DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1715
BALTIMORE, MARYLAND 21203

REPLY TO ATTENTION OF:

NABPL

27 February 1976

SUBJECT: Raystown Lake - Master Plan, Design Memorandum No. 16

Division Engineer, North Atlantic
ATTN: NADPL-R

1. The inclosed Master Plan, Design Memorandum No. 16, Raystown Lake, Pennsylvania, has been prepared in accordance with the provisions of ER 1110-2-1150 and ER 1120-2-400 and is submitted for review and approval.

2. As required by the provisions of paragraph 20, ER 1110-2-1150, five copies of the Master Plan are furnished for OCE and two for NAD.

FOR THE DISTRICT ENGINEER:

WILLIAM E. TRIESCHMAN, Jr.
Chief, Planning Division

1 Incl
as (cys 1 thru 7)

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

NADPL-R (27 Feb 76) 1st Ind
SUBJECT: Raystown Lake - Master Plan, Design Memorandum No. 16

DA, North Atlantic Division, Corps of Engineers, 90 Church Street,
New York, N.Y. 10007 21 April 1976

TO: HQDA (DAEN-CWO-R)

1. In accordance with ER 1110-2-1150, the Raystown Lake Master Plan is forwarded, in quintuplicate, for approval subject to the comments below:

a. Page 1-2, Section 1:06:05. P.L. 93-291, 24 May 1974, an Act to amend the Act of 27 June 1960 (74 Stat. 220), relating to the preservation of historical and archeological data should also be mentioned and discussed here.

b. Page 4-1. Section 4. The coordination with the Federal Power Commission regarding the acquisition of the Hawns Bridge Hydroelectric Plant and the Saxton Stream Electric Plant and Nuclear Facility for the Raystown project should be included.

c. Page 7-13, para. 7:03:04, item 4. Cloyd Rhodes House. The fact that this historic structures is located adjacent to the boat ramp in the initial development in the Rothrock recreation area could be discussed in this paragraph. Also some hint as to the possible disposition of this house should be made.

d. Page 9-37, Section 9:26 Facilities for the Elderly and Handicapped. Additional emphasis should be made in this section regarding proper gradients for wheelchair travel to essential facilities, such as comfort stations. Also ETL 1110-3-244, 12 Nov 1975, and ER 1110-2-102, 1 Aug 1966, should be referenced.

e. Page 12-6, Table 12:1. The Resource Management Appendix should fully support proposed staffing shown in Table 12:1. So many full time staff members may be difficult to justify if recreation areas are to be closed for the winter. Discuss fully in the Appendix just what staff will be responsible for during off peak recreation seasons and if such duties are commensurate with their grade and position.

f. Plate 16-37 Rothrock Recreation Area. It should be indicated more clearly on this drawing that the head gate valve house shown on the Texas Eastern Gas Transmission Corporation pipeline is a structur pertinent to that company's operation and not part of the recreation development.

g. Plate 16-37, Rothrock Recreation Area. The sewage treatment plant located in the future development area is indicated on this drawing as initial development. However, the extent of the gravity and force sanitary sewer mains to be installed initially is not readily discernable.

h. Plate 16-48. The first floor plan could be improved by reduction of the amount of corridor length. Specifically, the left wall of the checking room should be moved to the pier, and the top wall moved coincident with the women's locker room. The space presently occupied by corridors could then be overhung, sheltered outdoor area. Additionally, there exists the problem of not being able to remove equipment from the Mechanical Equipment room below. The latter problem can be overcome by providing a floor door in the space previously occupied by corridors, with removal of equipment by hoist.

2. Reference is made to NAD Form 802, Baltimore District, February 1976. The inclusion of section12 through 16 in the Master Plan does not abrogate the District's responsibility for preparing and submitting to this office for approval, Appendices A through E required by the ER 1130-2-400. Appendix A should be submitted no later than one year from the date of this indorsement and Appendices B through E in the 4th quarter of FY 77, as scheduled on the form referenced above.

FOR THE DIVISION ENGINEER:

1 Incl (cys 1 thru 7)
2 cys wd

HERBERT HOWARD
Chief, Planning Division

DAEN-CWO-R (27 Feb 76) 2nd Ind
SUBJECT: Raystown Lake Master Plan, Design Memorandum No. 16

DA, Office of the Chief of Engineers, Washington, D.C. 20314 15 July 76

TO: Division Engineer, North Atlantic
ATTN: NADPL-R

1. The Master Plan for Raystown Lake, Pennsylvania is approved subject to Division comments and the following additional comments:

a. Page 1-1, Paragraph 1:03:01. Mitigation is defined as action taken to lessen or reduce the adverse impacts of a project on various types of resources. Mitigation is however a project obligation not a project purpose. It is important that the concept of mitigation be distinguished from project purposes and clarified in this paragraph.

b. Pages 6-33 thru 6-60, Paragraph 6:04:04. The theoretical dissertation on bacteriology and it's association with standards of water quality and lake ecosystems although valuable knowledge have no useful place in the Master Plan. This information should be removed or presented in such a manner as to be useful from a operational standpoint.

c. Page 7-17, Paragraph 7:05:01. This paragraph states that the Raystown "area has relatively few lakes." This is not altogether true. Only a cursory review reveals a total of twenty-two Corps lakes within 200 miles of Raystown. Ten of these Corps lakes within a 100 mile radius reported a collective visitation of approximately 4,100,000 in 1975. None of these lakes are shown on Plate 16-1 nor Plate 16-23 nor are they accounted for in any of the statistical information presented in this Master Plan. This seriously detracts from the creditability of the Master Plan especially in light of the regional significance of Raystown Lake found on page 5-8 in the last subparagraph of paragraph 5:06.

d. Page 7-43 thru 7-45, Paragraph 7:09. Vehicle access from PA 26 as presented in this Master Plan is grossly inadequate and unsafe to support the "tremendous increase in the amount of traffic in the near future". Authorization for this project, Public Law 87-874 and House Document No. 565, 87th Congress, clearly included recreation as a project purpose. It is under this authority the recommendations for recreation access may be submitted to OCE for approval. Therefore it is strongly suggested that the District prepare a supplemental report to this Master Plan recommending acquisition of a permanent road right-of-way easement along the existing legislative roads or other economical and beneficial alignment to serve as access to the recreation areas. It is important to note that a perpetual right-of-way interest is considered project lands with regard to the expenditure of appropriated project funds, just as are other fee and easement lands of the project. Within limitations specified by the right-of-way easement, roadway improvements may be constructed

and maintained as deemed necessary by the Corps for project purposes. Report preparation and submittal should be expedited so that funding and construction of access may proceed commensurate with other facilities in order to provide the public a complete and safe recreational area.

e. Page 9-29, Paragraph 9:16. The "Overlook Structures" are scheduled to "provide safe shelter during electrical storms". However, if the details shown on Plate 16-49 are factual there will be little protection afforded the user unless he positions himself under the cantilevered deck. Either the roof should be changed or the statement removed from this paragraph.

f. Page 12-1, Paragraph 12:01. This paragraph indicates that the Corps is not directly involved in management actions such as "the thinning of forest stands". This is not infact true. Public Law 86-717 approved 6 September 1960 provides for the protection and improvement of forest lands at Corps projects. Paragraph 5c of ER1130-2-400 establishes the requirements of this public law as the policy of the Secretary of the Army and the Chief of Engineers. Therefore the Corps is directly involved and has been since 1960. Paragraph 12:10 states that PennDER "will not be directly involved in the administration of any of these lands". However, paragraph 14:01 states that "84 percent (or 18,000 acres) of the non-flooded project area will either be forested or covered with brush". This indicates a distinct need for "direct involvement". Also this paragraph indicates that the District personnel will only supervise and coordinate the preparation of the appendicies. It is the intent of ER 1130-2-400 that the appendicies to the Master Plan be prepared by project personnel and coordinated with the operating agency, not the reverse.

g. Section 15. Water control manipulation at reservoirs is a key component of sound and effective fishery management. Recent research by the National Reservoir Research Center USF & WS Fayetteville, Arkansas shows that holding flood water can actually be beneficial for increased lake productivity as opposed to the practice of lowering the pool as soon as flood conditions permit as indicated in paragraph 2:03:04. The management concept should be considered and worked into the management plan for Raystown Lake if at all feasible.

h. General. In addition to other concerns it is a function of project master planning to develop a conceptually complete sign program. Considering that the majority of visitation is to come from the second and third market areas. A regional sign program must be developed for public information and direction. The location, size, style and wording should be included in such an analysis and should be in line with the Division sign manual. The planning of such a program will require coordination with the State and local highway commissions who should be encouraged and willing to provide project directional signs at their expense.

i. General. Scientific nomenclature should be used in association with common names when reference is made to flora and fauna to relieve any confusion associated with colloquialism.

DAEN-CWO-R (27 Feb 76) 2nd Ind 15 Jul 76
SUBJECT: Raystown Lake Master Plan, Design Memorandum No. 16

2. In the future prior to submitting the Master Plan all comments and issues should be resolved to the extent possible between the Division and District during the draft stage of master plan preparation. A Master Plan with even two pages of comments of the nature and magnitude of those submitted in addition to those expressed herein seriously detract from its stated purpose and usefulness. It should be noted that indorsements do not necessarily become attached to all outstanding copies which often leads to misunderstandings within and between Corps elements and other agencies.

FOR THE CHIEF OF ENGINEERS:

wd all incl

FOR: GEORGE BRAZIER
Chief, Construction-Operations Division
Directorate of Civil Works

NADPL-R (27 Feb 76) 3rd Ind
SUBJECT: Raystown Lake - Master Plan, Design Memorandum No. 16

DA, North Atlantic Division, Corps of Engineers, 90 Church Street,
New York, N.Y. 10007 12 August 1976

TO: District Engineer, Baltimore, Attn: NABPL-E

1. Forwarded, noting approval, for your information and the necessary modifications and revisions. Also attached are additional comments from NADEN dated 26 May 1976, for your consideration.

2. In regard to paragraphs 1(d) and (f) of the previous indorsement, the following clarification is furnished.

a. Paragraph 1(d). Based on conversations with the District it is our understanding that the U.S. Department of Transportation recently entered into an agreement with the State of Pennsylvania for the improvement of the access road discussed in the referenced comments. It is further understood that USDOT is providing 1.2 million and the state $500,000 in FY 76 funds for initial work on this access work. If it is correct your response to the referenced comment should discuss this development rather than prepare the requested supplemental report.

b. Paragraph 1(f). If project lands are to be leased to State agencies for purposes of forest, fish and wildlife management, plans for management should be developed by those agencies and coordinated with the Corps. If the District plans to retain and manage these lands, appendices (management plans) to the Master Plan, should be prepared by project personnel and coordinated with the pertinent State agency.

3. If additional guidance is required by the District before answering any of the comments contact should be made with A. W. Remling of this office at 212-264-7814.

FOR THE DIVISION ENGINEER:

Herbert Howard

1 Incl
a/s

HERBERT HOWARD
Chief, Planning Division

NABPL (27 Feb 76) 4th Ind
SUBJECT: Raystown Lake - Master Plan, Design Memorandum No. 16

DA, Baltimore District, Corps of Engineers, P. O. Box 1715, Baltimore, Maryland 21203 4 February 1977

TO: Division Engineer, North Atlantic, ATTN: NADPL-R

1. Approval of the subject Master Plan, subject to comments, is noted.

2. The following actions have been taken on comments contained in the preceding indorsements.

a. 1st Indorsement.

(1) Subparagraph 1a. Noted. Discussion of P.L. 93-291 is presented in new paragraph 1:06:06.

(2) Subparagraph 1b. Coordination with the Federal Power Commission was not required for the acquisition of the Hawns Bridge facility nor the Saxton electric plant and nuclear facility. Both the steam electric plant and the nuclear facility were deactivated and abandoned and acquisition was limited to flowage easements. The U.S. Atomic Energy Commission was consulted regarding any potential nuclear hazards which might result from future flooding of the nuclear site. This coordination is presented in paragraph 4:02:08.

(3) Subparagraph 1c. Noted. Information as to location and future disposition is included in paragraph 7:03:04.

(4) Subparagraph 1d. Noted. Paragraphs 9:26:01 and 9:26:03 have been revised to include reference to ER 1110-1-102 and EM 1110-1-103. Maximum gradients for paths for the handicapped have been added.

(5) Subparagraph 1e. Noted.

(6) Subparagraph 1g. Plate 16-37 has been revised.

(7) Subparagraph 1h. Plate 16-48 has been revised. In moving the wall as suggested, the layout of the women's dressing room was reversed and the entrance area of the men's dressing room reduced. The outside wall has been eliminated and is shown as open, with wall above. A floor door has been shown for access to mechanical equipment.

(8) Paragraph 2. Noted. Appendices will be submitted as directed.

b. 2nd Indorsement.

(1) Subparagraph 1a. Noted. Paragraph 1:03:01 has been revised in accordance with the comment.

(2) Subparagraph 1b. This information has been deleted as recommended.

(3) Subparagraph 1c. Noted. Data concerning Corps' lake projects within a 100-mile radius of Raystown Lake are presented on table 7-7 and brief discussion included in paragraph 7:07.

(4) Subparagraph 1d. This District is aware of the inadequate recreational access to the Seven Points Recreation area. The Pennsylvania Department of Environmental Resources recently advised that a memorandum of agreement has been entered into between that agency and the Federal Highway Administration for improvements to LR 31037, the primary access road from Route 26 to Seven Points. This agreement provides for a contribution of approximately $0.5 million by PennDER and $1.212 million by the FHWA. It is understood that the Pennsylvania Department of Transportation is presently designing this improvement. It is recommended that no action be taken by the Corps at this time in view of the State and FHWA program. Roads constructed under this program which will serve adjacent property owners as well as for recreational access will be a State maintenance responsibility, including snow removal, and will relieve the District of this responsibility.

(5) Subparagraph 1e. Noted. Statement pertaining to electrical storms has been deleted.

(6) Subparagraph 1f. Noted. Sections 12 and 13 of the Master Plan have been revised to reflect the comments and recommendations in this subparagraph.

(7) Subparagraph 1g. Noted. Paragraph 15:01:04 has been revised to reflect this management concept and the concept will be considered and incorporated where feasible into the management plan for Raystown Lake.

(8) Subparagraph 1h. The need for regional directional signing was recognized by the District and the Pennsylvania Department of Transportation was consulted. Because of the extensive area of the project, the numerous approaches and the large market area, it was recognized that directional signs were required at considerable distance from the project as well as on Route 26, U.S. Route 22 and Route 994 adjacent to the project. PennDOT required that all directional signs be of standard highway design, and that they be constructed and installed by highway forces at Corps' expense. Signs were erected along Route 26, Route 994, and U.S. Route 22 to direct visitors to the various sites, such as the dam overlook, launching areas and similar points. A regional signing program was not developed, and signing was confined to the immediate area of and within the project limits.

(9) Subparagraph 1i. Noted. Tables 6:9, 6:10 and 6:11 have been added to provide scientific nomenclature.

(10) Paragraph 2. Noted.

c. 3rd Indorsement.

(1) Subparagraph 2a. See paragraph 2b(4) above.

(2) Subparagraph 2b. See paragraph 2b(6) above.

d. NADEN Comments dated 26 May 1976.

(1) Paragraph 1. Paragraph 2:03:06 has been revised to alert operating personnel to the problems which could arise from future development in the downstream flood plain and to report such activities to the District for appropriate action. The Master Plan, which is concerned primarily with the management, development and enhancement of project lands and immediate surroundings, is not considered to be the appropriate document in which to develop a plan for the encouragement of flood plain zoning by local governments.

(2) Paragraph 2. Paragraph 2:03:07 has been revised to reflect the NAD comments.

(3) Paragraph 3. Noted and necessary corrections made.

(4) Paragraph 4. Noted. Paragraph 9:11:01 has been revised. It must be recognized that if buildings and similar structures are to adequately serve the public, they must be located as close to the shoreline as possible and, where necessary, be constructed to withstand periodic flooding without undue damage.

(5) Paragraph 5. Noted and revised accordingly.

(6) Paragraph 6. The Seven Points wastewater treatment facility has been completed and is in operation. Construction of the Rothrock treatment facility is underway with similar treatment plants in other areas scheduled for future development. All facilities are designed to utilize air for the extended aeration activated sludge process. The small size of these plants does not justify the increased cost of equipment and maintenance that would be required for a pure oxygen system. As indicated in paragraph 5.2.7 on page 5-15 of the Environmental Protection Agency's "Process Design Manual for Upgrading Existing Wastewater Treatment Plants" (Oct 1974), a disadvantage of the pure oxygen system is increased complexity of operation of both oxygen generation and dissolution system.

NABPL (27 Feb 76) 4th Ind 4 February 1977
SUBJECT: Raystown Lake - Master Plan, Design Memorandum No. 16

(7) Paragraph 7

(a) The Seven Points wastewater treatment facility is presently discharging treated effluent to the lake while the Rothrock facility, now being constructed, and future plants are scheduled to do the same. Discharge of effluent to the river just below the dam is not justified due to excessive distances and adverse topography.

(b) The question of land treatment for the Raystown wastewater treatment facilities was addressed in a Corps of Engineers' survey, EC 1110-2-141, 20 July 1973, which was conducted to determine the availability of civil works sites for construction of on-the-land wastewater treatment systems. The conclusion reached in this survey was that land disposal was not feasible for the Raystown project due to steep slopes and poor soil characteristics.

(c) When construction of the Rothrock water supply system is complete, lake water will be utilized as the source of supply. It is agreed that continuing investigation and testing should be accomplished to determine that the lake supply will meet U.S. Public Health Service drinking water quality standards (P.L. 93-523, Safe Drinking Water Standards, December 1975) and the effect the operation of wastewater treatment plants will have on water quality.

3. Revised pages are inclosed for incorporation in Master Plans on file in NAD and OCE.

FOR THE DISTRICT ENGINEER:

WILLIAM E. TRIESCHMAN, Jr.
Chief, Planning Division

2 Incl
Added 1 incl
3. Rev. pages (7 cys)

NADPL-R (27 Feb 76) 5th Ind
SUBJECT: Raystown Lake - Master Plan, Design Memorandum No. 16

DA, North Atlantic Division, Corps of Engineers, 90 Church Street, New York, New York 10007 14 March 1977

TO: HQDA (DAEN-CWO-R)

1. Inclosed in quintuplicate are revised pages for the subject Master Plan for insertion into copies in your office.

2. The District actions taken on comments contained in the previous indorsements are satisfactory to this office and your concurrence is requested.

FOR THE DIVISION ENGINEER:

HERBERT HOWARD
Chief, Planning Division

2 Incls
2. n/c
3. Rev. pages (5 cys)

DAEN-CWO-R (NABPL 27 Feb 76) 6th Ind
SUBJECT: Raystown Lake - Master Plan, Design Memorandum No. 16

DA, Office of the Chief of Engineers, Washington, D.C. 20314

TO: Division Engineer, North Atlantic

The revised pages of the subject Master Plan are approved as submitted.

FOR THE CHIEF OF ENGINEERS:

wd all incls

GEORGE BRAZIER
Chief, Construction-Operations Division
Directorate of Civil Works

NADPL-R (27 Feb 76) 7th Ind
SUBJECT: Raystown Lake - Master Plan, Design Memorandum No. 16

DA, North Atlantic Division, Corps of Engineers, 90 Church Street, New York, New York 10007 25 March 1977

TO: District Engineer, Baltimore, ATTN: NABPL

The preceding, undated, indorsement is forwarded for your information and continuance of action.

HERBERT HOWARD
Chief, Planning Division

26 May 1976

RAYSTOWN LAKE MASTER PLAN,
DESIGN MEMORANDUM NO. 16

1. Paragraph 2:03:06, Lake Releases: Mention is made of possible restrictions if structures are built in the downstream floodplain. A plan for actively encouraging local governments in the downstream area of the dam to institute floodplain zoning so as not to create future restrictions for dam releases should be formulated and presented.

2. Paragraph 2:03:07, Water Regulation Effects: This paragraph contains several errors. The maximum pool elevation of 821.5 ft. MSL will not provide "flood storage for 17.5 inches of runoff." The recreation pool at 786.0 ft. MSL already contains 10.04 inches of runoff; actual storage at 821.5 ft. MSL is 17.01 inches of runoff, which includes surcharge, leaving only 6.97 inches for flood storage. The comparative percentage stated for other flood runoffs are therefore erroneous and misleading. The "maximum pool level of 821.5 ft. MSL" refers to the elevation reached during the spillway design flood; the "maximum flood storage pool" with "an average recurrence frequency interval of about 300 years" should be properly defined.

3. Page 2-10: The penultinate sentence on this page is in error. The emergency spillway will not contain 762,000 acre-ft. of floodwater, but only 248,000 acre-ft. of floodwater above a 514,000 acre-ft. recreation pool, which is equivalent to only 4.84 inches of runoff, and not 14.88 inches of rain.

4. Paragraph 9:11:01: The sentence that "All major buildings.... will be located above elevation 812 (full flood control pool) where feasible" should be reconsidered. Plates 16-34,36, and 40 show various buildings for Concessionaire Development located below the 812 ft. MSL elevation. This means that general stores, restaurants, administration, dry storage, and other buildings, with their contents, will eventually be inundated at some point in time. These buildings should either be located above the flood control pool, flood-proofed, or of raised construction to avoid the certain flood damages which will occur in the future if these structures are built within the flood control pool.

5. Paragraph 9:06:02: The end of the last sentence of the first paragraph should include "and the conditions of the National Pollutant Discharge Elimination System permit program."

Encl.

6. Paragraph 9:06:09: Consideration should be given to the use of a pure oxygen system for the extended aeration process (See Draft EM 1110-2-161, August 1975, Page 4-194).

7. Paragraph 9:05:03 and 9:06:01: There is a possibility that groundwater sources may be inadequate in quantity or quality to provide public water supply and that surface supply may be utilized by installing lake intake structures. In regards to the above, the practice of discharging treated wastewater into a potential direct use water supply system requires further investigation. Possible additional wastewater treatment processes and or the addition of water purification plants may be required to eliminate possible health risks associated with direct use of lake water for water supply. In light of the above, it may be advantageous to discharge treated effluent into the Raystown Branch below the lake or to utilize land treatment as a method of wastewater treatment. Paragraph 9:06:01 states that there is no need for irrigation water, however, wastewater discharge on forest land has proven to be a viable land treatment method. An investigation should be made to determine whether the lake water will meet USPHS drinking water standards (also see P.L. 93-523 Safe Drinking Water Act, December 1975) as a result of operation of the proposed wastewater treatment plants.

SUSQUEHANNA RIVER BASIN

RAYSTOWN LAKE

RAYSTOWN BRANCH, JUNIATA RIVER
HUNTINGDON AND BEDFORD COUNTIES

PENNSYLVANIA

DESIGN MEMORANDUM NO. 16

MASTER PLAN

PREPARED BY

L. ROBERT KIMBALL, CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA 15931

FOR THE

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND 21203

FEBRUARY 1976

SUSQUEHANNA RIVER BASIN

R A Y S T O W N L A K E

RAYSTOWN BRANCH, JUNIATA RIVER, PENNSYLVANIA

DESIGN MEMORANDUM NO. 16

MASTER PLAN

Related Reports

Design Memorandum Number	Title	Submission Date	Approved by OCE
1	Site Selection	Dec 1964	Apr 1965
2	Hydrology and Hydraulic Analysis	Mar 1965	Jul 1965
3	General Design Memorandum	Aug 1965	Mar 1967
4A	Preliminary Master Plan	Mar 1966	Sep 1966
5A	Real Estate - Part 1	Sep 1966	Mar 1967
5B	Real Estate - Part 2	Oct 1967	Feb 1968
6	Spillway and Outlet Works (Rev.)	Nov 1967	Feb 1968
7	Concrete Aggregates	Apr 1966	May 1966
8	Embankment and Foundation Treatment	Jan 1967	Apr 1967
9	Utility Relocations - Elect. & Tel. Lines	Aug 1967	Nov 1967
10	Cemetery Relocations	Mar 1968	May 1969
11	Relocations-Highway-(Route 994)	May 1967	Aug 1967
12	Relocations-Highway-(LR 31059)	May 1969	Oct 1969
13	Utility Relocations - Pipelines	Sep 1967	Dec 1967
14	Public Use Plan	Jan 1969	Sep 1969
15	Sedimentation Ranges and Investigations	Jun 1970	July 1970
16	Master Plan	Feb 1976	July 1976

Revisions		
Date	New Pages or Drawings	Date Approved by OCE
R-1, Feb 77	Delete pp: 6-33 thru 6-68; 12-1 thru 12-5. Rev. pps. a, 2, 4, 8,9,1-1,1-3.2-7,2-8,2-10,4-2, 6-33 to 6-46,7-13,7-23,7-42a, 9-9,9-20,9-29,9-37,12-1 thru 12-3,13-4,15-2 and plates 16-37 and 16-48	

*R-1, Feb 77

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1: INTRODUCTION

SECTION 1: INTRODUCTION

1:01 PROJECT AUTHORIZATION: GENERAL

Raystown Lake comprises one unit in the plan for the control, development, and utilization of the water and water-related resources of the Susquehanna River Basin.

1:02 AUTHORIZATION OF RAYSTOWN LAKE

The Raystown Lake Project was authorized by the Flood Control Act of 1962 (P.L. 87-874), in accordance with a report entitled House Document No. 565, 87th Congress, 2nd session. The authorizing act has no requirement for local participation. This is fully documented in D.M. 3, paragraph B-3, page B-1. (2nd ind. ENGCW-OM, 27 July 1966 to ENGCW-O let. dated 6 January 1966, subject "Raystown Reservoir").

1:03 PROJECT PURPOSES

* 1:03:01 PURPOSES

The purposes of the project are to provide flood control, general recreation and enhancement of downstream fisheries through maintenance of minimum flows. In addition, the authorizing act prescribed the acquisition of additional lands to mitigate the loss of wildlife habitat resulting from the project. These lands will be managed by the Pennsylvania Game Commission.

1:03:02 ECONOMIC BENEFITS

Average annual benefits to be derived from all aspects of the project for a 100 year economic analysis period based on 3 1/8% interest rate, July 1974 price levels, are estimated as follows:

Flood Control	$1,760,000
Recreation*	2,160,000
Enhanced Fishery	102,000

1:04 MASTER PLAN PURPOSES

The Master Plan describes how project lands, water,

*Recreation Value of $1.25/day.

forests, and other resources will be conserved, enhanced, developed, managed, and used in the public interest throughout the life of the project. This Master Plan provides guidelines for development, schedules for construction, and cost estimates for the project.

1:05 PRIOR PERTINENT PROJECT REPORTS

Title	Submission Date
Environmental Impact Statement	March, 1973
Definite Project Report, published as House Document No. 565, 87th Congress	1961
Report of U.S. Fish & Wildlife Service, U.S. Dept. of Interior, Appendix to G.D.M. 3	1966
D.M. No. 4a, Preliminary Master Plan	March, 1966
D.M. No. 14, Public Use Plan	January, 1969

1:06 APPLICABILITY OF SELECTED PUBLIC LAWS

1:06:01 PUBLIC LAW 87-874, FLOOD CONTROL ACT OF 1962

This act authorizes legislation and also authorizes assumption of the separable cost for recreational development plus the joint project costs allocated to this function. Thus, it relieves local interests of any requirement that they participate in the cost of the project in relation to recreation.

1:06:02 PUBLIC LAW 89-72, THE FEDERAL WATER PROJECT RECREATION ACT

This project is in Category C (projects funded for advance engineering and design prior to or during FY 1966 (1962 Act type: recreation specifically authorized) as set forth in ER 1120-2-404.

1:06:03 PUBLIC LAW 85-624, THE FISH AND WILDLIFE COORDINATION ACT

The U.S. Fish and Wildlife Service, in its report of 14 March 1961, recommended the acquisition of 3,500 acres to mitigate the loss of wildlife habitat resulting from the project. This recommendation is contained in the project document, House Document No. 565. A revised report by the U.S. Fish and Wildlife Service dated 3 June 1965 and included in the General Design Memorandum, D.M. No. 3, reduced the total mitigation lands required and designated the approximate area recommended for this purpose.

1:06:04 PUBLIC LAW 89-80, THE WATER RESOURCES PLANNING ACT

The Susquehanna River Basin Commission provides the necessary vehicle for future planning, management and operation of the project for comprehensive water resource management within the Basin.

1:06:05 HISTORIC SITES ACT OF 1935

This act mandates coordination with the National Park Service in regard to investigation and preservation of archaeological sites, buildings and objects. (Amplified by the Act of 27 June 1960, 74 Stat. 220).

* 1:06:06 PUBLIC LAW 93-291, ARCHEOLOGICAL AND HISTORIC PRESERVATION ACT OF 1974.

This Act relates to the preservation of historical and archeological data at Federal construction projects. Guidance for implementation of this Public Law is provided by EC 1105-2-37 and TM5-801-1

1:06:07 PUBLIC LAW 89-665, THE NATIONAL HISTORIC PRESERVATION ACT OF 1966.

This act mandates a coordinated review process of civil works projects for potential inclusion of properties in the National Register of Historic Places.

1:06:08 THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969.

This policy act mandates sound environmental planning and analyses of environmental impacts of Federal projects. The final environmental impact statement for Raystown Lake was completed in March 1973.

1:07 SCOPE OF REPORT

1:07:01 DESCRIPTION

A physical plan of development has been prepared consisting of two components, (1) a land and water use component, and (2) a facilities development component.

1:07:02 LAND AND WATER USE

The land and water use component identifies the resources of the project and depicts the relationships of varied land and water uses relative to these resources. It is a zoning and land use allocation plan which contains specific recommendations.

1:07:03 FACILITIES DEVELOPMENT

The facilities development component describes the type and location of physical facilities and programs required to implement the land use component over the life of the project. This component contains generalized site plans for areas showing the most desirable and feasible locations. These recreational aspects will be implemented, through construction and management, by the Corps of Engineers, with selected private concessions for the provision of various suggested marina and lodge facilities. The plan also designates areas to be developed and managed by other agencies for uses such as wildlife mitigation by the Pennsylvania Game Commission, a field laboratory station by Juniata College, and an outdoor education study area by the Huntingdon Area School District.

1:07:04 AREAS FOR SPECIAL EMPHASIS

Areas for special emphasis include geological and archeological interpretation, wildlife study and mitigation, and ecologic and environmental interpretation.

1:08 RAYSTOWN HYDROPOWER STUDY

In response to a resolution adopted by the Committee on Public Works of the U.S. House of Representatives on

11 April 1974, a study is presently under way to determine the advisability of providing hydroelectric power generating facilities in the Raystown Lake Project. This study is scheduled for completion in 1977.

The study will involve analysis of alternatives in terms of compatibility with resource management. Just as there is a physical need for hydropower, there is also a human need for recreation. These needs, and the interaction of the effects of hydropower generation on the lake and river, must ultimately be balanced for the most common good.

2: PROJECT DESCRIPTION

SECTION 2: PROJECT DESCRIPTION

2:01 LOCATION AND ACCESS

2:01:01 MID-ATLANTIC REGIONAL LOCATION

The project is located in the Mid-Atlantic region of the country, in south-central Pennsylvania. By highway routes, it is approximately 245 miles from New York City, NY; 580 miles from Chicago, IL; 160 miles from Washington, DC; and 165 miles from Baltimore, MD (plate 16-1).

2:01:02 COMMONWEALTH OF PENNSYLVANIA LOCATION

The project is in Huntingdon and Bedford Counties. The lake lies northeast-southwest, following the folded mountains of this section of the state. Using the Pennsylvania Department of Transportation map distances by nearest road, the project is 130 miles from Pittsburgh, 95 miles from Harrisburg, 130 miles from Lancaster, and 190 miles from Philadelphia (plates 16-1,-2).

2:01:03 MID-STATE LOCATION

Locally, Raystown Lake is midway between State College in Centre County and Everett in Bedford County. The northern portion of the lake is connected to I-80 (the Keystone Shortway) by 52 miles of PA 26. PA 26 also connects the lake to I-76 (the Pennsylvania Turnpike) 45 miles to the south. Both I-80 and I-76 traverse the state in an east-west direction. The project is 38 miles from Altoona, 38 miles from State College, and 64 miles from Johnstown. Although Everett is 36 miles from the Raystown administration headquarters, it is only about 20 miles from Saxton which is near the southern terminus of the normal recreation pool.

The lake is on the Raystown Branch of the Juniata River in the Susquehanna River Basin. The dam is 5.5 miles upstream of the Branch's confluence with the Juniata River just south of Huntingdon. The northerly terminus

of project land is approximately one mile southeast of the borough of Huntingdon and U.S. 22. The southern end of the recreation lake lies near the borough of Saxton, Bedford County, nineteen miles in a straight line from the dam, or thirty lake miles.

PA 26 is one to three miles west of the lake and parallels it for its length. It connects Huntingdon with Saxton via PA 913, including the intermediate communities of McConnellstown, Hesston, Marklesburg, and Entriken (plates 16-2,-3).

2:01:04 ACCESS

Locally, access to Raystown Lake will be predominantly by legislative and township routes eastward from PA 26. Traveling into the region from the Washington, DC and Baltimore areas, many visitors will follow I-70 to Breezewood, U.S. 30 to Everett, and PA 26 northbound.

Probable access from Harrisburg and east will be via the Pennsylvania Turnpike. Vacationers can first exit at Willow Hill and travel northwest to the PA 994 junction near Orbisonia. However, because of the capacity and alignment of the connecting roads, most visitors are expected to exit at Breezewood, proceed north via U.S. 30 to Everett, and follow PA 26 to the lake. U.S. 22 also provides direct access from the Harrisburg area via PA 26 southward from Huntingdon. Pittsburgh area visitors can reach the lake by several routes: (1) the Pennsylvania Turnpike east to Bedford, and U.S. 30 to Everett, (2) U.S. 30 from Pittsburgh to Everett, and (3) U.S. 22 to Huntingdon and PA 26 south.

Altoona area visitors will probably follow U.S. 22 to the Huntingdon area. An alternate route is PA 36 to Roaring Spring and PA 164 east to PA 26 near Cherrytown.

State College recreationists will probably travel to the project via PA 26 through Huntingdon. Some, however, may follow PA 45 and PA 350 south to Waterstreet, U.S. 22 to Huntingdon, and PA 26 south. Lewistown area visitors will use U.S. 22 (plates 16-2 and 16-3 for above areas).

Legislative routes will provide the main access routes from PA 26 into the project, with township roads being utilized in several areas (plates 16-27 through -33).

The nearby Altoona-Blair County Airport at Martinsburg provides air transportation to the area. It is about 26 miles from the administration area via PA 26, PA 164, and PA 866.

Train transportation via Penn Central is available to Huntingdon from the west through Pittsburgh and from the east through Harrisburg.

2:02 PROJECT DATA

2:02:01 WATERSHED DATA (Table 2:1, pg. 2-6)

The watershed above Raystown Lake dam has a drainage area of 960 square miles. The watershed is about 57 miles long and 35 miles wide at the maximum section. The watershed is bounded by the Allegheny Front on the west, the drainage divide of the Frankstown Branch on the north, the Aughwick Creek divide on the east, and the Potomac River divide on the south. Raystown Lake lies in a long, narrow valley with heavily wooded slopes. Most of the watershed consists of wooded areas (69 percent forest cover) with only small areas of land under cultivation. Development in the basin is limited because of the generally rugged terrain. Most improvements are located in the valleys along stream banks; only a few farms are located on the upper slopes. Major communities in the watershed are Saxton, Everett, and Bedford. Elevations range from 601 feet MSL at the damsite to 2,940 feet MSL on the Allegheny Front. The stream bed slope varies from 5 feet per mile at the damsite to 20 feet per mile in the upper reaches of the watershed. Principal tributaries are Dunning Creek, Cove Creek, Brush Creek, Yellow Creek and Great Trough Creek.

2:03 LAKE DATA (Table 2:2, pg. 2-9)

2:03:01 LAKE SHORELINE

The Raystown Lake shoreline, like the lake, is unique in many respects. Although the lake will be only

thirty miles long on its meandering course following the natural river valley, the shoreline will be approximately 118 miles in length. Much of the actual shore will be inaccessible from land because of the steepness of ground slope at lake elevation. Some of the shore is vertical cliff, a large portion being too steep on which to walk.

James Creek Cove and Woodcock Valley Cove, which are in the game mitigation area (plate 16-30), contain the flattest shore areas of the lake and should provide good fish hatchery areas and a marsh association for wildlife. Hawns Run Cove (plate 16-28), close to the dam, has moderate underwater gradient. Parks Island is in the middle of this cove.

2:03:02 LAKE OPERATION

A complete description of the operation of the lake is contained in Master Manual for Reservoir Regulation, Vol. II, Lower Basin, Appendix E, Raystown Lake, dated July, 1974.

2:03:03 LAKE PURPOSES

Downstream flood reduction and damage alleviation, maintenance of fisheries minimum flow requirements, and augmentation of minimum dependable downstream flows will be accomplished through the regulation of the lake water storage levels. Controls for a lake level sufficient for general outdoor recreation have been established.

2:03:04 LAKE REGULATION

Raystown Lake is a multi-purpose lake with a large storage capacity above the normal lake level of 786 MSL. The lake will be maintained year round as close to this elevation as possible. The lake will not have a fall drawdown lasting over the winter. After flooding occurs, the pool surface will be lowered to elevation 786 MSL as soon as conditions permit. During periods of low inflows, high evaporation losses, or necessary drawdowns when a drop below 786 MSL may occur, the lake will be returned to normal level as quickly as possible whenever inflow rates exceed outflow requirements.

The lake level will be maintained by the use of a warm water outlet with ports at three levels in the center pier of the gated spillway section and a two-bay gated spillway (tainter gates). These warm water outlet ports will permit discharge flexibility to provide flows of proper temperature to safeguard fish life downstream from the dam. The warm water outlet ports will be used for normal water releases. For low pool regulation below elevation 732 MSL, two tandem slide gates in the diversion tunnel will be utilized. These gates will also be operated for downstream temperature control if necessary.

The primary purpose of lake level regulation is to reduce floods at Mount Union, Lewistown, Mifflin, Newport, and other localities on the Juniata River. Pertinent data for the Juniata River below Raystown Branch at principal communities follows in Table 2:1, page 2-6.

When required, the lake can be lowered from full flood control pool level (812 feet MSL) to recreation lake level (786 feet MSL) in seven days. Minimum complete drawdown time from recreation lake level to the top of the permanent stoplogs (622.8 MSL) is 34 days.

2:03:05 LAKE FLOOD CONTROL STORAGE

The storage capacity provided by the lake will also be effective in substantially reducing flood peaks along the lower Susquehanna River downstream from the confluence of the Juniata River with the Susquehanna River at Duncannon. Flows exceeding the capacity of the warm water release system are controlled by operation of the tainter gates. Flood control regulation is based on inflow, lake elevation, and flow in the Juniata River at Mapleton Depot, 11.5 miles downstream from the dam. When the maximum or secondary crest on the main stem is caused by the peak flow of the Susquehanna River above Sunbury, it may be necessary to keep the gates at Raystown Dam closed longer than would be required by conditions on the Juniata River. In scheduling gate operations, full use will be made of the River Forecast Center located in the office of the National Weather Service at Harrisburg, Pennsylvania.

TABLE 2:1 WATERSHED DATA

Watershed Area	Watershed Sizes (sq. mi.)	% controlled by Raystown Dam	Miles from Susquehanna River	Wave Travel Time from Raystown Dam (hours)	Nat. Weather Service Flood Stage	
					Stage ft.	Dis. cfs
Raystown Branch - PA 913 at Saxton	756	0	127.5	-----	17	36,500
Raystown Branch at dam	960	100	96.5	0	n.a.	n.a.
Raystown Branch at Juniata River	963	99.69	91	0.2	17	20,000
Juniata River at Huntingdon	816	0	92	-----	12	20,100
Juniata River above Raystown Branch	988	0	91	0.2	n.a.	n.a.
Juniata River at Mapleton Depot	2,030	47.3	85	2	20	46,700
Juniata River at Lewistown	2,519	38.11	42	10	23	58,400
Juniata River at Newport	3,354	28.62	11	20	22	83,000
Juniata River at Susquehanna	3,409	28.16	0	24		
Susquehanna at Harrisburg	24,100	3.98	0	30	17	339,500

Vol. II, Appendix E, Raystown Lake, July, 1974

* 2:03:06 LAKE RELEASES

Control of releases during periods of high flow and flooding, although serving to reduce flood damages, will also minimize the flushing of the streambed that high water provides. This could lead to alteration of the streambank eccosystem, with shrub and brush species being replaced gradually with larger trees. This modification of plant species could eliminate existing sources of food and cover for wildlife presently found in these shore areas. Stream channels could silt up because of reduced velocity, although most of the sediment load of the Raystown Branch will be trapped and retained in the lake. Conversely, downstream minimum flows of cooler, clear water will be assured, resulting in improved fishery conditions, particularly between the dam and the confluence of the Raystown Branch with the Juniata River (plate 16-27). Tailrace waters are highly oxygenated, and their steady release during the summer months should be beneficial.

If development within the normal flood plain downstream from the dam is not controlled through flood plain zoning or similar restrictions, future operation of the project could be restricted. Several properties at the confluence of the Raystown Branch and the Juniata River are subject to minor flooding when flows in the Raystown Branch exceed 20,000 cfs or 25,000 cfs in the Juniata River. Lands in the flood plain of the Raystown Branch downstream of the dam to immediately above the confluence are in project ownership and development is adequately controlled. Operating personnel will alert the District to any proposed development in the vicinity of the confluence which might tend to restrict future operations.

2:03:07 WATER REGULATION EFFECTS

At the recreation level (786 msl), the lake will cover an area of 8,300 acres and will contain 514,000 acre feet of water. The ungated spillway is at 812 msl, and at this elevation the full flood control pool will reach 37 miles upstream from the dam, cover 10,800 acres, and contain 762,000 acre feet of water. The storage between recreation level and full flood control pool provides 248,000 acre feet of flood control storage, equal to 4.84 inches of runoff from the 960 square mile watershed. The full flood control pool level (812 msl) will be reached or exceeded on the average of once every 80 years. The historical floods of record -- June 1889, March 1936, and June 1972 -- would have reached elevation 813.1, 811.0, and 808.9 msl, respectively.

Surcharge storage between the ungated spillway (812 msl) and the maximum pool level (821.5 msl), reached during the spillway design flood, is 109,000 acre feet or 2.13 inches of runoff.

For more detailed information, see Volume II, Lower Basin, Appendix E, Master Manual for Reservoir Regulation, July 1974.

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Lake operations based on the stated purposes for the lake will have many varied effects. During flood stages, some recreational areas will of necessity be under water. Boat tie-ups will be inundated, and some stands of trees will be flooded. Although the reservoir area was cleared to elevation 789 MSL, the possibility exists that some trees above this elevation may be killed during a long period of inundation. Mud and rock slides, which will occur naturally at or near the recreation lake shore, may take place more frequently with resultant detrimental effects as the flood level rises and recedes. Sediment deltas upstream and in feeder stream areas will extend further into the lake and be larger than normal deltas. Muddy flood waters, during containment, will deposit a layer of silt throughout the lake. Although generally not harmful to the lake bottom, silt at certain times of the year, particularly at fish hatching time, could be very detrimental in the natural hatchery areas.

Excessive drawdowns, necessary to maintain minimum stream flows, could leave boat docks dry and boat tie-ups useless. Fish hatchery areas could be destroyed if drawdowns occurred before or during the hatching season.

Waterfowl nesting and hatching areas could be destroyed by flooding or left exposed to predators by lake drawdowns.

Recreational facilities of such a nature and location, i.e. beaches,
* boat ramps, boat tie-ups, etc., have been designed for a fifteen year frequency drawdown to elevation 775 MSL. Floating equipment
* will be designed to withstand a twenty year flood frequency at ele-
* vation 800 MSL and the fifteen year drawdown to elevation 775 MSL.

Not all drawdown effects will be harmful. Drawdowns will help to control noxious shoreline aquatic plants and to encourage the growth of shore zone grasses.

TABLE 2:2 LAKE DATA

	STORAGE			
	Elevation (m.s.l.)	Volume (Ac. Ft.)	Area (acres)	Runoff (inches)
Top of dam	826.0	925,000	12,200	18.07
Max. pool-design surcharge	821.5	871,000	11,750	17.01
Full flood control pool	812.0	762,000	10,800	14.88
Spillway crest (ungated section)	812.0	762,000	10,800	14.88
Recreation pool	786.0	514,000	8,300	10.04
Gated spillway crest	768.6	382,000	6,770	7.46
Warm water outlet	732.0	186,400	4,090	3.64
Dead storage	622.8	1,000	150	.02

Lake Distances:

Length of maximum pool @ 821.5' m.s.l.	36 miles
Length of flood-control pool @ 812' m.s.l.	34 miles
Length of recreation lake @ 786' m.s.l.	27 miles
Shoreline of recreation lake @ 786' m.s.l.	118 miles

Lands Acquired, Acres:

Dam and lake area	14,845
Public access area	11,625
Downstream area	374
Wildlife mitigation area	2,470
Total project lands	29,314

See plates E-9 and E-16 of Appendix E, Master Manual for Reservoir Regulation, Raystown Lake, for area capacity curves and drawdown storage frequency.

2:04 LAKE OPERATION STRUCTURES

2:04:01 DAM AND SPILLWAYS

Status: The dam and spillways were completed and became fully operational in the fall of 1973. Dedication ceremonies, with then Vice President Gerald Ford as the main speaker, were held June 6, 1974.

Site Location: The dam is located on the Raystown Branch of the Juniata River south of Huntingdon, PA in Juniata Township. The damsite is approximately five and one half miles upstream from the confluence of the Raystown Branch with the Juniata River.

Existing Conditions: The damsite chosen was a natural constriction of the valley. The site was tree covered in hardwood polé timber and mixed stands of Virginia pine (plate 16-13). Existing soil on the site was Calvin shaly silt loam with bedrock at 1 1/2 to 3 1/2 feet (plate 16-6).

Construction: The impervious core, rock fill embankment dam at elevation 826 MSL contains approximately four million cubic yards of fill. The embankment is 1,700 * feet long, 225 feet high, 24 feet wide at the top, and approximately 1,400 feet wide at the base. See D.M. 8, Embankment and Foundation Treatment, for complete construction details. The gated spillway is concrete and has two tainter gates to regulate discharge. There are outlets at various depths designed to release water of different temperatures to temper and cool warm water surface discharges. A flip-bucket for energy dissipation was installed on the spillway chute in lieu of a stilling basin. An outlet tunnel 1,600 feet in length and 18.5 feet in diameter permits drawdown of the lake to elevation 623 MSL. An ungated spillway 1,630 feet in length at elevation 812 MSL serves as the emergency spillway.

* At elevation 812, flood control storage above normal recreation pool (786 msl) is 248,000 acre feet or 4.84 inches of runoff. Elevation 812 MSL has a recurrence interval of 80 years.

2:04:02 HAWNS BRIDGE CAUSEWAY

Status: Hawns Bridge Causeway was completed in the fall of 1973.

Site Location: The Hawns Bridge Causeway is in Juniata Township on the first bend upstream of the dam on the Terrace Mountain side. The site is now called the Hawns Bridge Woods complex (plate 16-28).

Existing Conditions: The causeway site was tree covered in hardwood forest (plate 16-13). The soil is Calvin shaly silt loam with shallow bedrock and coarse fragments (plate 16-6). The site was a low saddle between Terrace Mountain and what would have been an island. Maximum elevation of the bottom of the saddle was 772 MSL. Hawns Road (L.R. 31110) connects the causeway road to PA 829 in Trough Creek Valley to the east.

Construction: The causeway is 220 feet long, 30 feet high, and contains 22,400 cubic yards of fill. It provides a permanent land connection for what would have been a 54-acre island above flood control pool elevation. It has 14,000 cubic yards of dumped rock for erosion prevention. The minimum elevation of the causeway at 801.25 MSL will allow access to Hawns Bridge Woods during a 50-year frequency storm at elevation 800 MSL.

2:04:03 HESSTON DIKE

The Hesston Dike was built to prevent impounded floodwaters from draining through a low point in a railroad cut into the watershed of Crooked Creek.

Status: The Hesston Dike was completed in the summer of 1973.

Site Location: The dike is located in Penn Township on an unnamed branch of James Creek. It is on the divide between James Creek to the southwest and Crooked Creek to the northeast (plate 16-29). Backbone Road (L.R. 31034) passes several hundred feet south of the dike.

Existing Conditions: The dike is on the high point between the two watersheds in a cut of the former Huntingdon and Broad Top Mountain Railroad. The area soil is Ernest silt loam (plate 16-7). The site was open abandoned fields (plate 16-14).

Construction: The compacted earthfill dike is 170 feet long, 15 feet high maximum, and has a top elevation of 826 MSL. It is protected with dumped rock for erosion control.

2:04:04 PA 994

Old PA 994 was flooded by the lake. The new road was built on a new and higher alignment, roughly parallel to the former route.

Status: This relocated highway was completed during the fall of 1973.

Site Location: The highway site is in Lincoln Township. The western end passes through the southern nose of Allegrippis Ridge at Coffee Run and follows the shore line of Raystown Lake southward. It crosses the lake on a bridge and causeway, and parallels Tatmans Run eastward to a connection with the old road (plate 16-31).

Existing Conditions: The roadway location was a hillside along Coffee Run on the west side of the lake. Running parallel to the shore line on the west side, it follows the toe of slope of Allegrippis Ridge. Crossing the lake, it continues along a small ridge south of Tatmans Run. Much of the area was vegetated by hardwood forest or open meadow (plate 16-16). The soils are Calvin shaly silt loam, Albrights silt loam, and Berks shaly silt loam (plate 16-9).

Construction: The roadway is a twenty-four foot wide two lane highway. It has ten to twelve foot paved shoulders. The rock excavation necessary for construction was performed by pre-split blasting, which has formed neat side walls. A two-lane concrete bridge with a pedestrian walkway was built over Coffee Run. See the next item for a description of the causeway.

Proposed Construction: Additional rock bolting may be necessary south of the Coffee Run Bridge across from

the Coffee Run Overlook parking lot. The toe of this slope was undercut during road construction. Some of the Chemung formation rocks have slid on dip slope bedding planes. This area should be watched closely for additional slippage and, if necessary, should be bolted.

2:04:05 PA 994 CAUSEWAY

This causeway was necessitated by the need for a highway crossing the lake. It maintains the access that PA 994 provided from PA 26 in Woodcock Valley to Trough Creek Valley beyond Terrace Mountain.

Status: This causeway was completed during the fall of 1973.

Site Location: The causeway crosses the lake east of Entriken in Lincoln Township. The road follows the eastern base of Allegrippis Ridge and crosses the lake opposite the wind gap in Terrace Mountain (plate 16-31).

Construction: The causeway was built as part of the relocation of PA 994. It is earthfill protected with dumped rock riprap. Bedrock on the west abutment was bolted to maintain stability. The bridge is steel and concrete and has a pedestrian observation walkway on the northern side. The causeway was designed to maintain traffic flow during a 50 year frequency flood.

Proposed Construction: The wide flange guard rail that has been installed should be redesigned to allow pedestrian and wheelchair access to the observation walkway. This could be done as part of highway maintenance.

2:04:06 TROUGH CREEK STATE PARK ACCESS ROAD

This road is covered in detail under the discussion of the proposed Terrace Mountain Parkway in 10:16.

3: CONSTRUCTION PROJECT STATUS

SECTION 3: CONSTRUCTION PROJECTS STATUS

3:01 COMPLETED DEVELOPMENT

The rolled earth rock fill dam, spillways, and outlet tunnel are completed and operational. The overlooks at the dam and Ridenour Overlook above the dam are completed and operational. PennDOT has accepted responsibility for operation and maintenance of relocated PA 994 and the Coffee Run and Entriken Bridge Overlooks adjacent to the PA 994 causeway. The administration building and two maintenance buildings are completed and operational. The reservoir area clearing is completed, and the lake is open to the public.

Part I of Phase I of recreational construction has been completed. This includes Shy Beaver, James Creek, and Snyders Run Boat Ramps; the campers' beach, boat ramp, and four boat tie-ups at the Rothrock Recreation Area; the beach at the Seven Points Recreation Area, and two hike-to/boat-in camps - Putts Camp, formerly Hopewell (plate 16-32), and Nancys Camp, formerly Allegrippis (plate 16-30).

3:02 SCHEDULED COMPLETION DATES

Phase I recreational development is scheduled for 1977. The scheduled recreational development program has been approved as follows:

SITE	PERCENT COMPLETED	PROJECTED COMPLETION DATE	SCHEDULED PROGRAMS
Seven Points Recreation Area (phase 1)	99% *	Feb., 1976	Day use, camping
Rothrock Camping Area (phase 2)	0%	Sept., 1978	Camping; family & groups
Putts Camp/formerly Hopewell Camping Area (phase 1)	100%	operational	Hike-to/ boat-in camping
Nancys Camp/formerly Allegrippis Camping Area (phase 1)	100%	operational	Hike-to/ boat-in camping
Snyders Run Boat Ramp James Creek Boat Ramp Shy Beaver Boat Ramp (phase 1)	100%	operational	Boat launching facilities

* Jan., 1976

4: COORDINATION WITH OTHER AGENCIES

SECTION 4: COORDINATION WITH OTHER AGENCIES

4:01 GENERAL

This section itemizes pertinent public bodies which were contacted during the preconstruction planning stages for review and inputs to the Raystown Lake Master Plan during its formulation. It identifies the interaction and coordination with the Corps of Engineers. A short description follows of various coordination efforts at Raystown Lake. All letters of coordination are displayed as exhibits at the conclusion of this Master Plan.

4:02 FEDERAL AGENCIES

4:02:01 LEGISLATIVE BRANCH

The Honorable Hugh Scott, United States Senator from Pennsylvania, was contacted regarding legislation he had introduced in the U.S. Senate concerning access roads to the project. See Exhibits 1 and 2 in the exhibit of letters of this master plan.

4:02:02 USDA: SOIL CONSERVATION SERVICE

This agency has done soil surveys in Bedford and Huntingdon Counties, parts of which were utilized for this master plan. See Exhibit 3. The agency also advises the Bedford and Huntingdon County Soil and Water Conservation Districts.

4:02:03 U.S. FISH AND WILDLIFE SERVICE

This agency prepared reports on the fishery and wildlife resources related to the Raystown Lake project during the survey and planning stages. These reports are included in appendix F of the Survey Report, June 1961, and in appendix C of the General Design Memorandum, Design Memorandum No. 3, November 1966. These reports were prepared by the USFWS in cooperation with the Pennsylvania Fish and Game Commissions. The USFWS is expected to assist in the preparation of general plans for fish and wildlife management by the Corps and the respective state agencies.

4:02:04 U.S. GEOLOGICAL SURVEY

This agency prepares large scale topographic maps for general use. These maps were adapted for the general map and site plan series plates for the Raystown Master Plan. See plates 16-5 through -18, and 16-27 through -33. The agency also operates stream gages on the Raystown Branch and the Juniata River, and gathered water data found in Section 6:04.

4:02:05 NATIONAL PARK SERVICE

The National Park Service prepared reports on the recreational aspects of the Raystown Lake in the survey and planning stages. These reports are included in appendix E of the Survey Report, June 1961, and in appendix C of the General Design Memorandum, Design Memorandum No. 3, November 1966. This agency also conducted the required archeological investigation of the project area. By Exhibit 4 dated 18 October 1972, this agency advised that salvage archeology had been completed. It should be noted for the record that salvage archeology was done by the Pennsylvania State University, and not the University of Pennsylvania, as stated by Mr. Moore in Exhibit 4.[1] By Exhibit 5 dated 24 April 1973, the agency advised that no reports had been done since before July, 1970.

4:02:06 BUREAU OF OUTDOOR RECREATION

The report of the Bureau of Outdoor Recreation, prepared during the planning stage, is included in appendix C of the General Design Memorandum, Design Memorandum No. 3.

4:02:07 ADVISORY COUNCIL ON HISTORIC PRESERVATION

Coordination with this agency was concerned with the preservation of the Brumbaugh Homestead. Pertinent correspondence is included in Exhibits 6 and 7 in the exhibit.

* 4:02:08 U.S. ATOMIC ENERGY COMMISSION

Coordination with this agency was concerned with potential nuclear contamination resulting from flooding of the abandoned reactor site of the Saxton Nuclear Experimental Corporation by the impoundment. No problem is expected to develop in this regard.

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[1] Vol. 1, 2, & 3, Archeological Investigations of Sheep Rock Shelter, The Pennsylvania State University, 1967, 1968.

4:03 COMMONWEALTH AGENCIES

4:03:01 PENNSYLVANIA DEPT. OF ENVIRONMENTAL RESOURCES

Formerly the Pennsylvania Department of Forests and Waters. This agency is designated by the Pennsylvania Legislature as the state liaison agency for all flood control projects. Continuous coordination was maintained with all state agencies through PennDER during project planning.

4:03:02 PennDER - BUREAU OF FORESTRY

Extensive state forest holdings abut the project and close coordination with state officials is maintained for fire protection, disease control and forest pest management. This agency will cooperate in the management of project forests. See also Sections 13 and 14 of this Master Plan.

4:03:03 PennDER - BUREAU OF STATE PARKS

This bureau is responsible for all state parks, including planning operations. Correspondence relative to their involvement and advice is found in Exhibits 8, 9, 10, 11, 12 and 13. Trough Creek State Park abuts the project and Warriors Path State Park lies just upstream. Continuous coordination in management of these facilities and of the federal project is maintained.

4:03:04 PennDER - BUREAU OF WATER QUALITY MANAGEMENT

This bureau was contacted by letter dated April 24, 1973, Exhibit 14. It is responsible for approval of all sewer and water treatment systems and issuance of bathing beach permits.

4:03:05 PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION

This agency cooperated in the determination of the existence of archeological and historic items within the project area. This resulted in the preservation of the Brumbaugh homestead, which has been determined by the Secretary of the Interior as warranting consideration for inclusion on the National Register of Historic

Places. Pertinent correspondence is included in Exhibits 15 through 21 of this Master Plan.

4:03:06 PENNSYLVANIA FISH COMMISSION

Continuous coordination is maintained with the Commission. The Commission has agreed to accept responsibility for fishery management and for the enforcement of boating laws, rules and regulations. In furtherance of these activities, and pending completion of a General Plan for fish management, a memorandum of understanding has been consummated. A copy of this document is included as Exhibit 23 of this Master Plan.

4:03:07 PENNSYLVANIA GAME COMMISSION

Continuous coordination is maintained with the Game Commission. Pending the completion of a General Plan for Wildlife Management, a memorandum of understanding covering wildlife management and public hunting on project lands has been consummated. A copy of this document is included in Exhibit 24 of this Master Plan.

4:03:08 PENNSYLVANIA TOPOGRAPHIC AND GEOLOGICAL SURVEY

This agency is currently mapping many segments of the geology of the state, including the geology of formations of the Raystown Lake valley. Correspondence with the agency is attached as Exhibits 25 and 26.

4:03:09 PENNSYLVANIA DEPARTMENT OF TRANSPORTATION

Coordination with this agency involved many decisions relative to the revised road pattern of the project area. Major efforts are reported in Design Memoranda 11 and 12, dated May, 1967 and May, 1969. Recent coordination is included in this report as Exhibits 27, 28, and 29.

4:04 COUNTY AND LOCAL AGENCIES

4:04:01 HUNTINGDON COUNTY CONSERVATION DISTRICT

Coordination continues with this organization to assure that conservation practices within the project are

consistent, as far as practicable, with those in the surrounding area. A memorandum of understanding has been prepared and is included as Exhibit 30 of this Master Plan. This agency is advised by USDA, Soil Conservation Service. See 4:02:02.

4:04:02 HUNTINGDON COUNTY HISTORICAL SOCIETY

Discussions are on-going with the Society relative to the management and maintenance of the Brumbaugh Homestead. The Society has expressed an interest in developing the homestead as a county historical museum. In furtherance of this objective, and to assure preservation of this structure in the interim, the Society has accepted a letter agreement for interim use pending final disposition. Pertinent correspondence is included as Exhibit 31 of this Master Plan.

4:04:03 HUNTINGDON COUNTY PLANNING COMMISSION

This agency is responsible for all county-wide planning. Land uses proposed by them were used for D.M. 14 dated September, 1969. Correspondence since then is included as Exhibits 32, 33, and 34.

4:04:04 JUNIATA COLLEGE

Juniata College has an outlease for some project land which it operates as a research field station. The lease is included as Exhibit 37. Other coordination is discussed in Exhibits 35 and 36. See also 8:02:03.6.

4:04:05 HUNTINGDON AREA SCHOOLS

Huntingdon Area Schools have an outlease of project lands for a school nature study laboratory. Coordination with the schools is shown as Exhibits 38 and 39, the outlease as Exhibit 40. See also 8:02:03.7.

5: DEMOGRAPHIC AND ECONOMIC FACTORS INFLUENCING DEVELOPMENT

SECTION 5: DEMOGRAPHIC AND ECONOMIC FACTORS INFLUENCING DEVELOPMENT

5:01 GENERAL

This section of the Raystown Lake Master Plan will discuss regional demographic and economic considerations basically within the primary market area of the project. These factors have been considered in the formulation and delineation of the project Master Plan. Items discussed are general overall area data, the Raystown Lake potential recreation market area (i.e. the geographic region that can reasonably be expected to use and support the project), population, housing, the local economy, and the possible effects of the project on the local economy. See Section 9:02 for anticipated visitation.

5:02 AREA OF INFLUENCE

Raystown Lake will be the largest body of recreation oriented water in central Pennsylvania. The 8,300 acre lake has a supporting land area of 21,000 acres. The project should have a regional influence for general recreation and water related activities, particularly water skiing, boating, swimming, and sailing. There have been three visitation market areas defined - primary, secondary, and tertiary. Due to the nature of generalized census data, the three visitation market areas were defined for data purposes by county groups.

5:03 POPULATION

The population projections shown in tables 5:1 and 5:2 indicate a greater growth for the secondary and tertiary market areas than for the primary market area. This is due to more industry and urbanization in these areas, plus a net in-migration. The primary market area is projected to have a net out-migration, thus further increasing the differences in population between the different areas. The primary area has a smaller population base of only 24% of the secondary area. The primary area also has an older population with less people in child bearing age groups. The primary market

area has a median population age of 29.8, the secondary market area 29.2, and the tertiary area 29.4. In comparison, it is still younger than Pennsylvania as a whole at 30.7, but much older than Maryland at 27.1.

5:04 PRIMARY VISITATION MARKET AREA

The primary visitation market area for recreation opportunities is the surrounding central Pennsylvania region. It is essentially limited by a one-hour driving time, and is a land area of 3,309 square miles. The area consists of Bedford, Blair, Fulton, Huntingdon, and Mifflin Counties, all within Pennsylvania.

The primary area had a 1970 population of 272,861 people, a decrease of .46% from the 1960 census of 274,123 persons. See tables 5:1 and 5:2. Population projections indicate stability or a very moderate increase over the next 20 years. An average of 7.08% of the people in the area are classified as farm families, while 3.3% of Pennsylvania's population is so classified. Rural nonfarm population is 49.4%, as compared to 25.3% for the rest of the state. See table 5:3.

Visitors from the primary area will be able to picnic during the day, boat or fish until late evening, and return home the same night. Recreation demands will include day use and weekend activities, although overnight camping and other overnight facilities will not be in demand by these users as much as by the visitors from the secondary and tertiary areas. The primary area also contains 18 state parks with varying levels of facility development and amenities. See table 7:4 for a list of basic facilities.

Raystown Lake, besides being the largest of the six lakes within this visitation area, will offer a greater variety of recreation types and the largest overall visitor capacity.

5:04:01 METROPOLITAN AREAS

Blair County has the largest single metropolitan urbanized area, the city of Altoona, population 62,385. The borough of Tyrone, with 7,043 persons, is also in Blair

County. Other larger towns in the area are Hollidaysburg in Blair County, Bedford in Bedford County, Huntingdon in Huntingdon County, and Lewistown in Mifflin County.

5:04:02 HOUSING

The 1970 census counted 93,349 dwelling units in the primary market area. Of these, 92,492, or 98%, were year-round housing units. These year round housing units were 79.2% single family units. Owner occupants accounted for 68.7% of all occupied units, with renter occupants accounting for 25.1%. One person households in the primary market area occupied 15.8% of all housing units. 6.2% of all year-round housing units were in transition, either for sale or for rent. The median value of all year-round housing units was $9,560 in 1970. Second home housing units, either seasonal or year-round units, accounted for 6.37% of all units. See table 5:4.

The average median value of houses varies by county from a low of $8,800 in Huntingdon County to a high of $10,200 in Mifflin County. This is considerably lower than the statewide average of $12,500. Some 1,384 housing units must be deducted from this total to account for acquisition for the Raystown Lake project area. This is less than 2% of the total housing supply and many of these, although year-round units, were vacation type dwellings and not occupied year round. In Huntingdon County, of the 13,985 total housing units, 12,363 were occupied year round, or available at the time of the census. Six hundred and one were seasonal or part time occupancy residences, with the majority probably located in the Raystown Lake project area.

Blair County has the largest number of total housing units, 45,122, with a nearly equal number in Mifflin, Huntingdon, and Bedford Counties. Fulton County has the smallest number of housing units, 3,911. See table 5:4.

5:04:03 LABOR MARKET

The Pennsylvania Office of Planning and Development classifies the city of Altoona and the boroughs of Bedford and Huntingdon as separate labor market areas

and groups Mifflin and Juniata Counties into the Lewistown labor market area. Fulton and Franklin Counties are counted in the Chambersburg-Waynesboro market area. Labor commutes freely within and without the periphery of the market area. See table 5:8. There is no highly structured socioeconomic area within the primary labor market area. Family income characteristics in table 5:6 show that nearly 33% of all families in the primary market area had a yearly income exceeding $10,000 in 1970, as compared to a statewide figure of 56% of all families. The median income for the primary market area in 1970 was $7,942, below Pennsylvania's $9,558 and a U.S. median of $9,867.

Historical estimates and projections of employment are shown in table 5:5. Although some industries are expected to either decline or remain stable, others should experience growth. Although white collar jobs are only 30.6% in the primary market area compared to 45.1% statewide, manufacturing and government employment levels are fairly close to statewide averages. Agriculture employment for each county in the primary market area is shown in table 5:7. Unemployment here was higher than the statewide average in 1970, as was the non-worker/worker ratio. See tables 5:5, 5:6, 5:7, and 5:8.

5:04:04 AGRICULTURE

Various agricultural pursuits are an important part of the primary market area's economy. Persons employed in agriculture in 1970 ranged from 10% of Fulton County workers, to 1.68% in Blair, a more industrialized county (table 5:7). This employment is expected to decline in coming years (table 5:5) as individual farms become bigger and more efficient, and as suburban pressures lead to utilization of former farmland for housing and other more highly developed uses.

Farmland occupies 24.75% (819 sq. miles) of all land in the primary market area. This is an area four times larger than all other developed uses, which occupy a combined area of 237 square miles. Forests cover 68.09 percent of the area, or 2,253 square miles. Much of the land classified as forest is farm woodlot, which is either used for timber and wood products for utilization on the farm, or for saw or pulp logs for sale to local industry.

The various types of farms are seen in table 5:10. Of the Pennsylvania total of 71,000 farms, 4,150, or 5.85%, are in the primary market area. These farms accounted for 6.6% of all state livestock production in 1971, a little above average. However, acreage in field crops of all types accounted for 6.41% of Pennsylvania's total, but only 5.70% of the value of production, which is below average. Therefore, the average value of production per farm was $5,923, or .92% behind the statewide average of $5,978.

There were approximately 4,150 farms in 1970 which had a total annual production valued at $52 million, of which $35 million was in dairy products. The only departures from this agricultural pattern are Bedford County, which is ranked among the top ten producers of apples in Pennsylvania, and Mifflin County, which has a high production of poultry. See tables 5:10, 5:11 and 5:12.

5:04:05 WHOLESALE AND RETAIL

There were an estimated 2,932 wholesale and retail establishments in the primary market area, which employed 21,702 persons in 1970 (table 5:5). Estimated value of goods and services in 1972 was $621,600,000 for the wholesale establishments and $38,000,000 for the retail establishments. Estimated wages and salaries paid totaled $56,167,000. Blair County had the largest single amount of sales, paid the largest amount in wages and salaries, and had the largest total number of employees.

5:04:06 MANUFACTURING

In the primary market area, there were a total of 308 manufacturing establishments, employing 44,840 workers. Of these, 43 firms exported products valued at a combined total of $21,013,000. Manufacturing paid total wages and salaries of $203.8 million in 1972, produced a value of production estimated at $802.5 million, with value added estimated at $407,416,000. Again Blair County was by far the leader, accounting for approximately 50% of the wages and salaries paid, value added, and value of production. It also contained over one-third of the total number of establishments and approximately half of the total number of employees.

Mifflin County was economically devastated by Hurricane Agnes in 1972. Mifflin County manufacturing employment was down from 8,083 in 1971 to 6,890 in 1972, a loss of 1,193 jobs, or 14.7%. Wages and salaries were down by $7.4 million to $56.4 million. The value of production slipped from $265.8 million to $214.6 million in 1972.

Meanwhile, Huntingdon County was registering record highs in industrial activity in 1972, with a gain of 19.6% or $4.3 million in wages and salaries paid. Increased business activity occurred in the fields of apparel, glass, and nonclay and refractory products.

Fulton County likewise experienced increased business activity, and wages and salaries were up $720,000 or 20.6% over 1971. The value of production was up 24.6%, or $2.8 million to $13.9 million total.

Fulton County has an interchange of the Pennsylvania Turnpike which accounts for an annual maintenance and construction expenditure of approximately $3.3 million in the county. This expenditure is significant in a county with the geographic size, small population and development level of Fulton.

