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ARMY ENGINEERING DISTRICT NORFOLK VA
NATIONAL DAM SAFETY PROGRAM. POHICK CREEK NUMBER 7 (INVENTORY N--ETC(U)
SEP 79 J A WALSH

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POTOMAC RIVER BASIN

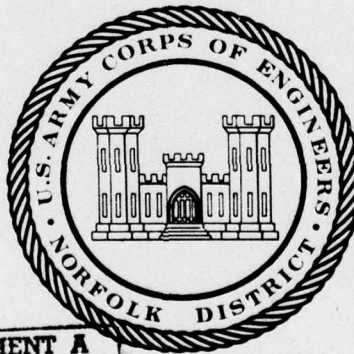
LEVEL #

Name Of Dam: POHICK CREEK NO. 7
Location: FAIRFAX COUNTY
Inventory Number: ~~05922~~ 05905

PHASE I INSPECTION REPORT NATIONAL DAM SAFETY PROGRAM

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20. Abstract

Pursuant to Public Law 92-367, Phase I Inspection Reports are prepared under guidance contained in the recommended guidelines for safety inspection of dams, published by the Office of Chief of Engineers, Washington, D. C. 20314. The purpose of a Phase I investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general conditions of the dam is based upon available data and visual inspections. Detailed investigation and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I investigation; however, the investigation is intended to identify any need for such studies.

Based upon the field conditions at the time of the field inspection and all available engineering data, the Phase I report addresses the hydraulic, hydrologic, geologic, geotechnic, and structural aspects of the dam. The engineering techniques employed give a reasonably accurate assessment of the conditions of the dam. It should be realized that certain engineering aspects cannot be fully analyzed during a Phase I inspection. Assessment and remedial measures in the report include the requirements of additional indepth study when necessary.

Phase I reports include project information of the dam and appurtenances, all existing engineering data, operational procedures, hydraulic/hydrologic data of the watershed, dam stability, visual inspection report and an assessment including required remedial measures.

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of the Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation and analyses involving topographic mapping, subsurface investigations testing, and detailed computational evaluations are beyond the scope of a Phase I investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspection can there be any chance that unsafe conditions be detected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established guidelines, the spillway design flood is based on the estimated "Probable Maximum Flood" for the region (flood discharges that may be expected from the most severe combination of critical meteorologic and hydrologic conditions that are reasonably possible), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the design flood should not be interpreted as necessarily posing a highly inadequate condition. The design flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

NAME OF DAM: POHICK CREEK #7
LOCATION: FAIRFAX COUNTY, VIRGINIA
INVENTORY: VA 05922

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM

PREPARED BY
NORFOLK DISTRICT, CORPS OF ENGINEERS
803 FRONT STREET
NORFOLK, VIRGINIA 23510

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PHASE I REPORT
NATIONAL DAM SAFETY PROGRAM
BRIEF ASSESSMENT

Name of Dam: Pohick Creek #7
State: Virginia
County: Fairfax
USGS Quad Sheet: Fairfax
Stream: Tributary of Pohick Creek
Date of Inspection: 30 May 1979

Pohick Creek #7 is a homogeneous earthfill structure about 650 feet long and 47 feet high. The dam is owned by Fairfax County and provides flood control for a tributary of Pohick Creek. The dam is classified as an intermediate size with a high hazard classification. The principal spillway consists of a 30-inch diameter pipe through the dam served by a two level intake in the reservoir. A vegetated earthen side-channel forms the emergency spillway located at the left abutment. The dam is located 0.4 miles north of Burke, Virginia.

Based on criteria established by the Department of the Army, Office of the Chief of Engineers (OCE), the Spillway Design Flood (SDF) is the PMF. The emergency spillway will pass 75 percent of the Probable Maximum Flood (PMF) without overtopping the dam; therefore, the emergency spillway is adjudged as inadequate, but not seriously inadequate. The PMF will overtop the dam by 0.7 feet and reach an average critical velocity of 3.8 feet per second.

The visual inspection revealed no apparent problems, the dam is considered stable, and there are no immediate needs for remedial measures.

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Colonel, Corps of Engineers
District Engineer

SEP 14 1979



CREST



DOWNSTREAM SLOPE

OVERALL VIEWS OF DAM

30 MAY, 1979

SECTION 1
PROJECT INFORMATION

1.1 General:

1.1.1 Authority: Public Law 92-367, 8 August 1972, authorized the Secretary of the Army, through the Corps of Engineers to initiate a national program of safety inspections of dams throughout the United States. The Norfolk District has been assigned the responsibility of supervising the inspection of dams in the Commonwealth of Virginia.

1.1.2 Purpose of Inspection: The purpose is to conduct a Phase I inspection according to the Recommended Guidelines for Safety Inspection of Dams (See Reference 1, Appendix VII). The main responsibility is to expeditiously identify those dams which may be a potential hazard to human life or property.

1.2 Project Description:

1.2.1 Dam and Appurtenances: Pohick Creek #7 is a homogeneous earthfill structure about 650 feet long and 47 feet high. The embankment is keyed into the foundation with a cutoff trench and a downstream toe drainage trench. The top of the dam is 16 feet wide and is at elevation 308.2 feet m.s.l.. Side slopes are 3 horizontal to 1 vertical. Upstream slope protection is provided from elevations 291.1 to 299.1.

The principal spillway consists of a 30-inch diameter reinforced concrete pipe, running through the dam at a low level. This pipe is served by a drop-inlet structure (riser) located in a low elevation of the reservoir just upstream from the toe of the embankment. The crest of the riser is at elevation 299.6. A 1.83 foot by 1.42 foot orifice (low stage) with invert at elevation 295.1, located in the riser, maintains normal pool.

The emergency spillway is a vegetated earth side-channel spillway located off the north end of the dam. It has a bottom width of about 50 feet with a crest at elevation 301.6 and side slopes of 3 horizontal to 1 vertical.

A 18-inch by 36-inch sluice gate with invert at a low level (elevation 268.5) enters the upstream side of the riser from the reservoir. This permits withdrawal of water from the bottom of the reservoir.

1.2.2 Location: Pohick Creek #7 is located on an unnamed tributary of Pohick Creek about 0.4 miles north of Burke, Virginia. The reservoir formed by the dam is known locally as Lake Braddock.

1.2.3 Size Classification: The dam is classified as an "intermediate" size structure because of its height (47 feet).

1.2.4 Hazard Classification: The dam is located in a residential area and is therefore given a high hazard classification in accordance with guidelines contained in Section 2.1.2 of Reference 1, Appendix V. The hazard classification used to categorize dams is a function of location only and has nothing to do with its stability or probability of failure.

1.2.5 Ownership: Fairfax County, Virginia

1.2.6 Purpose: Flood control

1.2.7 Design and Construction History: The dam was designed and constructed under the supervision of the U.S. Soil Conservation Service. Construction was completed in 1970.

1.2.8 Normal Operational Procedures: Operation of the project is automatic. The principal spillway is ungated, therefore water rising above the crest of the inlets is automatically passed downstream. Similarly water is automatically passed through the emergency spillway in the event of an extreme flood which fills the flood storage space.

1.3 Pertinent Data:

1.3.1 Drainage Areas: The dam controls a drainage area of 0.67 square miles.

1.3.2 Discharge at Dam Site:

Maximum flood at dam site - Approximately 117 cfs when Tropical Storm Agnes in 1972 caused the reservoir to rise within 2 feet of the emergency spillway crest or to about elevation 300.

Principal Spillway:

Pool level at top of dam 132 c.f.s.

Emergency Spillway:

Pool level at top of dam 3,060 c.f.s.

1.3.3 Dam and Reservoir Data: Pertinent data on the dam and reservoir are shown in the following table:

Table 1.1 DAM AND RESERVOIR DATA

Item	Elevation feet m.s.l.	Reservoir Capacity			Length miles
		Area acres	Acre feet	Watershed inches	
Top of dam	308.2	41.6	554	15.5	0.8
Emergency spillway crest	301.6	27.1	333	9.3	0.7
High Level Drop Inlet	299.6	23.6	283	7.9	0.7
Low Level Orifice	295.1	18.1	190	5.3	0.6
Streambed	261 ₊				

SECTION 2

ENGINEERING DATA

2.1 Design: The dam was designed by Dewberry, Nealon, and Davis, Fairfax, Virginia under the direction of the U. S. Soil Conservation Service (SCS). A design report and as-built drawings are available in the Office of the State Conservationist, U. S. Soil Conservation Services, P. O. Box 10026, Richmond, Virginia, 23240.

The design report provides sections covering Hydraulic and Hydrologic Design, Geology and Soil Test Data, and Embankment and Foundation Design. The Geology and Soil Test Data were prepared by Froehling & Robertson, Inc. (F&R), Richmond, Virginia.

The as-built drawings show the plan and profile views of the foundation, embankment, principal and emergency spillways, and the intake structure, Appendix I, Plates I through IV.

The site and material investigation, and foundation analysis were performed by F&R. The site investigation consisted of standard penetration testing in overburden, and core drilling with a 2-inch diamond bit in foundation rock. Also, performed were in situ permeability tests in undisturbed soil and pressure tests in rocks. Seven borings, designated A-2 through A-7, were drilled along the proposed centerline. Six more borings, designated A-8 through A-13, were drilled along the toe. Two more borings, A-14 and 15, were drilled in the proposed emergency spillway alignment. However, the constructed alignment was shifted approximately 75 feet southwest of the proposed alignment and no additional exploration was performed in holes A-2 and A-3 with K ranging from 1.10 - 1.32 ft/day. Pressure tests were performed in holes A-3 and A-4A with K ranging from 0 to 2.06 ft/day. The type of permeability and pressure tests used were not noted in the report.

Eleven borings, designated B-1 through 9, 19, and 20 were drilled in the proposed borrow area located approximately 700 feet downstream of the centerline of the dam. Bag samples were taken to form 3 composite samples for laboratory testing.

Splitspoon samples from borings A-2, A-10, and A-15 were tested for Atterberg limits, one point gradation (No. 200), and classification. The materials were essentially low plastic residual silty sands (SM), and clay (CL). The same tests were performed on the borrow pit bag samples as well as moisture density relationships, falling head permeability tests, and Unconsolidated Undrained (UU) Triaxial Shear Tests for embankment design. The material is primarily a low plastic residual silt.

A consolidation test was run on "remolded" foundation material to determine settlement characteristics of the foundation. A site investigation report is provided in Appendix IV. The report discusses the foundation conditions and provides a summary of the laboratory tests performed. The report references unconfined compression test results. However, no test data were available for review. Also, the triaxial shear test results were not included in the summary. The UU values were $\text{PHI} = 150$ and $C = 1.8 \text{ TSF}$. No other known field or laboratory testing were performed. The consolidation test results are also discussed in Appendix IV, but under a different cover letter than the geology report.

The outlet works, foundation, and embankment designs were performed by Dewberry, Nealon, & Davis. The outlet works design criteria are discussed in Section 5. The foundation system consisted of a cutoff trench and a downstream drainage blanket based on SCS criteria. The embankment design is unknown.

Stability of the embankment was checked with circular failure using a computer program. The criteria, method of analysis, and loading conditions are not given. However, based on the fact that UU shear strength values were used for design, and no pool elevation is referenced, it is assumed the given analysis is for the end of construction case. The analysis is provided in Appendix IV. Note that the design cohesion of $C=3000 \text{ PSF}$ is lower than the laboratory value of 1.8 TSF (3600 PSF). There are no known other calculations for other loading conditions.

The end of construction case was checked for two conditions; a shallow failure within the embankment tangent to the foundation, and a deep failure within the embankment and foundation tangent to bedrock. Nine failure planes were checked for shallow failure and the minimum factor of safety was 6.295. Sixteen failure planes were checked for the deep failure, but only 8 were available for review. Based on the 8 given curves, the minimum factor of safety was 1.369. It is suspected that one of the missing 8 curves would reveal a lower factor of safety. However, this discussion is academic since the dam is already successfully constructed.

2.2 Construction: A construction report by E. H. Dabney, Government Inspector dated November 2, 1970 is provided in Appendix V. The report outlines the contract schedule, all contract modifications, construction equipment used on the job, and people involved with construction and administration and construction costs. It also lists compression test results on concrete test cylinders, and provides a general discussion outlining construction problems with recommendations for future projects. Actual construction documents were not furnished by the SCS office Richmond, but are available from the SCS office in Washington, D.C.

2.3 Evaluation: The design report and the as-built drawings were adequate for review. Also, even though there were no construction records, it is evident based on the construction report, that the dam was under Government inspection to insure quality control.

SECTION 3

VISUAL INSPECTION

3.1 Findings:

3.1.1 General: The results of the 30 May 1979 inspection are recorded in Appendix III. At the time of the inspection the pool elevation was about 295 feet MSL, or about normal pool elevation. The outlet works were ungated and the 30-inch principal spillway was passing a minimal flow. The dam is annually inspected and reports dating back to the initial inspection in 1972 are provided in Appendix IV. The dam is identified as Dam Site #7 in the reports. The latest report, dated 8 December 1978, notes no seepage was observed and the upstream slope protection had thinned out, Appendix II, Photo 4. In review of the past reports, it is apparent effects have been made to stabilize the riprap, but have failed due to vandalism. The 1978 report further notes that the loss of the stone would not effect the structural integrity of the dam.

3.1.2 Dam: The embankment was in good condition. No surface cracks or sloughing were observed. The alignments did not deviate from the as-built drawings. However, a slight depression located 18 feet up the downstream slope and 3.5 feet over from the right edge of the concrete stilling basin was noted. Also, there appeared to be slight bulges in the embankment at the base of the dam. The significance of these findings is unknown. Also slight surficial erosion of the grass cover in the upstream right abutment was observed. Two wet spots were found in the downstream area. A seep was found discharging by the stilling basin. It was located at the right edge of the head wall at the end of the wing wall. The flow is negligible and clear. The wet spots and seeps are shown on Plate 1, Appendix I.

3.1.3 Appurtenant Structures: Observations of the intake structure were made from the embankment and no deterioration was noted. However, most of the structure was submerged at the time of the inspection, Appendix II, Photo No. 1. Riprap in the downstream channel was scattered below the stilling basin, Appendix II, Photo 7.

3.1.4 Emergency Spillway: The spillway channel was grass lined and in good condition except for some bare spots in an area children play baseball, Appendix II, Photos 5 and 6. The discharge channel was protected with a good grass cover, but some trees were located in the lower portion of the channel which would encourage damming of debris.

3.1.5 Instrumentation: There was no instrumentation on the dam.

3.1.6 Reservoir Area: Apartments surrounded the reservoir with mild slopes over the entire watershed. There was no available information pertaining to sedimentation.

3.1.7 Downstream Channel: The channel was well defined for 200 feet, Appendix II, Photo 3. After passing under a pedestrian bridge, thick trees and shrubs closed in the channel and the flood plain. Steep slopes were immediately below the dam, but flatten out to a wide flood plain 2000 feet downstream.

3.2 Evaluation: Overall, the dam appeared to be in good condition. However, the following recommendations should be implemented within 12 months.

a. The annual inspections include monitoring the seep noted by the stilling basin. This seep was never noted in past inspection reports and may be new. Also monitor the noted embankment depression and budes. If the seep should become cloudy, the depression increase, and/or the bulges expand then the services of a qualified geotechnical engineering firm should be retained to consider immediate remedial measures.

b. Vegetate exposed areas in the emergency spillway and on the right upstream abutment.

c. Repair the riprap in the channel slope for 20 feet immediately below the stilling basin.

d. Consider thinning trees in the discharge channel of the emergency spillway and in the downstream area to discourage damming caused by debris.

e. Add a staff gage to the intake structure and extend it above the normal pool level.

SECTION 4 - OPERATIONAL PROCEDURES

4.1 Procedures: Operation of the project is automatic. The 30-inch diameter principal spillway is ungated, therefore, water rising above the high and low level intake (elevation 299.6 and 295.1) is automatically passed downstream. The normal pool is maintained by the low level intake. Water is automatically passed through the emergency spillway in the event of an extreme flood which fills the flood storage space. A 19-inch by 36-inch sluice gate, located at the base of the intake structure, can be operated to dewater the reservoir.

