STATE OF FLORIDA
DEPARTMENT OF
Health & Rehabilitative Services
Bob Graham, Governor
P.O. BOX 15490
ORLANDO, FLORIDA 32858

OPHRS (J.C. EAKINS)

October 1, 1982

SUMMARY OF ACTIVITIES IN CONNECTION WITH
ST. LUCIE #1 CONTAMINATED SLUDGE DISPOSAL

Wednesday, September 15, 1982

Charles Ness and I departed from Orlando in Car 427 at 7:00 a.m. and traveled to Port St. Lucie to meet with Mr. Ron Brooks of the Florida Department of Environmental Regulations and Mr. Hank Buchanan, of Florida Power & Light. The objective of the trip was to investigate the possible contamination of a DER approved sludge dumping site. The contamination was with radioactive wastes from the St. Lucie Unit #1 nuclear power plant. The alleged radioactive sludge had been taken from a sewage treatment plant located on the FP&L property.

Prior to the sewage treatment plant, a septic tank had been used for sewage disposal. According to our information, a sink located in the radiation controlled area at St. Lucie Unit #1 had been connected to the sanitary sewer system by mistake. The sink had been used to wash various reusable items such as respirators and mops. A preliminary gamma scan of sludge at the plant revealed the presence of Cobalt-60.

Mr. Ness and I arrived at 9:30 a.m. at Mr. Brooks' office. Mr. Buchanan was already there. Mr. Brooks gave us some maps of the dumping areas. We all traveled to Frenz Enterprises in Ft. Pierce where we met with Mr. Roger Chubin, a chemist with Frenz. Frenz Enterprises is sanctioned by DER to dump treated sludge at the approved dumping sites.

Together, we traveled to the present dumping area. Mr. Ness and I began making a gamma survey of the woods and field 1B (see map), using a Ludlum 125 and a Ludlum 2220 survey instruments. We were unable to find any contamination. Mr. Chubin then told us sludge had been dumped in field 3, but dumping had ceased at least a year ago. We traveled to the site, and within 15 minutes, found an area of elevated gamma radiation, which read 12-14 uR/hr at contact with a Ludlum 125. At this point, no further surveys were

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conducted; however, soil and grass samples were taken. These samples were split with Mr. Buchanan.

Mr. Ness and I returned to Orlando with the samples. A gamma spectral analysis of the samples at the Orlando Health Physics laboratory revealed Cobalt-60 in the soil samples.

Thursday, September 16, 1982

Mr. Ness, Mrs. Kay Heath and I departed at 7:00 a.m. in Car 427 and traveled to the Howard Johnson Inn at the Ft. Pierce exit of the Florida Turnpike where we met Mr. Joe Danek of FP&L. Then, we convoyed to the contaminated field, designated field 3.

At field 3, there were several FP&L employees already on location. I met with Mr. George Frenz, owner of Frenz Enterprises. Mr. Frenz indicated that his records showed that only two shipments of sludge were made from St. Lucie Unit #1. One of these shipments was dumped on field 2A and one on field 3. I asked Mr. Frenz if he could assist me in collecting water samples from the monitoring wells located around the dump sites. He indicated that one of his employees would bring a pump to do so. However, it turned out that no one could find the wells, although a search was made. Our crew then began making gamma radiation surveys of fields 3 and 2A. It was also decided to bring in a helicopter to make an aerial survey of the entire approved dump area.

At 1:30 p.m. the helicopter arrived and Mr. Ness and an FP&L representative, Mr. Peter Bailey, made the survey. Several elevated areas were found. The elevated areas in field 2A turned out to be spoil banks on drainage ditches; however, in field 3, actual Cobalt-60 contamination was found.

FP&L wanted to begin removal of the contaminated soil that afternoon and brought in a front end loader and truck with low specific activity (LSA) waste containers. Their intent, as to soil removal, was unclear to us when we left.

Friday, September 17, 1982

Kay Heath, Charles Ness and I departed from Orlando in MERL, using cars 537 and 427, at 9:30 a.m. We drove directly to the White City FP&L Substation which serves as the berthing station for MERL during emergencies in the Ft. Pierce area. MERL was plugged in, the analytical equipment brought up to speed, and plans were made for sampling in the contaminated field 3.

When Ms. Heath, Mr. Ness and I arrived at Field 3 at about

2:00 p.m., the FP&L crews had already excavated the contaminated area found on Wednesday, September 15. The contaminated soil had been removed down to a depth of approximately 4 inches with a front end loader and placed in LSA waste shipment containers on a flat bed trailer. The soil was subsequently taken back to the St. Lucie plant site to await disposal.

Television news crews were on site by this time. Quite a bit of time was spent by the crews in taking pictures and conducting interviews. I was interviewed by one news crew.

The HRS team was also approached by Dan Montgomery, NRC, Atlanta. Mr. Montgomery was concerned about the level at which the state would require decontamination of the soil.

The HRS crew began surveying the high areas found by the helicopter aerial gamma survey on Thursday, Sept. 17. Almost immediately, it was found that a large area by the swamp was contaminated, although the levels appeared to be lower than the first contaminated area.

Thirty-two samples of soil and water were taken on this day. The HRS team returned to MERL with these samples. It was determined that Ms. Heath and I would remain with MERL during the weekend to count the samples. She and I set up a shift schedule and counted samples all night.

Saturday, September 18, 1982

Kay Heath relieved me at 4:30 a.m. I returned to MERL at 10 a.m. We continued to count samples collected on Friday. Only one sample was collected on this date.

I telephone Wallace Johnson in the morning and notified him of our progress and of the fact that we were nearly out of paper tape for the Hewlett Packard 9825 calculator. Mr. Johnson then notified Jere Dumas and Charles Ness by telephone that their presence at St. Lucie was required. Mr. Johnson arrived on Saturday afternoon around 4:00 p.m. Mr. Ness and Mr. Dumas arrived sometime thereafter.

Ms. Heath and I left MERL at 8:00 p.m. Mr. Ness and Mr. Dumas performed shift work during the night.

Sunday, September 19, 1982

Ms. Heath and I arrived at MERL at 8:00 a.m. All health physicists, including Ness and Dumas, then went out to field 3. We

also looked at the Midway substation, site of the St. Lucie area EOF.