Blair County had an increase of 3.9% in wages and 29% in the value of production over 1971. Bedford County likewise set new records for wages and salaries in value of production. Wages and salaries were up 5.9% in 1972 to $16 million. The losses in lumbering, printing, and shoe and fabricated metal manufacture were offset by gains in food, apparel, nonelectric machinery and bicycle and tricycle manufacturing. Bedford County also has the advantage of having a Pennsylvania Turnpike interchange located in the county, which accounts for a great deal of service and retail business.

In Huntingdon County, most of the manufacturing is concentrated in Huntingdon Borough and Smithfield Township. Fulton County industry is concentrated in McConnellsburg, and most of Blair County industry is in Altoona, Hollidaysburg and Tyrone. Mifflin County industry is concentrated in or around Lewistown.

No two counties are identical in their industrial diversification or type of industry. Agriculture and

forestry show a slight expected decrease; wholesale trade a decrease; and construction, government services, and manufacturing an expected increase in employment and production over the next few decades. See tables 5:5, 5:6, and 5:8.

5:04:07 PROJECT ECONOMIC OPPORTUNITIES

Visitors to Raystown Lake will require more goods and services than are presently available in the area. Overnight lodging, restaurants, fast food establishments and other convenience, user-oriented businesses should flourish. Gasoline, marine-related items such as boats, motors, etc., fishing and picnic supply sales should also increase from the additional patrons attracted by Raystown Lake. Land development is already occurring adjacent to project lands, thereby raising the value of most property in the area.

5:05 SECONDARY VISITATION MARKET AREA

Persons living in the secondary visitation market area, within a two hour travel distance, live in the predominantly rural counties of central Pennsylvania and northwest Maryland. Major cities within the secondary area are Johnstown and State College, PA, and Frederick and Hagerstown, MD. There were 1,137,030 people in this area in the 1970 census, an increase of 5.5% for the 1960-1970 decade. See tables 5:1 and 5:2. The secondary area contains 12,862 square miles. These recreationists will require primarily day use facilities. Other areas that provide similar recreational opportunities for people living in this area are Youghiogheny River Lake in Fayette and Somerset Counties, PA, Deep Creek Lake in Maryland, Prince Gallitzin State Park in Cambria County, PA, the Susquehanna and Juniata Rivers in Pennsylvania, and the Potomac River between Maryland, Virginia, and West Virginia. All of these are of similar quality and design capacity.

5:06 TERTIARY VISITATION MARKET AREA

This area, as shown on plate 16-1, includes a two to four hour travel distance. It includes Washington, DC,

the Baltimore, MD area, and Pittsburgh and Harrisburg, PA. The area contained 7,474,430 people in 1970. See tables 5:1 and 5:2. Sixty percent of the visitors from this area are expected to remain overnight, while 40% are expected to require only daytime facilities.

The secondary and tertiary areas have a higher per capita income; a higher ratio of management and professional employees with an accompanying higher income; a higher percentage of automobile ownership; and a lower median age of the population than does the primary area.

The population within the day-use zone of influence of Raystown is not expected to increase at the same rate as that of the week-end zone (i.e., the tertiary market area), primarily because of its low-density and the scarcity of large urban centers. However, the tertiary market area contains several major standard metropolitan statistical areas which will more than double the future demand that might be expected within the two-hour (primary day-use) zone.

Alternate recreation areas offering similar regional facilities are Lake Erie for the Pittsburgh region, the Susquehanna River for the Harrisburg area, and Chesapeake Bay for the Baltimore and Washington, DC areas.

TABLE 5:1

RAYSTOWN LAKE POPULATION PROJECTIONS BY MARKET AREA[1]

	Travel Time	Actual 1970	1975*	1980*	1985*	1990*
Primary Area[2]	1 hr.	272,861	275,800	277,706	287,415	296,781
Secondary Area[3]	1-2 hrs.	1,137,201	1,163,972	1,207,743	1,246,912	1,321,227
Tertiary Area[3]	2-4 hrs.	7,474,430	7,755,161	7,999,108	8,247,363	8,668,915

Note: 1. Average of cohort survival series D and E used for 1970-1975, after 1975, cohort survival series E was used.
2. Projected net out-migration.
3. Projected net in-migration.

*Source: Pennsylvania Office of Planning and Development Report No. 73 PPS-3
The General Development Plan, Regional Planning Council
Baltimore, Maryland; September, 1972
Urban and Regional Planning Department, L. Robert Kimball, Consulting Engineers

TABLE 5:2

POPULATION CHARACTERISTICS, 1970

	Persons per Household	Total Population Median Age	Percent of Population Under 18	Over 65	1960 to 1970-% Change in Population
Primary Visitation Market Area	3.29	29.8	36.7	11.2	- 0.46%
Secondary Visitation Market Area	3.19	29.2	34.8	16.7	+ 5.5%
Tertiary Visitation Market Area	3.35	29.4	32.9	8.8	+11.0%
State of Pennsylvania	3.10	30.7	32.6	10.8	+ 4.2%
State of Maryland	3.25	27.1	35.2	7.6	+26.5%
State of West Va.	3.12	30.0	33.3	11.1	- 6.2%
State of Virginia	3.20	26.8	34.2	7.9	+17.2%

TABLE 5:3

PRIMARY MARKET AREA
RURAL POPULATION

County	Total Population 1970	Rural Farm Population %	Rural Farm Population People	Rural Non-Farm Population %	Rural Non-Farm Population People
Bedford	42,353	10.8	4,574	81.4	34,475
Blair	135,356	4.7	6,362	28.0	37,900
Fulton	10,776	16.1	1,735	83.9	9,041
Huntingdon	39,108	7.6	2,972	65.1	25,459
Mifflin	45,268	8.1	3,667	61.9	28,021
Totals:	272,861	7.08% Avg.	19,310	49.4% Avg.	134,896
Pa.	11,793,864	3.3%	389,200	25.3%	2,983,850

Source: 1970 U.S. Census of Population

TABLE 5:4

PRIMARY MARKET AREA
SELECTED HOUSING DATA

County	Total Population	Total Housing Units	Year-round Housing Units	Seasonal Housing Units	Occupied or Available Units	Second Home Units	% Second Home
Bedford	42,353	15,525	14,827	698	13,635	1,890	12.17%
Blair	135,356	45,122	44,937	185	44,140	982	2.18%
Fulton	10,776	3,911	3,825	86	3,402	509	13.02%
Huntingdon	39,108	13,985	13,384	601	12,363	1,622	11.60%
Mifflin	45,268	15,806	15,519	287	14,796	1,010	6.39%
Totals	272,861	94,349	92,492	1,857	88,336	6,013	6.37% avg.

Source: Pennsylvania - General Housing Characteristics, 1970
U.S. Bureau of the Census

TABLE 5:5

PRIMARY MARKET AREA
HISTORICAL ESTIMATE AND PROJECTIONS OF EMPLOYMENT*

		1970	1975	1980	1985	1990
1.	Agric. Forestry & Fisheries	7,700	5,996	4,816	4,163	3,784
2.	Mining	500	553	539	500	487
3.	Construction	5,400	6,873	7,515	8,244	9,053
4.	Trans., Comm., & Public Util.	11,600	11,863	11,609	11,430	11,431
5.	Wholesale Trade	3,832	4,221	4,670	5,059	5,465
6.	Retail Trade	17,870	17,730	18,276	18,712	19,237
7.	Finance Ins. & Real Estate	2,500	2,813	3,507	4,241	5,087
8.	Services	16,700	18,737	20,312	21,782	23,179
9.	Federal Government	6,900	7,893	8,535	8,699	9,000
10.	State and Local Govt.	14,700	16,321	18,273	20,055	21,829
11.	Total Manufacturing	44,840	51,043	55,455	59,321	63,047
12.	Food and Kindred	3,748	3,998	4,150	4,320	4,486
13.	Tobacco	0	0	0	0	0
14.	Textile	1,713	1,754	1,683	1,521	1,396
15.	Apparel	8,587	9,667	10,541	11,336	11,987
16.	Lumber and Wood	939	983	953	904	909
17.	Furniture	338	359	364	371	375
18.	Paper	3,987	4,042	4,292	4,781	5,107
19.	Printing	1,339	1,831	2,104	2,426	2,807
20.	Chemicals	2,446	3,105	3,551	3,908	4,264
21.	Petroleum	69	75	82	83	93
22.	Rubber & Plastics	298	403	437	450	465
23.	Leather	2,836	3,163	3,345	3,384	3,437
24.	Stone, Glass, & Clay	2,644	2,857	2,959	3,007	3,051
25.	Primary Metals	2,647	2,842	2,967	3,066	3,105
26.	Fabricated Metal	1,342	1,575	1,747	1,909	2,092
27.	Nonelectrical Mach.	7,613	8,405	9,279	9,954	10,500
28.	Electrical Mach.	2,524	3,526	3,978	4,510	5,106
29.	Trans. Equipment	1,229	1,406	1,644	1,914	2,173
30.	Instruments	560	709	895	1,074	1,259
31.	Misc. Mfg.	290	342	383	406	435
32.	Other Nonagric. Employment	13,900	14,094	14,113	14,095	14,096
33.	Total Civilian Employment	146,452	158,137	167,610	176,301	185,695

Source: Pa. Office of State Planning and Development, 1972

*Includes Juniata and Franklin counties.

TABLE 5:6

INCOME LEVELS - ALL SIZE FAMILIES

	PA. - 1960		P.M.A.*- 1960		PA. - 1970		P.M.A.*- 1970	
Income Class	Families	Percent	Families	Percent	Families	Percent	Families	Percent
Under $1,000	121,440	4.18	4,407	6.22	50,939	1.70	1,438	2.01
$1,000 to $3,999	771,717	26.59	25,413	35.84	274,828	9.14	10,747	15.00
$4,000 to $5,999	864,557	29.79	21,509	30.33	264,329	8.79	10,326	14.41
$6,000 to $7,999	419,758	14.47	8,796	12.41	376,417	12.53	13,705	19.13
$8,000 to $9,999	429,796	14.80	6,827	9.63	356,182	11.86	11,880	16.58
$10,000 to $14,999	199,423	6.87	2,824	3.98	964,407	32.11	16,525	23.06
$15,000 to $24,000	67,239	2.32	808	1.14	556,556	18.53	5,639	7.87
$25,000 to $49,000	22,226	.77	258	.36	138,497	4.61	1,154	1.61
$50,000 and over	6,039	.21	64	.09	22,072	.73	236	0.33
TOTALS	2,902,195	100.00	70,906	100.00	3,004,227	100.00	71,650	100.00

	1960			1970		
	U.S.	PA.	P.M.A.	U.S.	PA.	P.M.A.
Median Income	$5,620	$4,625	$4,160	$9,867	$9,558	$7,942
Mean Income	N.A.	$3,670	$4,317	N.A.	$10,877	$9,245

Source: U.S. Census of Population, 1960 and 1970

*P.M.A. - Primary Market Area

TABLE 5:7

PRIMARY MARKET AREA
AGRICULTURE EMPLOYMENT/1970

County	Percent
Bedford	7.31
Blair	1.68
Fulton	10.02
Huntingdon	6.04
Mifflin	4.16

Source: U.S. Census of Population

TABLE 5:8

SELECTED WORKER CHARACTERISTICS - 1970

	PA	P.M.A.*
Non-worker/worker ratio	1.47	1.61
Percent in labor force		
Female, 16 yrs. & over	39.4	37.3
Married women, husband present	36.0	36.5
Male - 18 to 24 yrs.	70.0	78.6
- 65 yrs. & over	23.2	18.9
Civilian labor force/percent unemployed	3.7	5.26
Employed persons		
% in manufacturing	34.1	33.04
% in white collar occupations	45.1	30.6
% government	13.2	13.94
% working outside county of residence	18.7	18.7

*P.M.A. - Primary Market Area

Source: U.S. Census of Population, 1970

TABLE 5:9

PRIMARY MARKET AREA
LAND USE ACREAGES*

	Sq. Mi.	Acres	Percent
Forest	2,253	1,441,920	68.09
Agriculture	819	524,160	24.75
Developed	237	151,680	7.16
Totals	3,309	2,117,760	100.00

*Source: Pennsylvania - General Housing Characteristics 1970. U.S. Bureau of the Census

TABLE 5:10

PRIMARY MARKET AREA
SELECTED FARM TYPE DATA

County	All Farms (1) (2)	Cattle Farms	Commercial Dairy Farms (3)	Hog Farms	Sheep Farms	Chicken Farms
Pa. Total	71,000	50,000	18,000	22,000	5,300	15,000
Bedford	1,410	1,120	390	600	85	285
Blair	610	490	220	190	45	105
Fulton	640	510	150	290	35	180
Huntingdon	770	630	240	320	35	190
Mifflin	720	590	290	440	120	200
Totals	4,150	3,340	1,310	1,840	320	960
% of PA.	5.85%	6.68%	7.28%	8.36%	6.04%	6.40%

(1) Estimated as of January 1, 1972.
(2) Columns 2, 3, 4, 5, and 6 will not total to Column 1, as some farms are of one category and others a combination of several or all categories.
(3) Commercial dairy farms relate to farms with 10 or more milk cows.

Source: Pennsylvania Department of Agriculture, Crop Reporting Service, 1971 Crops and Livestock Annual Summary, C.R.S. -57.

TABLE 5:11

PRIMARY MARKET AREA
SELECTED LIVESTOCK DATA

County	Total Livestock Inventory Value	Number of Livestock: Cattle and Calves	All Hogs (1)	All Sheep	Milk Production: Average Number of Cows Milked During Year (2)	Pounds Produced (in Thousands)	Value (in Thousands)	Pounds Produced Per Cow
Pa. Total	$523,375,000	1,763,000	640,000	150,000	701,000	7,142,000	$464,000	10,188
Bedford	11,369,500	39,800	13,400	1,700	15,500	150,350	9,848	9,700
Blair	6,225,400	21,300	5,400	1,100	9,400	97,760	6,305	10,400
Fulton	3,917,900	13,600	5,600	900	5,300	54,060	3,352	10,200
Huntingdon	6,510,300	22,200	6,500	1,000	9,200	97,520	6,339	10,600
Mifflin	6,521,300	21,900	9,800	1,100	9,700	104,740	6,643	10,800
Totals	$ 34,544,400	118,800	40,700	5,800	49,100	504,430	$ 32,488	51,700
% of PA.	6.6%	6.74%	6.36%	3.87%	7.0%	7.06%	7.0%	10,340 avg.

(1) Inventory as of December 1, 1971.
(2) Milk cows 2 years old and over.

Source: Pennsylvania Department of Agriculture, Crop Reporting Service, 1971 Crop and Livestock Annual Summary, C.R.S.-57.

TABLE 5:12

PRIMARY MARKET AREA
SELECTED ACREAGE AND HARVEST VALUES

County	Field and Forage Crops: Acres Harvested	Field and Forage Crops: Value of Production (in Thousands)	Veg. Crops (Fresh & Proc.): Acres Harvested	Veg. Crops (Fresh & Proc.): Value of Production (in Thousands)	Average Value of Production Per Acre (in Dollars)	Fruit Value of Production (in Thousands)	Value of Prod.-Fld. Crops, Veg's. and Fruits (in Thousands)	Estimated Number of Farms Jan. 1, 1972	Average Value of Production Per Farm
Pa. Total	4,511,000	$371,223	44,440	$17,232	$85.27	$35,984	$424,439	71,000	$5,978
Bedford	94,600	7,322	157	27	77.39	347	7,696	1,410	5,458
Blair	49,500	4,232	293	228	89.57	349	4,809	610	7,884
Fulton	36,900	2,640	13	5	71.65	33	2,678	640	4,184
Huntingdon	59,200	4,643	87	12	78.52	52	4,707	770	6,113
Mifflin	48,900	4,229	56	19	86.77	55	4,303	720	5,976
Totals	289,300	$ 23,066	606	$ 291	$80.78	$ 836	$ 24,193	4,150	$5,923
% of PA.	6.41%	6.21%	1.36%	1.70%	$94.70	2.32%	5.70%	5.85%	99.08%

Source: Pennsylvania Department of Agriculture, Crop Reporting Service, 1971 Crop and Livestock Annual Summary, C.R.S.-57.

Estimate for calendar year 1971.

6: ENVIRONMENTAL RESOURCES: NATURAL FACTORS INFLUENCING DEVELOPMENT

SECTION 6: ENVIRONMENTAL RESOURCES: NATURAL FACTORS INFLUENCING DEVELOPMENT

6:01 GENERAL

This section elaborates on natural factors that must be considered in relation to the recreational use and development of the land and water areas of the Raystown Lake project. These include (1) geology, (2) topography, (3) soils, (4) climate, and (5) water quality. The actions and interactions of these factors on the project are paramount to development decisions because these are the continuing physical factors that will control and direct development.

The sensitivity of naturally occurring ecosystems to alteration and change has long been recognized. Some systems, such as certain wildlife habitats, respond negatively to Man and deteriorate rapidly. Others, dependent upon species, will not only adapt to change, but will accept Man as part of their environment and will even thrive from Man's influence. Some environmental phenomena, including climate, soils, and geologic structure, wield impressive practical influences. Such phenomena must be taken into consideration in planning for optimum use of the total environment. The best use of natural resources cannot be planned for, or achieved, until the natural determinants are subjectively and objectively studied, resulting in establishment of a balance between preservation, conservation, and utilization.

6:02 GEOLOGY

6:02:01 REGIONAL GEOLOGIC SETTING

The project is located in the ridge and valley physiographic province of Pennsylvania which is named for the subparallel narrow ridges and broad or narrow valleys which trend northeast-southwest through Pennsylvania. The stratified sedimentary rocks of this region have been severely folded. The principal structural features thus produced are a series of anticlines and synclines trending from about N 25° E in southwestern Pennsylvania to about N 75° E along the Susquehanna River.

Truncation of the folds, and differential weathering and erosion of less resistant shales and limestones and more resistant sandstones have formed the ridges and valleys of the province.

The exposed bedrock ranges in geologic age from Cambrian to Pennsylvanian. The lithologies include most sedimentary types. The Cambrian and Ordovician rocks are predominantly limestones and dolomites; Silurian rocks are carbonates, shales, and sandstones. Devonian rocks are mostly detrital sedimentary types (shale and sandstone) as are those of the Mississippian and Pennsylvanian.

6:02:02 LOCAL GEOLOGY

The project is characterized by the Raystown Branch of the Juniata River having cut its channel with but few exceptions, entirely in the rocks of the Catskill formation. This valley is composed of level floodplain areas and the hills of Catskill rocks which occupy the areas enclosed by bends. The hills and adjacent local stream valleys on the northwest side of the valley are underlain by basal Catskill rocks and those of the Chemung formation. The rock formations of the Chemung and Brallier formations make up those areas along the western boundary of the project. The high ground of Terrace Mountain to the southeast is formed by rocks of the Pocono and Pottsville formations and the hills which form the slopes between the valley and the mountain are underlain by the upper part of the Catskill.

The majority of the project is underlain by three geologic formations. They are the Pocono of Mississippian age, the Catskill of upper Devonian age, and the Chemung formation of upper Devonian age.

These layered sequences of sedimentary strata have been folded such that strike varies from N 25°-35°E in the southwestern portion of the project to N 30°-40°E in the northeastern part of the project. Dip varies from 25-50° SE in the southwestern portion of the project to 15-25° SSE in the northeastern part. A general line between Marklesburg and Trough Creek State Park marks the change in strike and dip. A traverse southeast-northwest along this line takes one across strike, down

stratigraphic section and, of course, across outcrops of rocks of increasing age. Therefore, the younger rocks occur on the southeast border of the area. These are rocks of the Pocono formation. here

The Pocono formation rests conformably on the underlying Devonian rocks. The uppermost sandstone member of the Pocono is called the Burgoon sandstone. This lithologic unit acts as a cap rock for Terrace Mountain. It is a gray to green, coarsely grained, thick bedded sandstone, which occurs locally as a conglomerate and has thin beds of shale (Lohman, 1938). Thicknesses of the Burgoon range from 50 to 240 feet. Approximately 800 feet of green shales and gray sandstones with some conglomerate, red shale, and small amounts of coal underly the Burgoon member. This accounts for a total Pocono thickness of 450 to 1,175 feet (Lohman, 1938).

The Catskill formation consists mainly of red to brown shale, but also contains red, brown, green and gray sandstone and gray and greenish shale. Some of the sandstones are cross-bedded and the formation ranges in thickness from 1,200 to 5,500 feet (Lohman, 1938).

Much of the shale found in this formation is a lumpy mudrock. Its softness as compared to that of adjacent units in the area and the fact that it makes up some two-thirds of the formation accounts in part for the Raystown Branch cutting its channel in rocks of this type rather than in those adjacent to it.

The Chemung formation is mainly drab green, brown, and chocolate colored shaley sandstone, but contains some thin siltstones, sandstones, and conglomerates and ranges in thickness from 0 to 3,500 feet (Lohman, 1938).

The remaining formations of the Devonian of central Pennsylvania and the two uppermost Silurian formations occur in the areas of the project where the lake is a large cove extending towards Marklesburg.

The area of the project at Hawns Run Cove near McConnellstown is underlain along its northwestern boundary by the Brallier formation and the area of the project at Shy Beaver Cove near Russelville is

underlain along its northwestern boundary by the Brallier, Harrell, and Mahantango formations (Ellison, 1965).

The relation of geologic structure to geomorphology is seen here in topography where the major ridges and valleys are aligned along strike. Breaks in the ridges occur where tributary streams to the Raystown Branch have cut valleys across dip. These hills and ridges have dip slopes facing to the southeast and updip facing slopes (northwest) often occurring as escarpments.

The geomorphology of the Raystown Branch valley proper can be explained with this same use of structural geology and lithology of bedrock. The difference in the steepness between the northwest and southeast banks is a vivid example of structural control. The gentler slopes on the northwest bank are formed on the dip slope of the bedrock and the steeper slopes on the southeast bank on the reverse slope. In the case of the portion of the project occupied by Terrace Mountain as the southeastern valley wall, the resistant rock units act as cap rocks. The river has cut its valley into a thick sequence of soft shale lithologies, particularly the red mudstone of the Catskill formation.

6:02:03 TOPOGRAPHY

The topography of the Raystown Lake area is quite constraining to the development of the project. The relatively flat, narrow ridges offer the only areas for camping and picnicking. The generally steep hillsides restrict development while yet providing a natural buffer between different uses. The shoreline is limited for suitable beach, marina, or boat tie-up sites. Boat ramp sites are limited to narrow steep sided ravines which limit parking areas. Construction of cross slope roads must be minimized because of the danger of cutting into bedding planes.

6:02:04 LAND FORMS AND GEOLOGICAL LIMITATIONS

The configuration of the bedrock has contributed materially to the topography of the region. This has been considered in this development plan. The southeast bank will be the least developed because of its generally steep slope and unstable bedrock conditions. This slope

is developed against the dip of the bedrock and is mantled with minimal soil cover. Because of this condition, excavations for construction in most areas will involve rock excavation. The amount of excavation required will generally be increased because of additional excavation required to produce stable cut slopes. This will be especially critical to any contemplated road construction on this bank. Because of the slope stability problems anticipated in this region, road construction will be minimized. Roads deemed necessary for service or emergency access will be designed for four wheel drive vehicles.

Because of the steepness of the slopes, erosion and sediment control will be a difficult and expensive problem to overcome on construction projects. Again, this would tend to become a very extensive problem for any road construction contemplated. In the case of road construction, erosion and sediment control will also be a continuing expense because of the requirement for maintenance on the steep cut and fill slopes. This would be especially true in those areas of 15%-70% slopes, which constitute a large portion of the southeast bank (plates 16-5 through 16-11).

Portions of the southeast shore, at or near the water line, will be suitable for development with access from the water and only service and emergency access and egress by land. These areas are delineated on GSP series, plates 16-27 to 16-33. On the northwest bank are areas of the project which have similar conditions.

6:02:05 GEOLOGICALLY SIGNIFICANT AREAS

Within the project borders, there are two types of geologically significant areas that lend themselves to developmental exploitation at minimal cost. These areas will provide both recreation and educational benefits for park visitors. The development discussion and detailed site descriptions are presented in Section 8:02:03.3 under geological feature areas.

The first site of importance is the large road cut exposure of the Upper Devonian sequence on PA 994 west

of the Coffee Run Overlook. This sequence was exposed when the alignment of PA 994 was changed. The exposed section contains a record of the deposition in this region during Upper Devonian time and illustrates a number of interesting geologic features.

The second feature of significance is localities for fossil collecting. These areas are primarily the exposed areas of the Marcellus shale formation in the Backbone Ridge Game Mitigation Area.

Nearby Trough Creek State Park contains an ice mine and a "balanced" rock. See Section 8:02:03.3 for a description of these areas.

6:02:06 SOILS

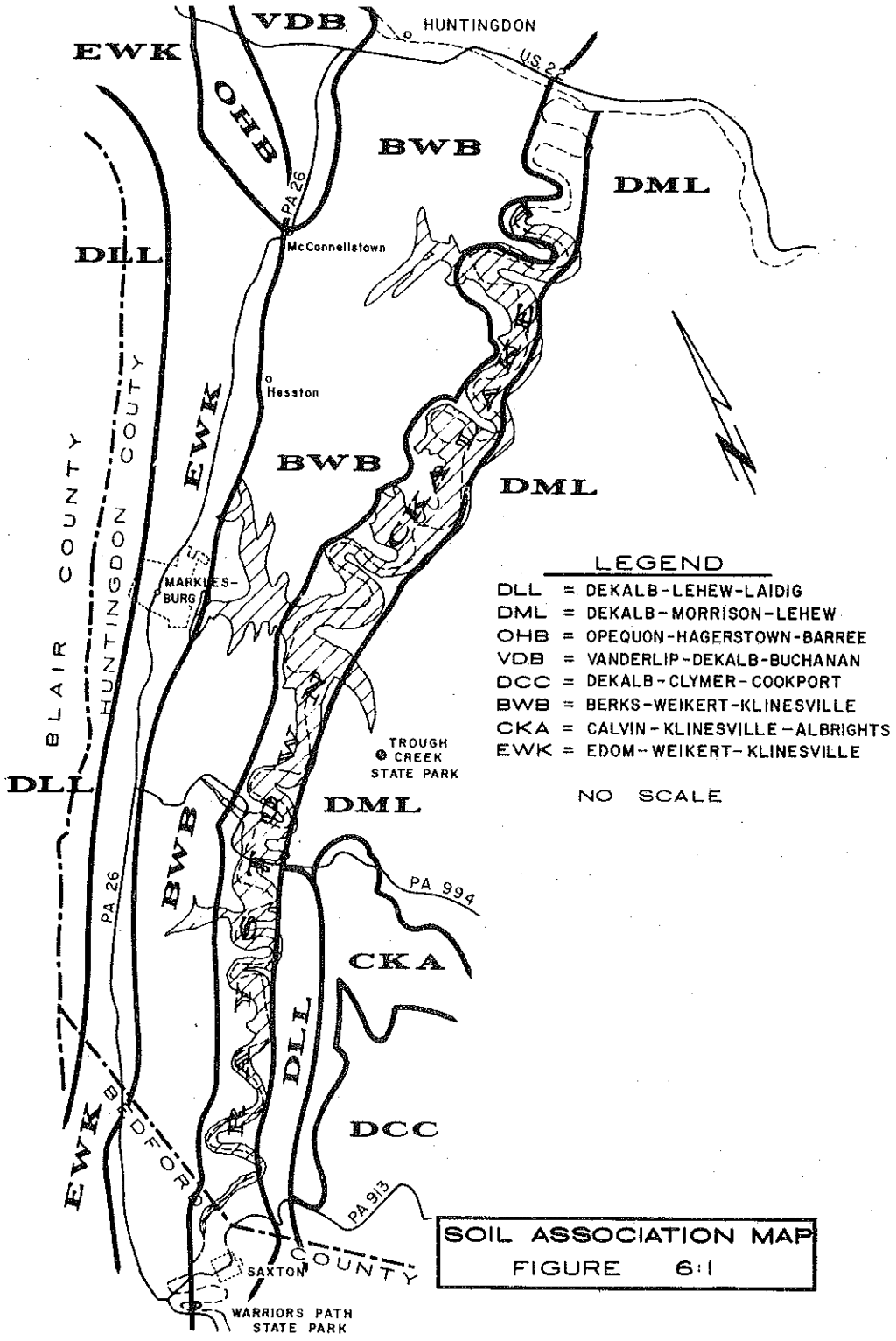
Field investigation and a review of the Soil Surveys for Huntingdon and Bedford Counties, (Soil Conservation Service, United State Department of Agriculture) reveals several general soil conditions for the specific site.

The project is characterized by generally shallow depth to bedrock and a general lack of thick residual soils. The effect of geologic structure and resultant topography on soil development is seen in the large amounts of soils developed on colluvium. These accumulations of weathered colluvium are largely caused by soil creep on the steep slopes and the long span of geologic time that has allowed such events to occur.

Certain rock slides or accumulations of talus occur in the valley. These tend to be local and are composed dominantly of sandstone or conglomerate boulders, although related features occur on steep slopes in shale and interbedded sandstone in areas along both sides of the valley.

The existence of the Raystown River over a long time span has resulted in many variegated fluviatile surface deposits throughout the valley proper.

The information for figure 6:1, SOIL ASSOCIATION MAP, was taken from the General Soils Maps for Huntingdon and



SOIL ASSOCIATION MAP
FIGURE 6:1

Bedford Counties as published by the United States Department of Agriculture, Soil Conservation Service. This map indicates that the dominant soil association for the project area proper is the Calvin-Klinesville-Albrights Association. This soil association is bounded on the northwest by the Berks-Weikert-Brinkerton Association and on the southeast by the Dekalb-Lehew-Laidig and Dekalb-Morrison-Lehew Association. A soil association is "a group of defined and named soil units that occur together in a particular geographic pattern. The soils may be derived from the same kind of parent material or different kinds of parent material" (USDA, 1972). A soil association is named for the major soils, but may also contain other minor soils.

The general relationship, then, between geology and soils on the site can be seen where soils are developed on bedrock, colluvium and fluvial deposits. Those soils developed on materials weathered from bedrock are those of the Calvin, Klinesville, Edom, Hagerstown and Lehew Series. The soils developed on materials weathered from colluvium are those of the Ernest, Meckesville, Laidig, Albrights, Clarksburg and Murrill Series. The soils developed on fluvial deposits are those of the Raritan, Philo, Basher, and Barbour Series (USDA, 1972).

The Calvin, Lehew and Klinesville soils are to be found in areas underlain by rocks of the Chemung and Catskill formations. The red beds of the Catskill formation yield red soils of the moderately deep Calvin and Lehew Series. Both soils are coarse grained and known to contain fair amounts of cobbles (particles larger than 3 inches). The reddish brown rocks of the Chemung yield the shallow Klinesville Series which is also coarse grained and contains fair amounts of cobbles. The Edom and Hagerstown Series are to be found in areas underlain by limestone, such as the area of the project near Marklesburg where the Helderberg limestone occurs.

The accumulation and weathering of colluvium from the Pocono, Catskill and Chemung formations has yielded the Ernest, Meckesville, Laidig and Albrights soils. The soils are loams and silt loams with gravelly, very stony and extremely stony variations. Examination of the mapping units listed in Table 6:1 will reveal that

increase in stoniness occurs with increase in slope for these units. The accumulation and weathering of colluvium containing limestone, sandstone and shale has resulted in the development of the Clarksburg soils, and the accumulation and weathering of colluvium containing sandstone and shale over limestone bedrock has resulted in the development of the Murrill soils. The Clarksburg Series are silt loams and gravelly silt loams and the Murrill Series are gravelly loams.

The Raystown River and its tributaries have deposited numerous fluvial deposits both on present day floodplains and on those of the past such as terraces. The Philo and Basher soils are gray and red silt loams, respectively, developed on fluvial deposits of floodplains. The Barbour soils are red fine sandy silt loams developed on fluvial deposits of floodplains.

The Raritan soils are gravelly silt loams developed on fluvial deposits of terraces.

6:02:07 SOIL SUITABILITY

In Table 6:1, Soil Limitations for Components of Recreational Development, taken from Volume I, Soil Survey Interpretations for Huntingdon County, Pennsylvania, as prepared by the United States Department of Agriculture, Soil Conservation Service, the soils listed are rated according to degrees of limitation for each use shown. The three degrees of limitation as defined in that publication are:

1. Slight. These soils have few known limitations for use indicated.

2. Moderate. These soils have one or more properties that limit their use. Correcting these factors will increase the installation and maintenance costs.

3. Severe. These soils have one or more properties that seriously limit their use. Using soils with a severe limitation will increase the probability of failure and add to the cost of installation and maintenance.

The Soil Conservation Service has rated the soils for the uses shown by considering the following soil properties: depth to bedrock, depth to seasonal high water table, slope, surface texture, stoniness and frequency of flooding.

The restricting soil property for each rating of limitation is listed underneath the rating according to the code:

a = shaly or gravelly (according to soil name)
b = depth to seasonal high water table
c = slope
d = surface texture
e = stoniness (> 12")
f = frequency of flooding
g = moderately slow permeability
h = slow permeability

Also listed for each soil is a land capability class and subclass. The capability classes are "a means of measuring soil limitations and degree of hazard when used for agriculture" (USDA, 1972). The subclasses "show the nature of the major limitations" (USDA, 1972). The following is a list of and explanation for each class and subclass:

CLASS I - Soils that have few limitations which restrict their use.

CLASS II - Soils that have some limitations which reduce the choice of plants or require moderate conservation practices.

CLASS III - Soils that have severe limitations which reduce the choice of plants, require special conservation practices, or both.

CLASS IV - Soils that have very severe limitations which restrict the choice of plants, require careful management, or both.

CLASS V - Soils that have little or no erosion hazard but have other limitations which are impractical to remove and limit their use largely to pasture, woodland, or wildlife food and cover.

CLASS VI - Soils that have severe limitations which make them generally unsuited to cultivation and limit their use largely to pasture, woodland, or wildlife food and cover.

CLASS VII - Soils that have very severe limitations which make them unsuited to cultivation and restrict their use largely to grazing, woodland, or wildlife.

CLASS VIII - Soils and land forms that have limitations which prevent their use for commercial plant production and restrict their use to recreation, wildlife, water supply and aesthetic purposes.

SUBCLASS

e - erosion hazard
w - water problems, such as wetness or flooding
s - physical soil problems, such as stoniness, shallowness or drouthiness

Use of Table 6:1 and plates 16-5 through -11 should be in a manner such that the user only seeks an idea of conditions he may encounter in an area, as to soil suitability. Planning for recreational development should be conducted on a site specific basis. Should an area have some severe limitation to a certain component, it should not be assumed that the component cannot be developed throughout the area.

The most restraining factor to recreational development on the site is topography. Often associated with excessive slope are surface texture and/or stoniness, to include shaly or gravelly conditions. Areas of stoniness or coarse surface texture where slope is not excessive may only prove as less desirable as opposed to

unsuitable for certain usages. Many such areas of stoniness will prove to be talus slopes or rock slides. Several restricting soil properties which occur with those fluvial deposits are found both adjacent to the course of the Raystown River and on terraces and slopes along the sides of the valley. Their sandy nature renders them very permeable. This allows them to be excellent paths for ground water. On the sides of the valley such deposits serve as subsurface paths of flow to the lower elevations for water that would have otherwise been surface runoff. Although these fluvial deposits of the valley walls are often known to be covered by weathered colluvium and their associated soils, extensive usage of areas underlain by such deposits risks the chance of erosion of topsoil and subsequent erosion of a highly erodible mass of material - the fluvial deposit. The modern day floodplain fluvial deposits are not necessarily subject to flooding as indicated in Table 6:1, but rather to fluctuations in reservoir water level as they exist adjacent to the existing lake. Such areas may have year round high water tables, but may also be very well drained. These soils are generally not susceptible to erosion, due to their shallow slope.

The areas adjacent to the existing lake underlain by soil which lies on dip slopes should be examined closely for any sort of usage. The northwest shoreline of the existing lake is in many places a dip slope - where rock dip and slope are coincidental. The sudden existence of the water of the lake and subsequent saturation of materials adjacent to it possibly has brought about slope instability and consequent slope failure. The field condition where soil strata lie on dip slopes is often considered as potentially unstable when slope approaches moderate amounts. The effect of the water of the lake is similar in the situation where the lake is bordered by slopes underlain by masses of unconsolidated materials (soils - colluvium, etc.), whether they be on the northwest or southeast shores of the lake. Opposite the dip slope of a ridge is the scarp slope. The steep slopes of Terrace Mountain along the lake are such slopes. These are generally steeper than the dip slopes and, in the instance of Terrace Mountain, are either bare rock or covered to some extent by colluvium.

TABLE 6:1

SOIL LIMITATIONS FOR COMPONENTS OF RECREATIONAL DEVELOPMENT

SOILS AND MAPPING SYMBOLS	CAMP SITES TENTS	CAMP SITES TRAILERS	PATHS AND TRAILS	PICNIC AND PLAY AREA (extensive use)	CAPABILITY CLASS AND SUB-CLASS
Blairton silt loam 99B	MODERATE b,g	MODERATE b,c,g	MODERATE b	MODERATE 3 b	IIIw
99C	MODERATE b,c,g	SEVERE c	MODERATE b	MODERATE c,b	IIIw
Calvin shaly silt loam 92B	MODERATE a	MODERATE c,a	MODERATE a	MODERATE a	IIe
92C	MODERATE a,c	SEVERE c	MODERATE a	MODERATE c,a	IIIe
92D	SEVERE c	SEVERE c	MODERATE c,a	SEVERE c	IVe
Clarksburg silt loam 101B	MODERATE h	MODERATE h,c	SLIGHT	SLIGHT	IIe
Clarksburg gravelly silt loam 103B	MODERATE h,a	MODERATE h,a,c	MODERATE a	MODERATE a	IIe
Edom-Klinesville complex 52B	MODERATE d,a	MODERATE d,c,a	MODERATE d,a	MODERATE d,a	IIIe
52C	MODERATE d,a,c	SEVERE c	MODERATE d,a	MODERATE d,a,c	IVe
52D	SEVERE c	SEVERE c	MODERATE d,a,c	SEVERE c	VIe

TABLE 6:1

SOIL LIMITATIONS FOR COMPONENTS OF RECREATIONAL DEVELOPMENT

SOILS AND MAPPING SYMBOLS	CAMP SITES TENTS	CAMP SITES TRAILERS	PATHS AND TRAILS	PICNIC AND PLAY AREA (extensive use)	CAPABILITY CLASS AND SUB-CLASS
Albrights silt loam 126B	MODERATE b,g	MODERATE b,c,g	MODERATE 3 b	MODERATE 3 b	IIe
126C	MODERATE b,c,g	SEVERE c	MODERATE b,c	MODERATE 3 c,b	IIIe
Albrights very stony silt loam 123AB	MODERATE b,e,g	MODERATE b,c,e,g	MODERATE b,e	MODERATE 3 b	VIs
128CD	SEVERE 1 c	SEVERE c	MODERATE b,c,e	SEVERE 1 c	VIs
Barbour fine sandy loam 13	MODERATE f	MODERATE f	SLIGHT	MODERATE f	I
Barbour silt 26	MODERATE f	MODERATE f	SLIGHT	SLIGHT	I
Berks shaly silt loam 87B	MODERATE a	MODERATE c,a	MODERATE a	MODERATE a	IIe
87C	MODERATE a,c	SEVERE c	MODERATE a	MODERATE c,a	IIIe
87D	SEVERE c	SEVERE c	MODERATE c,a	SEVERE c	IVe
Berks and Weikert shaly silt loams 87EF	SEVERE c	SEVERE c	SEVERE c	SEVERE c	VIIe

TABLE 6:1

SOIL LIMITATIONS FOR COMPONENTS OF RECREATIONAL DEVELOPMENT

SOILS AND MAPPING SYMBOLS	CAMP SITES: TENTS	CAMP SITES: TRAILERS	PATHS AND TRAILS	PICNIC AND PLAY AREA (extensive use)	CAPABILITY CLASS AND SUB-CLASS
Edom-Weikert complex 47B	MODERATE d,a	MODERATE d,a,c	MODERATE d,a	MODERATE d,a	IIIe
47C	MODERATE d,a,c	SEVERE c	MODERATE d,a	MODERATE d,a,c	IVe
47D	SEVERE c	SEVERE c	MODERATE d,a,c	SEVERE c	VIe
47EF	SEVERE c	SEVERE c	SEVERE c	SEVERE c	VIIe
Ernest silt loam 111B	MODERATE h	MODERATE c,h	SLIGHT	SLIGHT	IIe
111C	MODERATE c,h	SEVERE c	SLIGHT	MODERATE c	IIe
Hagerstown silt loam 33B	SLIGHT	MODERATE c	SLIGHT	SLIGHT	IIe
Hagerstown silty clay loam 30C	MODERATE d,c	SEVERE c	MODERATE d	MODERATE d,c	IVe
30D	SEVERE c	SEVERE c	MODERATE c,d	SEVERE c	VIe
Klinesville shaly silt loam 97C	MODERATE a,c	SEVERE c	MODERATE a	MODERATE c,a	IVe
97D	SEVERE c	SEVERE c	MODERATE c,a	SEVERE c	VIe

TABLE 6:1

SOIL LIMITATIONS FOR COMPONENTS OF RECREATIONAL DEVELOPMENT

SOILS AND MAPPING SYMBOLS	CAMP SITES TENTS	TRAILERS	PATHS AND TRAILS	PICNIC AND PLAY AREA (extensive use)	CAPABILITY CLASS AND SUB-CLASS
Laidig gravelly loam 114B	MODERATE g,e	Moderate g,c,e	MODERATE e	MODERATE e	IIe
114C	MODERATE g,c,e	SEVERE c	MODERATE e	MODERATE c,e	IIIe
114D	SEVERE c	SEVERE c	MODERATE c,e	SEVERE c	IVe
Laidig extremely stony loam 116CD	SEVERE c,e	SEVERE c,e	SEVERE e	SEVERE 1 c	VIIs
Lehew extremely stony loam 70AB	SEVERE e	SEVERE e	SEVERE e	MODERATE e	VIIs
70CD	SEVERE c,e	SEVERE c,e	SEVERE e	SEVERE c	VIIs
Meckesville silt loam 123C	MODERATE g,c	SEVERE c	SLIGHT	MODERATE c	IIIe
Meckesville extremely stony silt loam 125AB	SEVERE e	SEVERE e,c	SLIGHT e	MODERATE	VIIs
125CD	SEVERE c	SEVERE c	SEVERE e	SEVERE 1 c	VIIs
Philo and Basher silt loams 9	MODERATE f	MODERATE f	SLIGHT	MODERATE f	IIw

TABLE 6:1

SOIL LIMITATIONS FOR COMPONENTS OF RECREATIONAL DEVELOPMENT

SOILS AND MAPPING SYMBOLS	CAMP SITES TENTS	CAMP SITES TRAILERS	PATHS AND TRAILS	PICNIC AND PLAY AREA (extensive use)	CAPABILITY CLASS AND SUB-CLASS
Philo and Basher silt loams, high bottom 27	SLIGHT	SLIGHT	SLIGHT	SLIGHT	IIw
Raritan gravelly silt loam 25B	MODERATE a,g	MODERATE g,c,a	MODERATE a	MODERATE a	IIe
Weikert shaly silt loam 90B	MODERATE a	MODERATE a,c	MODERATE a	MODERATE a	IIIe
90C	MODERATE a,c	SEVERE c	MODERATE a	MODERATE c,a	IVe
90D	SEVERE c	SEVERE c	MODERATE c,a	SEVERE c	VIe

MAPPING SYMBOL
SLOPE KEY

(a) Level or nearly level, 0-3 percent - Class A
(b) Gently sloping, 3-8 percent - Class B
(c) Sloping, 8-15 percent - Class C
(d) Moderately steep, 15-25 percent - Class D
(e) Steep, 25-35 percent - Class E
(f) Very steep, 35 percent plus - Class F

1. The part of this unit with 8 to 15 percent slopes rates - MODERATE

3. The moderately well drained portion of this unit rates - SLIGHT

6:02:08 SEPTIC TANK SUITABILITY

The majority of the soils and soil types in the area surrounding Raystown Lake are not suitable for intensive septic tank use. There is no public sewage system within the area that could serve lands that are being developed by private developers. Project public use areas will have tertiary treatment facilities with discharge to the lake, or sealed vault comfort stations. Comfort station vaults will be pumped as required and the sewage transported to project sewage treatment facilities for treatment and disposal.

6:02:09 PRE-PROJECT UTILIZATION OF RESOURCES

Utilization of natural resources prior to the Raystown Lake project is the history of the region. Coal, shale, timber, limestone, and agriculture predominated in the region. On the site itself, all of the present timber is third or fourth growth from the virgin forests that met the white man. Most of the rich bottomland soil will be covered by the recreation lake.

Coal was deep mined in the Broad Top Coal Field during and after the 1860's and strip mined during the 1930's. Although the upper reach of Shoup's Run is acidic, this acid is partially relieved by the limestone rock base of the stream. Because this is a low volume stream, it does not adversely affect Raystown Lake. See also 6:04:02.

The core clay, fill and riprap rock for the dam came from the ungated emergency spillway area, the first upstream bend of the river, and downstream of the dam. The ungated spillway has been graded and seeded, the upstream river borrow area is below the level of the recreation pool, and the downstream borrow area has been regraded and seeded.

A new limestone quarry has recently been opened on private land west of the game mitigation area. Another exists in McConnellstown. These are the only two active quarries in the area.

6:02:10 SUMMARY

In summary, the existence of the ridges and the sinuousness of the lake can be interpreted as both a favorable influence and a restriction to recreational development and use.

Sewage disposal must be controlled with extreme care because of the general unsuitability of the soils for septic tanks and the recharge to the groundwater table by wastewaters.

Excessive cuts and fills must be avoided, or if necessary, handled with extreme care. The shallowness of most soils will necessitate careful field final site selection for most planned developments.

6:03 CLIMATE AND BASIN HYDROLOGY

6:03:01 GENERAL

Pennsylvania is generally considered to have a humid continental type of climate, but the varied physiographic features have a marked effect on the weather and climate of the various sections within the state. The prevailing westerly winds carry most of the weather disturbances that affect Pennsylvania from the interior of the continent, so that the Atlantic Ocean has only limited influence upon the climate of the state.

The ridge and valley province where the project is located is not rugged enough for a true mountain type of climate, but does have many of the characteristics of such a climate. The mountain-and-valley influence on the air movements causes somewhat greater temperature extremes than are experienced in the southeastern part of the state where the modifying coastal and Chesapeake Bay influence hold them relatively constant, and the daily range of temperature increases somewhat under these valley influences.

The effects of nocturnal radiation in the valleys and the tendency for cool air masses to flow down them at night results in a shortening of the growing season by causing freezes later in spring and earlier in fall than would otherwise occur. The growing (frost-free)

season in this section is longest in the middle Susquehanna Valley, where it averages about 165 days, and shortest in Schuylkill and Carbon Counties averaging less than 130 days.

6:03:02 STATE TEMPERATURES

Throughout the state temperatures generally remain between $0^{\circ}F$ and $100^{\circ}F$, and average from near $47^{\circ}F$ annually in the north central mountains to $57^{\circ}F$ annually in the extreme southeast. The highest temperature of record in Pennsylvania of $111^{\circ}F$ was observed at Phoenixville on 9 and 10 July, 1936, while the record low of $-42^{\circ}F$ occurred at Smethport on 5 January, 1904.

Summers in the state are generally warm averaging about $68^{\circ}F$ along Lake Erie to $74^{\circ}F$ in southeastern counties. High temperatures, $90^{\circ}F$ or above, occur on the average of 10 to 20 days per year in most sections; but occasionally localities may experience a season with as many as 30 days of high temperatures while the extreme northwest averages as few as 4 days annually. Only rarely does a summer pass without excessive temperatures being reported somewhere in the state. However, there are places such as immediately adjacent to Lake Erie and at some higher elevations where readings of $100^{\circ}F$ have never been recorded. Daily temperatures during the warm season usually have a range of about $20^{\circ}F$ over much of the state while the daily range in winter is several degrees less. During the coldest months temperatures average near the freezing point with daily minimum readings sometimes near zero or below.

Freezing temperatures occur on the average of 100 or more days annually with the greatest number of occurrences in mountainous regions. Records show that freezing temperatures have occurred somewhere in the state during all months of the year and below zero readings from November to April inclusive. See plate 16-19.

6:03:03 STATE PRECIPITATION

Precipitation is fairly evenly distributed throughout the state and throughout the year. Annual amounts generally range between 34 to 52 inches while the

majority of places receive 38 to 46 inches. Greatest amounts usually occur in spring and summer months while February is the driest month having about 2 inches less than the wettest months. During the warm season storms bring heavy rain while in winter heavy snow or a mixture of rain and snow may be produced. Thunderstorms, which average between 30 to 35 per year, are responsible for most of the summertime rainfall which averages from 11 inches in the northwest to 13 inches in the east. Occasionally dry spells may develop and persist for several months during which time monthly precipitation may total less than one-quarter inch. These periods almost never affect all sections of the state at the same time, nor are they confined to any particular season of the year. Winter precipitation is usually 3 to 4 inches less than summer rainfall and is produced most frequently from northeastwardly moving storms. When temperatures are low enough these storms sometimes cause heavy snow which may accumulate to 20 inches or more. Annual snowfall ranges within wide limits from year to year and from place to place. Some years are quite lean as snowfall may total less than 10 inches while other years may produce upwards to 100 inches mostly in northern and mountainous areas. Measurable snow generally occurs between November 20 and March 15 although snow has been observed as early as the beginning of October and as late as May especially in northern counties. Greatest monthly amounts usually fall in December and January; however, greatest amounts from individual storms generally occur in March, as the moisture supply increases with the annual change of temperature. See plate 16-19.

6:03:04 RAYSTOWN AREA CLIMATE

Locally, the mean annual total precipitation for the Raystown Lake watershed is 37.5 inches with a mean average runoff of 15.97 inches per year since 1912. Annually, days with freezing temperatures vary from 185 to 215, and the average annual snowfall is 33 inches. Snow depth of one inch or more occurs on an annual average of 60-80 days. The mean average annual temperature is 50°F. Prevailing winds are from the northwest during winter and from points between northwest and the southwest during spring and fall. The summer heavy-use recreation season can generally expect southwest breezes. See plate 16-19 of this Master Plan, and the Reservoir Regulation Manual, Appendix E dated July, 1974.

Precipitation data has been collected over the years at five stations in the immediate region. These stations and periods of record are (1) Saxton, 32 years; (2) Everett, 43 years; (3) Buffalo Mills, 48 years; (4) Martinsburg, 24 years; and (5) Huntingdon, 75 years. The Huntingdon station receives the greatest amount of precipitation, an annual mean of 40.17 inches, May having the highest monthly mean of 4.09 inches. The Buffalo Mills station also receives the greatest amount of precipitation in May (3.94 inches) and 37.09 inches average annual precipitation. Saxton and Martinsburg show highest mean monthly averages in July (4.11 inches and 4.05 inches respectively). Saxton receives an annual mean precipitation of 36.72 inches while Martinsburg receives 35.77. Everett experiences its highest mean monthly precipitation in June (4.27 inches) and a yearly average of 37.89 inches. Thus over the period of May, June, and July, the watershed above Raystown Lake receives an average of 3.86 inches; this is the season of heaviest precipitation.

The maximum annual precipitation recorded is 53.35 inches at the Buffalo Mills station (1972), while the minimum is 23.61 inches in Everett (1966).

Flood-producing storms in the Raystown watershed generally occur during the spring. The three most notable floods of record occurred during March, 1936; May, 1889; and June of 1972. The 1889 and 1972 floods were caused by excessive rainfall alone, while the 1936 flood resulted from excessive rainfall combined with snow melt runoff. Mean storm rainfall for these floods totalled 6.43 inches in 1889, 8.19 inches in 1936, and 7.54 inches in 1972.

Although fog is not an uncommon climatic condition in the Raystown Lake area, local reports show that it has increased since the inundation of project lands. This phenomenon is most likely caused by general local climate changes resulting from the increased water surface area of the lake and subsequent evaporation and condensation.

It is difficult to predict at this time what beneficial and/or detrimental effects this increased fog will have

on the local environment. Obviously, heavy fog will mask scenic views from project visitors and will cause complications in water and land travel.

Density of various vegetation types is largely dependent upon soil and atmospheric moisture, and changes in such moisture conditions could exert some effects on project area vegetation. Of particular concern are the effects which could be exerted on the barrens areas. Unfortunately, however, these deleterious changes may not be apparent until some future date.

6:04 WATER

6:04:01 GENERAL

Water resources records establish that the quality of the Raystown Branch of the Juniata River at and below the borough of Saxton, Pennsylvania, the headwaters of the lake, is generally good.

Historical water quality data is available from two sources within the geographical area of the project, the Saxton and Hawns Bridge (inundated) monitoring stations (tables 6:2 and 6:3).

Data from the Saxton monitoring station, presented in table 6:4, illustrates the stability and levels of measured water quality parameters over a period of nine years (1962-1971). This data indicates that the water quality is satisfactory from the standpoint that significant concentrations of industrial and mining wastes and other adverse contaminants are not present. Average values from the data in table 6:4 are shown in table 6:2.

The more illustrative mean values below are statistically representative of the nine year summary of data and demonstrate the satisfactory quality of the Raystown Branch at Saxton.

Critical parameters such as pH, alkalinity, total iron, biochemical oxygen demand, and dissolved oxygen display satisfactory levels with sufficient reserve to resist deterioration by extraneous influences. See plate 16-33 for the Saxton monitoring station location.

TABLE 6:2

Mean Values Saxton Water Quality
Date 1962-1971

Dissolved Oxygen	11.0 mg/l	Total Solids	187 mg/l
Biochemical Oxygen Demand	2.1 mg/l	Dissolved Solids	10 mg/l
pH	7.6	Chlorides	8 mg/l
Turbidity	11 J.T.U.*	Total Iron	0.6 mg/l
Alkalinity	78 mg/l	Sulfates	41 mg/l
Hardness	121 mg/l	Phosphates	0.33 mg/l

Coliform 1000 (MPN/100 ml)

*Jackson Turbidity Units

Additional water quality data from the same period of time was examined from the Hawns Bridge monitoring station, a point approximately 30 miles below Saxton and now inundated. See plate 16-28 for the location of the former Hawns Bridge monitoring station. This data is presented in tables 6:3 and 6:5. Comparison of the Hawns Bridge data with that of Saxton (table 6:2 and table 6:4) illustrates that little change in chemical and physical quality takes place in the Raystown Branch between Saxton and the Hawns Bridge area. However, a possible increase in coliform bacteria concentration is observed. The stability of the water quality is evidenced by examination of the following mean values of the Hawns Bridge data:

TABLE 6:3

Mean Values - Hawns Bridge Water Quality
Date 1962-1971

Dissolved Oxygen	9.4 mg/l	Dissolved Solids	10 mg/l
Biochemical Oxygen Demand	1.8 mg/l	Chlorides	7 mg/l
pH	7.2	Total Iron	0.3 mg/l
Turbidity	10 J.T.U.*	Sulfates	43 mg/l
Alkalinity	63 mg/l	Phosphates	0.02 mg/l
Hardness	108 mg/l	Coliform	1800 (MPN/100 ml)
Total Solids	166 mg/l		

*Jackson Turbidity Units

TABLE 6:4

Water Quality of Raystown Branch, Juniata River (Route 913 Bridge West of Saxton, Pennsylvania)

Month	Year	Temp C°	Dissolved Oxygen	Biological Oxygen Demand (BOD)	Field pH	Lab pH	Turbidity	Alkalinity	Hardness as $CaCO_3$	Total Solids	Dissolved Solids	Chlorides as Cl	Total Iron as Fe	Sulfates as SO_4	Phosphates as PO_4	Coliform MPN/100ml	Gross Alpha	Gross Beta
06	62	27	10.3	4.1	8.3	8.4	10	90	120	190	10	3	0.1	33	N.R.	0	N.R.	N.R.
09	62	17	13.1	0.6	8.2	8.4	5	105	155	205	0	5	0.0	38	N.R.	0	N.R.	N.R.
01	63	0	16.4	2.1	7.3	7.4	10	110	120	230	0	5	0.3	37	N.R.	2.2×10^3	N.R.	N.R.
04	63	11	12.3	0.0	7.3	6.9	10	36	50	78	5	4	0.8	7	N.R.	4.3×10^3	N.R.	N.R.
07	63	28	10.6	3.2	7.9	8.3	5	80	165	180	5	5	0.4	48	N.R.	3.6×10	N.R.	N.R.
09	63	17	11.2	2.4	8.1	8.2	0	100	180	295	0	6	0.0	78	N.R.	2.3×10^2	N.R.	N.R.
01	64	1	14.0	1.8	8.1	7.6	10	77	115	200	10	11	0.8	43	N.R.	4.3×10^2	N.R.	N.R.
03	64	8	13.4	3.0	8.3	7.3	10	40	74	135	5	7	0.6	54	N.R.	4.3×10^2	N.R.	N.R.
06	64	26	9.6	2.2	7.7	7.3	10	85	122	168	5	5	0.0	52	N.R.	0	<1	8±3
09	64	26	11.6	2.2	7.7	8.0	5	115	212	220	5	8	0.4	53	N.R.	0	<1	6±3
12	64	1	13.6	2.8	7.5	6.9	15	89	134	198	10	10	0.0	28	N.R.	4.3×10^2	<1±2	7±3
03	65	4	12.0	3.1	6.9	6.7	20	51	86	140	15	7	1.0	29	N.R.	4.0×10^4	<1	4±3
06	65	27	9.0	1.3	7.9	7.9	5	97	145	215	5	6	0.0	58	N.R.	0	<1	1±3
09	65	26	10.9	1.1	8.0	8.2	5	108	154	260	5	11	0.0	75	N.R.	2.2×10	<1	5±3
12	65	4	13.4	2.2	8.1	8.1	5	113	165	200	5	9	0.0	48	N.R.	1.7×10^2	<1	<3
02	66	2	12.4	1.4	7.1	7.3	15	58	62	155	15	11	0.4	42	N.R.	1.7×10^3	<1	<1
05	66	22	9.6	1.3	7.7	7.5	5	72	66	115	10	3	0.2	29	N.R.	4.5×10^2	<1	3
08	66	22	9.2	1.0	7.9	8.0	5	105	160	215	5	7	0.0	53	N.R.	7.8×10	<1	3
11	66	6	13.6	1.6	7.6	6.8	5	102	152	232	5	9	0.0	38	N.R.	1.7×10^2	1	6±3
02	67	2	14.0	3.1	7.3	6.4	10	43	80	150	10	12	0.6	33	0.00	4.9×10^2	<1	<3
05	67	9	10.8	3.2	7.0	6.3	80	23	66	188	25	3	4.0	22	0.00	1.6×10^5	1	3
08	67	24	9.0	1.5	7.3	7.0	5	46	86	180	5	8	1.0	34	N.R.	3.3×10^2	1	3
10	67	9	9.2	8.8	7.1	6.7	70	45	84	296	20	7	6.4	29	0.00	9.2×10^3	1	8
04	68	14	9.0	2.4	7.5	7.5	10	75	106	142	10	7	0.4	38	0.00	5.4×10^3	1	3
07	68	26	7.4	1.6	8.7	7.3	5	107	156	214	5	8	0.0	53	0.00	3.5×10^4	1	3
10	68	17	9.6	1.6	7.6	7.1	<5	123	182	276	5	8	0.0	71	0.00	7.9×10^2	1	6
01	69	1	14.0	2.6	7.2	7.7	5	77	146	190	5	17	0.4	41	0.21	4.9×10^2	1	3
04	69	10	11.2	1.4	8.1	7.4	5	50	88	140	5	10	0.5	16	0.07	N.R.	3	3
07	69	21	9.6	3.0	8.6	8.2	5	94	142	212	5	12	0.0	49	0.01	N.R.	3	4
10	69	16	7.6	1.7	7.5	7.9	<5	90	140	202	5	12	0.2	60	0.02	1.1×10^3	3	5
01	70	0	11.8	1.5	7.2	1.6	<5	57	120	164	20	17	0.0	35	0.08	1.69×10^2	3	4
04	70	6	9.4	1.3	7.1	7.5	10	39	64	126	44	7	0.4	25	0.03	N.R.	3	4
09	70	18	8.4	1.1	8.3	8.0	5	81	112	158	24	9	0.2	27	0.01	N.R.	N.R.	N.R.
10	70	14	7.6	1.2	8.0	7.9	2	115	152	192	5	12	0.2	44	0.02	4.9×10^2	<3	N.R.
01	71	4	13.6	1.2	7.0	7.6	20	49	90	118	25	8	0.5	23	0.04	1.4×10^3	<3	<4
04	71	10	5.8	2.2	7.1	8.7	10	63	88	138	10	13	0.1	20	0.07	N.R.	<3	<4

a. Department of Environmental Resources, Commonwealth of Pennsylvania
b. All results expressed in milligrams per liter (mg/l) unless otherwise indicated.
c. N.R. - No results

TABLE 6:5

Water Quality of Raystown Branch, Juniata River (Hawns Bridge, Huntingdon County, Pennsylvania)

Month	Year	Temp C°	Dissolved Oxygen	Biological Oxygen Demand (BOD)	Field pH	Lab pH	Turbidity	Alkalinity	Hardness as $CaCO_3$	Total Solids	Dissolved Solids	Chlorides as Cl	Total Iron as Fe	Sulfates as SO_4	Phosphates as PO_4	Coliform MPN/100ml	Gross Alpha	Gross Beta
07	62	24	6.1	2.5	7.4	7.7	10	75	105	170	10	4	0.2	36	N.R.	$2.3x10^2$	N.R.	N.R.
09	62	18	7.5	1.6	7.4	7.6	10	88	140	200	5	5	0.1	38	N.R.	9.1x10	N.R.	N.R.
01	63	1	15.2	1.5	7.3	7.2	10	72	110	205	0	3	0.2	44	N.R.	9.1x10	N.R.	N.R.
04	63	10	11.4	0.6	7.0	6.9	10	30	58	64	5	5	2.0	06	N.R.	$7.3x10^2$	N.R.	N.R.
07	63	26	4.6	4.4	7.5	7.3	10	60	95	180	10	6	0.4	46	N.R.	$1.5x10^2$	N.R.	N.R.
09	63	18	7.8	0.0	7.5	7.5	10	72	145	205	5	6	0.0	71	N.R.	$7.5x10^2$	N.R.	N.R.
01	64	1	13.4	1.8	8.1	7.6	5	67	125	210	5	10	0.2	62	N.R.	0	N.R.	N.R.
03	64	6	12.8	2.4	7.1	6.9	10	30	70	120	5	5	0.4	23	N.R.	$2.3x10^2$	N.R.	N.R.
06	64	23	6.4	2.6	7.2	6.9	10	73	114	168	5	5	0.0	52	N.R.	0	1	9±3
09	64	25	5.6	2.4	7.2	7.1	5	93	134	208	10	8	0.6	53	N.R.	$1.1x10^4$	1	7±3
12	64	3	11.2	2.8	7.3	6.8	10	103	154	192	10	6	0.0	28	N.R.	$1.3x10^2$	1	3±3
03	65	4	12.6	2.9	6.9	7.2	10	31	64	130	10	7	0.2	37	N.R.	$1.1x10^6$	1	5±3
06	65	24	6.2	1.6	7.1	7.1	5	67	165	180	5	5	0.0	47	N.R.	$2.2x10^2$	1	7±3
09	65	24	6.6	1.1	7.3	7.1	5	88	146	230	5	7	0.0	86	N.R.	$1.1x10^6$	1	5±3
12	65	5	11.0	2.2	7.4	7.8	10	94	158	205	5	8	0.0	64	N.R.	$2.3x10^4$	< 1	3
02	66	2	12.2	1.2	7.1	7.1	5	46	76	150	10	8	0.0	42	N.R.	$4.6x10^2$	< 1	3±3
05	66	20	9.6	2.2	7.6	7.3	10	73	72	120	10	4	0.2	17	N.R.	$9.3x10^2$	< 1	3
08	66	25	11.2	3.0	9.2	7.3	10	82	140	180	15	6	0.4	43	N.R.	7.8x10	1	3
11	66	8	10.2	2.2	7.3	6.5	5	90	144	258	5	11	0.0	62	N.R.	7.8x10	1	3
02	67	4	14.0	2.7	7.3	6.2	5	30	52	140	5	10	0.0	33	0.00	7.8x10	1	3
05	67	9	11.2	2.8	7.0	6.5	35	30	78	130	5	3	1.5	29	0.00	$1.6x10^5$	1	3
08	67	36	6.4	1.5	7.4	7.2	5	61	110	204	5	8	0.3	7	N.R.	$9.2x10^4$	1	3
10	67	11	10.0	1.4	7.4	7.1	15	63	114	180	15	8	0.6	42	0.00	$3.3x10^2$	1	3
02	68	22	12.6	2.3	7.0	6.1	15	38	48	106	15	6	0.4	31	0.05	$2.4x10^4$	1	3
04	68	16	8.2	2.2	7.4	7.2	15	64	92	106	15	6	0.3	38	0.00	$3.3x10^2$	1	3
07	68	35	5.0	1.4	7.5	6.4	5	82	146	164	5	7	0.2	48	0.00	$4.9x10^2$	1	3
10	68	16	8.1	0.8	7.4	6.9	<5	77	144	214	5	9	0.0	66	0.00	$3.3x10^2$	1	3
01	69	20	13.3	2.2	7.4	7.7	<5	61	122	170	5	16	0.2	46	0.00	$7.9x10^2$	1	3
04	69	11	8.0	1.6	8.0	7.3	10	35	76	120	10	9	0.3	18	0.01	N.R.	3	3
07	69	22	5.2	1.5	7.1	7.4	5	57	106	170	10	10	0.0	53	0.00	$2.4x10^4$	3	< 3
10	69	14	7.6	2.0	7.3	7.8	5	69	118	172	5	8	0.1	52	0.00	$4.9x10^2$	3	4
01	70	0	11.4	1.1	7.1	7.5	15	50	124	170	5	13	0.2	38	0.17	N.R.	3	4
04	70	8	10.0	0.9	7.6	7.7	10	30	62	130	20	7	0.5	33	0.03	$6.0x10^3$	3	4
07	70	21	5.0	1.2	7.2	8.1	15	68	92	140	64	8	0.5	28	0.03	N.R.	N.R.	N.R.
10	70	14	7.0	0.6	7.6	8.0	5	85	126	198	10	9	0.2	41	0.02	N.R.	N.R.	4
01	71	1	12.8	1.4	7.0	7.6	10	41	78	110	5	7	0.2	21	0.03	$1.3x10^3$	3	4
04	71	11	8.8	1.4	7.6	8.0	10	62	86	134	15	8	0.3	19	0.00	N.R.	N.R.	N.R.

a. Department of Environmental Resources, Commonwealth of Pennsylvania
b. All results expressed in milligrams per liter (mg/l) unless otherwise indicated
c. N.R. - No results

Standard deviations have been added to the following table to illustrate the scatter of the raw data. Table 6:6 shows the extensive ranges and standard deviations for the various parameters tested from 1962 to 1971.

TABLE 6:6

MEANS, STANDARD DEVIATIONS, AND RANGES OF PARAMETERS 1962-1971

	Mean	Standard Deviation	Range
Dissolved Oxygen	9.4 mg/l	3.0	4.6-15.2
Biochemical Oxygen Demand	1.8 mg/l	0.9	0.0-4.4
pH	7.2	0.5	6.1-8.1
Turbidity	10 J.T.U.	6	5-35
Alkalinity	63 mg/l	21	30-103
Hardness	108 mg/l	33	48-165
Total Solids	166 mg/l	41	64-258
Dissolved Solids	10 mg/l	10	0.0-64
Chlorides	7 mg/l	3	3-16
Total Iron	0.3 mg/l	0.4	0.0-2.0
Sulfates	43 mg/l	19	7-96
Phosphates	0.02 mg/l	0.04	0.00-.17

Table 6:7 compares means for tests run in 62-71 and 72-75. Incorporation of this data into an analysis does not significantly change the basic means of the parameters; the large standard deviations make all the original data questionable.

TABLE 6:7

COMPARISON OF MEANS
1962-1971 vs. 1972-1975

	Mean Values Saxton 62-71	Mean Values Saxton 72-75	Mean Values Hawns Bridge 62-71	Mean Values Hawns Bridge 72-75
Dissolved Oxygen	11.0 mg/l	11.0 (2.1)*	9.4 mg/l	10.7 (2.2)*
Biochemical Oxygen Demand	2.1 mg/l	-----	1.8 mg/l	-----
pH	7.6 mg/l	7.3 (0.6)*	7.2	7.2 (0.4)*
Turbidity	11 J.T.U.	-----	10 J.T.U.	-----
Alkalinity	78 mg/l	76 (32)*	63 mg/l	59 (20)*
Hardness	121 mg/l	-----	108 mg/l	-----
Total Solids	187 mg/l	-----	166 mg/l	-----
Dissolved Solids	10 mg/l	-----	10 mg/l	-----
Chlorides	8 mg/l	-----	7 mg/l	-----
Total Iron	0.6 mg/l	-----	0.3 mg/l	-----
Sulfates	41 mg/l	-----	43 mg/l	-----
Phosphates	0.04 mg/l	0.05 (0.04)*	0.02 mg/l	0.03 (0.03)*

*Standard Deviation

Table 6:8, following, presents a summary of pool water quality measurements made in June, 1973. As seen, the water quality is chemically satisfactory and consistent with depth. The water exhibits excellent levels of pH, alkalinity, dissolved oxygen, and hardness. No bacteriological examinations were made.