4.2 Maintenance: Maintenance of the project is performed by Fairfax County Department of Public Works. The responsibility includes operation and maintenance of the dam, principal spillway, which includes the riser, pipe and impact; and the emergency spillway. Annual inspections are made by the owner's representatives. Other inspections are performed after severe storms to help expedite any maintenance that is required.

4.3 Warning System: At the present time, there is no warning system or evacuation plan in operation.

4.4 Evaluation: The dam does not require an elaborate operational and maintenance procedure. However, the annual maintenance and inspection program should be expanded from its present form to help detect and control problems that may occur.

SECTION 5
HYDRAULIC/HYDROLOGIC DESIGN

5.1 Design: The dam was designed and constructed as a class C dam under the U. S. Soil Conservation Service. The design data was obtained and evaluated according to the guidelines in Reference 1, Appendix VII.

5.2 Hydrologic Records: None were available.

5.3 Flood Experience: The maximum flood reach was approximately elevation 300 or about 2 feet below the crest of the emergency spillway, during Tropical Storm Agnes.

5.4 Flood Potential: The 1/2 PMF and PMF were developed and routed through the reservoir by use of the HEC-1DB computer program (Reference 2, Appendix VII) and appropriate unit hydrograph, precipitation, and storage-outflow data. Clark's Tc and R coefficients for the local drainage area were estimated from basin characteristics. The rainfall applied to the developed unit hydrograph was obtained from the U. S. Weather Bureau Publication (Reference 3, Appendix VII). Losses were estimated at an initial loss of 1.0 inch and a constant loss thereafter of 0.05 inch/hour.

5.5 Reservoir Regulation: Pertinent dam and reservoir data are shown in Table 1.1.

Regulation of flow from the reservoir is automatic. Water rising above the high and low intake elevation flow into the concrete riser and through the dam in the 30-inch concrete conduit. Water also flows past the dam through the emergency spillway in the event water in the reservoir rises above the crest of the spillway.

The storage curve and the emergency spillway rating curve developed by the Soil Conservation Service was used in the development of this report. Rating curves were developed for the non-overflow section and the drawdown outlet. In routing hydrographs through the reservoir, it was assumed that the initial pool level was at the low level intake of the principal spillway. Flow through the principal spillway was neglected during routing.

5.6 Overtopping Potential: The probable rise in the reservoir and other pertinent information on reservoir performance is shown in the following table:

Table 5.1 RESERVOIR PERFORMANCE

Item	Normal Flow	Hydrograph	
		$\frac{1}{2}$ PMF	PMF 1/
Peak flow, c.f.s.			
Inflow	1	3,269	6,538
Outflow	1	1,573	5,676
Maximum elevation			
ft, m.s.l.		306.3	308.9
Emergency Spillway			
(el. 301.6)			
Depth of flow, ft.		4.7	7.3
Duration, hrs.		14	14
Velocity, f.p.s. 2/		10.1	13.3
Non-overflow section			
(el. 308.2)			
Depth of flow, ft.		—	.7
Duration, hrs		—	.8
Velocity, f.p.s. 2/		—	3.8
Tailwater elevation			
ft., m.s.l.	262+		

1/ The PMF is an estimate of flood discharges that may be expected from the most severe combination of critical meteorologic and hydrologic conditions that are reasonably possible in the region.

2/ Critical Velocity.

5.7 Reservoir Emptying Potential: The 18-inch sluice gate entering the upstream side of the riser at the base of the riser will permit withdrawal of about 108 c.f.s. with the reservoir level at the low level intake, elevation 295.1, and essentially dewater the reservoir in less than 2 days.

5.8 Evaluation: Based on the size (intermediate) and hazard classification (high), the recommended spillway design flood is the PMF. The emergency spillway will pass 75 percent of the PMF without overtopping the dam. The PMF will overtop the dam for a duration of 1 hour and reach a depth of 0.7 feet over the top of the dam and reach an average critical velocity of 3.8 feet per second.

Conclusions pertain to present day conditions and the effect of future development on the hydrology has not been considered.

SECTION 6

DAM STABILITY

6.1 Foundation and Abutments: The dam is located in the Piedmont Region of Virginia. The foundation conditions consist of residual soils overlying metamorphic and igneous bedrock. The overburden consists of residual low plastic clays (CL) grading into saprolite sandy silts (ML). The bedrock primarily consists of mica schist, gneiss, granitic gneiss, and slightly pegmatic materials. A geology report outlining the specific development of the area geology and describing the profile along the centerline of the dam is provided in geology report, Appendix IV.

A cutoff trench was constructed along the centerline of the dam. A plan and profile view of the trench is provided in Appendix I, Plate II. The trench design was based on SCS criteria and is included in Appendix IV. It varies in thickness from 10 to 20 feet extending as deep as elevation 256.

A foundation drainage system was provided at the downstream toe of the dam. A plan and profile view of the foundation system is provided in Appendix I, Plate III. The system consists of 4-foot wide, 8-foot deep intercepting drainage trench and toe drain.

6.2 Embankment: The dam is constructed of approximately 100,000 cubic yards of compacted fill; 15,000 for the core trench and 85,000 for the embankment. An outline of earth fill requirements is provided in Appendix IV.

The site investigation by F&R recommended a homogeneous dam based on its findings in Borrow Area B (B-2 through 9, 19 and 20) as designated by Dewberry, Nealen & Davis. However, Dewberry, Nealen & Davis included in their final design the excavated material from stripping of the foundation, the cutoff trench, and emergency spillway without performing additional laboratory tests to confirm the nature of this material. Also, Dewberry, Nealen & Davis reference a Borrow Area A as noted in the Material Inventory presented in Appendix IV. The nature and location of this borrow area are not known. The as-built drawings do not show the borrow pit locations.

However, it was specified in the earth fill requirements that embankment material shall consist of micaceous sandy silt (ML) placed in 9-inch lifts with -1 percent to +2 percent optimum moisture compacted to 95 percent ASTM D698 Standard Proctor, Method A.

The embankment material is essentially a composite of low plastic clays (CL), silty sands (SM), and sandy silts (ML). Liquid limits ranged from 28 to 38 with plastic limits of non-plastic to 16. The maximum dry density was 109.7 PCF with an optimum moisture of 18.2 percent according to ASSHO T-99. Falling head permeability was in the range of 10^{-5} cm/sec. Unconsolidated undrained shear values used for end of construction design were $\text{PHI} = 15^\circ$ and $C = 3,000$ PSF. No other testing was performed to determine consolidated undrained or direct shear values.

The principal spillway passes through the embankment equipped with anti-seep collars. The emergency spillway is constructed by an earth cut at the left abutment, but is separated from the embankment by about 25 feet of natural berm. The upstream slope is protected with riprap from elevations 291.1 to 299.1, but has deteriorated due to vandalism. The embankment is maintained and well vegetated with grass.

6.3 Stability:

6.3.1 Slope Stability: As noted in Section 2, only calculations for the end of construction case were available for review. The results of the analysis are incomplete, but the discussion is academic since the dam is now constructed. There are no other known available calculations.

The dam appears to have a stable foundation. The embankment consists of homogeneous residual low plastic soils and has a width of 16 feet and side slopes of 3H:1V. According to the guidelines presented in Design of Small Dams, U. S. Department of Interior, Bureau of Reclamation, a dam of this type should have a width of 19 feet and an upstream slope of 3.5H:1V and a downstream slope of 2.5H:1V. Based on these guidelines, the downstream slope is adequate, but the upstream slope and width are inadequate.

6.3.2 Seismic Stability: The dam is located in seismic zone 2, and the dam may be assumed to present no hazard from earthquakes provided the static stability conditions are satisfactory and conventional safety margins exist.

6.4 Evaluation: The embankment is subject to overtopping flows during the design flood. The upstream slope, and width are considered inadequate. Also, the dam has 5.5 feet of freeboard and is subject to a sudden drawdown condition. However, overtopping flows are less than 6 fps, the critical velocity for vegetated compacted earth dams, and are not considered detrimental to the embankment. Also, based on the visual inspection, the dam appears stable for normal pool operation. Plus, the upstream slope has experienced a near maximum pool load during Tropical Storm Agnes without experiencing any detrimental effects. Therefore, based on the inspection and past performance, the dam is considered stable.

SECTION 7

ASSESSMENT, RECOMMENDATIONS/REMEDIAL MEASURES

7.1 Assessment: The Pohick Creek #7 Dam, as observed 30 May 1979, appears sound without indication of instability or unsafe operation. Available design reports and as-built drawings were adequate for review. The visual inspection uncovered no apparent problems that threaten the integrity of the dam. There is a regular maintenance program. The operational procedures provide measures to drain the lake. The design flood is the PMF. Since the emergency spillway passes only 75 percent of the PMF, the spillway is considered inadequate, but not seriously inadequate, because 50 percent of the PMF is passed without overtopping. Flows overtopping the dam during the design flood are not considered detrimental to the embankment.

Based on the visual inspection and past performance, the dam is considered stable. Also, there is no apparent problems that require immediate action.

7.2 Recommendations/Remedial Measures: There is no immediate need for remedial measures. However, the following actions are suggested and should be initiated within 12 months. These measures are suggested for monitoring and maintenance only:

a. The annual inspections include monitoring the seep noted by the stilling basin. This seep was never noted in past inspection reports and may be new. Also monitor the noted embankment depression and budes. If the seep should become cloudy, the depression increase, and/or the bulges expand then the services of a qualified geotechnical engineering firm should be retained to consider immediate remedial measures.

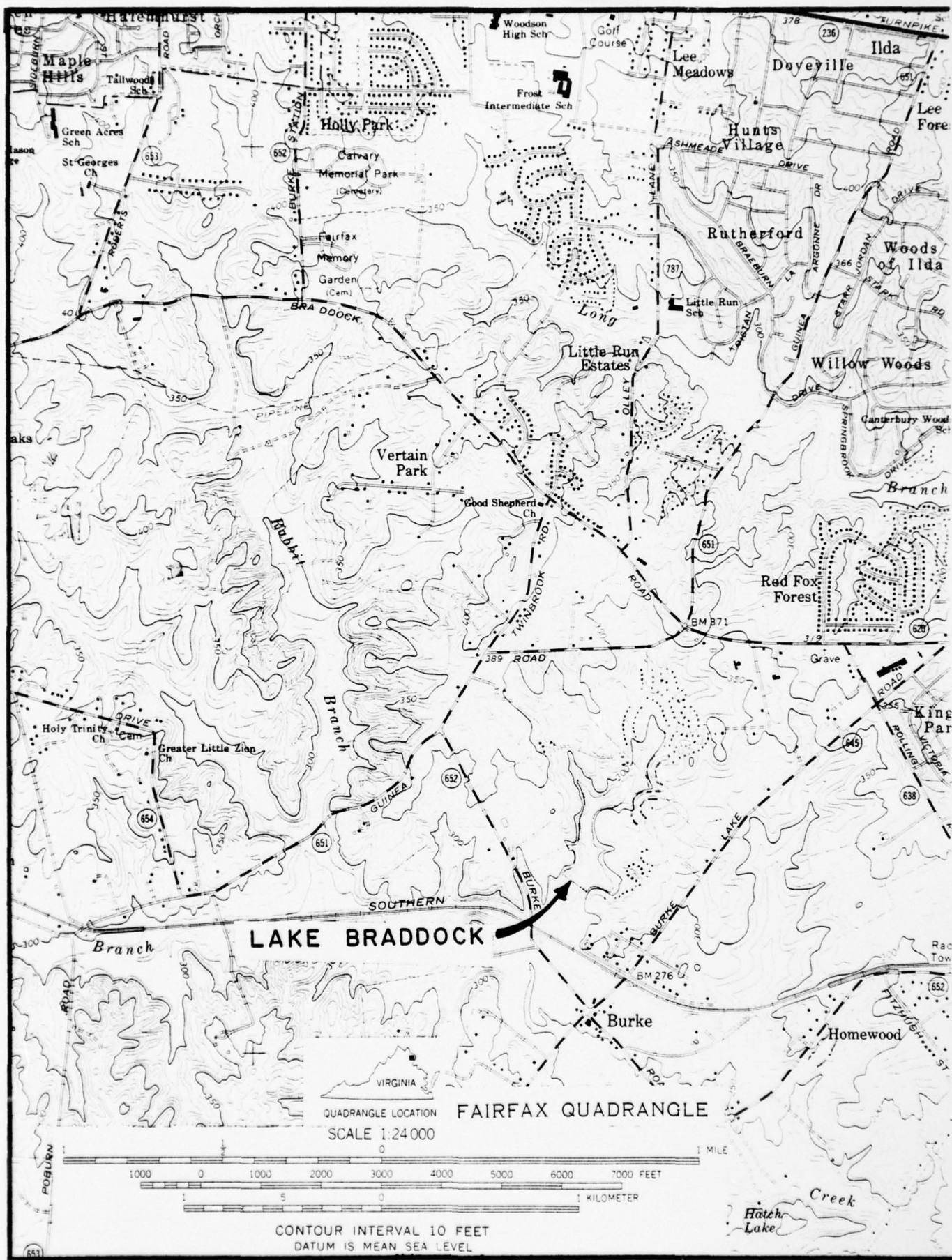
b. Vegetate exposed areas in the emergency spillway and on the right upstream abutment.

c. Repair the riprap in the channel shope for 20 feet immediately below the stilling basin.

d. Consider thinning trees in the discharge channel of the emergency spillway and in the downstream area to discourage damming caused by debris.

e. Add a staff gage to the intake structure and extend it above the normal pool level.

APPENDIX I
MAPS AND DRAWINGS

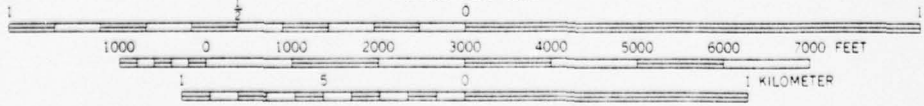


LAKE BRADDOCK

QUADRANGLE LOCATION
SCALE 1:24 000

FAIRFAX QUADRANGLE

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL



COORDINATES OF DAN-VA STATE GRID (N ZONE)

LOCATION	N	E	ED
1	412 225 75	2349 807 25	0200
2	412 847 00	2349 765 20	1240
3	45 033 2	2349 482 00	1045

Elevations are based on MSL Datum 8.11

PLATE I

DEWBERRY
ENGINEERS
8411 A
15th

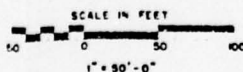
WET SPOT

WET SPOT

SEEP

AS BUILT

Note
After structure is built the
foundation of the dam
is to be connected with a
15 ft. vibratory compactor
to 25% maximum permeability
to be sure it is sealed
from item 1



As Built

POHICK CREEK WATERSHED PROJECT
SITE NO 7, ROLFE-KINCHLOE DAM
FAIRFAX COUNTY, VIRGINIA
PLAN OF STRUCTURAL WORKS
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