Surveys of field 3 were made using hand-held instruments. Six soil samples were taken to try and predict a correlation between uR/hr or cpm versus soil concentrations of Co-60. This proved to be fruitless due to a variety of problems, least of which was the fact that most of the sampled locations were distinct, concentrated areas of a small, physical size, and subsequent sampling methods tended to miss the area of highest concentration.

FP&L requested assistance in counting 11 samples from field 2A which was alleged to have been used for St. Lucie Unit 1 sludge dumping. Six of these samples were given to the NRC mobile lab for counting. The NRC mobile lab had set up in the White City substation, using our sampling hut as a power source.

Miss Leigh Kniskern arrived at White City around noon to aid in our analyses of the problem.

At approximately 2:00 p.m., Ms. Heath and I departed for Orlando.

Lyle Jerrett arrived at White City at 6:30 p.m.

Messrs. Dumas and Ness counted samples continuously until midnight.

Monday, September 20, 1982

MERL was opened at 6:45 a.m. The pressurized ion chamber was taken to field 3 to measure the excavated areas and other portions of the field that had been identified as having elevated readings.

Mr. Johnson, Mr. Jerrett and Mr. Dumas left at noon to attend the County Commissioner's meeting.

Grass samples were collected and analyzed. Merl was closed at 7:00 p.m.

Tuesday, September 21, 1982

John Pelchat, Kay Heath and myself left Orlando at 7:00 a.m. in Car 537. We drove to the White City substation and relieved Charles Ness, who had opened MERL at 7:00 a.m. I called Wallace Johnson and received instructions for locations and types of samples to be collected. I also completed a work schedule and plan for the immediate future.

Mr. Ness and Mr. Pelchat went to field 3 where they collected six samples and were given the sample from the DER monitoring well collected by DER at our request. They, then, returned to MERL.

Mr. Ness departed from MERL in Car 537 at 3:00 p.m. I went to field 3 and pulled a core sample from the excavated area. The core consisted of five each 6-inch plugs taken with an auger at stake #11. Ground water was evident at a depth of 20 inches. Due to inclement weather, I returned to MERL and made arrangements with DER to collect ground water by digging wells in the area. We departed from MERL at 5:00 p.m.

Wednesday, September 22, 1982

Mr. Pelchat, Ms. Heath and I opened MERL at 8:00 a.m. Ms. Heath began to count samples. Mr. Pelchat and I met with two DER representatives at 9:30 a.m. in field 3. The DER supervisor was Gregory Graves. I gave Mr. Graves a letter of request I had written in which I asked for DER assistance in digging shallow ground water wells and collecting water from them. Five wells in all were dug, and where possible, cores were taken. During this sampling, I met Mr. E. E. Whitaker, who represented the land owners.

Mr. Pelchat and I also took another coring from the excavated area.

We continued counting samples in MERL. Ms. Heath and I left MERL at 7:30 p.m; Mr. Pelchat remained until 11:00 p.m.

Thursday, September 23, 1982

Ms. Heath and I opened MERL at 8:00 a.m. We started a sample count and then went to field 2 where we collected water and bottom sediment from two ponds on the property.

Mr. Pelchat came in at 11:00 a.m. We counted samples until 1:45 p.m. at which time we departed with all our equipment except for 4 field scintillometers on loan to FP&L. We arrived back in Orlando at 4:30 p.m., and then berthed and unloaded MERL.

Friday, September 24, 1982

All health physics staff had a staff conference at 8:30 a.m. Assignments for compilation of the final report were made. I was assigned head of the project; Ness was to provide information from Sept. 18 through Sept. 20; Pelchat was to prepare maps. Ms. Heath is continuing to count the remaining samples in MERL.

Monday, September 27, 1982

Ms. Heath completed the sample analyses. FP&L notified us at 4:00 p.m. that they had completed the cleanup operation in field 3.

Monday, October 4, 1982

During the last week of September, Florida Power and Light called to notify us that they had completed the clean up of field 3 and to request us to check the field to determine that there is no gamma reading above 10 uR/hr.

On October 4 at 8:15 a.m., Mrs. Kay Heath, Mr. John Pelchat, Mr. Charles Ness and I left in state vehicle #427 to proceed to field 3 in St. Lucie County.

The survey party arrived at 11:00 a.m. at field 3 where we were met by Lang Jacobus of FP&L. We surveyed the 16 acres with two Ludlum 12-S, one Ludlum 2220 and the aerial surveillance system, which was specially mounted on a two-wheel hand cart that was pushed over the entire area.

There were five small areas located which had counts of 10,000 cpm. Samples were taken at each location, and a stake was placed in each excavated area.

The 16-acre survey was completed by nightfall and the survey party returned to Orlando with the samples.

Tuesday, October 5, 1982

The samples taken from field 3 were placed in marinelli beakers and counted in the Mobile Emergency Radiological Laboratory beginning at 10:00 a.m.

CONCLUSION

Wednesday, October 6, 1982

The Florida Department of Health and Rehabilitative Services has surveyed extensively the areas of Cobalt 60 contamination both before and after the Florida Power and Light Company's decontamination efforts. Based on the decontamination limit of five (5) picocuries per gram averaged over one square meter (m^2), I feel that Florida Power and Light Company has achieved adequate decontamination. Post clean up maximum activities' levels were no greater than one-half the decontamination limit. These data were from samples taken at the sites of greatest gamma exposure levels remaining after the decontamination.

ANNEX I

Analytical Results from St. Lucie Unit #1

Sludge Disposal Sites

NOTE: Those sample numbers followed by a "Z" indicate samples counted in the Health Physics Laboratory in Orlando. These samples were counted on an intrinsic germanium detector and the results were calculated on a Nuclear Data 6610 analyzer system.

Those sample numbers preceded by an "M" indicate samples counted in MERL, both on-site and in Orlando. These samples were counted on a germanium-lithium detector (GeLi), and results were calculated on a Hewlett Packard HP 9825A calculator, using an in-house data reduction routine.