TABLE 6:8

LAKE WATER QUALITY INFORMATION[1]

Elevation Above Mean Sea Level	Water Temperature	pH	Conductance	Alkalinity	Dissolved Oxygen	Hardness	Remarks
739.5' (Surface)	72° F	7.4	154 Micromhos	41 mg/l	9 mg/l	69 mg/l	Clear
729'	72	--	--	--	--	--	--
726'	71	--	--	--	--	--	--
725'	71	--	--	--	--	--	--
724'	68	--	--	--	--	--	--
722'	65	--	--	--	--	--	--
720'	63.5	--	--	--	--	--	--
719'	62	7.6	157	48	9	86	Clear
714'	59	--	--	--	--	--	--
709'	58	--	--	--	--	--	--
699'	55.5	--	--	--	--	--	--
689'	54	--	--	--	--	--	--
679'	53.5	--	--	--	--	--	--
669'	50.5	--	--	--	--	--	--
659'	49.5	--	--	--	--	--	--
649'	49	--	--	--	--	--	--
639'	49	--	--	--	--	--	--
629'	48.5	--	--	--	--	--	--
619'	--	7.5	151	34.4	7	69	Clear
602'	--	7.1	155	41	6	62	Muddy

[1] June, 1973 - Front of Gated Spillway, U.S. Army Corps of Engineers, Baltimore District

Comparison of the data in tables 6:2 and 6:3 indicates that mine drainage from former mining activities between Saxton and Hawns Bridge exerts an insignificant impact on the quality of the Raystown Branch.

6:04:02 SOURCES AND EFFECTS OF MINE DRAINAGE

Mine drainage in the Raystown Branch of the Juniata River drainage basin originates in the Broad Top coal field and is conveyed to the Raystown Branch by Longs Run, Six Mile Run, Shoups Run, and Great Trough Creek (Figure 6:2). Each of the first three streams is acid from its source to its mouth. Great Trough Creek is acid through its length in the coal fields, approximately five miles. Alkaline tributaries neutralize the acid load and provide an alkaline reserve at its mouth. The stream is so sufficiently neutralized that the Pennsylvania Fish Commission has annually stocked it with brook trout.

The three acid streams contributed the following acid loading to the Raystown Branch during a survey made in 1967:

Longs Run, 2.5 tons/day net acidity
Six Mile Run, 1.4 tons/day net acidity
Shoups Run, 1.6 tons/day net acidity

In spite of the sizable acid contributions as shown in Figure 6:3, the alkaline reserve of the Raystown Branch upstream (an observed 21 tons/day during the 1967 survey) was more than ample to assimilate the acid contribution. The 1967 survey established that the Raystown Branch downstream from the coal field exhibited no evidence of mine drainage loading.

Water quality in the three acid streams was generally comparable. They had pH values of less than 4.5 and elevated concentrations of manganese, sulfate, hardness, and other mine drainage indicators.

Almost all of the mine drainage discharges located in the watershed's tributary to the Raystown Branch of the Juniata River originate in deep mines. A limited amount of surface mining has taken place in the basin and may be influencing deep mine discharges. In the 1967 survey, no surface discharges were observed.

Acid mine drainage appears to have negligible effect on the quality of the water in the Raystown Lake. Examination of historical water quality records, with respect to sulfates, iron, pH, acidity, and alkalinity indicates that any mine drainage being transported into the lake is diluted to concentrations of minor significance. A summary of the effects of mine drainage observed during the survey on the Raystown Branch is shown in Figures 6:3 and 6:4.

6:04:03 LAKE AND TAILWATER WATER QUALITY

The water quality of the lake is expected to be of satisfactory quality for immediate and long range recreational use. Lake water quality is well defined in that all major water inputs have been identified and defined.

The major source of recharge water to the lake is via the Raystown Branch of the Juniata River. As seen in tables 6:2 through 6:5, the water quality is satisfactory for recreational use. Of particular note are significant levels of excess alkalinity in the Raystown Branch which act as a "buffer" against possible slugs of mine drainage. In addition, low levels of heavy metals (for example, iron) should prevent precipitation of unaesthetic deposits.

The lake is a potential immediate and long range source of domestic drinking water. The parameters depicted in tables 6:2 and 6:3 define a satisfactory "raw" source of domestic drinking water. From a chemical standpoint, the pool water is entirely acceptable as a source of drinking water. Critical parameters such as chlorides and heavy metals exhibit satisfactory levels of concentration and are within USPHS (United States Public Health Service) recommended limits. Sulfate levels are satisfactory, being well within recommended limits and in many cases equal or better in quality than most municipal sources of water in western Pennsylvania. Concentrations of hardness are possibly significant in that the use of the water for industrial or domestic household purposes might establish the desirability for "softening". In view of the intended recreational use of the lake, the hardness concentrations should not be an area of concern.

Based on the levels of coliform bacteria observed in the Saxton and Hawns Bridge records, it is recommended that chlorination be undertaken as a precautionary measure if drinking water is drawn from the lake.

6:04:04 RECREATIONAL USE

Chapter 193 of the Rules and Regulations of the Pennsylvania Department of Environmental Resources, dealing with public swimming and bathing areas, states that "the water in bathing beaches shall be considered contaminated for bathing purposes when one of the following conditions exists:

1. The fecal coliform density in five samples of said water collected on five different days exceeds a geometric mean of 200 per 100 ml.

2. The Department determines that any substance is being discharged or may be discharged into the water and is or may be hazardous to the health of persons using the bathing beach.

"When the fecal coliform density of any sample collected at a bathing beach exceeds 1,000 per 100 ml, daily samples from the beach area shall be collected by the permittee and analyzed for fecal coliforms for at least five consecutive days immediately following the finding. The results of the analyses shall be reported to the Department by the permittee within five days of the taking of the last of these five samples.

"Use of a bathing beach found to be contamined shall be discontinued until written approval is obtained from the Department. Such approval shall be given by the Department when the Department finds that the waters of such bathing beach are no longer contaminated."

6:04:05 GROUNDWATER

The rock units present on the site are predominantly shale and siltstone. Wells drilled in these units are generally of low yield and fair to good quality water. The sandstone and less abundant limestone units are the better water bearing units.

The Oriskany sandstone, where present below drainage level, yields water from joints in the unit and from pores in the rock itself. Certain limestone units of the Tonoloway, Keyser and Old Port formations and to a lesser extent the Cayuga group, yield large amounts of water to wells through solution cavities in the limestone. These limestone units have been known to yield water of poor quality (Lohman, 1938).

The Needmore, Marcellus, Mahantango, Harrell, Brallier, Chemung and Catskill formations are all considered to be poor water bearers. Fractures and jointed sandstone units within these formations are probably the most productive lithologies but their limited extent compared to that of the shales renders each formation a poor water bearer.

Two wells drilled as part of the project in the Seven Points area are drilled one hundred fifty feet into the Chemung formation. These wells are both artesian and productive. They are most probably drawing water from fractured sandstone and blocky siltstone units in the Chemung that rise to a higher elevation to the northwest. Precipitation enters the Chemung formation and flows down the dip of the strata. These wells penetrate the Chemung at a point where there is sufficient water pressure generated from higher elevations within the rock group to cause a natural flow from the well. This is an example of the control of geologic structure on groundwater occurrence and flow. A third well also drilled in the Seven Points area penetrated three hundred feet of the Catskill formation. This well produced considerably less water than the two wells mentioned above, and was not artesian.

The Burgoon sandstone member of the Pocono formation is one of the better aquifiers within the project area. This sandstone is the uppermost member of the formation and occurs along the southeastern boundary of the project.

The groundwater table in the area will most likely be raised when the lake has attained its full storage capacity. Based on this assumption, and without detailed hydrogeologic or hydrologic analysis, the final configuration and elevations cannot be fixed precisely. However, some generalizations based on the above assumptions are pertinent to this report.

The location of the lake on the northwest limb of the Broad Top syncline should lead to the raising of the piezometric surface within the syncline. This will tend to cause any artesian wells within the synclinal basin to increase their volume of flow. This increase in flow will tend to be slow as will the rise of the piezometric surface because of the impermeable nature of the shale bedrock (Chemung and Catskill formations) underlying the lake.

This resource will become more important in the future as the area is developed. The groundwater table rise

will definitely affect the supplies available to Saxton and its environs. The availability of increased groundwater supplies may be tapped to supplement the present surface water source of the city of Huntingdon, if future demand outstrips the present supply.

6:05 NATURAL AND WILDLIFE FEATURES

6:05:01 GENERAL

The valley formed by Tussey and Terrace Mountains is predominantly tree covered. A narrow agricultural zone occupies Woodcock Valley, and some scattered agricultural activities occurred on flat land adjacent to the Raystown Branch. Most of this land along the river will be inundated by the recreation pool. The forests are predominantly an oak-hickory association with scattered stands of Virginia and Jack pine. The vegetal types surrounding Raystown Lake are highly divergent, being influenced by soil, exposure, and topography. Open forest, or young timber stands, will exist at the water's edge in many areas. Some of the lake shore is steep cliffs that support little plant life. The embayments that intrude into Woodcock Valley will cover former cultivated field areas in some instances, particularly in the Backbone Ridge Game Mitigation Area. These areas will be managed for wildlife, and should support a divergence of vegetation and wildlife types. Understory for food and cover in most of the forested areas is sparse. Accordingly, the important wildlife in the Raystown Lake area consists of game species such as White-tailed deer, Wild turkey, Ruffed grouse, and Gray squirrel. An occasional bear may be seen, generally during the early summer when they roam widely in search of food.

Although seasonal changes and flood control requirements at Raystown Lake may cause fluctuations of the water surface, the predominant steepness of shoreline areas prevents creation of extensive mud flats. Areas suitable for bird life will develop in the game mitigation area where marsh areas will occur. The five year drawdown frequency will expose 70 acres of lake bottom for aeration of bottom muds and the growth of cover grasses.

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6:05:02 WILDLIFE HABITATS

A great variety of wildlife habitats exist in the Raystown Lake region. The most abundant of these are deciduous, woodland-related species, as 84% of project lands after creation of the recreation pool will be deciduous woodlands. The lake is already attracting waterfowl, and should attract more when the recreation pool is at normal level. The region is popular for hunting. Ringneck pheasant and rabbit are predominant in agricultural areas, while squirrel, grouse, turkey, and deer are found in the wooded areas.

6:05:03 HARDWOOD FORESTS AND ASSOCIATED WILDLIFE

Hardwood forests will cover fully 84% of land surface within the project after the recreation pool has been established. The association consists of various oaks, including White, Scarlet, Red, and Black; hickories, including Mockernut, Pignut, and Shagbark; Flowering dogwood; Tulip tree; wild Red and Black cherry; and such shrubs and vines as Shadbush, Bittersweet, Witch hazel, Mountain laurel, Mountain pink, huckleberry, and Northern fox grape. Many shield ferns, spleenworts, and club mosses are well represented.

These hardwood forests have been heavily logged in the past and are now in second or third growth stages.

Squirrels, opossum, and raccoons favor the older timber stands, as these contain the mature hollow trees suitable for dens. Because of the heavy crown of these areas, low-growing, food-bearing shrubs are not generally available. Wild turkey seek mast in the fall in the oak and beech concentrations. Deer and grouse favor the younger trees for their available browse, food, and cover. Red and Gray fox are also found here, as they seek mice, grouse, and grapes common to this area.

6:05:04 PINE FORESTS AND ASSOCIATED WILDLIFE

Stands of Virginia and Jack pine occur occasionally throughout the project. Existing stands will cover 4% of the noninundated area, and recently cut stands,

about 1.6%. The recently cut stands will regenerate, first passing through a briar-brush phase. These pine forests provide roosting areas for owls, cover areas for deer during heavy snows, and winter roosts for songbirds.

6:05:05 RAVINE AREAS AND ASSOCIATED WILDLIFE

There are many ravine areas on the ridges and slopes that surround Raystown Lake. Some tree and shrub species found here include Striped and Sugar maple, White birch, Flowering dogwood, beech, Tulip tree, hemlock, alders, and Mountain laurel. Many ferns grow in the shaded, moist areas; among them are Maidenhair, shield ferns, spleenworts, and polypody. The ravines quite often contain springs which attract all wildlife species living in adjacent areas, particularly species from the oak-hickory association areas discussed above.

6:05:06 MEADOW AREAS AND ASSOCIATED WILDLIFE

Meadow areas will occupy about 10% of land area after the lake has reached full pool. Some of the meadow areas will be utilized for development as the demand occurs. Shrubs that occur are dogwood varieties; hawthorne, various wild cherries, sumachs, viburnums, dewberries, blackberries, and raspberries. Some grasses are native bluegrass, Poverty grass, and Wild oats. There are over 14 miles of cleared pipeline rights-of-way traversing the project area. These clearings provide many hundreds of acres of meadow type areas and meadow edge/thicket areas that would not otherwise exist within this forested region. These areas are important feeding zones for song and game birds, rabbits, deer, and other game and nongame wildlife species.

6:05:07 MEADOW EDGE/THICKET AREAS AND ASSOCIATED WILDLIFE

This association is characterized vegetally by hawthorne varieties, Witch hazel, Mountain laurel, wild grape, blackberries, various huckleberries, dogwood, wild cherry, sassafras, and wild rose species. These meadow edge/thicket areas are very important to all wildlife,

particularly songbirds such as robins, cardinals, and chickadees. They provide food, shelter, and cover adjacent to meadow areas which are also a source for nest building material, weed seeds, and insects.

6:05:08 SHALE BARRENS

6:05:08:01 GENERAL

Pennsylvania contains a diversity of natural communities unequalled in many other states. Centrally located in the mid-Atlantic region, the state is a transition zone for numerous plant and animal communities. It is the meeting ground for biota from the north, south, east, and west. Of the 27 million acres in Pennsylvania, some 90,000^{+} acres have already been preserved as natural areas to protect the natural heritage so important to the scientific and public community. These areas, as living museums, are thus afforded complete protection of the biotic and physical systems native to that area for the purpose of scientific study and individual enjoyment.

6:05:08:02 SHALE BARRENS CONDITIONS

Shale barrens contain unique communities of plants adapted to extreme soil and climate conditions. Found on Devonian age outcrops of Chemung shale common to south central Pennsylvania, these cliff areas, and the associated endemic flora, occur when the proper western exposure, low soil moisture, shallow or nearly nonexistent soil, and steep slope gradient combine to create a "barrens" situation.

It is apparent from several studies that although water is available, high rates of evaporation and extremes of temperature combine to limit vegetation to those species with the ability to withstand the severe environmental conditions during seedling stages. Thus, a community of endemic, or restricted, species common only to a few sites is created.

6:05:08:03 LOCATIONS

Barrens are found from south central Pennsylvania through Maryland, West Virginia, and into Virginia

along the central section of the ridge and valley province. Although larger and more diverse shale barrens occur outside Pennsylvania, the twenty-two known sites in Bedford, Fulton, and Huntingdon counties are the northern limits for many of the common endemic species.

The shale barren communities of Bedford, Fulton, and Huntingdon counties are one of the most unusual, and also most endangered, vegetational ecosystems in Pennsylvania. These areas are few in number and small in size, but contain plant species known only in these limited habitats. Thus, the small total acreage and harboring of rare endemic species makes the barrens an important object for natural area preservation. At present, there are no completely protected shale barrens in Pennsylvania.

Generally small in size and considered "worthless", these natural areas have been saved from destruction by their apparent lack of value. But this defacto protection has not been enough, and there is a definite need to completely recognize and protect these endangered habitats.

6:05:08:04 IMPORTANCE

Each site is individually important, but with the protection of a series of similar habitats, the significance of each barren is geometrically increased. The Raystown Lake project offers the opportunity to fully preserve a complete set of shale barren communities, each similar, but each with enough variation in slope, exposure, degree of formation, and density of vegetation cover, to be a continuum of living reference communities for both researchers and laymen.

Similarly, the dedication of these tracts as natural areas will complement the total recreational facilities envisioned for the Raystown Lake project. These reserves will offer the visitor a series of completely undeveloped natural areas for study and the chance to experience the unalloyed sense of the environment at its fullest. See Section 10:20 and plates 16-27 through -33.

6:05:09 MARSH ZONES AND ASSOCIATED WILDLIFE

Dominant marsh plants which will develop will be cattails, sedge varieties, and various marsh grass species. The marsh zones of the lake will be primarily within the game mitigation area, which will be managed and maintained to produce optimum food and cover species by the Pennsylvania Game Commission. Important wildlife inhabitants that are expected in this area will be such fur bearers as muskrat, raccoon, and opossum; waterfowl species as Wood duck, Mallard, Blue-winged teal, Black duck, Scaup, and Canadian geese; wild birds, particularly Red-winged blackbird; and water snakes, various turtles, and frogs.

6:05:10 THE LAKE HABITAT

6:05:10:01 SURFACE

The generally steep underwater shoreline, coupled with lake level flood and minimum release fluctuations of Raystown Lake, is expected to preclude the existence of large numbers of many normal shoreline plants such as Water lily, Cattails, and Arrowroot.

6:05:10:02 SUBSURFACE

The subsurface environment of the lake itself will be as varied and diverse as the land areas of the project. The different slopes, changes of grade, northern or southern exposure, rock areas (known locally as stony batters), and former ravines which will be small inlets and coves will provide a habitat containing food and cover for a large variety of fish.

6:05:11 ENVIRONMENTALLY UNIQUE AREAS

6:05:11:01 GENERAL

There are many environmentally significant areas that will become important parts of the ecosystem complex of Raystown Lake. Although many are new, these areas will increase in value for wildlife food and cover as project management practices are performed. Included are the meadow edges and the woods edges along the

pipelines that cross the project. Clearing for hiking trails will create valuable openings for birds. These bird life and wildlife havens will be secured through management techniques to sustain and improve the habitat.

Other unique areas to wildlife are ravines. These usually contain water, laurel or rhododendron, and hemlock. The shrubs provide winter cover from heavy snows and will be protected. Grape thickets are important food sources to grouse, as are concentrated oak stands to squirrels and turkey. The game mitigation area will provide the primary marsh habitat for the project.

6:05:11:02 SUMMARY

Current construction and clearance activities have had an unsettling effect on wildlife in the area. However, new patterns of distribution of habitats will distinguish themselves in a short period after the completion of disturbances. The sensitive areas previously discussed will be avoided for further development and will, where possible, be utilized for nature study and observation purposes.

6:06 SCENIC VALUES

6:06:01 GENERAL

Raystown Lake is within the valley formed by Tussey and Terrace Mountains. The valley is 4 miles wide at the upstream end of the project, near Saxton, and diverges to 8 miles in width at the dam south of Huntingdon, nearly twenty miles away. The eastern flank of Tussey Mountain descends sharply from an elevation of 2,200-2,000 MSL to elevation 1,500-1,300 MSL. A gentle valley is then formed, progressing eastward through a series of seven ridges to Raystown Lake, then rising steeply on the western slope of Terrace Mountain to elevations of 1,600 to 1,900 feet MSL. The scenic beauty of this valley is outstanding, especially so when viewed from PA 164 either ascending or descending Tussey Mountain. The valley is predominantly tree covered, with a relatively narrow strip of agricultural land along PA 26 which provides visual relief to the wooded backdrop.

The changing of the seasons in Pennsylvania provides a continual panorama of scenic beauty, from the first blush of soft green in the spring to the deep green of summer. The coming of autumn and cooler weather provides one of Nature's truly outstanding displays of color, from the deep reds and intense yellows of the maples to the more earthy colors that the oaks display. Winter's rest, with the grayness that the trees give to the hills, only serves to highlight the deep green of scattered hemlock and pines against a scattered backdrop of snow.

6:06:02 THE LOCAL LANDSCAPE

The damming of the Raystown Branch to form Raystown Lake has created an enormous asset, physically as well as visually, for the entire area. As the recreational area around the lake is developed, it will become one of the most important amenities of the entire region. Most of the land area of the project is, and will remain, tree-covered. The density of the wooded areas, coupled with the length and physical size of the project, will allow for simultaneous use by many persons, while preserving the rural recreation experience.

The ridge of Terrace Mountain forms an outstanding backdrop for the lake. Persons on the water will receive a beautiful view of the western flank of the mountain. It parallels the entire lake and is almost entirely tree covered.

6:06:03 THE LAKE

Raystown Lake is generally narrow. It follows the sinuous course of the Raystown Branch of the Juniata River and contains three major bays, three major coves, and numerous minor coves and inlets. The rugged topography of the shoreline, which will keep most recreational development away from the lake, is an assurance that the lake will remain in its natural setting. The geologic structure and soil conditions of the shoreline area will prevent vegetative types from undergoing a great deal of change because of hydrologic influences. Localized low gradient areas will develop a marsh character; these will occur primarily in the Backbone Ridge Game Mitigation Area.

* TABLE 6:9
TREE AND SHRUB INHABITANTS OF
THE RAYSTOWN BRANCH AREA*

Common Name	Genus Species
Eastern hemlock	Tsuga canadensis
Eastern white pine	Pinus strobus
Red pine	Pinus resinosa
Eastern black walnut	Juglans nigra
Shagbark hickory	Carya ovata
Shellbark hickory	Carya laciniosa
Pignut hickory	Carya glabra
Mockernut hickory	Carya tomentosa
Yellow birch	Betula lutea
Sweet birch	Betula lenta
American beech	Fagus grandifolia
White oak	Quercus alba
Northern red oak	Quercus borealis
Scarlet oak	Quercus coccinea
Black oak	Quercus velutina
Pin oak	Quercus palustris
American elm	Ulmus americana**
Cucumbertree magnolia	Magnolia acuminata
Tuliptree	Liriodendron tulipfera
American planetree	Platanus occidentalis
Black cherry	Prunus serotina
Sugar maple	Acer saccharum
Red maple	Acer rubrum
Silver maple	Acer saccharinum
American linden	Tillia americana
White ash	Fraxinum americana
Pitch pine	Pinus rigida
Virginia pine	Pinus virginiana
Eastern larch	Larix laricina
Black willow	Salix nigra
Quaking aspen	Populus tremuloides
Bigtooth aspen	Populus grandidentata
Butternut	Jugians cinerea
River birch	Betula nigra
Chestnut oak	Quercus montana
Slippery elm	Ulmus fulva
Common hackberry	Celtis occidentalis
Common sassafras	Sassafras albidum
Pin cherry	Prunus pennsylvanica
Black locust	Robinia pseudoacacia
Common honeylocust	Gleditsia triacanthos
Boxelder	Acer negundo
Blackgum	Nyssa sylvatica
Black ash	Fraxinus nigra
Red ash	Fraxinus pennsylvanica
Eastern redcedar	Juniperus virginiana

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* TABLE 6:9 (cont'd)
TREE AND SHRUB INHABITANTS OF
THE RAYSTOWN BRANCH AREA*

Common Name	Genus Species
Gray birch	Betula populifolia
American hornbeam	Carpinus caroliniana
American hophornbeam	Ostrya virginiana
American chestnus	Castanea dentata
American mountainash	Sorbus americana
Shadblow serviceberry	Amelanchier canadensis
Thicket hawthorn	Grataequs intricata
Cockspur hawthorn	Crataegus crusgalli
Dotted hawthorn	Crataegus punctata
American plumb	Prunus americana
Wild sweet crabapple	Malus coronaria
Eastern redbud	Cercis canadensis
Striped maple	Acer pennsylvanicum
Flowering dogwood	Cornus florida
Shining willow	Salix lucida
Pussy willow	Salix discolor
Allehany chinkapin	Castanea pumila
Scrub oak	Quercus ilicifolia
Dwarf chinkapin oak	Quercus prinoides
Common chokecherry	Prunus virginiana
Devels walingstick	Aralia spinosa
Staghorn sumac	Rhus typhina
Poison sumac	Toxicodendron vernix
Mountain winterberry	Ilex montana
Mountain maple	Acer spicatum
Pagoda dogwood	Cornus alternifolia
Blackhow viburnum	Viburnum prunifolium
Nannyberry viburnum	Viburnum lentago
Common witchhazel	Hamamelis virginiana

* Commonwealth of Pennsylvania, Department of Environmental Resources

** Rare and/or endangered species

* TABLE 6:10
PARTIAL LIST OF MAMMALS
OBSERVED IN RAYSTOWN LAKE AREA

Beaver (Castor canadensis)
Black bear (Ursus americanus)
Cottontail rabbit (Sylvilagus floridanus)
Eastern chipmunk (Tamias striatus)
Gray fox (Urocyon cinereoargenteus)
Gray squirrel (Sciuras carolinensis)
Muskrat (Ondatra zibethicus)
Opossum (Didelphis marsupialis)
Porcupine (Erethizon dorsatum)
Raccoon (Procyon iotor)
Red fox (Vulpes fulva)
Striped skunk (Mephitis mephitis)
Whitetailed deer (Odocoireus virginianus)
Woodchuck (Marmota monax)

* TABLE 6:11
PARTIAL LIST OF GAME BIRDS
OBSERVED IN RAYSTOWN LAKE AREA

Black duck (A. rubripes)
Blue-winged teal (A. discors)
Bob-white quail (Colinus virginianus)
Canadian goose (Branta canadensis)
Green-winged teal (Anas Carolinensis)
Mallard duck (Anas platyrhynchos)
Ring-necked pheasant (Phasianus colchicus torquatus)
Ruffed grouse (Bonasa unbellus)
Scaup (Athya marila)
Turkey (Meleagris gallopavo)
Whistling swan (Cygnus columbianus)
Wood duck (Aix sponsa)

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7: ENVIRONMENT: CULTURAL FACTORS INFLUENCING DEVELOPMENT

SECTION 7: ENVIRONMENT: CULTURAL FACTORS INFLUENCING DEVELOPMENT

7:01 RAYSTOWN REGION

An inventory of the cultural factors of the Raystown Lake area begins with an understanding of the region surrounding the lake. The following inventory of cultural features identifies relevant data as they concern the lake. No artificial assumed boundary was chosen, as some areas adjacent to project lands have almost no influence, while others miles away will have an impact upon the project visitor. Cultural factors included in this section are archeological and historical features, recreational resources, land use and accessibility.

7:02 ARCHEOLOGICAL FEATURES OF THE SITE AREA

The Raystown Lake area has recently been the scene of extensive archeological research. Although the construction of the dam was the impetus to the field studies, as the valley would soon be flooded, the beginning had come just a few years earlier. In the autumn of 1957, a dry rock shelter was discovered above the valley floor.

The importance of this shelter, found by amateur archeologists while boating on the former reservoir (7:04:04 and 7:04:04.1), was soon realized. Contact was made with the Pennsylvania Historical and Museum Commission, and further excavations were initiated. Eventually, the National Park Service provided funding; the Pennsylvania State University, personnel; and Juniata College, laboratory and living facilities for field crews. Over thirty-five other sites of varying importance were discovered in the project area. Excavations sufficient to establish the importance of the archeological finds were carried out. Most sites were found to be seasonal hunting camps. The dry rock shelter, known locally as Sheep Rock, was placed as one of the most important archeological sites in the northeastern United States. See table 7:1 on the following page, and plate 16-22.

TABLE 7:1

ARCHEOLOGICAL SITES

Key - plate 16-22	Number	Site Name	OCCUPATION				TOPOGRAPHY			
			Archaic	Woodland	Historic		Stream Confluence	Point Bar Meander	Other	
A	36HU1	Sheep Rock	●	●	●				●	
B	36HU2		●					●		
C	36HU3			●				●		
D	36HU4			●				●		
E	36HU5			●					●	
F	36HU6	Mussell Rock		●					●	
G	36HU7		●					●		
H	36HU8		●					●		
I	36HU9	Cunningham	●	●				●		
J	36HU10						●			
K	36HU11	Potato Patch	●		●		●			
L	36HU12	James Creek #1	●	●			●			
M	36HU13	James Creek #2	●		●		●			
N	36HU14						●			
O	36HU15						●			
P	36HU16						●			
Q	36HU17		●					●		
R	36HU18		●					●		
S	36HU19				●			●		
T	36HU20							●		
U	36HU21							●		
V	36HU22	Entriken	●	●	●			●		
W	36HU23							●		
X	36HU24	Entriken Bridge	●					●		
Y	36HU25	Baker #2	●					●		
Z	36HU26	Baker #1	●					●		
AA	36HU27	Shy Beaver	●				●	●		
BB	36HU28							●		
CC	36HU29		●		●			●		
DD	36HU30		●						●	
EE	36HU31		●					●		
FF	36HU36							●		
GG	36HU39							●		

Table adapted by LRK from data in reports by Penn State University on Sheep Rock Shelter, 1966, 1967, 1968.

7:02:02 PRIMITIVE SETTING: THE REGION BEFORE MAN

The Raystown Lake area has not been subjected to major tectonic activity for millions of years. The entrenched meanders of the present river flowed on a peneplane during Cenozoic time. Uplift and dissection of this peneplane occurred during the Cenozoic and the river remained in the meandering channels and cut down to what we see today. The river produced the Sheep Rock Shelter by undercutting in Chemung age shale. Eventually, the floor of the shelter was left 30 to 40 feet above the river. The sheltered area faces west and is about 30 feet deep. The floor was protected from the elements, yet enjoyed sunshine most of the day.

The ridges of Tussey and Terrace Mountains and the intervening ridges called Redstone, Warrior, Backbone, Piney, Middle and Allegrippis, had been formed for centuries. Travel through Pennsylvania then, as now, was controlled by the folded mountains and their general lack of an east-west passage.

The regional forest was predominantly coniferous (Kovar, 1964, 1967) until approximately 7000 B.C., at which time the area became slightly warmer and drier, and changed to the oak-hickory association that still exists today. Meadow areas were probably few, and the large trees of the forest did not allow much sunlight through to the forest floor. The continuous shade meant little understory and available food and hence a small wildlife population. There is no evidence of man in the Raystown Lake area prior to the change in the forest cover, although recent excavations near Avella in Washington County place man in the western Pennsylvania area as early as 12,000 B.C.

7:02:03 PALEO-INDIAN EPOCH

The oldest evidence of man at Sheep Rock has been carbon dated at 6290 B.C. $\pm$ 320 years. This is very late in the Paleo-Indian Epoch, which dates 16000 - 6000 B.C. and is considered by some to be Early Archaic, or 8000 - 5000 B.C. This would place man at the site nearly 2,000 years before the pyramids of Egypt. The oldest skull yet discovered in the eastern United States, that of a 30 year-old woman, was found at Sheep Rock and dates back to this period.

Man, at this time, led a highly nomadic life, hunting and fishing in an area from season to season and moving as the game or readily available firewood was exhausted. Big game animals were preferred; these early men hunted several species of now extinct elephant with spears and roasted the meat (Witthoft, 1965). Paleo-Indians had few tools, were never numerous, and left scant evidence of their existence. Only three projectile points of this epoch were found in the Sheep Rock Shelter as evidence of a hunting economy.

7:02:04 EARLY ARCHAIC PERIOD

During this time at Sheep Rock, there were two different periods of occupation. The first, termed the Raystown River Phase, dated 5000-4000 B.C.; the latest, the Laurentian Phase, dates 4000-3000 B.C. The occupants hunted many of the same animal species which are still living in the area today. They were the first to domesticate the dog, which was often used as a food supply when game was scarce. Chopping tools were invented, acorn porridge was eaten, and foods were boiled in bark vessels with the use of heated stones. Woven fabrics and sandals were made, and a diversified economy for nomadic life within a family territory existed. The people hunted, fished, and gathered wild fruits and edible plants, and were the first to invent a stone hatchet with a blade sharpened by grinding.

7:02:05 LATE ARCHAIC PERIOD

This period was level 6 of the excavation of Sheep Rock. It covers the time span of 4000-1500 B.C. Several varieties of points were found in this level. Two radiocarbon dates were obtained; one dated a hearth at 2350 B.C.$\pm$ 180 years. At this time in the Eastern United States, forged copper tools and axes were first invented. The river was utilized for transportation, shellfish became part of the diet, and the spear thrower and javelin were first used. These people were the first to be populous in North America, and most campsites that contain Indian relics are of this period. The tomahawk was invented during this period, as well as "corn grinders" which were, in actuality, used for crushing acorns.

Many of the other habitation sites in the area were of this Archaic period. They were mainly small camp-sites, and only one will remain above the recreation pool (plate 16-22).

7:02:06 TRANSITIONAL PERIOD

This period occurs between the Archaic Epoch and the Woodland Epoch. It dates 1500 to 1000 B.C. This period at Sheep Rock was represented by a relatively thin layer of debris with diagnostic artifacts being highly restricted to the central and westerly portions of the site.

This was the period of intensive fisheries, the first carved soapstone kettles, and the first pottery. With good cooking ware, meats were now stewed. Although canoe life began in the eastern U.S., canoes as we know them were not used locally as the Paper, or Canoe, birch has never grown in this area. Some canoes were made of elm or hickory bark, but these and the dugouts made by hollowing large logs, were cumbersome. They required deep water, and could only be portaged with a great deal of difficulty.

Hills and the countryside were apparently abandoned as a food source, and streams and rivers were followed for fish, migratory waterfowl, and riverfront game. Floodplains were farmed, and with the need to tend crops, plus a bounty of surpluses, the first settlement began. Sheep Rock Shelter would have been ideal for this way of life.

7:02:07 EARLY WOODLAND PERIOD

This period of 1000-500 B.C. was the beginning of a productive economy. At Sheep Rock, the Early Woodland Period was represented by a debris layer 30 inches deep at the eastern edge of the shelter, lensing out in the western side. Three varieties of pottery were found, along with Meadowood and Juniata Stemmed types of projectile points.

The settlements of the Transitional Period dissolved, and Indians lived in single households along rivers. Sunflowers were first cultivated, along with pigweed and amaranth. Tobacco also found its way into use for the first time.

7:02:08 MIDDLE WOODLAND PERIOD

The Middle Woodland Period at Sheep Rock has been radiocarbon dated from two charcoal samples as A.D. 60 ± 140 and A.D. 320 ± 140. The period itself is dated as 500 B.C. to 500 A.D. Projectile points from four different archeological cultures have been identified. These cultures may have either lived in the shelter, or traded with those that did. Sheep Rock cord-marked pottery was also identified from this period.

Although the beginning of this period saw Indians still living on scattered hut sites, the end saw communities again established. In the Illinois Valley, dense towns existed, while here in Pennsylvania only two or three households were apparently situated together.

During this time, maize, beans, and pumpkins came into cultivation and formed the staple part of the peoples' diets. The bow and arrow was invented and a sedentary house life became well established.

7:02:09 LATE WOODLAND PERIOD

This period marks the last stage preceding European contacts and eventual settlement. It ranges in a time frame of 500 to 1570 A.D. There were five archeological cultures represented at Sheep Rock, these being Clemson's Island, Owasco, Shenk's Ferry, Monongahela and Susquehannock. These sites in the east are marked by an abundance of pottery sherds, and only one shape of arrowhead- a small, unnotched triangular point.

These people nearly always lived on river flats in small villages close to the water. The villages consisted of approximately six houses in the middle of a field area. Corn, beans, and pumpkins were cultivated, tobacco was grown for smoking, and deer, bear, turkey and other animals were hunted for meat. Houses were round, oval, or rectangular, and covered with sheets of bark. Ring palisades of logs were sometimes used as protection in the event of warfare.

The end of this period, about 1560, saw the last continuous occupation of Sheep Rock. A small band of

Susquehannock, about 20 adults, lived at the shelter and left a great deal of evidence of their life style. There were about thirty-two sleeping pits arranged in an oval. Women and children slept in the center while the men slept in pits at the perimeter of the oval. These pits were made of bark and lined with grass. They were about three to four feet long, two to three feet wide, and three feet deep, thus offering protection from winter winds.

The Susquehannock at this time were mobile. Prior to 1550, they had lived on the North Branch of the Susquehanna, near Wyalusing, PA. Iroquois war parties drove them out, whereupon the Susquehannock proceeded to eliminate other tribes from the entire Susquehanna valley, of which Sheep Rock on the Raystown Branch of the Juniata River was a part. Their sweep of the Susquehanna River basin ended the record of native culture history at Sheep Rock. The Susquehannock were finally destroyed by the Iroquois in 1675.

7:02:10 COLONIAL PERIOD

This period, which saw the end of Indian tribal occupations in the area, is dated 1570 to 1775. The last band of Susquehannock had actively lived at Sheep Rock about 1560. Few cultural artifacts were found, although there were seven large distinct hearth areas. These represented all of the Indians, traders, and hunters that had camped here for almost 200 years. Only scattered wood chips, two rifle balls, a French rifle flint of the late 1700's and two worn fragments of worn and tattered "Kentucky cloth" were the total record. Owls and hawks had added many flying squirrel bones, but practically no rabbit, indicating the existence of a forest in the Sheep Rock area.

7:02:11 AN OVERVIEW: SHEEP ROCK AND THE REGION

Sheep Rock, as can be seen from the preceding information, has served many people over a period of 9,000 years. Although never housing a large number of persons at any one time, the shelter was nearly ideal because it was dry, protected from storm and flood, and yet close to water, fields and forests. Although easily defensible

because of Sheep Rock's elevated position above the water and adjacent cliffs, the rear wall was difficult to ascend, making entrapment by war parties possible.

Although the river was available for travel by dugout or elm bark canoe, these were not generally used in the area because they were unwieldy and the water level fluctuated. Walking along the river, especially the Raystown Branch, was also difficult. The meanders add extra length between distant points, and unpassable cliffs alternating with flat areas, thick river bank brush from floods, side streams, and the main branch had to be crossed again and again. There was also a very scattered population; consequently, many square miles of forest northeast and southwest of the Raystown Lake area were not inhabited. Standing Stone, now called Huntingdon, and the late Shawnee settlement of Opessah's Town (Oldtown, MD) were the primary objectives of travelers. They walked the Warrior's Path, which was on the eastern side of Warrior's Ridge. The path was relatively dry, level, and more importantly, direct. There have been several Archaic age campsites found adjacent to it. The general location of the path near the project was later followed by the former Huntingdon and Broad Top Mountain Railroad, and may now be seen on maps marked "jeep trail". As this was the primary travel route, Sheep Rock, although having many positive attributes, was never convenient enough or large enough to have grown into a self-supporting community (plates 16-27 through 33, -21, and -22).

The ultimate importance of Sheep Rock may be many years in coming. It is evident that the rich finds of well preserved plant materials and archeological artifacts associated with carbon datable organic remains yield a much better insight into early Man's way of life in this area. The proposed interpretive center will be invaluable in explaining early Man's methods of living with nature in the Raystown Lake area.

7:03 HISTORICAL FEATURES OF THE SITE AREA

7:03:01 THE ARRIVAL OF THE WHITE MAN

This early period is marked by much overlap of contact and settlement. The Monongahela people vanished from

the upper Ohio River Valley and its main tributaries above present day Pittsburgh before any direct physical contact with white men, although white men's diseases could have been responsible for their demise. White men had had contact with Indians at Sheep Rock, as attested by potsherds discovered in excavations there.

By the time William Penn's first deed with the Delaware Indians was confirmed October 24, 1682, the Iroquois had established the Tree of Peace over the area six years previously. As more land was bought and settlers moved westward, it was not until 1750 that Indian trader Robert Ray settled at what became known as Raystown. The following year the British built Fort Bedford on the southern shore of the stream now known as Raystown Branch. This fort was used as a supply post for the campaign against Fort Duquesne in 1758 during the French and Indians Wars. It is now present-day Bedford, PA.

7:03:02 EARLY SETTLEMENT

During the Revolutionary War, bands of Indians frequented the region, and Fort Bedford was used for refuge, along with new forts at Standing Stone (Huntingdon) and McAlevy's Fort, northeast of Huntingdon. During the war, Michael Skelly was killed by Indians near Elk Gap in Woodcock Valley, Hopewell Township and his brother Felix was taken prisoner (Africa, 1883). The wife of William Elder was taken prisoner in the same raid, about half a mile from the present day Cove. John Plummer had settled on Coffee Run before the Revolutionary War, and was killed in an early Indian raid. Several children were captured, and one girl, Sarah, remained in Canada the rest of her life with the Indians. There was also a fort near Marklesburg, Fort Hartsock.

One of the first warrants of 1755 in Huntingdon County was in Logan Township, several miles north of Huntingdon. People came from Maryland and eastern Pennsylvania to settle in the Raystown Branch and Juniata Valleys. All of the townships around the lake were first settled between this time and up to 1800.

7:03:03 BEGINNINGS OF A COMMUNITY

With the arrival of white settlers throughout the area, businesses and industries started. Farms were cleared

in Woodcock Valley and in the fertile bottomlands along the Raystown Branch. Sawmills were built on many of the local streams and great quantities of oak bark were shipped for use in tanning hides in the making of leather. Jacob Haun had one of the first sawmills in Juniata Township in 1825, and four existed at various times on Shy Beaver Creek. The first grist mill was probably built by the Englishman Thomas Wilson. It was in Penn Township near "Station Farm". Known as "Tub Mill", it was a very primitive structure. James Entriken built a grist mill in 1844 on Shy Beaver Creek at its confluence with the river, and Puttstown also had one built by Henry Putt in 1842. Entriken at one time owned three flouring mills, the locations of which are unknown. A local tannery was built in Puttstown in 1857 by W.S. Enyeart & Bros. In 1880 it was rebuilt, and in 1882 a twenty-five horsepower steam engine was installed. At that time, it had an annual capacity of 2,500 hides. There was also an early tannery on Coffee Run, and one on the Bedford Road a mile north of Marklesburg. Grantville, south of Aitch, also had a tannery.

Iron ore was dug between Mulberry and Warrior's Ridge and at the base of Tussey Mountain in Hopewell and Penn Townships for shipment to Johnstown and Danville. There were several iron furnaces in the area. Paradise Furnace, once called Mary Ann's, was in what is now Trough Creek State Park. Rough and Ready Furnace was built by James Entriken on Shy Beaver Creek. The remains of this furnace were leveled when the Shy Beaver Boat Ramp was built.

The area had several general stores. A distillery was built in 1875 in Juniata Township, and there were cabinet shops, wagon works, and blacksmith shops in the valley. A brick mill was operated in Penn Township.

The Huntingdon and Broad Top Mountain Railroad was built in 1854 following in part what was essentially the Indian Trail known as Warrior's Path. The trains principally hauled coal from the Broad Top coal fields (east of the project) to Huntingdon. They also hauled iron ore, lumber, and other local products. It was a narrow gauge railroad. Some of the flag stations near the project were Cove, Entriken, Grantville, Grafton, and Hesston. The railroad was removed in 1954.

Post offices were established at Coffee Run, McConnellstown, Aitch, Cove Station, Shy Beaver, Grafton, and Marklesburg. The Marklesburg Post Office, established in 1840, still carries its original name of James Creek.

There were many schoolhouses in the area. However, most of these were not built until after the Civil War. The free school system was not kindly received by local residents, and the people were too widely scattered to effectively use the schools. Each township had several schools, and usually there was one in each village. Churches were numerous throughout the valley. Some of the denominations were Unity, Presbyterian, Evangelical Lutheran, Methodist, Episcopal, Baptist, Reformed, Brethren, Zion's Reformed, Mount Zion Evangelical Lutheran, German Reformed, German Baptist Brethren, Mennonite, and Methodist.

All of the existing churches within the project site have now been cleared. There were thirteen cemeteries containing 408 graves on the project which required relocation. Most cemeteries have been relocated outside of the project boundaries. The Yocum Cemetery remains in the Seven Points Recreation Area. There are three other burial sites at various locations. See D.M. 10 for further details on cemetery relocations.

Local communities were established as the need for trade arose in the area. Most of the settlements were either along present day PA 26 or were built adjacent to the Huntingdon and Broad Top Mountain Railroad after its construction in 1854. One of the earlier communities was Marklesburg, founded in 1844 and named after General Joseph Markle, the Whig candidate for governor that year. Its post office, known as James Creek, had been established in 1840. Puttstown was founded by Jacob Putt in 1840. Coffee Run was first settled by James Entriken, Sr. at the mouth of Coffee Run between 1790 and 1800. The store he established there was the first in the region.

Although the local Raystown Branch area had many industries, these were all small and produced goods generally used and consumed in the immediate area.

Timber was cleared, and many of the early log houses survived until recent clearance for the lake. It was a subsistence farm economy, with most farms producing for themselves, selling their surplus, and buying those few items which could not be made at home.

As machinery progressed and production agriculture developed, the farms on the steep fields and ridges were no longer economical units. Fields and farms, in many cases, were abandoned and have returned to scrub growth. Although farming has continued in the limestone soils along PA 26, the less fertile ridges of the project area contained many nonoperating farms.

7:03:04 HISTORICAL SITES

Occurrences related to the settlement of the Raystown Branch by traders and farmers are historically unique. This is evidenced by the many sites which have been identified as being significant by various individuals and the Huntingdon County Historical Society. Unfortunately, flood control requirements dictated inundating many of the locations of interest, as these were adjacent to the Raystown Branch or its tributaries. As mentioned earlier in this section, required cemetery relocations are complete, and all churches, houses, and barns have been cleared. However, there are still some significant features remaining above recreation lake level. These are:

1. Brumbaugh Homestead: the farm "Timothy Meadows," has been the Brumbaugh family homestead since August 4, 1800. It was first surveyed for a patent application August 2, 1766. The existing stone house was built about 1840. The Brumbaugh house is included in the National Register of Historic Places. See Letters 6 and 7 in the Exhibits at the conclusion of this Plan.

2. Double stone lime kiln: near the Brumbaugh house.

3. The Dean Grove house and farm: first settled in 1795 or 1796, the log house was built in 1826. This house is on the outlease to Juniata College and will be restored and used as their field station headquarters.

4. The Cloyd Rhodes house and farm: a very old, well preserved stone farm house with a large stone lined spring adjacent to the house. The cemetery on the farm, which contained burials dated to 1800, was relocated when other burials on project lands were reinterred. This structure, * which is located in the Rothrock Recreation area will be preserved and utilized as a ranger station and interpretive * and community center for the camping area.

5. Anderson Cemetery: immediately adjacent to the project at the Raystown Lake Administration Building southeast of Hesston; burials date to the early 1800's. The cemetery is along the main access road into the Seven Points Recreation Area.

6. Valley View Cemetery: the project boundary abuts and skirts this cemetery; it is across the road from the Brumbaugh Homestead. The late Pennsylvania governor, M.G. Brumbaugh, is interred here.

7. Yocum Cemetery: Juniata Township adjacent to Enyeart Barrens in the Seven Points Recreation Area. The cemetery dates to the early 1800's.

All of these are shown on plate 16-22.

7:04 RECREATIONAL FEATURES: RAYSTOWN LAKE AREA

7:04:01 GENERAL

The total recreation pool surface area of Raystown Lake is 8,300 acres at elevation 786 MSL. It is bordered by flood control storage lands totalling 2,500 acres, and park, recreation, and open space land of approximately 18,500 acres. Completed development will include four major picnic/day-use recreation areas, five major camping areas, numerous primitive camps, marinas operated by concessionaires, and other recreational facilities around the lake. These will be managed by the Corps of Engineers. The development of private boating and similar facilities on the lake shore or project lands will be prohibited.

Water skiing and boating clubs will sublease facilities from the marina concessionaires. There will be several outleases of project property - 2,470 acres to the Pennsylvania Game Commission for a wildlife mitigation

and management area, 10 acres to Huntingdon Area Schools for a nature study area, 365 acres to Juniata College for a field laboratory, and several acres to the Huntingdon County Historical Society which includes the Brumbaugh Homestead at "Timothy Meadows".

7:04:02 PREPROJECT PUBLIC RECREATION AREAS

There was only one public recreation area within the project confines that has been eliminated because of project construction.

The Pennsylvania Fish Commission's boat access area on the old Raystown Power Dam and Reservoir was on the right bank descending. The area provided boat access to the former reservoir and had a car and boat trailer parking area, launching ramp, and comfort stations.

7:04:03 ADJACENT PREPROJECT PUBLIC RECREATION AREAS

There are several preproject public recreation areas that are close to, or immediately adjacent to, the project. These are:

1. Warriors Path State Park

   Although close to PA 26, Warriors Path State Park is across the Raystown Branch and must be reached via PA 913 through the borough of Saxton (plate 16-33). Warriors Path State Park was opened by the state in 1965 for picnicking and fishing. It also has comfort stations, parking areas, and a boat launch area into the Raystown Branch (table 7:2). It is bounded by the river on three sides and contains 296 acres. Full flood level of 812 MSL will terminate adjacent to the park's upstream side. Attendance in 1967 was 35,616 persons, and attendance in 1971 was 150,280 persons, a four year increase of 422%. See tables 7:4 and 7:4A and figure 7.4A.

2. Trough Creek State Park

   This state park is composed of 600 acres of the Rothrock State Forest. It is on Great Trough Creek which enters Raystown Lake opposite

Marklesburg. Access to the park is via L.R. 31118 from PA 994, south of the proposed Rothrock Recreation Area and also via various township and forest roads from Todd, Cassville, and Calvin townships (plates 16-15, -30). Recreational activities available at the park are swimming, picnicking, camping, and hiking (table 7:2). The small swimming impoundment on Great Trough Creek will not be affected by the recreational pool level of Raystown Lake but will be inundated at full flood. Great Trough Creek is stocked with trout each spring. Attendance in 1963 was 84,400 and increased to 191,956 in 1967, a four year increase of 227%; it was 253,017 in 1971, a four year increase of 132%, totalling an eight year increase in park visitors of 300%. See tables 7:4, 7:4A, and figure 7.4A.

3. Rothrock State Forest

This state forest covers many thousands of acres in separate parcels in Huntingdon and nearby counties, with a large tract lying east of Raystown Lake (plates 16-30, -31, -32). This tract is principally "The Barrens" in Great Trough Creek Valley and part of the forest on the western slope of Terrace Mountain. A portion of the forest was acquired for the project.

The state lands are open for hunting in season and contain many miles of snowmobile trails. Great Trough Creek, which flows through the southern boundary of the forest, is annually stocked with brook trout.

4. State Game Lands

There are numerous Pennsylvania State Game Lands in Huntingdon County, several lying near Raystown Lake. State Game Land No. 67 is east of the lake between Broad Top and Saxton (plate 16-32). State Game Land Nos. 73 and 118 follow the ridges and slopes of Tussey Mountain in Huntingdon and Blair Counties west of PA 26 (plates 16-31, -32, -33). They are controlled for game management and propagation and are open for public hunting during the various hunting seasons.

5. The Point Access Area

This fishing access area is on the left bank descending of the Raystown Branch at its confluence with the Juniata River (plate 16-27). Built and maintained by the Pennsylvania Fish Commission, it has a launching area for boats, a parking area, and portable comfort stations. It offers water access and shore fishing in either stream (table 7:2).

6. Public Facilities: Huntingdon County

In 1967 the Huntingdon County Planning Commission surveyed public recreation facilities. Their summary showed 3,828 acres of recreation land with a total visitation of 726,105 persons in 1965. This acreage does not include state forests or game lands.

7:04:04 PREPROJECT PRIVATE RECREATION AREAS

1. Hawns Bridge Reservoir

In 1907, the Pennsylvania Electric Company built a dam on the Raystown Branch. It was breached and broken in the St. Patrick's Day flood of March, 1936. It was rebuilt shortly thereafter and created a 436 acre pool 7 miles long with 15 miles of shoreline. There were numerous private cottages and three private marinas on the reservoir created by the dam. All water sports, including water skiing, were available in the reservoir. The annual visitation of the area was estimated at about 30,000 visitor days. Plate 16-28 shows the location of the old spillway.

2. Raystown Branch

The Raystown Branch affected by the project, including the Hawns Bridge Reservoir area, had over 1,200 private cottages along its banks. These cottage owners were attracted by the fishing, boating, and hunting opportunities of the area and by the wilderness recreation experience offered (plates 16-27 through -33).

3. Other Facilities

A. Quasi-Public Camps

There were two church camps and a Y.M.C.A. camp, Camp Reynolds, on the Raystown Branch. These were on the river opposite the new Coffee Run and Entriken Bridge Overlooks.

B. Private Camps

There were also several sportsmen's clubs which owned hunting camps in the reservoir area. These were removed during the various clearing phases.

C. Water Activitity Clubs

There were two water activity clubs that headquartered on the former reservoir. These were the Raystown Water Ski Association and the Bald Eagle Power Squadron.

7:05 RECREATIONAL ATTRACTION

7:05:01 GENERAL

Raystown Lake is expected to become a major regional recreational resource. Its physical size and facility development will be a major attractor of local daily visitors. Also, its close proximity to Pittsburgh and Harrisburg, PA, and the Baltimore-Washington, DC metropolitan areas locates it within the under-four hour driving range for weekend visits by millions of persons (plate 16-1). The project adds a large body of water to an area that has relatively few lakes. Water related sports will be the most important recreational activities at Raystown Lake, followed by picnicking, hiking, and hunting.

7:05:02 SWIMMING

The clean water of Raystown Lake will provide excellent swimming. Although the steep shoreline limits suitable beach areas, beaches will be developed to handle expected swimmer loads. Swimming activity will be concentrated

at the Seven Points, Rothrock, Paradise Furnace, and Hopewell Recreation Areas.

7:05:03 FISHING

Raystown Lake should be a very popular warm water fishing lake. The Raystown Branch downstream to the Juniata River and the Juniata itself, will be improved by the minimum low flow discharge from the lake. Walleye, Smallmouth bass, Muskellunge, Rock bass and White suckers should inhabit the waters downstream of the dam. The lake will support these species also, except that the Smallmouth bass will be replaced by the Largemouth bass. Sunfish, Yellow perch, Black crappie, and Channel catfish are other species that will be present in the lake.

The Pennsylvania Fish Commission will regulate fishing on project waters by agreement with the Corps. The season on game fish is closed for part of the year; however, the presence of pan fish in the lake will mean the availability of a year round fishery.

7:05:04 BOATING

Raystown Lake will have many areas open to unlimited power boats. Given the size of the lake and the increasing popularity of boating, Raystown should become a major recreation center for boaters of all types. Participants in water skiing, sailing, rowing, and canoeing will all have suitable lake recreation areas.

7:05:05 CAMPING

The major recreation and camping areas at Raystown Lake will provide many opportunities for a family or group wilderness recreation experience. Picnic tables and grills will be provided at most sites in addition to nearby parking and comfort station facilities. Occasional picnic shelters suitable for organized groups will be available and will connect with nearby hiking trails.

7:05:06 INTERPRETIVE CENTER

Future plans call for an interpretive center for the project. The center will feature displays of the

area's flowers, fish, wildlife, trees, soils, and geology. A major exhibit will be the archeological history and interpretation of the Sheep Rock Shelter and other archeological sites in the project area.

Trails for those handicapped in various ways, including the blind and those visitors confined to wheelchairs, will be constructed near the interpretive center.

7:05:07 HUNTING

Hunting will dominate the late fall and early winter recreational use of Raystown Lake. Migratory and resident waterfowl will be present on the lake; species include mallard, teal, Wood duck and Canadian geese. Upland game pursued will be Gray squirrel, Ruffed grouse, and some rabbit and pheasant. Deer, turkey, and an occasional Black bear round out the hunter's list.

Hunting is controlled by the Pennsylvania Game Commission. The commission designates the various hunting seasons and regulates the bag limits.

Camping by hunters will be permitted only in designated camp areas. The majority of the project will be open to hunting, except for designated safety zones around picnic and camping areas and project buildings.

7:05:08 HIKING

Hikers will, at project completion, find many miles of trails. These will circumscribe the lake and connect to the Mid-State Trail and the Tuscarora Trail. In addition, many miles of minor trails will permit short round trip hikes, starting and returning to a picnic or camp area. Separate trails for horseback riding and off road vehicles will be constructed in suitable areas.

7:06 RAYSTOWN LAKE FACILITY DEVELOPMENT

7:06:01 GENERAL

The public recreation facilities of Raystown Lake are currently in several stages, ranging through completed

construction, under construction, design, and proposed for future. These will be discussed briefly below and in detail further in this Master Plan, Section X.

7:06:02 COMPLETED CONSTRUCTION

The dam, spillway, and overlooks at and above the dam were completed in 1973. Three boat ramps - Shy Beaver, James Creek, and Snyders Run, are complete. Also, Putts Camp and Nancys Camp boat-in camping areas are complete, as are two overlooks, Coffee Run and Entriken. All of the above were available for the 1975 recreation season. The 800 foot swimming beach at the Seven Points Recreation Area is complete, and will be available with the first phase development in January of 1976. A 200 foot beach at the Rothrock Recreation Area, a boat ramp and separate boat tie-ups will be available in April of 1978 with the rest of the Rothrock Camping Area. The Raystown Lake administration building and the Penn maintenance building are open and operational.

7:06:03 UNDER CONSTRUCTION

Public picnicking and camping facilities are under construction in the southern part of the Seven Points Recreation Area. The facilities should be available in January, 1976 (plates 16-29, -34 and -35).

7:06:04 DESIGN STAGES

The Rothrock Recreation Area camping facilities are currently under final design. A contract is scheduled to be awarded in August, 1976 and the camping areas should be available in April, 1978 (plates 16-31, -36 and -37).

7:06:05 PROPOSED FUTURE CONSTRUCTION

Future recreation facilities for day use of picnicking, lake access fishing, and swimming will be built at the Hopewell Recreation Area (plates 16-32, -40, and -41), the Paradise Furnace Recreation Area (plates 16-30, -38, and -39), and the Rothrock Recreation Area (plates 16-31, -36, and -37). Additional camping facilities

will be provided at Seven Points Recreation Area, Aitch and Allegrippis Ridge Camping Areas, and the Hopewell Recreation Area. Primitive camping at hike-to/boat-in camps will be available at seven sites on Terrace Mountain, and three sites on the left bank descending (table 7:3).

There are three proposed concessionaire lodge and cabin developments and six marinas also proposed for concessionaire operation. There will be five independent boat tie-ups, and also one for each of the hike-to/boat-in camps. There will be four large group camp areas available to groups on a reservation basis. A hiking trail of 51 miles with 62 miles of side trails will surround the lake. An interpretive center will be built on the project and a historical farm homestead museum will be operated by the Huntingdon County Historical Society on an out lease of project lands near the Backbone Ridge Game Mitigation Area.

7:06:06 MULTIUSE OF STRUCTURES

The spillway itself is not suitable for public use. Boat launching facilities and parking lots have been constructed elsewhere for access to the water. None of the other structures were designed for public use, except for observation of the areas surrounding the dam.

An access road traverses the downstream face of the dam for visitor access to the observation area and maintenance personnel access to the operational and residential areas of the dam itself. The dam and other operational areas offer no opportunity for public use.

The causeway of PA 994 offers some dramatic views of the lake, especially the downstream (north) side. Although Coffee Run and Entriken Overlooks are close by, the pedestrian way on the north side of the bridge should be a favored viewing area.

7:06:07 SUMMARY

In summary, Raystown Lake recreational activities will be plentiful and varied. Visitors will find different

activities throughout the year for their enjoyment and peace of mind. Many of the activities will be water oriented, and winter may offer ice skating, ice boating, and ice fishing. Hunters, hikers, campers, and picnickers will use recreational facilities throughout the project at various times of the year.

A recapitulation of the various facilities available at Raystown Lake, the two adjacent state parks, and the state fishing access area are shown in table 7:2.

7:07 RELATED VISITOR INTEREST AREAS

There are many state parks within the visitor attraction area of the Raystown Lake. The nearby parks were discussed previously and the ones further away are discussed on the next pages as to facilities available, size, and other features. Some of these facilities will share visitor demand, thereby relieving Raystown Lake of some of its expected visitor load. However, the large physical size of the lake may overcome some of this division of attraction, and these factors have been considered of equal importance in estimating future project visitors. Table 7:4 lists state park and recreation areas, table 7:6 historic properties.

Attendance at the various parks within the primary recreation market area is shown in tables 7:4A, 7:4B, 7:4C, and 7:6A. The state wide attendance figures from 1966 to 1973 are shown on table 7:5B, with parks similar to Raystown shown on table 7:5. An analysis of the accompanying figures shows a peak attendance in 1970, decrease for 1971 and 1972, and increases after 1972. Weather is a large factor in attendance, and the rainy month of June, 1972 lowered attendance for that year. The Agnes storm late in the month, and consequential flooding, did much damage to parks, with some parks remaining closed for many months afterwards.

Park attendance throughout Pennsylvania has remained fairly stable during recent years, at the 28 to 30 million figure annually. Yearly attendance overall showed a 4.02% drop (figure 7:5B) in 1972, as compared to a

10.2% drop (figure 7:4A) for those state parks within a fifty mile radius of Raystown Lake.

* In addition to the state parks and recreation areas, ten Corps of Engineer water resources projects within a 100-mile radius of Raystown Lake provide water-oriented recreation. The water areas available at these projects are considerably smaller than that offered at Raystown. These projects are presented in table 7-7. *

Historic properties attendance has flucuated somewhat, but has risen from thirty-two thousand in 1968 to ninety-eight thousand in 1974. See tables 7:6 and 7:6A and figure 7:6A.

7:08 EXISTING LAND USE

7:08:01 GENERAL

The greatest extend of the land surrounding Raystown Lake is wooded basically with deciduous trees. These grow on ridges and slopes too steep or rocky to farm. Residential uses are associated with farms and scattered single lots throughout the area. Some subdivisions are beginning to appear adjacent to or near project lands. The ridges and slopes of Tussey and Terrace Mountains are to a great extent in public ownership by either the Pennsylvania Game Commission, the Department of Environmental Resources (Bureau of State Parks or Bureau of Forestry) or the Corps of Engineers.

In a regional context, productive agricultural uses follow a strip generally one-half to less than a mile wide, centered on PA 26. This is a long narrow area of generally fertile limestone residual soils. Dairy cows, beef cattle, sheet, and hogs are the predominant livestock. Crops include pasture, hay, corn, oats, and wheat. Trees cut for lumber products in the area of Huntingdon County are generally pulpwood; there is a limited amount of good quality saw timber. See 5:04:04.

7:08:02 EXISTING ZONING

No governmental units within or without the Raystown Lake project currently have land use zoning. Several townships have developed sketch comprehensive plans showing suggested land use, but actual legal control over the land may be many years away. Although the need for zoning is readily apparent, it may not happen until utilization detrimental to the project and to the area has already occurred.

*R-1
Feb 77

TABLE 7:2

FACILITIES AT RECREATIONAL AREAS

CE - Corps
S - State
P - Private Concession

	RECREATION AREA														
	SEVEN POINTS	ROTHROCK	PARADISE FURNACE	HOPEWELL	AITCH	ALLEGRIPPIS RIDGE	UPPER CORNER	HAWNS BRIDGE WOODS	HIKE-TO CAMPS	WARRIORS PATH STATE PARK	TROUGH CREEK STATE PARK	POINT ACCESS	FISHING ACCESS	BOAT RAMPS	
Agency	CE	CE	CE	CE	CE	CE	P	P	CE	S	S	S	CE	CE	
Acreage	3635	780	150	1080	2285	1179	228	71	330	296	600		75	100	
Comfort Stations	●	●	O	O	O	O	O	O	O	●	●	●	●	●	
Water	●	●	O	O	O	O	O	O	O	●	●	●	●	●	
Shower	●	●	O	O	O	O	O	O							
Electricity	●	●	O	O	O	O	O	O							
Swimming beach	●	●	O	O			O	O			●				
Boat launch	●	●	O	O						●		●	O	●	
Boat tie-up	●	●	O	O	O		O	O	O	●			O	●	
Marina	●	O	O	O		O		O							
Hiking	●	O	O	O	O	O	O	O	O	●	●			O	
Maintenance	●	●													
Play area	●	●	O	O			O	O			●				
Picnic tables	●	O	O	O	O	O	O	O		●	●		●	O	
Picnic shelter	●	O	O	O							●				
Camping	●	●	O	O	O	O	O	O	O		●				
Landscaping	●	●	O	O			O	O							
Pavement	●	●	O	O			O	O					●	●	
Parking Area	●	●	O	O	O	O	O	O		●	●		●	●	
Concession	●	●	O	O		O	O	O							
Admin. Bldg.	●										●				
Overlooks	●					O									

● INITIAL PHASE OR EXISTING
O FUTURE

TABLE 7:3

FACILITIES AT HIKE-TO/BOAT-IN CAMPS

	RECREATION AREA														
	CORBINS CAMP	SHENEFELTS CAMP	SNYDERS CAMP	PENNS CAMP	MARY ANNS CAMP	FORGE CAMP	TATMANS CAMP	PUTTS CAMP	NANCYS CAMP	SUSQUEHANNOCK CAMP					
Corps	O	O	O	O	O	O	O	●	●	O					
Acreage	22	58	37	62	38	33	32	58	44	17					
Comfort Stations	O	O	O	O	O	O	O	●	O	O					
Water	O	O	O	O	O	O	O	●	O	O					
Shower															
Electricity															
Swimming beach															
Boat launch															
Boat tie-up	O	O	O	O	O	O	O	●	O	O					
Hiking	O	O	O	O	O	O	O	●	O	O					
Play Area															
Picnic tables															
Picnic shelter															
Camping	O	O	O	O	O	O	O	●	O	O					
Landscaping															
Pavement															
Parking Area															
Concession															
Admin. Bldg.															
Overlooks															

● INITIAL PHASE OR EXISTING

O FUTURE

TABLE 7:4
DEVELOPED PUBLIC RECREATION AREAS
OF
COMMONWEALTH OF PENNSYLVANIA
WITHIN 50 MILE RADIUS OF
RAYSTOWN LAKE
HUNTINGDON AND BEDFORD COUNTIES, PA.
(plate 16-23)

STATE PARKS	Total Acres Land Area	Lake Area	Rental Cabins-No.	Hiking-Miles	Swimming	Boating	Camping No. sites	Fishing	Picnicking-No. Tables	Skiing (Snow)
*Bald Eagle Centre County	4,170	1,730				0	35	0	35	
Big Spring Perry County	45							0	96	
Black Moshannon Centre County	3,269	250	14	13	0	0	73	0	513	0
Blue Knob Bedford County	5,897	Pool		17	0		75	0	223	0
Caledonia Franklin County	1,130	1		9.3	0		196	0	500	
Canoe Creek Blair County	750	155		1					450	
Colonel Denning Cumberland County	122	3		2.5	0		64	0	563	
Cowans Gap Fulton County	966	42	10	3	0	0	300	0	815	
*Curwensville Clearfield County	1,328	790			0	0		0	263	
Greenwood Furnace Huntingdon County	376	6		0.5	0		50	0	335	
Laurel Mountain Westmoreland County	520									0
Linn Run Westmoreland County	560	Linn Run	10	5				0	77	
Little Buffalo Perry County	742	88	3		0	0		0	400	

*Corps of Engineers lake

TABLE 7:4 (CONT'D.)

STATE PARKS (CONT'D.)	Total Acres Land Area	Lake Area	Rental Cabins-No.	Hiking-Miles	Swimming	Boating	Camping No. Sites	Fishing	Picnicking No. Tables	Skiing
Mont Alto Franklin County	85	W. Br. Antietam Creek						C	103	
Pine Grove Furnace Cumberland County	610	27		3.35	C	0	74	0	300	
Poe Valley Centre-Mifflin County	595	25		0.5	0	C	79	0	133	
Prince Gallitzin Cambria County	4,960	1,640	14		0	0	437	0	954	
Reeds Gap Mifflin County	220	Pool		1	0			0	280	
Shawnee Bedford County	3,389	451		16	0	0	335	0	533	
Snyder-Middleswarth Snyder County	486	Swift Run		6				0	60	
Trough Creek Huntingdon County	600	2		16	0		30	C	102	
Subtotals	31,370	5,232	51	94.75			1,748		6,981	
Warriors Path Bedford County	296	Raystown Branch		0.6		0		0	66	
Whipple Dam Huntingdon County	254	22			0	0		0	180	
STATE FOREST PICNIC AREAS										
Babcock Somerset County	380	Babcock Creek							59	
Bear Gap Mifflin County	6	Treaster Valley Run						0	18	
Bear Valley Franklin County	8	Broad Run						C	50	

TABLE 7:4 (CONT'D)

STATE FOREST PICNIC AREAS (CONT'D.)	Total Acres Land Area	Lake Area	Rental Cabins-No.	Hiking-Miles	Swimming	Boating	Camping No. Sites	Fishing	Picnicking-No. Tables	Skiing (Snow)
Blankley Bedford County	20								45	
Colerain Huntingdon County	33	Spruce Creek						0	82	
County Line Huntingdon-Mifflin County	40	Licking Creek						0	56	
Fowlers Hollow Perry County	50	Fowlers Hollow Run						0	77	
Hairy Johns Centre County	48	Laurel Run Tributary							32	
Jerry Springs Fulton County	7	L.B. Wooden Bridge Cr.							20	
Kansas Valley Perry County	10	Kansas Creek						0	24	
Karl B. Guss Juniata County	35	East Licking Creek						0	55	
Laurel Summit Westmoreland County	15							0	53	
Old Forge Franklin County	78	E. Br.; Antietam Creek						0	55	
Penn-Roosevelt Centre County	20	3						0	12	
Pine Hill Huntingdon County	12								38	

TABLE 7:4 (CONT'D.)