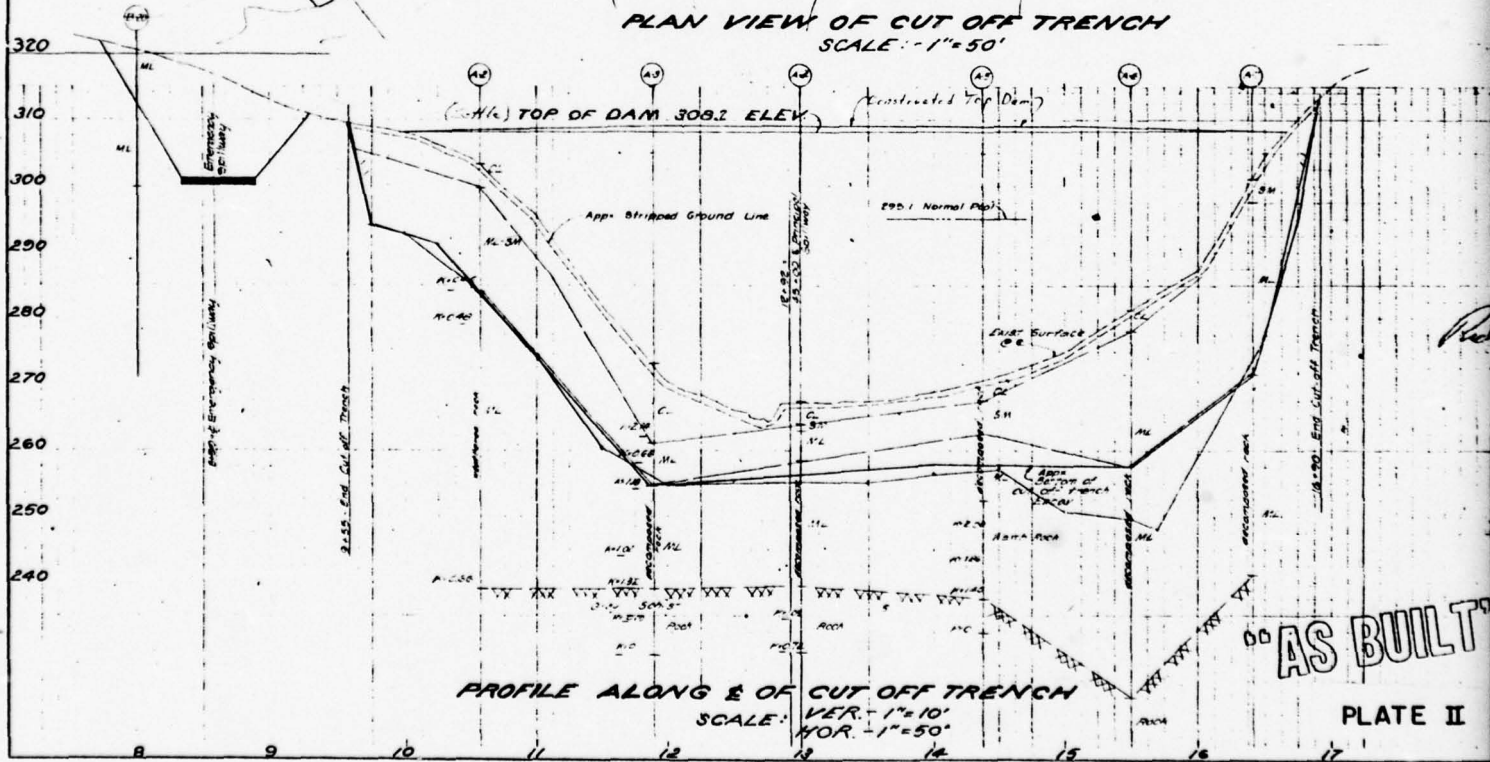
Prepared By
HARRY, NEALON & DAVIS
Planners, Surveyors
Arlington, Virginia

M-1251

CONSTRUCTION DETAILS

1. The location of the dam and the approach roads shall be marked on the ground with concrete or iron pins.
2. The bottom of the cut-off trench shall be thoroughly cleaned and shall be inspected by the engineer prior to the placement of any concrete material.

PLAN VIEW OF CUT OFF TRENCH
SCALE: 1"=50'



PROFILE ALONG & OF CUT OFF TRENCH
SCALE: VER. 1"=10'
HOR. 1"=50'

SEC. A

PROPOSED - 9:00 AM TO 12:00 PM
 10:00 AM TO 12:00 PM

SEC. B

PROPOSED - 9:00 AM TO 12:00 PM
 10:00 AM TO 12:00 PM

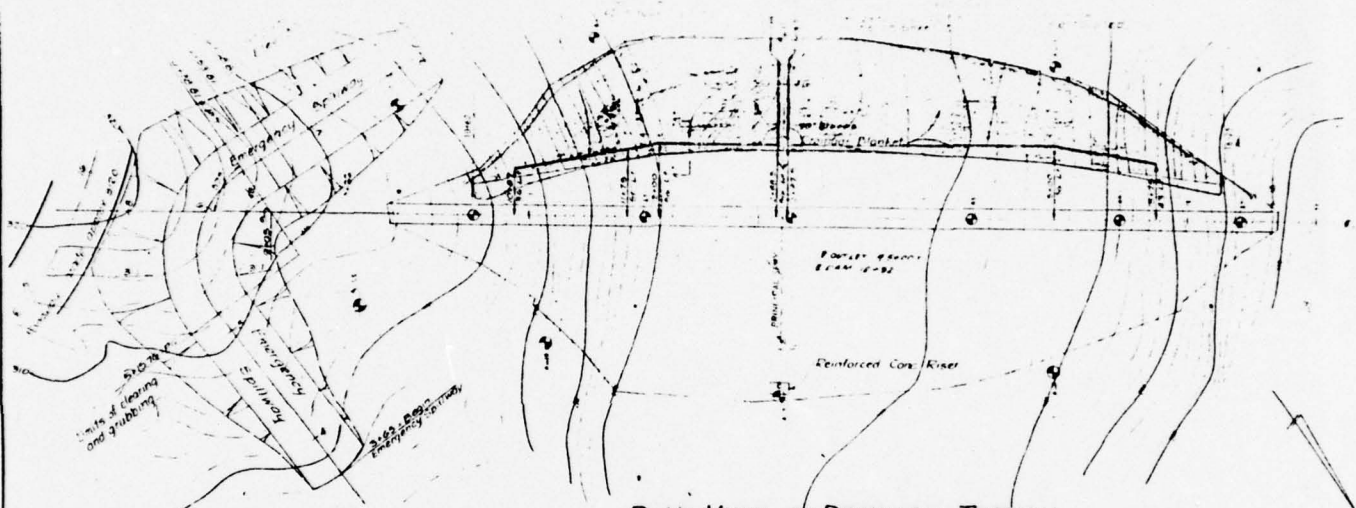
As Built

DEWBERRY, NEALON & DAVIS

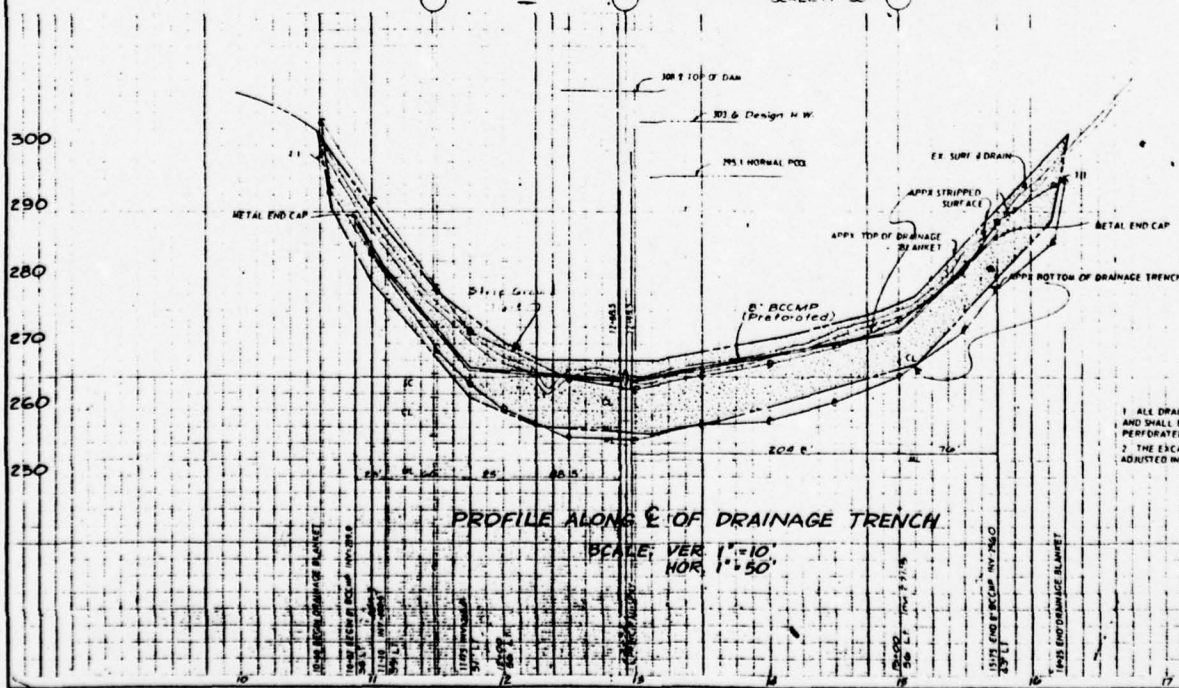
POHICK CREEK WATERSHED PROJECT
 SITE NO. 7, ROLFE-KINCHLOE DAM
 FAIRFAX COUNTY, VIRGINIA
 CUT OFF TRENCH

U. S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE

FORM SES-1 (NOV. 1961)

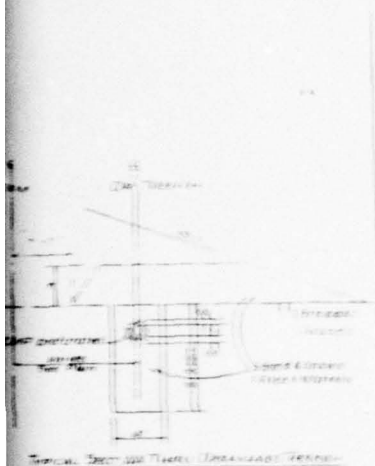


PLAN VIEW OF DRAINAGE TRENCH
SCALE: 1"=50'



- CONSTRUCTION DETAILS
1. ALL DRAIN PIPE SHALL CONFORM TO SPECIFICATION AND SHALL BE 8" DIA. 16 GAUGE, SHAPE 1, CLASS 1, TYPE 10 PERFORATED PIPE.
 2. THE ELEVATION LIMITS ARE APPROX AND SHALL BE ADJUSTED IN ACCORDANCE WITH CONDITIONS ENCOUNTERED.

AS BUILT



PERCENTAGE OF SAND

DEPTH	PERCENTAGE
0-10	100
10-20	100
20-30	100
30-40	100
40-50	100
50-60	100
60-70	100
70-80	100
80-90	100
90-100	100

[Handwritten signature]

DEWEY P. NEWLIN DAVES

POHOCK GREEN WATERSHED PROJECT

SITE NO. 1, POHOCK GREEN WATERSHED PROJECT
FALLING SPRING, VIRGINIA

DRAINAGE TRENCH DETAILS

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

DATE: 10/1/50

BY: [Signature]

CHECKED: [Signature]

APPROVED: [Signature]

SCALE: 1" = 10'

[illegible]

DATE	DESCRIPTION OF WORK DONE	BY	INITIALS	TIME
1-1-77	1.0000	1.0000	1.0000	1.0000
1-2-77	1.0000	1.0000	1.0000	1.0000
1-3-77	1.0000	1.0000	1.0000	1.0000
1-4-77	1.0000	1.0000	1.0000	1.0000
1-5-77	1.0000	1.0000	1.0000	1.0000
1-6-77	1.0000	1.0000	1.0000	1.0000
1-7-77	1.0000	1.0000	1.0000	1.0000
1-8-77	1.0000	1.0000	1.0000	1.0000
1-9-77	1.0000	1.0000	1.0000	1.0000
1-10-77	1.0000	1.0000	1.0000	1.0000
1-11-77	1.0000	1.0000	1.0000	1.0000
1-12-77	1.0000	1.0000	1.0000	1.0000
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1-19-77	1.0000	1.0000	1.0000	1.0000
1-20-77	1.0000	1.0000	1.0000	1.0000
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1-23-77	1.0000	1.0000	1.0000	1.0000
1-24-77	1.0000	1.0000	1.0000	1.0000
1-25-77	1.0000	1.0000	1.0000	1.0000
1-26-77	1.0000	1.0000	1.0000	1.0000
1-27-77	1.0000	1.0000	1.0000	1.0000
1-28-77	1.0000	1.0000	1.0000	1.0000
1-29-77	1.0000	1.0000	1.0000	1.0000
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1-36-77	1.0000	1.0000	1.0000	1.0000
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1-47-77	1.0000	1.0000	1.0000	1.0000
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1-58-77	1.0000	1.0000	1.0000	1.0000
1-59-77	1.0000	1.0000	1.0000	1.0000
1-60-77	1.0000			

*Note: H. J. Fisher, M.D., is a physician in
New York City.

AS BUILT

POHICK CREEK WATERSHED PROJECT
SITE NO. 7, WOLFE-KINGSDALE DAM
FAIRFAX COUNTY, VIRGINIA
PRINCIPAL SPILLWAY
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

[illegible]

●-1210

APPENDIX II
PHOTOGRAPHS

34

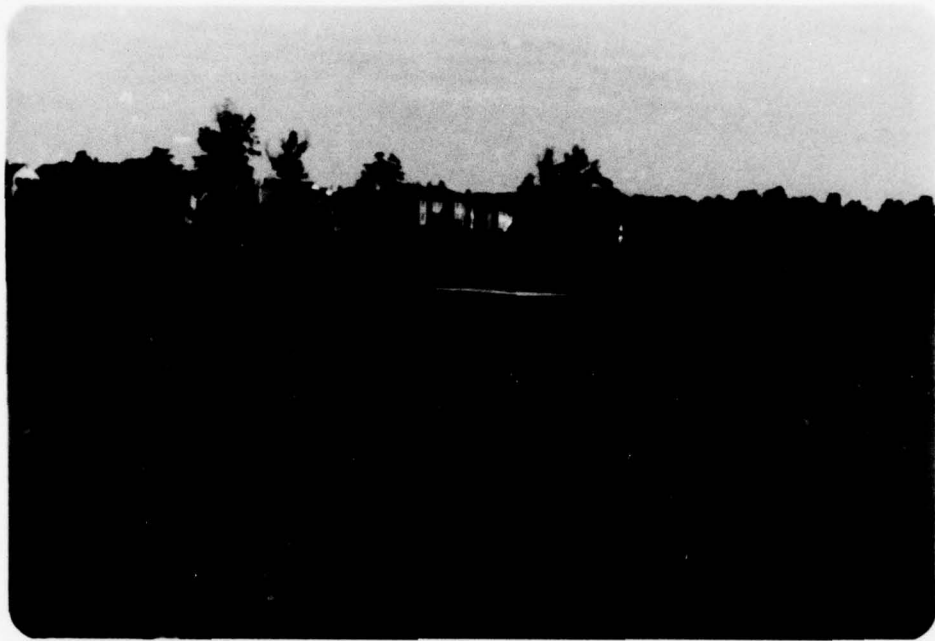


PHOTO #1 INTAKE STRUCTURE



PHOTO #2 OUTLET STRUCTURE



PHOTO #3 DOWNSTREAM CHANNEL



PHOTO #4 UPSTREAM SLOPE



PHOTO # 5 EMS APPROACH CHANNEL



PHOTO # 6 EMERGENCY SPILLWAY (EMS)

APPENDIX III
FIELD OBSERVATIONS

Check List
Visual Inspection
Phase I

Name Dam Lake Braddock County Fairfax Co. State Virginia Coordinates Lat. 38° 48.0' Long. 77° 16.5'

Date(s) Inspection 30 May 1979 Weather Clear Temperature 65°+F

Pool Elevation at Time of Inspection 295 + m.s.l. Tailwater at Time of Inspection 261 + m.s.l.

Inspection Personnel:

<u>J. Robinson, COE</u>	<u>J. Koenig, (Fairfax County)</u>
<u>L. Jones, COE</u>	<u>P. Hughes, (SCS)</u>
<u>B. Taran, COE</u>	

PEZZA & ROBINSON Recorders

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SURFACE CRACKS	No surface cracks were observed.	None.
UNUSUAL MOVEMENT OR CRACKING AT OR BEYOND THE TOE	There is a slight depression located 18 feet up the slope and 3.5 feet over from the right edge of the concrete stilling basin. Also, there appears to be slight bulges in the embankment at the base of the dam.	Include monitoring of depression and bulges in annual inspection.
SLOUGHING OR EROSION OF EMBANKMENT AND ABUTMENT SLOPES	There is surficial erosion of the grass cover on the upstream right abutment. No sloughing or other erosion was noted.	Vegetate exposed areas.
VERTICAL AND HORIZONTAL ALIGNMENT OF THE CREST	The alignments do not deviate from the as-built drawings.	None.
RIPRAP FAILURES	Riprap is provided in the upstream slope. The armor stone is in disarray exposing the bedding material. The scattering of the stone is due to vandalism. Past attempts have been made to repair the protection but again have deteriorated due to vandalism. III-2	None.