SAMPLE NUMBER	DATE COLLECTED	DESCRIPTION & LOCATION	Co-60 RESULTS (pCi/gm or pCi/l)
168Z	9-15-82	Topsoil from Field 3. Approximate location, stake#11, excavated area (prior to excavation)	38.6±0.1
169Z	9-15-82	Same as 168Z, actually another portion of same sample.	101.2±0.3
170Z	9-15-82	Pasture grass from field 3. Same location as 168Z unwashed	5.1±0.2*
170Z	9-15-82	Same as 170Z above, except washed	0.7±0.07
171Z	9-16-82	Water from drainage ditch across Glades Cutoff Road from Field 3. Used as background	<0.01
172Z	9-16-82	Water from drainage ditch across Glades Cutoff Road from Field 2A. Used as background	<0.02
173Z	9-16-82	Soil from field 2A used as background	<0.02
174Z	9-16-82	Soil from across Glades Cutoff Road from Field 2 A. Used as background	<0.02
175Z	9-16-82	Topsoil and grass from field 3. Approximate location, stake#11, excavated area, core section #1	16.1±0.02
176Z	9-16-82	Soil from same location as 175Z. Core section #2	1.7±0.05

* Result from NaI detector

SAMPLE NUMBER	DATE COLLECTED	DESCRIPTION & LOCATION	Co-60 RESULTS (pCi/gm or pCi/l)
177Z	9-16-82	Soil from same location as 175Z Core section #3	0.7±0.04
178Z	9-16-82	Soil from same location as 175Z Core section #4	3.8±0.07
179Z	9-16-82	Soil and grass from field 3. Approximate location FP&L stake #33.	0.5±0.03
180Z	9-16-82	Soil and grass from field 3. Approximate location FP&L stake #33	0.8±0.04
181Z	9-16-82	Soil and grass from field 3. Approximate location FP&L stake #33	0.2±0.02
182Z	9-16-83	Soil and grass from field 3. Approximate location FP&L stake #33	<0.01
183Z	9-16-82	Soil and grass from field 3. Approximate location FP&L stake #33	<0.02
184Z	9-16-82	Surface water, field 3. Approximate location, FP& L stake #43. Edge of low area.	<0.01
185Z	9-16-82	Surface water, field 3. Approximate location FP&L stake #5. Small pond west of access road.	<0.02
186Z	9-16-82	Surface water, large pond, field 2A	<0.02

SAMPLE NUMBER	DATE COLLECTED	DESCRIPTION & LOCATION	Co-60 RESULTS (pCi/gm or pCi/l)
187Z	9-16-82	Surface water, ditch in field 2A	<0.02
188Z	9-16-82	Bottom sediment, drainage ditch along Glades Cutoff Road, field 3.	<0.02
189Z	9-16-82	Soil and grass from field 2A. FP&L stake #13. Alleged "hot spot" located by helicopter.	<0.02
190Z	9-16-82	Soil from field 2A. FP&L stake #14. Alleged "hot spot" located by helicopter.	<0.009
191Z	9-16-82	Soil and grass from field 2A. FP&L stake #15. Alleged "hot spot" located by helicopter.	<0.02
192Z	9-16-82	Silt from field 3. Approximate location same as 185Z.	<0.01
193Z	9-16-82	Bottom sediment field 3. Approximate location same as 184Z.	<0.01
194Z	9-16-82	Soil and grass from field 2A. Edge of ditch.	<0.01
195Z	9-16-82	Soil from across Glades Cutoff Rd. from field 2A.	<0.01
M159	9-17-82	Soil from field 3. Approximate location FP&L stake #46.	0.4 ± 0.07

SAMPLE NUMBER	DATE COLLECTED	DESCRIPTION & LOCATION	Co-60 RESULTS (pCi/gm or pCi/l)
M160	9-17-82	Soil from field 3. Approximate location FP&L stake #46.	1.8±0.2
M161	9-17-82	Soil from field 3. Northwest edge of low area.	<0.05
M162	9-17-82	Background soil from field 3. Location FP&L stake #1.	<0.04
M163	9-17-82	Soil from field 3. Location 3 ft. north of stake#16 in excavated area.	0.7±0.09
M164	9-17-82	Soil from field 3. Edge of grass at excavated area, near FP&L stake #7.	0.07±0.02
M165	9-17-82	Soil from field 3. Approximate location stake#46.	0.7±0.09
M166	9-17-82	Soil from field 3. Stake #8, excavated area.	< 0.03
M167	9-17-82	Soil from field 3. Stake #9, excavated area.	<0.04
M168	9-17-82	Soil from field 3. Stake #7, excavated area.	<0.04
M169	9-17-82	Soil from field 3. Stake #11, excavated area.	<0.03

SAMPLE NUMBER	DATE COLLECTED	DESCRIPTION & LOCATION	CO-60 RESULTS (pCi/gm or pCi/l)
M170	9-17-82	Soil from field 3. Edge of cut, excavated area, near stake #13	4.0±0.4
M171	9-17-82	Soil from field 3. Stake #15, excavated area.	<0.03
M172	9-17-82	Soil from field 3, stake #17, excavated area.	<0.03
M173	9-17-82	Same, stake #18	<0.04
M174	9-17-82	Same, stake #2	<0.03
M175	9-17-82	Same, Stake #1	<0.03
M176	9-17-82	Same, Stake#6	<0.04
M178	9-17-82	Same, Stake#10	<0.03
M179	9-17-82	Same, Stake #12	<0.04
M180	9-17-82	Same, Stake #13	<0.03
M181	9-17-82	Same, Stake #14	<0.03
M182	9-17-82	Same, Stake #15	<0.04
M183	9-17-82	Same, Stake #19	<0.07
M184	9-17-82	Same, Stake #20	<0.08
M185	9-17-82	Same, Stake #22	<0.06
M186	9-17-82	Same, Stake #23	<0.07
M187	9-17-82	Same, Stake #24	<0.04
M188	9-17-82	Same, Stake #3	<0.03

SAMPLE NUMBER	DATE COLLECTED	DESCRIPTION & LOCATION	Co-60 RESULTS (pCi/gm or pCi/l)
M189	9-17-82	Same, Stake #4	<0.04
M190	9-17-82	Same, Stake #5	<0.04
M191	9-18-82	Soil from field 3, FP&L Stake #20	1.5±0.2
M192	9-19-82	Soil from field 3, FP& L Stake #18 (18B)	0.09±0.02
M193	9-19-82	Soil from field 3. FP&L stake #17, (17B)	0.6±0.07
M194	9-19-82	Soil from field 3. FP&L stake #17 (17A)	0.6±0.08
M195	9-19-82	Soil from field 3. FP&L stake #18 (18A)	1.5±0.2
M196	9-19-82	Soil from field 3. FP&L stake #17 (17C)	3.3±0.4
*M197	9-16-82	Soil from field 2A, FP&L stake #19	<0.08
*M198	9-17-82	Soil from field 2A, FP&L stake #22	<0.07
*M199	9-17-82	Soil from field 2A, FP&L stake #23	<0.08
*M200	9-16-82	Soil from field 2A, FP&L stake #24	<0.08
*M201	9-17-82	Soil from field 2A, FP&L stake #29	<0.08
*M202	9-16-82	Soil from field 2A, FP&L stake #30	<0.04
M203	9-20-82	Grass field 3, location same as M196	0.6±0.1

*FP&L collected samples, counted at their request.

