SOUTH CAROLINA ELECTRIC & GAS COMPANY
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T. C. NICHOLS, JR.
VICE PRESIDENT AND GROUP EXECUTIVE
NUCLEAR OPERATIONS

December 5, 1980

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Virgil C. Summer Nuclear Station
Docket No. 50/395
West Embankment Investigation

Dear Mr. Denton:

South Carolina Electric and Gas Company, acting for itself and as agent for South Carolina Public Service Authority, herewith forwards forty-five (45) copies of a soils investigation program for the service water pond West Embankment and service water structures. This investigation is being performed at the request of the NRC Staff and reflects comments from your Mr. John Chen by telephone on 12/3/80.

A schedule for this work is provided within the attachment. As noted, the field work for this investigation program will begin on 12/8/80; however due to the additional testing requested by Mr. Chen, a final report will not be available until late February 1981. We will proceed with this program as outlined unless there are further comments or questions from the Staff.

Very truly yours,

T. C. Nichols, Jr.

RBW:TCN:rh
Enclosures
cc: V. C. Summer w/o enclosures
G. H. Fischer w/o enclosures
T. C. Nichols w/o enclosures
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Woodward-Clyde Consultants

December 4, 1980
71C72-WE

South Carolina Electric & Gas Company
Post Office Box 764
Columbia, South Carolina 29218

Attention: Mr. Robert Whorton

Re: West Embankment Investigation
Virgil C. Summer Nuclear Station

Gentlemen:

In order to satisfy concerns of the Nuclear Regulatory Commission with respect to the West Embankment, we will conduct an investigation consisting of test borings and laboratory testing. The purpose of this investigation will be to:

(a) Determine the soil profile along the Service Water Intake Structure (SWIS)

(b) Document the degree of compaction and shear strength of the select fill materials in the West Embankment

(c) Confirm the removal of soft natural soils from the foundation of the West Embankment

(d) Provide additional shear strength and consolidation test data for the select fill and sapprolite soils, particularly with regard to secondary compression and creep.

We will drill eight test borings located as shown on the attached West Embankment plan (Figure 1) and Service Water Intake Structure profile (Figure 2). The approximate coordinate location and depth of each of these borings are tabulated as follows:

Boring No.	Coordinates North	Coordinates East	Bottom Elevation
WE-14	472,680	1,905,460	330
WE-15	472,720	1,905,515	350
WE-16	472,670	1,905,350	355
WE-17	472,745	1,905,292	355
WE-18	472,620	1,905,392	320
WE-19	472,530	1,905,465	335
WE-20	472,400	1,905,575	335
WE-21	472,470	1,905,510	360

All borings will be drilled 10 feet into decomposed rock; therefore, the bottom elevations are subject to change, depending upon field conditions. The locations of the borings may be shifted a few feet in the field to avoid obstructions, such as underground piping.

Location stakes for the land borings should be provided for us by your site surveyors. In order to provide a reference for navigation of the barge which will be used to drill Borings WE-14 and WE-15, we will need two red and white range poles placed 10 feet off the face of the Service Water Intake Structure, one at the top of slope of the West Embankment, and one about 50 feet back. These range poles will provide a line of site 10 feet off and parallel to the SWIS. Also, a water level elevation staff gauge will be required in the Service Water Pond in a location visible from the locations of the water Borings, to be used for elevation control in the borings. While the water borings are in progress, we will ask your surveyors to determine the as-drilled locations from land by triangulation or other suitable means. Also, if any land borings are offset from the staked locations we will request your surveyors to determine the as-drilled coordinates.

We will require the construction of about 20 crates by your carpentry personnel, if possible, for shipment of the samples to Plymouth Meeting. These crates will be about 3 feet long and 1 foot square, of 3/8-inch or 1/2-inch plywood, with metal banding. Our field representative will supply the exact dimensions. We will also need a sufficient quantity of sawdust for packing and about 400 square feet of one inch thick stryofoam.

The borings along the SWIS will be located 10 feet northwest of the structure. The borings have also been located to provide 30 to 40 feet of clearance from the monitoring masts in order to reduce the risk of damage by collision with the barge. It will not be possible to drill a boring directly at the Pumphouse end of the SWIS because of the riprap on the slope and the electronic security zone on the crest of the embankment. Borings WE-14 and WE-18 will be located as close as possible to the Pumphouse end of the SWIS.

We anticipate obtaining about 70 undisturbed samples of select fill and saprolite, as requested by the NRC. These samples will be obtained using conventional Shelby tubes, and when necessary, a Pitcher sampler. Laboratory testing on these samples would will include the full range of physical properties (water content, gradation, plasticity, specific gravity, and unit weight) on selected samples, plus consolidation tests, $\overline{CIU}$ triaxial compression tests and creep tests. The complete testing program will be determined with consultation by the NRC after the samples are obtained.