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
JUNCTION OF EMBANKMENT AND ABUTMENT, SPILLWAY AND DAM	No problems were observed at the junctions.	None.
ANY NOTICEABLE SEEPAGE	Two wet spots were found in the downstream area. Their locations are shown on plate I. A seep was found discharging by the stilling basin. It is located at right edge of headwall at the end of the wingwall. Flow is negligible and clear.	Include monitoring seep by headwall in annual inspection.
STAFF GAGE AND RECORDER	There are no staff gages or recorders.	None.
DRAINS	Both drain pipes are discharging clear flow. The right and left were discharging 6 and 5 GPM, respectively.	None.

OUTLET WORKS

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CRACKING AND SPALLING OF CONCRETE SURFACES IN OUTLET CONDUIT	No cracking or spalling of concrete was observed. All concrete looked in good condition.	None.
INTAKE STRUCTURE	Concrete and metal trash rack appeared in good condition. No debris was noted near the trash rack.	None.
OUTLET STRUCTURE	Concrete dissipator 4 to 5 feet from 30-inch discharge pipe outlet slows flow velocities. Water then discharged into small concrete lined stilling basin through two openings in dissipator.	None.
OUTLET CHANNEL	Some riprap was scattered below the stilling basin. Channel was well defined, 15-20 feet wide and 3-4 feet high	Place riprap on channel slopes immediately below stilling basin
EMERGENCY GATE	Stem has little rust. No wheel on stem.	Wheel for gate is kept in maintenance house.

EMERGENCY SPILLWAY

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONCRETE WEIR	N/A	
APPROACH CHANNEL	Good grass cover. Children use the area to play baseball. Bare spots are not serious.	Vegetate exposed areas.
DISCHARGE CHANNEL	Good grass cover. Some trees are located in lower portion of the discharge channel. A wet area is located below the trees in the over bank area of the downstream channel.	Trees should be removed from channel.
BRIDGE AND PIERS	A pedestrian bridge is located 200 feet below the dam where the discharge channel and downstream channel meet.	None.

INSTRUMENTATION

VISUAL EXAMINATION	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
MONUMENTATION/SURVEYS	There are no monuments or surveys.	None.
OBSERVATION WELLS	There are no observation wells.	None.
WEIRS	There are no weirs.	None.
PIEZOMETERS	There are no piezometers.	None.
OTHER	There are no staff gages on the dam.	A staff gage should be added to the intake structure and extend above the normal pool level.

RESERVOIR

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SLOPES	Apartments surround the reservoir with mild slopes over the entire watershed. An asphalt path circles the reservoir.	None.
SEDIMENTATION	Unable to evaluate.	None.

DOWNSTREAM CHANNEL

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONDITION (OBSTRUCTIONS, DEBRIS, ETC.)	The channel is well defined for 200 feet. After passing under a pedestrian bridge thick trees and shrubs close in the channel and the flood plain.	Some trees should be removed in the channel and <u>thin</u> the flood plain of trees.
SLOPES	Steep slopes are immediately below the dam but flatten out to a wide flood plain 2000 feet downstream.	None.
APPROXIMATE NO. OF HOMES AND POPULATION	Apartments below dam (right side). The top of dam elevation is level with the second floor windows of the right apartment units downstream.	None.

CHECK LIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION

ITEM	REMARKS
PLAN OF DAM	A complete set of as built drawings are available
REGIONAL VICINITY MAP	A USGS quadrangle map is provided in the design report.
CONSTRUCTION HISTORY	The dam was constructed by R. L. Rider & Co., Warrenton, Virginia, and it was completed in 1970.
TYPICAL SECTIONS OF DAM	Cross sections of the dam are shown on the as-built drawings. A report briefly outlining the construction of the dam is available.
HYDROLOGIC/HYDRAULIC DATA	The design report outlines the following data: storage capacity, discharge calculations, hydrologic calculations, and reservoir routing calculations.
OUTLETS - PLAN - DETAILS - CONSTRAINTS - DISCHARGE RATINGS	The as-built drawings show the plan and details for outlets. The discharge ratings and constraints are provided in the design report.
RAINFALL/RESERVOIR RECORDS	There are no records

ITEM	REMARKS
DESIGN REPORTS	A design memorandum was prepared by Dewberry, Nealon & Davis, Engineers & Surveyors, Fairfax, Virginia 22030, in April 1969. The report is titled "Pohick Creek Watershed Design Report, Site 7, Fairfax County, Virginia, U.S. Department of Agriculture, Soil Conservation Service.
GEOLOGY REPORTS	The design report includes brief articles on the physiography, and geology.
DESIGN COMPUTATIONS DAM STABILITY SEEPAGE STUDIES	The design report includes a stability analysis and design calculations for appurtenant structures. No seepage studies were performed.
MATERIALS INVESTIGATIONS BORING RECORDS LABORATORY FIELD	Subsurface investigations were made along the centerline of dam, the main & emergency spillway, and the borrow area. Laboratory tests included Atterberg limits, gradations, classifications, unconfined compression tests, triaxial test, moisture density relationships, and consolidation tests. All the borings and test data were performed by Froehling & Robertson, Inc., Richmond, Virginia. No known field tests were performed.
POST-CONSTRUCTION SURVEYS OF DAM	No post-construction surveys were performed.
BORROW SOURCES	The design report outlines the investigations conducted on the borrow sources.

ITEM	REMARKS
SPILLWAY PLAN	Section and details are shown on the as-built drawings.
OPERATING EQUIPMENT PLANS & DETAILS	Plans and details are shown on the as-built drawings.
MONITORING SYSTEMS	The only monitoring system ever used was a system to check siltation. However, it was destroyed by vandalism and never replaced.
MODIFICATIONS	No modifications have been done.
HIGH POOL RECORDS	Only record is our photographs of the dam at high pool stage during Tropical Storm Agnes.
POST CONSTRUCTION ENGINEERING STUDIES AND REPORTS	No studies have been done.
PRIOR ACCIDENTS OR FAILURE OF DAM DESCRIPTION REPORTS	There have been no failures
MAINTENANCE OPERATION RECORDS	The dam is inspected annually and reports are available.

APPENDIX IV

DESIGN DATA

POHICK CREEK WATERSHED

SITE #7

DESIGN REPORT

INDEX TO GEOLOGY & SOILS TEST DATA

Location & Physiography	S-1
✓ Geology	S-2
✓ Dam Center Line	S-2
✓ Main & Emergency Spillway	S-3
✓ Borrow Area Borings	S-3 to 5
✓ Foundation Permeability	S-6
✓ Foundation Classification	S-7
Strain Tests	S-8 to 10
Triaxial Shear Test	S-11
OMC Test	S-12
Boring Logs A-2 to 15	S-13 to 35
Boring Logs B-2 to 9 and B-19, 20	S-36 to 46
Map Showing Location of Borings	S-47
✓ Profile of Test Borings (foundation) Consolidation Test Results	S-48 not inc
Summary of Consolidation tests	S-49
Moisture Density Chart	S-50
Consolidation Coefficients	S-51
Time Consolidation Curves	S-52 to 60

April, 1969
Dewberry, Nealon & Davis
Engineers & Surveyors
Fairfax, Virginia 22030



TEET

FROEHLING & ROBERTSON, INC.

INSPECTION ENGINEERS • CHEMISTS • BACTERIOLOGISTS

CABLE ADDRESS—FROEHLING

BRANCH LABORATORIES
 BOSTON, CHARLOTTE, BALTIMORE
 WASHINGTON, BALTIMORE
 GREENVILLE, ROANOKE, FAYETTEVILLE
 ASHTON

MADE FOR

DEMBERRY, NEALON & DAVIS
 FAIRFAX, VIRGINIA

ROLFS-KINCHELOE DAM SITE
 FAIRFAX COUNTY, VIRGINIA

LOCATION & PHYSIOGRAPHY

THE CROSSROADS VILLAGE OF BURKE, VA. LIES ABOUT 4 MILES SOUTHEAST OF THE FAIRFAX COUNTY COURTHOUSE. BURKE IS SITUATED JUST SOUTH OF THE SOUTHERN R.R. TRACKS AT THE INTERSECTION OF BURKE LAKE ROAD AND BURKE ROAD, DESIGNATED, RESPECTIVELY AS STATE ROUTE 645 AND 652. THE DAM SITE IS LOCATED APPROXIMATELY ONE HALF MILE NORTHWEST OF BURKE CROSSROADS AND ABOUT 1,000 FT NORTH OF THE SOUTHERN R.R. TRACKS ACROSS A SOUTH FLOWING TRIBUTARY TO POHICK CREEK WHICH, IN TURN, FLOWS SOUTHEASTWARDLY ACROSS THE SOUTHERN EDGE OF THE VILLAGE OF BURKE. THIS LOCATION OF THE DAM SITE PLACES IT IN THE SOUTH CENTRAL PART OF FAIRFAX COUNTY IN WHICH THE GEOLOGY HAS BEEN MAPPED AS ROCKS OF UNCERTAIN AGE.

FAIRFAX COUNTY OCCUPIES PARTIALLY THE NORTHEASTERN MOST AREA IN THE PIEDMONT PHYSIOGRAPHIC PROVINCE, WHICH IN THIS COUNTY MAY BE SUBDIVIDED INTO A WESTERN BELT CALLED THE PIEDMONT LOWLAND AND ANOTHER IRREGULAR BELT LIKE AREA TO ITS EAST, BUT CENTRALLY LOCATED FROM NORTH TO SOUTH ACROSS THE COUNTY, CONSISTING OF A MORE UPLAND TYPE OF TERRAIN. THEN, THE EASTERN THIRD OF THE COUNTY IS SITUATED IN THE COASTAL PLAIN PROVINCE WHERE THE BEDROCK IS MUCH YOUNGER AND CONSIDERABLY DIFFERENT FROM THE OTHER ROCKS OF THE COUNTY, BUT WHICH UNDERLIE A TERRAIN REMARKABLY SIMILAR TO THAT OF THE AREA ADJACENT TO THE WEST.

TOPOGRAPHY IN THE VICINITY OF THE ROLFS-KINCHELOE DAM SITE IS SUB MATURE WITH OBVIOUSLY ROUNDED AND SUBDUED VALLEYS AND SPURS BUT EASILY OBSERVABLE ROUNDED AND SUBDUED VALLEYS AND SPURS WITH NEARLY FLAT UPLAND SURFACES AS WELL AS A SERIES OF APPARENTLY SLIGHTLY SLOPING TERRACE LEVELS BETWEEN MAJOR INTERSTREAM DIVIDES.

THE SMALL STREAM TO BE DAMMED HAS FORMED A FLOOD PLAIN OF 100 TO 150 YARDS IN WIDTH AT DAM SITE.

ABOVE THIS LOWEST LEVEL AT ELEVATION 300 TO 310' ALONG THE MINOR SPURS IS A SECOND POORLY PRESERVED LEVEL AND A SIMILAR ONE AGAIN EXISTS AT ELEVATION 330 TO 340'. THE BASE OF THE DAM WILL BE AT ELEVATION 265' AND WILL EXTEND FROM NORTHWEST TO SOUTHWEST.

MINOR TOPOGRAPHIC MODIFICATION OCCUR UPSTREAM FROM THE DAM SITE CAUSED BY RESISTANCE QUARTZ AND HIGH QUARTZ SCHISTOSE ZONES. THE POSITION OF THESE ZONES ARE ROUGHLY PARALLEL TO THE CENTERLINE OF THE DAM AND SHOULD HAVE NO BEARING ON

PAGE -1-

THE PROPOSED STRUCTURE.

GEOLOGY

THE BEDROCK IN THE AREA OF THE DAM AND IN THE EMBAYMENT AREA CONSISTS PRINCIPALLY OF MICA SCHIST, GNEISS, GRANITE GNEISS, AND SLIGHTLY PEGMATITIC MATERIALS. APPARENTLY THE WISSAHICKON METAMORPHIC COMPLEX WERE INVADDED BY A LATER DATE GRANITE WITH SOME EMANATIONS AT THE LAST STAGES OF THE INTRUSION OF FINE GRAINED PEGMATITES AND QUARTZ VEINS.

THE AGE OF THE METAMORPHICS AND THE LATER GRANITES IS SUFFICIENTLY GREAT THAT CONSIDERABLE SECONDARY ALTERATION HAS OCCURRED IN THEM, PROBABLY IN MULTIPLE STAGES OF BURIAL BY MUCH YOUNGER SEDIMENTS AFTER EROSION HAD INITIALLY EXPOSED THEM AT THE SURFACE FROM A PREVIOUS CONSIDERABLY GREATER DEPTH. THIS IS SHOWN BY THE METAMORPHIC CHARACTER OF THE ROCK AND COARSE CRYSTALLINITY OF THE INVADING GRANITES. SUCH CYCLES OF BURIAL AND EROSION PROBABLY OCCURRED SEVERAL TIMES AND IN SOME CASES PERMITTING CHEMICAL WEATHERING TO PROCEED TO CONSIDERABLE DEPTHS BELOW THE LAND SURFACE.

THEREFORE, IT IS TO BE EXPECTED THAT THE DIFFERENTIALLY RESISTANT METAMORPHIC AND IGNEOUS BEDROCK WOULD HAVE DEVELOPED A HIGHLY IRREGULAR TOP LEVEL WHICH WOULD GIVE RAISE TO AN OVERLYING SOIL PROFILE OF GREATLY VARYING THICKNESS. CONSEQUENT IRREGULAR PROTRUSION OF BEDROCK CAN EXIST BELOW PRESENT CREEK LEVEL AT RATHER SHALLOW DEPTH, WHILE A FEW YARDS AWAY BEDROCK COULD BE A CONSIDERABLY GREATER DEPTH.

THE SAPROLITE SOILS OVERLYING THE BEDROCK ALL ARE RESIDUALS SOILS WITH LITTLE EVIDENCE OF BEING TRANSPORTED ANY DISTANCE. IN THE TERRACES SOME REWORKING OF THESE RESIDUAL SOILS HAS UNDOUBTEDLY TAKEN PLACE, AND IT IS QUITE POSSIBLE THAT THE MATERIALS OF THE TERRACES CAN CONSIST OF ALLUVIUM AND RESIDUALS SAPROLITIC SOILS. THE SORTING PROCESSES THAT TAKE PLACE DURING THE DEPOSITION OF THESE SEDIMENTARY SOILS WILL CREATE SOIL ZONES WITH A POTENTIAL FOR WIDELY VARYING PERMEABILITIES.

DAM CENTER LINE

BORINGS A-2, A-3, A-4, A-5, A-6 AND A-7 WERE MADE ALONG THE CENTERLINE OF THE PROPOSED DAM. ALL BORINGS WERE CARRIED INTO ROCK OR WELL INTO DENSE SAPROLITIC MATERIALS, WITH BLOW COUNTS ON THE STANDARD PENETRATION TEST OF OVER 100 BLOWS FOR 1' PENETRATION FOR 20'. BORING NO. A-2 WAS THE ONLY ONE IN WHICH ROCK WAS NOT ENCOUNTERED AND THIS BORING WENT FROM 19.0' TO 64.1' IN A SAPROLITE WITH THE LAST 25' APPROXIMATELY HAVING A BLOW COUNT OF OVER 100 BLOWS PER FT. THE CAUSES OF THIS ERRATIC CHANGE IN RELATIVELY SOUND ROCK HAVE BEEN PREVIOUSLY MENTIONED.

THE CORE RECOVERY IS SHOWN ON THE LOGS AS WELL AS THE R.Q.D. (ROCK QUALITY DETERMINATION) CORE RECOVERY IN WHICH ALL CORE OF 4" OR LESS ARE SUBTRACTED FROM THE CORE RECOVERY AND THE RESULTS GIVEN TO INDICATE THE QUALITY OF THE ROCK. THE HIGHER THE PERCENTAGE THE BETTER THE QUALITY OF THE ROCK.

THE RESULTS OF THE PERMEABILITY TESTS IN THE UNDISTURBED SOIL AND PRESSURE TESTS ON THE ROCK ARE GIVEN SEPARATELY IN THE APPENDIX UNDER TABLE 1 - PERMEABILITY.

NOT A WATER SUPPLY DAM AND WATER LOSSES WERE MODERATE TO LOW, WE DO NOT FEEL THAT

THE DEPTH, WILL NOT ACCEPT GROUT.