	Total Acres	Lake Area	Rental Cabins-No.	Hiking	Swimming	Boating	Camping No. Sites	Fishing	Picnicking-No. Tables	Skiing (Snow)
STATE FOREST PICNIC AREAS (CONT'D.)										
Poe Paddy Centre-Mifflin County	15	Penns Creek					45	0	14	
Sideling Hill Fulton County	16								65	
Sweet Root Bedford County	6	Sweet Root Creek							24	
Ulsh Gap Snyder County	5	Lancaster Valley Cr. Trib.							21	
Subtotal	804	3					45		673	
STATE FOREST NATURAL AREAS										
Allan Seeger Huntingdon County	110	Standing Stone Creek						0	0	
Bear Meadows Centre County	833	Sinking Creek						0		
Box Huckleberry Perry County	10									
Detweiler Run Huntingdon County	185	Detwiler Run								
Hemlocks Perry County	131	Patterson Run						0	0	
Subtotal-	1,269									
STATE FOREST WILD AREA										
Martins Hill Bedford County	11,376									
Totals -	44,819	5,235	51	94.75			1,793		7,654	

TABLE 7:4A
PENNSYLVANIA STATE PARKS ATTENDANCE
50 MILE RADIUS OF RAYSTOWN LAKE*

State Park	1966	1967	1968	1969	1970	1971	1972	1973
Bald Eagle	--	--	--	--	--	78,256	149,665	175,232
Big Spring	16,788	12,647	8,040	6,832	19,541	15,059	8,842	13,656
Black Moshannon	197,475	257,668	193,140	177,515	166,602	168,397	148,054	280,725
Blue Knob	222,928	192,366	229,970	181,531	252,980	185,016	196,175	227,469
Caledonia	573,249	661,005	634,511	719,428	558,837	629,602	485,737	654,530
Canoe Creek	--	--	--	--	--	--	14,771	65,758
Colonel Denning	183,999	158,955	171,950	118,488	97,656	91,674	78,819	70,341
Cowans Gap	605,253	612,135	529,219	568,845	532,664	451,556	542,328	546,181
Curwensville	102,058	62,311	62,918	39,042	79,628	126,768	126,351	163,104
Greenwood Furnace	104,234	125,253	125,908	114,806	110,263	115,605	99,021	126,811
Laurel Mountain	--	--	--	--	--	--	2,250	8,957
Linn Run	199,225	195,535	264,283	213,493	171,833	135,840	129,645	178,548
Little Buffalo	--	--	--	--	--	--	213,332	322,040
Mont Alto	101,158	109,476	92,344	97,548	79,535	92,546	40,867	38,096
Pine Grove Furnace	284,176	266,004	251,766	252,392	225,675	282,236	307,040	264,152
Poe Valley	115,041	117,603	149,270	163,705	108,924	140,787	194,009	170,342
Prince Gallitzin	1,386,341	1,971,085	1,770,687	1,632,724	2,142,835	1,801,371	1,702,292	1,313,242
Reeds Gap	24,380	31,203	1,943	64,803	88,847	80,875	92,835	69,903
Shawnee	612,806	591,463	709,306	703,025	698,431	726,904	372,398	458,158
Snyder-Middleswarth	5,178	6,309	9,674	13,608	11,702	15,124	13,312	16,923
Trough Creek	233,950	191,956	150,144	130,850	88,307	253,017	55,497	29,763
Warriors Path	36,731	35,616	43,542	55,586	66,046	150,280	25,721	10,734
Whipple Dam	171,815	208,442	207,205	195,575	237,855	193,054	150,347	204,156
Total Attendance	5,176,785	5,807,031	5,505,820	5,499,796	5,718,161	5,733,961	5,149,308	5,408,821
% Change		+12.2%	-5.2%	-0.1%	+4.0%	+.3%	-10.2%	+5.9%
Total of All State Parks in State	24,037,872	25,460,018	27,258,733	29,176,204	30,179,731	29,763,428	28,567,171	30,109,619
% Change		+5.92%	+7.06%	+7.03%	+3.44%	-1.38%	-4.02%	+5.40%

*See Table 7:4 for additional information.

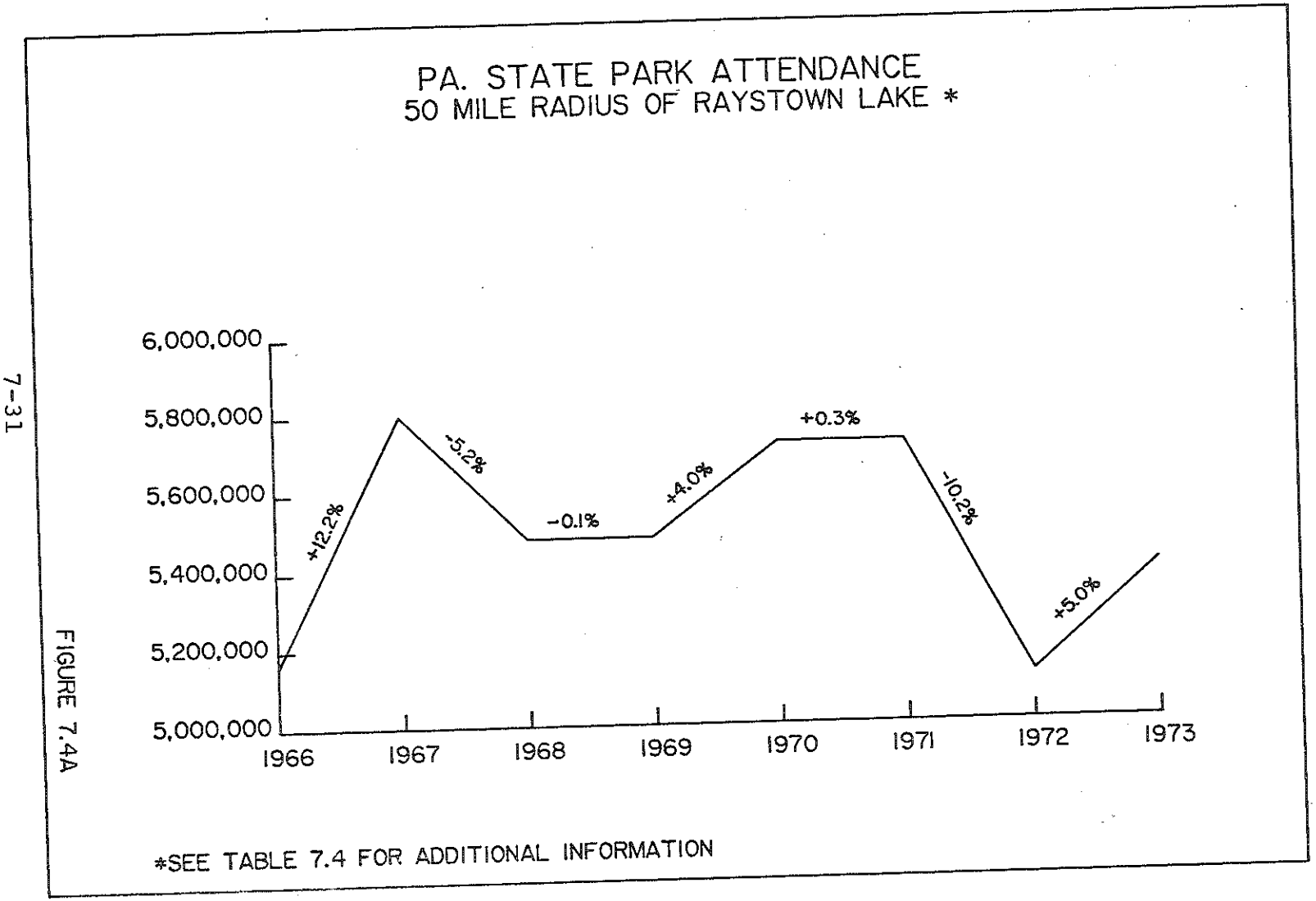

PA. STATE PARK ATTENDANCE
50 MILE RADIUS OF RAYSTOWN LAKE *
6,000,000
5,800,000
5,600,000
5,400,000
5,200,000
5,000,000
+12.2%
-5.2%
-0.1%
+4.0%
+0.3%
-10.2%
+5.0%
1966
1967
1968
1969
1970
1971
1972
1973
*SEE TABLE 7.4 FOR ADDITIONAL INFORMATION

FIGURE 7.4A

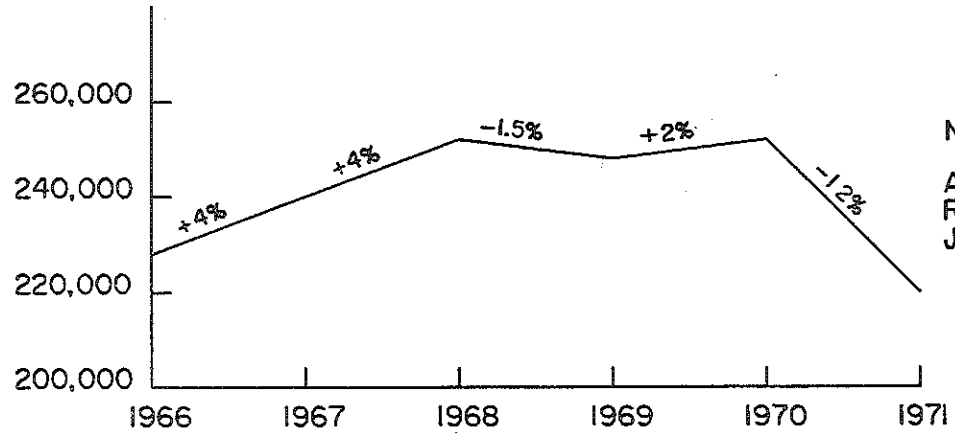
TABLE 7:4B
PENNSYLVANIA STATE FOREST PICNIC AREAS ATTENDANCE
WITHIN 50 MILE RADIUS OF RAYSTOWN LAKE*

	1966	1967	1968	1969	1970	1971	1972	1973
Babcock	16,785	16,457	18,783	16,986	18,211	21,331	5,210°	--
Bear Gap	1,039	2,495	2,894	2,309	3,050	2,336	675°	--
Bear Valley	15,924	14,935	18,454	19,850	15,828	14,972	3,751°	--
Blankley	2,832	4,584	3,242	6,673	4,405	4,637	828°	--
County Line	6,273	5,628	8,083	6,117	4,802	4,541	2,255°	--
Colerain	15,894	13,241	14,562	13,047	9,701	9,131	3,639°	--
Fowlers Hollow	26,275	33,305	19,356	26,448	23,219	11,720	8,199	11,557
Hairy Johns	6,545	7,491	11,492	9,330	32,066	11,030	3,425°	--
Jerry Springs	26,198	20,337	22,656	15,436	21,044	17,406	3,785°	--
Kansas Valley	12,782	10,672	1,166	1,982	4,406	7,942	1,974°	--
Karl B. Guss	4,804	4,845	6,633	5,238	4,658	3,622	2,075°	--
Laurel Summit	--	--	--	--	--	--	--	--
Old Forge	37,704	51,195	55,881	58,975	55,270	58,374	13,469°	11,570
Penn-Roosevelt	4,771	9,820	11,618	11,208	6,896	10,072	8,576°	--
Pine Hill	4,036	2,907	3,118	4,144	3,462	3,478	1,060°	--
Poe Paddy	16,909	12,342	18,134	16,870	5,521	5,450	4,521	6,889
Sideling Hill	29,804	27,599	28,207	24,019	30,104	26,261	8,144°	--
Sweet Root	3,021	2,985	4,263	7,502	5,798	7,604	1,235°	--
Ulsh Gap	1,372	2,597	3,522	2,221	5,225	3,163	818°	--
Total Attendance	233,058	243,435	252,064	248,355	253,666	223,070		
% Change		+4%	+4%	-1.5%	+2%	-12%	avg. -65%	+15% avg. inc.

*See Table 7:4 for additional information.

°Attendance taken until June, 1972. Figures not included in column total.

PA. STATE FOREST PICNIC AREAS ATTENDANCE
50 MILE RADIUS OF RAYSTOWN LAKE *



NOTE.

ATTENDANCE NOT RECORDED AFTER JUNE, 1972

*SEE TABLE 7.4 FOR ADDITIONAL INFORMATION

FIGURE 7.4B

TABLE 7:4C

PENNSYLVANIA STATE FOREST NATURAL AREAS ATTENDANCE
WITHIN 50 MILE RADIUS OF RAYSTOWN LAKE*

	1966	1967	1968	1969	1970	1971	1972
Alan Seeger	7,103	9,648	7,396	6,609	5,438	6,487	3,175
Bear Meadows	3,127	3,406	4,340	3,221	2,284	2,892	969
Box Huckleberry°							
Detweiler Run	262	75	141	150	255	165	13
Hemlocks	2,878	20,629	917	1,225	3,382	7,503	767
Total Attendance	13,370	33,758	12,794	11,205	11,359	17,047	4,924
% Change		+152%	-62%	-12%	+1%	+50%	-71%

PENNSYLVANIA STATE FOREST WILD AREA

Martins Hill°

*See Table 7:4 for additional information.

°Attendance data not available.

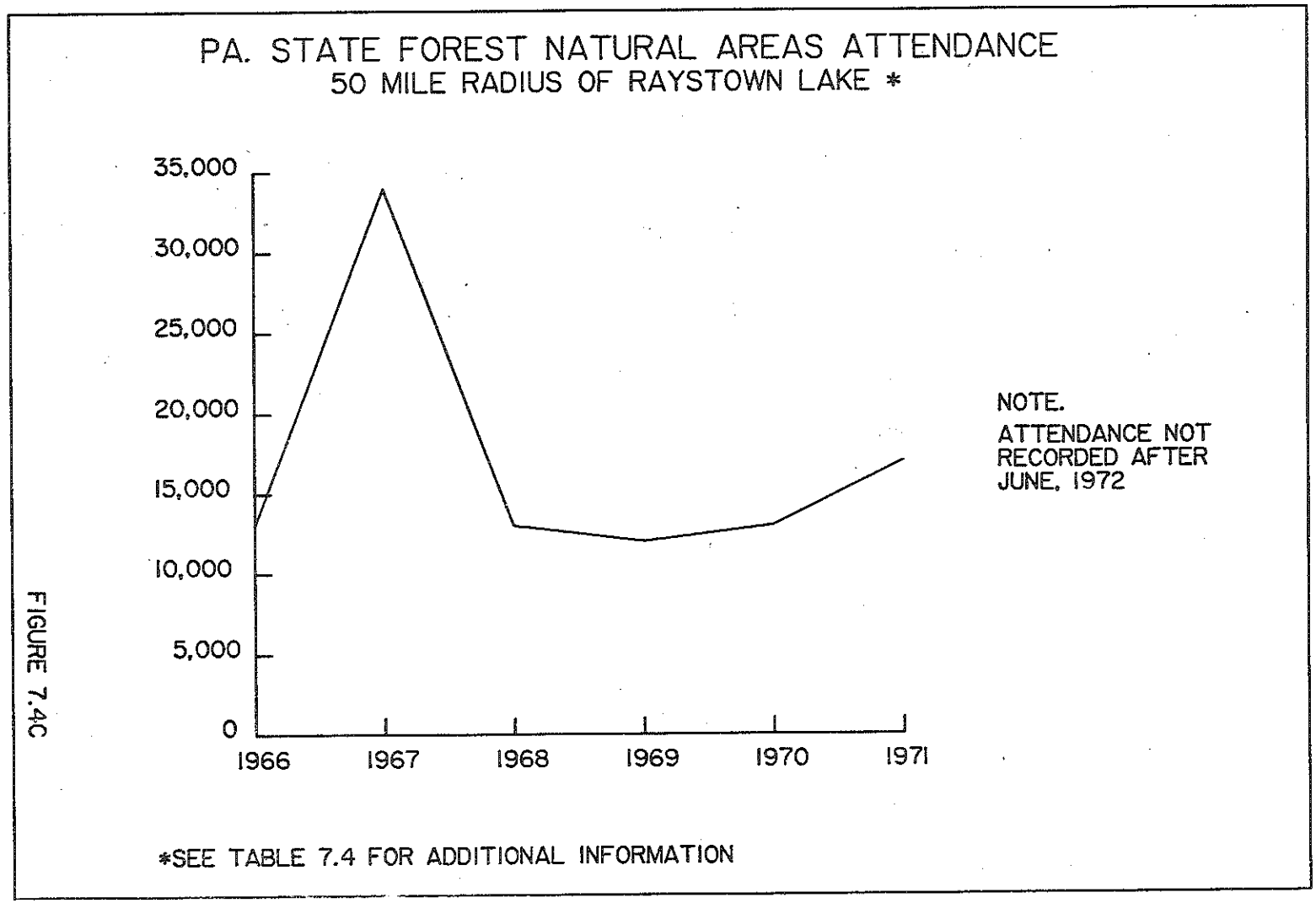

PA. STATE FOREST NATURAL AREAS ATTENDANCE
50 MILE RADIUS OF RAYSTOWN LAKE *
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
1966
1967
1968
1969
1970
1971
NOTE.
ATTENDANCE NOT RECORDED AFTER JUNE, 1972
*SEE TABLE 7.4 FOR ADDITIONAL INFORMATION

FIGURE 7.4C

TABLE 7:5
SIMILAR PA STATE PARKS ATTENDANCE[1]

	1966	1967	1968	1969	1970	1971	1972	1973
Moraine	--	53,080	44,802	652,290	1,565,699	1,725,596	1,330,137	1,484,878
Presque Isle	3,614,175	3,176,667	3,498,205	3,658,612	4,034,264	3,876,282	3,019,298	3,562,382
Pymatuning	3,734,821	4,671,000	5,492,325	6,806,487	6,631,211	4,851,738	4,536,778	4,750,521
Total Attendance	7,348,996	7,900,747	9,035,422	11,117,389	12,231,174	10,453,616	8,886,213	9,797,781
% Change		+7.51%	+14.36%	+23.04%	+10.02%	-14.53%	-14.99%	+10.26%

[1]Pennsylvania Department of Environmental Resources - Bureau of State Parks.

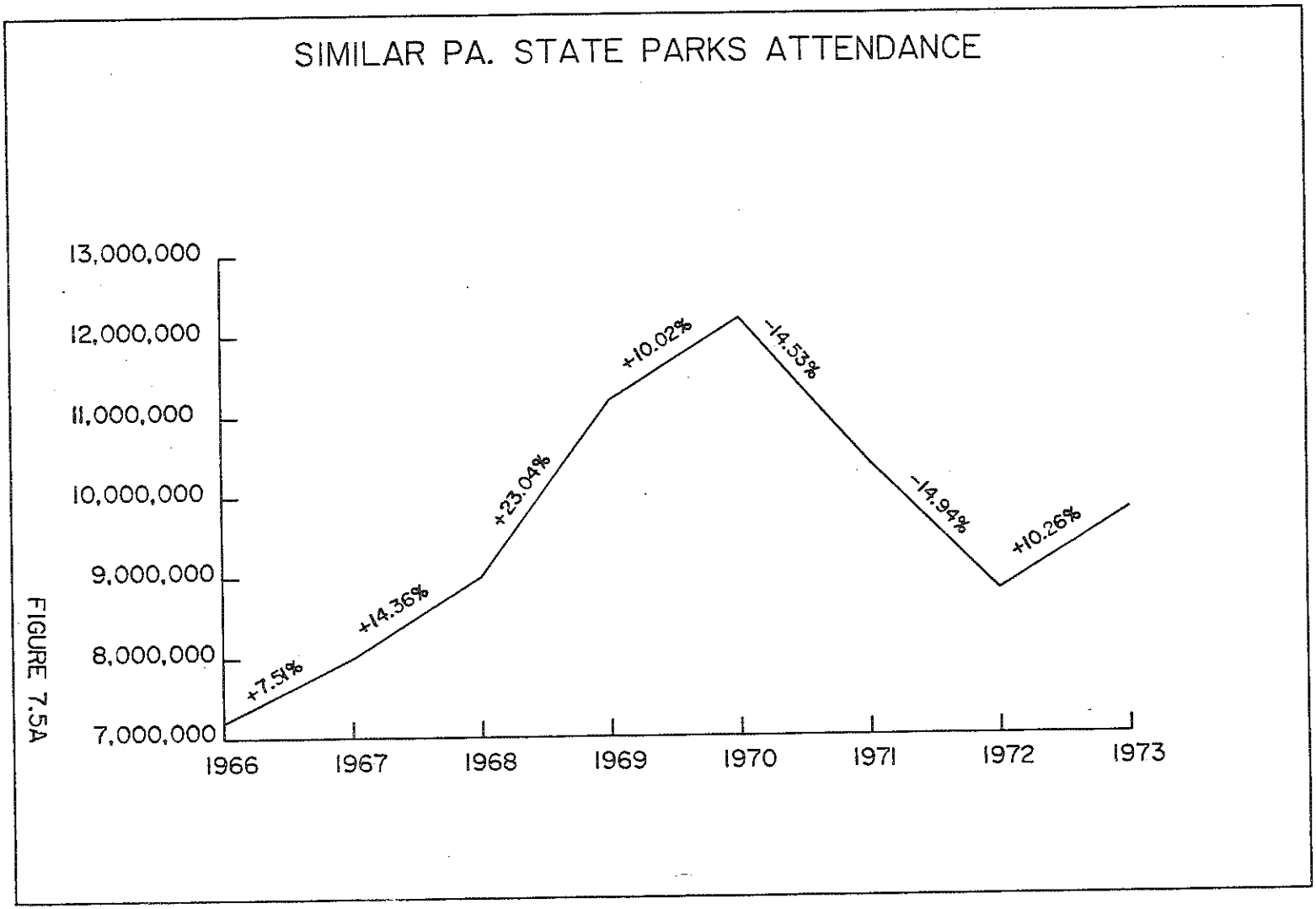

SIMILAR PA. STATE PARKS ATTENDANCE
13,000,000
12,000,000
11,000,000
10,000,000
9,000,000
8,000,000
7,000,000
1966
1967
1968
1969
1970
1971
1972
1973
+7.51%
+14.36%
+23.04%
+10.02%
-14.53%
-14.94%
+10.26%

FIGURE 7.5A

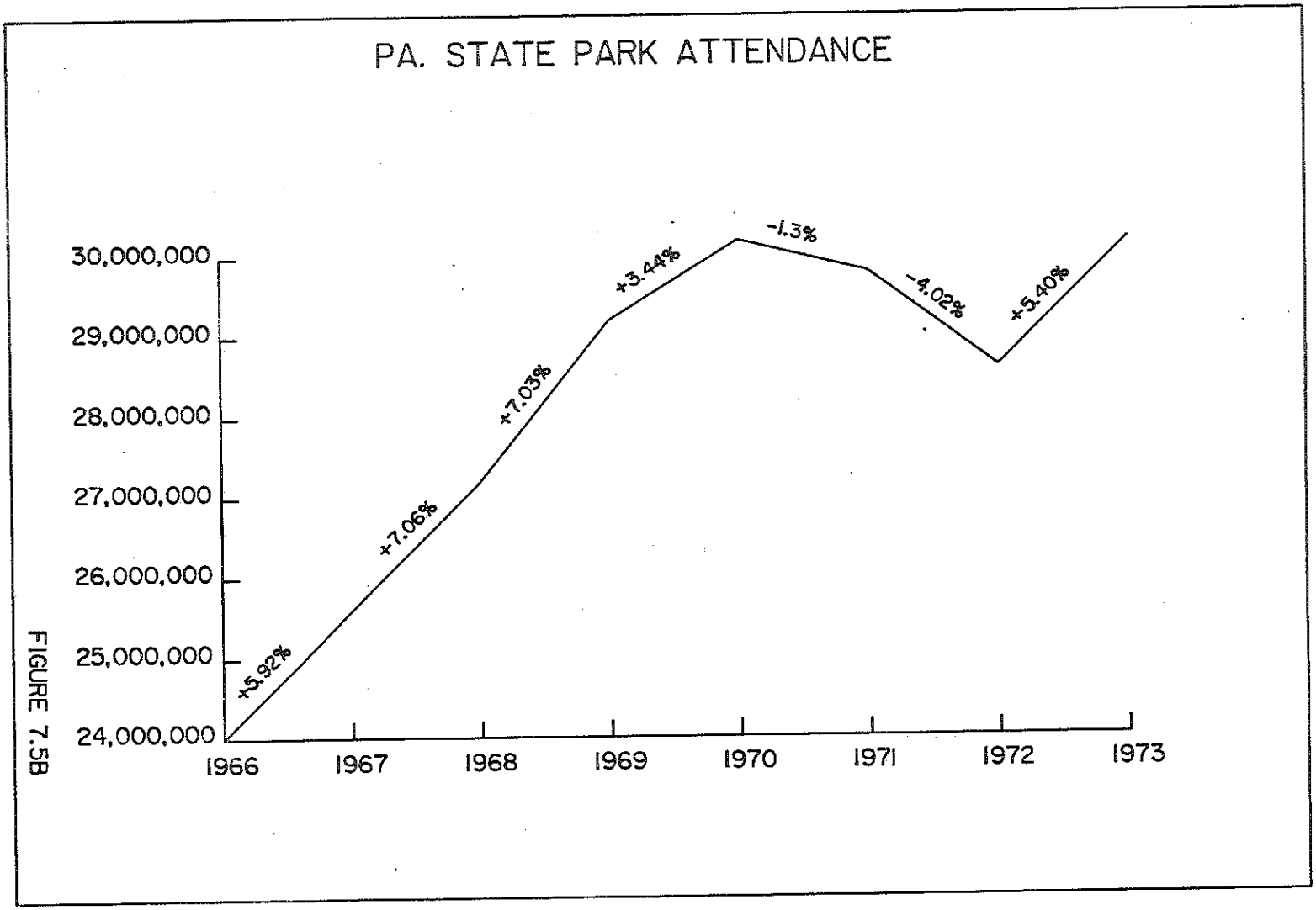

PA. STATE PARK ATTENDANCE
30,000,000
29,000,000
28,000,000
27,000,000
26,000,000
25,000,000
24,000,000
1966
1967
1968
1969
1970
1971
1972
1973
+5.92%
+7.06%
+7.03%
+3.44%
-1.3%
-4.02%
+5.40%

FIGURE 7.5B

TABLE 7:6
HISTORIC PROPERTIES WITHIN 50-MILE

RADIUS OF RAYSTOWN LAKE

1. Admiral Peary Park, Cresson, Cambria County*
2. Allegheny Portage Railroad National Historic Site, Cresson, Cambria County[o1]
3. Buchanans Birthplace, Foltz, Franklin County* [1]
4. Thaddeus Stevens Blacksmith Shop, Caledonia, Franklin County*
5. Browns Mill School, Marion, Franklin County*
6. Johnstown Flood Museum, Johnstown, Cambria County
7. Johnstown Flood National Memorial Site, Sidman, Cambria County[o1]
8. Pennsylvania Military Museum, Boalsburg, Centre Co.*
9. Captain Phillips Rangers Memorial, Saxton, Bedford County*
10. Tuscarora Academy, Academia, Juniata County*

*Commonwealth of Pennsylvania - State Landmark

[o]National Park Service - National Historic Landmark

[1]See Table 7:6A for attendance figures.

TABLE 7:6A
HISTORIC PROPERTIES ATTENDANCE

		1968	1969	1970	1971	1972	1973	1974	1975 (to 5/30)
1.	Buchanan's* Birthplace	-	-	-	-	-	-	-	-
2.	Allegheny° Portage Railroad	5,512	21,085	42,019	26,877	26,337	46,181	44,088	10,539 (low)
	% change		+285%	+99%	-36%	-2%	+75%	-5%	
3.	Johnstown° Flood National Memorial	26,610	19,735	43,187	53,647	46,003	56,496	54,530	25,122 (normal)
	% change		-26%	+119%	+24%	-14%	+23%	-3%	
	Attendance of 2 & 3 only	32,122	40,820	85,206	80,524	72,340	102,677	98,618	
	% change		+27%	+109%	-5%	-10%	+42%	-4%	

- Attendance figures not available

* Commonwealth of Pennsylvania

° National Park Service

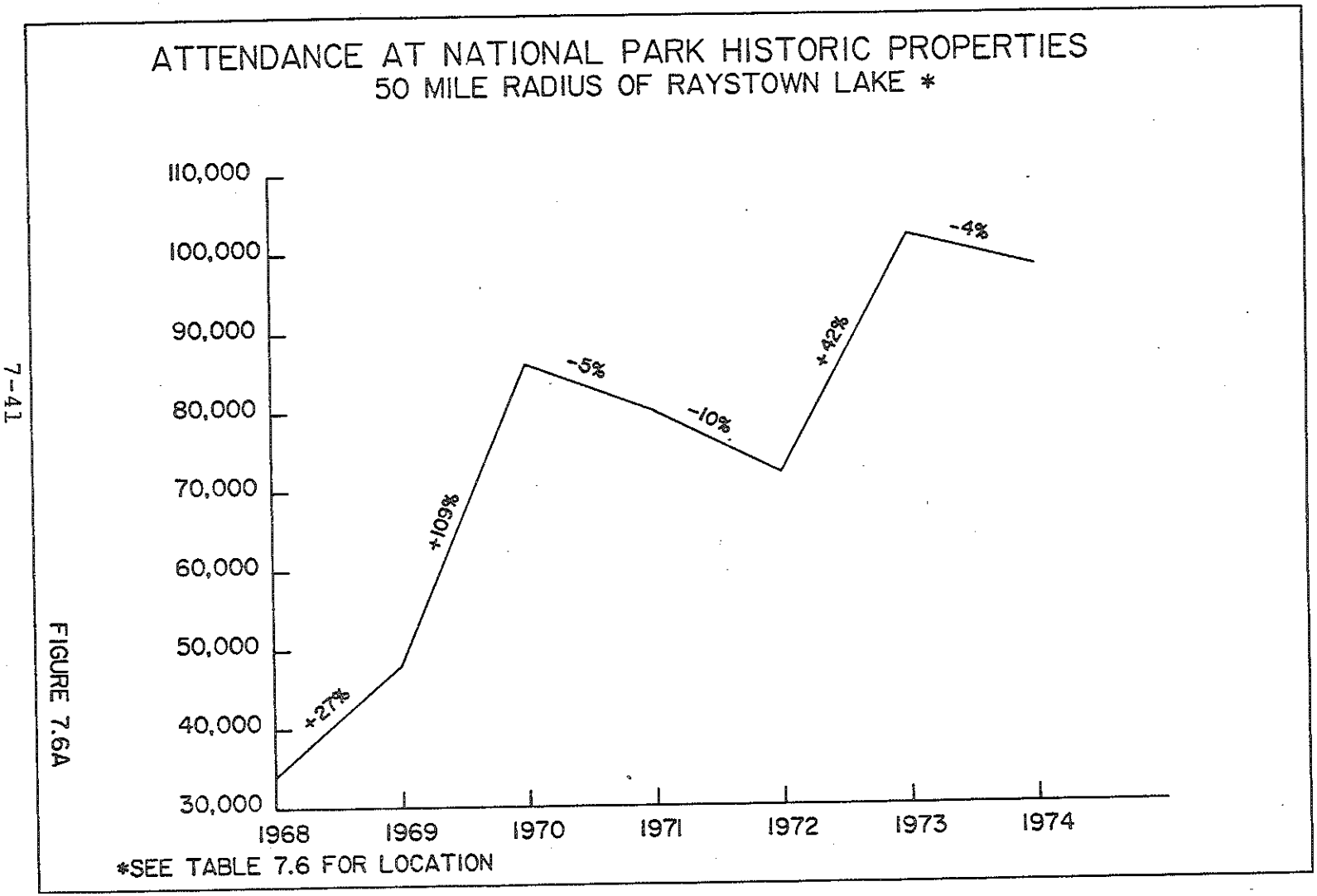

ATTENDANCE AT NATIONAL PARK HISTORIC PROPERTIES
50 MILE RADIUS OF RAYSTOWN LAKE *
110,000
100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
1968
1969
1970
1971
1972
1973
1974
+27%
+109%
-5%
-10%
+42%
-4%
*SEE TABLE 7.6 FOR LOCATION

FIGURE 7.6A

7:08:03 RECENT SUBDIVISION

The increase of subdivision of land can be seen on the fringes of the Raystown Lake project, particularly on the western side of the lake. This area lies between the project and PA 26. The soils in this area are generally clay derived from limestone and are usually borderline or unsatisfactory for subsurface sewage disposal. There are no subdivision requirements and no zoning regulations in the area. Water quality may be downgraded in the future from inadequate sewage disposal. The very quality the homeowners seek of quiet settings, pure air and water, and pleasant views, may very well be destroyed by demands for development adjacent to project boundaries which do not recognize and respect these limitations. PennDER, Bureau of Health, requires soil tests and satisfactory percolation rates for on-lot subsurface sewage disposal for all lots ten acres or less before a building permit may be issued.

7:08:04 SCENIC DISAMENITIES

The narrow valley formed by Allegrippis Ridge and Terrace Mountain which contains Raystown Lake has remained relatively free of the visual effects of man. There are very few areas of physical features that could be classified as scenic disamenities within the project area. However, because the access to the lake is primarily from PA 26, several regional disamenities are listed.

1. Stone quarry south of McConnellstown (plate 16-28).

2. New stone quarry east of Marklesburg. Both this quarry and the one listed above mine limestone from Warrior's Ridge (plate 16-29).

3. Overhead electrical transmission line from the top of Tussey Mountain that crosses Woodcock Valley between McConnellstown and Hesston. It rises to Piney Ridge, then eastward parallel to Hawns Run Cove past the project where it then follows Middle Ridge and crosses U.S. 22 east of Huntingdon (plates 16-27, -28 and -29).

* TABLE 7-7

CORPS OF ENGINEER PROJECTS
PROVIDING RECREATION WITHIN A 100-MILE
RADIUS OF RAYSTOWN LAKE

Project	Airline mileage and direction from Raystown	Acreage of normal recreation lake	Available activities: Camping	Picnicking	Boating	Fishing	Swimming	1975 Attendance
F. J. Sayers Dam	43 NNE	1,730		X	X	X		337,600
Curwensville Lake	44 NWbN	790		X	X		X	180,000
Alvin R. Bush Dam	63 N	160	X	X	E	X	X	439,600
Conemaugh River Lake	70 W	300	X	X				150,000
Mahoning Creek Lake	73 WNW	170	X	X	X	X	X	59,500
Loyalhanna Lake	74 W	210	X	X	X	X	X	469,000
Crooked Creek Lake	80 WbN	350	X	X	X	X	X	482,200
East Branch Clarion River Lake	81 NNW	1,160	X	X	X	X		213,400
Youghiogheny River Lake	83 SWbW	450	X	X	X	X	X	1,433,400
Tionesta Lake	102 NW	480	X	X	X	X	X	483,500

E = Electric motors only.

4. Overhead electrical transmission lines that cross Tussey Mountain and Woodcock Valley south of the intersection of PA 26 and PA 164. One line connects with the abandoned Saxton power plant of Penelec and crosses the lake a very short distance from the southern end of the recreation pool. The other crosses south of Weaver Bridge on L.R. 31019. Both lines ascend Terrace Mountain east of Shoups Run and run easterly, passing through Carbon Township east of Broad Top City (plates 16-32 and -33).

5. Petroleum products pipelines. There are six underground pipelines crossing the lake in five general rights-of-way. Four of these cross the Seven Points Recreation Area (plate 16-29). The other two cross the Rothrock Recreation Area and the Allegrippis Ridge Camping Area (plate 16-31). All lines have rights-of-way which are maintained in grass or low shrubs. Although the long, narrow woods openings are interruptive of the natural scenery, the fourteen miles of woods-edge effect is a boon to wildlife.

7:09 ACCESSIBILITY

Regional and state highway access routes and other modes of transportation were discussed in Section II. This section will cover existing local access to the various facilities. Regionally, Huntingdon and Bedford Counties are reached via federal and state routes connecting to the east-west Keystone Shortway (I-80) to the north, and the Pennsylvania Turnpike (I-76) to the south.

The Huntingdon County Planning Commission has estimated that 80% of the traffic approaching Raystown Lake will utilize PA 26. This road is presently a two lane highway, and it will see a tremendous increase in the amount of traffic in the near future. Although PennDOT is currently reviewing a relocated PA 26 in its long range plan, this new roadway could be many years away.

The geologic configuration and topography of Raystown Lake have resulted in most of the locations for recreation facilities being on the western shore between PA 26

and the lake. Two of the future recreation areas will be on the eastern shore, reached via PA 994, which is the main lake crossing (plates 16-30, -31). As these facilities are developed, access roads will be improved on Corps property. The state is considering improvements to various legislative routes that connect to some of the facilities, both present and future.

Visitors northbound on PA 26 will use PA 913 through Saxton, and L.R. 31019 to reach the future Hopewell Recreation Area. Although Weaver Bridge on L.R. 31019 is a second crossing of Raystown Lake, it basically serves the future Hopewell Recreation Area and therefore must also serve return traffic. Part of L.R. 31019 downstream of Weaver Bridge has been relocated and raised to provide access to the Hopewell Recreation Area and to adjacent private property. This road will require further upgrading and widening when the recreation area is completed (plates 16-32, -33). Shy Beaver Boat Ramp is reached via L.R. 31025 from PA 26 at Russellville. It is a secondary road that has poor horizontal and vertical alignment (plates 16-31, -32).

PA 994 is the principal crossing of Raystown Lake. It connects with PA 26 west of Entriken. The road was relocated and raised during construction and was completed in 1973. The road will provide access to the future Allegrippis Ridge Camping Area via L.R. 31019, the future Aitch Camping Area, and James Creek Boat Ramp via L.R. 31037 (plates 16-30, -31). On the eastern shore of the lake, it bisects the future Rothrock Recreation Area and provides access to Corps-rebuilt L.R. 31118, the entrance road to Trough Creek State Park and the future Paradise Furnace Recreation Area (plates 16-30, -31).

The Seven Points Recreation Area is reached from PA 26 eastward via L.R. 31037. PennDOT is currently studying this road for widening and improvement of alignment. It may bypass Hesston entirely to keep lake bound traffic outside the town and to eliminate the two right angle turns within Hesston. There are also several severe curves and grades that a realignment would remove from the roadway (plate 16-29).

The second phase of the Seven Points Recreation Area will be reached via T-430. This area will include a group campsite, family camping, and an additional boat ramp. This boundary road could be improved when recreation area facilities are constructed (plates 16-28, -29).

The site for Upper Corner Lodge, one of two future concession lodges on the lake, is reached via L.R. 31037 from the intersection of Seven Points Road near the lake administrative headquarters. L.R. 31037 is a tar and chip road at this point and will eventually serve non-project land, the future Sarah Boat Ramp, and the proposed Interpretive Center (plate 16-29).

Hawns Bridge Woods complex, a future concessionaire site, is reached via L.R. 31110. This road comes west from Colfax and PA 829 and will need improvement to serve as an access road. Because of the distance involved for road access to Hawns Bridge Woods, the concessionaire may desire to provide a ferry service from Snyders Run Boat Ramp, or more ideally for parking, from the Seven Points marina (plate 16-28).

Snyders Run Boat Ramp is reached via L.R. 31032 from U.S. 22 near Huntingdon. This road could be widened, thereby eliminating a sharp curve and small rise, (plates 16-27, -28).

The dam and overlooks are reached over Juniata Township roads T-430, T-434, and T-440. These roads are all narrow; T-430 is partly tar and chip and partly stabilized soil, T-434 is tar and chip, and T-440 is dirt. All could be improved and upgraded (plates 16-27, -28).

All hike-to/boat-in camps will have access roads for service and emergency vehicles only, and will not be accessible to visitors' automobiles. These roads will utilize existing roadways, old logging trails, and new construction (plates 16-28 through 16-32).

7:10 SITING OF RELOCATIONS

7:10:01 GENERAL

All relocations necessary for the completion of the project will be constructed to minimize adverse effects

on the environment. Roads will, where possible, be laid easily upon the land, and new electric and telephone wires will be placed underground. If at all possible, future construction will utilize existing rights-of-way.

7:10:02 ROADS

Project roads necessary to the completion of the dam and lake have been completed. A road was built into the dam overlook from T-434 in Juniata Township. PA 994 across the lake east of Entriken was completed in 1973, as was former T-381 (now L.R. 31118), the access road to Trough Creek State Park in Todd Township. See D.M.'s 11 and 12 for complete details of the relocations of PA 994 and L.R. 31118.

Roads currently under construction are the Seven Points access roads and camping and picnicking roads within the Seven Points Recreation Area. Future roads will use minimum cuts and fills to create the least disturbance. One way roads will be used where possible to control traffic and to allow road access across steep slopes. Road layout will follow a curvilinear alignment, and forest edges at the roadway will be cut back randomly to alleviate a parallelism between road and woods.

7:10:03 CEMETERIES

Cemetery relocations have now been completed. These reinterments involved 408 graves in 13 cemeteries, some of which were family plots. A cemetery was recently discovered on Terrace Mountain. Its location does not interfere with present or future project uses and it will remain in its present site. Yocum Cemetery, and a smaller one close to it, will remain. They are on a bluff on the western shore close to the Juniata-Penn Township line. See D.M. 10 for details on cemetery relocations.

7:10:04 UTILITIES - PIPELINES

Six pipelines that will remain underneath the lake were relaid or relocated. Replacement of line and anchors and other work was done, dependent on the line's location and proposed project facilities at the shoreline.

Head gate valve houses were installed on each shore to allow isolation of underwater portions of the lines. See D.M. 13: Utility Relocations - Pipelines for further details and plates 16-27 through -33.

7:10:05 UTILITIES - ELECTRIC AND TELEPHONE

All electrical and telephone distribution lines affected by project purposes have been removed from the lake area and project lands. New lines servicing recreation and concession facilities will be placed underground where possible, with a minimum disturbance of the land. Where lines must cross wooded areas, existing logging trails and old roadbeds will be used to the fullest extent possible.

The high tension line that crosses the lake in an east to west direction near the Huntingdon-Bedford County line will remain. The low point in the line should pose no danger to recreationists on the water below. See D.M. 9 for further information.

7:10:06 BORROW AND SPOIL AREAS

Borrow and spoil areas have been utilized and regraded to minimize their visual effect on the project. There were many borrow areas at the dam, various roads, and turnarounds.

7:10:07 DAM CONSTRUCTION

Borrow for the dam was discussed under preproject utilization of resources. These borrow areas have been regraded and seeded where possible. By utilizing rock from the ungated emergency spillway and the gated spillway for the rock fill dam, two construction and disposal problems were turned into assets.

7:10:08 ROAD CONSTRUCTION

The access road into Trough Creek State Park utilized a balanced cut and fill construction method, thereby reducing borrow and waste areas to a minimum.

PA 994, however, had an excessive amount of spoil material. This was necessitated by the road's location

in the narrow valley of Coffee Run. Spoil material has been graded and seeded to form a large flat area immediately adjacent to Coffee Run Cove. Other excavated materials east and west of the lake crossing were used for the causeway embankment that extends into the lake.

The western edge of excavation for PA 994 follows the bedding plane just south of Coffee Run. Some slippage occurred here during construction, and additional cracks in the surface were noted during the winter of 1973-74. This area should be watched for possible future surface damage. The possibility of rock bolting for safety may be considered if extensive future damage appears likely.

7:10:09 TURNAROUNDS

Turnarounds were constructed at the project property line where existing preproject roads will remain to serve private property. These were normally built with necessary cut being used for required fill. They are completed, and slopes have been seeded to blend into the landscape. See plates 16-27 through -33.

8: LAND AND WATER USE PLAN

SECTION 8: LAND AND WATER USE PLAN

8:01 GENERAL

The land and water use plan represents the combining of land and water capabilities with project use demands. The plan seeks to assure uses consistent with good design principles, while providing a unique recreation experience to the project visitor.

The designation of various land use areas was determined by employing the following criteria: (1) the highest and best use of the specific site, (2) automobile and boat access to the site, (3) suitability of the site for recreational areas, (4) operational requirements of the project, (5) estimated recreational demand of the market area, and (6) estimated future recreational demand.

8:02 DEFINITIONS OF LAND AND WATER USE CATEGORIES

The development of land and water use categories for Raystown Lake utilized the land use allocations in ER 1120-2-400 as a basis of determination. All of the defined uses will not be required at Raystown Lake. An interpretation of land and water use categories used at the project is outlined below. These categories will provide for a full range of wildlife habitat, recreational, and operational activities for the project.

8:02:01 RECREATION - INTENSIVE USE

Land areas designated for use as public use areas for intensive recreational activities including areas for concession and quasi-public development. Those areas not scheduled for initial development will be available in the interim for wildlife management or agriculture use. The category includes:

1. HIGH-DENSITY

These recreation areas will be intensively developed to accommodate a maximum of 200 people per day per gross high-density acre. Uses at these areas will be picnicking, swimming, sunning, and utilization of multipurpose play fields. Intensive recreational use areas

at Raystown Lake are allocated to four locations -- the Seven Points, Paradise Furnace, Rothrock, and Hopewell Recreation Areas. These sites offer a combination of open areas, tree cover, accessibility by land and water, and usable slopes. They are located far enough apart on the lake to distribute use but yet allow access by boat to any destination. See Section 9:12 for design criteria and 10:02 for site descriptions.

2. MEDIUM-DENSITY

These areas may have the same activities as the high-density recreational areas, but will be less intensively developed. Generally, these areas will be family drive-to camps and group camps. Medium-density uses are designated for two specific sites, the Allegrippis Ridge and Aitch Camping Areas. See Sections 10:08 and 10:09. In addition, parts of Seven Points, Rothrock, and Hopewell Recreation Areas will have medium-density areas. See Sections 9:12 and 10:03, 10:04, and 10:05 of this Master Plan.

3. VISITOR SERVICES

A. MARINAS

The marina areas will be located at each developed recreation area and proposed lodge areas. Facilities available to the public at each area will include restaurants, boat service and sales, boat slips, off-season boat storage, and stores selling groceries, camping supplies, bait and tackle.

Several marinas will be built around the lake. The ones at Seven Points (plate 16-29), Rothrock (plate 16-31), and Hopewell Recreation Areas (plate 16-32) will be operated in conjunction with those recreation areas. The marina adjacent to Allegrippis Ridge Camping Area (plate 16-31) will be independent and will be the only facility at that point of the shore. Hawns Bridge Woods (plate 16-28) and Paradise Furnace (plate 16-30) marinas will be operated as part of future concessionaire facilities.

B. LODGES

Lodge areas at Raystown Lake will include marinas as described above, restaurants and lounges, rental rooms, cabins, and recreational amenities.

There will be three concessionaire lodge and rental cabin areas on the lake. These are Upper Corner (plate 16-29), Hawns Bridge Woods (plate 16-28), and Paradise Furnace (plate 16-30).

8:02:02 RECREATION-LOW DENSITY USE

Land areas designed for low density recreation activities, not scheduled for initial development will be available, where suitable, during the interim for wildlife management or agricultural use. This category includes:

1. HIKE-TO/BOAT-IN CAMPS

There are eight planned for the east shore and two for the west shore. The majority of these will be constructed after the trail system on Terrace Mountain is completed. See Sections 9:13 and 10:11.

2. INTERPRETIVE CENTER

The Interpretive Center will be located south of the Administrative Headquarters on the hill overlooking the entrance to James Creek Cove and opposite the Paradise Furnace Recreation Area. The center will house educational and informational displays explaining geological factors, soil data, and water facts related to the lake. Trees, shrubs, mosses, and grasses of the region will be displayed and grown naturally or in recreated microenvironments. The center will house a large archeological display and will be capable of handling large groups for educational purposes.

A series of specially constructed nature trails will be built. The trails will be signed with Braille for the blind and will also be designed for wheelchair use. Approximately one hundred acres of the Raystown Natural Area are considered as the interpretive center.

8:02:03 NATURAL AREAS

Lands allocated and managed for the preservation of scientific, ecological, historical, archeological, or visual value. Only limited development on these lands is contemplated. No agricultural uses will be permitted on these areas. The areas allocated for this purpose at Raystown Lake are:

1. HISTORICAL FEATURES

Two structures of state and local significance will remain on project lands. The first is the former Brumbaugh Homestead, "Timothy Meadows", near PA 26 in the Backbone Ridge Game Mitigation Area (plate 16-30). The second is the former Rhodes house in the Rothrock Recreation Area (plate 16-31). The special development and relationship of these buildings to the total project is discussed in Section 11:05:02.

2. ARCHEOLOGICAL FEATURE AREAS

Of the thirty-five known campsites of early man in the project area, only one will remain above the recreation pool. It is east of the access road into Shy Beaver Boat Ramp, between Shy Beaver Creek and an unnamed stream. The area will be maintained as a mown field and will be properly marked (plate 16-22, site AA).

The Sheep Rock Shelter archeological site is now inundated. It was completely excavated prior to flooding, and a representative sample of the artifacts recovered will be exhibited in various displays at the future interpretive center. A diorama may be constructed near the center to depict the way of life of the shelter occupants.

An overlook will be built on the cliff above the shelter site. It will be reached by hiking trail only and will have a commanding view of Yocum Bay and south towards the Seven Points Recreation Area (plate 16-29).

3. GEOLOGICAL FEATURE AREAS

The thick sequence of sedimentary rock strata in the project area contains several occurrences of fossils.

Probably the best sites of fossil occurrence are in bedrock outcrops in highway cuts or along valley walls where bedrock is exposed. The occurrence of fossil bearing rock fragments in float stone on hillsides should not be overlooked; these occur in many different places.

The areas of the most abundance and variety of fossils are generally near Aitch and Marklesburg in the Backbone Ridge Game Mitigation Area. Here limestone is an added area rock type. Small road cuts and quarries provide areas of exposed fossiliferous rocks, particularly in the limestone rocks. These exposures of the Harrell and Hamilton formations are known to be highly fossiliferous.

The new highway cut on PA 994 near the Coffee Run Overlook exposed a thick sequence of shales and sandstones that are known to be locally fossiliferous. Fossil collectors at this particular site should be careful because of the height of the steep cut and the possibility of falling rock material. The areas along the southeastern bank of the lake contain localized areas of fossil occurrences, although larger abundances of fossiliferous rocks will be found on the higher slopes of Terrace Mountain.

Access to these fossil locations will be by foot paths. Tablets will be placed to illustrate and identify the specific fossils available for collecting at the sites. Should use permit, exhibits at the site may be expanded to include reconstructions of the habitats in which the fossilized animals lived.

Adjacent to the Paradise Furnace Recreation Area in Trough Creek State Park are the Ice Mine and Balanced Rock. The Trough Creek Ice Mine is a short opening in the hillside which was probably dug as a prospect hole in early mining days. Frost and weathering along the hillside have broken the rock mass into loose slabs which are now partially tree covered. During the winter the rock slabs are cooled and cold air fills the voids between the blocks. Because the winter air is dry, little ice forms in the opening. During the spring and summer months, however, the outside air warms, air circulation at the mouth of the opening changes, and the

cold air flows downhill out of the rock mass. Snow melt and warm, moist summer air enter the mine, meet the cold air flow, and produce ice. Ice formation continues well into the summer until the rock mass warms and downhill circulation of cold air ceases.

Balanced Rock is high on a ridge along the west side of Trough Creek Valley, and although it has stood for many years, it gives the impression of being precariously balanced on the edge of a cliff. This rock is an erosion remnant left when Trough Creek cut its valley millions of years ago. This sandstone rock was broken from rock cliffs that once formed a higher part of the ridge on which it now rests. As the cliffs below slowly weathered away, the rock slowly moved downhill a short distance and came to rest at the edge of the cliff.

4. BARRENS NATURAL AREAS

There are eleven barrens areas within the Raystown Lake Project that have been designated as barrens natural areas. These areas will be preserved in their natural state, with only minimal trail facilities proposed. See Section 6:05:08 for a general discussion of the barrens, Section 10:20 for a description of the individual areas, and plates 16-27 through -34.

5. LINCOLN NATURAL AREA

One area at Raystown is proposed as a natural area. Now entirely wooded, it is a beautiful peninsula jutting out of Terrace Mountain (plate 16-31). No vehicular access to this area is planned because a road would cause great damage to the slopes it would cross. The peninsula is located in Lincoln Township, one mile down lake from the Rothrock Marina. Although also a wildlife area, this peninsula will undergo no management practices, as it will be a demonstration of a naturally regenerating forest. The peninsula contains 150 acres of land.

6. JUNIATA COLLEGE: RAYSTOWN FIELD STATION

This field station will occupy the southern shore of the James Creek Cove inlet (plate 16-30) on lands outleased to Juniata College. The station will be used by the

College for on-going research into the biological, geological and ecological effects of Raystown Lake on the area environment.

Parts of this land will be allowed to revert to a completely natural state, with complete observation of all processes. A base for aquatic studies will be established at the lakeshore. The base will have dock facilities for research boats which will be used for the periodic collection of data concerning the water and fishes of the lake. This field station will be used as a living laboratory for the College, and data gathered here will be utilized for displays and current exhibits in the interpretive center.

To insure the best possible conditions for experiments and observations, the general public will not have access to the field station lands. The hiking trail surrounding the lake will bypass the property.

7. HUNTINGDON AREA SCHOOLS OUTDOOR EDUCATION OUTLEASE

The outdoor education outlease to the Huntingdon Area School District is located east of T-430 in Penn Township, one mile northeast of the Raystown Lake Administration Headquarters. It will be used as an outdoor laboratory primarily for elementary school children. Students will utilize the "discovery method", and teaching units will concern animals, plants, man's relationship to his environment, soil, water, air, and conservation of natural resources (plate 16-29).

8:02:04 RESERVE FOREST LANDS

These lands consist of lands the terrain of which is not suitable for development and/or not committed to recreational or other use. Timber will be harvested only when required for improvement of wildlife habitat. These lands will be available for low density recreational activities. Agricultural use will be restricted to meadow areas when compatible with wildlife management.

8:02:05 FISH AND WILDLIFE LANDS

Project lands have been acquired specifically for the mitigation of wildlife displaced by operations and recreational uses of the lake. This land will be used as an intensive management area, and will be managed by the Pennsylvania Game Commission to mitigate the loss through clearance and new uses of former wildlife habitat. It occupies nearly 2,470 acres of Backbone and Piney ridges and contains two coves of the lake, Woodcock Valley and James Creek (plates 16-29 and -30). For further details, see Section 11, Special Problems, and Section 15, Fish and Wildlife Management.

8:02:06 OPERATIONAL

Areas designated for operational uses will be those areas necessary for the efficient and safe daily, seasonal, and annual operation of the project. They will include administrative, water regulation, and maintenance areas.

Operational land areas at the lake are the dam, spillway, administrative headquarters, and maintenance building locations.

The dam, gated spillway, and ungated spillway are located in Juniata Township just south of the intersection of T-430 and T-440 (plate 16-28). Public use will be restricted to a visitor area and overlook.

The Administrative Headquarters building is located on Allegrippis Ridge, east of Hesston at the intersection of L.R. 31037 and L.R. 31115 in Penn Township (plate 16-29). It is also a visitor information center.

The Juniata Maintenance Building is located at the dam site. The building will be headquarters for all maintenance north of the future Hawns Bridge Woods complex and Snyders Run Boat Launch.

The Penn Maintenance Building is located just east of the Administrative Headquarters. There is no need for public access. At the present time, it will be operations headquarters for the Penn and Coffee Run units of the lake.

A future operational maintenance unit will be located west of PA 994 adjacent to the Rothrock Recreation Area (plate 16-31). When constructed, the Coffee Run Maintenance Building will be the headquarters for maintenance operations related to the south end of the lake; the Penn Maintenance Building will then be headquarters for the central unit (plate 16-26).

The operational water use zone will occur in the dam area, from the outlet tunnel to the dam itself. This area may be opened to a restricted use depending on operational demands. The other operational areas are the two small coves at the Raystown Field Station of Juniata College. These areas will be used for fisheries research, and public access will be prohibited.

A boat dock and service area will be provided for the Corps of Engineers floating plant in the Seven Points Recreation Area as shown on plate 16-34. An area for a similar facility of the Pennsylvania Fish Commission will also be provided adjacent to the Corps facility.

8:02:07 WATER CONTROL (plate 16-25)

1. OPERATIONAL

The operational water use zone will be restricted to all craft except those operated by authorized personnel. They will be used for lake operations and maintenance of safety areas near the dam and experimental areas. See 8:02:06.

2. LAKE ZONING

A. UNRESTRICTED

This will be the predominant water surface use at Raystown Lake. The main body of the lake will be zoned for unrestricted use, subject to all applicable boat operation and safety laws. The zone will go from near the dam upstream to the mouth of Shy Beaver Creek, a distance of over 19 miles.

B. RESTRICTED: NO WAKE ZONE

These water surface zones will occupy the narrow coves and inlets of the lake. There are six major and

numerous minor restricted zones. The minor zones will limit themselves because of their small size. The major restricted zones are Hawns Run Cove, the entrances to James Creek Cove and Woodcock Valley Cove, Great Trough Creek Cove, Coffee Run Cove, Shy Beaver Creek Cove, and the remainder of the lake upstream from the mouth of Shy Beaver Creek Cove. This restricted zone runs to the end of slack water at the power plant dam in Saxton, a distance of nearly 10 miles.

8:03 SUMMARY - LAND ALLOCATION

The various land allocations are shown on plate 16-24. The acreage allocated to the various uses is tabulated below:

	Acreage
Recreation - Intensive use	1,739
Recreation - Low density use	883
Natural areas	2,270
Reserve forest lands	13,182
Fish and wildlife lands	2,470
Operational	470
Water control	8,300
TOTAL	29,314

9: DESIGN CRITERIA

SECTION 9: DESIGN CRITERIA

9:01 GENERAL

The siting and design of the recreation facilities for the Raystown Lake project were accomplished in accordance with generally accepted recreation standards and design criteria as outlined in Appendix A of EM 1110-2-400. Public services such as water supply, sewage disposal, and utilities were planned for estimated visitation rates following commonly accepted criteria and will be built in accordance with all applicable Federal, State, and local regulations. Since portions of this project are either completed or currently under construction, proposed design criteria have taken these facts into account. The criteria outlined in this section of the Master Plan are further detailed on plates 16-35, -44, -45, -46, -53, -54, and -55.

9:02 VISITATION PROJECTIONS

9:02:01 GENERAL

a. In a report prepared in March 1965, the National Park Service reported that, based upon a development objective of gaining a full national recreation area potential, it was estimated that annual attendance at Raystown Lake would reach 1,900,000 visitors within five years of impoundment of the recreation lake and 3,000,000 annually within ten years. The Bureau of Outdoor Recreation, also in a report prepared in March 1965, estimated that attendance at the project would be at least 1,400,000 annually within three years, rising to a total ultimate visitation of 2,400,000. The above reports are included in appendix C to the General Design Memorandum, Design Memorandum No. 3.

b. The anticipated annual visitation estimate was re-examined and presented in the Public Use Plan, Design Memorandum No. 14, January 1969. The estimated annual attendance within three years after completion was reported as 1,538,000, rising to 4,011,000 by the year 2005.

c. Since the development of the above estimates, there have been no major social or economic changes within the area of project influence. This Master Plan therefore recommends that use-estimate figures as presented in D. M. No. 14 be used as a continuing basis for project planning.

9:02:02 APPLICABILITY OF ER 1120-2-403

ER 1120-2-403 was not utilized to recalculate attendance for the following reasons:

a. Based on a comprehensive examination of social and economic factors affecting the project area (Section 5) no major changes were noted that would significantly affect the original estimates.

b. A careful review of Technical Report No. 2, Estimating Initial Reservoir Use, failed to disclose any project which could be adequately compared to Raystown Lake, requiring any comparison to be based on such extensive subjective judgements and adjustments as to render the method unacceptable.

9:03 FACILITY DESIGN LOAD

In order to assure adequacy of planned developments, both initial and future, specific design load data for the public use facilities are required.

9:03:01 PUBLIC USE PLAN, D.M. NO. 14

Due to cost limitations imposed by 2nd Indorsement, ENGCW-PV, 11 September 1969 to letter, NABEN-R, 31 January 1969, subject: Raystown Reservoir, Pennsylvania; Design Memorandum No. 14, Public Use Plan, the planned initial development set forth in that design memorandum was restudied. It was concluded that the reduction in cost should be primarily accomplished by eliminating the day-use facilities from the Rothrock Recreation Area with minor adjustments in the Seven Points Recreation Area.

9:03:02 ONE-DAY DESIGN LOADS

Design Memorandum No. 14 established the one-day design load as: 22,260 initial and 54,000 ultimate. The design and construction of initial facilities is based upon the above determination.

9:03:03 ACTIVITY ALLOCATION

The above one-day design loads were distributed among the four major recreation activities in the following proportions: 40 percent for picnicking, 55 percent for swimming, 10 percent for camping and 15 percent for boating. Activity-specific turnover factors reflecting the patterns of recreationists in the Northeast were used. The factors were: Camping = 1, picnicking = 2, swimming = 3, and boating = 1.5. Computations made for initial and ultimate one-day design loads are presented in Table 9:1.

TABLE 9:1

FACILITY DESIGN LOADS

	Initial	Ultimate
One-day design load (D.L. (od)	22,260	54,000
Facility design load (F.D.L) =		
Swimming		
$F.D.L. = \frac{D.L.(od) \times 55\%}{3} =$	4,000	9,900
Picnicking		
$F.D.L. = \frac{D.L.(od) \times 40\%}{2} =$	4,400	10,800

Camping

$$F.D.L. = \frac{D.L.\ (od) \times 10\%}{1} = \qquad 2,200 \qquad 5,400$$

Boating

$$F.D.L. = \frac{D.L.\ (od) \times 15\%}{1.5} = \qquad 2,200 \qquad 5,400$$

9:03:04 REQUIRED FACILITIES.

Using the anticipated demand or facility design loads in Table 9-1, the number of facilities required to satisfy the demand were calculated and are furnished in Table 9:2. The planning criteria used in making these computations are listed as follows:

PLANNING CRITERIA

ACTIVITY	FACILITIES	PARKING
Picnicking	5.5 persons/table	1 space per site
Camping	4 persons/site	--
Group camping	5 persons/site	--
Boating	3 persons/boat	1 space/car or truck
	1 lane for each	w/boat trailer
	40 boats	
Swimming	30 sq. ft. of	4 persons/car
	swimming area	
	per person	

TABLE 9:2

REQUIRED FACILITIES

ACTIVITY	INITIAL	ULTIMATE
Picnicking	800 tables	1,960 tables
Camping	550 sites	1,350 sites
Boating	18 lanes	45 lanes
Swimming	120,000 sq. ft.	297,000 sq. ft.

9:04 SITING

This discussion of siting will be conceptual in nature. That is, technical aspects such as percentage grades on roads and ramps will not be described. These are outlined in respective sections.

The majority of the existing environment at Raystown Lake is much as it has always been. Certainly, Man has cut trees, built roads, buried pipelines, and changed forests to fields. However, Nature has healed most of these scars and wounds. The new lake has covered many of the visible effects of human occupation and agricultural uses, as these were on the level land adjacent to the river. Bulldozers have removed houses and barns and covered their foundations.

As the land returns to its natural state, public use and enjoyment of the project will be controlled to maximize the benefits available and to minimize any adverse effects the use of the land might create. Accordingly, buildings will be sited to minimize intrusion on the landscape. Building sites will be selected for suitability of the building to the area and for the size of the building to the site. Extensive cuts and fills will be avoided where possible. When necessary, trees, shrubs, and ground cover will be planted to not only stabilize slopes, screen or frame views, or to separate public areas from building service areas, but also to naturalize the building in its setting.

Because of the natural topography of the project area and resultant views of hills and the lake, buildings will be sited to take advantage of these views. However, low profiles will be employed to screen the buildings from view from the lake.

Roads will be eased along the ground, and large cuts and fills will be avoided. If possible, they will be screened from view from the lake by intervening ridges or trees. Rights-of-way through trees will be cut and maintained with irregular edges to preserve a natural appearance. All grading work will be done to insure positive drainage of all use areas.

9:05 WATER SUPPLY SYSTEMS

9:05:01 GENERAL

Water supply systems generally comprise (1) water source; (2) purification works where needed; and (3) distribution systems. Each part of the system must be designed to take into account the uniqueness and interaction of individual phases.

9:05:02 DESIGN

The water supply facilities shall be designed in accordance with the requirements of the Pennsylvania Department of Environmental Resources. The water supply facilities shall provide an adequate quantity to satisfy present and future demands and shall be of a quality to meet U.S. Public Health Service Drinking Water Standards.

9:05:03 SUPPLY

There were no existing sources of public water supply close enough to the project to be considered; subsequently, a source of supply had to be developed at the Seven Points Recreation Area. Other sources will be developed as the need arises. The obvious source is Raystown Lake itself.

The water quality of Raystown Lake is shown in Section 6 of this report. The quality data indicates that the lake could be a potential source of domestic drinking water which may require minor treatment beyond chlorination.

A groundwater source holds the possibility of no treatment beyond chlorination and would probably be less costly. Stage development of the recreation areas and the distance between each area leads logically to the consideration of the development of individual systems for the various areas as they are developed. The published information on

the availability of groundwater sources in the project area is not encouraging. The available information indicates low yields, if any, and raises some doubts as to quality if high yields are obtained. However, the minimal amount of actual groundwater development in this area is possibly contributory to the unfavorable impression of the information. A groundwater source is being developed for the initial development of the Seven Points Recreation Area; treated lake water will be used at the Rothrock Recreation Area.

There is also the consideration of the effect of Raystown Lake on the groundwater conditions when the lake is superimposed on the present geology. There is a good possibility that a gravel packed well, being recharged by the lake, would be a satisfactory source. Considering the possible savings involved by developing a groundwater source, wells are presently considered to be the best source of potable water. A detailed study will be undertaken, including the drilling of exploratory wells to confirm the well concept, before final selection of the source is made. If the groundwater source proves to be inadequate in quantity or quality, the surface supply will be utilized by installing lake intake structures to serve the development areas shown on plates 16-29, -30, -31, and -32.

TABLE 9:3

WATER SUPPLY BASIS OF DESIGN*

The unit loadings for water supply were calculated using the following daily consumption rates:

Use	Daily Water Requirement
Administration	100 gpcd
Boating	5 gpcd
Camping	60 gpcd
Lodges	100 gpcd
Marinas	5 gpcd
Picnicking	10 gpcd
Swimming	10 gpcd
Visitors	5 gpcd

*Criteria from EM 1110-2-400 APP A, and from Pennsylvania Department of Environmental Resources (PennDER) design manuals

9:05:04 TREATMENT

Chlorination will be provided as a minimum treatment for all water supplies. In the case of a well source, the storage facilities described below will be utilized as contact tanks, requiring separate fill and discharge lines to each storage facility. Other treatment requirements will be based upon the quality of the water source finally selected.

9:05:05 STORAGE

Storage will be sized to provide adequate supply based upon the safe daily yield of the source finally selected. Sufficient high ground is available to provide adequate pressures in the distribution system. Ground level concrete storage will be used in order to maintain cooler water temperatures during summer months and for esthetic reasons.

9:05:06 DISTRIBUTION

The distribution systems will serve the recreational facilities as schematically indicated on plates 16-35, -37, -39, and -41. Construction materials will be in accordance with guideline specification CE 501, Waterlines, Supply Lines and Distribution Systems. The system's design will be in accordance with generally accepted water works practices. Fire protection will not be considered in the design of the water facilities.

9:05:07 MISCELLANEOUS SYSTEMS

The smaller areas will be serviced from individual wells with household type equipment, including any required treatment facilities. These systems are presently installed and operating at three boat ramps, the dam operators' residences, the maintenance shop and the dam overlook.

9:06 SEWAGE: COLLECTION AND TREATMENT

9:06:01 GENERAL DESCRIPTION

There are a number of methods available to protect the lake from domestic wastewater pollution. The possibility of pumping the sewage for treatment outside of the watershed is precluded by the great distance required. Treated

effluent disposal by the spray irrigation method on the forest lands is a secondary possibility. Treatment plants are required for this method also, and the cost of providing and maintaining the spray system is high. The ability of the shallow clay soils that cover most of the area to absorb large quantities of water is seriously questioned. Since there is no need for irrigation water, this method is considered impractical. Treating the sewage or discharging treated effluent into the Raystown Branch below the lake is precluded by topography and the great distance between the recreation facilities and the dam. The most economical maximum treatment of the sewage at major recreation areas and discharge of the effluent to the reservoir.

9:06:02 DESIGN REQUIREMENTS

Sewage treatment shall be provided for all the proposed recreational facilities at Raystown Lake. Sewage treatment shall be through the secondary process and shall include phosphorus removal, a tertiary treatment process. The design shall provide maximum protection of the lake from pollution by sanitary sewage generated at the recreational facilities. The sewage treatment facilities and disposal methods shall be designed in accordance with the regulations of * the Pennsylvania Department of Environmental Resources and the conditions of the National Pollutant Discharge Elimination System permit program. *
The treatment plants will be designed to reduce the five-day BOD to a level of 10 milligrams per liter and the suspended solids to 10 milligrams per liter. In addition, removal of nutrients will also be included. Ammonia nitrogen will be reduced to a level of three milligrams per liter, and the phosphorus will be reduced to a level of one milligram per liter. Disinfection will be accomplished by chlorine addition. Satisfactory sludge disposal will also be provided.

TABLE 9:4

SEWAGE TREATMENT BASIS OF DESIGN*

The unit loadings for sewage treatment were calculated using the following daily quantity rates:

Use	Quantity
Administration	100 gpcd
Boating	5 gpcd
Camping	60 gpcd

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Lodges	100 gpcd
Marinas	5 gpcd
Picnicking	10 gpcd
Swimming	10 gpcd
Visitors	5 gpcd
Cabins	75 gpcd

* Criteria for the foregoing table from EM 1110-2-400 APP A and, from Sewerage Manual, Pennsylvania Department of Environmental Resources, Bureau of Water Quality Management

9:06:03 COLLECTION SYSTEM

The collection system materials will be in conformance with guideline specification CD 600.01, Sewers, Sanitary, Gravity. Design parameters will be in accordance with the Pennsylvania Department of Environmental Resources Sewerage Manual. The collection systems are shown on plates 16-35, -37, -39, and -41. Numerous pump stations are required because the water related facilities are committed to low ground. All pump stations below elevation 812 MSL will be flood proof. Auxiliary power facilities for both the treatment plants and pumping stations will be incorporated in the treatment plants above maximum flood, with power distribution to the individual pump stations. A number of the pump stations will be incorporated into the buildings served. Facilities will be incorporated in the project for receiving sewage from boats. Dock mounted, floating pumping facilities will be installed at the marinas to receive sewage for pumping to holding tanks. The sewage shall ultimately be discharged to the sewerage system for treatment and disposal. For isolated locations, independent sewage treatment facilities may be provided. Sealed vault comfort stations are shown at a number of locations because of their isolated nature or small usage. These sealed vaults will be pumped as required, and the sewage will be taken to the closest sewage treatment facility for treatment and disposal.

9:06:04 WASTEWATER COLLECTION STATIONS

Wastewater collection stations will be installed at convenient spots in the camping areas to collect the wastewater, which will be primarily from washing dishes. The stations will be a typical janitors clean-up stainless steel sink, shall be either drained into a sewage collection system or sealed concrete vault, and will be pumped out as need requires. These collection stations will normally be installed in conjunction with or in close proximity to a comfort station or washhouse.