SAMPLE NUMBER	DATE COLLECTED	DESCRIPTION & LOCATION	Co-60 RESULTS (pCi/gm or pCi/l)
M204	9-20-82	Grass field 3, location same as M195	0.4±0.1
M205	9-20-82	Grass, field 3, location X	<0.4
M206	9-20-82	Grass, field 3, location same as M193	<0.2
M207	9-20-82	Grass, field 3, location Z	<0.4
M208	9-21-82	Water, field 3, near FP&L stake#44	<0.08
M209	9-21-82	Bottom sediment, field 3 Near FP&L stake #44	<0.06
M210	9-21-82	Water, field 3, near FP&L stake#18	<0.08
M211	9-20-82	Water, field 3, Dept. Env. Reg. Monitoring well	<0.08
M212	9-21-82	Bottom sediment, field 3 west of FP&L stake#18	<0.03
M213	9-21-82	Soil, field 3. Coring at stake#11, excavated area, 24" - 30"	<0.04
M214	9-21-82	Soil, field 3. West of stake#13 in excavated area on undisturbed area	8.8±0.9
M215	9-21-82	Soil, field 3, stake #5, excavated area.	<0.06
M216	9-21-82	Soil, field 3. Coring at stake#11, excavated area 0" - 6"	<0.06

SAMPLE NUMBER	DATE COLLECTED	DESCRIPTION & LOCATION	Co-60 RESULTS (pCi/gm or pCi/l)
M217	9-21-82	Soil, field 3. Coring at stake#11, excavated area. 6"-12".	<0.04
M218	9-21-82	Soil, field 3. Coring at stake#11, excavated area. 12" - 18".	<0.05
M219	9-21-82	Soil, field 3. Coring at stake#11, excavated area. 18" - 24".	<0.04
M220	9-22-82	Soil, field 3. Coring at stake#8, excavated area. 0" - 6"	0.1±0.02
M221	9-22-82	Soil, field 3. Coring at stake#8, excavated area. 8" - 15"	<0.005
M222	9-22-82	Soil, field 3. Coring at 58' southeast of FP&L stake#67. 0"-7"	<0.06
M223	9-22-82	Soil, field 3. Location same as M222. 7"-13"	<0.05
M224	9-22-82	Same as M222. 13" -28"	<0.05
M225	9-22-82	Soil, field 3. Topsoil at FP&L stake F3-1.	314±31
M226	9-22-82	Soil, field 3. Coring at FP&L stake F3-2. 0"-6". (Top soil removed)	<0.05
M227	9-22-82	Soil, field 3. Same as M226. 6"-12"	<0.06

SAMPLE NUMBER	DATE COLLECTED	DESCRIPTION & LOCATION	Co-60 RESULTS (pCi/gm or pCi/l)
M228	9-22-82	Same as M226. 12" - 18"	<0.05
M229	9-22-82	Same as M226. 18" -24"	<0.04
M230	9-22-82	Same as M220. 15" - 24"	<0.05
M231	9-22-82	Soil, field 3. 116' east of FP&L Stake #43	<0.07
M232	9-22-82	Ground water, field 3, same as M222	<0.07
M233	9-22-82	Ground water, field 3. 298' NNE of FP&L Stake #62.	<0.1
M234	9-22-82	Ground water, field 3, Stake #11, excavated area.	<0.1
M235	9-22-82	Ground water, field 3, 116' east of FP&L stake #43.	<0.1
M236	9-22-82	Ground water, field 3. FP&L stake F3-1	<0.09
M237	9-23-82	Surface water, Field 2A, large pond.	<0.01
M238	9-23-82	Surface water, Field 2A, small pond	<0.09

SAMPLE NUMBER	DATE COLLECTED	DESCRIPTION & LOCATION	Co-60 RESULTS (pCi/gm or pCi/l)
M239	9-23-82	Bottom sediment, Field 2A, small pond.	<0.06
M240	9-23-82	Bottom sediment, field 2A, large pond.	<0.05
M241	10-04-82	Soil, field 3. HRS Resample #1	2.1 ± 0.3
M242	10-04-82	Soil, field 3. HRS Resample #2	2.5 ± 0.3
M243	10-04-82	Soil, field 3. HRS Resample #3	2.0 ± 0.2
M244	10-04-82	Soil, field 3. HRS Resample #4	2.0 ± 0.2
M245	10-04-82	Soil, field 3. HRS Resample #5	2.0 ± 0.2

ANNEX II

Aerial Survey of Potentially

Contaminated Site in St. Lucie County

On September 16, 1982, Florida Power and Light furnished a Bell Jetranger helicopter to survey approximately 2,000 acres of woods and pasture that had recently served as a sewage sludge dump site; part of this waste was allegedly taken from the St. Lucie nuclear sewage treatment plant.

The helicopter arrived in field three (see map) at 1400 in order to provide Florida HRS Radiation Control personnel an opportunity to conduct an in-depth aerial survey of all fields that may have served as dump sites.

The aerial surveillance system used by Florida Radiation Control consists of a seven-inch plastic scintillator with a five-inch photomultiplier tube on a specially constructed base. This is attached to a modified model 12 Ludlum count rate meter. This system has a background of 800 counts per minute at sea level due to cosmic ray and electronic noise.

Mr. Peter Bailey of FPL accompanied us (the pilot and I) to coordinate communications between the ground crew and the aerial survey.

Upon takeoff, we flew over Glades Cutoff Road to an area that was removed from the dump area to secure a background, baseline reading (see background area on map). The background registered 1,000 to 1,100 counts per minute on the Ludlum Ratemeter. We then flew back over field three to take a reading at 100 feet over the 20' x 30' area previously identified with surface instruments (Ludlum 12 S and Ludlum 2220) as having a higher than background reading. At 100', this area registered 1,600 to 1,700 counts per minute.