THE CUT OFF TRENCH SHOULD BE CARRIED INTO THE ML MATERIALS AS NOTED ON THE LOGS INTO 50 BLK. MATERIAL OR BETTER. WE FEEL THAT THE PERMEABILITY OF THESE MATERIALS WILL PROVIDE AN ADEQUATE BARRIER TO WATER MOVEMENT IN THIS DENSE SOIL.

THE SOIL CLASSIFICATION GIVEN ON THE BORING LOGS WERE ESTABLISHED BY TESTING REPRESENTATIVE SAMPLES AS SHOWN ON TABLE 2, BORINGS A-8 THRU A-13 WERE MADE ALONG THE TOE OF THE PROPOSED DAM AND ARE ALSO INCLUDED IN THIS SECTION.

MAIN & EMERGENCY SPILLWAY

THE MAIN SPILLWAY WILL CONSIST OF INTAKE STRUCTURE CONDUIT THROUGH THE DAM ALONG A LINE THROUGH BORINGS A-9 AND A-12. THE FOUNDATION FOR THE INTAKE STRUCTURE IS AT ELEVATION 265 AT BORING NO. A-9. WE SUGGEST THAT THE FOOTING DEPTH BE LOWERED TO ELEVATION 260 AND THAT A 3000 LB DESIGN LOAD BE USED. THE FOOTING EXCAVATION SHOULD BE KEPT AS UNDISTURBED AND DRY AS POSSIBLE AND CAREFULLY INSPECTED PRIOR TO CONSTRUCTION.

THE INVERT FOUNDATION AT BORING NO. A-12 IS PLANNED FOR ELEVATION 262.0'. WE SUGGEST THAT THIS ELEVATION BE LOWERED TO ELEVATION 260' AND THAT A 2000 LB DESIGN LOAD BE USED. MAXIMUM PROTECTION FROM EROSION WILL BE REQUIRED AT BOTH STRUCTURES AND ALONG THE CONDUIT TO PREVENT PIPING.

THE EMERGENCY SPILL IS TO BE ALONG THE LINE OF BORING A-14 AND A-15 AT ELEVATION 301.5'. THE SOILS IN THESE BORINGS ARE LOOSE AND SHOULD BE COMPACTED TO GIVE MAXIMUM PROTECTION TO EROSION FOR THE PLANNED GRASS EMERGENCY SPILLWAY COMPACTING THIS AREA TO 90% DENSITY OF T-99 WOULD PROBABLY RESULT IN GREATLY INCREASED EROSION PROTECTION.

BORROW AREA BORINGS

BORINGS B-1 THRU B-9 AND B-19 AND B-20 WERE MADE IN THE PROPOSED BORROW AREA. ALL BORINGS WERE CARRIED TO THE INSTRUCTED DEPTH OF 20' WITH THE EXCEPTION OF BORING NO. B-7 AND B-8. REFUSAL WAS ENCOUNTERED IN THESE BORINGS AT A DEPTH OF 5' AND 11.0'.

ON THE BASIS OF THE LABORATORY CLASSIFICATION TEST THE DOMINANT BORROW MATERIAL WAS A ML. THIS WAS ALSO THE CASE NOTED ON THE BORING LOGS.

BASED ON THE RESULTS OF THE ORIGINAL CLASSIFICATION TEST MADE ON THE A BORINGS AND ON THE RESULTS OF THE VISUAL CLASSIFICATION OF THE SOIL SAMPLES, WE THEN COMBINED THE SAMPLES AND RAN THEM AS FOLLOWS.

TEST SAMPLE NO.	CONSIST OF BAG SAMPLES FROM	
	BORING NO.	DEPTH
1	B-3	16 - 20'
	B-3	7 - 16'
	B-9	5 - 20'
	B-5	7 - 20'
	B-1	12 - 20'
	B-6	13 - 20'
	B-6	0 - 5'

TEST SAMPLE NO.	CONSIST OF BAG SAMPLES FROM	
	BORING NO.	DEPTH
2	B-6	5 - 13'
	B-5	0 - 7'
	E-4	0 - 20'
	S-2	11 - 20'
	B-20	5 - 20'
	B-19	12 - 20'
	B-20	0 - 5'
	B-19	0 - 12'
	B-1	0 - 12'
3	B-8	5.5 - 8.5'
	B-7	0 - 5'
	B-9	0 - 3'
	B-8	0 - 4.5'
	B-8	8 - 11'

THESE COMPOSITE SAMPLES TESTED SEPARATELY GAVE THE FOLLOWING RESULTS.

SAMPLE NO. 1 L.L. 30.6 P.I. N.P. UNIFIED SM-ML

	SIEVE	% PASSING
GRADATION	10	96.1
	40	73.5
	200	48.7

SAMPLE NO. 2 L.L. 31.9 P.I. 8.9 UNIFIED ML

	SIEVE	% PASSING
GRADATION	10	97.8
	40	90.1
	200	66.7

SAMPLE NO. 3 L.L. 28.4 P.I. 3.9 UNIFIED ML

TEST ON COMPOSITE OF ALL SAMPLES -

L.L. 36.1 P.I. 9.8 UNIFIED ML

MOISTURE DENSITY RESULTS UNDER AASHO METHOD T-99

OPTIMUM MOISTURE 18.2 MAX. DENSITY 109.7 LBS CU. FT.

PERMEABILITY TEST RESULTS - IMPERVIOUS - NO

MEASUREABLE WATER FLOW - FALLING HEAD TEST

PERMEABILITY IN THE RANGE OF 10^{-5} CM/SEC

UNCONFINED COMPRESSIVE STRENGTH 3.3 TSF.

THE CURVES FOR THE MOISTURE DENSITY TEST RESULTS AND THE TRIAXIAL TEST RESULTS ON THE COMPOSITE SAMPLES ARE ENCLOSED.

TABLES 3, 4, 5, AND 7 INCLUSIVE.

THE RESULTS OF THE LABORATORY TESTS WERE BETTER THAN HAD BEEN ANTICIPATED. THE MATERIALS CAN BE USED SATISFACTORILY UNDER GOOD CONTROL. SINCE THESE SOILS ARE ALL LOCALLY DEVELOPED RESIDUAL SOIL AND ALL CLASSIFY MORE OR LESS THE SAME, WE FEEL THAT A HOMOGENOUS DAM WOULD BE THE BEST APPROACH.

THESE SOILS WILL COMPACT SATISFACTORILY WITH A VIBRATORY COMPACTOR AND WILL PROVIDE AN IMPERVIOUS FILL. SOME BLENDING OF THE MATERIAL WILL PROBABLY BE REQUIRED TO ACHIEVE A HOMOGENEOUS MIXTURE.

A TOE DRAIN WOULD SEEM TO BE THE BEST METHOD OF CONTROLLING THE PNEUMATIC LINE IN THE PROPOSED STRUCTURE.

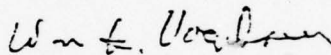
THERE SEEMS TO BE AMPLE BORROW MATERIALS IN THE PROPOSED BORROW AREAS AND THE EXACT DEPTH AND EXTENT OF THE BORROW AREA CAN BE ADJUSTED TO BEST SUIT CONSTRUCTION CONDITIONS. THIS IS BASED ON THE ASSUMPTION THAT CLOSE CONTROL WILL BE MAINTAINED ON SELECTION AND USE OF MATERIALS ON THE SITE.

THE ML SOILS WILL NEED MAXIMUM EROSION PROTECTION AFTER PLACING.

WE HOPE WE HAVE COVERED ALL POINTS REQUESTED ON THIS REPORT. IF YOU HAVE ANY QUESTIONS PLEASE CONTACT THE WRITER.

VERY TRULY YOURS,

FROEHLING & ROBERTSON, INC.



W. H. VOGELSANG, DIRECTOR
FOUNDATION INVESTIGATION

WHV/dw

TABLE 1

PERMEABILITY

<u>HOLE NO.</u>	<u>DEPTH</u>	<u>FEET/DAY</u>
A-2	9.0 - 10.0'	1.10
A-2	9.0 - 15.0'	0.66
A-2	9.0 - 20.0'	0.46
A-2	9.0 - 24.0'	0.48
A-2	9.0 - 29.0'	0.59
A-2	9.0 - 34.0'	0.78
A-2	9.0 - 39.0'	0.83
A-2	9.0 - 44.0'	0.70
A-2	9.0 - 49.0'	0.76
A-2	9.0 - 54.0'	0.72
A-2	9.0 - 59.0'	0.69
A-2	9.0 - 64.0'	0.66
A-3	9.0 - 11.0'	2.14
A-3	9.0 - 15.0'	0.66
A-3	9.0 - 19.0'	1.18
A-3	9.0 - 24.0'	1.57
A-3	9.0 - 29.0'	1.02
A-3	9.0 - 34.0'	1.32

<u>HOLE NO.</u>	<u>DEPTH</u>	<u>K = $\frac{CpR}{h}$ FT/DAY</u>
A-3	34.0 - 39.0'	0.19
A-3	39.0 - 44.0'	0
A-5	18.0 - 23.0'	2.06
A-5	23.0 - 28.0'	1.86
A-5	23.0 - 28.0'	1.71
A-5	28.0 - 33.0'	1.24
A-5	28.0 - 33.0'	1.65
A-5	33.0 - 38.0'	0
A-4-A	28.0 - 33.0'	1.03
A-4-A	23.0 - 38.0'	1.00
A-4-A	33.0 - 38.0'	0.66
A-4-A	33.0 - 38.0'	0.50

ROLFS-KINCHELOE DAM SITE
FAIRFAX COUNTY, VIRGINIA

TABLE 2

BORING NO.	DEPTH	LIQUID LIMIT	PLASTIC INDEX	% PASSING 200 MESH SIEVE	UNITED CLASSIFICATION
A-2	2.0 - 3.0'	38.0	16.2	65.2%	CL
A-2	9.0 - 10.0'	28.5	N.P.	49.2%	ML-SM
A-10	24.0 - 25.0'	32.0	N.P.	36.1%	SM
A-15	1.0 - 2.0'	29.6	N.P.	29.0%	SM



1681

FROEHLING & ROBERTSON, INC.

INSPECTION ENGINEERS • CHEMISTS • BACTERIOLOGISTS

CABLE ADDRESS—"FROEHLING"

BRANCH LABORATORIES
 BOSTON CHARLOTTE BALTIMORE
 WASHINGTON SALEM
 GREENVILLE SCARFORD FAYETTEVILLE
 ASHEVILLE

Richmond, Virginia

April 8, 1969

Dewberry, Nealon & Davis
 8411 Arlington Boulevard
 Fairfax, Virginia 22030

Ref: Rolfs-Kinchaloe Dam Site

Attention: Mr. Harold Williams

Gentlemen:

In accordance with instructions issued by Mr. Harold Williams of Dewberry, Nealon & Davis, several lab tests and analysis were made on the material provided. The maximum wet weight at 100% saturation (zero air voids) was calculated to be 131.7 pcf. By using the blow count and without running void ratio, the foundation material was calculated to weight approximately 115 pcf. The procedure for determining this was obtained from Hough's Basic Soils Engineering.

Through running a consolidation test it was ascertained that the material would consolidate very shortly after the load was applied. By using the void ratio obtained through consolidation tests the maximum consolidation under the riser would be six inches, although in practice the consolidation would be in the magnitude of three to four inches. The consolidation test was, of course, ran on a remolded sample at 95% compaction of standard proctor, not the natural undisturbed material. The settlement would probably be slightly more on the natural material.

Very truly yours,

FROEHLING & ROBERTSON, INC.

John S. Thornton

John S. Thornton

JST/dw

4-13-69
 4/14/69
 Conduit
 Is this Riser
 of Conduit?
 Dial Readings?
 Relation of cr to S?

April, 1969

POHICK CREEK
SITE # 7
VIRGINIA

INDEX TO EMBANKMENT AND FOUNDATION DESIGN

<u>ITEM</u>	<u>SHEET</u>
Gradation	E-2
Filter Gradation	E-3 to 4
Plasticity Chart	E-5
✓ Material Inventory	E-6 and 7
✓ Placement of Materials	E-8
Plan & Profile of Cut-off Trench	E-9
✓ Cut-off Trench Width	E-10
Plan & Profile of Drainage	E-11
Drain Details	E-11 to E-14
✓ Stability Analysis	E-15 to 19

60

VA. Potlick CR - site # 7

3-19-69
Rev 4-30-69

Material Inventory

Excavation (from Quantity Calculations)

Cut-off Trench	—	15100 c.y.
Emergency Spillway	—	11300 c.y.
Borrow Area A	—	94400 c.y.
<u>Borrow Area B</u>	—	<u>44900 c.y.</u>
Total material available	—	165700 c.y.

Embankment (from Quantity Calculations)

Core Trench Fill	—	15100 c.y.
<u>Dam Embankment</u>	—	<u>85300 c.y.</u>
Compacted Fill Required	—	100400 c.y.
W/Est shrinkage @ 20%	=	125500 c.y.

Available	—	165700 c.y.
<u>Needed</u>	—	<u>125500 c.y.</u>
Surplus		40200 c.y.

select best quality borrow materials

Pot hole Er - Site #7

5.12.69
Rev 4-5 9

Material Inventory (Cont)

Shipping Topsoil

Dam Foundation (1')	=	5800 c.y.
Emergency Spillway (1')	=	1560 c.y.
<u>Total</u>		<u>7360 c.y.</u>

Salvage & Place Topsoil (6")

Dam - DS Face, Top, & U.S. Face ^{down} to Elev 299.1 -
1740 c.y.

Em Spwy - sides (4")		300 -
<u>Total Required</u>	-	<u>2040 -</u>

Available	7360 c.y.
<u>Required</u>	<u>2040 -</u>
Excess	5320

Excess topsoil to be disposed of
outside construction limits of dam,
as directed by the Engineer.

500.101 CUTOFF TRENCH BOTTOM WIDTH-S

Sheet 1 of 1

CRITERIA:

$$\textcircled{1} \quad w = \frac{h_1 - d}{2}$$

$$\textcircled{2} \quad w = h_2 - d$$

$$\textcircled{3} \quad w \geq 12'$$

h_1 = Difference in elevation between emergency spillway and stripped ground at centerline of cutoff trench.

h_2 = Difference in elevation between permanent pool and stripped ground at centerline of cutoff trench.

d = Depth of cutoff trench excavation

w = Bottom width of cutoff trench

Station	d	h_1	h_2	<i>used</i> w
10+00	12	4.5	+ 11	10
11+00	21	8	- 2	10
12+00	18	30	- 24	20
13+00	11	35	- 29	20
14+00	11	33	- 27	20
15+00	19	27	- 21	20
16+00	22	9	- 3	10
16+90	0	11.5	+ 17	10

Summary:

Use - $W = 20'$ 12+00 to 15+00

- $W = 10'$ 9+55 to 11+00
15+50 to 16+90

- Transition 11+00 to 12+00
15+00 to 15+50

V PONICK CREEK SITE NO 7
DESIGN SECTION

UPSTREAM SLOPE

ARC INPUT DATA

HORIZONTAL DISTANCE FROM CENTERLINE OF DAM TO LEFT MOST ARC CENTER = -100.0 FT.

HORIZONTAL DISTANCE BETWEEN ARC CENTERS = 10.0 FT.

NUMBER OF HORIZONTAL DISTANCES = 4

VERTICAL DISTANCE FROM TOP OF DAM TO UPPER MOST ARC CENTER = 64.0 FT.

VERTICAL DISTANCE BETWEEN ARC CENTERS = -10.0 FT.

NUMBER OF VERTICAL DISTANCES = 4

DISTANCE BETWEEN ARC RADIUS = 4 FT.