9:06:05 CAMPGROUND SEWAGE

Comfort station wastes from most of the drive-to camping areas will be collected by a sanitary sewer system and piped to wastewater treatment plants for treatment. Comfort station wastes from the hike-to/boat-in camp areas will be collected and transported to the nearest sewage treatment plant.

9:06:06 TRAVEL TRAILER SANITARY STATIONS

Travel trailer sanitary stations will meet prevailing standards at the time they are constructed and will be connected to the wastewater treatment plants. They will be concrete pads with drains and water under pressure for flushing trailer holding tanks-and cleansing the pad of any spillage during use.

9:06:07 WATERCRAFT SANITARY STATIONS

The watercraft sanitary stations will be sealed metal tanks for the temporary storage of the waste from watercraft sanitary holding containers. When the tanks are filled, the waste will be pumped out and transported to the waste-water treatment plant.

9:06:08 PETROLEUM WASTES

Petroleum wastes from marinas and maintenance buildings will be stored in sealed metal containers to be collected by the salvage contractor for re-refining.

9:06:09 TREATMENT PROCESS

The treatment process that will be used is of the extended aeration type. This type of treatment affords maximum flexibility and control and allows for the integration of the nutrient removal process at a relatively low cost. Nitrogen will be removed through biological treatment, while phosphorus will be removed through precipitation. The last units of the treatment process will be sand filters. Modular construction will be used to facilitate adequate treatment during periods of widely fluctuating seasonal demands. Treatment facilities will be located above the spillway crest elevation of 812 feet MSL. The schematic flow diagram is shown on plate 16-35. Liquid digested sludge will be disposed of at a state approved landfill site; tank trucks will be utilized for sludge hauling.

9:06:10 MISCELLANEOUS SYSTEMS

There are some isolated, small facilities which will be served by individual sewage disposal systems. These proposed disposal systems will be either sand filter plants, if available area and groundwater conditions permit, or will be prefabricated factory-built sewage treatment units. Treated effluent discharge will be to the lake in either case.

Sewerage facilities have been provided for the administration and maintenance complex. Subsurface disposal was used in this area, and septic tanks and tile fields were installed.

9:07 SOLID WASTE: COLLECTION AND DISPOSAL

9:07:01 GENERAL

The solid wastes that will be generated will consist of refuse and garbage from day use recreational areas plus that from the marinas, restaurants, lodges, camping areas, etc.

The second major category of solid waste will be the sludge from the sewage treatment facilities. It will be necessary to periodically dispose of the wastes resulting from sewage treatment and water filtration. In the case of the sewage plants, the sludge will be aerobically digested. Sludge will be hauled by tank truck to an approved sanitary landfill for disposal. The sludge will contain approximately four percent solids.

9:07:02 COLLECTION AND DISPOSAL

The collection and disposal methods that have been used for solid waste estimation are based on the criteria contained in table 9:5 and 9:6 on the following pages.

The following assumptions were used for the initial solid waste disposal requirements:

Estimated initial yearly visitor days - 1,011,050
Estimated generation rate - .55 lbs/visitor day
Approximate waste load - 278 tons/yr.
Density of waste in place - 700#cu. yd.
Landfill unit of measurement - 700 tons/acre ft.
Landfill space requirement - .4 acre ft./yr.

Both the collection and disposal of all solid waste material will be handled by a private contractor. This will be done on a one or two year contract basis, depending upon the rate of completion of recreational facilities and the number of visitors to the area.

TABLE 9:5

SOLID WASTE COLLECTION RATES FOR RECREATIONAL AREAS

Recreational site	Average amount of solid waste collected (90% confidence interval)
Campground	1.26 ± 0.08 lb/camper/day (1)
Family picnic area	0.93 ± 0.16 lb/picnicker (1)
Group camp	1.81 ± 0.39 lb/occupant/day (1)
Lodge area	
Rented cabin (w/kitchen)	1.46 ± 0.31 lb/occupant/day (1)
Lodge room (w/o/kitchen)	0.59 ± 0.59 lb/occupant/day (1)
Restaurant	0.71 ± 0.40 lb/meal served (1)
Residence	2.13 ± 0.54 lb/occupant/day (1)
Boater	1.0 lb/boater/day (2)
Winter recreationist	1.0 lb/recreationist/day (2)
Observation site	0.05 ± 0.03 lb/incoming axle (1)
Visitor center	0.02 ± 0.008 lb/visitor (1)
Miscellaneous visitor	.035 lb/visitor/day (2)
Swimming beach	0.04 ± 0.01 lb/swimmer (1)
Concession stand	0.14 lb/patron + (1)
Administrative residence	1.37 ± 0.035 lb/occupant/day (1)

(1) Little, H.L. Design Criteria for Solid Waste Management in Recreational Areas, U.S. E.P.A., 1972.

(2) L.Robert Kimball, Department of Environmental Engineering Estimate. +No confidence interval possible because of limited data.

TABLE 9:6

CHARACTERISTICS OF SOLID WASTE COLLECTED FROM RECREATIONAL AREAS (2)

Site	Average values (% by weight)		
	Food waste	Other combustibles	Noncombustibles
Campground	37	40	33
Family picnic area	44	29	27
Group camp	59	18	23
Group picnic area	29	31	40
Recreation residence	24	41	35

Factors considered in the adoption of this collection and disposal system are:

a. The seasonal nature of the operation in relation to the equipment and personnel needs.

b. Cost comparison of the alternatives.

c. The landfill site limitations due to nearness of camping and recreational facilities.

d. Limiting geologic, soils, and hydrologic characteristics of the area.

e. The relatively small amount of solid waste to be generated per year.

Solid waste will be collected throughout the project by park personnel, and hauled to various central storage sites. The commercial hauler will load solid waste at these points for disposal at an approved landfill site, including dewatered sewage sludges.

9:07:03 SOLID WASTE RECEPTACLES

Trash receptacles, placed in the numbers and locations as indicated on future construction plans, will be 32 gallon, covered galvanized metal containers having a total weight, when filled, of no more than sixty (60) lbs. Their estimated need is outlined in table 9:7.

(2) Ibid (1), Table 9:5.

TABLE 9:7 (3)

ESTIMATED NUMBER OF 32-GALLON REFUSE STORAGE CONTAINERS NEEDED IN RECREATIONAL AREAS

Site	Number of containers*
Campground	1 per site (C of E)
Family picnic area	.5 per site (C of E)
Group picnic area	1 per 20 people +
Group camp	1 per 1.8 people
Concessionaire lodge area:	
Rented cabin (w/kitchen)	1 per 2.5 people
Lodge room (w/o/kitchen)	1 per 6.0 people
Restaurant	1 per 7.5 meals‡
Residence	2.75 per residence
Observation site	1 per 150 visitors
Visitor center	1 per 180 visitors
Swimming beach	1 per 7.3 swimmers
Concession stand	1 per 24 patrons
Administrative residence	1.65 per residence

*Based on a minimum of once-a-week collection and 170 lb. per cubic yd. waste density in storage containers.

+Collected after each use.

‡Based on a density of 350 lb. per cubic yd.

(3) Ibid (1), Table 9:5

Certain sites will be used more frequently than others, and unless the visitors are willing to take their waste to an unused (or less frequently used) container, littering and overflowing containers may result. Additional containers are, therefore, normally placed in the area, or collection is provided more frequently. The collection frequency required for a particular area will be determined on the basis of prevailing temperatures, visitation, and insect and animal problems. Once the collection frequency is chosen, the total storage requirements can be calculated (Little, 1971).

9:07:04 INCINERATORS

Incineration will not be used as a disposal method for solid waste. It may be necessary,however, to install sludge incinerators at the wastewater treatment plants if other disposal alternatives acceptable to the Pennsylvania Department of Environmental Resources cannot be found.

9:08 ROADS

9:08:01 GENERAL

The existing roads within the project were analyzed both graphically and in the field as to their alignment and physical condition. It became evident that some of the sites with topography suitable for development were inaccessible from the existing road network. For this reason, some of the sites were not considered for major development. Two major access concepts were studied.

9:08:02 PERIMETER ROAD

The first concept studied was a perimeter road which would connect all of the various recreation areas along the lake. Such a road would facilitate rapid movement between the areas. This would also make park maintenance easier. However, such a loop system also encourages a continuous stream of cars moving around the lake, thereby destroying the feeling of isolation in a relatively natural wilderness area. Another important consideration in developing the loop road concept is economic. In order to build a loop road, two major bridges would be needed; one at the Backbone Ridge Game Mitigation Area, a 450 foot span over James Creek; and the other over Shy Beaver Creek with a

150 foot span. These bridges and the perimeter road would be extremely costly.

9:08:03 CUL-DE-SACS

The second access concept is a system of "recreation cul-de-sacs" in which a major access road will link a recreation area to the nearest primary State or Federal highway, such as PA 26. This scheme is shown on plates 16-27 through 16-33. One of the advantages of this concept is that it honors the rugged topography by not forcing roadways across steep terrain, necessitating the construction of costly bridges and causeways which would destroy the area's inherent wilderness character. The "cul-de-sac" concept also facilitates the orderly development of each recreation area as an independent complex of recreational facilities and activities. From the standpoint of users traveling from one area to another, it is felt that, since the individual recreation areas provide a wide range of activities, the recreationist will not have to move from one area to another. The need for sightseeing via automobile would be satisfied by the development of the proposed scenic parkway which will generally follow the ridge line of Terrace Mountain above the east bank of the lake. This parkway would feature dramatic panoramas of the lake and the surrounding countryside while the eight hundred to a thousand foot difference in elevation separates the automobile from the lake which further removes it from the active recreation areas. However, this parkway is not a feature of the project. It was recommended by the Commonwealth for consideration in the scenic highway program.

9:08:04 ROADWAY DESIGN STANDARDS

The following standards will determine roadway design throughout the project:

Road Type	Road Width (ft.)	Maximum Grade (%)	Design Speed (mph)	Shoulder Width (ft.)	Minimum Radius (ft.)
Major Access	22	10	35	4	200
Circulation	20	10	30	4	150
Camp	18	12	20	4	100
One-Way	14	12	15	2	
Service	10-12	12	10	2	100

Additional design criteria and roadway details are shown on plate 16-46.

9:08:05 MATERIALS

All roadways, except service roads, will be surfaced with bituminous material. Service roads will be gravel surfaced.

Road construction will be in accordance with the applicable standards of PennDER; Bureau of State Parks and Bureau of State Forests, and Park Road Standards of the U.S. National Park Service.

9:09 PARKING

9:09:01 Parking lots will be sited to minimize the visual and environmental effect of large areas of parked automobiles. The location of existing large trees will be considered during design phases, and suitable trees will be saved for shade and for breaking the monotony of the parking lot. Lots may be depressed below sight lines, or earth berms may be built to intercept sight lines and screen the viewer from parked vehicles. Parking spaces for automobiles will be 9 x 20 feet, and spaces for cars with boat trailers will be 10 x 55 feet. Lots will be surfaced with crushed stone and will have a center cartway of bituminous material. The porous surface will allow the rainwater to soak naturally into the ground, thereby reducing the extent of required storm water collecting systems. Consideration may be given to providing up to one-third of the single spaces for compact cars, 7 x 15 feet. This will allow a greater efficiency of utilization of the parking lots.

9:10 BOATING RAMPS

9:10:01 DESIGN CONSIDERATIONS

The existing topographical configurations of the shoreline and shore lands at the project severely limit the availability of suitable boat ramp sites. Some suitable sites have limitations of poor or no vehicle access.

Therefore, boat ramp sites have been classified in two suitability categories. One condition is a gentle hillside with a slope not exceeding 15 percent. The other type of site occurs more frequently but is somewhat more

difficult to develop. It consists of a narrow drainage-way or gully which has steep banks and is approximately 150 to 200 feet across at the bottom. A ramp suitable to both situations is shown as "TYPICAL BOAT RAMP", plate 16-44.

Ramps shall be sited to avoid an abrupt change in depth at the end of the ramp. The ramps will be designed to operate through lake elevations of 788 to 775 MSL.

9:10:02 DESIGN

Launching ramps will be constructed with a maximum grade of 14 percent and will be 12-15 feet in width per lane. Courtesy piers with floating boat docks may be provided. The boat ramps will be reinforced concrete. Earth embankment areas will be protected by stone rip-rap to prevent erosion. Wooded bollards will be used in lieu of curbing to control traffic.

In the development of ramp areas, consideration will be given to providing a nearby picnic area, primarily for non-boating family members. Water supply will be provided from individual wells at each ramp site. Sealed vault comfort stations will be provided at all ramps.

9:10:03 NUMBER

Public boat ramp lanes will be provided at the minimum rate of one lane for every 40 boats.

9:10:04 PARKING

Parking will be provided at each boat ramp. The total number of required parking spaces was calculated using the boating segment (15 percent) of the project's instant design load, as well as the number of boaters per boat (3). Single car as well as car-trailer parking will be provided at each ramp. The paving will be like the recreation area lots, crushed stone with a central bituminous cartway. Parking spaces for automobiles will be 9 x 20 feet and 10 x 55 feet for cars with trailers. Lots will allow pull-through parking wherever possible. See 9:09.

9:11 MARINAS

9:11:01 GENERAL

The marinas developed in conjunction with the recreation facilities will be designed to meet the following criteria:

a. Floating equipment (dock, slips, fuel barges, etc.) will be constructed to withstand a 50-year flood frequency at a pool elevation of 800 MSL. This equipment must be secured at the marina site in the event of flood.

b. All shoreline within the marina development will be protected to resist erosion (either rip-rap, bulkhead, or other approved treatment) to an elevation of 795 MSL (25 year flood frequency).

c. Floating equipment, including floating marina buildings, must be designed to accommodate a drawdown to elevation 775 MSL (25-year drawdown frequency).

d. All major buildings, except floating marina buildings, will be located above elevation 812 MSL (full flood control pool), where feasible. Buildings constructed within the flood pool will be
* flood-proofed or of raised construction.

e. All buildings and construction will be designed in accordance with the general architectural criteria established in Section 9:15.

9:11:02 FACILITIES

Marinas will include a monorail launch, boat ramps, comfort stations (including dock comfort stations), minimum slip storage in the initial development for 200 boats with possible future expansion to 500 boats, dry storage and repair facilities, small grocery and convenience store, fuel station, small restaurant, and parking in the initial phase for 250 cars with possible expansion to 600 cars. Size of the marina and parking facilities will be governed by the topography of the site. Docking, storage, servicing requirements, and meeting rooms for power boat clubs will be accommodated in conjunction with the operation of marina concessions.

9:11:03 ANTICIPATED NEEDS

Marina needs (the potential number of boat storage slips) were calculated using the following formula:

$$\text{Number of slips} = \frac{\text{Capacity of lake} \times 50\%}{40\%}$$

Where:

Capacity of lake: Unrestricted

= approximately one boat for every five acres, measured 200 feet from shore.

Restricted

= approximately one boat for every three acres. (remainder of lake except operational areas)

40%= Percent of marina boats in use at any one time.

50%= Percent of boats on lake that are trailered to the lake.

9:12 PICNIC AREAS

9:12:01 GENERAL

The design for a typical picnic area is shown on plate 16-45. The criteria on which the design is based are noted on this plate. In general, the facilities will be oriented to a field play area or to the water's edge. Picnic shelters will be located as shown on the plates. These structures will generally be located near a field playing area in order to provide a facility for group participation.

9:12:02 PICNIC UNIT

The standard picnic unit at Raystown Lake will consist of four picnic tables, one charcoal grill and two trash receptacles. It is assumed that each table will accommodate five and one-half picnickers at any one time. The minimum spacing between tables will be 50 feet, and the maximum number of tables per acre will be 16.

9:12:03 NUMBER OF TABLES

The number of picnic tables in each picnic area is dependent upon the facility design load for picnicking. This design load is divided by 5.5 persons per table to derive the required number of tables, according to the following formula:

$$FDL = \frac{DL(od) \times 40\%}{2}$$

9:12:04 AREA DEVELOPMENT

Each picnicking complex will have some areas provided for games and field play activities. The picnic area will also have picnic shelters provided at the rate of one structure for each 225 picnickers, or approximately one every 41 tables. Each shelter will accommodate a minimum of eight tables. The preferred allowable cross slope for picnic areas is 15 percent.

9:12:05 COMFORT STATIONS

Comfort stations will be located no further than 400 feet from 90 percent of the picnic units. The need for comfort stations will be determined by the following criteria: one fixture (water closet or urinal) for each 150 picnickers (facility design load), and one sink for every two fixtures (water closets or urinals). Buildings will be sized in accordance with the fixtures use area requirements (plate 16-54).

9:12:06 PARKING

Convenient parking areas will be provided for each picnicking complex. Each will be situated to assure that 90 percent of the tables are within a 400 foot radius of the parking. The required number of parking spaces will be determined by multiplying the total number of tables by 1.3 However, in the instance of a picnic area being adjacent to the swimming area, the calculated parking required for picnicking was reduced by 30 percent because of activity overlap. Each parking area will have bituminous cartways and graveled parking stalls. Depending upon topography and soil conditions, the parking area may be depressed, or shielded from view with earth berms.

9:13 CAMPING AREAS

9:13:01 GENERAL

There are three types of camping areas to be developed; family camping, group camping, and hike-to/boat-in camping. The locations of these areas are shown on plates 16-27 through -32. The following criteria apply to family camping areas, and generally to the other two types.

9:13:02 AREA DEVELOPMENT

The number of required camping units has been calculated by dividing the facility design load for camping by four. Although EM 1110-2-400 (Appendix A) standards are based on a party size of five, Pennsylvania State Park records indicate that the average camping party in the Commonwealth is four. Eighty percent of the campsites will be designed for trailer or mobile camping vehicles and the remainder will be designed for hike-to/boat-in tent camping. Tent campers will, however, be able to use the vehicular camping pads if they wish. A drinking water source will be provided within 150 feet of every campsite. If at all possible, camp pads will be sloped toward the rear (i.e., away from the road). Banks resulting from camp pad construction (either in cut or fill) will be no higher than three feet for 90 percent of the campsites. Visitor parking may be provided in the vicinity of each camp control building, should this be desired.

9:13:03 CAMPING UNIT

A camping unit will consist of one campsite (pad), one grill, one table and one trash storage container. In conformance with prevailing Pennsylvania State Park standards, the distance between campsites will be a minimum of 60 feet with an average distance between pads of 65 feet. This is slightly less than the 75-foot minimum specified in EM 1110-2-400 (Appendix A). The maximum density of each campground will be eight campsites per acre; however, overall density (including roadways and buffer areas) will not exceed 2.5 to 3 campsites per acre.

9:13:04 GROUP CAMPING

The areas reserved for group camping will be developed by the Corps of Engineers or by private, non-profit organizations. These areas are shown on plates 16-27 through 16-32.

It is assumed group camping units will be larger, an average of five people per site. Parking requirements should be lower, as most campers such as Girl or Boy Scouts will be brought to the site by adults who will not remain to camp.

The facilities will include roads, parking, shelters, water, comfort stations, a camp multi-purpose building, and where warranted, a campstore.

9:13:05 HIKE-TO/BOAT-IN CAMPING

As the name implies, access to these camping areas will be via hiking trails or by boat. Locations for these areas are shown on plates 16-27 through 16-32. Generally, the campsites will be more primitive than those described for the family camping area. Sealed vault comfort stations and a water supply will be provided. This type of camping will be controlled by a park employee making rounds of these areas by boat and will be serviced via existing or new service roads. Hike-to/boat-in camping areas will be constructed at an overall density of three units per acre; this does not include roadways and buffer areas.

9:13:06 CAMP CONTROL STATION

This facility will control camping areas having more than one hundred sites. A typical camp control station is shown on plate 16-54. These stations will be manned during the camping season. Locations for this type of control facility are shown on plates 16-27 through 16-32, -36 and -40.

9:13:07 COMFORT STATIONS AND WASHHOUSE

As shown on plate 16-46, each campsite will be located no further than 500 feet from a comfort station or a washhouse, with 300 feet being desirable. One water closet (or urinal) will be provided for every 35 campers, and one lavatory will be provided for every water closet. There will be a minimum of one washhouse with showers, laundry area, lavatories and water closets for each 100 camp pads. (plate 16-54)

9:13:08 WASTEWATER COLLECTION STATIONS

Each wastewater collection station will have one inlet for every 100 campsites in the camping area it services.

9:14 SWIMMING FACILITIES

9:14:01 GENERAL

Public beach and swimming areas will be constructed at the four day-use recreation areas. Pools and/or beaches may be built at the concessionaire lodge areas. General design criteria are outlined in the following paragraphs.

9:14:02 SIZE

The required size of the various elements of a swimming area, such as the water, beach, and sunbathing space, is related directly to the facility design load for swimming. The standard assumption is made that at any one time 60 percent of the bathers will be on the beach, 30 percent will be in the water, and 10 percent will be elsewhere, with a daily turnover rate of three. Beach area has been allotted at the rate of 50 square feet per individual, while the required water area has been calculated on the basis of 30 square feet per bather. As illustrated on plate 16-44, the shoreline length of beach is a function of the underwater beach gradient, the required area of swimming water, the magnitude of lake fluctuations and the desired maximum depth of swimming water. The beaches will be constructed with an underwater gradient of no more than eight percent. For purposes of design, the maximum summer drawdown will be eleven feet and the maximum depth of swimming water will be set at five feet. No swimming will be allowed during water elevations over 786 MSL, the normal summer pool.

9:14:03 MATERIALS

Underwater beaches will be constructed of poured concrete. The use of concrete rather than sand, although initially more expensive, will greatly reduce future maintenance costs. The high costs of maintaining sand and/or gravel beaches stem primarily from (1) the need to periodically replace wind and water eroded materials and (2) the periodic need to restore swimmer-disturbed underwater beach material (i.e., compaction forces mud to the surface). Despite the potential occurrence of late summer algal growth on some concrete beach surfaces (i.e., those located in slack water areas), this type of beach construction has received favorable public acceptance when installed in Pennsylvania recreation areas (for instance, the U. S. Forest Service's concrete beaches in the Allegheny Reservoir).

9:14:04 PARKING

The parking areas will be crushed stone with bituminous cartways. Individual sizes will be determined from the swimming facility design loads, using the assumptions that there will be four swimmers per car and a daily turnover rate of three. The required number of parking spaces thus equals the facility design load divided by four. Parking areas will be placed as close to the beaches as possible. However, because of an individual site's topographic or maximum flood pool considerations (i.e., with regard to bathhouse location), walking distances will vary with the maximum being approximately 800 feet.

9:14:05 BATHHOUSE

As shown on plate 16-55, and described further in 9:15:03 the bathhouses will have dressing areas, lockers, comfort stations, and shower facilities. The buildings will be located within 200 feet of their respective beaches. The floor of the bathhouses will be constructed above the spillway crest elevation of 812 MSL. All structures will be situated to be conveniently serviced by maintenance and concession vehicles.

9:15 ARCHITECTURAL CHARACTER

9:15:01 CRITERIA

The overall character and specific designs of the various buildings of the Raystown Lake project have been and will be determined on the basis of the following architectural criteria:

a. The sensitive integration of the buildings with the natural setting;

b. the harmonious use of local materials with natural finishes;

c. the standardization of architectural details, design and materials throughout the project; and

d. ease of maintenance and ability to withstand public abuse and vandalism.

9:15:02 BUILDING DESCRIPTIONS

There will be eight types of buildings constructed within the Raystown Lake project. General character and overall designs are shown on plates 16-50 through 16-55.

9:15:03 BATHHOUSE

As shown on plate 16-55, the bathhouse complex consists of a building with dressing and shower areas, concessionaire storage, and a first-aid station. The structure will be faced with a combination of natural sandstone, redwood board and batten siding. The roof of cedar shakes will be pitched at a 12/5 slope. The interior walls of the dressing facility will be of concrete block faced with epoxy paint. Showers and water closets will be provided on both sides of the dressing area. Open stockade dressing areas will be constructed on either end of the building. As shown on plate 16-55, the concessionaire's area will also have space provided for a small first-aid office and general storage, in addition to the food preparation area. All ceilings will be plastered.

9:15:04 ADMINISTRATION BUILDING

The exterior of this building is faced with natural rubble sandstone with a hip roof constructed at a 12/5 pitch and faced with cedar shakes. Entry into the lobby area is by way of a glass and anodized aluminum entry door. This door is part of a larger floor-to-ceiling glass and aluminum window-wall. The lobby area has a clay tile flooring, while the remainder of the building has vinyl tile floors. The interior partitions are either plaster dry-wall or wood paneling. The administration building houses the lake manager's office, additional office space for other project personnel, a public information area, comfort facilities, and miscellaneous storage space (plate 16-53).

9:15:05 CAMP CONTROL BUILDING

Each camp control building will be constructed as shown on plate 16-54. The exteriors will be faced with natural rubble sandstone. The windows will be bronze-finished, either aluminum casement or aluminum projected, within a panel faced with board and batten. The entry door

will be of glass with a bronze-finished steel frame. The hip roof, at a pitch of 12/5, will be surfaced with cedar shakes. The interior walls will be of painted masonry block and in the public area they will be faced with mahogany panelling. The floor in the public area will be surfaced with quarry tile, while the remainder of the floor areas will have vinyl-asbestos tile surfacing. The ceiling will be 1/2" dry-wall.

9:15:06 PICNIC SHELTER

As shown on plate 16-53, the picnic shelters will be open on all four sides with the roof structure supported at the corners by wood columns. The floor will be of finished concrete and the hip roof will be surfaced with cedar shakes. The 12/5 pitched ceiling will be vaulted and the tongue-and-groove wooden decking will be exposed to view. These shelters will be large enough to house approximately eight picnic tables. The double central fireplace will be faced with rubble sandstone.

9:15:07 COMFORT STATION - TYPE A

As shown on plate 16-54, this type of comfort facility will not be serviced by sanitary sewer lines, nor will it have running water. The Type A facilities will be constructed over a reinforced concrete sanitary vault that will be serviced through an exterior access. The exterior walls will be faced with natural rubble sandstone and the gable roofs (pitched at a 12/5 slope) will be sheathed with cedar shakes. Low wall-vent openings will be installed with a central chimney vent provided at the center of each building. Bronze-finished, aluminum projected windows will be installed in all four walls. The floor will be concrete throughout and the interior concrete block walls will be surfaced with epoxy paint. Portions of the exterior walls may be faced with vertical board and batten.

9:15:08 COMFORT STATION - TYPE B

This type of comfort station is designed to be used in either the picnic areas or within non-shower locations in the camping areas. As shown on plate 16-54, the exterior and interior materials are identical with those used in the Type A facilities with the major difference being the provision of running water and flush-type toilet

fixtures. No shower facilities will be provided. An attendant's utility area will also be incorporated within the central portion of this structure.

9:15:09 WASHHOUSE

The washhouse is designed for exclusive use within the camping areas. As shown on plate 16-54, it is considerably larger than the other two types of comfort stations because of the additional provision of laundry and shower facilities. The exterior and interior materials are essentially the same as those used in the other types of comfort stations; however, the hip roof design will accommodate the construction of a suspended portland cement plaster ceiling throughout the interior. The divider partitions in both the shower and the comfort areas will be of a hollow metal construction.

9:15:10 MAINTENANCE BUILDINGS

This building type has two parts - an unheated garage area and a heated workship area with a washroom. As shown on plate 16-55, the nearly flat (12/1/2 pitch) steel joisted roof is surfaced with built-up tar and chip material on metal roof decking.

The exterior and interior walls are conventional concrete block. The drive-in bay doors are roll-type steel and the entry doors are of hollow steel construction. The windows have metal frames and are protected by steel security bars on the outside.

9:16 OVERLOOK STRUCTURES

The three existing overlooks have parking areas and a gravelled walkway to the overlook. The overlooks are either gravelled or blacktop surfaced and have solid rubble stone walls on the view side. A small wooden roof shelters appropriate maps of the project at each structure so that a visitor may identify the viewing area.

Future overlook structures are shown on plate 16-49. They will be of wood with a cantilever design to partially project the viewer into the viewing space. An open wooden railing will further invite the viewer. A wooden
* superstructure and cedar shake roof will be provided.

* Plantings designed to have a natural appearance and selective thinning of trees will provide a setting in keeping with the environment and will allow optimum pleasure in viewing the lake.

9:17 PLAY FIELDS

Generalized play field areas are shown on plate 16-45. There will be one large play field at each day-use recreation area. A picnic shelter (plate 16-53) and comfort station (plate 16-54) will be located in close proximity to each play field. The field will be a gently sloping area of at least 400 feet by 400 feet to safely accommodate various types of informal field game activities.

9:18 SITE STRUCTURES

9:18:01 GENERAL

Required site structures not discussed elsewhere will be minor foot bridges and drainage way protectors.

9:18:02 FOOT BRIDGES

Foot bridges will be of two types: (a) earthfill or (b) log bridge. Earthfill bridges will have pipes of sufficient size to pass storm water and will have riprap protected embankments. They will be built in shallow drainage ways where regular bridges are not suitable.

Log bridges will be either constructed of trusses made from logs or a tree or trees cut in half lengthwise to provide a level surface. These will have hand rails for hiker safety. They will be built across narrow, deep ravines and will be limited by the size and length of available trees. The wood will be treated with a clear preservative to insure maximum life of the bridge.

9:19 UTILITIES

9:19:01 GENERAL

Public utilities available at the project are electric and telephone service. Petroleum product transmission pipelines cross project lands but have no delivery areas on project property.

9:19:02 UTILITY RELOCATIONS

Relocation work involving six pipeline companies, two power companies, and two telephone companies is shown in DM 9 and DM 13. Pipelines involved were Allegheny, Atlantic, Buckeye, Laurel, Magnolia, and Texas Eastern Transmission Corporation. Power companies were Pennsylvania Electric Company and the Valley Rural Electric Cooperative. Telephone companies were the Bell Telephone Company and the United Telephone Company. Utility relocations were based on flowage easements at elevation 815 MSL. Information concerning utility relocations can be found in D M's 9 and 13.

9:19:03 PIPELINE RELOCATIONS

Pipeline rights-of-way will be screened from people driving through the area by the use of landscape buffers strategically placed at the points where roadways and pipelines intersect. Precautions will be taken to protect all valves and markers employed in connection with the pipelines from vandalism. Buildings will not be located within one hundred (100) feet of any major oil or gas pipeline.

9:19:04 ELECTRICITY AND TELEPHONE SERVICE

In providing electricity and telephone service to the various structures and facilities to be developed within the project boundaries, the following general guidelines will be adopted. Electric or telephone lines located within recreation areas will disturb a minimum of existing vegetation. Lines will not normally be visible to visitors driving through the project. Electric and telephone lines within developed recreation areas will be installed underground. The point of connection to the utility company's primary transmission system is shown for the facilities proposed for initial phase development in plates 16-34, -36. Electricity will be furnished to all park buildings but not to individual campsites. Sealed vault comfort stations located in hike-to/boat-in camping areas will not be furnished with electricity. Telephones will be provided at all administrative and maintenance facilities. Public pay telephones, if provided by the telephone company, will be located at various points throughout the park, such as bathhouses, camping control stations, and information centers.

9:19:05 LIGHTING

All electric service lines within the project will be placed underground. All lighting will be provided in accordance with the standards outlined in EM 1110-2-400 (Appendix A).

9:20 TRAILS

9:20:01 GENERAL

Trails constructed as part of the trail system will be of four general types. These are: (1) paved walkways, (2) wood chip paths, (3) earth paths, and (4) abandoned roads. All of these will tie together into a complete trail network with refinements and safeguards added for the interpretive center nature trails (plate 16-49). All paths and walkways will be field located for the greatest site advantage and for minimum disturbance to the ground and trees of the path area.

The formula used for potential hikers was:

$$\text{Hikers} = \frac{DL(0d) \times 15\%}{2}$$ [1]

This means that when complete in 2010, 5,400 hikers may be expected each weekend day. Of this amount, 21% may be expected to fish, 11% to boat, 83% to picnic, 50% to swim, and only 3% to hike.[2] The average hike is a four to five hour, one day trip. Only one in ten hikers stays overnight on the trail and a similar number may be expected to hike more than five miles.[2]

[1]Baltimore District, Corps of Engineers

[2]Fogg, "Park Planning Guidelines", NRPA, 1975

9:20:02 PAVED WALKWAYS

These walkways will be paved with bituminous cement concrete. Eight feet in width, they will connect major parking areas with major recreation activity areas such as beaches, large play fields, the interpretive center, and wherever a great volume of foot traffic is expected. The walkways will follow natural ground and will be designed to not exceed a 10% maximum grade.

9:20:03 WOOD CHIP PATHS

These paths will be constructed of wood chips, produced by chipping the brush and tops of trees cleared for construction of the various recreation areas. Limbs from future clearing and maintenance of wooded areas will be chipped for path maintenance and repair. Normally built six feet in width in day use or camping areas, they may be made narrower in less active areas. As many of the hiking trail paths as possible will be wood chip, ranging from eighteen inches to two feet in width.

9:20:04 EARTH PATHS

Earth pathways will be cleared in areas where it would not be feasible to transport the equipment necessary to run a wood chipper. These paths will be laid out and marked as naturally as possible, with as little intrusion on the land as can be accomplished. Cleared by hand, they will follow natural grade and will have steps and ramps built of stone from the immediate area of construction. Large machinery will not be needed in construction and will be excluded from most of the trail area so as to not disturb the natural setting of the trail.

9:20:05 ABANDONED ROADS

Existing roads not needed for access to park property will be abandoned in place. The roadbed of earth roads will be seeded to grasses. Maintenance will consist of fallen limb and stone removal, necessary grading as required, and in the case of grassed roads, mowing once a year. Certain roads may be opened to snowmobiles during the winter; these will be marked and identified in the field as the need becomes apparent.

9:21 SITE IMPROVEMENTS

9:21:01 GENERAL

Site improvements will consist of two general types of construction. One will be building amenities such as benches, patios, and retaining walls. The second is shrub and tree plantings.

9:21:02 BUILDING AMENITIES

These site improvements will be built in conjunction with the use and enjoyment of the buildings constructed in the various recreation and project operation areas. Benches will be placed in viewing areas and in other appropriate positions around public access buildings. They will be built of unpainted, treated wood for seating comfort, ease of maintenance, and durability.

Patios and paved areas, where appropriate, will be built of brushed concrete, flagstone, treated dimensional lumber, or treated wood rounds laid on grade.

Necessary retaining walls will be built of either rough sawn board formed, reinforced concrete; mortared stone; or dry stone with the face laid to a 1/12 batter. Local surface or "float" stone, or salvaged barn foundation stone will be the source of materials.

9:21:03 PLANTINGS

Plantings will consist of trees, shrubs, and ground covers. They will be only native plants or species proven hardy to the area. Plantings will be done to enhance, screen, or frame views, settle buildings to their site, provide shade, and control windbreak and erosion. All plantings will be designed and laid out to give a natural appearance to the setting and to avoid geometric patterns and rigid lines. See plate 16-20 for a likely and natural succession.

Representative species that may be planted for general landscaping effects are:

Coniferous Trees	Deciduous Trees
Red pine	Pin oak
Scotch pine	White oak

Coniferous Trees

White pine
Norway spruce
Douglas fir
White fir
Canadian hemlock

Deciduous Trees

Sugar maple
Red maple
Blackgum
Tulip poplar
Mockernut hickory
Black walnut
Washington hawthorne
Flowering dogwood
Eastern redbud
Red oak
Chestnut oak

Shrubs

Azalea var.
Mountain laurel
Japanese pieris
Rhododendron var.
Drooping leucothoe
Holly var.
Elderberry

Vines

Halls Japanese honeysuckle
English ivy
Periwinkle
Crownvetch
Boston ivy
Virginia creeper
Bittersweet

9:22 SIGNING

9:22:01 GENERAL

Signing at the project will consist of informational and directional signs. All signs will be sized, placed, and made of appropriate materials to perform their function without intruding on the naturalness of the area. All traffic control signs will conform to the Manual on Uniform Traffic Control Services for streets and highways. Symbol signs will be used appropriately.

9:22:02 SIZES

Sizes of directional signs will be kept in scale and commensurate with the speed and distance of the viewer in relation to the sign.

9:22:03 LOCATION SIGNS

Large location signs at the entrances to all major areas will be 8'-6" by 2'-0" rubble stone pillars with a western red cedar or cypress sign board. The sign board lumber will be 3" x 12" planks, approximately 4'-0" high by 5' wide.

9:22:04 DIRECTIONAL SIGNS

Directional signs will be of treated 10" to 12" native logs. A signboard 2'-6" x 4' will be suspended from a horizontal 5' x 6" log centered 6'-8" above the ground. The main upright support log is 12" in diameter with the top 9'-6" above grade. Three shorter logs will be clustered vertically at the base for additional support.

9:23 INTERPRETIVE DEVICES

9:23:01 GENERAL

Interpretive devices will be used throughout the project to explain to the recreationist the value and significance of individual areas and aspects of importance within the park, in relation to both the park and the region. Although the majority of the devices will be at the interpretive center, others will be placed in the park at applicable points. The devices will interpret the geology, soils, vegetation, water, game, fish, archeological and historical aspects of the project area.

9:24 BOAT TIE-UPS

Boat tie-up facilities will consist of ground tie-ups only.

The tie-up is a 1 1/2" Schedule 40 galvanized pipe railing sixty feet long, and providing tie-up space for 12 boats. The tie-up will have a four foot wide gravel surface centered on the pipe rail.

9:25 VISITOR SAFETY AND CONVENIENCE

The saving and safeguarding of human life, either visitor or employee, shall take precedence over all other activities. The protection of property from fire or vandalism, either visitor or government, shall also have the highest priority.

The objective of the Corps shall be to administer this project so as to maintain its integrity of purpose. Development and use of this project must follow a pattern that will afford to visitors the deeply satisfying experience that the area is capable of giving without material impairment of the natural, historical, and physical features of the project. The rights of visitors must be preserved by preventing prohibited activities on the

part of over-exuberant, thoughtless, or selfish persons. Enforcement of all laws, rules, and regulations must be handled with judgment, dignity, and intelligence, and applied as uniformly as practical with regard for the particular circumstances involved.

Visitor safety and convenience will be carefully considered in all facilities open to the public. Those areas off limits to the general public will be properly and adequately signed and suitably barricaded. All facilities will be marked and protected according to Section EM 1110-2-400, Appendix A, Change 1, dated 26 May 1972.

9:26 FACILITIES FOR THE ELDERLY AND HANDICAPPED

* 9:26:01 GENERAL

Special attention will be given to facilities for the physically handicapped and the elderly. The applicable criteria contained in ER 1110-1-102 and EM 1110-1-103 for features to make facilities accessible to and usable by, the physically handicapped, will be utilized in planning of facilities. *

9:26:02 DRINKING WATER AND SANITARY FACILITIES

Each developed day-use or family-camping recreation area will have adequate, low-mounted water fountains, suitable for use by persons confined to a wheelchair. All comfort stations will have one extra wide stall equipped with grab bars.

9:26:03 WALKS AND PATHS

* Walks in day-use and camping areas intended for use by the physically handicapped will have a slope not more than 1-in-24 (4.2%) and will have a fired, firm, non-slip surface. *

9:26:04 RAYSTOWN NATURAL AREA

In the Raystown Natural Area, special trails will be developed to allow wheelchair access. These will be hard surfaced and constructed with grades and adequate width to allow two wheelchairs to pass safely.

Railings along the trails will provide support for the elderly and guidance for the blind. Significant features will be explained through the use of Braille signs.

9:26:05 FISHING

After good fishing spots along the shoreline are identified, a few areas will be reserved for the use of blind and/or wheelchair confined persons. A fishing pier with railings and ramp access will allow these persons the opportunity to pursue recreational fishing with maximum safety.

9:27 FISHING PIERS

The development of fishing piers is shown on plate 16-45. The piers will be floating structures 15 feet wide by varying lengths. The fishing piers will not be located until the lake is fished for several fishing seasons and the best locations are identified. The fishing piers are located on the development plans for general information only, as their locations are subject to change.

9:28 SMALL BOAT NAVIGATIONAL AIDS

9:28:01 GENERAL

Small boat navigational aids will follow the latest U.S. Coast Guard navigation aid and marker system for inland waterways. Other additional markers will be placed if and when required by the Commonwealth of Pennsylvania.

9:28:02 CONTROL DEVICES

Log booms will be placed across the entrance to the outlet control structure at the dam. Shoreline markers and appropriately placed buoys will identify creeks, bays, boat launch areas, danger areas, and mileage upstream from the dam.

All navigation aids, i.e. markers and buoys, signal beacons, blinker lights or guiding beacons marking channels and obstructions, shall be placed and operated in accordance with Uniform State Waterway Marking System requirements.

Clearance gages will be placed on the PA 994 bridge at Entriken and Weaver Bridge. Staffs will be placed at all boat ramps, the dam, administration headquarters, and marinas for flying small craft warning flags.

10: OVERALL DEVELOPMENT PLAN

SECTION 10: OVERALL DEVELOPMENT PLAN

10:01 GENERAL

The land use plan for Raystown Lake provides for public access to all properly designated project lands. Administrative, operational, and maintenance functions have been provided for.

Development proposed by this Master Plan has been coordinated with all prior Design Memorandums, including D.M. 14, Public Use Plan. The development follows the land use categories of Section 8 which established the pattern of development within which project visitation and land use activities are expected to occur. The topographic configuration and physical limitations of the project do not allow an economically or ecologically feasible intraproject land circulation system. Rather, each destination site will be a complete recreation area of its type. Visitors will enter and leave recreation areas via legislative routes, connecting to PA 26. This road will serve as the north-south connector route for the various project recreation areas.

10:02 RECREATIONAL FACILITIES

10:02:01 HIGH DENSITY SITES

High density sites will be intensively developed day-use picnic and swimming areas. Facilities available will include swimming beaches, bathhouses, water and comfort stations. Picnic facilities will include tables, charcoal grills, trash receptacles, and shelters, which may have fireplaces. Parking areas will be graveled with paved traffic ways. Play fields will allow free play; hiking trails will connect all facilities with the major trail surrounding the lake (plates 16-44 and 46).

Every effort will be made to design parking areas and roadways to minimize the effect of automobiles on the landscape and on the recreation area visitor.

10:02:02 MEDIUM DENSITY SITES

Medium density sites will be developed as family camping areas. These sites will generally follow ridge tops or will be near the shoreline. Sites will be developed with a minimum distance between campsites of seventy feet, or

a density in developed areas of four sites per net acre. This density will be much less on a gross acreage basis because of the large amount of open space that will separate camping areas from other activities.

Each medium-density campsite will have a tent or trailer pad, parking space for car, pickup, or recreational vehicle, site identification, picnic table, grill and garbage can. See plate 16-46 for typical arrangement.

Within a four hundred foot distance of each campsite, there will be a comfort station or washhouse building. The washhouse will provide water closets, urinals, showers, lavatories, and laundry facilities (plate 16-54). Comfort stations may, in remote areas, be vault type, with drinking water furnished by wells.

The camps will have camping control stations at the main entrance to each camp or group of camps. These stations will provide registration facilities for the camps and will collect fees when applicable (plate 16-54). Boat tie-ups will be provided for each camping area as required. In addition, a trail system within the camping area will inter-connect with the main hiking trail surrounding the lake (plate 16-49).

The relatively low percentage of accessible shoreline dictates maximum use of developable land. This precludes excessive exclusive outleases for group camps. Two areas, Allegrippis Ridge and Hopewell, because of their location, are well-suited for development by a private, non-profit organization such as the YMCA or Boy Scouts. Although development costs of these areas have been included in Section 10:21, these areas are designated for development by such organizations. With proper regulation and control, such development will be acceptable and beneficial.

In developing camping areas designated for group use, there must be a balance between available land and budget. Therefore, limited group camping areas will be available on a first-come, first-served reservation basis. Fees charged will vary depending on the level of development and the number of campers in the group.

10:02:03 LOW DENSITY SITES

Low density sites will be hike-to/boat-in camps. Access roads for service or emergency vehicles only will utilize existing roads or logging trails. General public access by automobile or any motorized vehicle will not be provided or permitted.

The sites will generally have boat tie-ups, hand operated wells or developed springs as water sources, and sealed vault comfort stations. There will be prepared tent sites placed at the rate of approximately 2 per gross site acre.

10:03 SEVEN POINTS RECREATION AREA

10:03:01 DAY-USE

Status: Currently under construction, intensively developed day-use area. This will be first complete recreation site at Raystown Lake. It is scheduled for opening in May of 1976. The 800 foot concrete beach was completed in the fall of 1973.

Site Location: Seven Points Recreation Area is located 8.3 miles above the dam. Access is provided via improved former L.R. 31115, now Seven Points Road, southeast of the Administrative Headquarters in Penn Township. Visitors will reach the recreation area via L.R. 31037 from PA 26 at Hesston (plate 16-29).

Existing Conditions: This recreation area is currently under construction. The land slopes toward the lake and has a view of Terrace Mountain beyond the lake, which is between 2,000 feet to a mile wide along this recreation area. The site is covered in second growth, scrub, recent timber cuttings, and old fields and meadows (plate 16-14). Four underground petroleum products pipelines in three general rights-of-way cross the site. The soil is Albrights silt loam and Calvin shaly silt loam. These soils are moderately stony and have a seasonal high water table (plate 16-7).

Proposed Construction: In addition to the beach, a sunning area and bathhouse is being built. There will be 1,137 picnic tables and 1,101 car parking spaces on nearly 90 acres of land, a density of 12.6 picnic tables per acre. A trail system will connect all areas and will interconnect

in the future with Raystown Trail West. An underpass near the bathhouse will separate pedestrian circulation to the beach from automobile traffic on Seven Points Access Road. A central water supply and sewage collection and treatment system is being constructed (plates 16-29, 34 and 35, also D.M. 14, Public Use Plan.)

10:03:02 FAMILY CAMPING

a. SEVEN POINTS CAMPING AREA NORTH

Status: This camping area is a future development. See Section 10:21 for the construction phasing.

Site Location: The Seven Points Camping Area North is located on Allegrippis Ridge and minor ridges in Juniata Township. The site is the northern extremity of the Seven Points Recreation Area and is reached via T-430 and L.R. 31032 from L.R. 31037 north of the administrative headquarters. The camp sites are on the left bank descending of the lake with views toward Terrace Mountain (plate 16-28).

Existing Conditions: The site is mostly hardwood forest with a few scattered pine stands. There are several open meadows (plates 16-13, -14). The site is separated from the rest of the Seven Points Recreation Area by a large valley. The flatter ridges will be developed with steeper slopes left as open space. Soils here are Calvin or Klinesville shaly silt loams. Each is 1 1/2 to 3 1/2 feet to bedrock and contains coarse fragments (plates 16-6, -7).

Proposed Development: Future development at this camping area will include 560 sites on 105 developed acres. The Jackson Boat Ramp and two boat tie-ups will be built with the construction of this camping area.

b. SEVEN POINTS CAMPING AREA SOUTH

Status: Most of Seven Points Camping Area South is currently under construction. Two additional camping areas will be constructed in the future. See Section 10:21 for the construction phasing.

Site Location: This site is part of the Seven Points Recreation Area. The camping areas are generally west or northwest of the day use areas, with one area to the north. These camp sites are reached via L.R. 31037 from Hesston at PA 26, by Seven Points Road into Anderson Bay (plate 16-29).

Existing Conditions: The sites are on a series of ridges overlooking Anderson and Yocum Bays, they are predominantly wooded in hardwood forest, with one pine stand (plate 16-14). They all have good views of the surrounding water, particularly the peninsula of Point Camp Circle, which is almost an island. Three petroleum products lines in two rights-of-way cross two camps. Soils are a Calvin shaly silt loam. These are shallow to bedrock and contain coarse fragments (plate 16-7).

Proposed Development: Construction currently in progress will provide 110 camping sites on twenty-two developed acres. The four camps will be called Point Camp Circle, Valley Camp, Bay Camp, and Ridge Camp. All camps except Point Camp Circle will have waterborne sewage. Future construction will provide 75 additional sites on fifteen acres. These individual camping areas will be separated from each other and from day-use activities by woods (plates 16-29, -34, -35). Janes Trail will connect this area with Raystown Trail West.

10:03:03 GROUP CAMPS

Status: The Seven Points Group Camps are scheduled for future development. See Section 10:21 for the construction schedule.

Site Location: The group campsites are in two locations in the Seven Points Recreation Area. One site is close to the marina and beach area on the south shore of Yocum Bay. It is wholly within Penn Township (plate 16-29).

The other larger site is partially in Juniata Township but mostly in Penn Township. It is reached via T-430. The site overlooks Yocum Bay (plate 16-29).

Existing Conditions: The smaller site is a knob, surrounded on three sides by Raystown Lake. It is 20 acres in area; the northern side is an open meadow, and the southern side is in hardwood forest (plate 16-14). Soil on the site is Albrights silt loam. It has moderate restraints to development with a seasonally high water table of 6" to 36" from the surface. The soil also exhibits some stoniness with gentle slopes on the northern shore and a steeper bank facing the marina-beach complex to the south. Elevation of the ridge is 935 MSL.

The larger site is 265 acres of ridge tops. Both sites are part of Allegrippis Ridge and are generally Calvin shaly silt loam. This soil has bedrock at 1 1/2' to 3 1/2' depths and contains coarse fragments. The site is predominantly hardwood forest. Two small areas of former pine stands, as well as a small open meadow, are also included (plate 16-14). Half of the area faces the lake and has a good view of Terrace Mountain; the other half faces west towards Tussey Mountain. Elevation high point is 1,330 MSL with most of the site above 1,200 MSL.

Proposed Construction: The smaller group campsite will contain facilities for 300 campers. Fifty percent of the campers, or 150, will be accommodated in 15 rustic cabins holding ten persons each. The 150 other campers will have 30 campsites suitable for tents or recreational vehicles. There will be a central multi-purpose building serving as a dining hall and a meeting and activities building.

A central water and sewage system will connect to the nearby Seven Points system. A central parking area will have 60 parking spaces (plate 16-29 and D.M. 14). The larger group camp at Seven Points will accommodate 3,950 campers. Because of its ridge top location, it will be non-lake oriented. Campers desiring boating facilities will use the Seven Points marina. The area will be designed in sub-groups to allow for several small groups or one large group for maximum use of the area. The central dining hall/multi-purpose building will be designed to provide simultaneous service to small groups or to one large one.

Half of the campers, or 1,975, will be accommodated in 198 rustic cabins. The other campers will occupy 397 campsites.

10:04 ROTHROCK RECREATION AREA

10:04:01 DAY-USE

Status: The Rothrock Recreation Area day-use area is planned for future construction. See Section 10:21 for the current phasing schedule. This area will utilize the sanitary treatment and water supply facilities constructed for the Rothrock Camping Area described in paragraph 10:04:02.

Site Location: This area is two separate sites located adjacent to the PA 994 Causeway, both north and south of the road. It is reached from PA 26 by way of PA 994 from Entriken. The site lies on the western slope of Terrace Mountain in Lincoln Township (plate 16-31).

Existing Conditions: The northern portion of the day-use area is a ridge, with a maximum elevation of 148 feet above recreation pool level. The site is a former corn field of 25 acres and slopes east toward the water. The shoreline area is tree covered (plate 16-16). A petroleum products pipeline crosses the site; there is a valve gate head house in a fenced off area near the shoreline (plate 16-36). The soil here is a Calvin shaly silt loam. Shallow depth to bedrock and coarse fragments are limiting factors (plate 16-9).

The southern portion of the day-use area is rolling, with gentle slopes to the lake. An underground petroleum products pipeline bisects the site in an east-west direction. Half of the 81 acre site is tree covered in hardwood forest, the remainder being former field areas. Portions of the woods were recently timbered (plate 16-16). An embankment separates the picnic area from the swimming area. The southern bank slopes steeply to the lake (plate 16-9). Soils in this area are Calvin shaly silt loam and Albrights silt loam. The Calvin characteristics are discussed in the previous paragraph. The Albrights has a slowly permeable fragipan and a seasonal high water table 6" to 36" from the surface during wet periods. The soil exhibits some stoniness (plate 16-9).

Proposed Development: The northern portion of the day-use area will be developed as a picnic facility. The 25-acre area will provide space for 300 picnic tables, parking areas and roadways, picnic shelters, and comfort stations. As this is a future picnic area, tree planting will be carried out in the near future to provide shade and shelter when the area is developed (plates 16-31, 36 and 37). Limited picnic facilities are being provided in this area as part of the initial development phase.

The southern portion of the day-use area will be developed intensively as a swimming and picnicking area. A 1,000 foot concrete beach will face Entriken Overlook. This day-use area will have a bathhouse and comfort stations. The picnicking area will accommodate 970 tables on 81 acres of land. A multi-purpose play field and parking lots will also be built. The widened and new access road will connect to PA 994 (plate 16-36, and D.M. 14).

10:04:02 FAMILY CAMPING

Status: The Rothrock Camping Area is scheduled for initial development.

Site Location: The camping area is part of the Rothrock Recreation Area. It is on the eastern shore of the lake, on a finger of land extending westward from Terrace Mountain. It is reached by project roads from PA 994 near the eastern end of the causeway (plate 16-36).

Existing Conditions: The peninsula that will be developed as a camping area is about one-quarter open meadow; the remainder is covered with hardwood forest (plate 16-16).

The soils are Raritan gravelly silt loams with a moderately slowly permeable fragipan. A seasonally high water table within 6" to 36" of the surface is expected during wet periods (plate 16-9). The total peninsula is 46 acres. A 200-foot beach was completed in the fall of 1973, together with a boat ramp. The former Rhodes house, an excellent example of an early Pennsylvania limestone farmhouse type exists on the property.

Proposed Development: Initial development at this camping area will consist of 198 campsites. A central water supply and sewage collection and treatment system will be provided. These systems will be adequate to serve the proposed future day-use areas. Test wells drilled for water supply did not provide adequate flow and

water will be drawn from the lake and treated for sanitation and other uses. The farm house will be converted to an interpretive center and ranger station. The entrance road will have a camp control station near PA 994. The maintenance building for the Coffee Run Maintenance District of the project will be built in the woods east of the camping area (plates 16-26, -31, -36, -37, and D.M. 14).

10:04:03 GROUP CAMPING

Status: Completion of the Rothrock Group Camp is included in the initial development phase.

Site Location: The Rothrock Group Camp is located in the Rothrock Recreation Area in Lincoln Township. It is reached via an access road to PA 994. The site is between the Rothrock Family Camping area and the day-use recreation area on the right bank descending (plate 16-31).

Existing Conditions: The site is a protruding finger of land, very narrow at the tip and surrounded on two sides by water. It is basically open meadow with scattered shade trees (plate 16-16). The northern shoreline is steep; the southern is quite flat. Elevations vary between recreation pool at 786 MSL and a maximum of 820 MSL at the access road connection. There are 12 acres of land. The soil is Raritan gravelly silt loam, with a seasonally high water table of 6" to 36" depth during wet periods. The soil has a moderately slowly permeable fragipan (plate 16-9).

Proposed Construction: The camp will have 36 camping sites, 24 for tents and 12 for either tents or recreational vehicles, and will accommodate 180 campers. A sewerage collection system and water supply lines will connect to the Rothrock sewer and water lines. A boat tie-up is already completed. A group picnic shelter built above elevation 812 will serve as the activities center. A central parking lot will provide spaces for 50 cars (plate 16-36 and D.M. 14).

10:05 HOPEWELL RECREATION AREA

10:05:01 DAY-USE

Status: The Hopewell Recreation Area day-use area is planned for future construction. See Section 10:21 for the current phasing schedule.

Site Location: The site is located four and a half miles uplake from the PA 994 Causeway. It is reached via L.R. 31019, from Saxton Borough via Weaver Bridge. It is the southernmost project recreation area. The recreation area is in Hopewell Township on the eastern slope of Allegrippis Ridge. (Plate 16-32)

Existing Conditions: The day-use recreation area is on an eastern facing slope. The land is gently rolling and consists of open fields and hardwood forest (plate 16-17). The site consists of 110 acres. The southern shore area is steep and varies from an elevation of 920 MSL to lake level at 786 MSL. Soils are Berks and Calvin shaly silt loams. These soils all have bedrock at 1 1/2' to 3 1/2' depths. Use restraints are related to depth to bedrock, slope, or naturally occurring coarse fragments (plate 16-10).

Proposed Development: Facilities proposed for the day-use area include a 1,000 foot beach with bathhouse and comfort stations, 1,032 picnic tables on 86 acres, parking lots, and free play field areas (plates 16-40, and D.M. 14).

10:05:02 FAMILY CAMPING

Status: This camping area is a future development. See Section 10:21 for the construction schedule.

Location: The Hopewell Camping Area is part of the Hopewell Recreation Area. It is north of the day-use area at the end of L.R. 31019 (plate 16-32).

Existing Conditions: The site is on the eastern slope of Allegrippis Ridge and has shoreline access to the lake. It is about half meadow and field area, with

the remainder being mostly hardwood forest with small areas of pine stands (plate 16-17). The land slopes toward the lake with one large ridge at an elevation of 900 MSL. The soils are Berks and Calvin shaly silt loam with a shallow, 1 1/2' to 3 1/2' depth to bedrock. Use limitations are shallowness and coarse fragments (plate 16-10). The slopes are mostly flatter than 15% on the 130 total acres designated for family camping.

Proposed Development: This area will have 336 sites on 67 acres developed for camping. A boat tie-up is planned for the northern shore of the site. Extensive tree planting will be carried out here in the near future to assure shade when the site is developed. There will also be a small amphitheater. The former farm pond will serve as a children's fishing area, (plates 16-32, -40, -41, also D.M. 14).

10:05:03 GROUP CAMP

Status: The Hopewell Group Camp is planned for future development. See Section 10:21 for the development schedule.

Site Location: The group camp is located on an east-west ridge in Hopewell Township. It is reached by car through Saxton by L.R. 31019. It will be the southernmost large camping area on the lake (plate 16-32).

Existing Conditions: The site is a broad ridge top with steep slopes north, east, and south to the lake shore. A former farm road provides access to the site. There is nearly total tree cover, about 1/2 in pine stands and 1/2 in forest (plate 16-17). The soil is a Calvin shaly silt loam. It is 1 1/2 to 3 1/2 feet to bedrock and contains coarse fragments (plate 16-10).

The high point of the site is two hundred feet above normal recreation pool. There is a view through the woods to the lake from three sides of the site and a view east towards Terrace Mountain. The site contains a total of 67 acres.

Proposed Construction: The site will provide facilities for 1,000 campers. Thirty percent of the campers will be accommodated in 30 rustic cabins holding 10 persons each. Seven hundred other campers will have 140 tent sites in clustered arrangements. A multi-purpose building will serve as a dining hall and meeting and activities building. A boat tie-up will be built north of the camp area.

A drilled well will be the source of water for the camp. Sewage will be treated in a package plant providing tertiary treatment. The access road will be an upgraded existing road of 1,600 feet. Several parking areas will accommodate 150 cars.

10:06 PARADISE FURNACE RECREATION AREA

Status: Paradise Furnace Recreation Area is a future intensively developed day-use area. See Section 10:21 for the construction phasing.

Site Location: This recreation site is located on the eastern shore of the lake on a peninsula immediately north of Great Trough Creek Cove in Penn Township. Visitors driving to the site on L.R. 31118 will pass through Rothrock State Forest and Trough Creek State Park (plate 16-30).

Existing Conditions: The site is wooded with hardwood forest (plate 16-15), has rolling topography, and slopes both ways to the lake. Area to be developed totals approximately 47 acres. The Great Trough Creek Cove shoreline is steep, with a Calvin shaly silt loam soil exhibiting severe restraints to recreational development.

The remainder of the site slopes northerly to the lake and is a Raritan gravelly silt loam. This soil has a moderately slowly permeable fragipan and a seasonal high water table within 6"-36" of the surface during wet periods. Most use problems are related to these conditions (plate 16-8).

Proposed Development: The site will be developed as a high-density day-use recreation area. Facilities at the recreation area will include a 1,000 foot concrete beach,

play fields, picnic shelters, 425 picnic tables, and comfort stations. The beach will have a bathhouse and the area will have a central water and sewage collection and treatment system (plates 16-30, 38, and 39, also D.M. 14, Public Use Plan).

10:07 CLIFFS PICNIC AREA

Status: The Cliffs Picnic Area is being developed under the 1976 Raystown Lake Title X program, and is scheduled for completion by Spring, 1976.

Site Location: The area is some 6 miles above the dam and is on the western shore of the lake on a high bluff overlooking Yocum Bay. It is positioned near the entrance to Susquehannock Camp. (Plate 16-29).

Existing Conditions: The picnic area overlooks the lake from a high bluff and is situated on some 6 acres of ground covered with mature hardwoods interspersed with white pines. The soil is Calvin shaly silt loam containing moderate shale fragments. A former road, T-430, which has been rehabilitated, connects to the end of the site. Views down lake are impressive from the high cliffs.

Construction: Cliffs Picnic Area will accommodate some 50 families. Facilities will include a sealed vault comfort station for sewage collection. Former township road T-430 will be used for service vehicles. Water will be available from a hand pumped well in the nearby Susquehannock Camp.

10:08 AITCH CAMPING AREA (FAMILY CAMPING).

Status: The Aitch Camping Area is a future development. See Section 10:21 for the construction phasing.

Site Location: The Aitch Camping Area is located on Allegrippis Ridge and other minor ridges eastward to the lake. It is limited on the south by Coffee Run Cove and on the north by the Juniata College out-lease. The camping areas are within Lincoln Township and will be reached over former Lincoln Township Road T-402 which intersects with PA 994 near the end of Coffee Run Cove (plates 16-30 and -31).

Existing Conditions: The site is heavily wooded in hardwood forest and pine stands. There are several large meadow areas (plates 16-15 and -16). Several former township roads traverse the site. The total site consists of 2,285 acres, most of which is in slopes too steep for development. Soils over this large camp area fall into four major soil types. The soil of the ridge camp in the northern part of the camping area is Berks shaly silt loam. The soil is shaly, with bedrock at 1 1/2' to 3 1/2' depths. Coarse fragments also occur in this soil.

The second site is shoreline related and is in the center of the overall camping area. The soils are Calvin shaly silt loam with a depth to bedrock of 1 1/2' to 3 1/2'. Use problems will be depth to bedrock and coarse fragments.

Third is the area north of Coffee Run Cove. This ridge land soil is Berks shaly silt loam and Ernest silt loam. The Berks was described above. The Ernest has a moderately slow to slowly permeable fragipan and a seasonal high water table within 18" to 36" of the surface during wet periods.

The last site is the point projecting into the lake. It is basically ridge, with a Calvin shaly silt loam with shallow depth to bedrock and coarse fragments (plates 16-8 and -9).

Proposed Development: The Aitch Camping Area will have approximately 175 acres devoted to developed campsites. The acreage is planned for 860 individual sites and four boat tie-ups. An intra-camp trail, High Germany, will connect all campsites and interconnect with Raystown Trail West (plates 16-30, -31, and D.M. 14).

10:09 ALLEGRIPPIS RIDGE CAMPING AREA (FAMILY CAMPING)

Status: The Allegrippis Ridge Camping Area is scheduled for future development. See Section 10:21 for the construction schedule.

Site Location: This camping area is located on Allegrippis Ridge between Shy Beaver Cove and Coffee Run Cove. The site is reached via L.R. 31019 from PA 994 east of Entriken at the project's western boundary (plate 16-31). It is in Lincoln Township, directly west and above the PA 994 Causeway.

Existing Conditions: This site is wooded in predominantly hardwood forest with some pine stands (plate 16-16). The soil is Berks shaly silt loam. These soils have bedrock at 1 1/2' to 3 1/2' depths and contain coarse fragments (plate 16-9). There are 1,179 acres designated for general development.

Proposed Development: The Allegrippis Ridge Camping Area is basically a non-water oriented camping area. It consists of 70 acres to be developed into 240 campsites. It will not have a boat tie-up. However, the Allegrippis Marina, a concessionaire facility, will be located at the mouth of Shy Beaver Cove.

10:10 ALLEGRIPPIS RIDGE GROUP CAMP

Status: The Allegrippis Ridge Group Camp is planned for future construction. It will be built in conjunction with the Allegrippis Ridge Camping Area. See Section 10:21 for the construction schedule.

Site Location: The site is located on Allegrippis Ridge, just south of and on the ridge overlooking Coffee Run Cove. It is just east of Entriken, a short distance south from PA 994. It lies in Lincoln Township at the northern end of the Allegrippis Ridge Camping Area (plate 16-31).

Existing Conditions: The campsite area is all woods, about half in pine stands and the rest in hardwood forest (plate 16-16). It is a ridge top composed of Berks shaly silt loam. This soil is 1 1/2 to 3 1/2 feet to bedrock and contains coarse fragments (plate 16-9). The area consists of 50 acres that will be devoted to campsites, with many acres of hillside buffer between other family camping uses. An existing road to a former farm will be used as the access for the site.

Proposed Construction: Construction at this group camp will consist of 150 sites, seventy-five at each end of the area. Comfort stations and washhouses will be constructed. The water supply and sewerage system will be extended from the main Allegrippis Ridge Camping Area. There will be 1,500 feet of access road improved and 1,000 feet of camp road constructed. A boat tie-up

on Coffee Run Cove will serve the camp. This camp will have a small kitchen and central dining hall that will also serve as an activities and meeting room. This site will accommodate a maximum of 750 campers. Two parking lots will be designated for 50 cars each.

10:11 PRIMITIVE CAMPING (HIKE-TO/BOAT-IN CAMPS)

10:11:01 PUTTS CAMP

Putts Camp is named after Henry Putt, an early settler. In 1842, he built and operated the first grist mill in Hopewell Township.

Status: Portions of Putts Camp, formerly known as Hopewell boat-to-shore camp, have been completed. Additional facilities are planned for future development. See Section 10:21 for the construction schedule.

Site Location: Putts Camp is on the eastern shore of the lake in Hopewell Township. It is south and across the lake from the Hopewell day-use area (plate 16-32).

Existing Conditions: The campsite of 58 acres is close to the shore of the lake, with elevations ranging from 800 to 980 MSL. The site is basically covered in hardwood forest with a small area in pine stands (plate 16-17). The soil is Calvin shaly silt loam with moderate restraints for tent site development because of occurrences of shale fragments in the soil (plate 16-10). Service vehicle access will be over old logging roads in the area.

Proposed Construction: Putts Camp presently has twelve tent sites, a hand well, sealed vault comfort station, a boat tie-up, and an access road. Future plans will include 104 additional tent sites. New comfort stations, hand wells, and boat tie-ups will be added as required.

10:11:02 NANCYS CAMP

Nancys Camp takes its name from Nancy Plummer, the daughter of an early settler, John Plummer. Captured by Indians during the Revolutionary War, she died on her way to imprisonment in Canada.

Status: Portions of Nancys Camp, formerly known as Allegrippis Ridge boat-to-shore camp, have been completed. Additional facilities are planned for future development. See Section 10:21 for the construction schedule.

Site Location: Nancys Camp is on the western shore of the lake. It is at the northern part of the Aitch Camping Area in Lincoln Township (plate 16-30).

Existing Conditions: The site is close to the shore and contains two small coves. Elevations vary from 810 to 1,000 MSL. The 44 acres of the site are covered 90% in hardwood forest and 10% open meadow (plate 16-15). Soils are an Ernest silt loam with a moderately slow to slowly permeable fragipan. A shallow water table within 10" to 36" of the surface can be expected during seasonally wet periods (plate 16-8).

Views of the site extend down lake a mile and a half to the Raystown Natural Area and eastward toward Terrace Mountain. There is an old logging road into the site which connects with former T-405.

Proposed Construction: Nancys Camp presently has 10 tent sites, a sealed vault comfort station, a hand well, a boat tie-up, and a service road. Future accommodations will include 78 additional tent sites; wells, comfort stations, and boat tie-ups will be built as required.

10:11:03 SUSQUEHANNOCK CAMP

Susquehannock Camp honors the name of the last tribe of American Indians believed to have camped at the nearby Sheep Rock Shelter. See Section 7:02 for further information.

Status: The Susquehannock Camp is being developed under the 1976 Raystown Lake Title X program, and is scheduled for completion by Spring, 1976.

Site Location: The camp is on the western shore of the lake in Penn Township. Part of the Seven Points Recreation Area (plate 16-29), the campsite is located on the southeastern end of Yocum Bay.

Existing Conditions: The campsite is a true peninsula of 17 acres connected to land by a very narrow ridge. Elevations of the site range from 810 to 860+ MSL. The site is covered completely in hardwood forest (plate 16-14). The soil is Calvin shaly silt loam which can be expected to contain moderate shale fragments. There are moderate restrictions to tent site development (plate 16-7). A former road, T-430, connects to the end of the site. Views down the lake are quite good, extending 1 1/2 miles. Up the lake, views extend 2 1/2 miles past the Seven Points Recreation Area beach and include all of the sweep of Yocum Bay.

Construction: Initial development at Susquehannock Camp will include 34 camp sites, a well with hand pump, two sealed vault comfort stations, and a boat tie-up on the downstream side of the camp. Former Route T-430 will be used for access, supplemented by a newly constructed minor access road.

10:11:04 PENINSULA CAMP

Status: Peninsula Camp is being developed under the 1976 Raystown Lake Title X program, and is scheduled for completion by Spring, 1976.

Site Location: The camp is located on a 1/2 mile long peninsula which juts into the lake from the eastern shore between the Rothrock camping area and Putt's camp. (Plate 16-32).

Existing Conditions: The campsite is a true peninsula, averaging 200 feet in width and containing about 12 acres. The site is covered with mature hardwoods. The soil is Calvin shaly silt loam with moderate shale fragments. Service vehicle access is readily available off the now improved logging road which services the Rothrock and Putt's camp areas.

Construction: Peninsula Camp will initially provide 15 tent camping sites, and can later be expanded to about 35 sites. A hand pumped well will supply water and a sealed vault comfort station will allow for sewage collection. There will be a service road extending some 1,000 feet to the logging road along Terrace Mountain, and boat tie-ups on both the north and south shores of the peninsula.