After discussing our findings with other Radiation Control health physicists on the ground, it was decided to mark all locations in the 2,000 acre sector that had a count per minute of 1,400 or over.

Each pasture field has a series of drainage swail ditches running across the field. It was decided to fly at 100' between these swail ditches; the pasture between ditches is approximately 100'.

By past experience, we had ascertained that the detector has almost uniform sensitivity in all directions. The diameter of the area of greatest sensitivity is approximately 500'. While in the air, the survey instrument was placed on the floor of the helicopter. The floor and outside surface of the helicopter consist of two relatively thin pieces of aluminum. These metal pieces would provide little detection interference.

In each case where a higher than background count per minute (1,400 - 1,500) was secured, the helicopter hovered over the particular portion of the ground at 50' in order to verify the original reading.

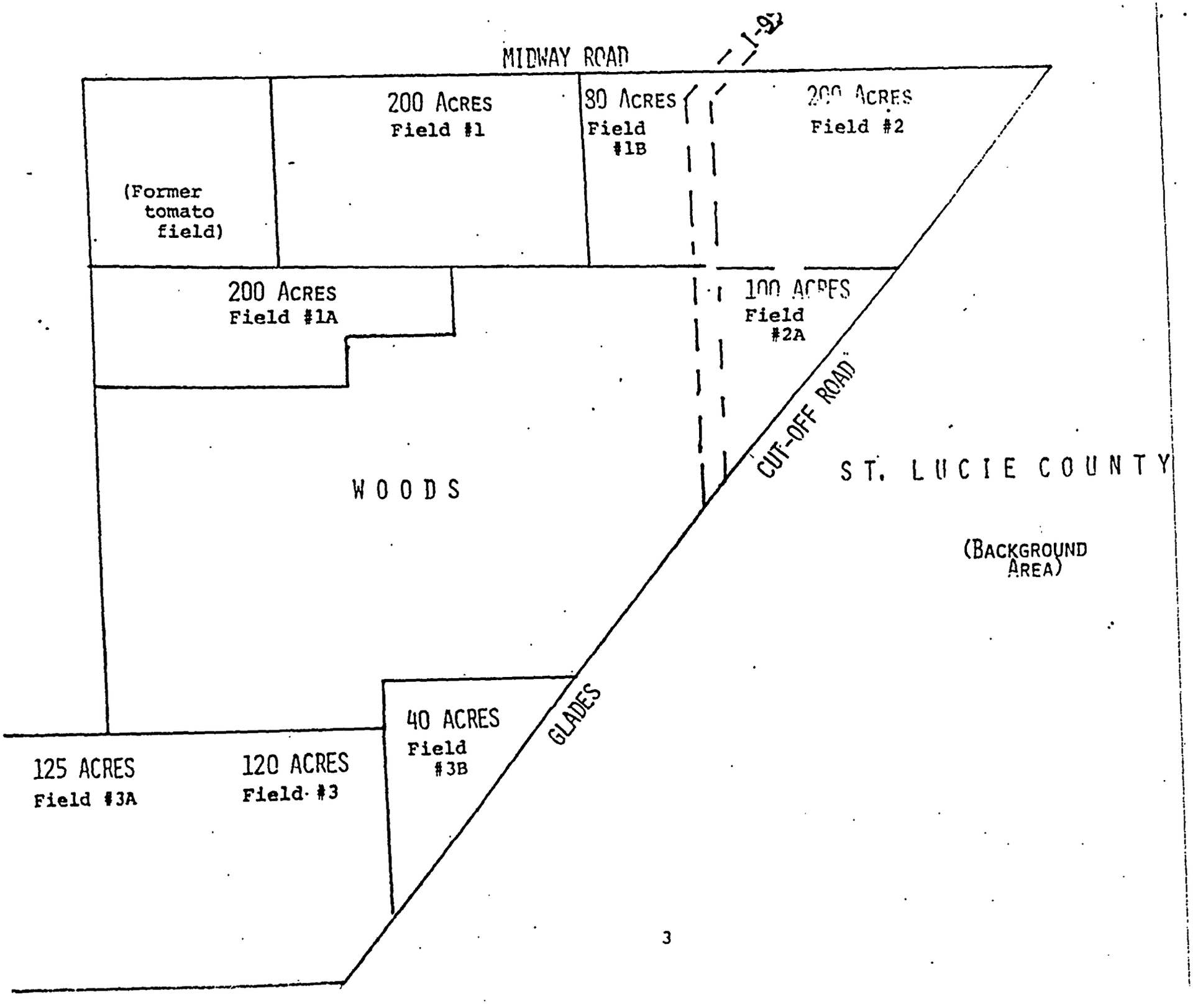
When a high reading was taken, the ground crew (FPL) was advised by Mr. Bailey to mark the identified area for further survey.

There are several small lakes and considerable swampy sections on the total property; these lakes provided a reading of 900 counts per minute.