LINE NUMBER TANGENT TO MINIMUM ARC = 9

LINE NUMBER TANGENT TO MAXIMUM ARC = 12

MINIMUM SAFETY FACTOR AND ASSOCIATED RADIUS FOR SELECTED ARC CENTERS

		HORIZONTAL DISTANCE			
		-100.0	-90.0	-80.0	-70.0
		RAD	FS	RAD	FS
		RAD	FS	RAD	FS
127	1.392	127	1.420	127	1.498
117	1.369	117	1.380	117	1.450
				127	1.637
				117	1.502

V POHICK CREEK SITE NO 7
DESIGN SECTION

EMBANKMENT AND FOUNDATION INPUT DATA

LINE	FIRST POINT		SECOND POINT		DENSITY TII LBS/CU.FT.	SHEAR PARAMETERS	
	X	Y	X	Y		ABOVE LINE PHI C	BELOW LINE PHI C
LINE 1	-26.0	-6.0	-8.0	0.0	129.0	0.0	35.0
LINE 2	-8.0	0.0	8.0	0.0	129.0	0.0	35.0
LINE 3	8.0	0.0	137.0	-43.0	129.0	0.0	35.0
LINE 4	137.0	-43.0	1000.0	-43.0	-132.0	0.0	15.0
LINE 5	137.0	-43.0	50.0	-43.0	-132.0	35.0	300.0
LINE 6	50.0	-43.0	-26.0	-6.0	-132.0	35.0	300.0
LINE 7	-26.0	-6.0	-59.0	-17.0	-132.0	0.0	35.0
LINE 8	-59.0	-17.0	-64.0	-17.0	-132.0	0.0	35.0
LINE 9	-64.0	-17.0	-142.0	-43.0	-132.0	0.0	35.0
LINE 10	-142.0	-43.0	-1000.0	-43.0	-132.0	0.0	15.0
LINE 11	-142.0	-43.0	50.0	-43.0	-132.0	35.0	300.0
LINE 12	-5000.0	-63.0	5000.0	-63.0	0.0	15.0	500.0

VA POHICK CREEK SITE NO 7 JOB NO 572 MARCH 21 1969
FIRST RUN

EMBANKMENT AND FOUNDATION INPUT DATA

	FIRST POINT			SECOND POINT		DENSITY T/1 LBS/CU.FT.	SHEAR PARAMETERS		
	X	Y		X	Y		ABOVE LINE	BELOW LINE	
							PHI	C	
LINE 1	-26.0	-6.0		-8.0	0.0	129.0	0.0	0.	15.0 3000.
LINE 2	-8.0	0.0		8.0	0.0	129.0	0.0	0.	15.0 3000.
LINE 3	8.0	0.0		137.0	-43.0	129.0	0.0	0.	15.0 3000.
LINE 4	137.0	-43.0		1000.0	-43.0	-115.0	0.0	0.	15.0 2000.
LINE 5	137.0	-43.0		50.0	-43.0	-115.0	15.0 3000.		15.0 2000.
LINE 6	50.0	-43.0		-26.0	-6.0	-132.0	15.0 3000.		15.0 3000.
LINE 7	-26.0	-6.0		-59.0	-17.0	-132.0	0.0	0.	15.0 3000.
LINE 8	-59.0	-17.0		-64.0	-17.0	-132.0	0.0	0.	15.0 3000.
LINE 9	-64.0	-17.0		-142.0	-43.0	-132.0	0.0	0.	15.0 3000.
LINE 10	-142.0	-43.0		-1000.0	-43.0	-115.0	0.0	0.	15.0 2000.
LINE 11	-142.0	-43.0		50.0	-43.0	-115.0	15.0 3000.		15.0 2000.

() PONDICK CREEK SITE NO 7 JOB NO 572 MARCH 21 1969
FIRST RUN

UPSTREAM SLICE

ARC INPUT DATA

HORIZONTAL DISTANCE FROM CENTERLINE OF DAM TO LEFT MOST ARC CENTER = -120.0 FT.

HORIZONTAL DISTANCE BETWEEN ARC CENTERS = 20.0 FT.

NUMBER OF HORIZONTAL DISTANCES = 3

VERTICAL DISTANCE FROM TOP OF DAM TO UPPER MOST ARC CENTER = 72.0 FT.

VERTICAL DISTANCE BETWEEN ARC CENTERS = -20.0 FT.

NUMBER OF VERTICAL DISTANCES = 3

DISTANCE BETWEEN ARC RADIUS = 2 FT.

LINE NUMBER TANGENT TO MINIMUM ARC = 9

LINE NUMBER TANGENT TO MAXIMUM ARC = 11

MINIMUM SAFETY FACTOR AND ASSOCIATED RADIUS FOR SELECTED ARC CENTERS

HORIZONTAL DISTANCE

	-120.0 RAD	FS	-100.0 RAD	FS	-80.0 RAD	FS	FS	RAD	FS	RAD	FS	FS
115	10.208		115	7.561		115	6.295					
95	10.775		95	8.088		95	6.560					

APPENDIX V

CONSTRUCTION RECORDS

Puller A. Hughes, Government Representative
SCS, Warrenton, Virginia

November 2, 1970 ✓

E. H. Dabney, Jr., Government Inspector
SCS, Harrisonburg, Virginia

Watershed: Construction Report Site #7

1. Pohick Watershed Project, Fairfax County, Virginia, Multiple Purpose Retarding Dam #7, Contract No. 405-235-7, Agreement No. 12-10-440-314, Drawing No. M-1251 & PP 2148.
2. Project Agreement dated May 3, 1969, was signed by Stuart Finley, Chairman, Northern Virginia Soil and Water Conservation District, and Carleton C. Massey, County Executive of Fairfax County, on May 12, 1969.
3. Invitations of Bids was issued May 16, 1969. Group showing was held on the site June 6, 1969.

Bids were received until 2:00 p.m. E.D.S.T. on June 16, 1969. R. L. Rider & Company of Warrenton, Virginia, was awarded the contract at a cost of \$163,316.18, of which 50.23% of the cost was borne by the Contracting Local Organization and 49.77% by the Service.

This dam was designed by Dewberry, Nealon, and Davis of Fairfax, Virginia, to conform to SCS standards.

4. Notice to Proceed was received by R. L. Rider on August 8, 1969. Work was started on August 27, 1969. There were 155 calendar days of performance time in this contract. Original completion date was January 10, 1970. On August 26, 1969, Contract Modification #3 was executed for the installation of Sewer Line "B" and to extend the completion date by 30 days. Revised completion date was February 9, 1970.

On August 21, 1969, S. O. Jennings of Fairfax County, Virginia, started to install Sewer Line "A" through emergency spillway. This was not a part of the contract but was installed to meet SCS requirements.

Site Engineering and Construction Corporation of Falls Church, Virginia, was approved as a sub-contractor on September 9, 1969, for all concrete work.

Four hundred, twenty-five calendar days elapsed from time work ordered commenced until job was completed.

There were 37 Suspend & Resume Orders issued during this period because of weather and working conditions. The contract completion date was extended 215 days due to these orders.

5. Contract Modifications:

Modification #1 was executed to change normal pipe lengths from 16 foot to 20 foot joints and also relocations of anti-seep collars. This was done to speed up delivery time of pipe.

Modification #2 to change linear feet of 8" C.M. pipe from 520 L/F to 660 L/F to bring bid schedule in line with quantities shown on drawing.

Modification #3 was to add items 17 - 23 to install 167 L/F of 15" sewer line, dig 167 L/F trench between manhole G-1 to G-1A, 100 L/F of concrete cradle, 3 anti-seep collars and 3.0 V/F manhole drop connection.

Modifications #4, 5, and 6 issued to extend the completion date to March 3, 1970, in accordance with Suspend and Resume work orders 1 thru 11.

Modification #7 was to change gate from self-contained to not self-contained, to change moisture limits from (-1% to +2%) to (-2% to +3%) and also delete from plans the specification calling for 97% maximum density for earth fill compaction.

Modification #8 issued to extend the completion date to July 31, 1970, due to 149 days for winter shutdown.

Modifications #9 and 10 issued to extend completion date to August 28, 1970, in accordance with Suspend and Resume work orders 15 thru 24.

Modification #11 issued to eliminate Borrow Area "B" and change Borrow Area "A" at request of landowners.

Modifications #12, 13, and 14 to extend completion date to September 12, 1970, in accordance with Suspend and Resume work orders 25 thru 35.

Modification #15 was executed to decrease clearing and grubbing from 4.0 acres to 1.1 acres due to elimination of Borrow Area "B" and to delete from the bid schedule Items 3, 17, 19, and 22. This modification also decreased the cost of the contract by \$2,140.00.

Modification #16 executed to extend completion date of the contract by 2 days in accordance with letter from Preston H. Newton dated November 2, 1969, concerning winter shutdowns.

Modification #17 executed to pay for the construction of two silt basin dams and the seeding of stock piles. Also to extend contract completion date one (1) day.

The contractor and sub-contractor were authorized to work 5 days a week 10 hours per day -- 7:00 a.m. to 5:30 p.m.

The sub-contractor, after placing very little concrete before (riser foundation slab and anti-seep collars base), walked off job on May 6, 1970, due to a misunderstanding and misinterpretation of plans and specifications. R. L. Rider finished concrete work.

6. Equipment used on job:

- 2 each - Pans DW21 Caterpillar
- 1 each - Pan 435E Caterpillar
- 1 each - Pan Allis-Chalmers
- 1 each - Pan 60 Caterpillar
- 1 each - Pan - Self-loader - Hancock
- 1 each - Dozer D8 Caterpillar
- 3 each - Dozer D7 Caterpillar
- 1 each - Dozer D6 Caterpillar
- 1 each - Dozer D4 Caterpillar
- 1 each - Dozer TD15 International
- 1 each - Backhoe Northwest
- 1 each - Backhoe John Deere 400
- 1 each - Backhoe Drott 40
- 1 each - Roller Shovle Supply Model 120S
- 2 each - Roller Ferguson 112S
- 3 each - Pumps water
- 2 each - Compressor with attachments
- 2 each - Loader 955X Caterpillar
- 1 each - Loader 175B International
- 1 each - Loader Michigan 55
- 2 each - Water trucks
- 1 each - Motor Grader Galion 503

Work Crew averaged 7 skilled workmen, 1 superintendent, 1 foreman, and 3 laborers.

Those directly concerned with construction of administering the contract were:

Stuart Finley, Chairman, Northern Virginia Soil and Water Conservation District
Carleton C. Massey, Fairfax County Executive
Harry L. Hale, Contracting Officer, Director, Department of Public Works, Fairfax County
J. H. Leidl, Deputy Director, Dept. of Public Works
Robert B. Atkins, Branch Chief, Projects Branch, Public Work Department, Fairfax County
Preston H. Newton, Chief, Construction Section, Fairfax County
Martin G. Ferguson, Dept. of Development, Div. of Design Review, Fairfax County
Ebbie Ramay, Chief, Public Utilities Inspection Branch, Fairfax County
Edward Lutes, Chief Inspector, Fairfax County
Herbert Brown, Inspector, Fairfax County
William Lowe, Inspector, Fairfax County
Harold Williams, Dewberry, Nealon, and Davis
Susan Peetoom, District Clerk Typist, Northern Virginia Soil and Water Conservation District
Norman E. Parrish, State Administrative Officer, SCS
Billy M. Putnam, Ass't. State Administrative Officer, SCS
M. B. Perry, Contract Specialist, SCS
L. S. Button, Jr., State Conservation Engineer, SCS
R. A. Gallo, Ass't. State Conservation Engineer, SCS
William Rider, R. L. Rider and Company
Charles Rider, R. L. Rider and Company
James Weeks, R. L. Rider and Company
Daniel Campbell, R. L. Rider and Company
Eddie Wood, Area Conservationist
Glenn B. Anderson, District Conservationist
Kenton R. Inglis, District Conservationist
William E. Lucas, Government Representative
Puller A. Hughes, Government Representative
Charles Edwards, WAE (SCS)
John Hart, Alternate Inspector
E. H. Dabney, Jr., Government Inspector

7. Comments relative to "Items" in bid schedule as follows:

Item 1 - Clearing and Grubbing

Bid Schedule - 4 acres @ \$600.00 = \$2,400.00

Final - 1.1 acre @ \$600.00 = \$ 600.00

Contract Modification #15 executed to take care of underrun.

Quantity decrease due to elimination of Borrow Area "B" at request of landowner.

Item 2 - Excavation, Common

Bid Schedule - 13,000 C.Y. @ .74 = \$ 9,620.00

Final - 15,519 C.Y. @ .74 = \$11,484.06

Overrun for payment utilizing 25% clause. Overrun due to over-excavating core trench and pipe trench.

Item 3 -

Bid Schedule - 10 C.Y. \$10.00 \$100.00

Final - 0 C.Y.

Contract Modification #15 executed to delete rock - none encountered.

Item 4 - Earth Fill Class "A"

Bid Schedule - 100,400 C.Y. @ .50 = \$50,200.00

Final - 100,000 C.Y. @ .50 = \$50,000.00

Underrun due to fact that rock rip rap on face of dam was not taken off of earth fill sections in design.

There were 66 sand cone density tests made. All tests satisfactory. Average test per C.Y. of fill - 1 test for every 1,515 C.Y.

Four sand cone tests were made on sewer line through emergency spillway by SCS and five by Fairfax County inspectors. These tests are not included in 66 on dam.

There were 11 Proctor tests made.

Item 5 - Drain Fill

Bid Schedule - 4,872 @ \$8.80 = \$42,873.60

Final - 4,497 @ \$8.80 = \$39,573.60

Underrun provided for by 25% clause.

Item 6 - Concrete - Reinforced 4,000 lbs.

Bid Schedule - 83.6 C.Y. @ \$175.00 = \$14,630.00

Final - 85.8 C.Y. @ \$175.00 = \$15,015.00

Overrun provided for in 25% clause.

Item 7 - Concrete - Non-reinforced 4,000 lbs.

Bid Schedule - 57.6 C.Y. @ \$58.50 = \$3,369.60

Final - 59.6 C.Y. @ \$58.50 = \$3,486.60

Overrun due to size of cradle and yokes.

Item 8 - Concrete - Non-reinforced 2,500 lbs.

Bid Schedule - 58.7 @ \$48.00 = \$2,817.60

Final - 58.2 @ \$48.00 = \$2,793.60

Underrun due to the fact that keys were paid for in Item 6.

Compression test results:

<u>7 Days</u>	<u>28 Days</u>
3,210	5,160
3,270	4,900
3,980	4,650
3,740	5,060
4,040	5,150
4,440	4,690
4,180	5,460
3,720	5,600
3,340	5,150
<u>3,770</u>	5,360
3,769 PSI Av.	5,160
	5,080
	5,790
	5,710
	6,110
	6,450
	6,230
	5,470
	5,220
	5,200
	4,690
	4,890
	4,720
	4,470
	4,510
	4,490
	5,160
	4,960
	<u>5,110</u>
	5,199 PSI Av.

Sample #5A was not delivered to lab so 5B was used for seven day test and only 2 samples were used for 28 day test.

Samples 6A, B, C, D, and 7A, B, C, D were for sewer line "B" cradle and anti-seep collars and are not included in concrete sample for dam.

<u>7 Days</u>	<u>28 Days</u>
No. 6A 3,760 PSI	6B 5,050 PSI
7A <u>4,080</u>	6C 4,950
3,920 PSI Av.	6D 4,920
	7B 5,260
	7C 5,290
	7D <u>5,020</u>
	5,081 PSI Av.

There were also tests made on concrete on sewer line "A" through emergency spillway. (This was not a part of the contract)

<u>7 Days</u>	<u>28 Days</u>
3,115 PSI Av.	4,304 PSI Av.

Item 9 - Steel

Bid Schedule - 12,309 lbs. @ .17 = \$2,092.53

Final - 12,464 lbs. @ .17 = \$2,118.88

Overrun provided for in 25% clause.

Item 10 - Reinforced Concrete Pipe 30" Dia.

Bid Schedule - 254 L.F. @ \$35.00 = \$8,890.00

Final - 255.7 L.F. @ \$35.00 = \$8,949.50

Measured laid length.

Item 11 - Pipe - 8" C.M.

Bid Schedule - 520 L.F. @ \$2.50 = \$1,300.00

Final - 668.3 L.F. @ \$2.50 = \$1,670.75

Contract Modification #2 executed to bring bid schedule in line with quantities shown on drawings.

Item 12 - Trash Racks (High and Low Stage)

Bid Schedule - 1 L.S. --- \$2,650.00

Final - 1 L.S. --- \$2,650.00

Item 13 - Manhole Assembly

Bid Schedule - 1 L.S. --- \$450.00

Final - 1 L.S. --- \$450.00

Item 14 - Rip Rap (Equipment Place)

Bid Schedule - 1,169 C.Y. @ \$11.90 = \$13,911.10

Final - 1,306 C.Y. @ \$11.90 = \$15,541.40

Overrun due to lengths across berm and top of rip rap.