10:11:05 CORBINS CAMP

This camp is named for William Corbin, who before 1800 was one of the first settlers of Juniata Township.

Status: Corbins Camp is planned for future development. See Section 10:21 for the construction schedule.

Site Location: The camp is in Juniata Township on Terrace Mountain. It is on the beginning of the finger of land that forms the dam above the right bank descending (plate 16-28).

Existing Conditions: The site is 22 acres of hardwood (plate 16-13). The soil is Calvin shaly silt loam. With a depth to bedrock of 1 1/2 to 3 1/2 feet, its use restrictions are shallow soil and coarse fragments (plate 16-6). Elevations vary from 1,000 MSL to 1,200 MSL. Views from the site are the ungated spillway, the Hawns Bridge Barrens Natural Area, the Hawns Bridge Woods Complex, and the northern part of the Seven Points Recreation Area (plate 16-28).

Proposed Construction: This camp will be reached over an old logging road that connects to T-438 near the top of Terrace Mountain. It will be upgraded for service vehicles only, and is 2,700 feet long. The camp will have 44 tent sites. Sealed vault comfort stations will be constructed. The water supply source will be either a developed spring or drilled well, depending upon existing conditions. The boat tie-up will be at the last bend of the lake before the dam.

10:11:06 SHENEFELTS CAMP

Named for George Shenefelt, a pioneer settler of the area.

Status: Shenefelts Camp is planned for future development. See Section 10:21 for the construction schedule.

Site Location: The site is located in Juniata Township close to the lake on Terrace Mountain. The site is south of the Hawns Bridge Woods complex across the lake from the Seven Points Camping Area North (plate 16-28).

Existing Conditions: Elevations of the site run between 820 and 1,100 MSL. The 60 acre site is covered in hardwood forest. The woods include a stand of very large poplar trees (plate 16-13). Soils are approximately one-half Albrights very stony silt loam and one-half Meckesville extremely stony silt loam. The Albrights occurs at the base of the camp. It is poorly drained with a moderately slowly permeable fragipan and seasonal high water table within 6" to 36" of the surface.

It contains some stoniness, or rock fragments greater than 10" in diameter. The Meckesville soils occur on the upper half of the site. They are deep and well drained and have a moderately slowly permeable fragipan and some stoniness (plate 16-6). No access road exists into the camp. Views will be north towards Hawns Bridge Woods and two miles up the lake to the peninsula forming Susquehannock Camp (plate 16-28 and -29).

Proposed Construction: Shenefelts Camp will accommodate 116 tent sites. A new access road for service vehicles will run 2,000 feet to L.R. 31110, the public access road to Hawns Bridge Woods. There will be either a drilled well or developed spring and sealed vault comfort stations. The boat tie-up will be on the right bank of the lake in the bend before Hawns Bridge Woods (plate 16-28).

10:11:07 SNYDERS CAMP

It is named after Snydertown, which was north of the camp across the lake.

Status: Snyders Camp is planned for future development. See Section 10:21 for the construction schedule.

Site Location: Snyders Camp is located on Terrace Mountain opposite the Seven Points Recreation Area beach. It is in Penn Township adjacent to an old section of the Fink Road (plate 16-29).

Existing Conditions: The camp area of 37 acres is completely wooded in hardwood forest (plate 16-14). The soil is Meckesville extremely stony silt loam. It is deep well-drained soil with moderately slowly permeable fragipan and contains stoniness (plate 16-7). The former Fink Road is on the western edge of this site. Elevations vary from 1,000 MSL to 1,200 MSL. It will enjoy a view of the Seven Points Day Use Area and Marina.

Proposed Construction: Snyders Camp can accommodate 74 tent sites. Three thousand, four hundred feet of the former Fink Road will serve as the service access road to the camp. This existing road will also serve Penns Camp. The camp will have a water supply, sealed vault comfort stations, and a boat tie-up (plate 16-29).

10:11:08 PENNS CAMP

This camp is named after Penn Township, which is in turn named after William Penn, the first proprietor of Pennsylvania.

Status: Penns Camp is planned for future development. See Section 10:21 for the construction schedule.

Site Location: Penns Camp is located in Penn Township on the western flank of Terrace Mountain. The camp site is opposite the Upper Corner Lodge concessionaire development (plates 16-29, -30).

Existing Conditions: The camp is on a bench of the mountain with elevations of 1,100 to 1,300 MSL. The site consists of 62 acres covered in hardwood forest (plates 16-14, -15). The soil is Lehew extremely stony loam. It is shallow to bedrock and exhibits stoniness (plates 16-7, -8). Because of the angle of the mountain at this point, the site provides a three mile view down the lake towards Yocum Bay, with Hawns Bridge Woods to the north six miles away.

Proposed Construction: An access road to this campsite will be 3,000 feet, of which 1,000 feet will be new construction. The other 2,000 feet will use a former roadway. This road will connect with the former Fink Road, which will also serve Snyders Camp (plates 16-29, -30). One hundred twenty-four tent sites will provide camping facilities, a water supply, sealed vault comfort stations, and a boat tie-up will also be provided.

10:11:09 Mary Anns Camp

This camp is named after the former nearby Mary Ann iron furnace.

Status: Mary Anns Camp is planned for future development in conjunction with the development of the Paradise Furnace Recreation Area. See section 10:21 for the construction schedule.

Site Location: This 33 acre camp is on Terrace Mountain in Penn Township. It is behind and above the Paradise Furnace Recreation Area (Plate 16-30).

Existing Conditions: The site is at the base of Terrace Mountain. Elevations on the site vary from 920 to 1,100 MSL. The site is covered half in pine stands, and half in hardwood forest. The southern end of the camp is near a stand of very large White pine (plate 16-15). The soil is Laidig extremely stony loam. It has a moderately slowly permeable fragipan, contains coarse fragments and displays stoniness (plate 16-8). This site has a good view of Great Trough Creek Cove, James Creek Cove across the lake, and the Raystown Natural Area.

Proposed Construction: Access to Mary Anns Camp will involve only 1,600 feet of new service road. This service road will connect to the public access road into the Paradise Furnace Recreation Area. This access road will be through Trough Creek State Park and might possibly be developed by the Commonwealth as an adjunct to the state park. Seventy-six tent sites will be built. Water supply and water borne sewage disposal will be provided by the facilities of the Paradise Furnace Recreation Area. The concessionaire marina will provide necessary boat mooring.

10:11:10 FORGE CAMP

Forge Camp is named from the old forge that was in the immediate area at Paradise Furnace.

Status: Forge Camp is planned for future development. See Section 10:21 for the construction schedule.

Site Location: Forge Camp is on the southern shore of Great Trough Creek Cove. It is in the extreme southern part of Penn Township west of Trough Creek State Park (plate 16-30).

Existing Conditions: The campsite is 33 acres on a narrow peninsula and the base of the mountain just before the cove. Elevations on the peninsula range from 800 to 860 MSL , and on Terrace Mountain from 880 to 1,000 MSL. The site is covered in hardwood forest (plate 16-15). The soil is Philo and Basher silt loam, with seasonal high water table within 18" to 36" of the surface during wet periods (plate 16-8).

The view west across the lake is to the field station area leased to Juniata College. North across the cove is the Paradise Furnace Recreation Area. The lake may be seen for nearly two miles upstream.

Proposed Construction: Forge Camp will consist of 66 tent sites. A water supply will be developed and sewage will be handled in sealed vault comfort stations. An existing forest road 10,000 feet long will be upgraded and utilized for service vehicles. This access will be through Trough Creek State Park and might possibly be developed by the Commonwealth as an adjunct to the State Park. A boat tie-up will be constructed on Great Trough Creek Cove.

10:11:11 TATMANS CAMP

Tatmans Camp takes its name from nearby Tatman Run, named after Joseph Tatman, an early settler.

Status: Tatmans Camp is planned for future development in conjunction with the development of the northern Rothrock Recreation Area. See Section 10:21 for the construction schedule.

Site Location: The site is on Terrace Mountain in Lincoln Township. It is just east of the northern day use area of the Rothrock Recreation Area and is east of PA 994 (plate 16-31).

Existing Conditions: Tatmans Camp is on a bench of Terrace Mountain, with elevations ranging between 960 and 1,200 MSL. The 30 acre site is covered in hardwood forest (plate 16-16).

Slopes range between 10 and 30 percent. The soil is Calvin shaly silt loam. It is 1 1/2' to 3 1/2' to bedrock and contains some coarse fragments (plate 16-9). A former alignment of PA 994 provides current access to the proposed day use area near the campsite. Views are across the lake to the Aitch Camping Area, the PA 994 Causeway, and down the lake about a mile.

Proposed Construction: Tatmans Camp will provide 64 tent sites. Water supply and water borne sewage disposal lines will connect to the Rothrock Recreation Area system. A boat tie-up will be built on Tatmans Run. A 600 foot access road will be constructed for service vehicles only.

10:12 BOAT RAMPS

10:12:01 JAMES CREEK BOAT RAMP

Named for nearby James Creek, the actual site is across the lake on an unnamed branch. The ramp was formerly called the James Creek South Boat Ramp.

Status: Construction of the James Creek Boat Ramp was completed in the Spring of 1974.

Site Location: The site is located in northern Lincoln Township northeast of the termination of L.R. 31037. The ramp is on an unnamed tributary to Woodcock Valley Cove (plate 16-30).

Existing Conditions: The ramp was built in a narrow cove with steep side slopes. The slopes are covered in hardwood forest on the east bank and open meadow on the

west (plate 16-15). The soil here is Ernest silt loam, which has a moderately slow to slowly permeable fragipan. This soil also has a seasonally high water table within 18" to 36" of the surface during wet periods (plate 16-8). An unnamed wet weather stream runs on the east side of the road.

Construction: This boat ramp is forty feet wide and has three lanes. There is parking for 148 cars and trailers. A hand well and a sealed vault comfort station have been provided.

10:12:02 SHY BEAVER BOAT RAMP

Shy Beaver Boat Ramp is named after Shy Beaver Creek, on which it is located.

Status: Construction of the Shy Beaver Boat Ramp was completed in the Spring of 1974.

Site Location: This boat ramp is on Shy Beaver Cove in Hopewell Township. It is at the termination of L.R. 31025 east of Russellville (plate 16-31, -32).

Existing Conditions: This site is a relatively flat bench on the south side of Shy Beaver Creek. It was an open meadow area with some hardwood trees (plates 16-16, -17). The soil is a Berks shaly silt loam. It has bedrock at 1 1/2 feet to 3 1/2 feet and contains course fragments (plates 16-9, 110). Portions of the Rough and Ready iron furnace remained on this site; they were destroyed for construction of the parking lot.

Construction: This three lane boat ramp is forty feet wide. There is parking capacity for 144 cars and trailers, a hand well, and a sealed vault comfort station.

10:12:03 SNYDERS RUN BOAT RAMP

This boat ramp is named after nearby Snyders Run. Snyders Run does not enter Raystown Lake, but flows north directly to the Juniata River.

Status: Construction of Snyders Run Boat Ramp was completed in the Spring of 1974.

Site Location: This boat ramp is on the northerly unnamed arm of Hawns Run Cove. It is at the western termination of L.R. 31032 in Juniata Township (plates 16-27, -28).

Existing Conditions: Snyders Run Boat Ramp is built in a narrow, steepsided valley. These 15-30% and over 30% slopes are covered with hardwood forest (plate 16-13). The soil here is Ernest silt loam. It has a moderately slow to slowly permeable fragipan and a shallow high water table within 18" to 36" of the surface during wet periods.

Construction: This boat ramp is a forty foot wide, three lane ramp. There are parking spaces for 65 cars with trailers, a hand well, and a sealed vault comfort station.

10:12:04 AITCH BOAT ACCESS

This facility is named for the former village of Aitch, which was abandoned and removed for construction of the lake in the vicinity of this access point.

Status: The Aitch boat access area is being developed under the 1976 Raystown Lake Title X program, and is scheduled for completion by Spring, 1976.

Site Location: The site is one mile east of PA 26 at Marklesburg, along the western shore of Raystown Lake.

Existing Conditions: This lake shore has slopes of 0-10%. The soil is Ernest silt loam. The area, once the village of Aitch, is open except for a few shade trees and ornamental spruces. The topography lends itself to easy future parking facility expansions.

Construction: This site will serve as an access point to the lake. Facilities provided here will be parking for 50 cars with trailers, a 15-foot wide single lane boat ramp, a small picnic area, a hand well, and a sealed vault comfort station.

10:12:05 TATMAN BOAT RAMP

This facility is named for nearby Tatman Run.

Status: The Tatman Boat Ramp is being developed under the 1976 Raystown Lake Title X program, and is scheduled to be completed by Spring, 1976.

Site Location: This boat ramp is located along the north shore of the peninsula east of Tatman Run, northeast of the PA 994 causeway. (Plate 16-31).

Existing Conditions: This site is along the edge of a peninsula, with 15-30% slopes below the water line, and 0-15% slopes on land. The soil is a Calvin shaly silt loam (plate 16-9). This soil has bedrock at depths of 1 1/2' to 3 1/2' and contains coarse fragments. The site is a former field area, now beginning to grow over with trees and grasses (plate 16-16).

Construction: Tatman Boat Ramp will consist of a fifteen-foot wide single lane ramp. It will have an initial parking capacity for 50 cars and trailers, with a well-drained grassed area for additional capacity, 20 picnic tables for day users, and a sealed vault comfort station.

10:12:06 WEAVER FALLS BOAT ACCESS

This facility is named for nearby Weaver Falls, which were named for Jacob Weaver, who settled in the vicinity in 1791. This boat access will provide easy entrance to the upper end of the lake.

Status: This boat access is planned for initial development.

Site Location: The site is in Hopewell Township on the left bank just down lake from Weaver Bridge. It is reached by way of L.R. 31019 from Saxton (plate 16-32).

Existing Conditions: This lakeshore site has slopes of 0-15%. The soil is Calvin shaly silt loam. Depth to bedrock averages 1 1/2 to 3 1/2 feet, and the soil contains coarse fragments (plate 16-10). The site is open meadow area (plate 16-17).

Proposed Construction: This site will also serve as an access point to the lake. However, it will not be a typical boat ramp, because of topographical and water level fluctuation limitations. Facilities provided here will be parking for 50 cars with trailers, a 15 foot wide single lane gravel boat ramp, a small picnic area, a hand well, and a sealed vault comfort station.

10:12:07 JACKSON BOAT RAMP

This ramp is named for George Jackson, an early settler in the vicinity. D.M. 14 referred to this boat ramp as Seven Points Boat Ramp.

Status: This boat ramp is planned for future development. See Section 10:21 for the construction schedule.

Site Location: The ramp will be located in Juniata Township on an unnamed cove of the lake. It is at the northernmost portion of the Seven Points Recreation Area (plate 16-28). L.R. 31032 and T-430 connect to the site from the Administrative Headquarters.

Existing Conditions: The ramp site is in a steep sided cove. Adjacent hillsides are covered in hardwood forest (plate 16-13). The soil in the area is Ernest silt loam. This soil has a moderately slow to slowly permeable fragipan and a shallow high water table within 10" to 36" of the surface during wet periods (plate 16-6). L.R. 31032 formerly crossed the lake area at this point. The road is now terminated and will provide access to the boat ramp.

Proposed Construction: Development at this site will include a thirty foot wide, two-lane boat ramp. Parking will be provided for approximately 50 cars with trailers. A well will supply drinking water and a sealed vault comfort station will be constructed.

10:12:08 SARAH BOAT RAMP

Sarah Boat Ramp is named for the former village of Sarah. This community was located along former James Creek in the immediate vicinity of the boat ramp area. This boat ramp was formerly referred to as James Creek North Boat Ramp (D.M. 14).

Status: Sarah Boat Ramp is planned for future development. See Section 10:21 for the construction schedule.

Site Location: This site is at the mouth of James Creek Cove on the north bank. The ramp will be at the southerly termination of former L.R. 31037 in Penn Township (plate 16-30).

Existing Conditions: The ramp will be located in a narrow cove. Valley sides here are covered in hardwood forest (plate 16-15). The soil is Ernest silt loam. This soil has a shallow high water table within 18" to 36" of the surface. An unnamed wet weather stream is on the eastern side of the existing road leading to the boat ramp site.

Proposed Construction: The boat ramp to be built will be thirty feet wide with two lanes. Parking will be provided for about 50 car-trailer combinations. A hand well will supply water, and a sealed vault comfort station will handle sewage.

10:13 DOWNSTREAM FISHING ACCESS:

Three fishing access areas will be developed on the river downstream from the dam. (plates 16-27, -28). A typical fishing access will include a parking area for twenty-five cars, a sealed vault comfort station, and a boat ramp where natural grade permits and stream depth is sufficient for boating.

The area of construction for these facilities may, at some time in the future, be the site of the pumped storage re-regulation pool for hydropower facilities. Therefore, only these minimal access facilities have been planned. Should hydropower production be approved for this project, a new access road to the dam will be required. The suggested routing for this road, and access to the fishing access area, is shown on plates 16-27 and 16-28. The adjacent area may then be considered for campsite and picnic development, if a re-regulating pool is created.

10:13:01 FISHING ACCESS AREA NO. 1

Status: This fishing access was completed in the spring of 1975.

Site Location: Fishing access Area No. 1 is in Juniata Township just east of T-430. It is on the Raystown Branch one-half mile downstream from the spillway (plate 16-28).

Existing Conditions: The site is a streamside location. It is adjacent to T-430, the main access road to the dam. The area is partly open space and partly covered with sycamore and other floodplain trees (plate 16-13). The soil is Barbour fine sandy loam, has a depth of five feet or more, and is well drained. The only limitation on use is that the area may be subject to minor flooding as discharges from the lake fluctuate for flood control purposes (plate 16-6).

Construction: Facilities include parking for twenty-six cars, a sealed vault comfort station, a minor access road and boat access to the Raystown Branch, and minor picnicking facilities.

10:13:02 FISHING ACCESS AREA NO. 2

Status: Fishing Access Area No. 2 is planned for future development. See Section 10:21 for the construction schedule.

Site Location: Fishing access Area No. 2 is located on the Raystown Branch approximately one mile below the spillway. It is in Juniata Township near T-430 (plate 16-28).

Existing Conditions: The site is a streamside location which last served as cattle pasture. There are a few trees at the water's edge (plate 16-13). Slopes are 0-15%. The soil is Barbour fine sandy loam. This soil is sandy, well drained, and ofter extended to depths of approximately five feet. The stream side location is subject to flood control discharges that may cause flooding (plate 16-6).

Proposed Construction: This fishing access will have a parking area for twenty-five cars, a hand well, and a sealed vault comfort station. Should stream depth permit boating, a small boat access will be constructed.

10:13:03 FISHING ACCESS AREA NO. 3

Status: This area is being developed under the 1976 Raystown Lake Title X program, and is scheduled for completion by Spring, 1976.

Site Location: This site is located on the Raystown Branch 3.7 miles downstream of the dam. It is in Juniata Township adjacent to T-430 (plate 16-27).

Existing Conditions: This site is an abandoned pasture area with only a few trees (plate 16-12). Slopes are 0-15% and the soil is Barbour fine sandy loam. This soil is sandy, well drained, and extends to depths in the five foot range. This area is subject to flood control discharges that may cause flooding (plate 16-6).

Construction: Construction will include parking for 20 cars, a sealed vault comfort station, a well with hand pump, a minor access road, boat access to the Raystown Branch, and 20 camping sites.

10:14 HIKING TRAILS

10:14:01 GENERAL

A system of hiking trails will be constructed. These will be built to connect facilities as various construction phases are completed. Eventually, the trail system will encompass the lake. The trail will cross the valley in two places - at Weaver Bridge (plate 16-32), and at Corbins Bridge downstream of the dam (plate 16-27).

The trail on Terrace Mountain will be known as Raystown Trail East. On Allegrippis Ridge, it will be called Raystown Trail West. Connecting trails will branch out to each of the camping and recreation areas. Some of the larger of these are Reeds Trail in the Seven Points Camping Area North (plates 16-28, -29), Jane's Trail in the Seven Points Camping Area South (plate 16-29), High

Germany Trail in the Aitch Camping Area (plates 16-30, -31), Lincoln's Trail in the Allegrippis Ridge Camping Area (plate 16-31) and Rough and Ready Trail and Sawyers Trail in the Hopewell Recreation Area (plate 16-32).

This trail system could eventually interconnect with the Mid-State Trail which now runs from Colerain State Forest Picnic Area to the Penn-Roosevelt Picnic Area near Pa 322 north of Milroy, PA. Such connection would take place at Marklesburg where the trail would ascend Tussey Mountain (plates.16-30, -2). Also, it could interconnect to the south with the Tuscarora Trail. By following Sideling Hill and Scrub Ridge, it would intersect with the Tuscarora Trail east of Dickeys Mountain, PA (plates 16-28, -2). This would connect Raystown Lake with the Appalachian Trail.

Status: The trail system within the project boundaries is planned for future development. See Section 10:21 for the trail construction schedule. Trail connections described above outside project limits will require the cooperation of state or other interests.

Site Location: The trail will surround most of the lake and will remain in Huntingdon County in the Townships of Juniata, Penn, Lincoln, Hopewell, and Todd. The trail system will traverse Allegrippis Ridge and Terrace Mountain (plates 16-27 through -33).

Existing Conditions: The trail corsses over and travels through every different type of exisitng soil and meadow-forest cover at Raystown. Slopes crossed range from nearly flat to very steep and sandy to clay to rocky (plates 16-5 through -11, and 16-13 through -18).

Proposed Construction: The trail system will take advantage of all favorable field conditions. Natural benches on steep slopes, ridge tops, portions of the former Huntingdon and Broad Top Mountain railroad bed, former roads, and old logging roads will be utilized. Existing springs in proximity to the trail will be developed for water supplies. Comfort facilities will be built at or supplied each overnight camp on Terrace Mountain. On Allegrippis Ridge, hikers will utilize

the comfort stations in the various day-use recreation areas and trail-side camping areas. Parking areas will be available at the drive-to recreation areas, both camping and day use areas (plates 16-27 through 16-33, -50 and -54). Raystown Trail East and West will be 61 miles long; connecting trails will total 50 miles.

10:14:02 RAYSTOWN TRAIL EAST (SOUTH PORTION)

Status: This trail is being developed under the 1976 Raystown Lake Title X program, and is scheduled for completion by spring 1976.

Site Location: This portion of the park-wide system is located along the base of Terrace Mountain, on the east shore of the lake, from Weavers Bridge near Saxton to Route 994. It traverses the lake and provides hiking access to Putts Camp, Peninsula Camp and the Rothrock Recreation Area. It is a part of the park-wide trail system. (Plates 16-31, -32).

Proposed Construction: This portion of Raystown Trail East, some 7 miles in length, will take advantage of natural benches, field conditions, and old logging roads. Potable water and comfort stations will be available at the 3 camping areas which the trail passes.

10:15 INTERPRETIVE CENTER

The interpretive center for Raystown Lake will interpret and explain the importance and interrelationships of the myriad of natural processes that have occurred or are expected to take place at Raystown Lake. It will offer displays telling the story of the geologic processes that have occurred here, how the soil was formed, and the ecological relationships of the plants and animals to the environment.

Artifacts recovered from the Sheep Rock Indian Shelter will be displayed. A diorama will be created to depict the way of life of the early men that inhabited this area for nearly 10,000 years (plates 16-8, -15, -30, -50, and -51). See also Section II, Special Problems.

Trails and overlooks will be constructed throughout the Raystown Natural Area to show, under natural conditions, the interrelationship of Man to his environment. The natural area, of which the center will be a part, is discussed in Section 8:02:03.

Status: The interpretive center is planned for future development. See Section 10:21 for the construction schedule.

Site Location: The interpretive center itself will be located on 100 acres of Allegrippis Ridge, overlooking Raystown Lake at the mouth of James Creek Cove (plate 16-30). It will be on the ridge east of the termination of former L.R. 31037 in Penn Township.

Existing Conditions: The land area around the interpretive center that has been designated as the Raystown Natural Area is a microcosm of the ecologic community of Raystown Lake. The soil type at the center site is Calvin shaly silt loam. A well drained ridge top, it is a shallow soil with bedrock at depths of 1 1/2 to 3 1/2 feet and it contains coarse fragments (plate 16-8). The tree cover is basically hardwood forest. There are sections of open meadow, hardwood forest and pine stands (plates 16-14, -15). There are two areas of Red cedar, Scrub oak, and Virginia pine. This barrens vegetation type is covered in Section 6:05:08. At present, no road serves the site directly; access will be from former L.R. 31037.

Views from the site are quite spectacular. The ridge at the building site crests at 1,315 MSL. At this elevation, Middle, Piney, and Backbone Ridges are below the visitors' view as Tussey Mountain is seen to the west. Views to the Terrace Mountain Wilderness Area and the Paradise Furnace Recreation Area are unobstructed across Raystown Lake to the east. Down lake, the viewer may see beyond the Seven Points Day-Use Area beach, a distance of almost five miles. To the south, the northern end of the Rothrock Recreation Area, nearly 6 miles away, is visible.

Proposed Construction: The interpretive center building will be constructed of native stone and natural materials. The stone will be arranged in geological order chronologically around the building to exhibit all of the rock formations found at Raystown Lake. The building will contain public comfort stations. Water will be supplied from a drilled well. Three thousand feet of new road will provide access to the interpretive center. The parking lot will hold 30 cars and 10 busses, and will be designed for future expansion as trails are developed and use of the facility increases (plates 16-50, -51).

10:16 SCENIC PARKWAY

A scenic parkway has been proposed for Raystown Lake. It would be constructed by others on private property acquired for parkway right-of-way and on Pennsylvania state forest and Raystown Lake project property. This parkway would offer many dramatic views of Raystown Lake and the valley between Terrace and Tussey Mountains. It will also offer a secondary use, that of ready access to Terrace Mountain for fire protection and suppression.

Status: The scenic parkway is planned for future development. It is included in the long-range plan of the Bureau of Advance Planning, PennDOT. No date for completing the parkway has been set at this time.

Site Location: The road would utilize parts of existing L.R. 31020 in Little Valley, Carbon Township (plate 16-32). It will ascend Terrace Mountain two miles east of Coalmont, entering Todd Township at the ridge (plate 16-32). It follows the summit for two and a half miles, then descends just south of the PA 994 and L.R. 31118-L.R. 31020 intersection in Todd Township (plate 16-31). It then follows L.R. 31118 northward into Trough Creek State Park and Rothrock State Forest. After crossing Great Trough Creek, it again ascends Terrace Mountain in Todd and Cass Townships (plate 16-30). At the crest, Union Township, from the east, meets Penn and Juniata Townships on the west. The road follows the summit, intersecting Hawn Road (L.R. 31110), the access road to the Hawns Bridge Woods complex. It continues easterly along the ridge to Corbin Road (T-438) in

Juniata Township. It then follows Corbin Road, descending the western flank of Terrace Mountain and crossing the Raystown Branch over Corbin Bridge.

Existing Conditions: The scenic parkway will encounter all conditions of soil and slope. Valley bottoms will be clays and silt loams with side slopes tending towards shaly silt loams. The ridge of Terrace Mountain will be a stony or extremely stony loam (plates 16-5 through -11). The parkway will vary in elevation from 980' MSL on PA 913 near Coalmont in Hopewell Township to 600 MSL near the Corbin Bridge in Juniata Township. Crest elevations are in the range of 1,686 MSL north of Coalmont to 1,960 MSL on Horse Knob, which is east of Upper Corner Lodge (plates 16-32, -30)

The tree cover along the proposed parkway is mostly hardwood forest with some pine species present (plates 16-12 through -18).

Proposed Construction: The scenic parkway will be constructed to Pennsylvania Department of Transportation (PennDOT) standards, Class IV, with a minimum surface width of 22 feet with 10 foot paved shoulders. The road will have an all-weather bituminous concrete surface. The scenic parkway will total 23.55 miles, of which 6.2 miles will be reconstructed existing roads, 15.6 miles new construction and 1.75 miles existing roads.

10:17 OVERLOOKS

The completed recreational development of Raystown Lake will see the creation of nine overlooks. Four of these will be on the left bank, with two being relatively close to the water. Four other overlooks will be constructed on the ridge of Terrace Mountain and will offer unexcelled views of Raystown Lake, intervening ridges, Woodcock Valley, and Tussey Mountain. The remaining overlook is on the east bank at the dam (plates 16-27 to -33).

Status:

Of the nine overlooks, five are constructed and operational. The four future overlooks are along the proposed scenic parkway. The parkway is in the long range highway plan of PennDOT, and a target construction date has not been set. Therefore, a construction date for these overlooks cannot be predicted at this time.

Existing Conditions:

Of the five operating overlooks, three were built in conjunction with the dam and two with the construction of PA 994.

10:17:01 DAM OVERLOOK

The overlook at the spillway is on a small, flat point adjacent to the lake and between the dam and the gated spillway. A visitors pagoda dominates the point. Concrete walkways and oak benches provide visitor access and comfort. There is a small circular shaped parking area and access drive. A comfort station has been constructed, and the surrounding grounds have been extensively landscaped. The main view is the gated spillway and inlet channel, Terrace Mountain on the east, and the Hawns Bridge Barrens Natural Area on the south (plate 16-28).

10:17:02 RIDENOUR OVERLOOK

Ridenour Overlook is in the Hawns Bridge Barrens Natural Area on the hilltop west of the dam. A mile long road was built to provide access from Henderson Hollow Road (T-434) in Juniata Township to the site. It is a knob at elevation 1,214 MSL. Although the main view is east and of the dam, spillway, and ungated spillway, the downstream view of the Raystown Branch is outstanding. There is also a view to the west including Hawns Run Cove. Facilities at this overlook are a gravelled parking lot and visitor area (plate 16-28).

10:17:03 HAWNS BRIDGE BARRENS NATURAL AREA OVERLOOK

This overlook is southwest of the Ridenour Overlook. It utilizes the same access road and parking area. There

is an excellent view of the lake to the south and Hawns Run Cove to the west (plate 16-28). Both this overlook and Ridenour Overlook are within the Hawns Bridge Barrens Natural Area.

10:17:04 COFFEE RUN OVERLOOK

This overlook is adjacent to PA 994 in Lincoln Township and is maintained by PennDOT. It is on the point of land that forms the southern shore of the mouth of Coffee Run Cove. At elevation 820± MSL, it is very close to the water. The view is east toward Terrace Mountain and the Rothrock Recreation Area marina. There is a parking area for 12 cars. The exit area affords a view of the extensive rock cut that was necessary for the relocation of PA 994. An interpretive display at this point will explain the rock strata and will allow the visitor to compare the model section with actual field conditions (plate 16-31).

10:17:05 ENTRIKEN BRIDGE OVERLOOK

This overlook is west of PA 994 at the causeway over Raystown Lake. The view is on the Rothrock Recreation Area day use facilities and Terrace Mountain. A paved parking area is immediately adjacent to the western end of the causeway. The overlook and parking lot are maintained by PennDOT (plate 16-31).

10:17:06 TERRACE MOUNTAIN PARKWAY OVERLOOKS (BY OTHERS)

There are four overlooks proposed for Terrace Mountain. They would be built in conjunction with the Terrace Mountain Parkway. Elevations of these range 900' to 1,200' above the lake, or between 1,686' and 1,960'+ MSL. All the sites are covered by hardwood forest (plates 16-13, -14, -15 and -17). The soil is either Andover very stony loam or Buchanan extremely stony loam. These soils are both poorly drained with seasonal high water tables and coarse fragments (plates 16-6, -7, -8, and -10).

The southermost parkway overlook is east of the Hopewell Recreation Area (plate 16-32). The first parkway overlook north of Trough Creek State Park on Horse Knob is

across from Upper Corner Lodge. The second one above Trough Creek State Park overlooks the Seven Points Recreation Area. The northermost parkway overlook enjoys a view of the dam area, the lake, and Hawns Run Cove (plates 16-30, -29, -28).

Suggested Construction: These overlooks should have parking areas for twenty cars and an overlook structure (plate 16-49). The suggested overlook structure has been designed to dramatize the view, to place the visitors above immediate ground level, and to project visitors into the viewed space. Sealed vault comfort stations should be provided.

10:18 OPERATIONAL DEVELOPMENT

10:18:01 GENERAL

The stated purpose of the Raystown Lake project is flood control and recreation. In order to impound the lake, it was necessary to abandon many existing roads. Others were relocated or rebuilt to provide access to areas made inaccessible by rising lake waters.

The administration headquarters, two maintenance buildings, and the dam have been constructed. They are now complete and operational. These buildings are all described in this portion of Section 10.

10:18:02 ADMINISTRATION HEADQUARTERS

Status: The administration headquarters and visitor center was occupied 1 March, 1974.

Site Location: The site is located in Penn Township on Allegrippis Ridge. It is adjacent to the intersection of L.R. 31037 and T-430. The site is east of Hesston and is reached via PA 26 and L.R. 31037 (plate 16-29).

Existing Conditions: The site is a knob on the ridge. At elevation 1,248 MSL, it can be seen from a considerable distance, and it enjoys a commanding view of the minor ridges and valleys that lie before Tussey Mountain. The former field was void of trees (plate 16-14). The soil is Berks shaly silt loam. It has bedrock at 1 1/2 to 3 1/2' and contains coarse fragments. It is two and a half miles from PA 26 via L.R. 31037.

Construction: The building is a one story structure that hugs the ridge. It is cased in stone and roofed in cedar shakes. There is an access drive and a visitor and personnel parking area. Sewage disposal is handled with a septic tank; water comes from a central well in the hollow south of the building.

10:18:03 JUNIATA MAINTENANCE BUILDING

The Juniata maintenance building will house maintenance crews and equipment for the Juniata Maintenance Unit (north). This unit will be responsible for all maintenance north of Hawns Run Cove (plate 16-26).

Status: This building was completed with the dam in the fall of 1973.

Site Location: The site is west of and immediately adjacent to the inlet channel for the gated spillway. The building is within the fenced area of the operators' compound.

Existing Conditions: The original ridge was wooded in pine stands and hardwood forest. However, because of clearance and grading for the dam, it is now classified as open area (plate 16-13). The building was built on solid rock (Chemung shale), as 30 to 40 feet of the ridge was removed during construction to provide necessary level areas for the operators compound (plate 16-6).

Construction: The maintenance building is of concrete block construction. There is a workshop and storage space for maintenance vehicles. Water is from the supply system for the operators compound. Sewage disposal is handled with a septic tank.

10:18:04 PENN MAINTENANCE BUILDING

The Penn maintenance building will handle the central and southern maintenance units and all vehicle maintenance until the Coffee Run Maintenance Building is completed. Upon its completion, the Coffee Run maintenance unit will be responsible for all areas south of James Creek Cove. The Penn maintenance unit will be responsible for the area between James Creek Cove and Hawns Run Cove (plate 16-26).

Status: The Penn maintenance building was occupied in the spring of 1974.

Site Location: The site is east of the administration building. It is on a south facing slope and is hidden from view of the administration building (plate 16-29).

Existing Conditions: The site is a former abandoned field (plate 16-14). The soil is Calvin shaly silt loam with bedrock at 1 1/2 to 3 1/2 feet. It contains coarse fragments (plate 16-7). An old farm lane ran up the hollow below the building.

Construction: The maintenance building is of concrete block construction. There is a workshop and storage space for eight vehicles. Water is from the central supply system serving the maintenance and administration building. The well and treatment plant are located in the hollow just below the maintenance building. Sewage disposal is handled with a septic tank.

10:18:05 COFFEE RUN MAINTENANCE BUILDING

Status: The Coffee Run maintenance building is planned for initial development.

Site Location: The site is in Hopewell Township on Terrace Mountain just uphill from the Rothrock family camping area (plate 16-31 and -36).

Existing Conditions: The site is a small bench on the western flank of Terrace Mountain. The soil is Raritan gravelly silt loam which has a seasonally high water table (plate 16-9). The area is covered with hardwood forest (plate 16-16). An old logging road enters the site from the access road into the Rothrock Recreation Area.

Proposed Construction: This building will be similar to the Penn maintenance building. It will have storage space for eight vehicles, a workshop, and tool storage space. Sewage disposal will be through the Rothrock central disposal plant. The water treatment system for the Rothrock Recreation Area is adjacent to this maintenance building.

10:19 CONCESSIONAIRE DEVELOPMENT

10:19:01 GENERAL

There are seven areas at Raystown Lake that could be operated by concessionaires under lease from the U.S. Army Corps of Engineers. Four of these are marinas with various support facilities; the other three are lodge developments which include rental cabins and marinas. Public demand will generally govern the rate at which they are developed. In some cases, support development by the Corps, i.e. water supply, sewage disposal and access roads, will determine when the areas can become available for development.

The architectural character of the buildings will be contemporary rustic, employing native stone, hand split shake roofs, and rough sawn woods for finish materials (plates 16-47, -48, and -52).

10:19:02 ALLEGRIPPIS RIDGE MARINA

Status: The Allegrippis Ridge marina is planned for future development. It will utilize the access road into the Allegrippis Ridge Camping Area. Therefore, it cannot be constructed until this road is built. See Section 10:21 for the construction schedule.

Site Location: This shore site is directly opposite the Rothrock Recreation Area. The site is located on the eastern slope of Allegrippis Ridge at the mouth of Shy Beaver Cove. The marina will be in Lincoln Township close to the Hopewell-Lincoln Township line (plate 16-31).

Existing Conditions: The forty acre site chosen for this marina is the best topographically of all the marina sites on the lake. The majority of the shore does not exceed slopes of 15% either above or below the recreation pool level of 786 MSL (plate 16-9).

The area is now primarily open meadow and abandoned field (plate 16-16). The soil on the site is Albrights silt loam with a moderately slowly permeable fragipan and a seasonally high water table 6" to 36" from the surface. The soil also exhibits some stoniness (plate 16-9).

Proposed Construction: The 6,000 foot access road will be built by the Corps as part of the development of Allegrippis Ridge Camping Area. The marina will have parking for 500 cars, mooring for 500 boats, and conventional launching ramps. The main building will have boat service and sales and a fueling station. A restaurant and general store will also be provided (plate 16-31).

10:19:03 HAWNS BRIDGE WOODS COMPLEX

Status: The Hawns Bridge Woods Complex is proposed for future development. The causeway connecting it with the base of Terrace Mountain was completed in the fall of 1973. Demand for this facility will determine when the lodge, motel, rental cabins, and marina will be open to the public. See Section 10:21.

Site Location: Hawns Bridge Woods Complex is located in Juniata Township on the western flank of Terrace Mountain. The site is a mile and a half up lake from the dam and is east of the Seven Points Recreation Area (plate 16-28).

Existing Conditions: The site is now a peninsula. Although it would have been an island, it is connected to land by a causeway constructed in 1973. The causeway connects to L.R. 31110, and to PA 829 in Trough Creek Valley. The seventy-three acre site is covered with Calvin shaly silt loam soil. This soil has a shallow bedrock at 1 1/2 to 3 1/2 feet and contains some coarse fragments. Slopes are partly gentle at 0-15%, with some at 15-30%. The southern edge is a cliff; the western end is a Chemung exposure (plate 16-6).

Trees cover more than half of the site. They are generally hardwood forest with some pine species. The rest is in open meadow (plate 16-13). The southern cliffs have been designated as the Hawns Bridge Woods Barrens Natural Area.

Proposed Construction: This complex will be a complete water-oriented resort area. Overnight accommodations may include a lodge with a restaurant, bar and swimming pool; one hundred efficiency rental units; and 30 cabins of various sizes (plates 16-47, -48, -52). A small beach will also be included near the lodge area.

The marina in the complex will have mooring for 300 boats, conventional and mechanical boat launches, dry storage for 200 boats, a fuel dock, parking for 400 cars, and a general store with groceries, fishing, boating, and camping supplies (plate 16-42). The complex will have a separate central water supply and sewage treatment system.

10:19:04 HOPEWELL MARINA

Status: The Hopewell marina is planned for future development. It is within the Hopewell Recreation Area and will await development of the recreation area for water, sewage treatment, and access roads. See Section 10:21 for the construction schedule.

Site Location: This marina is located in a small cove in Hopewell Township on the west side of the lake. The site is in the Hopewell Recreation Area between the day use area and the family camping area. The marina will be reached through the borough of Saxton on L.R. 31019 (plate 16-32).

Existing Conditions: The site is all open area and meadow, with the exception of a small stand of virginia pine (plate 16-17). Slopes are gentle, ranging between 0 and 15%. The soil is Berks shaly silt loam. This soil has a shallow depth to bedrock of 1 1/2 to 3 1/2 feet and contains some coarse fragments (plate 16-10). The marina will be on the shoreline midway between the two arms of the cove and consists of 23 acres of land and water (plate 16-32).

Proposed Construction: The proposed marina will provide mooring for 100 boats and parking for 150 cars. It will also have a boat launch and a general store with a bait and tackle shop. Campers in the Hopewell campgrounds will utilize the marina boat launch.

The parking area near the launch will have a comfort station. Water and sewer facilities will be provided through the central supply and treatment system that will be built for the Hopewell Recreation Area.

10:19:05 PARADISE FURNACE LODGE AND MARINA

Status: The Paradise Furnace Lodge and Marina are planned for future development. The lodge will be constructed after the Paradise Furnace Recreation Area day use facilities are complete, as the access road to the area must first be constructed (plate 16-30). See Section 10:21 for the construction schedule of the recreation area.

Site Location: This site is located east of and Adjacent to the Paradise Furnace Recreation Area. The location is in Penn Township at the base of Terrace Mountain. The lodge will be two miles north of Trough Creek State Park and across the lake from the Raystown Natural Area (plate 16-30).

Existing Conditions: The 69 acre site is on two sides of a cove. Soil on the southern side is Laidig extremely stony loam. This soil has a moderately slowly permeable fragipan and coarse fragments and exhibits stoniness. The northern area of the site is Raritan gravelly silt loam. This soil has a moderately slowly permeable fragipan and a seasonal high water table within 6" to 36" of the surface during wet periods. The site has slopes mostly between 0 and 15%, with one area on Terrace Mountain approaching 20% (plate 16-8).

The northern area of the site is open field and meadow and was farmed in the past. The southern, or hill, portion of the site is wooded in pine stands and hardwood forest (plate 16-15).

There is at present no access road to the site, as portions of former Trough Creek Drive (L.R. 31059) were inundated by the recreation lake (plate 16-30).

Proposed Construction: This total development will include a complete marina and overnight accommodations. The marina will have slips for 400 boats, boat launches, parking for 540 cars and 45 car-trailers, off-season dry storage for 200 boats, a fuel dock, a restaurant, and a general store with fishing, boating, and camping supplies.

The lodge will have a restaurant, swimming pool, 100 efficienty rental units, and 18 rental cabins (plates

16-47, -48, and -52). See plate 16-38 for a general layout of the area. Plate 16-39 shows diagrammatically the central water and sewer system that will serve this recreation area and the included concessionaire development. The beach in the day-use area may also be used for swimming.

10:19:06 ROTHROCK MARINA

Status: The Rothrock marina is planned for future development. See Section 10:21 for the construction schedule.

Site Location: The Rothrock marina is located in Lincoln Township north of PA 994 on the western flank of Terrace Mountain. It is part of the Rothrock Recreation Area (plate 16-31).

Existing Conditions: This thirteen acre site is on the lee side of a peninsula. Slopes under water are 15 to 30%; on the site itself they range from 0 to 15%. The land up the ridge of the peninsula from the site ranges from 15 to 30%. The soil is Calvin shaly silt loam. This soil has bedrock at 1 1/2 to 3 1/2 feet and contains some coarse fragments (plate 16-9). The site was recently under cultivation and is now reverting to open meadow (plate 16-16). There is an old road to the site from PA 994.

Proposed Construction: This marina will have boat launches, mooring slips for 200 boats, parking for 260 cars, a small restaurant, and a general store. The access road to the site will be built by the Corps as part of future development of the Rothrock Recreation Area (plate 16-36). Water supply and sewage disposal will be provided by the central system of the recreation area (plate 16-37).

10:19:07 SEVEN POINTS MARINA

Status: The Seven Points marina is planned for initial development.

Site Location: The marina is located in the Seven Points Recreation Area in Penn Township, just north of the public beach at the day-use recreation area.

It is reached from PA 26 by Hesston Road (L.R. 31037) through Hesston, Seven Points Road (former L.R. 31115), and project roads on site (plate 16-29).

Existing Conditions: The site is midway between Anderson and Yocum bays. Access roads to the site, as well as the water supply and sewage treatment system for the Seven Points Day Use Recreation Area, are currently under construction. All development is scheduled to be completed by May, 1976.

The site soil is Calvin shaly silt loam. This soil is shallow, with bedrock at 1 1/2 to 3 1/2 feet. The slopes vary from 0 to 15% (plate 16-7). The area was covered in pine stands which were logged just prior to acquisition (plate 16-14). The marina will be on the left bank descending of the lake, adjacent to a one-half mile wide bay.

Proposed Construction: This completely developed marina will consist of 20 acres of land and 13 acres of water area. It will have mooring capacity for 400 boats. There will be three types of launches - a conventional ramp, a "travelift", and a monorail. A fuel dock and sewage pump for marine holding tanks will be installed. The area will provide parking for 400 cars and 60 cars with attached trailers. A restaurant may be built, as well as a general store carrying fishing, boating, and camping supplies. The boat sales and service building will also have a dry storage area (plate 16-34, -35).

10:19:08 UPPER CORNER LODGE AND MARINA

Status: The Upper Corner Lodge and Marina is planned for early development. It will be done by a concessionaire as the market and economics of demand allow its construction. See Section 10:21 for the proposed construction schedule.

Site Location: This lodge and marina is located on the south shore of Anderson Bay in Penn Township. It is also south of the administrative headquarters, east of L.R. 31037. It is reached by Upper Corner Road, former T-404 (plates 16-29, -30).

Existing Conditions: The site consists of 228 acres of rolling terrain. Most of the slopes on the eastern shoreline area are 0 to 15%. Ridge tops are also gently sloping. The ravines are mostly 30% and over. Upland areas are Clavin shaly silt loam. This soil has shallow bedrock at 1 1/2 to 3 1/2 feet and contains coarse fragments. The lower areas closer to the water are Raritan gravelly silt loam. This soil is deeper, but contains a moderately slowly permeable fragipan. It also has a seasonally high water table to within 6" to 36" of the surface during wet periods (plate 16-7).

The site is approximately one-fourth open meadow area, with the majority of the remainder in hardwood forest. There is one area of former pine stands and an old orchard (plate 16-4). Existing access roads into the site are generally in good condition. It is adjacent to the Grove Barrens north of the Raystown Natural Area.

Proposed Construction: The Upper Corner Lodge and Marina will be a complete, resort-type development. This concessionaire facility will include a lodge, 325 efficiency rental units, and a marina. The lodge will include a reception area, restaurants, and 200 rooms in a multistory structure. Recreation facilities in the complex will include hiking trails, a swimming pool, five tennis courts, and a small beach on the lake.

The marina will have mooring slips for 170 boats, a fuel dock, a marina service building, a boat launch, and parking for eighty cars. Rental craft will be available as part of the total recreation package (plates 16-43, -47, -48, and -52).

10:20 SHALE BARRENS NATURAL AREAS

10:20:01 GENERAL

Natural area status should include complete restriction of any destructive use in the area. It should also protect the steep slope and fragile environment of the barrens areas from disturbance except for scientific investigation. Especially important is the restriction of foot travel on the slope and prohibition of watercraft docking at the base of the cliffs.

The following list describes the shale barren communities on project lands and suggests potential natural areas which, when dedicated, will serve as voucher landscapes to protect these important ecological communities.

10:20:02 HAWNS BRIDGE BARRENS NATURAL AREA

This is a large and very scenic barren with sheer cliffs. Forest cover is Red cedar, Virginia pine, and Chestnut oak. Barren species of Hairy lip fern, Rock selaginella, and Barrens bindweed are present. Barrens evening primrose is reported but was not found. This site also contains a transitional zone to the east which exhibits a denser tree cover and scattered patches of exposed shale. The complete natural area of 590 acres will protect the barren, as well as an oak-hickory-pine forest. This forest type is atypical of the project lands (plates 16-13 and -28).

10:20:03 HAWNS BRIDGE WOODS BARRENS NATURAL AREA

This is a small nine acre barren with cedar-pine-oak trees and open areas of exposed shale. The area is smaller and less steep than the other barrens and is more a transitional area remaining after the major portion was inundated (plate 16-28).

10:20:04 ENYEART BARRENS NATURAL AREA

This is a seven acre series of very steep barrens. Only the upper portion will not be flooded. Indicator species of cedar, pine, and oak are present, but the cover is sparse and there is a high percentage of exposed shale, making this an excellent comparison to the smaller barrens further north. It is named the Enyeart Barrens in honor of William Enyeart, who settled the ridge immediately above the barrens about 1770 (plate 16-29).

10:20:05 CHINIOTTA BARRENS NATURAL AREA

This is a 25 acre barrens with a cedar-pine-oak community and open patches of exposed shale. These barrens should be well protected because of their steepness and the generally inaccessible position against the lower slope of Terrace Mountain. It is named for the Juniata River after one of the early spellings (Pennsylvania Colonial Records, IV, 657) (plate 16-29).

10:20:06 SHEEP ROCK BARRENS NATURAL AREA AND LENAPE BARRENS NATURAL ISLAND

This series of barrens is the finest in the Raystown project. The largest of the group is a steep, well developed area sparsely covered with cedar-pine-oak and a typical barren shrub and herbaceous layer. This area of 32 acres harbors Kate's mountain clover (Trifolium virginicum), an endemic plant previously unreported in Huntingdon County. Further investigation may uncover additional specimens at other sites in the complex. Previously, this plant was reported in only three sites in Pennsylvania, and the Raystown record is a new northern limit of distribution for the species. This barren is immediately above the former Sheep Rock Indian Shelter from whence it takes its name. The adjacent barren to the east was an extension of the larger community. It will be separated from the main system, forming a small island. The third barrens is a small island of exposed shale openings in the cedar-oak covering, called Lenape Barrens Natural Island (plate 16-29).

10:20:07 RAYSTOWN NATURAL AREA AND GROVE BARRENS - PLATE 16-30

This area is primarily cedar-pine-oak trees with scattered, but continuous, shale exposures and some steep cliff areas. Because of the predominance of shale barrens in this region, and specifically in the project, this barrens site will be a portion of the Raystown Natural Area of 1,330 acres, the center of which is the interpretive center. The natural area has been outlined on plate 16-30 to include a typical shale barren as well as a variety of topographic, slope, and exposure situations illustrating the general floral and faunal systems in the western section of the total project. This area is contiguous to the Backbone Ridge Game Mitigation Area, which will increase the interpretive value and ecosystem illustration. There is a small barren just east of the interpretive center and one to the north of the natural area, adjacent to the Upper Corner Lodge Area. The barrens are named for Jacob Grove, one of the settlers in the township about 1796 (Africa).

10:20:08 GARNER BARRENS NATURAL AREA

These are quite similar to the Grove Barrens but are located on the east side of the lake (plate 16-30). Tree cover is again cedar-pine-oak, and scattered open shale exposures are common over the 46 acres. The area is named for Michael Garner, who settled in Penn Township in 1789 (Africa).

10:20:09 AITCH BARRENS NATURAL AREA

Aitch Barrens is a potential barrens natural area which was not investigated. This 53 acre site appears to be the proper slope and exposure to contain shale outcrops and typical vegetation (plate 16-31). It is named after the former nearby community of Aitch.

10:20:10 WEAVER BARRENS NATURAL AREA

This is also a potential barrens natural area which was not investigated. This 28 acre area appears to be the proper slope and exposure to contain shale outcrops and typical vegetation (plate 16-32). It is named after Jacob Weaver, an early settler.

10:20:11 SAXTON BARRENS NATURAL AREA

This area is reported to contain Barrens evening primrose on a rocky bluff of ten acres. An inspection in the spring of 1973 failed to confirm presence of the species (plate 16-33). This area lies outside the project boundaries.

10:20:12 BYES BARRENS NATURAL AREA

This is a large steep cliff with numerous exposed shale outcrops totalling 58 acres. This barren is important to the total complex of sites in that it, along with the Huntingdon Barrens, has not been directly affected by the impoundment (plate 16-27). Thus, these sites are important for comparison of environmental changes which may affect the vegetational composition of those areas now partially flooded. (This, or the following barrens may be the Huntingdon Barrens listed in the Preliminary List of Natural Areas in Pennsylvania).

10:20:13 HUNTINGDON BARRENS NATURAL AREA

This area is a steep cliff with cedar-pine-oak cover and exposed shale outcrops. It is 42 acres, not as steep as Byes Barrens, and has a higher density of tree cover (plate 16-28).

10:20:14 SHALE BARRENS DEVELOPMENT

The areas described represent important natural features which will be given complete protection within the Raystown Lake project. They additionally represent the opportunity to protect one of this state's rarest and most endangered habitats. The Corps is seldom faced with such an advantageous situation to designate and preserve such a significant natural feature (Weigman).

These barrens, known collectively as the Raystown Shale Barrens, have been formally recommended by Paul Weigman, Western Pennsylvania Conservancy Naturalist, for designation by the National Park Service as a national natural landmark. The total area of project lands so recommended, including natural areas contiguous to the shale barrens, is 2,220 acres.

The shale barrens will be protected from incompatible uses. The only development will be foot trails in suitable places, as their primary purpose will be scientific investigation.

10:21 SUMMARY OF PROPOSED DEVELOPMENT

In summarizing the proposed development of facilities, several factors must be kept in mind. Because of the relative isolation of most of the facilities from each other, separate roads, water supplies, and sewage treatment facilities will be required. Therefore, complete facilities will be developed to provide the most efficient use of necessary improvements and expenditures. The time limit on phases is an arbitrary one, with all facilities in each phase scheduled for completion before the limiting date. Tables 10:1 and 10:2, following, outline the various facilities by phase for Raystown Lake.

10:21:01 INITIAL PHASE (complete by 1980)

This first construction phase is partially completed, under construction, or in design sequence.

TABLE 10:1
PHASING OF INITIAL DEVELOPMENT

1. Snyders Run Boat Ramp - completed Fall, 1973
2. James Creek Boat Ramp - completed Fall, 1973
3. Shy Beaver Boat Ramp - completed Fall, 1973
4. Coffee Run Overlook - completed 1973
5. Entriken Overlook - completed 1973
6. Ridenour Overlook - completed 1973
7. Raystown Dam Overlook - completed 1973
8. Seven Points Beach - completed 1973
9. Nancys Camp - (formerly Allegrippis Boat-to-Shore) - first phase completed 1974
10. Putts Camp - (formerly Hopewell Boat-to-Shore) - first phase completed 1974
11. Downstream Fishing Access Point #1 - May, 1975
12. Tatman Boat Ramp - May, 1976*
13. Aitch Boat Access - May, 1976*
14. Cliffs Picnic Area - May, 1976*
15. Peninsula Camp - May, 1976*
16. Susquehannock Camp - May, 1976*

*Facilities marked thus: * - have received a total of $500,000 in Title X - Job Opportunities Program funds. A detailed cost breakdown for each individual facility could not be furnished by the Baltimore District, Corps of Engineers at this time.

TABLE 10:1 (CONT'D)
PHASING OF INITIAL DEVELOPMENT

17. Downstream Fishing Access Point #3 Branch - May, 1976*
18. Seven Points Bathhouse, picnic and day-use area, camping area - January, 1976
19. Weaver Falls Boat Access - May, 1976
20. Rothrock Camping Area - April, 1978
21. Raystown Trail East (south portion) - May, 1976*
22. Seven Points Marina (concessionaire) - May, 1977**
23. Upper Corner Lodge (concessionaire)**

10:21:02 STAGED FUTURE DEVELOPMENT

Various development elements are listed in expected order of anticipated development priority. Actual construction of individual areas may vary depending upon public demand, economic considerations, and supporting area development.

TABLE 10:2
PHASING OF FUTURE DEVELOPMENT

1. Tatman Boat Ramp Improvement
2. Nancys Camp enlargement
3. Putts Camp enlargement
4. Tatmans Camp
5. Rothrock Marina (concessionaire)**
6. Rothrock Recreation Area - Day Use
7. Fishing Access Point #2 Schoolhouse

*Ibid, p. 10-53

**In the development of concession facilities, the economics of demand will be the major criterion for determining their construction phasing. However, in some cases, access to concessionaire developments may be dependent on the phasing of roads and utilities developed by the Corps of Engineers.

TABLE 10:2 (CONT'D)
PHASING OF FUTURE DEVELOPMENT

8. Allegrippis Ridge Camping Area
9. Allegrippis Ridge Marina (concessionaire)**
10. Paradise Furnace Recreation Area
11. Paradise Furnace Marina and Lodge (concessionaire)**
12. Mary Anns Camp
13. Interpretive Center
14. Hopewell Recreation Area
15. Hopewell Camping Area
16. Hopewell Marina (concessionaire)**
17. Susquehannock Camp enlargement
18. Sarah Boat Ramp
19. Hawns Bridge Woods Complex (concessionaire)**
20. Corbins Camp
21. Shenefelts Camp
22. Snyders Camp
23. Aitch Camping Area
24. Penns Camp
25. Forge Camp
26. Seven Points Camping Area North
27. Jackson Boat Ramp

Trails will be completed and placed in operation throughout the life of the project, as demand and available budget allow.

**Ibid, p. 10-54

10:21:03 RECREATION DEVELOPMENT COSTS

Estimated future recreation facility development costs are summarized below in Table 10:3. Detailed future cost estimates for most recreation areas follow this table.

TABLE 10:3
COST ESTIMATE SUMMARY: RECREATION DEVELOPMENT

	Initial	Future
Snyders Run Boat Ramp	$ 280,000 (completed)	$
James Creek Boat Ramp	300,000 (completed)	
Shy Beaver Boat Ramp	285,000 (completed)	
Seven Points Recreation Area	5,485,000 (under const)	4,440,000
Nancys Camp	60,000	73,000
Putts Camp	60,000	87,000
Downstream Fishing Access Point #1	60,000 (completed)	
Weaver Falls Boat Access	106,000	
Rothrock Recreation Area	3,980,000	2,823,000
Tatman Boat Ramp	*	406,000
Tatmans Camp		190,000
Fishing Access Point #2		75,000
Allegrippis Ridge Camping Area		3,400,000
Aitch Boat Access	*	
Cliffs Picnic Area	*	
Peninsula Camp	*	

*Ibid, p. 10-53

TABLE 10:3 (CONT'D)

	Initial	Future
Paradise Furnace Recreation Area	$	$ 2,688,000
Mary Anns Camp		193,000
Interpretive Center		393,000
Hopewell Recreation Area		5,966,000
Susquehannock Camp	*	101,000
Sarah Boat Ramp		215,000
Corbins Camp		98,000
Shenefelts Camp		203,000
Fishing Access Point #3	*	75,000
Snyders Camp		160,000
Aitch Camping Area		8,400,000
Penns Camp		195,000
Forge Camp		231,000
Trails	*	1,174,000
Tables, Misc. Park Furniture, Signing, and other park oriented permanent operating equipment.	510,000	
Totals	$11,626,000	$31,586,000

*Ibid, p. 10-53

10:21:04 DETAILED COST ESTIMATES

SEVEN POINTS CAMPING AREA NORTH

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Clearing, Site Prep. and Clean up	$ 400/Ac.			117 Ac.	$ 46,800
Roads: 18' Paving	$ 40/LF			19,000 LF	$ 760,000
Road to be improved- 18'	$ 40/LF			11,000 LF	$ 440,000
Camp sites - 560 N; 75 S	$ 200			635	$ 127,000
Washhouse	$ 75,000/ea.			4	$ 300,000
Comfort Station - Type B	$ 45,000/ea.			25	$1,125,000
Camp Control Station	$ 40,000			1	$ 40,000
Wells	$ 5,500/ea.			4 ea.	$ 22,000
Water Supply & Treatment	L.S.			L.S.	$ 100,000

SEVEN POINTS CAMPING AREA NORTH (CONT'D)

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Sanitary Sewers	$ 18/LF			16,000 LF	$ 288,000
Sewage Treatment Plant	L.S.			L.S.	$ 200,000
Water Lines	$ 7.40/LF			14,000 LF	$ 103,600
	Subtotal				$3,552,400
Fences, Guard Rails, Gates and Park Controls	1% Project Cost				$ 35,524
Signs, Markers and Control Information	½% Project Cost				$ 17,762
	Subtotal				$3,605,686
E & D	6%±				$ 216,341
S & A	6%±				$ 216,341
	Total				$4,038,368

E & D (Engineering and Development)

S & A (Supervision and Administration)

ROTHROCK RECREATION AREA
DAY USE

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Clearing, Site Prep. and Clean Up	$ 400/Ac.			85 Ac.	$ 34,000
Roads:					
24' Paving	$ 52/LF			1,650 LF	$ 85,800
18' Paving	$ 40/LF			15,050 LF	$ 602,000
14' Paving	$ 31/LF			300 LF	$ 15,500
Roads to be removed	$ 1.00/LF			2,700 LF	$ 2,700
Parking	$375/space			1,156 sp.	$ 433,500
Picnicking	$150/unit*			1,270	$ 190,500
Turf and Grass Areas for Play and Erosion Control	$ 1,500/Ac.			35 Ac.	$ 52,500
Tree Planting: Seedlings	$ 900/Ac.			14 Ac.	$ 12,600
Comfort Station - Type B	$ 45,000/ea.			5	$ 225,000
Picnic Shelter	$ 33,000/ea.			6	$ 198,000
Information Center	$ 40,000/ea.			1	$ 40,000

*Incl. one table with one grill and two trash receptacles for each 4 tables.

ROTHROCK RECREATION AREA
DAY USE (CONT'D)

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Bathhouse	$250,000/ea.			1	$ 250,000
Water Storage	L.S.			L.S.	$ 100,000
Water Lines	$ 7.40/LF			8,850 LF	$ 65,490
Sewer Lines	$ 18/LF			9,750 LF	$ 175,500
	Subtotal				$2,483,090
Fences, Guard Rails, Gates and Park Controls	1% Project Cost				$ 4,831
Signs, Markers, and Control Information	½% Project Cost				$ 12,415
	Subtotal				$2,520,336
E & D	6%±				$ 151,220
S & A	6%±				$ 151,220
	Total				$2,822,776

ROTHROCK RECREATION AREA
CAMP GROUND

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Clearing, Site Prep. and Clean up	$ 400/Ac.	29 Ac.	$ 11,600		
Roads:					
18' Paving	$ 40/LF	19,200 LF	$ 768,000		
14' Paving	$ 31/LF	2,650 LF	$ 82,150		
Roads to be removed	$ 1/LF	2,250 LF	$ 2,250		
Parking	$ 375/space	15 spaces	$ 5,625		
Tent Sites	$ 200/ea.	198	$ 39,600		
Tree Planting Trees	$ 2,500/Ac.	15 Ac.	$ 37,500		
Washhouse	$ 75,000/ea.	1	$ 75,000		
Comfort Station - Type B	$ 45,000/ea.	6	$ 270,000		
Water Supply and Treatment	L.S.	--------	$ 132,500		
Water Lines	$ 7.40/LF	17,550 LF	$ 129,870		
Sewage Treatment Plant	L.S.	--------	$ 720,368		
Sewer Lines	$ 18/LF	9,900 LF	$ 178,200		

ROTHROCK RECREATION AREA
CAMP GROUND (CONT'D)

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Coffee Run Maintenance Bldg.	$125,000/ea.	1	$ 125,000		
Waste Station	$ 2,750/ea.	1	$ 2,750		
Camp Control Station	$ 40,000/ea.	1	$ 40,000		
	Subtotal		$2,620,413		
Fences, Guard Rails, Gates and Barricades @ 1%			$ 26,204		
Signs, Markers, and Control Information @ ½%			$ 13,102		
	Subtotal		$2,659,719		
E & D	6%±		$ 159,583		
S & A	6%±		$ 159,583		
	Total		$2,978,885		

HOPEWELL RECREATION AREA
DAY USE

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Clearing, Site Prep. and Clean up	$ 400/Ac.			86 Ac.	$ 34,400
Roads:					
24' Paving	$ 52/LF			4,500 LF	$ 234,000
18' Paving	$ 40/LF			9,750 LF	$ 390,000
Roads to be removed	$ 1.00/LF			2,900 LF	$ 2,900
Parking - cars	$ 375/space			1,940 sp.	$ 352,500
Picnicking	$ 150/unit			1,032 units	$ 154,800
Turf and Grass Areas for Play and Erosion Control	$ 1,500/Ac.			24.7 Ac.	$ 37,050
Tree Planting: Tree Seedlings	$ 900/Ac.			15 Ac.	$ 13,500
Beach	$ 500/LF			1,000 LF	$ 500,000
Bathhouse	$250,000/ea.			1	$ 250,000
Comfort Station - Type B	$ 45,000/ea.			6	$ 270,000
Children's Fishing Pond	L.S.			1	$ 3,000

HOPEWELL RECREATION AREA
DAY USE (CONT'D)

Cost Items	Initial Phase Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Water Supply and Treatment	L.S.			L.S.	$ 132,500
Water Lines	$ 7.40/LF			17,625 LF	$ 130,425
Sanitary Sewers	$ 18/LF			17,700 LF	$ 318,600
Sewage Treatment	$720,500			1	$ 720,500
	Subtotal				$3,544,175
Fences, Guard Rails, Gates and Barricades	1% Project Cost				$ 35,442
Signs, Markers, and Control Information	½% Project Cost				$ 17,721
	Subtotal				$3,597,338
E & D	6%±				$ 215,840
S & A	6%±				$ 215,840
	Total				$4,029,018

HOPEWELL RECREATION AREA
CAMPING

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Clearing, Site Prep. and Clean up	$ 400/Ac.			45 Ac.	$ 18,000
Roads:					
24' Paving	$ 52/LF			4,500 LF	$ 234,000
18' Paving	$ 40/LF			19,600 LF	$ 784,000
Roads to be removed	$ 1.00/LF			3,000 LF	$ 3,000
Parking - cars	$ 375/space			60 sp.	$ 22,500
Turf and Grass Areas for Play and Erosion Control	$ 1,500/Ac.			10.5 Ac.	$ 15,750
Tree Planting: Seedlings	$ 900/Ac.			27 Ac.	$ 24,300
Comfort Station - Type B	$45,000/ea.			4	$ 180,000
Washhouse	$75,000/ea.			5	$ 375,000
Trailer Sanitary Station	$ 2,750/ea.			1	$ 2,750

HOPEWELL RECREATION AREA
CAMPING (CONT'D)

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Camp Control Station	$40,000/ea.			1	$ 40,000
Family Camping Units	$ 675/unit			336 units	$ 226,800
Amphitheater	L.S.			1	$ 10,000
Gravel Boat Ramp	$ 600/ea.			1	$ 600
Boat Tie-up	$ 1,500			1	$ 1,500
	Subtotal				$1,704,100
Fences, Guard Rails, Gates and Barricades	1% Project Cost				$ 17,041
Signs, Markers, and Control Information	½% Project Cost				$ 8,520
	Subtotal				$1,729,661
E & D	6%±				$ 103,780
S & A	6%±				$ 103,780
	Total				$1,937,221

PARADISE FURNACE RECREATION AREA

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Clearing, Site Prep. and Clean up	$ 400/Ac.			29 Ac.	$ 11,600
Roads:					
24' Paving	$ 52/LF			7,400 LF	$ 384,800
18' Paving	$ 40/LF			4,030 LF	$ 161,200
Roads to be removed	$ 1.00/LF			1,350 LF	$ 1,350
Parking	$375/space			387 sp.	$ 145,125
Picnicking	$150/unit*			425 units	$ 63,750
Turf and Grass Areas for Play and Erosion Control	$ 1,500/Ac.			4 Ac.	$ 6,000
Tree Planting: Trees	$ 2,500/Ac.			7 Ac.	$ 17,500
Beach	$ 500/LF			1,000 LF	$ 500,000
Comfort Station - Type B	$ 45,000/ea.			3	$ 135,000
Picnic Shelter	$ 33,000/ea.			2	$ 66,000

*incl. one table with one grill and two trash receptacles for each 4 tables.