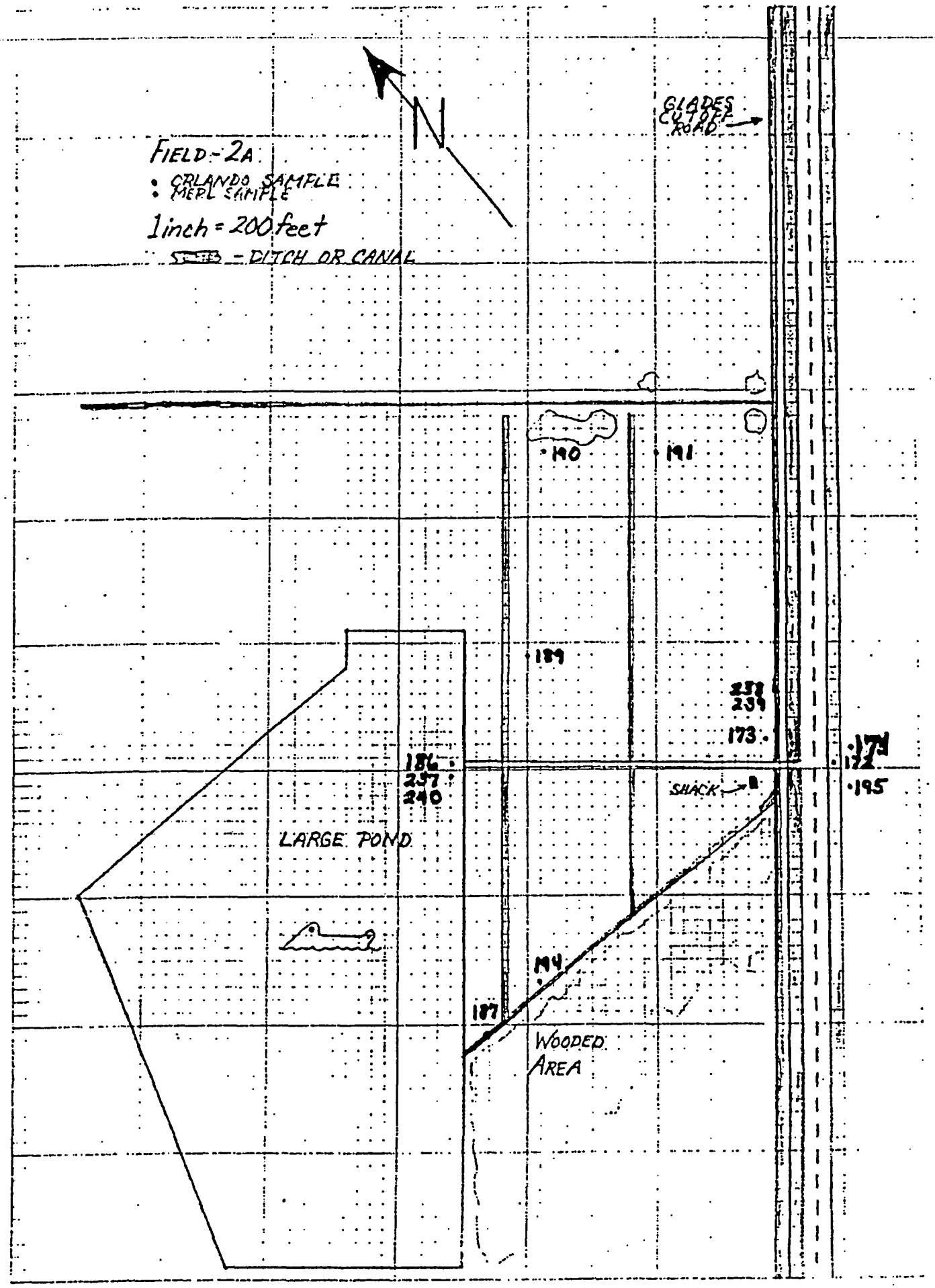
Not all areas identified as being higher than background were a result of Co-60; some sections had been ditched for drainage and gave higher than background readings perhaps due to naturally occurring radiation in the overturned soil.

The aerial survey was concluded at 1530 on September 16, 1982.

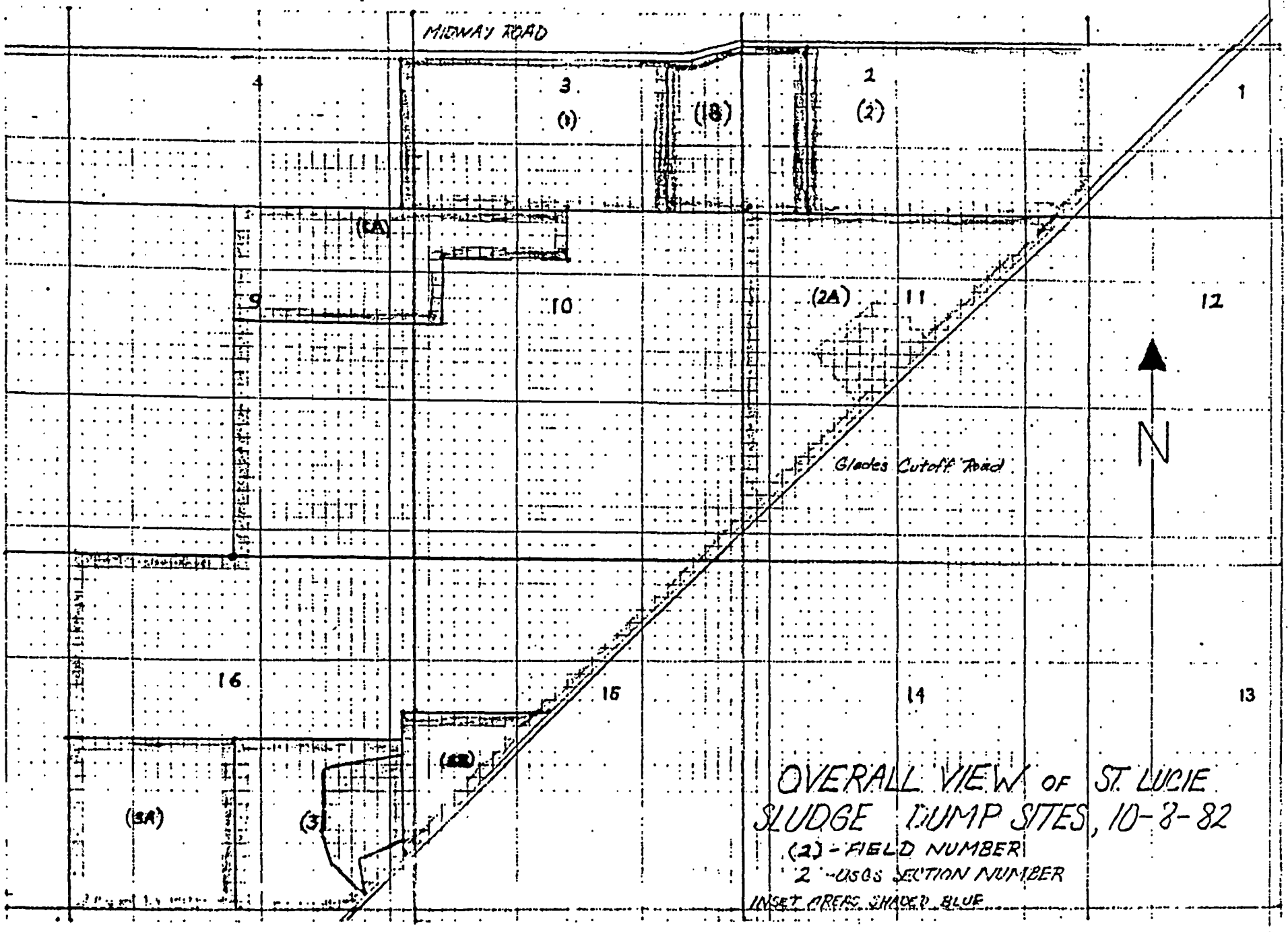
CHARLES R. NESS
Public Health Physicist II
Radiation Surveillance