It is anticipated that the field work will begin on December 8, 1980 and will require about 2 weeks to complete. Laboratory testing will begin around December 29. Based on the laboratory testing program which has been tentatively proposed by the NRC staff, it is anticipated that 4 to 6 weeks will be required for this work. Allowing an additional 2 to 3 weeks for data reduction, analysis and report preparation, it is anticipated that our final report will be submitted in mid to late February.

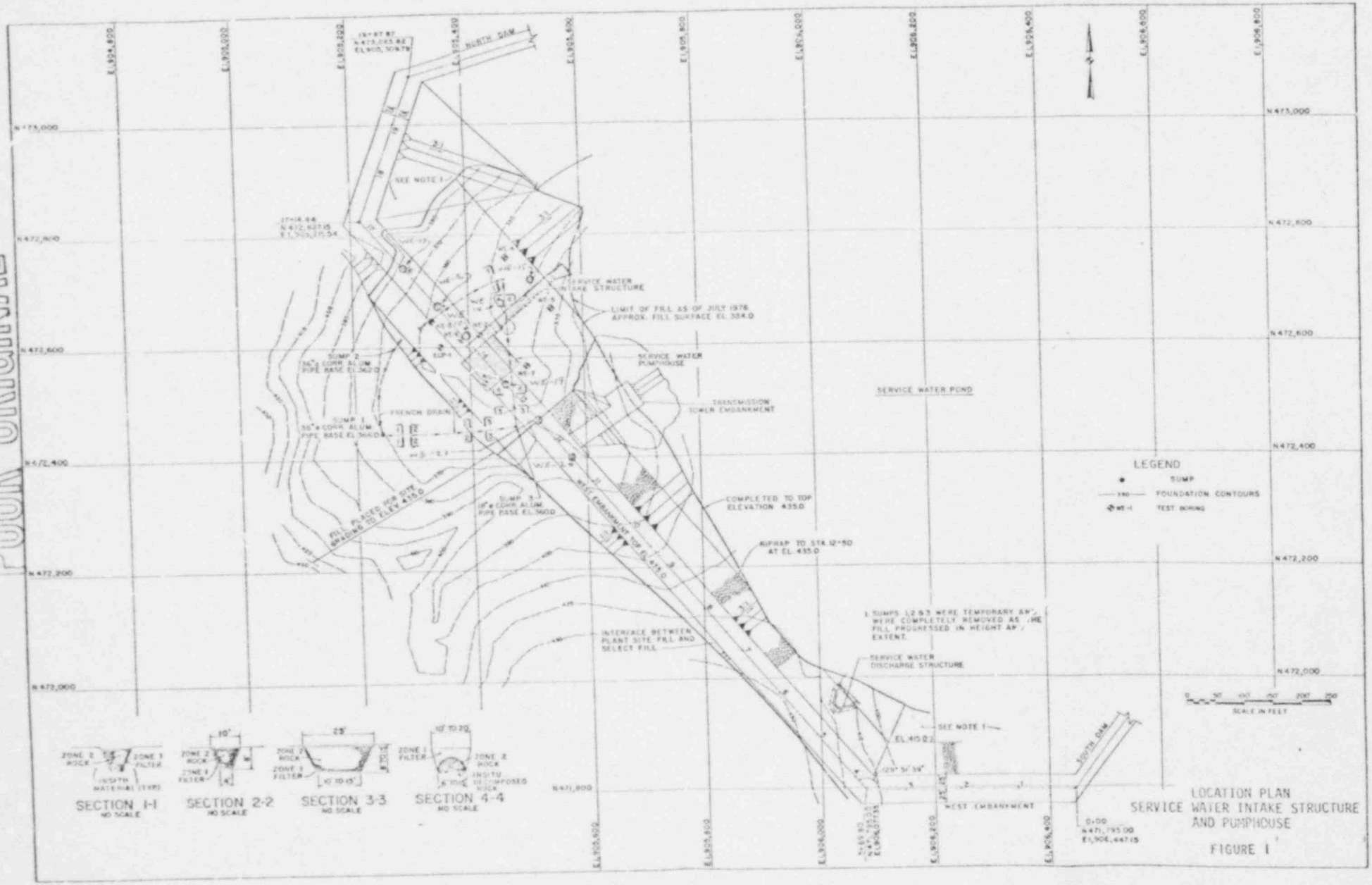
If we may provide any additional information, please do not hesitate to contact us.