PARADISE FURNACE RECREATION AREA (CONT'D)

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Bathhouse	$250,000/ea.			1	$ 250,000
Sanitary Sewer Lines	$ 18/LF			4,050 LF	$ 72,900
Sewage Treatment Plant	L.S.			L.S.	$ 400,000
Water Lines	$ 7.40/LF			3,900 LF	$ 28,860
Water Supply and Treatment	L.S.			L.S.	$ 132,500
	Subtotal				$2,376,585
Fences, Guard Rails, Gates and Barricades	1% Project Cost				$ 23,766
Signs, Markers and Control Information	½% Project Cost				$ 11,883
	Subtotal				$2,400,351
E & D	6%±				$ 144,021
S & A	6%±				$ 144,021
	Total				$2,688,393

AITCH CAMPING AREA

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Clearing, Site Prep. and Clean up	$ 400/Ac.			175 Ac.	$ 70,000
Roads:					
24' Paving	$ 52/LF			19,000 LF	$ 988,000
18' Paving	$ 40/LF			39,000 LF	$1,560,000
Trailer Sites	$ 675/ea.			240	$ 162,000
Trailer Sanitary Station	$ 2,750/ea.			1	$ 2,750
Camp Control Center	$40,000			1	$ 40,000
Comfort Station - Type B	$45,000/ea.			34	$1,530,000
Washhouse	$75,000/ea.			12	$ 900,000
Water Supply and Treatment	$250,000 L.S.				$ 250,000
Water Lines	$ 7.40/LF			36,000 LF	$ 266,400
Sanitary Sewer	$ 18/LF			34,000 LF	$ 612,000
Treatment Plant	$1,000,000 L.S.			1	$1,000,000
Boat Tie-ups	$ 1,500/ea.			4	$ 6,000

AITCH CAMPING AREA (CONT'D)

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Gravel Boat Ramps	$ 600/ea.			4	$ 2,400
	Subtotal				$7,389,550
Fences, Guard Rails, Gates and Barricades	1% Project Cost				$ 73,896
Signs, Markers, and Control Information	½% Project Cost				$ 36,948
	Subtotal				$7,500,394
E & D	6%±				$ 450,023
S & A	6%±				$ 450,023
	Total				$8,400,440

ALLEGRIPPIS RIDGE CAMPING AREA

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Clearing, Site Prep. and Clean up	$ 400/Ac.			70 Ac.	$ 28,000
Roads:					
24' Paving	$ 52/LF			6,000 LF	$ 312,000
18' Paving	$ 40/LF			22,000 LF	$ 880,000
Camp sites - R.V.	$ 675/ea.			240	$ 162,000
Washhouse	$75,000/ea.			4	$ 300,000
Comfort Station - Type B	$45,000/ea.			10	$ 450,000
Water Supply and Treatment	L.S.			1	$ 75,000
Water Lines	$ 7.40/LF			12,000 LF	$ 88,800
Sewer Lines	$ 18/LF			14,000 LF	$ 252,000
Sewage Treatment Plant	L.S.			1	$ 400,000
Camp Control Station	$40,000/ea.			1	$ 40,000
Trailer Sanitary Station	$ 2,750/ea.			1	$ 2,750
	Subtotal				$2,990,550

ALLEGRIPPIS RIDGE CAMPING AREA (CONT'D)

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Fences, Guard Rails, Gates and Barricades @ 1%					$ 29,906
Signs, Markers, and Control Information @ ½%					$ 14,953
	Subtotal				$3,035,409
E & D	6%±				$ 182,125
S & A	6%±				$ 182,125
	Total				$3,399,659

PUTTS CAMP
(Formerly Hopewell Boat-to-Shore)

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Clearing, Site Prep. and Clean up	$ 400/Ac.	10 Ac.	Built	48 Ac.	$19,200
Access Road - 12'		17,000	LF Built		
Tent Sites	$ 200/ea.	12	Built	104	$20,800
Boat Tie-up	$ 1,500/ea.	1	Built	1	$ 1,500
Well	$ 5,500/ea.	1	Built		
Comfort Station - Type A	$35,000/ea.	1	Built	1	$35,000
	Subtotal				$76,500
Fences, Guard Rails, Gates and Barricades @ 1%					$ 765
Signs, Markers, and Control Information @ ½%					$ 383
	Subtotal				$77,648
E & D	6%±				$ 4,658
S & A	6%±				$ 4,658
	Total				$86,964

NANCYS CAMP
(Formerly Allegrippis Boat-to-Shore)

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Clearing, Site Prep. and Clean up	$ 400/Ac.	10 Ac.	Built	34 Ac.	$13,600
Access Road - 12'		3,000 LF	Built		
Tent Sites	$ 200/ea.	10	Built	78	$15,600
Boat Tie-up		1	Built		
Comfort Station - Type A	$35,000/ea.	1	Built	1	$35,000
Well		1	Built		
	Subtotal				$64,200
Fences, Guard Rails, Gates and Barricades @ 1%					$ 642
Signs, Markers, and Control Information @ ½%					$ 321
	Subtotal				$65,163
E & D	6%±				$ 3,910
S & A	6%±				$ 3,910
	Total				$72,983

SUSQUEHANNOCK CAMP

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Clearing, Site Prep. and Clean up	$ 400/Ac.			17 Ac.	$ 6,800
Access Road - 12'	$ 10/LF (former T-430)			3,300 LF	$ 33,000
Boat Tie-up	$ 1,500/ea.			1	$ 1,500
Well	$ 5,500/ea.			1	$ 5,500
Comfort Station - Type A	$35,000/ea.			1	$ 35,000
Tent Sites	$ 200/ea.			34	$ 6,800
	Subtotal				$ 88,600
Fences, Guard Rails, Gates and Barricades @ 1%					$ 886
Signs, Markers, and Control Information @ ½%					$ 443
	Subtotal				$ 89,929
E & D	6%±				$ 5,396
S & A	6%±				$ 5,396
	Total				$100,721

CORBINS CAMP

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Clearing, Site Prep. and Clean up	$ 400/Ac.			22 Ac.	$ 8,800
Access Road - 12'	$ 10/LF			2,700 LF	$27,000
Tent Sites	$ 200/ea.			44	$ 8,800
Boat Tie-up	$ 1,500/ea.			1	$ 1,500
Well	$ 5,500/ea.			1	$ 5,500
Comfort Station - Type A	$35,000/ea.			1	$35,000
	Subtotal				$86,600
Fences, Guard Rails, Gates and Barricades @ 1%					$ 866
Signs, Markers, and Control Information @ ½%					$ 433
	Subtotal				$87,899
E & D	6%±				$ 5,274
S & A	6%±				$ 5,274
	Total				$98,447

SHENEFELTS CAMP

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Clearing, Site Prep. and Clean up	$ 400/Ac.			58 Ac.	$ 23,200
Access Road - 12'	$ 10/Ac.			2,000 LF	$ 20,000
Tent Sites	$ 200/ea.			116	$ 23,200
Boat Tie-up	$ 1,500/ea.			1	$ 1,500
Well	$ 5,500/ea.			1	$ 5,500
Comfort Station - Type A	$35,000/ea.			3	$105,000
	Subtotal				$178,200
Fences, Guard Rails, Gates and Barricades @ 1%					$ 1,782
Signs, Markers, and Control Information @ ½%					$ 891
	Subtotal				$180,873
E & D	6%±				$ 10,847
S & A	6%±				$ 10,847
	Total				$202,567

SNYDERS CAMP

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Clearing, Site Prep. and Clean up	$ 400/Ac.			37 Ac.	$ 14,800
Access Road - 12'	$ 10/LF	(former Fink Road)		3,400 LF	$ 34,000
Tent Sites	$ 200/ea.			74	$ 14,800
Boat Tie-up	$ 1,500/ea.			1	$ 1,500
Well	$ 5,500/ea.			1	$ 5,500
Comfort Station - Type A	$35,000/ea.			2	$ 70,000
	Subtotal				$140,600
Fences, Guard Rails, Gates and Barricades @ 1%					$ 1,406
Signs, Markers, and Control Information @ ½%					$ 703
	Subtotal				$142,709
E & D	6%±				$ 8,563
S & A	6%±				$ 8,563
	Total				$159,835

PENNS CAMP

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Clearing, Site Prep. and Clean up	$ 400/Ac.			62 Ac.	$ 24,800
Access Road - 12'	$ 10/LF (1,000' new, 2,000' existing)			1,000 LF	$ 10,000
Tent Sites	$ 200/ea.			124	$ 24,800
Boat Tie-up	$ 1,500/ea.			1	$ 1,500
Well	$ 5,500/ea.			1	$ 5,500
Comfort Station - Type A	$35,000/ea.			3	$105,000
	Subtotal				$171,600
Fences, Guard Rails, Gates and Barricades @ 1%					$ 1,716
Signs, Markers, and Control Information @ ½%					$ 808
	Subtotal				$174,124
E & D	6%±				$ 10,447
S & A	6%±				$ 10,447
	Total				$195,018

MARY ANNS CAMP

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Clearing, Site Prep. and Clean up	$ 400/Ac.			38 Ac.	$ 15,200
Access Road - 12'	$ 10/LF			1,600 LF	$ 16,000
Water Line	$ 7.40/LF			600 LF	$ 4,440
Sewer Line	$ 18/LF			1,600 LF	$ 28,800
Comfort Station - Type B	$45,000/ea.			2	$ 90,000
Tent Sites	$ 200/ea.			76	$ 15,200
	Subtotal				$169,640
Fences, Guard Rails, Gates and Barricades @ 1%					$ 1,696
Signs, Markers, and Control Information @ ½%					$ 848
	Subtotal				$172,184
E & D	6%±				$ 10,331
S & A	6%±				$ 10,331
	Total				$192,846

FORGE CAMP

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Clearing, Site Prep. and Clean up	$ 400/Ac.			33 Ac.	$ 13,200
Access Road - 12'	$ 10/LF (Existing road to be upgraded)			10,000 LF	$100,000
Tent Sites	$ 200/ea.			66	$ 13,200
Boat Tie-up	$ 1,500/ea.			1	$ 1,500
Well	$ 5,500/ea.			1	$ 5,500
Comfort Station - Type A	$35,000/ea.			2	$ 70,000
	Subtotal				$203,400
Fences, Guard Rails, Gates and Barricades @ 1%					$ 2,034
Signs, Markers, and Control Information @ ½%					$ 1,017
	Subtotal				$206,451
E & D	6%±				$ 12,447
S & A	6%±				$ 12,447
	Total				$231,345

TATMANS CAMP

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Clearing, Site Prep. and Clean up	$ 400/Ac.			32 Ac.	$ 12,800
Access Road - 12'	$ 10/LF			600 LF	$ 6,000
Boat Tie-up	$ 1,500/ea.			1	$ 1,500
Comfort Station - Type B	$45,000/ea.			2	$ 90,000
Water Line	$ 7.40/LF			1,400 LF	$ 10,360
Sewer Line	$ 18/LF			1,400 LF	$ 25,200
Tent Sites	$ 200/ea.			64	$ 12,800
	Subtotal				$158,660
Fences, Guard Rails, Gates and Barricades @ 1%					$ 1,587
Signs, Markers, and Control Information @ ½%					$ 794
	Subtotal				$161,041
E & D	6%±				$ 9,662
S & A	6%±				$ 9,662
	Total				$190,365

TATMAN BOAT RAMP

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Boat Ramp	$106,000/ea.			1	$106,000
Parking	$850/space			150 sp.	$127,500
Comfort Station - Type B	$ 45,000/ea.			1	$ 45,000
Water Fountain and Line	$ 8/LF			800 LF	$ 6,400
Sewer Line	$ 18/LF			500 LF	$ 9,000
Small Pump Station	L.S.			L.S.	$ 5,000
Access Road - 18'	$ 40/LF			400 LF	$ 16,000
	Subtotal				$314,900
Fences, Guard Rails, Gates and Barricades @ 1%					$ 3,149
Signs, Markers and Control Information @ ½%					$ 1,575
	Subtotal				$319,624
E & D	6%±				$ 19,177
S & A	6%±				$ 19,177
	Total				$357,978

WEAVER FALLS BOAT ACCESS

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Gravel Boat Ramp	$ 600/ea.	1	$ 600		
Parking: car w/trailer	$ 850/space	50 sp.	$ 42,500		
Access Road - 18'	$ 40/LF	250 LF	$ 10,000		
Well	$ 5,500/ea.	1	$ 5,500		
Comfort Station - Type A	$35,000/ea.	1	$ 35,000		
	Subtotal		$ 93,600		
Fences, Guard Rails, Gates and Barricades @ 1%			$ 936		
Signs, Markings and Control Information @ ½%			$ 468		
	Subtotal		$ 95,004		
E & D	6%±		$ 5,700		
S & A	6%±		$ 5,700		
	Total		$106,404		

JACKSON BOAT RAMP (W/SEVEN POINTS NORTH)

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Clearing, Site Prep. and Clean up	$ 400/Ac.			3 Ac.	$ 1,200
Road to be improved - 18'	$ 40/LF			4,000 LF	$160,000
Boat Ramp	$106,000/ea.			1	$106,000
Parking: car w/trailer	$ 850/space			40 sp.	$ 34,000
Comfort Station - Type A	$ 35,000/ea.			1	$ 35,000
Well	$ 5,500/ea.			1	$ 5,500
Boat Tie-up	$ 1,500/ea.			2	$ 3,000
	Subtotal				$344,700
Fences, Guard Rails, Gates and Park Controls	1% Project Cost				$ 3,447
Signs, Markers and Control Information	½% Project Cost				$ 1,724
	Subtotal				$349,871
E & D	6%±				$ 20,992
S & A	6%±				$ 20,992
	Total				$391,855

SARAH BOAT RAMP

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Boat Ramp	$106,000/ea.			1	$106,000
Parking - car with trailer	$ 850/space			50 sp.	$ 42,500
Well	$ 5,500/ea.			1	$ 5,500
Comfort Station - Type A	$ 35,000/ea.			1	$ 35,000
	Subtotal				$189,000
Fences, Guard Rails, Gates and Barricades @ 1%					$ 1,890
Signs, Markers, and Control Information @ ½%					$ 945
	Subtotal				$191,835
E & D	6%±				$ 11,510
S & A	6%±				$ 11,510
	Total				$214,855

FISHING ACCESS POINTS #2 AND 3

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Parking: car w/trailer	$ 850/space			12 sp.	$10,200
Car	$ 375/space			13 sp.	$ 4,875
Well	$ 5,500/ea.			1	$ 5,500
Comfort Station - Type A	$35,000/ea.			1	$35,000
Access Road - 18'	$ 40/LF			250 LF	$10,000
Gravel Boat Ramp	$ 600/ea.			1	$ 600
	Subtotal				$66,175
Fences, Guard Rails, Gates and Barricades @ 1%					$ 662
Signs, Markers, and Control Information @ ½%					$ 331
	Subtotal				$67,168
E & D	6%±				$ 4,030
S & A	6%±				$ 4,030
	Total: Each				$75,228

TRAILS

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Raystown Trail; East and West	$9,300/mi.			61 miles	$ 567,300
Connecting Trails	$9,300/mi.			50 miles	$ 465,000
	Subtotal				$1,032,300
Fences, Guard Rails, Gates and Barricades @ 1%					$ 10,323
Signs, Markers, and Control Information @ ½%					$ 5,162
	Subtotal				$1,047,785
E & D	6%±				$ 62,867
S & A	6%±				$ 62,867
	Total				$1,173,519

INTERPRETIVE CENTER

Cost Items	Unit Cost	Initial Phase Units	Initial Phase Cost	Future Development Units	Future Development Cost
Site Development	L.S.			L.S.	$ 15,000
Building	$ 40/SF			4,600 SF	$184,000
Sewage Treatment	L.S.			L.S.	$ 5,000
Well	L.S.			L.S.	$ 5,500
Access Road - 18'	$ 40/LF			3,000 LF	$120,000
Parking Lot	$ 375/space $ 900/space-bus			30 sp. 10 sp.	$ 11,250 $ 9,000
	Subtotal				$349,750
Fences, Guard Rails, Gates and Barricades @ 1%					$ 3,498
Signs, Markers and Control Information @ ½%					$ 1,749
	Subtotal				$354,997
E & D	6%±				$ 21,300
S & A	6%±				$ 21,300
	Total				$397,597

11: SPECIAL PROBLEMS

SECTION 11: SPECIAL PROBLEMS

11:01 GENERAL

There are some land and water uses at Raystown Lake that, because of the unique character of the geography of the region, have created special problems of land and water use and control. This section will discuss these problems and ways of coping with them.

11:02 NATURAL RESOURCE PRESERVATION

One of the problems created by the length of the lake and surrounding topography is the matter of natural resource preservation. Law enforcement by land and water will necessitate lengthy and time consuming trips to provide adequate protection to prevent intentional destruction of public property. Fire protection will require all park vehicles and boats to be equipped with a limited amount of fire fighting apparatus, and all personnel must be trained in its use.

The utmost care will be taken in all decisions regarding land and water use, construction of activity areas, and the exploitation of these natural resources. These problems will be dealt with in Section 12 and in detail in appendix A to this master plan.

11:03 FISH RESOURCES

11:03:01 GENERAL

The Raystown Lake will be managed by the Pennsylvania Fish Commission as a warm water fishery with major emphasis being placed on early and heavy stocking activities. Such a stocking plan will increase the game fish population which will advantageously fill the aquatic void created by the new lake. Since a dramatic increase in rough fish population is anticipated, early stocking of large numbers of game fish will aid in establishing a desirable balance between game and rough fishes in the lake. The following paragraphs outline the general management plans of the Pennsylvania Fish Commission.

11:03:02 EVALUATIONS

Evaluations of all efforts to establish new game species will be made through lake surveys and netting operations

approximately two years after initial stockings. Particular attention will be directed to the Striped bass population, as introduction of this species is experimental. Initial introduction of the Striped bass is being made in anticipation that they will utilize whatever forage species become predominant in the new lake, and that the forage fish will be in sufficient abundance to provide adequate nourishment for the bass.*

11:03:03 FORAGE SPECIES

Consideration will be given to introduction of a forage species in three years if the Striped bass fail to survive. Rainbow smelt (Osmerus), which would provide a suitable forage base for the bass while also serving as a desirable target species for ice fishing, will have primary consideration provided the lake stratifies with sufficient dissolved oxygen concentrations at appropriate temperature levels. Should such stratification fail to occur, alewife will be the second choice forage species. (Stratification is, among other factors, a function of the topography of the lake. Raystown Lake is deep, steep-sided, and contains a considerable volume of water in the hypolimnion.) Both smelt and Alewife may offer several disadvantages when introduced as forage species. Large populations may alter the zooplankton community structure, and both species are potential predators of the stocked fry.*

11:03:04 SALMONID POPULATIONS

Establishment of a salmonid population in Raystown Lake will be given consideration in the future provided the lake stratifies with good dissolved oxygen levels in the summer hypolimnion. A similar project was attempted at another reservoir in Pennsylvania, the Allegheny Reservoir, but the results did not show promise; there was insufficient oxygen in the hypolimnion in late summer to support the salmonids. Should Raystown Lake develop in a manner similar to the Allegheny Reservoir, only severely limited salmonid habitat would be provided and salmonids would be given no further consideration for deliberate management efforts.*

11:03:05 LAKE DRAWDOWNS

Drawdowns of Raystown Lake during the recreational season will be combined with fishery improvement techniques.

*Information from Pennsylvania Fish Commission, Nov. 1973.

The procedure to be used (pulse stabilization) will facilitate aeration of bottom muds, growth of vegetation on the exposed bottom muds for forage and shelter, removal of rough fishes, and concentration of forage fishes for increased predation. Such procedures, when coupled with refilling and selective stocking, will result in maintenance of good fishery conditions in the lake.

11:03:06 FISH HARVEST

Of great importance to any fishery is the harvest rate of game fishes by anglers. Management of fish harvest is accomplished by enforcement of state regulations regarding licensing, length of the fishing season, and daily limits for anglers. As with all public fisheries in the Commonwealth, these regulations will be enforced at Raystown Lake to prevent over harvest of desirable game fish.

11:04 WILDLIFE RESOURCES

11:04:01 GENERAL

The Raystown Lake project area, because of its incorporated source of clean water, diversified land use patterns, and relative remoteness, provides suitable habitat for numerous species of game and fur-bearing animals. The two most important game species in the area are the Whitetail deer and the Wild turkey. Because of the abundance of hardwood trees, primarily oak species, in the area, the Gray squirrel is most numerous. Of great importance to the hunter is the abundance of Eastern cottontail rabbit near farming areas.

Although habitat conditions are not as ideal for these and they therefore do not contribute significantly to the annual game harvest, the Black bear, Ringneck pheasant, Bobwhite quail, and several migratory species occur in the Raystown Lake area.

11:04:02 WATERFOWL

The forty-two mile segment of the Raystown Branch of the Juniata River included in the project provides waterfowl habitat during migration seasons for such species as mallards, Black duck, Bluewing teal, Scaup, and

mergansers. The upstream area of the former Hawns Reservoir furnished Wood ducks with nesting and brood territory. In addition, Canadian geese, mallards, Blue-winged teal, Greenwinged teal, and Whistling swan have also been observed above the old Hawns Reservoir.

11:04:03 HABITAT LOST

When Raystown Lake reached full pool and recreation areas were opened, approximately 9,000 acres of wildlife habitat were lost and additional acreage was adversely affected. Two thousand four hundred and seventy acres have therefore been designated as a wildlife mitigation area. For these reasons, it is imperative that a sound wildlife management program be implemented to insure a healthy animal population in the project area.

11:04:04 FLOODPLAIN ALTERATIONS

Beneficial changes have also occurred from the impounding of the Raystown Branch. Flooding in downstream areas will be greatly reduced, thus providing more stable habitats for wildlife in the floodplain. The increased body of water provides more habitat territory for shore birds and waterfowl. These areas must also be managed to insure propagation of desirable wildlife species.

11:04:05 WILDLIFE PROPAGATION

Wildlife species depend upon, and respond rapidly to, changes in food and cover. Therefore, activities to encourage their propagation will be directed toward vegetation management for food and habitat improvement.

11:04:06 MANAGEMENT

Wildlife management will be geared toward managing those species which will best thrive in a relatively undisturbed hardwood forest. These include such game species as Whitetail deer, squirrel, Wild turkey, Ruffed grouse, and rabbit, and such nongame species as raccoon, fox, crows, owls, hawks, songbirds, woodpeckers, skunk, opossum, chipmunks, and mice. Most nonpredatory wildlife will be provided with adequate food from oak and hickory mast, wild grapes, other tree and shrub seeds, and insects.

11:04:07 MARSH ZONES

Marsh zones will be created in the Backbone Ridge Game Mitigation Area. The five-year drawdown frequency will expose an additional 70 acres of lake bottom for aeration of bottom muds and growth of cover grasses. Where required, these bottom muds will be seeded. Dominant and naturally occurring marsh plants such as Cattails and sedge varieties will also provide suitable habitat for muskrat. Such waterfowl species as Wood ducks, mallards, Bluewing teal, Black duck, Scaup, and Canadian geese, along with wild birds (particularly Redwinged blackbird), will thrive in the marsh zones.

11:04:08 MEADOW AND CLEARED AREAS

When Raystown Lake is at full recreation lake level, approximately ten percent of the land in the project area is in meadow lands. Fourteen miles of pipeline rights-of-way traverse the project area to provide additional meadow and thicket areas and woodland interface that would not otherwise exist in the wooded areas. Meadows are important feeding zones for songbirds, rabbits, and deer, and they will be maintained by periodic mowing to prevent extensive scrub growth.

11:04:09 THICKETS

Thicket zones surrounding the meadow areas, which are characterized by heavier scrub growth of hawthorne, Witch hazel, Mountain laurel, dogwood, wild grape, wild cherry, and various berry bushes, provide food, shelter, and cover for all wildlife. They are also important sources of nest-building material, weed seeds, and insects for songbirds. These thicket areas will be maintained by periodic cutting of any vegetation over four inches base diameter within a fifty foot perimeter of the meadow zones. Cut vegetation will not be removed, as it will provide added cover and shelter for wildlife.

11:04:10 COVER AREAS

Roosting areas for owls, cover areas for deer in heavy snow, and winter roosting for songbirds will be provided by the pine stands which cover four percent of the noninundated land. Since these pine stands are overstocked with an excessive number of trees per acre for optimum growth, they will be selectively pruned and

thinned to facilitate their improvement for wildlife habitation. Wildlife of all species are expected to inhabit ravine areas on the ridges and slopes that surround the lake. Natural springs in the ravines attract wildlife living in adjacent (primarily oak-hickory) areas.

Eighty-four percent of project land above the recreation pool is covered by stands of various oaks, hickories, and other canopy trees, shrubs, vines, and various ground covers. The older stands are favored by raccoons, opossum, and squirrels because these contain mature hollow trees suitable for dens. Silvicultural management will be held to a minimum in these areas to prevent unwarranted removal of den trees. The younger stands provide ample food and cover for such species as deer, grouse, and Red and Gray fox. Again, care will be taken in forestry practices to prevent destruction of these game habitats.

11:04:11 WHITETAIL DEER

The Whitetail deer population will be enhanced in these wooded areas by strip-type clear cutting in isolated areas. A continued source of browse and food for the deer will be provided by coppice and seedling growth in these cutstrips. Wild grapevine, berry, nut tree, and fruit tree (particularly apple) growth will be encouraged in other isolated areas by planting and pruning to supplement food sources for Whitetail deer and other wildlife species.

11:04:12 HARVEST

Management of wildlife harvest by hunters will be accomplished by continued enforcement of state regulations regarding licensing, length of hunting seasons, and daily and seasonal limits. Because large project land areas previously posted to prohibit hunting will now be open to sportsmen, there has been a net gain of hunting area. This increase in acreage on which hunting is permitted, coupled with strict enforcement of state regulations, will allow a balanced harvest of wildlife in the Raystown Lake project.

11:05 ARCHEOLOGICAL AND HISTORICAL RESOURCES

11:05:01 ARCHEOLOGICAL

One of the special problems with archeological resources is the location of the sites that were discovered during archeological investigations. These sites were mostly located close to the Raystown Branch or feeder streams. All but one are now flooded by the recreation pool of the lake. The uppermost site on Shy Beaver Creek will not be flooded, even by the full flood pool. This site will be appropriately marked and interpreted for the recreational visitor.

Another problem was rather unique and is one that is not normally associated with archeological activities. This problem was abundance of artifacts, both inorganic but especially organic, that were recovered from the Sheep Rock Shelter. Many thousands of artifacts were salvaged. The display and interpretation at the Interpretive Center will provide a rare opportunity to publicly exhibit artifacts from the daily life of the early inhabitants of the area. The Corps will cooperate with the Pennsylvania State University and the Pennsylvania Historical and Museum Commission to gain the utmost in benefits from these artifacts.

11:05:02 HISTORICAL

Problems of historical significance involve the preservation and interpretation of structures and areas that played an important role in the development of the Raystown Lake area from about 1750 onward. Although most structures of any historical significance have long ago disappeared or were recently cleared for project development, a few remain that can be utilized for project purposes.

The former Brumbaugh homestead, "Timothy Meadows", will be utilized as a regional museum. It is well located with respect to PA 26 (plate 16-30). A cooperative agreement for the management of the house as a museum has been arranged between the Corps and the Huntingdon County Historical Society. In the beginning years of the project, it may also serve as the beginning of the Interpretive Center. See also Exhibit 31.

The former Rhodes house in the Rothrock Recreation Area will be remodeled and used as a combination ranger headquarters and interpretive center. It is a stone building with a large spring flowing into the basement, and it is an outstanding example of Pennsylvania farmhouses of its era.

11:06 FOSSIL AREAS

Use of areas of fossil occurrence will be controlled. Certain areas will be designated as collecting sites for the general public while others will be strictly reserved for observation. Collecting sites will not be in areas where frequent visits by collectors would cause damage to the natural state of the area.

Choice of areas reserved for collection and observation will be done by a trained paleontologist to preserve rare occurrences of fossils. These areas will generally be near the eastern end of the Backbone Ridge Game Mitigation Area. Specific areas will be marked for access to the general public.

11:07 FEE SYSTEMS AND COLLECTION

Under current Corps regulations, a daily fee may be charged for camping. One sizable camping area must be provided at which no fees are charged. A graduated fee schedule is based on facilities available and degree of development. Before a fee can be charged, the campground must include designated camp sites, picnic tables, fireplaces, a pit or vault comfort station and potable water. The only other fee authorized is for mechanical assistance in boat launching. The camp control stations (plate 16-54) will serve as the booths for fee collection.

11:08 WATER SURFACE CONTROL

11:08:01 GENERAL

Optimum public use and safety of recreationists on lake waters will be assured by zoning the lake for the various types of boats and activities that can be expected on the lake. Horsepower will not be controlled, as the majority of the lake will permit unrestricted use. Thus,

boat speed will be controlled by no wake restrictions. This will allow large and small boats, both power and nonpower, to mix in certain areas, and also provides a natural separation in others. All federal and state laws regarding boat operations will be applicable. See plate 16-25 for all zones.

11:08:02 UNRESTRICTED ZONE

This zone will be unrestricted for speed. It will thus tend to be used primarily by larger horsepower boats, although it will still be open to sail and other non-power boats. A problem with this zone is the occasional narrowness of the lake. This limitation, with shoreline and other craft clearances will reduce some portions of the lake to two lane traffic only.

11:08:03 NO WAKE ZONE

This zone involves many narrow areas, as well as two large areas. The narrow areas restricted to no-wake will be used primarily by fishermen and canoeists in smaller boats, while at the same time permitting large boats at a reduced speed. The two large zones are Yocum and Anderson Bays, intended primarily for sailing. Sailers will be able to use the whole lake subject to wind currents.

11:08:04 GAME MITIGATION AREA

The lake area within the game mitigation area will be zoned for "no-wake operation". The area may be closed during certain seasons for game and fish management purposes.

11:08:05 BATHING AND MARINA AREAS

All bathing beaches and marina areas will have marker buoys to either exclude boats or warn of reduced speeds permitted. The buoys will also define the outer limits of swimming areas. For safety reasons, swimming will be permitted only in designated areas (plate 16-44 and EM 1110-2-400, pg. A-20).

11:09 AGRICULTURAL

A small portion of project lands, less than 10%, will be open areas after the lake has reached full recreation pool. Some of these areas are planned for reforestation to provide shade when the areas are ultimately developed. Others are in the Backbone Ridge Game Mitigation Area. These will be managed by the Pennsylvania Game Commission as part of their wildlife management program.

Because of the shallowness, wetness, steepness, or small size of some of the remaining areas, the U.S. Soil Conservation Service (S.C.S.) will advise the Corps which of these areas could be suitable for outlease for agricultural purposes. Land suited for cultivation and not needed for current operations will be outleased for agriculture. The usual 5-year lease term will allow the lessor to fertilize properly and to receive an economic return from the land. The S.C.S. will assist in the development of cultivation method plans for each parcel so leased. The lessor will follow soil fertilization recommendations of the Pennsylvania State University Soil Testing Laboratory (plates 16-12 through 18).

11:10 VECTOR CONTROL

Opening forest and field areas to active use areas for visitors increases the park user's chances of exposure to various vectors. Although vectors can probably never be eliminated, their numbers and effects may be somewhat controlled.

All refuse will be collected and stored in suitable metal containers, thus eliminating a food source for flies and rodents. Positive drainage of all developed areas will eliminate standing water as breeding places for mosquitoes. All active use grass areas will be mown short to discourage meadow mice.

12: PROJECT RESOURCE MANAGEMENT

SECTION 12: PROJECT OPERATION AND MANAGEMENT

12:01 PROJECT RESOURCE MANAGEMENT

The Park Manager (resource manager) for Raystown Lake will prepare the Resource Management Plan, Appendix A to this Master Plan, for all areas of the project. This plan will be prepared in accordance with the provisions of ER 1130-2-400 and ER 1165-2-400, and will be developed with the cooperation and assistance of the various State and local agencies, including the Pennsylvania Fish Commission, the Pennsylvania Game Commission, and the Pennsylvania Department of Environmental Resources.

12:02 MANAGEMENT OBJECTIVES

All purposes of the Raystown Lake project will be accomplished within the overall management policy of optimizing public use in a manner that is consistent with (1) the project's resource capabilities and (2) maintaining and enhancing the project's intrinsic, aesthetic, and ecological values. This can be achieved through:

A. - The sensitive improvement and protection of the project's resources through the enforcement of project land and water zoning to avoid conflicts between public use, operational needs, and ecological preservation.

B. - The imagination and management of private investors who will be invited to submit competitive proposals to develop certain portions of the project area through concession agreements.

C. - The prevention of incompatible visual or physical encroachments.

D. - The prevention of unauthorized structures, trespass, encroachments, and other misuse of project lands and water areas.

E. - The enhancement of the project through such measures as reforestation, landscape planting, and the control of noxious weeds and shrubs.

F. - The initiation and implementation of integrated and coordinated fish, wildlife, and forest management plans.

G. - Preservation of aesthetic integrity of banks and shorelines
* while making them available for public use.

H. - Insurance of proper utilization of project lands appropriate for agriculture purposes in a manner designed to optimize recreation and fish and wildlife opportunities.

I. - Encouragement of local officials to adopt and enforce zoning and building codes to control private developments adjacent to the project and to avoid problems of water pollution, visual pollution or the use of project roads for access to private property, and

J. - The development and implementation of a project safety plan for the visiting public as well as project personnel.

12:03 ADMINISTRATION

The Baltimore District Office is responsible for the overall administration and operation of the project in accordance with current rules and regulations of the Corps of Engineers. The project staff will be directly responsible to the Chief, Operations Division, through the Chief, Project Operations Branch, for all operation and maintenance functions. The Engineering Division is responsible for lake regulation in accordance with approved rule curves and during flood periods.

12:04 STAFFING AND ORGANIZATION

The operation and maintenance of the project will be administered by the Park Manager. Staffing for Raystown Lake will follow the schedule outlined in table 12:1, Organization Chart.

12:05 LAW ENFORCEMENT

Citation authority will be granted to selected project personnel who will enforce the provisions of Title 36 of the Code of Federal Regulations. Pennsylvania laws pertaining to boating and fishing will be enforced by personnel of the Pennsylvania Fish Commission who have arrest and citation authority for such enforcement under Commonwealth laws. Pennsylvania game laws will be enforced within the project by Pennsylvania Game Commission personnel. In the event of serious violations or criminal acts not covered by the above individuals or agencies, the Pennsylvania State Police will provide required enforcement assistance.

12:06 INTERPRETIVE SERVICES

Plans will be prepared for interpretive services so that they can be implemented as funds become available. An effective interpretive program informs and educates the public with regard to purposes and concepts of operation of the project and the natural and/or historic features of the area. The facilities of the several regional educational institutions, in particular those of Juniata College, will be utilized in the preparation and presentation of this program.

12:07 PENNSYLVANIA FISH COMMISSION

The Park Manager and the Fish Commission, in accordance with the guidelines subsequently detailed in this Master Plan, will cooperatively prepare a Fishery Management Plan. When completed, this plan will become part of appendix D to this Master Plan. Administrative considerations and policies developed as part of this plan will also become a part of appendix A and will include, but will not be limited to, the policy and practices that will govern the public's fishing and boating use of Raystown Lake. Policy governing the management of fishing and boating access areas will also be included.

12:08 PENNSYLVANIA GAME COMMISSION

As proposed in this Master Plan, the Pennsylvania Game Commission will assist the Corps of Engineers in developing a wildlife management plan for approximately 21,000 acres of project land. This agency will also lease 2,470 acres to be called the Backbone Ridge Game Mitigation Area. Administrative policy for the use of these lands, and policy on the remainder of the project as it affects wildlife, will be determined primarily by the Game Commission. Of particular importance is administrative policy pertaining to (1) the location of trails with respect to sensitive feeding or nesting areas, (2) hunting regulations, (3) seasonal restrictions and (4) the implementation and maintenance of interpretive programs administered by the Game Commission. These administrative considerations and policies will also be included in appendix A of this Master Plan.

12:09 PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL RESOURCES (PennDER)

While it is anticipated that the Bureau of Forestry of PennDER will assist the Corps of Engineers in the preparation of a Forest Management Plan for all of the project lands, this use will not be an exclusive one, and this agency will not be directly involved in the administration of any of these lands. However, this agency will have an opportunity to review and comment on the administrative policy defined by others in appendix A in order to minimize incompatible practices that might conflict with the Forest Management Plan.

The Bureau of Forestry now provides the project with forest fire protection, prevention, presuppression, and suppression.

*R-1
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TABLE 12:1

ORGANIZATION CHART: RAYSTOWN LAKE

PROJECTED RAYSTOWN LAKE STAFF - 1980

PARK MANAGER
GS-12

1 GS-7 Admin. Specialist
1 GS-5 Secretary
1 GS-3 File Clerk

Chief, Maintenance Services
GS-11

Penn Maint. Unit
1 WS-10 Foreman
1 GS-9 Sewage Plant Oper.
1 WG-10 Carpenter
1 WG-10 Eng. Equip. Oper.
1 WG-8 Preventive Maint. Spec.
1 Laborer
1 Tractor Oper.*
2 Laborers*

Coffee Run Maint. Unit
1 WS-8 Foreman
1 WG-8 Tractor Oper.
1 Tractor Oper.*
2 Laborers*

Juniata Maint. Unit
1 Head Dam Oper.
1 Dam Oper.
1 Laborer
1 Tractor Oper.*
1 Laborer*

Chief, Visitor Services
GS-11

1 GS-5 Info. Rep.
1 GS-3 Clerk-Typist
1 GS-3 Receptionist*

Penn M.U. & Juniata M.U.
1 GS-9 Supv. Park Ranger
1 GS-7 Park Ranger
1 GS-4 Park Aide
5 GS-4 Park Aides*
5 GS-3 Park Aides*

Coffee Run M.U.
1 GS-7 Park Ranger
1 GS-4 Park Aide
4 GS-4 Park Aides*
4 GS-3 Park Aides*

*SEASONAL

*R-1
Feb 77

preparation of a Forest Management Plan for all of the project lands, this use will not be an exclusive one, and this agency will not be directly involved in the administration of any of these lands. However, this agency will have an opportunity to review and comment on the administrative policy defined by others in appendix A in order to minimize incompatible practices that might conflict with the Forest Management Plan.

The Bureau of Forestry now provides the project with forest fire protection, prevention, presuppression, and suppression.

TABLE 12:1

ORGANIZATION CHART: RAYSTOWN LAKE

PROJECTED RAYSTOWN LAKE STAFF - 1980

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1 Tractor Oper.*
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Coffee Run M.U.
1 GS-7 Park Ranger
1 GS-4 Park Aide
4 GS-4 Park Aides*
4 GS-3 Park Aides*

*SEASONAL

13: FOREST MANAGEMENT

SECTION 13: FOREST MANAGEMENT

13:01 POTENTIAL

The Raystown Lake project contains approximately 29,300 acres. The lake will occupy 8,300 acres during the summer months, and approximately 21,000 acres of project land will remain above water. Of this nonlake area, approximately 18,000 acres, or 84 percent, is presently forested. From a resource management perspective, the magnitude and potential quality of this forest resource is very significant. These forested areas, in addition to performing valuable ecological functions, enhance the scenic values and the recreation potential of the project. Thus, in keeping with the principle of the highest and best use for specific areas and the overriding planning concept of multiple use of the entire project, forestry emerges as a significant element of resource management activity.

13:02 OBJECTIVES

As outlined in paragraph 5d of ER 1130-2-400, "the objectives of the forest management program are to increase the value of project lands for recreation and wildlife, and to promote natural ecological conditions by following accepted conservation practices. Where the preservation of natural conditions or other noncommercial objectives are the paramount consideration, there is no justification for using cultural practices such as thinning, pruning, and release cutting for stand improvement appropriate to commercial production forestry. The removal of vegetation, living or dead, will be done only with sound justification such as urgent disease control, urgent insect pest control, fire hazard reduction, removal for construction of recreational facilities, or specific essential uses." Within the rather broad scope of these regulation objectives, the more specific purposes of forest management within the Raystown Lake project include:

13:03 WATERSHED PROTECTION

Forest vegetation is one of the most environmentally desirable types of watershed cover. Despite the fact that the forest stands of the Raystown Lake project make up only a fraction of the total watershed of the drain-

age basin, these areas will be managed in a manner that enhances their watershed value. Silvicultural measures intended to minimize water runoff and reservoir siltation (through soil erosion) will be identified in the Forest Management Plan. Such measures will logically address optimum composition and density of species to maximize snow retention while also minimizing spring and summer runoffs.

13:04 WILDLIFE HABITAT

Even though specific project areas are designated as forest management areas, the management plans for each of these will include measures to enhance the wildlife habitat. Of particular importance in this regard are silvicultural measures which, among other objectives, will create and maintain a diverse array of understory species, particularly those that are mast-producing. In some instances, this may require creating scattered openings in the forest canopy. Such measures will be aimed at not only enhancing the habitat of the existing wildlife community, but also at creating a desirable habitat for those species that are relatively scarce or totally absent from the project area. Of necessity, these facets of the Forest Management Plan will be closely coordinated with the Wildlife Management Plan.

13:05 RECREATION

Forest Management programs are also intended to enhance the recreational use of the Raystown Lake project. No management action will be taken that will impair this use. These programs will include provisions for the sensitive reforestation of nonused, open fields and will be particularly aimed at creating diverse and interesting visual experiences for project visitors. Such measures will both create and emphasize the scenic interplay between open spaces and forest stands. In addition to reforestation programs, the management plan will also provide for the creation of scenic vistas through the sensitive removal of obstructing vegetation. In addition to aesthetic considerations, silvicultural measures will also be used to encourage certain recreation uses in some areas, while discouraging similar activity in other areas. Silvicultural actions to protect recreation areas will also be identified. The planting of windbreaks adjacent to exposed sites or the removal of dead understory to reduce the fire hazard in certain areas will also be included in

the management plan.

13:06 ECOLOGICAL VITALITY

Management provisions will be identified that will assure the continued ecological viability of the forest communities within the project. Silvicultural practices geared to assuring a healthy diversity of species within the forest stands will be detailed. Similarly, silvicultural steps to control vectors and forest pathogens will also be described. Disease-prone species will be discouraged.

13:07 PUBLIC EDUCATION

The Forest Management Plan will locate and describe any scientifically unique forest or plant community within the project. Protection measures will also be outlined for the future preservation of these communities, and plans will be developed for making such areas accessible without threatening their future existence. In a similar fashion, dramatic or unique examples of natural forest succession will be called to the attention of the public through the development and application of sensitive interpretive programs and devices.

13:08 LIMITATIONS

There are generally two types of forest management limitations that will tend to broadly define the scope of the Forest Management Plan--those imposed through the nonforest needs of different activity areas within the project, and those resulting from the overall Department of the Army policy limitation on more traditional forest management practices. While both of these constraints have been previously discussed, it should be re-emphasized that the general thrust of this program is one of conservation and environmental enhancement only, and not forest management towards an optimum, economically desirable end state or product. The activities outlined in the Forest Management Plan will thus constitute a program of "forest housekeeping" tasks with little or no economic justification being necessary.

* 13:09 GENERAL POLICY

The forest stands of the Raystown Lake project are integral elements of the natural environment of the area. As such these resources will be enhanced through a sound forest management plan which will be appendix B of this Master Plan. The following guidelines will determine forest management practices within the project area:

A. - The forest management plan will be prepared by the Park Manager and coordinated by the Baltimore District with the appropriate State agencies. The Bureau of Forestry, Pennsylvania Department of Environmental Resources and the Pennsylvania Game Commission, both of which manage extensive State lands adjacent to and in the vicinity of the projects, will assist in the preparation of this plan. The Bureau of Forestry presently provides the project with forest fire protection, prevention, presuppression and suppression.

B. - The ultimate goal of the forest management program will be the creation and/or preservation of ecologically viable forest communities that will enhance the visitor experience while at the same time providing optimum recreation, wildlife and recreation benefits.

C. - Demonstration forest conservation areas and typical vegetation associations will be set aside in key project locations and appropriate interpretive displays will be developed for project visitors.

14: FIRE PROTECTION

SECTION 14: FIRE PROTECTION

14:01 GENERAL

As previously cited, approximately 84 percent (or 18,000 acres) of the nonflooded project area will either be forested or covered with brush. This potentially volatile vegetation constitutes a most serious safety hazard during periods of minimal rain or snow fall with resultant dry and high fire danger conditions. The anticipated popularity of the project's recreation facilities further increases the likelihood of accidental forest and brush fires. The camping and picnicking activities during the summer recreation season and hunting during the fall will attract thousands of recreationists to the Raystown Lake project during periods when forest fire indexes are normally at their highest. The majority of these visitors will have no first-hand knowledge of precautionary fire prevention measures, and periodic forest fires can be expected to occur.

14:02 PLANS

Plans to prevent and/or suppress these future fires will be developed. The responsibility for preparing this Fire Protection Plan is assumed by the Baltimore District Office. The District Office through the office of the Park Manager of Raystown Lake will develop and maintain a close working relationship with the various responsible agencies.

The plan will be coordinated with any existing plans for the Raystown Lake area, including those developed by the Department of Environmental Resources (Division of Forest Protection) and the Pennsylvania Game Commission. When completed, this plan will become appendix C of this Master Plan and will include, but not be limited to, the following types of information:

14:03 RESTRICTED ACCESS

A plan will be developed for restricting public access to high risk areas within the project when fire indexes exceed a predetermined danger level.

14:04 FIRE TRAILS

A system of proposed fire lanes and trails throughout the project will be established using existing roads and

old logging trails. This fire trail system will be coordinated with similar trail systems on all adjacent lands, particularly the trails of the Rothrock State Forest.

14:05 PERSONNEL

A schedule of responsible personnel will be defined detailing administrative functions during periods of high fire hazard and outlining responsibilities during project fires.

14:06 FIRE WARNING SYSTEM

A forest fire warning system to alert project users to the current fire hazard rating will be developed. This system will identify the locations within public use areas where warning signs and devices will be displayed.

14:07 COOPERATION

Cooperative agreements have and will be negotiated through the office of the Park Manager of Raystown Lake between the Baltimore District Office and local fire-fighting units to utilize local fire-trained personnel and equipment within the project when necessary. Additional cooperative agreements between this office and the Commonwealth have been established to assure that State equipment and personnel will be available to suppress project fires. The cooperative agreement between the Corps and Bureau of Forestry provides for forest fire protection, training of project personnel and suppression, presuppression, and prevention of fires. The District has entered into contracts with two local fire companies for fire protection of buildings, training of project personnel, building inspection, and suppression of fires.

15: FISH AND WILDLIFE MANAGEMENT

SECTION 15: FISH AND WILDLIFE MANAGEMENT

15:01 FISHERY MANAGEMENT

15:01:01 POTENTIAL

As described in Section 6 the Raystown Branch and other lake feeder streams have the potential to support extensive fish populations. Indeed, the lake and the Raystown Branch presently have a sizable fish population with species such as bass, bluegill, catfish, sunfish and suckers present in large numbers. Great Trough Creek is annually stocked with trout and similarly affords excellent fishing. The water quality of the Raystown Branch is presently more than adequate for fishery purposes. It should be noted that prior to construction of the dam, occasional summer low flows caused water temperatures to soar which resulted in poor fishing conditions in the Raystown Branch. The impoundment of Raystown Lake will hopefully eliminate some of these poor fishing conditions in the river downstream from the dam and, to a lesser degree, in the Juniata River.

15:01:02 OBJECTIVES

The detailed management objectives will be prepared in cooperation with the Pennsylvania Fish Commission and will be included in appendix D of this master plan. It will include the following general goals:

A. To create and maintain a Raystown Lake fishery habitat that is not only ecologically desirable, but also equally favorable to game species as well as nongame fish;

B. To regulate outflows insofar as is compatible with other purposes to maintain and improve the fishery conditions in the stream below the dam;

C. To provide optimum fishing opportunity for project visitors in both lake and stream; and

D. To inform visitors about the management programs and their place within the overall resource management picture.

15:01:03 LIMITATIONS

The ultimate success of the fishery programs that will

be defined in appendix D will be contingent upon a number of existing and potential resource and operational constraints. These include, but are not limited to:

A. The excessive depths, cold water temperatures, and lack of oxygen in bottom lake waters;

B. The toxic impact of copper sulfate crystals which may be used to combat the growth of algae in the vicinity of the lake swimming beaches;

C. Improving the cooperation between the Baltimore District Office and the Pennsylvania Fish Commission; and

D. The coordination of project operations (i.e., extreme drawdowns, etc.) with fishery management plans.

15:01:04 GENERAL POLICY

The fisheries of the Raystown Lake project and downstream areas are environmental resources worthy of special attention and specific management programs. These resources will be enhanced through the implementation of the Fishery Management Plan (appendix D). The Pennsylvania Fish Commission has agreed to accept responsibility for primary fishery management in Raystown Lake. In this connection, the Commission commenced initial stocking of the lake in 1973, shortly after impoundment was begun. The Fish Commission will construct a small facility, including boat docks and storage sheds, on land leased from the Corps (plate 16-29). The following outlines general policy that will be adhered to in the development of the Fishery Management plan.

A. The Baltimore District Office, through the office of the Park Manager of Raystown Lake, will develop and maintain a close working relationship with the Pennsylvania Fish Commission. All project operations that might have an adverse impact on fish life will be coordinated with this State agency; and

* B. Water control manipulation at reservoirs is recognized as a key component of sound and effective fishery management. This management concept will be considered and incorporated into the management plan for Raystown Lake when feasible. Variations in regulation recommended for fishery management will be directed to the District Reservoir Regulation Center, Engineering Division, Baltimore District, for possible implementation. *

C. A coordinated program will be undertaken by the Baltimore District Office, through the office of the Park Manager of Raystown Lake

Fish Commission. This program will be aimed at informing project visitors about fishery management practices and their respective place within the overall resource management plan of the project.

15:02 WILDLIFE MANAGEMENT

15:02:01 POTENTIAL

The Raystown Lake project is within a section of Pennsylvania that has an abundance of wildlife. As described earlier in this master plan, a diverse array of species is native to this area and includes not only relatively common animals such as Whitetail deer, Cottontail rabbit, fox, skunk, and others, but also some relatively scarce species such as the Black bear. The bird life is also quite diverse and includes many game species popular with hunters. Woodcock, Wild turkey, grouse, and doves can all be found occasionally in the project. Most waterfowl pass east and west of this area on their migration flights, and some presently use the river and stream valleys of the project as rest areas during these biannual migrations.

The Pennsylvania Game Commission has long been involved in game propagation in this portion of Huntingdon County, and State Game Lands No. 73 occupy much of the Tussey Mountain Ridge. This agency's program is aimed primarily at encouraging game species such as deer, Wild turkey, woodcock, and grouse. A number of management food plots and controlled habitat areas are located near project lands.

There has been very little attempt made in the past to encourage waterfowl in this portion of the Commonwealth. The relative absence of large bodies of water and suitable habitat have made such an effort impractical. However, the creation of Raystown Lake and Game Commission management of the Backbone Ridge Game Mitigation Area greatly improves the waterfowl propagation potential. The use of nondeveloped project lands for wildlife management purposes will considerably increase not only the total amount of wildlife lands, but also the variety of publicly owned habitat. Most of the previous wildlife management effort in this region has occurred on forested slope or upland areas with artificially created feed plot openings.

The project's acquisition of large tracts of stream valleys will make available many open bottomland sites for wildlife propagation. With proper management of these areas, additional species of wildlife can be encouraged.

15:02:02 OBJECTIVES

The overriding justification for initiating wildlife management programs within the project is twofold--to maintain and enhance an ecologically balanced, natural environment, and to increase hunting opportunity for project visitors. The wildlife management plan that will be developed for the Raystown Lake project (appendix D of this Master Plan) will be prepared in accordance with the following objectives:

A. The natural propagation and protection of native animal species in an optimum, ecologically sound environment that is in keeping with the other plans and uses of the project;

B. The enhancement of waterfowl habitat and the encouragement of waterfowl within suitable project areas;

C. The natural propagation of game species to enhance the hunting opportunity within and around the project;

D. To provide project visitors an opportunity to occasionally see wildlife species in native habitats; and

E. To establish wildlife research and educational areas within the project to be leased and/or administered by education or conservation groups.

15:02:03 LIMITATIONS

The wildlife management plan that will be appended to this document will reflect two major constraints:

A. The greatest diversity of wildlife habitat existed within the valley floor portions of the project. It is these same areas, however, that were flooded in the creation of the lake. Wildlife propagation (i.e. nesting and feeding) is dependent upon the separation

of "people areas" and "animal areas". It is for these reasons that the Backbone Ridge Game Mitigation Area was created. This and other wildlife zones will be protected from seasonal disturbances by project visitors.

B. The general steepness of the underwater shoreline will restrict the natural propagation of waterfowl over most of the lake. This is particularly true for waterfowl such as ducks and geese. Waterfowl propagation programs will be restricted to the Backbone Ridge Game Mitigation Area. Other wildlife species that are similarly dependent on floodplain flora and fauna will also be adversely affected by these topographic conditions.

15:02:04 GENERAL POLICY

The wildlife community of the Raystown Lake project is an important element of the project's natural environment. Its preservation and enhancement will be assured through the implementation of a wildlife management plan that will be prepared in cooperation with the Pennsylvania Game Commission. When completed, this plan will become an element of appendix D of this Master Plan. While the specific policy of this plan is as yet undetermined, it will include the following general objectives.

A. The Baltimore District Office will coordinate and supervise the preparation and implementation of a comprehensive wildlife management program designed to protect and propagate the wildlife population of the Raystown Lake project;

B. Specific measures will be taken to attract migratory waterfowl to the project, particularly those game species which are popular with hunters;

C. A separation will be maintained between public use developments and wildlife management areas, and measures will be taken to limit the public's access to sensitive wildlife nesting and feeding areas;

D. Educational institutions and established conservation groups will be encouraged to lease and/or administer wildlife research and educational areas within the

project;

E. Where feasible, demonstration feed plots will be established in areas made accessible to the public, and appropriate interpretive devices will be erected; and

F. All wildlife management programs and actions will be coordinated with other project programs such as forest management, recreation, and dam operation, in order to avoid resource management conflicts.

16: PROJECT SAFETY

SECTION 16: PROJECT SAFETY

16:01 GENERAL

A Project Safety Plan will be cooperatively prepared by the Baltimore District Office through the office of the Park Manager of Raystown Lake, the Pennsylvania Game Commission, the Pennsylvania Fish Commission, the Pennsylvania State Police, local fire departments, local ambulance association, and other safety organizations. When completed, this plan will become appendix E of this Master Plan. Of necessity, this plan will address the following types of considerations:

16:02 FIRST AID TRAINING

A statement of first aid training requirements for all resident project personnel and seasonal employees;

16:03 TRAFFIC SAFETY

A comprehensive traffic safety plan detailing traffic surveillance measures and controls. This plan will also include a program of traffic sign maintenance and any special measures to be instituted during periods of peak holiday traffic;

16:04 WATER SAFETY

A water safety plan that defines an ongoing water safety educational program which will cover such measures as presentations to local civic groups and student bodies about safe boating and swimming practices. The distribution of safety literature and the placement and display of posters will also be covered by this safety plan. In addition to these general safety concerns, this plan will also identify any restricted lake areas, will itemize the maximum allowable boating horsepower and speeds permitted on various areas of the lake. It will identify any no-wake areas on the lake. The specifics of this plan will be cooperatively defined by the appropriate state and federal agencies involved, particularly those responsible for the enforcement of these boating regulations; and

16:05 EMERGENCY INFORMATION

An emergency assistance plan will be developed wherein policies are outlined pertaining to the public. These policies will be displayed on official bulletin boards where emergency assistance information will be posted for project visitors. As a minimum, such information will include the telephone numbers of local emergency assistance squads, police, hospitals, and directions to the nearest public telephone. Also included in this plan will be specific procedures to be followed in the event of a fatal accident.

17: CONCLUSIONS AND RECOMMENDATIONS

SECTION 17: CONCLUSIONS AND RECOMMENDATIONS

17:01 CONCLUSIONS

On the basis of the information developed in this Master Plan, it is generally concluded that:

17:01:01

The construction of the Raystown Lake project will greatly increase water-oriented recreational opportunities in this section of the Commonwealth.

17:01:02

The use of nondeveloped project areas for wildlife management will significantly increase the amount of publicly-owned acreage devoted to this purpose in the Raystown Lake region.

17:01:03

The warm water fishery that will be developed in Raystown Lake will greatly increase the amount and variety of fishing opportunity in this region of Pennsylvania.

17:01:04

The planned day-use facilities of this project are expected to attract many Pennsylvanians from surrounding counties. Additionally, many of the recreationists can be expected to come from the Baltimore, Md.-Washington, D.C. area. This same pattern of visitation is also expected to be evidenced in the use of overnight and boating facilities.

17:01:05

The separation of intensively used recreation areas from the more passively used resource areas (i.e. fishery, forest, and wildlife management areas) optimizes and mutually enhances the resource potential of both types of areas.

17:01:06

The future character and visitor appeal of the Raystown Lake project is linked directly with the control of unsightly and incompatible development on privately owned lands outside its periphery.

17:01:07

Expected initial visitor demand for facilities will generally be met by initial phase construction. However, land areas suitable for development to meet the expected future demand do not exist. There are many other facilities in the primary, secondary, and tertiary recreation market areas that will absorb these visitors so that a balance will be achieved.

17:01:08

The cooperative administrative and management involvement of both state and federal agencies in this project better assures the optimum development of its various resources.

17:02 RECOMMENDATIONS

It is recommended that this Master Plan be approved as the overall guide for the future development and management of the Raystown Lake project.

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General Services Administration

Pennsylvania Manual 1970-71, Volume 100
Commonwealth of Pennsylvania

EXHIBITS

L. ROBERT KIMBALL

CONSULTING ENGINEERS

CIVIL ENGINEERING
SANITARY ENGINEERING
MECHANICAL ENGINEERING
PHOTOGRAMMETRIC ENGINEERING
SOILS & SUBSURFACE INVESTIGATION
SURVEYING

615 WEST HIGHLAND AVE., EBENSBURG, PENNSYLVANIA 15931 - PHONE (814) 472-7700
CABLE ADDRESS KIMENG, EBENSBURG

July 14, 1975

The Honorable Hugh Scott
United States Senate
Washington, D.C. 20510

Re: Raystown Lake
Huntingdon County, Pa.

My dear Senator:

Your "Washington Reports" for July has just reached my desk. I was particularly interested in the article concerning Raystown Lake.

We are currently completing work on the Master Plan for this project. Could you please send me information concerning your recently introduced legislation that would authorize the Army Corps of Engineers to improve and maintain access roads leading to the lake. As you know, this has been, and is, a major problem for the local people and for those trying to reach the project. I would like to include any new information available in the final draft.

Sincerely,

L. ROBERT KIMBALL

Duane L. Mohney

Duane L. Mohney
Landscape Architect

DLM/jay

Exhibit 1

HUGH SCOTT
PENNSYLVANIA

RICHARD G. QUICK
ADMINISTRATIVE ASSISTANT

United States Senate

WASHINGTON, D.C. 20510

July 21, 1975

Duane L. Mohney
L. Robert Kimball
615 West Highland Avenue
Ebensburg, Pa. 15931

Dear Mr. Mohney:

Thank you for writing for further information regarding legislation that I have recently introduced with Senator Schweiker for the improvement of the Raystown Dam access roads.

I have enclosed some material that I thought might be of interest. The bill I introduced, S. 2000, has not been printed at this time, but S. 3803 from the 93rd Congress is an identical measure so I have attached it.

If I can be of further assistance in this matter please do not hesitate to write.

With best wishes,

Sincerely,

Hugh Scott
United States Senator

HS:kwb

Exhibit 2

L. ROBERT KIMBALL

CONSULTING ENGINEERS

CIVIL ENGINEERING
SANITARY ENGINEERING
MECHANICAL ENGINEERING
PHOTOGRAMMETRIC ENGINEERING
SOILS & SUBSURFACE INVESTIGATION
SURVEYING

615 WEST HIGHLAND AVE., EBENSBURG, PENNSYLVANIA 15931 - PHONE (814) 472-7700
CABLE ADDRESS: KIMENG, EBENSBURG

December 11, 1973

Frank Lucas
U.S. Soil Conservation Service
908 Pennsylvania Avenue
Huntingdon, Pa. 16652

Re: Raystown Dam Project

Dear Mr. Lucas:

As per our conversation in your office on December 7, 1973 please find enclosed a site plan showing the property limits of the Corps of Engineers.

We would be most appreciative if you could forward to us soil maps of the area of the Corps of Engineers property. Any further information you could provide us, like the report we discussed, would be most appreciated.

If you require any further information please do not hesitate to contact us.

Sincerely,

L. ROBERT KIMBALL

Bernard J. Olup, Jr.
Engineering Geologist

BJO/dm
cc: Duane Mohney
Enclosure

Exhibit 3

United States Department of the Interior

NATIONAL PARK SERVICE
WASHINGTON, D.C. 20240

IN REPLY REFER TO:

H22-PHA

October 18, 1972

Mr. Charles Solomon
U.S. Army, Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Mr. Solomon:

This office has been requested by Dr. John L. Cotter, Denver Service Center, to contact you regarding archeological salvage at the Raystown Reservoir, Pennsylvania.

Salvage archeology was carried out by the University of Pennsylvania under contract to the National Park Service. The resultant reports fulfilled the terms of these contracts and the Service feels that the intent of the Reservoir Salvage Act of 1960 has been carried out. This office has no objection to the Corps of Engineers proceeding with the contruction of the dam and reservoir.

Sincerely yours,

Jackson W. Moore, Jr.

Jackson W. Moore, Jr.
Staff Archeologist

Exhibit 4

United States Department of the Interior

NATIONAL PARK SERVICE

NORTHEAST REGION
143 SOUTH THIRD STREET
PHILADELPHIA, PA. 19106

IN REPLY REFER TO:

L7423
NER(CF)

APR 24 1973

Mr. George E. Evans, Director
Urban and Regional Planning
L. Robert Kimball, Consulting Engineers
202 Rosemont Drive
Coraopolis, Pennsylvania 15108

Dear Mr. Evans:

In reply to your letter of April 18, we have prepared no studies or reports on the Susquehanna River or Raystown since well before July 1970.

We would appreciate being kept informed of the progress of the study.

Sincerely yours,

Ben Butterfield

Exhibit 5

JOHNNY HORIZON '76

Let's Clean Up America For Our 200th Birthday

Advisory Council
On Historic Preservation

September 4, 1974

Col. Robert S. McGarry
Corps of Engineers
U.S. Department of the Army
Baltimore District
P.O. Box 1715
Baltimore, Md. 21203

Dear Colonel McGarry:

The Advisory Council has been informed by William J. Wewer, Historic Preservation Officer for Pennsylvania, that the Raystown Lake Project in Huntington County, Pennsylvania, an undertaking of the Corps of Engineers, may have an effect upon Brumbaugh House, a property determined by the Secretary of the Interior to be eligible for inclusion in the National Register of Historic Places. A copy of Mr. Wewer's letter is enclosed.

On the basis of this information, the Council requests that the Corps of Engineers investigate this matter to determine whether Section 1(3) or Section 2(b) of Executive Order 11593 is applicable. Steps to determine this applicability are set forth in Section 800.4 of the Council's "Procedures for the Protection of Historic and Cultural Properties" (36 C.F.R. Part 800). A copy of the Council's procedures is attached for your convenience.

The Council requests that Corps of Engineers report the results of its investigation to the Council at the earliest opportunity. If you have further questions or require assistance regarding this matter, please contact Ellen R. Ramsey of the Council staff at 202-254-3974.

The Council appreciates the Corps cooperation in this matter.

Sincerely yours,

Ann Webster Smith

Ann Webster Smith
Director, Office of Compliance

Exhibit 6

NABEN-R

Miss Ann Webster Smith
Director, Office of Compliance
Advisory Council on Historic Preservation
1522 K Street, N.W., Suite 430
Washington, D. C. 20005

Dear Miss Smith:

From your letter of 4 September 1974 we learned that the Brumbaugh House on the Raystown Lake project in Huntingdon County, Pennsylvania, has been determined by the Secretary of the Interior to be eligible for inclusion in the National Register of Historic Places.

Section 2(b) of Executive Order 11593 is applicable inasmuch as this property was acquired by the Government for the Raystown Lake project. This office took necessary action to preserve this structure until a determination as to its historic interest was made by the Secretary of the Interior. The Huntingdon County Historical Society agreed to protect and maintain the structure and has indicated a desire to utilize it as an area historical museum.

An examination of project effect on the structure as set forth in Section 800.9 of the "Procedures" indicates that the structure will be adversely affected in that the project will change the surrounding environment, alter the setting, and subject the structure to possible flooding during project operation for flood control since it lies below spillway crest, elevation 812.0. The shore of the recreation lake, at elevation 786, will be within approximately 200 feet of the structure. No public use facilities are proposed in this area.

The floor of the basement is at elevation 800.4 and the elevation of the first floor is 808.2. The following frequency of flooding in the reservoir has been computed, based upon past flood history:

Exhibit 7

NABEN-R
Miss Ann Webster Smith

Elevation	Average recurrence interval in years
800	20
805	28
810	50
812	85

In other words, it could be expected that the first floor of the building would be covered by about two feet of water once every 50 years.

Although the house would be subject to such flooding at infrequent intervals, it is the view of this office that this hazard should be recognized and accepted and no perishable articles stored or displayed at these levels rather than attempt to relocate or protect the building.

As indicated above, the Huntingdon County Historical Society has indicated that it wishes to lease the structure from the Government and to restore and develop a museum of local history. This office will give favorable consideration to such a program.

Sincerely yours,

GRAHAM J. NORTON, Jr.
LTC, Corps of Engineers
Deputy District Engineer
for Civil Works

CF w/cy ltr 4 Sep 74:
Park Manager, Raystown
Operations Division

Exhibit 7

L. ROBERT KIMBALL

CONSULTING ENGINEERS

CIVIL ENGINEERING
SANITARY ENGINEERING
MECHANICAL ENGINEERING
PHOTOGRAMMETRIC ENGINEERING
SOILS & SUBSURFACE INVESTIGATION
SURVEYING

615 WEST HIGHLAND AVE., EBENSBURG, PENNSYLVANIA 15931 - PHONE (814) 472-7700
CABLE ADDRESS KIMENG, EBENSBURG

February 1, 1974

Mr. Clayton Kritschgau
Pa. Department of Environmental Resources
Bureau of Resources Programs
Division of Outdoor Recreation
301 Market Street
Harrisburg, Pa. 17101

Re: Proposed Hiking Trail System
Raystown Lake and Environs

Dear Mr. Kritschgau:

Pursuant to our phone conversation of yesterday morning, I am writing to determine the proper sequence of presenting my proposal for a hiking trail connection between future Raystown Lake trails and the Mid-State Trail and Tuscarora Trail.

The idea was presented to the Corps of Engineers, Baltimore District, on January 11, 1974. The proposal was okayed verbally in principle, and I would like to determine the proper agencies to contact in presenting the proposal to the State.

As you can see by the accompanying map, the connection to Mid-State involves only 23 miles of trail, mostly across State Forest or State Game Lands. The connection to Tuscarora is further, 55 miles, but the ultimate trail distance is also greater. Although I realize this is a long range proposal, I sincerely believe it is extremely worthwhile, and one worthy of your consideration.

Your guidance will be most deeply appreciated.

Sincerely,

L. ROBERT KIMBALL

Duane L. Mohney
Landscape Architect

Encl.
DLM/jay
cc: Mr. Kass, Mr. Kaufmann

EBENSBURG, PENNSYLVANIA OMAHA, NEBRASKA PITTSBURGH, PENNSYLVANIA
HUNTINGTON, WEST VIRGINIA ST. JOSEPH, MISSOURI LEXINGTON, KENTUCKY

Exhibit 8

COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF ENVIRONMENTAL RESOURCES
600 Feller Building, 301 Market Street
Harrisburg, Pennsylvania 17101

In reply refer to
RM-R

February 22, 1974

Mr. Duane L. Mohney
Landscape Architect
L. ROBERT KIMBALL
Consulting Engineers
615 West Highland Avenue
Ebensburg, Pennsylvania 15931

Dear Mr. Mohney:

This will acknowledge receipt of your letter with attached map of proposed connector trail alignments between Raystown Lake and other trail systems in Pennsylvania.

Within the Department of Environmental Resources, you should contact the following:

William C. Forrey, Director
Bureau of State Parks
301 Market Street
Harrisburg, Pennsylvania 17101

Samuel S. Cobb, Director
Bureau of Forestry
Evangelical Press Building
3rd and Reily Streets
Harrisburg, Pennsylvania 17120

For other involved agencies contact:

Paul Glenny, Supervisor
Pennsylvania Game Commission
South Central Division Headquarters
P. O. Box 537
R. D. #1
Huntingdon, Pennsylvania 16652

If this office can be of further assistance, please advise.

Sincerely yours,

Clayton H. Kritschgau, Chief
Programming & Operations Section
Division of Outdoor Recreation

Exhibit 9

L. ROBERT KIMBALL
CONSULTING ENGINEERS

CIVIL ENGINEERING
SANITARY ENGINEERING
MECHANICAL ENGINEERING
PHOTOGRAMMETRIC ENGINEERING
SOILS & SUBSURFACE INVESTIGATION
SURVEYING

615 WEST HIGHLAND AVE. EBENSBURG, PENNSYLVANIA 15931 - PHONE (814) 472-7700
CABLE ADDRESS: KIMENG, EBENSBURG

April 8, 1974

Mr. Clayton Kritschgau
Bureau of Resources Programming
Division of Outdoor Recreation
Department of Environmental Affairs
307 Market Street
Harrisburg, Pennsylvania 17101

Re: Raystown Lake
Huntingdon Co., Pa.

Dear Mr. Kritschgau:

In reference to the above project, I am seeking additional information concerning State facilities within the area of Raystown Lake. I felt you would be the best source concerning the facilities on the enclosed list for:

1. Total acres of the parks and recreation areas.

2. Acres of water, or name of stream.

3. The availability of rental cabins, number.

4. Is hiking available on designated trails.

5. Number of campsites.

6. Number of picnic tables.

I would also like data on acreages in State Parks, State Forests, State Game Lands, State Fishing Lakes and Access Areas, and total County acreages, by County, for the State.

Additionally, I am seeking attendance figures for the past five years for the recreation facilities on the enclosed list. Are there any per capita participation rates for recreational activities in Pennsylvania?

Exhibit 10

L. ROBERT KIMBALL
CONSULTING ENGINEERS

I am still awaiting receipt of the hiking trail shelter plans for Laurel Ridge that we discussed by phone last January 31.

Please call me if further clarification is needed on any of the above items.

Sincerely,

L. ROBERT KIMBALL

Duane L. Monney
Landscape Architect

DLM/jay

Enc.: Public Recreation Areas

cc: Mr. Howard Kass

Exhibit 10

COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF ENVIRONMENTAL RESOURCES
600 Feller Building, 301 Market Street
Harrisburg, Pennsylvania 17101

In reply refer to
RM-R

May 24, 1974

Mr. Duane L. Mohney
L. ROBERT KIMBALL
Consulting Engineers
615 West Highland Avenue
Ebensburg, Pennsylvania 15931

Dear Mr. Mohney:

Attached is the data requested, except Fish Commission ownership. That material is still being compiled and will be forwarded when completed. The trail shelter plans have been mailed separately.

As subsequently discussed, a compilation of annual attendance for some of the State Forest Picnic Areas listed is not available beyond calender year 1972.

Park Planning Guidelines will be published by the National Recreation and Park Association; copies should be available in June of this year. Contact Mr. John Blair, Executive Secretary, 1601 Kent Street, Arlington, Virginia 22209 for your copy.