MIDWAY ROAD
I-95
200 ACRES
Field #1
80 ACRES
Field #1B
200 ACRES
Field #2
(Former tomato field)
200 ACRES
Field #1A
100 ACRES
Field #2A
CUT-OFF ROAD
WOODS
ST. LUCIE COUNTY
(BACKGROUND AREA)
GLADES
40 ACRES
Field #3B
125 ACRES
Field #3A
120 ACRES
Field #3

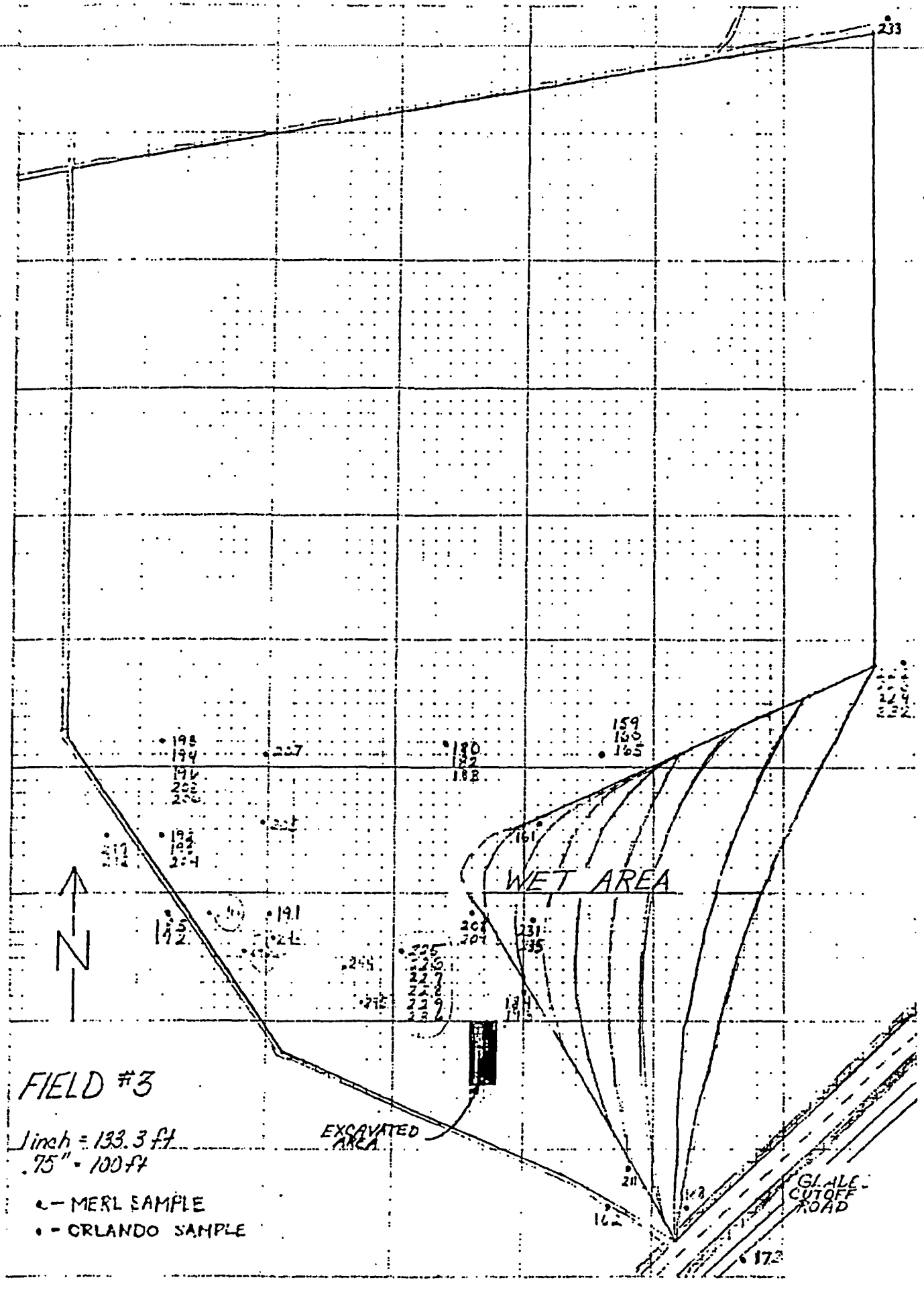
ANNEX III


FIELD-2A
• ORLANDO SAMPLE
• MERL SAMPLE
1 inch = 200 feet
- DITCH OR CANAL
GLADES CUTOFF ROAD
190
191
189
173
195
186
237
240
SHACK
LARGE POND
194
187
WOODED AREA