Very truly yours,

WOODWARD-CLYDE CONSULTANTS

Arthur H. Dvinoff, Ph.D., P.E.
Senior Project Engineer

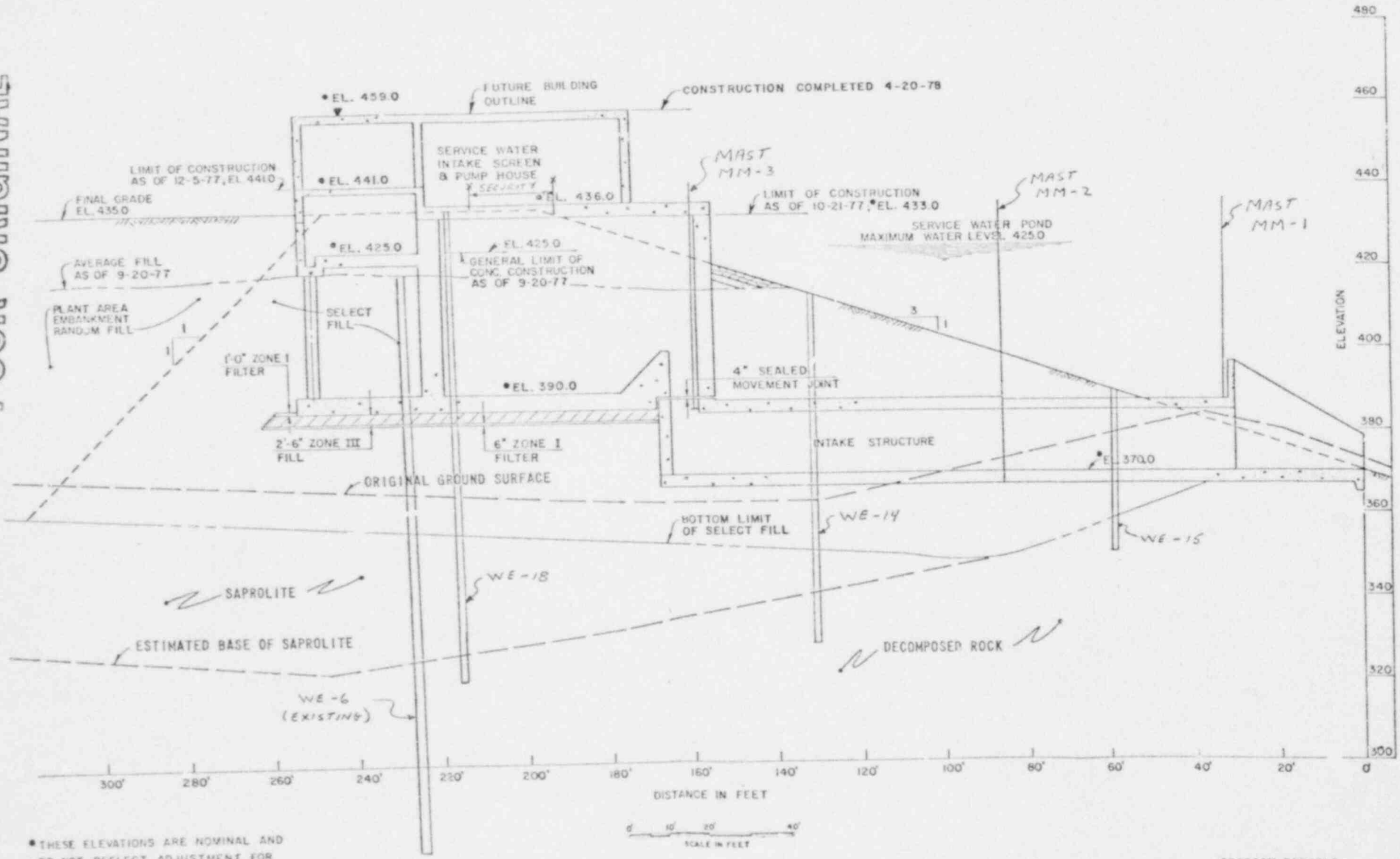
AHD/ee
5 copies submitted
cc: Mr. Frank S. Waller
Mr. James E. Lisney
Dr. M. Ayub Iqbal
Master File 6.10



LOCATION PLAN
SERVICE WATER INTAKE STRUCTURE
AND PUMPHOUSE

FIGURE 1

POOR ORIGINAL



*THESE ELEVATIONS ARE NOMINAL AND DO NOT REFLECT ADJUSTMENT FOR FINAL SETTLEMENT LEVELS.

SECTION PROFILE
SERVICE WATER INTAKE STRUCTURE
AND PUMPHOUSE

FIGURE 2