Item 15 - Slide Gate

Bid Schedule - 1 L.S. ---\$7,500.00

Final - 1 L.S. ---\$7,500.00

Item 16 - Salvaging and Spreading Top Soil

Bid Schedule - 2,044 S.Y. @ .25 = \$511.75

Final - 2,244 S.Y. @ .25 = \$561.00

Overrun due to lengths of emergency spillway slopes.

Item 17 - Sewer Line Trench - Depth 10' - 12'

Contract Modification #3 was executed to include this item in contract @ \$33.30 per L/F. (No trench encountered for these depths.) Modification #15 was executed to delete this item from contract.

Item 18 - Sewer Line Trench - Depth 12' - 14'

Bid Schedule - 167 L.F. @ \$36.10 = \$6,028.70

Final - 165 L.F. @ \$36.10 = \$5,956.50

Underrun provided for under 25% clause.

Item 19 - Sewer Line Trench - Depth 14' - 16'

This item included in contract under Contract Modification #3 at \$39.10 per L/F. (No trench was encountered at this depth.) Modification #15 was executed to delete this item.

Item 20 - Sewer Line Cradle

Bid Schedule - 100 L.F. @ \$12.00 = \$1,200.00

Final - 98.7 L.F. @ \$12.00 = \$1,184.40

Underrun provided for in 25% clause.

Item 21 - Anti-seep Collars

Bid Schedule - 3 ea. @ \$400.00 = \$1,200.00

Final - 3 ea. @ \$400.00 = \$1,200.00

Item 22 - Manhole Drop

Bid Schedule - 3 V.F. @ \$100.00 = \$300.00

Final - 0 V.F.

Contract Modification #15 executed to delete this item at request of County by letter to Government Representative.

Item 23 - 16" C301 RCWP Sewer Line

Bid Schedule - 167 L.F. @ \$12.15 = \$2,029.05

Final - 163.5 L.F. @ \$12.15 = \$1,986.53

Underrun provided for payment by utilizing 25% clause. This was measured laid length.

Item 24 - Construct 2 Silt Basin Dams, Seed and Mulch - Approximately One (1) Acre of Stock Piles

Bid Schedule - 1 ea. = \$1,940.67

Final - 1 ea. = \$1,940.67

Contract Modification #16 executed to include this item in contract.

8. Cost Summary

Original Bid	\$163,316.18
Due to Contract Modification	+ 13,050.92
Due to Contract Modification	- 2,140.00
25% Clause	- 3,654.32
25% Clause	+ 4,149.71
Total Cost of Contract	174,722.49
Less Liquidated Damages	<u>1,650.00</u>
Total Cost Due R. L. Rider and Company	\$173,072.49

Items 17 thru 23 were 100% cost items to be paid for by Contracting Local Organization. These items increased the cost of the contract by \$10,327.43.

September 15, 1970, was the revised completion date after all Contract Modifications were executed.

Work was completed on October 7, 1970.

There were 22 days of liquidated damages at \$75.00 per day, total cost of liquidated damages due \$1,650.00.

An inspection was made by L. S. Button, Jr., R. A. Gallo, M. B. Perry, P. A. Hughes of SCS, representatives of the Yeonas Company, and William Rider on October 13, 1970. The work was completed in accordance with the contract with no exceptions. The Final Inspection and Certification of Completion was signed by SCS.

On October 26, 1970, a meeting at the site included Hughes and Anderson of SCS, Mr. Davis of Dewberry, Nealon, and Davis,

Mssrs. Ray and Nice of Yeonas Company, Mssrs. Atkins, Ferguson, Newton, and Brown of Fairfax County, and William Rider, to inspect site with County Personnel. Mr. Atkins accepted the work on behalf of the County.

General:

Except for some clearing and grubbing, the building of 2 silt basin dams and the seeding of stockpiles, there were approximately 140 days used to complete this job.

The relationship between the contractor's personnel and SCS personnel was very good.

All certifications were received and properly signed.

Some difficulty was encountered in getting the drain fill material locally, so the Specification Limits were changed and material placed in accordance with letter of June 1, 1970. There were 6 tests made from material delivered on the job. All of these tests were within the new limits.

The material in Borrow Area "A" was very dry and water trucks had to be run on fill the last of the job to bring up optimum moisture.

All records and reports were kept up to date.

Environmental protection measures and controls were established and adhered to during construction and at time of winter shutdown.

Two silt basins were constructed on the site to prevent silt off the borrow area and the dam site from entering the stream. One of the basins remained in place until the final grading of the borrow area. The other, located below the outlet of the principal spillway, had to be removed to construct the impact basin. Both basins served their purpose in holding back the silt.

Also, there were three small catch basins, constructed in a swale adjoining the top soil stockpile, which worked to a good advantage in catching silt.

A berm was constructed above the steep slope of the stockpile which prevented the water from flowing down the slope.

All top soil, waste areas, and haul roads in borrow area were seeded to temporary cover and mulched with straw during winter shutdown.

A berm was constructed alongside the principal spillway conduit to prevent silt from washing down from that area.

The grass and top soil was removed from the borrow area only as more fill material was needed. The borrow area was graded in such a manner that any water that flowed from it either went into the silt basin or flowed over the edge where there was a grass strip approximately 300 feet wide down to the stream.

As a result of these remedial measures, a minimum amount of silt left the construction area.

During the construction period the haul roads were kept watered when necessary to help keep down dust.

A portable sanitary facility was provided on the site for the workers' use.

Oil from the maintenance of equipment was drained into containers and disposed of off site.

There was no burning on site. The area was policed for trash and kept reasonably clean.

Safety regulations were enforced and adhered to. No personnel injuries occurred on the job.

Recommendations:

1. If a concrete impact basin is used, such as the one on Site #7, a fence should be built around the inlet wall and along each side or grating panels be placed over the openings from the inlet wall to baffle as safety measures.
2. If a gate is designed to be on the inside of the riser, holes should be drilled in the frame so the bolts could be tightened with a socket wrench.
3. Environmental control measures should be shown on the plans; the approximate location of any silt basin dam, and any seeding that should be done in the event of a winter shutdown.

Puller A. Hughes, Jr.
Government Representative

APPENDIX VI

ANNUAL INSPECTION REPORT

DRAFT

3-15-72

TO:

REPORT ON THE FIRST ANNUAL INSPECTION OF LAKE BRADDOCK

The first operation and maintenance inspection was made of Floodwater Retarding Structure #7 (Lake Braddock) of the Pohick Creek Watershed Project on March 9, 1972. Since this lake is currently owned by the Yeonas Company, but will soon be legally conveyed to the Lake Braddock Community Association, representatives of both organizations were present. The actual inspection was made jointly by representatives of Fairfax County's Department of Public Works and the Soil Conservation Service. The PL566 Coordinator of Fairfax County and the Northern Virginia Soil and Water Conservation District's District Executive also participated.

Observation and Recommendations:

1. Vegetative Cover: Cover on the upstream slope is in good condition. On the downstream side were found a few rills and bulldozer tracts. These bare areas should be spot-seeded and mulched.
2. Spillway: No noticeable defects on the riser. A pole needs to be removed from inlet.
3. Riprap: In good condition, except one point where large stones have been moved and piled up ^{on} one side. These stones should be replaced.
4. Walkways: Grading along the newly-installed walkways have left a few bare areas that need to be sodded.
5. Outlet: The riprap that has been piled up in the impact basin needs to be removed and should be placed on the stream bank below the structure.

There is no indication of cracks or scaling.

6. Embankment: There is a small gully on the downhill side that should be repaired, spot-seeded, and mulched.

7. Emergency Spillway: There is a small gully at outlet that needs backfilling, seeding, and mulching.

PARTICIPANTS

Glenn Anderson
James Boxley
W. E. Blair
M. Ferguson
Herbert Jankers
C. J. Koch
Siegmar Koller
Tillman Marshall
Thomas G. Mays
Arthur C. Meihers
Maynard D. Myers
William C. Ray
William W. Smith

Soil Conservation Service
Public Works Dept, Fairfax County
Public Works Dept, Fairfax County
PL566 Coordinator, Fairfax County
Yeonas Company
No. Va. SWCD
Yeonas Company
Soil Conservation Service
Lawyer
Lake Braddock Community Association
Lake Braddock Community Association
Yeonas Company
Design Review Div, Fairfax County

Submitted By:

Soil Conservation Service

Fairfax County

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE 3 45 Chain Bridge Road, Suite B, Fairfax, Va. 22030

December 6, 1972

TO: W. W. Smith
J. F. Jones
Conrad Brewer
Puller Hughes
Maynard Meyers
Robert Modesitt

Charles Koch
Kenneth May
Tony MacLeod
Clay Peters
Stanley Button

FROM: Glenn B. Anderson, USDA, SCS
District Conservationist

SUBJECT: Pohick Creek Watershed Annual Operation and Maintenance
Inspection, Dam #7

The second operation and maintenance inspection was made of Floodwater Retarding Structure #7 (Lake Braddock) on November 10, 1972. The inspection was made jointly by appropriate representatives of Fairfax County, the Northern Virginia Soil and Water Conservation District, and the Soil Conservation Service.

Observations and Recommendations:

1. Vegetation: The grass-legume cover on the dam and emergency spillway is in fair condition. It is recommended that bare spots and small rills on the downstream side of the dam be rennovated. The entire area should be top-dressed during the 1973 Spring season with about 800 lbs. per acre of 5-10-10 or equivalent fertilizer.
2. Riprap: The large riprap rocks have been moved and piled up on one side at the point of the shoreline opposite the mechanical spillway. It is recommended that these rocks be moved back to their original locations.
3. Outlet: The riprap rocks that have been piled up in the impact basin should be removed and placed along the streambank below the outlet.
4. Mechanical Spillway: It has been known for some time that the valve control shaft is bent out of alignment. It is understood that the representative of the steel company has been asked to investigate and make recommendations on this matter. No cracks or scaling were observed on the masonry of the mechanical spillway.

Further Comments:

This structure withstood the impact of Hurricane Agnes on June 22-23, 1972, without significant damages. It appears that the sponsor is doing an excellent job keeping the vegetation mowed.

GBA/sjp



UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE 3945 Chain Bridge Road, Suite B, Fairfax, Va. 22030

November 26, 1973

To: Robert E. Modesitt, A.C.
USDA, SCS, Culpeper, Va. 22701

From: Henry H. Williamson, D. C.
USDA, SCS, Fairfax, Va. 22030

Subject: Pohick Creek Watershed Annual Operation and Maintenance
Inspection

The annual watershed operations and maintenance report was made by representatives of Fairfax County, Northern Virginia Soil and Water Conservation District, and the Soil Conservation Service on November 14, 1973. The following were present:

W. W. Smith	County Development, Design Review Division
John Koenig	Public Works, PL566 Coordinator
Charles Koch	No. Va. Soil & Water Conservation District
Henry H. Williamson	Soil Conservation Service
Galen Stees	Fairfax Co. Park Authority
Maintenance Inspector from Public Works	

Observations--Site #8

1. Vehicular traffic has denuded an area going up the berm of the spillway and down the upstream side. Slight erosion is taking place. The entire top of the dam has been denuded by traffic and slight erosion is taking place.
2. The bottom of the spillway is being used by vehicles, but to date little damage has been done to the vegetation.
3. Both sides of the spillway have trails cut as a result of motorcycle riders. Erosion is evident and will increase unless checked.
4. The area where the dam ties into the berm of the spillway was seeded and tied down with net jute. This has been disturbed by vehicles and is now eroding.
5. The area on the right as you face upstream from the dam was seeded and mulched by the sewer contractor. The seeding was not successful.
6. There are some areas on the shore line where "borrow" was obtained that should be re-seeded.

Recommendation: Stop vehicular traffic on all areas immediately. Fertilize, seed, and mulch all bare and eroding areas during Spring 1974. Fertilize entire seeded area of dam and spillway during Spring 1974 with 800# per acre of 5-5-10 or its equivalent.



Observations-Site #7

1. There are foot trails across the spillway that are eroding, and the bottom of the spillway is being used as a baseball field. Playing of baseball should be prohibited on the spillway and the bare spots fertilized and seeded, then mulched. Consideration should be given to constructing permanent foot paths across the spillway, then fertilize, seed, and mulch existing eroding trails.
2. Riprap should be replaced on the face of the dam, where the rocks have been pushed into the water or otherwise removed.
3. The valve control shaft on the mechanical spillway should be repaired as soon as possible.
4. Since the vegetated area was not fertilized during the Spring of 1973, it is strongly recommended that the entire vegetated area be fertilized during the Spring of 1974 with 800# of 5-10-10 per acre or its equivalent.

Over all, the structures are being maintained in very good condition.

HHW/sid

cc: W. W. Smith
John Koenig
Charles Koch
Galen Stees

W. W. Smith
DC

NOTE. COPY SENT TO BOB MODESITT ON DECEMBER 5, 1974

FAIRFAX COUNTY, VIRGINIA

DEC 4 1974

MEMORANDUM

TO: Distribution List

DATE: November 25, 1974

FROM: John W. Koenig *JWK*

FILE NO: PL 566 Coordinator

SUBJECT: PL 566 Pohick Creek Watershed Project Annual Operation and Maintenance Inspection

REFERENCE:

The annual watershed operation and maintenance inspection of Floodwater Retarding Structures #7 (Lake Braddock) and Structure #8 was made on November 13, 1974. The inspection was made jointly by appropriate representative of Fairfax County, the Fairfax County Park Authority, the Northern Virginia Soil and Water Conservation District, and the Soil Conservation Service. The following representative were present:

William W. Smith - Department of Environmental Management, Fx. Co.
John W. Koenig - Department of Public Works, Fx. Co.
George Shake - Fairfax County Park Authority
Charles J. Koch - Northern Virginia Soil & Water Conservation District
Fuller A. Hughes - Soil Conservation Service

The following observations and recommendations were made on the inspection:

Dam Site #8

1. A permanent type vehicle proof barrier is needed at the stream crossing below the dam to prevent vehicle access to the dam and spillway area.
2. Regrade, reseed, mulch, and tack down with netting the North abutment, upstream and downstream faces.
3. Floor of emergency spillway and areas damaged by cars and motorcycle traffic needs to be scarified, seeded, mulched, and tacked down with netting.
4. Check principal spillway for trash and debris, clean out and replace bars on trash rack.
5. It is suggested that the Park Police, County Police, and Police helicopter be utilized more to check the area for motor vehicle and off road bikes.

Dam Site #7

1. Bike and foot path traffic from the street level is causing some erosion on the spillway slopes. Suggest, providing an asphalt path across spillway on upstream side of control section.

TO: Distribution List

Page -2-

RE: Ponick Creek Watershed Operation and Maintenance Inspection

2. Vegetative cover shows signs of lack of plant nutrients. Recommend a soil test be taken and apply lime and fertilizer as need is indicated by soil test. Also extend mowing interval and increase height of cutting to approximately 4 inches.
3. Replace small animal guards on foundation drains.
4. Remove trash and debris from impact basin at principal spillway outfall and replace rip rap on banks of channel at outfall.
5. Replace missing rip rap on berm on upstream face of dam.

Charles J. Koch
Charles J. Koch
District Executive

John W. Koenig
John W. Koenig
PL 566 Coordinator

Fuller A. Hughes, Jr.
Fuller A. Hughes, Jr.
District Conservation

JWK/tlh

Distribution List

✓ Charles J. Koch, Northern Virginia Soil & Water Conservation District
Fuller A. Hughes, Jr., Soil Conservation Service
William W. Smith, Department of Environmental Management
George Shake, Fairfax County Park Authority
R. B. Atkins, Director, Office of Capital Facilities
J. E. Sunday, Director, Systems Control & Planning Division
James Dooley, Director, Maintenance & Construction
William Blair, Construction Superintendent

DEC 8 1975 FAIRFAX COUNTY, VIRGINIA

Hughes
File

MEMORANDUM

TO: DISTRIBUTION LIST

DATE November 12, 1975

FROM: John W. Koenig, Chief *JWK*
Storm Drainage Branch
UTILITIES PLANNING AND DESIGN DIVISION

FILE NO:

SUBJECT: PL566 Pohick Creek Watershed Project Annual
Operation and Maintenance Inspection

REFERENCE

The annual watershed operation and maintenance inspection of Flood Water Retardation Structure #7 Lake Braddock, and Structure #8, was made on November 5, 1975.