46 0700

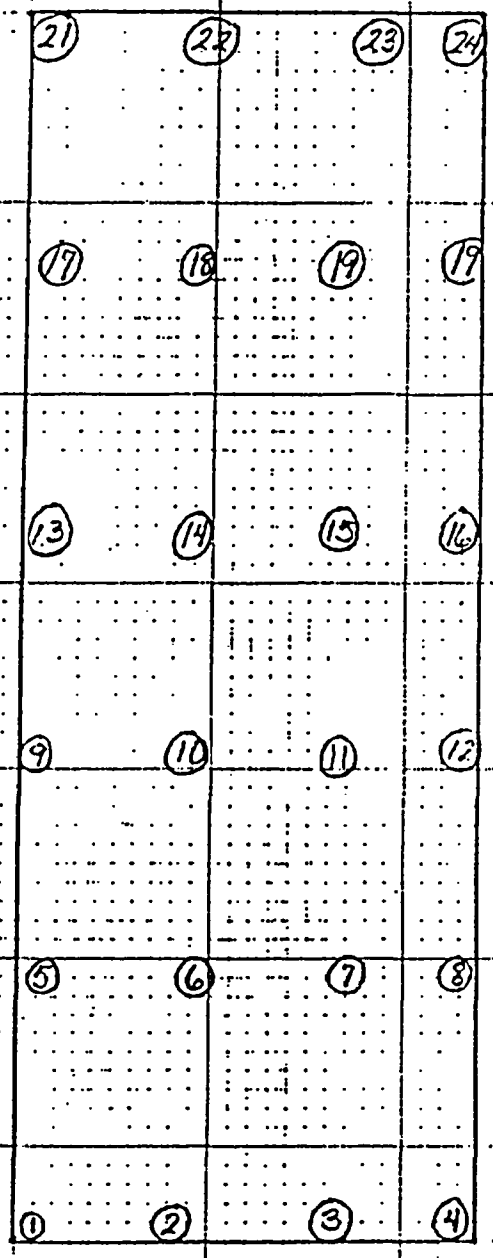

MIDWAY ROAD
4
3
(1)
(18)
2
(2)
1
(4A)
9
10
(2A)
11
12
N
Glades Cutoff Road
16
15
14
13
(3A)
(3)
OVERALL VIEW OF ST. LUCIE
SLUDGE DUMP SITES, 10-8-82
(2) - FIELD NUMBER
2 - USGS SECTION NUMBER
INSET AREAS SHADED BLUE

46 0700


WET AREA
N
FIELD #3
1 inch = 133.3 ft
.75" = 100 ft
• — MERL SAMPLE
• - ORLANDO SAMPLE
EXCAVATED AREA
GLALE CUTOFF ROAD

460700

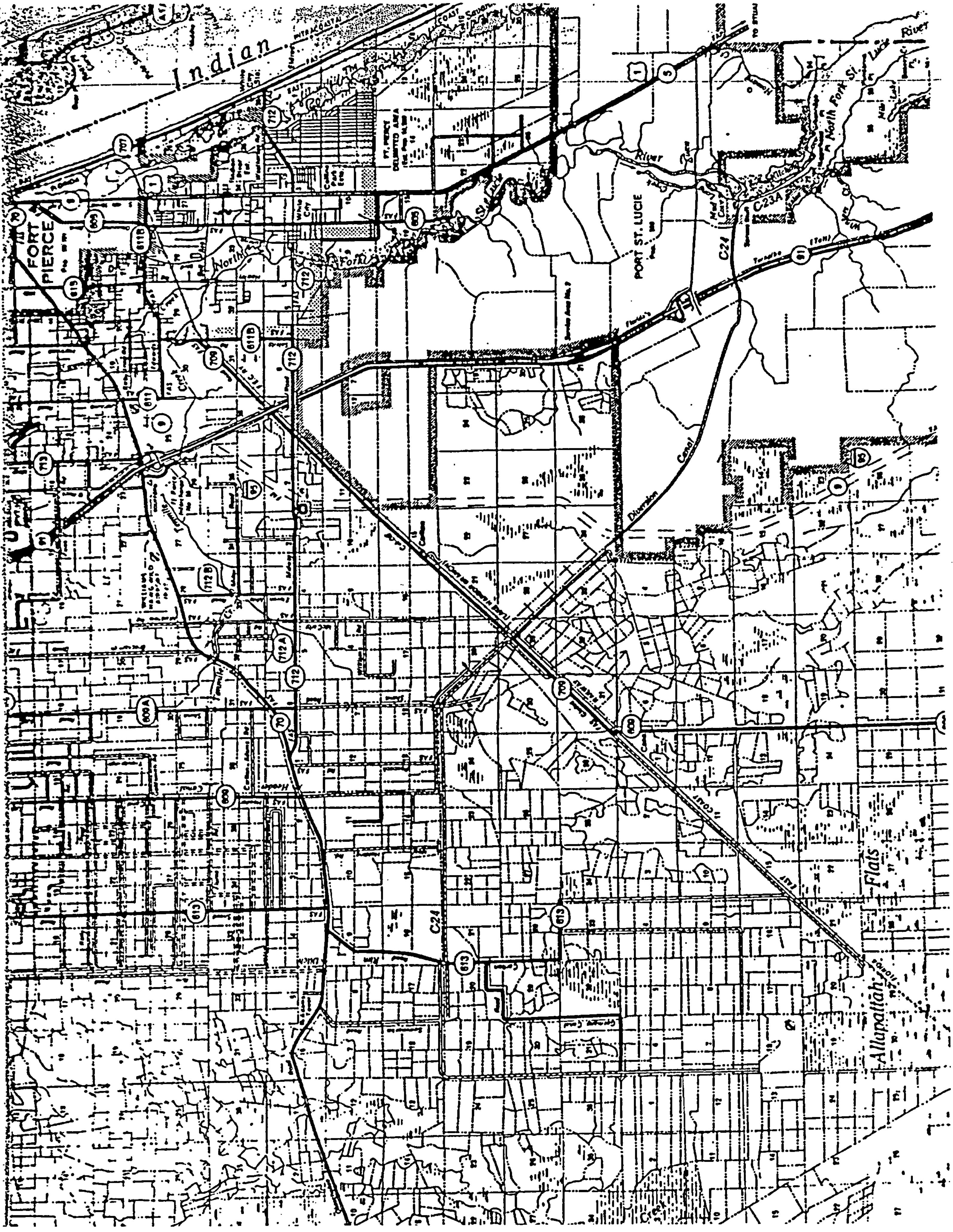
EXCAVATED AREA, FIELD 3. SHOWN WITH NUMBER STAKE LOCATIONS



1 inch = 10 feet

Samples from Excavated Area, Field -3

	Sample #	Stake #
ORLANDO LAB	168Z	11
	169Z	11
	170Z	11
	175Z	11
	176Z	11
	177Z	11
	178Z	11
MERL	M166	8
	167	9
	168	7
	169	11
	171	15
	172	17
	173	18
	174	2
	175	1
	176	6
	177	10
	178	12
	179	13
	181	14
	182	15
	183	19
	184	20
	185	22
	186	23
	187	24
	188	3
	189	4
	190	5
	213	11
	215	5
	216	11
	217	11
	218	11
	219	11
	220	8
	221	8
	230	8
	234	11


Indian
FORT PIERCE
PORT ST. LUCIE
North Fork
North Fork St. Lucie River
River
Diversion Canal
C24
C23A
Allapattah Flats
712
712A
712B
707
709
70
608
608A
613
611B
615
713
91
5
1