Inspection was made jointly by the appropriate representatives of Fairfax County, the Fairfax County Park Authority, the Northern Virginia Soil and Water Conservation District and the U.S.D.A. Soil Conservation Service. The following representatives were present:

C. Koch, Northern Virginia Soil and Water Conservation District
R. Keating, Northern Virginia Soil and Water Conservation District
G. Shake, Fairfax County Park Authority
W. Ference, Fairfax County Park Authority
R. Ross, Fairfax County Park Authority
P. Hughes, U.S.D.A. Soil Conservation Service
D. Farmer, U.S.D.A. Soil Conservation Service
W. W. Smith, Fairfax County Department of Environmental Management
J. Koenig, Fairfax County Department of Public Works
H. Williamson, Fairfax County Department of Public Works
W. Blair, Fairfax County Department of Public Works

DAM SITE #8

Generally, the dam appeared in good condition with few signs of vandalism or destruction. It is anticipated that with the commencement of development around the lake, these problems will further diminish. However, the following observations and recommendations were made:

- [1] The frequency of mowing was discussed with the general recommendation that twice a year mowing was optimal to keep the grass vigorous and maintain a rugged turf.
- [2] Place a layer of Virginia Department of Highways and Transportation (VDH&T) #57 aggregate four inches deep across the top of the dam. This modification will require approval from the Soil Conservation Service before being implemented.
- [3] Paint the newly installed bars on the trash rack of the principal spillway riser
- [4] Investigate the need for lime and fertilizer on the front face of the dam and take any necessary action that may be deemed appropriate.
- [5] Evidence of vehicle traffic still exists on slopes of emergency spillway.

DISTRIBUTION LIST

Page -2-

November 12, 1975

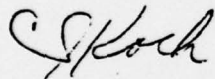
RE: PL566 Pohick Creek Watershed Project Annual Operation and Maintenance Inspection

DAM SITE #7

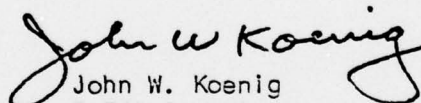
The dam appeared in good condition with the rip-rap replaced on the face of the dam and the animal guards repaired on the foundation drains. The following recommendations were made:

- [1] Remove debris and rip-rap from the impact basin of the principal spillway outfall
- [2] Investigate the need for lime and fertilizer on the dam and take any necessary action that may be deemed appropriate.
- [3] The suggestion was made that the grass length could be increased and mowed less frequently.
- [4] Replace or repair the draw-down valve control shaft on the principal spillway
- [5] It was suggested that the Lake Braddock Homeowners Association be cautioned on the potential safety hazard of children throwing rip-rap and debris into the impact basin.

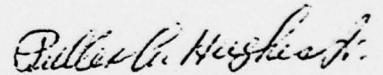
Respectfully submitted,



Charles J. Koch
Dist. Executive
Northern Virginia Soil
and Water Conservation
District



John W. Koenig
PL566 Coordinator
Fairfax County



Puller A. Hughes, Jr.
Dist. Conservationist
Soil Conservation Service

JWK/bas

DISTRIBUTION LIST

- C. Koch, Northern Virginia Soil and Water Conservation District
- G. Shake, Fairfax County Park Authority
- R. Ross, Fairfax County Park Authority
- P. Hughes, Soil Conservation Services
- W. Smith, Dept. of Environmental Management
- G. Ehrich, Director, Dept. of Public Works
- R. Atkins, Director, Office of Capital Facilities
- J. Sunday, Director, Utilities Planning and Design Division
- H. Williamson, Maintenance and Construction Division

FAIRFAX COUNTY, VIRGINIA

NOV 23 1976

Directors

MEMORANDUM

CORRECTED COPY

TO: DISTRIBUTION

DATE November 17, 1976

FROM: John W. Koenig, Chief *JWK*
Storm Drainage Branch
FILE NO: Utilities Planning and Design Division

SUBJECT: PL566, Pohick Creek, Annual Operation and Maintenance
Inspection

REFERENCE:

The annual PL566 dam inspection of structure #8 and structure #7 (Lake Braddock) was conducted on November 2, 1976. The inspection was made jointly by the appropriate representatives of Fairfax County, Fairfax County Park Authority and the U.S.D.A., Soil Conservation Service. The following representatives were present:

Harold Williamson	Fairfax County Maintenance and Construction
Bill Blair	Fairfax County Maintenance and Construction
Bob Keiser	Fairfax County Maintenance and Construction
John Koenig	Fairfax County Department of Public Works
Ralph Wills	Fairfax County Department of Public Works
W. W. Smith	Fairfax County Department of Environmental Mgt.
Don Lederer	Fairfax County Park Authority
Bill Terence	Fairfax County Park Authority
Bob Royce	Fairfax County Park Authority
Puller Hughes	U.S.D.A. Soil Conservation Service

DAM SITE #8

The dam showed considerably more signs of vandalism and destruction than was noted at the previous PL566 annual inspection. Four-wheel drive vehicles had made tracks up the center section of the dam, completely destroying vegetation for a 20-foot wide strip. Muddy tracks destroying the vegetation were also found along the entire downstream toe of the dam. The Levitt Development construction surrounding the lake has opened up additional access points for four-wheel drive vehicles contributing to the increase in vandalism. However, it is anticipated that with the completion of development around the lake, these problems will diminish.

The following additional observations were made:

1. Most of the turf on both faces of the dam was in good condition. Fertilizer had been applied by the Fairfax County Maintenance and Construction Division, and the grass mowed approximately four times per year.

2. The turf on the bottom of the emergency spillway appeared sparse in places. It is recommended that additional seed, fertilizer and mulch be applied to these areas, as well as the denuded areas on the face and toe of the dam.

TO: DISTRIBUTION

Page -2-

November 17, 1976

3. The toe drains were discharging what appeared to be a very small amount of fine silty material. This matter was further investigated by the Soil Conservation Service to determine if any soil loss is occurring within the dam structure. It was discussed with the Assistant State Conservation Engineer of the Soil Conservation Service (SCS), and he advised that this is not silt, but ironized material which is crystalizing. There is no movement of soil in the structure.

4. A 4-inch layer of VDH&T #21A aggregate had been placed across the top of the dam. It appeared to be functioning well in absorbing the impact of vehicular traffic across the top of the dam.

DAM SITE #7

Generally, the dam appeared in good condition. However, the following observations were made:

1. The riprap along the face of the dam appeared to be thinning out, probably due to children throwing it out into the lake. It is recommended this riprap be replaced and that the homeowners association be notified of the problem and requested to provide assistance in preventing this reoccurrence.

2. The impact basin was clean, with only a minor amount of debris collected within it.

3. The lake level appeared to be abnormally high for the amount of discharge flowing from the outfall of the principal spillway. Further investigation revealed a plastic garbage can was caught inside the orifice which controls the lake level. This garbage can was removed by the Maintenance and Construction Division during the inspection.

Respectfully submitted,

John W. Koenig
John W. Koenig
PL566 Coordinator
Fairfax County

Puller A. Hughes, Jr.
Puller A. Hughes, Jr.
District Conservationist
Soil Conservation Service

JWK/meb

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W. W. Smith, Fairfax County Department of Environmental Management

DEC 10 1977

TO: Distribution List

FROM: John W. Koenig, Chief *gwk*
Storm Drainage Branch
FILE NO: Utilities Planning and Design Division

REFERENCE

Donald Clark, Fairfax County Park Authority
W. W. Smith, Fairfax County Department of Environmental Management
Patrick Scango, Fairfax County Maintenance and Construction Division
John Koenig, Fairfax County Department of Public Works
Puller Hughes, U. S. D. A. Soil Conservation Service
Jim Blodgett, U. S. D. A. Soil Conservation Service

The dam structure appeared to be in good shape with vegetation establishing on the previously bare areas. A vehicle proof barrier had been constructed around the entire perimeter of the dam. The barrier appeared to be functioning well in preventing vehicles from destroying the vegetation on the dam structure. The areas that were previously scarred by such vandalism had been restored with grass germinating on these areas. The entire dam structure had been limed and fertilized in accordance with Soil Conservation Service recommendations given to the County during September, 1977.

1. All of the trash rack bars on the principal spillway riser were in place with no signs of vandalism as had been experienced in prior years.
2. The foundation drains are continuing to produce a very fine iron colored material. This material was present in greater quantities than in previous years. It was recommended that a sample be taken of the material at some later date and analyzed by the Soil Conservation Service.

DAM SITE # 7

In general, the dam appeared to be in good condition. However, the following observations were made:

1. Although the rip rap along a portion of the face of the dam had been replaced, it has thinned out along the center section of the dam. This occurrence is probably due to the children throwing the stones out into the lake. It was recommended that the Soil Conservation Service check the design to determine the necessity for this rip-rap. Since the children continue to throw rip rap out into the lake, it was the consensus of the people involved in the inspection that possibly the rip rap could be replaced at a less frequent interval of say every ten years. This would be contingent upon the Soil Conservation Service analysis of the necessity for the rip rap and their corresponding recommendation for replacement.
2. The foundation drain outlet pipes had some algae inside causing a slight backup of water at the invert. It is recommended that they be checked and cleaned if necessary to prevent water from ponding inside the pipes.
3. It is suggested that soil samples be taken on both faces of the dam and lime and fertilizer be applied as per the results of the soil samples.

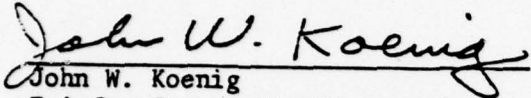
DAM SITE # 4

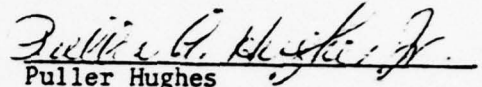
The dam appeared in fairly good shape considering it was completed last July, 1977. The vegetation is well established in some areas and sparse in others, probably due to the application of the grass seed during July, 1977. The lake itself is empty and will not be filled until late spring, 1978, after the County has completed the deepening modifications to the permanent pool. The principal spillway and outlet works were clean and functioning well. The following observations and recommendations were made:

1. It is recommended that the Soil Conservation Service, in conjunction with the County, conduct another inspection of the vegetation during early spring, 1978, and at that time determine the additional vegetation requirements to be installed by the Soil Conservation Service.
2. The eastern upstream abutment of the dam was experiencing gully erosion. It is recommended this be repaired by the Soil Conservation Service.
3. The western downstream abutment was also experiencing erosion and should be repaired by the Soil Conservation Service.
4. The rip rap outfall ditch from the terminal end of Chatsworth Court was experiencing erosion and should be corrected by the Soil Conservation Service.

5. Erosion was being experienced on the steep slope coming down from the peninsula on the western finger of the lake. It is recommended that this matter be further looked into and corrected by the Soil Conservation Service.

Respectfully submitted:


John W. Koenig
Fairfax County PL 566 Coordinator


Puller Hughes
District Conservationist
Soil Conservation Service

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J. Sunday/J. Koenig, Fairfax County Department of Public Works

1/19/78

FAIRFAX COUNTY, VIRGINIA

P. Hughes
copy to AC 12/19/78
H

MEMORANDUM

TO: Distribution DATE December 8, 1978

FROM: John W. Koenig, Chief
Storm Drainage Branch

FILE NO: Utilities Planning and Design Division
Department of Public Works

SUBJECT: PL 566 Pohick Creek Annual Operation and Maintenance Inspection

REFERENCE

The annual PL 566 dam inspection for Structures 8, 7, and 4 was conducted on October 26, 1978. Inspection was made jointly by the appropriate representatives of Fairfax County, the U.S.D.A. Soil Conservation Service, the Northern Virginia Soil and Water Conservation District, and the Fairfax County Park Authority. The following representatives were present:

Puller Hughes, Soil Conservation Service

Robert Keating, Northern Virginia Soil and Water Conservation District

Mark Decot, Northern Virginia Soil and Water Conservation District

William W. Smith, Department of Environmental Management

Harold Williamson, Department of Public Works

William Blair, Department of Public Works, Maintenance & Construction Div.

Robert Jones, Department of Public Works, Maintenance & Construction Div.

Raymond Marks, Department of Public Works, Office of Capital Facilities

John Koenig, Department of Public Works, Storm Drainage Branch

Donald Lederer, Fairfax County Park Authority

Robert Royce, Fairfax County Park Authority

DAM SITE #8

The dam structure appeared to be in good condition with good vegetation established on the dam and emergency spillway. All vehicular traffic on the dam and emergency spillway has been eliminated due to the effectiveness of the vehicle barrier. The downstream toe of the dam was dry and showed no signs of water seepage or soft spots. The principal spillway riser appeared sound with all the trash rack bars in place. The discharge pipe for the principal spillway appeared in good condition as well as the downstream plunge pool.

The southernmost foundation drain was not discharging any water. The northernmost foundation drain was continuing to produce water with a very fine iron colored material. The material appeared to be the same as has been discharging from this toe drain for the last two years. It is recommended that the SCS continue to monitor and analyze this discharge.

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ARMY ENGINEERING DISTRICT NORFOLK VA
NATIONAL DAM SAFETY PROGRAM. POHICK CREEK NUMBER 7 (INVENTORY N--ETC(U)
SEP 79 J A WALSH

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DDC

December 8, 1978

TO: File

SUBJECT: PL 566 Pohick Creek Annual Operation and Maintenance Inspection

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DAM SITE #7

In general, the dam appeared to be in good condition as has been noted in previous dam inspection reports. The vegetation on the dam is well established. The downstream toe of the dam was dry and showed no signs of seepage. It is recommended that soil samples be taken on the back slope of the dam. It appears from the incoming vegetation that an application on lime may be needed.

The rip-rap along the center portion of the front face of the dam has thinned out slightly more than was reported in the last annual dam inspection, although no apparent erosion has occurred from the wave action. The Soil Conservation Service reviewed the necessity for the rip-rap and determined that the loss of this stone would not effect the structural integrity of the dam. As such, it is felt that there is no need to replace the rip-rap.

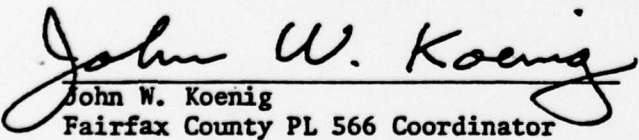
The impact basin had accumulated a minor amount of rocks and debris. It is recommended that the County remove this material.

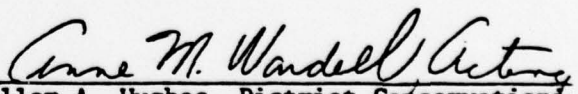
DAM SITE #4

The dam appeared to be in good condition with the vegetation establishing itself on the dam. It was noted by Mr. Puller Hughes, that an application of lime is required as shown by recent soil tests which determined existing Ph of between 4.7 and 4.9. Mr. Hughes stated a letter from SCS to the County would be forthcoming specifying the lime requirements to be applied by the County.

The minor gully erosion that is being experienced at the eastern abutment of the dam as well as at other locations around the dam site still needs correction by the SCS. In a meeting between the County and the SCS subsequent to the dam inspection, it was agreed that the SCS would install remedial erosion protection for these areas during the Spring of 1979. This work will be accomplished with the lake filled. It is anticipated that the gate valve on the principal spillway riser will be closed during January, 1979, and the lake filled.

RESPECTFULLY SUBMITTED:


John W. Koenig
Fairfax County PL 566 Coordinator


Puller A. Hughes, District Conservation
Soil Conservation Service

JWK/lc

December 8, 1978

TO: Distribution

SUBJECT: PL 566 Pohick Creek Annual Operation and Maintenance Inspection

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Utilities Planning and Design Division

William W. Smith
Department of Environmental Management

APPENDIX VII

REFERENCES

REFERENCES

1. Recommended Guidelines for Safety Inspection of Dams, Office of the Chief of Engineers, Department of the Army, Washington, D.C.
2. HEC-1DB Flood Hydrograph Package (Hydrologic Engineering Center, U.S. Army Corps of Engineers, September 1978).
3. "Seasonal Variation of the Probable Maximum Precipitation East of the 105th Meridian", Hydrometeorological Report No. 33, (U.S. Weather Bureau, April 1956).