Sincerely yours,

Clayton H. Kritschgau, Chief
Programming Operations Section
Division of Outdoor Recreation

Attachments

Exhibit 11

L. ROBERT KIMBALL

CONSULTING ENGINEERS

CIVIL ENGINEERING
SANITARY ENGINEERING
MECHANICAL ENGINEERING
PHOTOGRAMMETRIC ENGINEERING
SOILS & SUBSURFACE INVESTIGATION
SURVEYING

615 WEST HIGHLAND AVE., EBENSBURG, PENNSYLVANIA 15931 - PHONE (814) 472-7700
CABLE ADDRESS KIMENG, EBENSBURG

July 11, 1975

Mr. Clayton H. Kritschgau, Chief
Programming and Operations Section
Division of Outdoor Recreation
Department of Environmental Resources
600 Feller Building
301 Market Street
Harrisburg, Pennsylvania 17101

Re: Raystown Lake

Dear Mr. Kritschgau:

Enclosed are the rough drafts of attendance graphs discussed yesterday by phone. I would appreciate any comments you may have concerning them.

I am also seeking additional recreation facilities design load information. I would be grateful for any figures or sources you may have.

Sincerely,

L. ROBERT KIMBALL,
CONSULTING ENGINEERS

Duane L. Mohney
Landscape Architect

DLM/mls

Enclosures

cc: Mr. Howard Kass

Exhibit 12

COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF ENVIRONMENTAL RESOURCES
P. O. Box 1467
Harrisburg, Pennsylvania 17120

In reply refer to
RM-R

July 30, 1975

Duane L. Mohney, Landscape Architect
L. Robert Kimball, Consulting Engineers
615 West Highland Avenue
Ebensburg, Pennsylvania 15931

Dear Mr. Mohney:

I have reviewed the attendance records you sent me July 11, 1975.

The only comment I can offer concerns Graph 7.4D, Pennsylvania State Forest Natural Areas Attendance.

As I mentioned previously and subsequently confirmed, the Bureau of Forestry does not keep attendance records for these areas since they assumed administrative control in 1972. The figure you show for 1972 is inaccurate in that it represents only a portion of that year. Correct figures for 1972 are not available.

You may be able to obtain additional information on the annual attendance if you contact Mr. John F. Kohler, Regional Park Superintendent, State Parks Region #3, Shawnee State Park, Schellsburg, Pennsylvania 15559. Mr. Kohler is responsible for most of the State parks you are dealing with.

Pages 13, 14 and 15 from "Park Planning Guidelines" by George Fogg are attached. They should yield considerable information concerning design land capacities. You may find a complete copy of this book to be very valuable in your work. Information about this publication is also attached.

Sincerely yours,

Clayton H. Kritschgau, Chief
Programming & Operations Section
Bureau of Resources Programming

Attachments

Exhibit 13

COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF ENVIRONMENTAL RESOURCES
734 West Fourth Street
Williamsport, Pennsylvania 17701
April 24, 1973

Raystown Reservoir
Juniata River
Huntingdon and Bedford Counties

Mr. George E. Evans, Director
Urban and Regional Planning
L. Robert Kimball Consulting Engineers
202 Rosemont Drive
Coraopolis, Pennsylvania 15108

Dear Mr. Evans:

Acknowledgment is made of your letter of April 18, 1973 requesting information to be used in preparation of a Master Plan Design Memorandum on the Raystown Reservoir.

I am forwarding your letter of request to the Lewistown Regional Office, which is responsible for the Water Quality Management programs in Huntingdon and Bedford Counties. If you have any questions on this matter before you are contacted, please direct them to Mr. James Donato, 29 Chestnut Street, Lewistown, Pennsylvania, Telephone No. 717-248-6785.

Very truly yours,

Mark A. Roller

Mark A. Roller, P. E.
Regional Sanitary Engineer
Bureau of Water Quality Management

MAR/pas

cc: James V. Donato

Exhibit 14

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION
P. O. BOX 1026, HARRISBURG, PENNSYLVANIA 17108

EXECUTIVE DIRECTOR

January 26, 1973

Mr. William E. Trieschman, Jr.
Chief, Planning Division
Department of the Army
Corps of Engineers
P. O. Box 1715
Baltimore, Maryland 21203

Dear Mr. Trieschman:

Reference is made to our correspondence regarding preparation of a Final Environmental Impact Statement for the Raystown Lake project in Huntingdon County, Pennsylvania.

A staff review of the Draft Environmental Impact Statement and reference to information on historical and archaeological sites available in our office indicate that the project will have no direct effect on known historical or archaeological sites. Exception is made, however, to a site commonly referred to as "The Sheep Rock" which has been fully excavated for archaeological purposes.

Very truly yours,

WILLIAM J. WEWER

W s

Exhibit 15

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION
WILLIAM PENN MEMORIAL MUSEUM AND ARCHIVES BUILDING
BOX 1026
HARRISBURG, PENNSYLVANIA 17108

June 18, 1973

Colonel L. W. Prentiss, District Engineer
Baltimore District
U. S. Army Corps of Engineers
P. O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Prentiss:

Mrs. Nancy Shedd, Huntingdon County Historical Society has informed us of an area of historic buildings which will be destroyed by the Raystown Dam project. This area, centered around the village of Brumbaugh, has a large number of architecturally significant structures. Unfortunately, we had no knowledge of this area's importance when we submitted our report on the dam's environment impact to your office. While our oversight cannot be excused, I would urge that you reconsider the proposed demolition of the buildings in this area. The Brumbaugh area is a potential National Register district and if at all possible should be preserved.

A short descriptive list and location map of the endangered sites is enclosed for your information. If I can be of any assistance in this matter, please dont't hesitate to call or write.

Sincerely yours,

William K. Watson

William K. Watson, Historian

Enc.

Exhibit 16

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION
P. O. BOX 1026, HARRISBURG, PENNSYLVANIA 17108

EXECUTIVE DIRECTOR

July 30, 1973

Colonel L. W. Prentiss
District Engineer
Baltimore District
U. S. Army Corps of Engineers
P. O. Box 1715
Baltimore, Maryland 21203

Dear Colonel Prentiss:

An examination of the Raystown Lake Project, Huntingdon County, Pennsylvania was conducted by a staff member of the Pennsylvania Historical and Museum Commission. This study was undertaken on July 10, 1973 with Mr. Karl Kaufmann and Mr. Robert Bell of the Corps of Engineers and Mrs. Nancy Shedd of the Huntingdon County Historical Society in attendance.

The study area was found to contain no National Register properties and was found to have no major historical significance with regard to historical or archaeological sites or historical structures.

Sincerely yours,

William J. Wewer

William J. Wewer

Exhibit 17

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION
P. O. BOX 1026, HARRISBURG, PENNSYLVANIA 17120

EXECUTIVE DIRECTOR

February 21, 1974

Colonel Robert S. McGarry
Corps of Engineers
Department of the Army
Baltimore District
P. O. Box 1715
Baltimore, Maryland 21203

Dear Colonel McGarry:

With reference to the Brumbaugh House-Raystown Lake matter, we believe that Section 2, Executive Order 11593, "Protection and Enhancement of the Cultural Environment" applies.

On the basis of a brief, preliminary survey made last summer at your request, we concluded there were no sites or structure of major significance in the project area, and we so stated in our letter to you dated July 30, 1973.

Since then, we have become aware of the architectural and historical significance of the Brumbaugh House, and therefore are now in the process of considering its nomination to the National Register of Historic Places, in accordance with the National Historic Preservation Act of 1966.

Section,2, (b) of the Executive Order cited above gives Federal agencies responsibility for identifying, in cooperation with the State Historic Preservation Officer, historic buildings under their jurisdiction, then nominating those to the Secretary of the Interior which appear to qualify for entry on the National Register. It occurs to us, that in accordance with this procedure you may wish to either make your own survey and evaluation of the Brumbaugh House, or participate with this office in making such an evaluation.

In any case, it should be borne in mind that Section 2 (b) directs that caution be exercized doing the interim period until a decision has been reached by the Secretary of the Interior.

Sincerely yours,

William J. Wewer

Exhibit 18

NABEN-R

15 March 1974

Mr. William J. Wewer
Executive Director
Pennsylvania Historical and
Museum Commission
P. O. Box 1026
Harrisburg, Pennsylvania 17120

Dear Mr. Wewer:

In your letter of 21 February 1974, you indicated that Section 2 of Executive Order 11593 was applicable to the Brumbaugh house on the Raystown Lake project and that the Commission was presently considering nominating this structure for entry on the National Register of Historic Places in accordance with the National Historic Preservation Act of 1966.

The information concerning the historical significance of this structure available to this office would not appear to meet the criteria for such nomination as established by the Department of the Interior. However, I recognize the responsibility of the Corps in this regard and, since the State Historic Preservation Officer now feels that additional investigation is necessary, I will be glad to cooperate.

As I advised you previously, I have offered to lease this property to the Huntingdon County Historical Society for preservation, restoration, and use as a museum. I recently offered to make the property available to the Society immediately pending the consummation of a formal lease.

I can assure you that no action will be taken to raze this structure until reasonable time has been allowed to determine its qualification for entry on the National Register and until the Historical Society or other interested local agencies have had ample opportunity to formulate a program for its preservation.

Exhibit 19

NABEN-R 15 March 1974
Mr. William J. Wewer

If this office can be of any assistance in your evaluation of the Brumbaugh house, please let us know. I would suggest that, if necessary, you contact Mr. K. F. Kaufmann of my office, whose telephone is (301) 962-4887.

Sincerely yours,

ROBERT S. McGARRY
Colonel, Corps of Engineers
District Engineer

CF:
Ch, Real Estate Div w/cy ltr 2/21/74
Ch, Construction Div " " "
Ch, Civ Proj Mgmt Sec " " "

Exhibit 19

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA HISTORICAL AND MUSEUM COMMISSION
P. O. BOX 1026, HARRISBURG, PENNSYLVANIA 17120

EXECUTIVE DIRECTOR

April 12, 1974

Colonel Robert S. McGarry
Department of the Army
Baltimore District, Corps of Engineers
P.O. Box 1715
Baltimore, Maryland 21203

Dear Colonel McGarry:

Thank you for your letter of March 15, 1974, in which you informed us of the arrangements being worked out with the Huntingdon County Historical Society for them to maintain and use the Brumbaugh house in the Raystown Lake project.

As we understand the procedures, properties owned by the Federal Government can be nominated to the National Register of Historic Places by either the State Historic Preservation Officer of the state in which they are located or by the federal agency which has administered them. In either case, the U. S. Secretary of the Interior makes the final decision as to whether or not the property meets the criteria for entry on the National Register of Historic Places.

As we stated in our letter of February 21, 1974, we do intend to nominate the Brumbaugh house to the National Register. However, we would have no objections to the Corps of Engineers seeking the opinion of the Secretary of the Interior, as it is authorized to do by Executive Order 11593.

In the meantime, please let me know if we can be of any assistance in working out arrangements for preserving the Brumbaugh house.

Sincerely yours,

WILLIAM J. WEWER

Exhibit 20

NABEN-R

Mr. William J. Wewer
Executive Director
Pennsylvania Historical and Museum Commission
P. O. Box 1026
Harrisburg, Pennsylvania 17120

Dear Mr. Wewer:

In your letter of 12 April 1974 you advised that the Commission would nominate the Brumbaugh house at the Raystown Lake project to the Secretary of the Interior for inclusion on the National Register of Historic Places. You further indicated that you would have no objection to the Corps of Engineers seeking the opinion of the Secretary in this regard.

The procedure for nomination by this office as set forth in Corps of Engineers regulations requires such nominations to be submitted to the State Historic Preservation Officer for review and comment prior to submission to the Secretary of the Interior. It would appear that any independant action by this office would merely duplicate the Commission's efforts. We will be happy, however, to cooperate in the preparation of your report. Please do not hesitate to call upon us if we can be of assistance.

Sincerely yours,

GRAHAM J. NORTON, Jr.
LTC, Corps of Engineers
Deputy District Engineer
for Civil Works

CF:
Ch, Operations Div
Ch, Real Estate Div
Ch, Civ Proj Mgt Sec

Exhibit 21

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA FISH COMMISSION
REGION II OFFICE
R. D. #2
SOMERSET, PA. 15501

April 19, 1973

Mr. George E. Evans, Director
Urban & Regional Planning
L. Robert Kimball
202 Rosemont Drive
Coraopolis, Pa. 15108

Dear Mr. Evans:

Your letter of April 18, 1973, has been forwarded to our Bellefonte Office for answering. I am sure our Engineering Division can be of help to you.

Thank you for your cooperation.

Very truly yours,

Thomas F. Qualters
Regional Supervisor
PENNSYLVANIA FISH COMMISSION
Region II

TFQ:bak

cc: Mr. Jack Miller
Aquatic Biologist

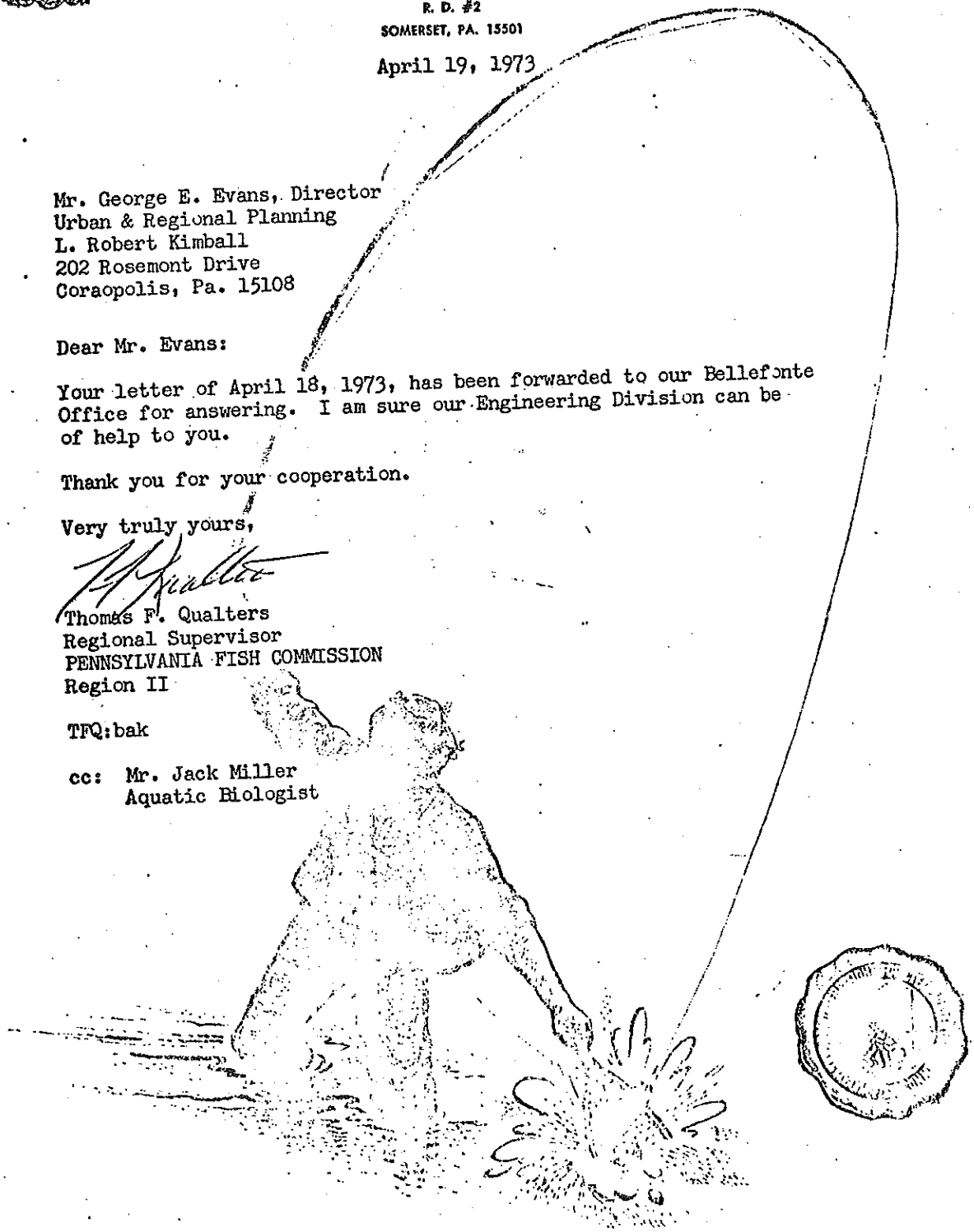


Exhibit 22

MEMORANDUM OF UNDERSTANDING
BETWEEN
U. S. ARMY ENGINEER DISTRICT, BALTIMORE
AND
PENNSYLVANIA FISH COMMISSION
COMMONWEALTH OF PENNSYLVANIA

Exhibit 23

MEMORANDUM OF UNDERSTANDING
BETWEEN
PENNSYLVANIA FISH COMMISSION
AND
THE U. S. ARMY ENGINEER DISTRICT, BALTIMORE

Relating to Fish Management and Enforcement of Fish Laws and Regulations and Enforcement of Pennsylvania Motor Boating Laws at Raystown Lake, Pa.

This Memorandum of Understanding entered into this 11th day of October 1974, by and between the PENNSYLVANIA FISH COMMISSION, Commonwealth of Pennsylvania, represented by the Executive Director (hereinafter referred to as the "COMMISSION":) and the U. S. Army Engineer District, Baltimore, (hereinafter referred to as the DISTRICT:), represented by the District Engineer executing this memorandum;

WITNESSETH, that:

WHEREAS, The Commission has been created to provide an adequate and flexible system of control, propagation, management, protection, and regulation of all fisheries in the Commonwealth of Pennsylvania; and

WHEREAS, Congress, under Public Law 87-874, authorized the development of the Raystown Lake project for the Juniata River substantially in accordance with the House Document Number 565 for the control of floods, enhancement of fish and wildlife through a balanced basic development of the general fish and wildlife and recreational potential created by the reservoir and assure fully effective public use and enjoyment, and the regulation of flow for general improvement of downstream conditions; and

WHEREAS, Section 4 of the Flood Control Act of 1944 (Ch 665, 58 Stat. 534) provides that the Chief of Engineers, under the supervision of the Secretary of War (now Secretary of the Army) is authorized to construct, maintain, and operate public park and recreational facilities in reservoir areas under control of such Secretary for the purpose of boating, swimming, bathing, fishing, and other recreational purposes, so long as the same is not inconsistent with the laws for the protection of fish and game of the State in which such area is situated; and

WHEREAS, the National Environmental Policy Act of 1969 (P.L. 91-190) encourages productive and enjoyable harmony between man and his environment, promotes efforts which will stimulate the health and welfare of man, and encourages cooperation with State and local governments to achieve these ends; and

WHEREAS, the Fish and Wildlife Coordination Act (16 U.S.C. 661-666c) provides for the consideration and coordination with other features of water-resource development programs through the effectual and harmonious planning development, maintenance, and coordination of wildlife conservation and rehabilitation; and

WHEREAS, the District and the Commission are desirous of protecting and, if possible, improving the existing aquatic life and recreational benefits of the Raystown Lake and of the Juniata River downstream from the dam; and

WHEREAS, the District and the Commission wish to implement the aforesaid acts through this interim agreement, pending implementation of a Fish and Wildlife Management Plan (Appendix D of

the Master Plan), will focus the skills and abilities of the Commission and the District toward achieving maximum public benefits and proper management of the wildlife involved.

NOW, THEREFORE

A. The District agrees on waters within the Raystown Lake project:

1. That the Commission has prime authority and responsibility in the establishment, administration and enforcement of the fishing and boating laws applicable to this project, provided that the rules and regulations promulgated by the Commission support and implement, where applicable, the intent of the Rules and Regulations Governing Public Use of Water Resources Development Projects Administered by the Chief of Engineers in Title 36, Chapter III, Part 327, Code of Federal Regulations;

2. To practice those forms of resource management as determined jointly by the Corps and the Commission to be beneficial to the fishery resources and which will enhance opportunities for fishery harvest by the Public, compatible with other authorized purposes of the project;

3. To consult with, or propose to, the Commission any recommendations for special regulations affecting fishing or boating in Raystown Lake

which might be desirable for reasons of public safety, administration or public use and enjoyment;

4. To consult with the Commission relative to the marking of the lake with buoys and the posting of speed limits, no wake zones, restricted or other control areas and to provide, install and maintain such buoys as are agreed to be necessary for the implementation of a plan mutually agreed upon by the Commission and the District. All buoys to be used shall be marked in conformance with the uniform Waterways Marking System;

5. To consult with the Commission prior to the issuance of any permits for ski ramps, regattas, marine parades, establishments of private markers, lighting, etc. All such permits issued will require the permittee to comply with all State rules and regulations;

6. To permit the harvest of fish by the public in accordance with laws and regulations of the Commonwealth of Pennsylvania [illegible];

7. To provide, install and maintain public ramps, parking areas, courtesy docks, etc., at various points as provided for by an approved master plan;

8. To notify the Commission, through the Department of Environmental Resources, in writing, of each reservoir drawdown prior thereto excepting drawdown for the reestablishment of normal lake levels following flood control operations and drawdown resulting from routine low flow augmentation. In case of emergency releases, telephone or oral notification will be provided. The District reserves the right, following issuance of the above notice, to make operational and other tests which may be necessary to insure the safe and efficient operation of the dam, for inspection and maintenance purposes, and for the gathering of water quality data both within the impoundment and in the Juniata River downstream from the dam.

B. The Commission agrees:

1. To cooperate with the District by promulgating and enforcing regulations agreed upon as necessary to support and implement the intent of Title 36, Chapter III, Part 327, Code of Federal Regulations as they pertain to the waters within the project and by calling to the attention of proper authorities any violation of other Corps Rules and Regulations;

2. To recognize that the District and other Federal Agencies have the right and responsibility to

enforce, when appropriate within the boundaries of the Raystown Lake Project, all applicable Federal Laws, Rules and Regulations so as to provide the public with safe and healthful recreation opportunities and to provide protection to all federal property within the project:

3. To evaluate fish resources, to develop a fish management plan and to initiate and carry out approved management programs, such as, but not limited to, the restocking and introduction of game fish species;

4. To supply adequate manpower, tools and equipment necessary for carrying out duties as prime enforcement agency of Pennsylvania fishing and boating laws on Raystown Lake;

5. To inform the Park Manager of all emergencies or unusual activities occurring on Raystown Lake;

6. To provide periodic training to District employees in order to familiarize them with Commonwealth fishing and boating regulations.

C. The Commission and the District mutually agree:

1. To meet jointly at least once annually before 1 May, and to provide for other meetings as deemed necessary for discussion of matters

relating to the management of aquatic resources and visitor use on waters within the Raystown Lake project and the Juniata River downstream from the dam;

2. To encourage the joint publication of press releases and the interchange between parties of all pertinent agency policies, and objectives for the use and perpetuation of the aquatic resources of Raystown Lake and the Juniata River downstream from the dam, and for proper management of visitors so as to insure safe boating on the lake;

3. To enter into working arrangements as occasion demands for the use of the lands, construction and use of buildings and other facilities at the project.

4. Each and every provision of this Memorandum of Understanding is subject to the laws of the Commonwealth of Pennsylvania and the laws of the United States, and the delegated authority in each instance.

5. Nothing in this Memorandum of Understanding shall be construed as obligating either party hereto to the expenditure of funds or for the future payment of money in excess of appropriations authorized by law.

Exhibit 23

6. That no member of or delegate to Congress, or Resident Commissioner, shall be admitted to any share or part of this agreement, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit;

7. This Memorandum of Understanding shall become effective when signed by the parties hereto and shall continue in force until terminated by mutual agreement or by either party upon six (6) months notice in writing to the other of his intention to do so. This Memorandum of Understanding is an interim agreement only pending implementation of the Fish and Wildlife Management Plan (Appendix D, Master Plan). Amendments to this Memorandum of Understanding may be proposed by either party and shall become effective upon written approval by both parties.

IN WITNESS WHEREOF, the parties hereto have executed this Memorandum of Understanding as of the day and year first written above.

U. S. ARMY ENGINEER DISTRICT, BALTIMORE

By _____
ROBERT S. McGARRY
Colonel, Corps of Engineers
District Engineer

WITNESS:

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA FISH COMMISSION

_____
Administrative Secretary

By _____
Ralph W. Abele, Executive Director

Exhibit 23

MEMORANDUM OF UNDERSTANDING
BETWEEN
U. S. ARMY ENGINEER DISTRICT, BALTIMORE
AND
PENNSYLVANIA GAME COMMISSION

COMMONWEALTH OF PENNSYLVANIA

Exhibit 24

MEMORANDUM OF UNDERSTANDING
BETWEEN
PENNSYLVANIA GAME COMMISSION
AND
THE U. S. ARMY ENGINEER DISTRICT, BALTIMORE

Relating to Wildlife Management and Enforcement of Game Laws of the Commonwealth of Pennsylvania at Raystown Lake, Pa.

This Memorandum of Understanding entered into this 11th day of October 1974, between the Pennsylvania Game Commission, Commonwealth of Pennsylvania, represented by the Executive Director, (hereinafter called the "Commission"); and the U. S. Army Engineer District, Baltimore (hereinafter called the "District") represented by the District Engineer executing this memorandum of understanding;

WITNESSETH, that:

WHEREAS, The Commission has been created to provide an adequate and flexible system of control, propagation, management, protection, and regulation of all wildlife in the Commonwealth of Pennsylvania; and

WHEREAS, Congress, under Public Law 87-874, authorized the development of the Raystown Lake project for the Juniata River substantially in accordance with the House Document Number 565 for the control of floods, enhancement of fish and wildlife through a balanced basic development of the general fish and wildlife and recreational potential created by the reservoir and assure fully effective public use and enjoyment, and the regulation of flow for general improvement of downstream conditions; and

WHEREAS, Section 4 of the Flood Control Act of 1944 (Ch 665, 58 Stat. 534) provides that the Chief of Engineers, under the supervision of the Secretary of War (now Secretary of the Army) is authorized to construct, maintain, and operate public park and recreational facilities in reservoir areas under control of such Secretary for the purpose of boating, swimming, bathing, fishing, and other recreational purposes, so long as the same is not inconsistent with the laws for the protection of fish and game of the State in which such area is situated; and

WHEREAS, the National Environmental Policy Act of 1969 (P.L. 91-190) encourages productive and enjoyable harmony between man and his environment, promotes efforts which will stimulate the health and welfare of man, and encourages cooperation with State and local governments to achieve these ends; and

WHEREAS, the Fish and Wildlife Coordination Act (16 U.S.C. 661-666c) provides for the consideration and coordination with other features of water-resource development programs through the effectual and harmonious planning development, maintenance, and coordination of wildlife conservation and rehabilitation; and

WHEREAS, the District is desirous of providing maximum benefits from the Raystown Lake project through the proper management of wildlife and related resources based on a balanced evaluation of the social, economic, monetary, and environmental consideration involved, and of creating new opportunities for the people of the Commonwealth of Pennsylvania to use and enjoy their environment; and

WHEREAS, the District desires to provide for the safeguarding of human life by providing safe hunting at Raystown Lake; and

WHEREAS, the District and the Commission wish to implement the aforesaid acts through this interim agreement, pending implementation of a Fish and Wildlife Management Plan (Appendix D of the Master Plan), will focus the skills and abilities of the Commission and the District toward achieving maximum public benefits and proper management of the wildlife involved.

NOW, THEREFORE

A. The District agrees within the Raystown Lake Project:

1. To cooperate with the Commission which has prime authority in the enforcing of Pennsylvania Game laws, by the enforcement of said laws and regulations as contained in Title 36, Chapter 3, Section 327, Code of Federal Regulations;

2. To practice those forms of resource management that will benefit wildlife and will enhance opportunities for their harvest by the Public, compatible with other authorized purposes of the Project;

3. To consult with the Commission prior to issuing special regulations which might affect wildlife population controls at Raystown Lake;

Exhibit 24

4. To permit harvest of wildlife by the public in accordance with laws and regulations of the Commonwealth of Pennsylvania where consistent with project purposes.

B. The Commission agrees:

1. To evaluate game resources, to develop a wildlife management plan for the Raystown Lake project in harmony with the approved Master Plan, and to initiate and carry out Wildlife management programs in accordance with an approved management plan such as, but not limited to, the harvest, restocking and introduction of wildlife species, planting of crops for the benefit of wildlife, development of wildlife habitat, etc.;

2. To supply as determined by the Commission, adequate manpower, tools, and equipment necessary for carrying out duties as prime enforcement agency of Pennsylvania Game Laws at Raystown Lake;

3. To consult with the District before the issuance or promulgation of any special regulations pertaining to harvesting and managing of wildlife within the Raystown Lake Project;

Exhibit 24

4. To inform the Park Manager of emergencies and management activities occurring within the area;

5. To provide periodically, as mutually determined, training to District employees so as to familiarize them with Pennsylvania Game Laws and Commission regulations.

C. The Commission and the District mutually agree:

1. To meet jointly at least once annually before 1 May, and to provide for other meetings as deemed necessary for discussion of matters relating to the management of wildlife resources and of public use within the Raystown Lake Project;

2. To encourage the joint publication of press releases and the interchange between parties of all pertinent agency policies, and objectives for the wise use and perpetuation of the wildlife resources of Raystown Lake and for proper management in order to insure safe and productive hunting at the Lake;

3. To enter into working arrangements as occasion demands for the use of lands, buildings, and other facilities owned and operated by either party;

4. That each and every provision of this Memorandum of Understanding is subject to the laws of the Commonwealth of Pennsylvania and the laws of the United States, and the delegated authority in each instance;

5. That nothing in the Memorandum of Understanding shall be construed as obligating either party hereto to the expenditure of funds in excess of appropriations or allocations authorized by law;

6. That no member of or delegate to Congress, or Resident Commissioner, shall be admitted to any share or part of this agreement, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit;

7. That this Memorandum of Understanding shall become effective when signed by the parties hereto and shall continue in force until terminated by mutual agreement or by either party upon thirty (30) days notice in writing to the other of his intention to do so. This Memorandum of Understanding is an interim agreement only, pending implementation of the Fish and Wildlife Management Plan (Appendix D, Master Plan).

Exhibit 24

Amendments to this Memorandum of Understanding may be proposed by either party and shall become effective upon approval by both parties.

IN WITNESS WHEREOF the parties hereto have executed this Memorandum of Understanding as of the day and year first above written.

U. S. ARMY ENGINEER DISTRICT, BALTIMORE

By _____
ROBERT S. McGARRY
Colonel, Corps of Engineers
District Engineer

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA GAME COMMISSION

By _____
GLENN L. BOWERS
Executive Director

Exhibit 24

L. ROBERT KIMBALL
CONSULTING ENGINEERS

CIVIL ENGINEERING
SANITARY ENGINEERING
MECHANICAL ENGINEERING
PHOTOGRAMMETRIC ENGINEERING
SOILS & SUBSURFACE INVESTIGATION
SURVEYING

615 WEST HIGHLAND AVE., EBENSBURG, PENNSYLVANIA 15931 - PHONE (814) 472-7700
CABLE ADDRESS KIMENG, EBENSBURG

January 14, 1975

Dr. Donald Hoskins
Assistant State Geologist
Pennsylvania Topographic
and Geological Survey
Harrisburg, Pennsylvania 17120

Dear Dr. Hoskins:

During a phone conversation this date with Mr. Alan Geyer of the survey, I was referred to you regarding my questions on the Devonian in Huntingdon County.

In writing a few paragraphs on the geology of Raystown River Valley (now a lake of course), I discovered Mr. Ellison's publication on the Mahantango Formation and Mr. Frakes' publication on the non-red Upper Devonian across Pennsylvania. Because I was taught according to the original work by Butts, etc., I found myself researching the new work and remembering my field experience in the area in an attempt to come up with up-to-date information about the stratigraphy of the area for my written paragraphs and cross section.

Enclosed is my sketch of the stratigraphic column - comparing the original to the up-to-date. My questions involve Catskill boundaries both original and up-to-date, and the Mahantango Formation. Also enclosed are some paragraphs I wrote on the up-to-date work.

I am interested in any comments you may have on these paragraphs and the strat-column; and any help you can be to me regarding the following questions:

1. Having held a job with the construction company that did the Relocation of Rt. 994 near Entriken and across the lake I had the experience of seeing new road cuts through Portage-Chemung and Catskill formations and Pocono across the lake. The Saxton conglomerate can be seen in the road cut near the lake as two 5'-6' beds of

Exhibit 25

L. ROBERT KIMBALL
CONSULTING ENGINEERS

quartz pebble conglomerate. To the best of my recollections, there are red beds down section from the Saxton conglomerate. Unfortunately I haven't had the opportunity to go out and check this. But, according to the extent of Catskill as defined by Frakes, wouldn't this mean that Saxton conglomerate is now part of the Catskill? If so, the contact on available maps between Catskill and Fort Littleton would be moved. Could you give me an idea of how this would be stratigraphically?

2. According to Frakes' definition of Catskill, does the Catskill-Pocono contact move up to the top of red beds previously designated as lower Pocono beds and what happens, if anything, to the Patton red shale of the Pocono near Altoona?

3. Have I properly shown the Rush Formation on the strat-column?

4. Have I shown Fort Littleton properly on the strat-column?

5. How does the deposition of the Saxton conglomerate compare to that of the Pottsville conglomerate near Hazleton, Pa. in regards to source, area, and cause?

6. Is there anything written on the Devonian along the Allegheny Front? My home is at the base of the front, near Altoona along Spring Run and in Juniata Gap. Is there anything written about these gaps in the front and the alluvium (sometimes 40' thick) which fills the "valleys" between the front and Altoona?

This concludes my list of questions. I am in particular interested in the correctness of the strat-column. I will appreciate your help on this matter.

Sincerely,

L. ROBERT KIMBALL

John W. Conrad

John W. Conrad

Enclosures
JWC/jay
cc: E. Bednar

Exhibit 25

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
BUREAU OF TOPOGRAPHIC AND GEOLOGIC SURVEY
HARRISBURG, PENNSYLVANIA 17120

ARTHUR A. SOCOLOW
DIRECTOR AND STATE GEOLOGIST

DONALD M. HOSKINS
ASSISTANT DIRECTOR

January 17, 1975

Mr. John W. Conrad
L. Robert Kimball, Consulting Engineers
615 West Highland Avenue
Ebensburg, Pennsylvania 15931

Dear Mr. Conrad:

Your very interesting letter of January 14th arrived and I will try to give you our most up-to-date opinions on your questions. In recent years the Pennsylvania Geological Survey has been engaged in mapping along the Susquehanna and Juniata Rivers near Harrisburg and, more recently, in the Williamsport and Altoona areas. We have been mapping the full sequence of the rocks, therefore we have been engaged, at least in part, in mapping the Catskill and its subjacent and superjacent formations over this whole area. In the past year several of our staff members visited the Entriken section with the idea of attempting to resolve stratigraphic nomenclatural problems in the Altoona area as based on the new data we have produced from the Susquehanna region between Harrisburg and Williamsport coupled with the work of Butts and our work at Altoona. Most of us had never looked at these rocks very carefully and were quite surprised with what we saw.

First of all, let me say that the work done by Charles Butts and his associates in mapping in the early 1900s is very good. The contacts, by and large, are quite accurate. Since the time that Butts worked in the area, Brad Willard and others have made many suggested revisions to the stratigraphic names, most of which have not proved out in actual practice because they were not based on geologic mapping as was Butts' work.

I can perhaps best evaluate your stratigraphic section and your comments by telling you how we view these rocks and would tentatively call them at the present time for that area if we were remapping there. We are currently using the name Tonoloway for that area. This, in turn, is overlain by the Keyser Formation which, based on the most recent studies by Jean Berdan of the U. S. Geological Survey, includes the systemic boundary between the Silurian and Devonian. Overlying the Keyser is the Old Port Formation. In the Susquehanna/Juniata area it is usually impossible to separate out the small "Helderberg" limestone units because of the chert float and therefore we have embraced them as one. Much of what Butts has called Helderberg is apparently what we call Keyser.

The overlying "Coeymans-New Scotland" are now referred to as New Creek Limestone and Corriganville Limestone based on the work done recently by James Head in

his Ph.D dissertation at Brown University, 1969. They would be included in the Old Port. The black calcareous shale at the bottom of the Shriver Limestone as mapped by Butts is probably what we refer to now as the Mandata. The upper part of the Shriver Limestone of Butts and the Ridgeley Sandstone are as we now refer to them and are also included in the Old Port. Where the Ridgeley is mappable as a separate unit, we are mapping that separately.

The Onondaga Formation of Butts is generally called Needmore and is, in turn, overlain by the black Marcellus shale which we include with the Mahantango Formation in the Hamilton Group. The breakdown of the Mahantango Formation done by Ellison, which you note in your column, seems to be appropriate for the area in which he did his section measuring near Huntingdon and thus would probably be appropriate for the Entriken area.

The terms Rush and Fort Littleton, which were introduced by Willard, have been dropped by the Pennsylvania Geological Survey and in their place we are reverting to the terminology of Butts which includes the Tully as a separate unit where it can be mapped so, or as a member of the Mahantango Formation. Overlying this is the Harrell Formation which contains in some areas a black shale at the base referred to as the Burket Member. We are using the terms Harrell and Burket in the same sense as did Butts. Overlying the Harrell in this area is the Brallier Formation which we are accepting as the proper name for this area inasmuch as the type section is just south of the Huntingdon quadrangle. The Trimmers Rock is restricted to the Susquehanna/Juniata area between Harrisburg and Williamsport and is the same unit as the Brallier. Up to this part of the section we are in general agreement amongst the members of our mapping staff. However, above the Brallier the stratigraphy is less certain.

The stratigraphy that we have worked out in the Susquehanna Valley is not applicable in all units to the Williamsport area, to the Altoona area or to the Huntingdon/Hollidaysburg area. The Brallier is interpreted as prodelta marine deposits forming in the relatively quiet silt laden waters off the delta fronts and are analogous to the fore-set beds. Above the Brallier (Trimmers Rock in the Susquehanna region) we encounter a significant change from the rather uniform, silty, drab, gray rocks of the Brallier. In the Susquehanna/Juniata area we refer to these rocks as the Irish Valley Member of the Catskill Formation because they include red beds and alluvial fining upward sequences as well as marine beds. In the Entriken area we are uncertain what the situation is. We feel, however, that much of the lower part of Butts' Chemung is probably the equivalent of our Irish Valley Member but certainly cannot be called that because the sedimentology and the rock types are somewhat different. We do not know of any red beds in this lower Chemung. We would probably map his Brallier and Lower Chemung as one unit without dividing it unless the unit he mapped as Piney Ridge Sandstone is a delta front sandstone, at which point we would draw a contact similar to his. From the Piney Ridge Sandstone to the unit he mapped as Allegrippus, we would call "Chemung" for the time being. Based on our work in the Williamsport area, we will probably

Exhibit 26

be coming up with a new name shortly for the "Chemung". The Allegrippus and the Saxton Conglomerate are both delta front sandstone and conglomerate units; possibly the Saxton is a beach deposit. Because of its included red beds and alluvial fining upward sections, we would call this unit the Sherman Creek Member of the Catskill and the unit which Butts calls Hampshire, we would call the Duncannon Member of the Catskill. The Sherman Creek and Duncannon Members seem to possess unitary lithologies that can be generally traced over a large area except in the Altoona area where we have been unable to break them down, largely because of lack of exposure.

We continue the Duncannon Member of the Catskill upward through the highest fining upward alluvial section which contains red beds. Therefore, we would probably include the Lower Pocono in the Catskill Formation as a separate member. In the Susquehanna area we refer to this as the Spechty Kopf Member. There is debate between us and the U. S. Geological Survey as to whether this should be a member of the Pocono Formation or a member of the Catskill Formation. We feel that it belongs in the Catskill Formation because it is a continuation of the alluvial fining upward sequences with red beds similar to the Duncannon Member. We have not yet resolved where to place the Patton red shale in the Altoona area because we have not yet finished mapping that quadrangle but logically it belongs in the Catskill.

I mentioned the Saxton Conglomerate briefly before. Based on our knowledge of conglomerates which occur in many places in the Chemung-Catskill rocks, we believe that these are local beach-bar deposits which do not have the magnitude, of course, that the Pottsville Conglomerate does. They apparently were deposited in local areas off rivers whereas the Pottsville Conglomerate is the result of an alluvial river system such as perhaps a braided river system.

As I also mentioned briefly, we are currently working in the Altoona area and we have completed mapping of bedrock geology of a portion of it as well as we have done a ground water study of a portion of the area around the City of Altoona. Neither of these reports has dealt with the alluvium in the valleys up to this point. However, we will be concerning ourselves with the surficial deposits.

In response to the written portion of your report, I would note that we no longer are using any fossil as the distinction for drawing a contact. We are using the rock lithology to define units and we are more concerned with their sedimentology in assisting us in defining large formations and members.

I trust that this information will be of use to you in your report. I would recommend that you refer, if you need additional information, to U. S. Geological Survey Oil and Gas Investigation Chart OC-64 which is the most recent correlation chart of Devonian rocks in the Appalachian Basin. This was published in 1969 by several other people and myself and even now is out of date because we have advanced with additional mapping.

Exhibit 26

If you are interested in learning about some of the sedimentological interpretations we are making on the Middle and Upper Devonian, I would refer you to our Reports G62 and G63 which have to do with Upper Devonian marine, nonmarine transition and sedimentary environments in southern and northeastern Pennsylvania. These were published in 1972 and 1974 and represent the most recent thinking on these rocks. As soon as we have our new list of publications, we will send you a copy. The work done by Mr. Frakes, unfortunately, is of much less caliber and very unreliable and we are not using this in our stratigraphic work presently.

Yours sincerely,

Donald M. Hoskins
Assistant State Geologist

DMH:ms

Exhibit 26

FORM 0310-0500-0200 (7 13 A)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

Hollidaysburg
April 30, 1973

IN REPLY REFER TO

Huntingdon County
Raystown Reservoir

Mr. George E. Evans, Director
Urban & Regional Planning
L. Robert Kimball Consulting Engineers
202 Rosemont Drive
Coraopolis, Pennsylvania 15108

Dear Mr. Evans:

Reference is made to your letter of April 18, 1973, concerning studies done by our office on the Raystown Dam project in Huntingdon and Bedford Counties.

The only studies conducted by this office are the recently initiated Corridor-Location studies for L.R. 31037 and L.R. 31013, from T.R. 26 into the dam perimeter. We have not conducted any other studies or prepared reports that would be useful in the preparation of a Master Plan Design Memorandum. However, it may be feasible to contact the PennDOT Bureau of Advance Planning in Harrisburg and the Huntingdon County Planning Commission, Huntingdon, Pennsylvania, for any information they may have concerning this matter.

Thank you for your interest in contacting this office and we welcome the opportunity of meeting with you in the future to further discuss activities concerning the Raystown Dam project.

Very truly yours,

Thomas Colantino

Thomas Colantino, P.E.
District Engineer, 9-0

Exhibit 27

L. ROBERT KIMBALL
CONSULTING ENGINEERS

CIVIL ENGINEERING
SANITARY ENGINEERING
MECHANICAL ENGINEERING
PHOTOGRAMMETRIC ENGINEERING
SOILS & SUBSURFACE INVESTIGATION
SURVEYING

615 WEST HIGHLAND AVE., EBENSBURG, PENNSYLVANIA 15931 - PHONE (814) 472-7700
CABLE ADDRESS KIMENG, EBENSBURG

February 5, 1974

Mr. Lewis Keefer, Director
Bureau of Advanced Planning
PennDOT
Harrisburg, Pennsylvania 17100

Re: Huntingdon Co., Pa.
Raystown Lake

Dear Mr. Keefer:

This letter will confirm my recent telephone conversations with Mr. Allen Schade and Mr. Jerry Chiles relative to the proposed scenic highway on the east side of Raystown Lake. This proposed highway, which generally follows the ridge of Terrace Mountain, is being considered for inclusion in the master plan for the Raystown Lake being developed for the U.S. Army Corps of Engineers.

It is my understanding from these conversations that this route was initially considered as a Scenic Highway under the provisions of the 1966 Highway Beautification Program. However, due to lack of funds, planning never advanced beyond the initial assessment. I also understand that the 1973 Federal Highway Act calls for an updating of the Scenic Highway Study. However, these studies are just getting under way and no decisions have been made on which routes will be included in the System.

We trust that your office will give all due consideration to the location generally following the ridge of Terrace Mountain in Huntingdon County.

Sincerely,

L. ROBERT KIMBALL

Earl F. Neiderer

Earl F. Neiderer, P.E.
Senior Vice President
Engineering and Architecture

EFN/jay
cc: Mr. Kass, Mr. Kaufmann

Mr. Keefer - 717/787-5796
Mr. Schade - 717/787-5797

Exhibit 28

L. ROBERT KIMBALL

CONSULTING ENGINEERS

CIVIL ENGINEERING
SANITARY ENGINEERING
MECHANICAL ENGINEERING
PHOTOGRAMMETRIC ENGINEERING
SOILS & SUBSURFACE INVESTIGATION
SURVEYING

615 WEST HIGHLAND AVE., EBENSBURG, PENNSYLVANIA 15931 - PHONE (814) 472-7700
CABLE ADDRESS: KIMLNG, EBENSBURG

February 7, 1974

Mr. Robert Kopitnik, P.E.
District Engineer
District 9
PennDOT
N. Juniata Street
Hollidaysburg, Pa. 16648

Attn.: Mr. Edward Trofino
Pre-Construction Planning

Re: Huntingdon County
Raystown Lake Master Plan

Gentlemen:

Reference is made to the April 18, 1973 letter from Mr. George Evans of our firm and conversations relative to proposed highway improvements in the Raystown Lake area.

We are enclosing 2 sets of prints of the General Site Plan for the Raystown Lake Project. Kindly return one set to this office with current and proposed projects indicated. We would also appreciate your comments on the status of the Proposed Scenic Highway along the ridge of Terrace Mountain.

Thank you for your interest and we look forward to a meeting to discuss this matter.

Sincerely,

L. ROBERT KIMBALL

Earl F. Neiderer, P.E.

Enclosures
EFN/jay

cc: Mr. Kass, Mr. Kaufmann

Exhibit 29

MEMORANDUM OF UNDERSTANDING

BETWEEN THE

HUNTINGDON COUNTY CONSERVATION DISTRICT

AND THE

U. S. ARMY ENGINEER DISTRICT, BALTIMORE

Exhibit 30

MEMORANDUM OF UNDERSTANDING
BETWEEN THE
HUNTINGDON COUNTY CONSERVATION DISTRICT
AND THE
U. S. ARMY ENGINEER DISTRICT, BALTIMORE

This Memorandum of Understanding is between the Huntingdon County Conservation District, hereinafter called the Conservation District, and the District Engineer, U. S. Army Engineer District, Baltimore, hereinafter called the Corps.

In order to assure the coordination of effort, and to define the areas of responsibility for each signatory party, in planning and implementing a program to promote conservation of all natural resources, to provide watershed protection with the Raystown Lake and to promote flood prevention in the Juniata River Valley, procedures are established in this memorandum, which are intended to:

1. Minimize duplication of effort;

2. Maintain harmonious relations;

3. Pool available resources of manpower, equipment and materials so as to use these resources most effectively in solving mutual problems.

4. Review and update existing conservation programs and activities so that they will enhance the development of Raystown Lake.

5. Utilize the creative ideas of all personnel in order to develop the most progressive and practival conservation program possible within the Raystown Lake area while at the same time fostering and preserving our natural resources.

6. Assist in creating a greater awareness on the part of the general public of the importance of natural resources conservation and the need for their concern and cooperation.

7. Stimulate natural resources conservation action programs on the part of individuals, organizations, and agencies.

In order to achieve the foregoing objectives, the Conservation District will conduct its communications through the Park Manager, Raystown Lake, and will adhere to the following procedures and activities within the limits of its capabilities:

Exhibit 30

1. Furnish the Corps, a current list of District Directors and staff indicating their addresses, and the date of each regular Board of Directors meeting.

2. Notify the Corps of Conservation District meetings and invite the representatives to attend.

3. Request the Soil Conservation Service to supply the Corps annually with an updated list of names and addresses of their Area Conservationists and maps showing district work units with the District Conservationist in charge.

4. Invite the Corps to participate in the planning and implementation of the Conservation District's Long Range Program and in the development of an annual plan reflecting this program.

5. Secure a schedule of activities of the Corps within the Conservation District and recommend conservation activities which relate to the proposed recreational development and management programs at Raystown Lake Project.

   a. Conservation District representatives will visit the Corps at the Park Manager's office, at not less than three-month intervals, to review current programs and arrange to attend appropriate field reviews.

6. Invite a representative of the Corps to serve as an advisor in the development of those conservation plans where there are problems of mutual concern.

7. Make available to the Corps any maps, slides, motion picture films, displays, and printed materials applicable within the Conservation District.

8. Make available to the Corps soil survey data for planning and will consult with the Corps on problems of erosion and sediment control at Raystown Lake.

The Corps will, within the limits of its capabilities;

1. Cooperate with the Conservation District in the development and implementation of Long Range and Annual programs.

Exhibit 30

2. Provide the Conservation District with a copy of the Master Plan for Raystown Lake, plans of proposed and current construction, and areas related thereto, at a time that would allow the district to make meaningful recommendations related to the conservation of the soil and water-related resources of the area.

3. Cooperate with the Conservation District and inform it of watershed problems involving soils, sedimentation, flooding, drainage, and revegetating of disturbed areas where these factors affect or are affected by the maintenance or construction of recreational facilities. Before revegetating disturbed areas, appropriate soils tests will be employed when deemed necessary for successful revegetation.

4. Furnish the Conservation District with a list of Corps personnel assigned to the Conservation District's area.

5. Consult with the District and its representatives in implementing an agriculture leasing program and game habitat program. This consultation should take place at a stage in planning that is prior to final implementation.

6. Supply upon request to the Conservation District any available maps, printed materials, photo slides, films, displays, that pertain to conservation district programs.

Exhibit 30

AGREEMENT

It is mutually agreed by the parties, hereto, that this Memorandum of Understanding shall become effective on the date of the latest signature below.

U. S. ARMY ENGINEER DISTRICT, BALTIMORE

DATE _____ COL. ROBERT S. McGARRY
DISTRICT ENGINEER

HUNTINGDON COUNTY CONSERVATION DISTRICT

DATE _____ ARCHIE L. CARBAUGH
CHAIRMAN
BOARD OF DIRECTORS

PENNSYLVANIA DEPARTMENT OF
ENVIRONMENTAL RESOURCES

DATE _____ SECRETARY MAURICE K. GODDARD
CHAIRMAN, PENNA. DEPT. OF
ENVIRONMENTAL RESOURCES

Exhibit 30

Mr. John W. Swigart
President
Huntingdon County Historical Society
Huntingdon, Pennsylvania 16652

Dear Mr. Swigart:

It has been determined by the District Engineer, Baltimore District, Corps of Engineers, that the structure known as the Brumbaugh Home and surrounding grounds situated on Tract 1804-1 of the Raystown Lake Project is available for historical purposes.

This letter will serve as permission to the Huntingdon County Historical Society, its members and agents, to enter the said structure and surrounding grounds for the purpose of protecting and maintaining them until such time as a formal lease is executed. The Society will not, without specific permission of the District Engineer, alter the premises in any manner excepting for such repairs as may be necessary to maintain the structure in good condition. The Society also agrees that it will not occupy or permit the structure to be occupied for any purpose whatsoever under the terms of this letter.

This permission is granted because of the urgency requiring the Huntingdon County Historical Society to assure the preservation of this structure pending the development of plans and programs for its ultimate use and in advance of lease negotiations, processing, execution and delivery of a formal instrument. The Society affirms that it presently intends to enter into a lease with the Government for the purposes of preserving, operating and maintaining this structure for historical purposes.

This permission is granted subject to the additional conditions:

a. That the use and occupation of the property being used hereby shall be subject to the general supervision and approval of the officer having immediate jurisdiction over said property, hereinafter referred to as "said officer" and to such rules and regulations regarding ingress,

Exhibit 31

[illegible] safety, sanitation, and security as may be [illegible] from time to time.

b. That the Huntingdon County Historical Society has inspected and knows the condition of the property and it is understood that the same is hereby granted to use the property without any representation or warranty by the Government whatsoever, and without obligation on the part of the Government to make any alterations, repairs, or additions thereto.

c. That all portions of the property shall at all times be protected and maintained in good order and condition by and at the expense of the Huntingdon County Historical Society.

d. That the right is hereby reserved to the United States, its officers, agents, and employees, to enter upon the said premises at any time and for any purpose necessary or convenient in connection with river and harbor and flood-control work, to remove timber therefrom, and to flood the premises whenever necessary, and the Huntingdon County Historical Society shall have no claim for damages of any character on account thereof against the United States or any officer, agent, or employee thereof.

e. That the United States shall not be responsible for damages to property or injuries to persons which may arise from or be incident to the use and occupation of the said premises, or for damages to the property of the Huntingdon County Historical Society, or for damages to the property or injuries to the person of the Huntingdon County Historical Society's officers, agents, servants, or employees, or others who may be on said premises at their invitation or the invitation of any one of them, arising from or incident to the flooding of the said premises by the Government or flooding from any other cause, or arising from or incident to any other Governmental activities; and the Huntingdon County Historical Society shall hold the United States harmless from any and all such claims.

Exhibit 31

[illegible] Society, please so indicate by signing [illegible] and returning it to this office.

Sincerely yours,

GRAHAM J. [illegible], Jr.
LTC, Corps of [illegible]
Deputy District [illegible]
for Civil Works

The above terms and conditions are hereby accepted.

John W. Swigart
President Huntingdon County Historical Society

Date: June 11, 1974

Exhibit 31

L. ROBERT KIMBALL
CONSULTING ENGINEERS

CIVIL ENGINEERING
SANITARY ENGINEERING
MECHANICAL ENGINEERING
PHOTOGRAMMETRIC ENGINEERING
SOILS & SUBSURFACE INVESTIGATION
SURVEYING

202 ROSEMONT DRIVE, CORAOPOLIS, PA. 15108 PHONE (412) 264-6[illegible]
(412) 321-[illegible]

April 18, 1973

Huntingdon County Planning Commission
Courthouse
Huntingdon, Pennsylvania 16652

Dear Sir:

Our firm has recently entered into a contract with the Corps of Engineers, Baltimore District, for the preparation of a Master Plan Design Memorandum for the Susquehanna River Basin, Raystown Reservoir, Raystown Branch, Juniata River in Huntingdon and Bedford Counties, Pennsylvania. Accordingly, we are now requesting from your office any type of existing information and reports, recently prepared, which may be useful in the preparation of this Design Memorandum. This would be material published or experience gained only since the preparation of Design Memorandum No. 15, Sedimentation Ranges and Investigations, with OCE approval dated July, 1970. The Corps will supply us with copies of all their own prior reports and findings. If a fee or charge is necessary, please include an invoice.

We also intend to keep your office fully informed of our activities, and to meet with you from time to time to conduct progress report meetings, with the Corps in attendance.

Thank you for your cooperation.

Sincerely,

L. ROBERT KIMBALL
Consulting Engineers

George E. Evans, Director
Urban & Regional Planning

GEE:ck

cc: Karl F. Kaufmann
Outdoor Recreation Planner
Corps of Engineers-Baltimore District

Exhibit 32

L. ROBERT KIMBALL
CONSULTING ENGINEERS

CIVIL ENGINEERING
SANITARY ENGINEERING
MECHANICAL ENGINEERING
PHOTOGRAMMETRIC ENGINEERING
SOILS & SUBSURFACE INVESTIGATION
SURVEYING

615 WEST HIGHLAND AVE., EBENSBURG, PENNSYLVANIA 15931 - PHONE (814) 472-7700
CABLE ADDRESS KIMENG, EBENSBURG

February 18, 1974

Mr. James C. Lodge
Director of Planning
Huntingdon County Planning Commission
Court House
Huntingdon, Pennsylvania 16652

Re: Raystown Lake
Master Plan

Dear Mr. Lodge:

It was a pleasure meeting with you and Dr. Fisher last week. Your time and comments were appreciated.

I have reviewed the Sketch Comprehensive Plan for the Woodcock Valley, and we will incorporate those land uses in the final project area land use plan. As I stated, when the Preliminary Draft has been approved by the Corps, the Huntingdon County Planning Commission will be invited to review it. Also, any comments you should care to make relative to the General Site Plan, or the proposed project area zoning plan for those areas outside of the Woodcock Valley area would be appreciated at this time.

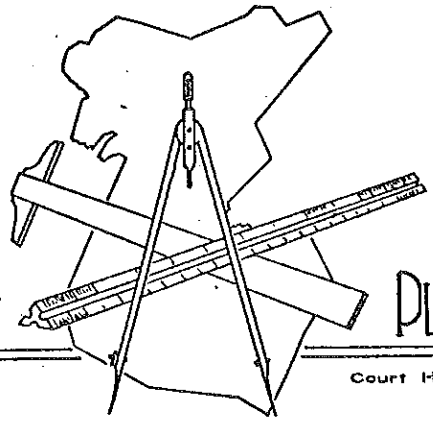
Sincerely,

L. ROBERT KIMBALL

Duane L. Mohney
Landscape Architect

DLM/jay

Exhibit 33



HUNTINGDON COUNTY PLANNING COMMISSION

Court House - Huntingdon, Pennsylvania - 16652

February 21, 1974

Mr. Duane L. Mohney
Landscape Architect
L. Robert Kimball, Consulting Engineers
615 West Highland Avenue
Ebensburg, Pennsylvania 15931

Dear Mr. Mohney:

Thank you for your letter of February 18. We will certainly look forward to reviewing the public land use plan when it has been approved by the Army Corps. I believe we discussed at our meeting on February 13 the desirability of changing the general site plan to include a more coherent internal roadway system.

For land uses outside of both the Corps area and the Woodcock Valley study I would direct you to the adopted Land Use Plan for the County as there are no municipal land use plans for those areas. Unfortunately we have no copies for distribution but the Land Use Plan may be reviewed here in our office.

May I stress once more that any reference to land use outside the Corps area as a "zoning plan" is highly inappropriate. We cannot foresee municipal zoning within the Woodcock Valley within the immediate future.

Sincerely,

James Lodge

James C. Lodge
Director of Planning

JCL:smm

F: gc

Exhibit 34

L. ROBERT KIMBALL

CONSULTING ENGINEERS

CIVIL ENGINEERING
SANITARY ENGINEERING
MECHANICAL ENGINEERING
PHOTOGRAMMETRIC ENGINEERING
SOILS & SUBSURFACE INVESTIGATION
SURVEYING

615 WEST HIGHLAND AVE., ebensburg, pennsylvania 15931 - phone (814) 472-7700
CABLE ADDRESS: KIMENG, EBENSBURG

February 8, 1974

Dr. Kenneth Rockwell
Biology Department
Juniata College
Huntingdon, Pennsylvania 16652

Re: Raystown Lake
Proposed Juniata College
Field Station

Dear Dr. Rockwell:

Pursuant to our telephone conversation of yesterday, I would like to take this opportunity to thank you for your time and thoughts concerning the proposed Juniata College Field Station. Your inputs will certainly be considered in formulating the final master plan.

I look forward to talking with Mr. Fisher concerning the project, and would also appreciate receiving from you any written comments or material you would care to make available to me. Perhaps a meeting could be arranged to discuss the field station, and the environment of the Raystown Valley in general.

Sincerely,

L. ROBERT KIMBALL

Duane L. Mohney
Landscape Architect

DLM/jay

Exhibit 35

L. ROBERT KIMBALL

CONSULTING ENGINEERS

615 WEST HIGHLAND AVE., EBENSBURG, PENNSYLVANIA 15931 - PHONE (814) 472-7700
CABLE ADDRESS KIMENG, EBENSBURG

CIVIL ENGINEERING
SANITARY ENGINEERING
MECHANICAL ENGINEERING
PHOTOGRAMMETRIC ENGINEERING
SOILS & SUBSURFACE INVESTIGATION
SURVEYING

February 18, 1974

Dr. Robert Fisher
Biology Department
Juniata College
Huntingdon, Pa. 16652

Re: Raystown Lake
Master Plan

Dear Dr. Fisher:

Just a short note to thank you for your time last week in meeting with me to discuss the Raystown Lake project. Your comments and thoughts are much appreciated.

As we discussed, could you please send me any written material you may have developed on the Juniata College Raystown Field Station, or any other comments you may care to make concerning ecological or environmental aspects of the lake.

Sincerely,

L. ROBERT KIMBALL

Duane L. Monney
Landscape Architect

DLM/jay

Exhibit 36

DEPARTMENT OF THE ARMY

LEASE

RIVER AND HARBOR OR FLOOD CONTROL PROPERTY

ON RAYSTOWN LAKE, Huntingdon, Pennsylvania

No. DACW-31-1-73-672

THIS LEASE, made between the Secretary of the Army, of the first part, and
The Board of Trustees of Juniata College, Huntingdon, Pennsylvania 16652

of the second part, WITNESSETH:

That the Secretary of the Army, by virtue of the authority contained in Title 10, United States Code, section 2667, and for the consideration hereinafter set forth, hereby leases to the party of the second part, hereinafter designated as the lessee, for a ten (10) year period beginning upon the execution of this lease, with an option to renew, for two (2) additional ten (10) years periods, but in no event exceeding a total aggregate of thirty (30) years, but revocable at will by the Secretary of the Army, the following described property for environmental, educational and recreational purposes: approximately 365 acres over Tracts 2300, 2301, 2302, 2303, 2304, 2307 and 2308 as identified under Exhibit "A" attached hereto and made a part hereof.

THIS LEASE is granted subject to the following conditions:

1. That the lessee shall pay to the United States rental in the amount of $1.00 for the term and other good and valuable considerations as provided in condition 29 and the lessee shall also pay to the United States on demand any sum which may have to be expended after the expiration, revocation, or termination of this lease in restoring the premises to the condition required by Condition 23, alternate thereof. Compensation shall be made payable to the Treasurer of the United States and forwarded by the lessee direct to District Engineer, Corps of Engineers, Baltimore, P.O. Box 1715, Baltimore, Maryland 21203.

Exhibit 37

in addition to the land-use regulations to which reference is made in Condition No. 20 ...ease, the use and occupation of the property leased hereby shall be subject to the general ...ision and approval of the officer having immediate jurisdiction over said property, hereinafter referred to as "said officer", and to such rules and regulations regarding ingress, egress, safety, sanitation, and security as may be prescribed by him from time to time. Use of the premises and any part of the reservoir shall be in accordance with the Project Master Plan.

3. That, as of the commencement date of this lease, an inventory and condition report of all personal property and improvements of the Government included in this lease shall be made by a representative of the Government and a representative of the lessee to reflect the then present condition of said property. A copy of said inventory and condition report shall be attached hereto and become a part hereof, as fully as if originally incorporated herein. Upon the expiration, revocation, or termination of this lease a similar inventory and condition report shall be prepared and submitted to the said officer, said inventory and condition report to constitute the basis for settlement by the lessee with said officer for leased property shown to be lost, damaged, or destroyed, any such property to be either replaced or restored to the condition required by Condition No. 23 hereof, or at the election of the Government reimbursement made therefor by the lessee at the then current market value thereof.

DELETED

4. That the lessee has inspected and knows the condition of the leased property and it is understood that the same is hereby leased without any representation or warranty by the Government whatsoever, and without obligation on the part of the Government to make any alterations, repairs, or additions thereto.

5. That, subject to the limitations of Condition No. 23 hereof with respect to the restoration of the leased property, alternate *all portions of the leased property shall at all times be protected and maintained in good order and condition by and at the expense of the lessee.*

6. That the lessee shall neither transfer nor assign this lease or any property on the demised premises, nor sublet the demised premises or any part thereof or any property thereon, nor grant any interest, privilege, or license whatsoever in connection with this lease without permission in writing from the said officer.

7. That the right is hereby reserved to the United States, its officers, agents, and employees, to enter upon the said premises at any time and for any purpose necessary or convenient in connection with river and harbor and flood-control work, and to flood the leased premises or to alter Lake levels including draw down whenever necessary and the lessee shall have no claim for damages of any character on account thereof against the United States or any officer, agent, or employee thereof.

8. That the United States shall not be responsible for damages to property or injuries to persons which may arise from or be incident to the use and occupation of the said premises, or for damages to the property of the lessee, ~~or for injuries to the person of the lessee (if an individual)~~, or for damages to the property or injuries to the person of the lessee's officers, agents, servants, or employees, or others who may be on said premises at their invitation or the invitation of any one of them, arising from or incident to the flooding of the said premises by the Government or flooding from any other cause, or arising from or incident to any other Governmental activities; and the lessee shall hold the United States harmless from any and all such claims.

9. That the lessee shall at all times exercise due diligence in the protection of the demised premises against damage or destruction by fire and other causes.

10. That any property of the United States damaged or destroyed by the lessee incident to the lessee's use and occupation of the said property shall be promptly repaired or replaced by the lessee to the satisfaction of the said officer, or in lieu of such repair or replacement the lessee shall, if so required by the said officer, pay to the United States money in an amount sufficient to compensate for the loss sustained by the United States by reason of damages to or destruction of Government property.

11. That the lessee shall cut no timber, conduct no mining or drilling operations, remove no sand, gravel, or kindred substances from the ground, ~~except in connection with authorized work~~

12. That the lessee shall comply with all applicable laws, ordinances, and regulations of the State, county, and municipality wherein the said demised premises are located, with regard to construction, sanitation, licenses or permits to do business, and all other matters.

13. That the lessee shall not construct any permanent structure on the said demised premises, and shall not construct any temporary structure or advertising sign thereon without the prior written consent of the said officer.

14. That the lessee shall pay to the proper authority, when and as the same becomes due and payable, all taxes, assessments, and similar charges, which, at any time during the term of this lease, may be taxed, assessed, or imposed upon the Government or upon the lessee with respect to or upon the leased premises. In the event any taxes, assessments, or similar charges are imposed with the consent of the Congress upon property owned by the Government and included in this lease (as opposed to the leasehold interest of the lessee therein), this lease shall be renegotiated so as to accomplish an equitable reduction in the rental provided above, which shall not be greater than the difference between the amount of such taxes, assessments, or similar charges and the amount of any taxes, assessments, or similar charges which were imposed upon such lessee with respect to his leasehold interest in the premises prior to the granting of such consent by the Congress; provided that, in the event that the parties hereto are unable to agree, within ninety (90) days from the date of imposition of such taxes, assessments, or similar charges, on a rental which, in the opinion of the said officer constitutes a reasonable return to the Government on the leased property, then, in such event, the said officer shall have the right to determine the amount of the rental, which determination shall be binding on the lessee subject to appeal in accordance with Condition No. 15 of this lease.

15. (a) That, except as otherwise provided in this lease, any dispute concerning a question of fact arising under this lease which is not disposed of by agreement shall be decided by the said officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the lessee. The decision of the said officer shall be final and conclusive unless, within 30 days from the date of receipt of such copy, the lessee mails or otherwise furnishes to the said officer a written appeal addressed to the Secretary of the Army. The decision of the Secretary or his duly authorized representative for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence. In connection with any appeal proceeding under this condition, the lessee shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. Pending final decision of a dispute hereunder, the lessee shall proceed diligently with the performance of the contract and in accordance with the said officer's decision.

(b) This Condition does not preclude consideration of law questions in connection with decisions provided for in paragraph (a) above: Provided, that nothing in this Condition shall be construed as making final the decision of any administrative official, representative, or board on a question of law.

16. That this lease may be terminated by the lessee at any time by giving to the Secretary of the Army, through the said officer, at least ten (10) days' notice in writing provided that, in case of such termination, no refund by the United States of any rental theretofore paid shall be made, and provided further, that in the event the said notice is not given at least ten (10) days prior to the rental due date, the lessee shall be required to pay the rental for the period or term shown in Condition No. 1 hereof.

17. That the lessee shall pay the cost, as determined by the said officer, of producing and/or supplying any utilities and other services furnished by the Government or through Government-owned facilities for the use of the lessee, including the lessee's proportionate share of the cost of

...tion and maintenance of the Government-owned facilities by which such utilities or services are ...oduced or supplied. The Government shall be under no obligation to furnish utilities or services. Payment shall be made in the manner prescribed by the said officer upon bills rendered monthly.

18. That for such period as the lessee is in possession of the leased property pursuant to the provisions and conditions of this lease the lessee shall procure and maintain at the lessee's cost a standard fire and extended coverage insurance policy or policies on the leased property to the full insurable value thereof. The lessee shall procure such insurance from any responsible company or companies. The policy or policies evidencing such insurance shall provide that in the event of loss thereunder the proceeds of the policy or policies, at the election of the Government, shall be payable to the lessee to be used solely for the repair, restoration, or replacement of the property damaged or destroyed, any balance of the proceeds not required for the repair, restoration, or replacement of the property damaged or destroyed to be paid to the Government, and that in the event the Government does not elect by notice in writing to the insurer within sixty (60) days after the damage or destruction occurs to have the proceeds paid to the lessee for the purposes hereinabove set forth, then such proceeds shall be paid to the Government, provided however, that the insurer, after payment of any proceeds to the lessee in accordance with the provisions of the policy or policies, shall have no obligation or liability with respect to the use or disposition of the proceeds by the lessee. Nothing herein contained shall be construed as an obligation upon the Government to repair, restore, or replace the leased property or any part thereof.

19. That no Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this lease or to any benefits to arise therefrom. Nothing, however, herein contained shall be construed to extend to any incorporated company, if the lease be for the general benefit of such corporation or company.

20. That the lessee shall maintain, in a manner satisfactory to the said officer, terraces and other soil and water conservation structures that may be in existence upon said premises at the beginning of or that may be constructed during the term of this lease, and the use of the said leased premises by the lessee shall be in accordance with good soil conservation practices and with the land-use regulations attached hereto and made a part of this lease.

21. That the lessee shall not sell or deal in beer, wine, or any intoxicating liquors on the said leased premises, or permit on the said premises any gambling or games of chance, or install and operate or permit to be installed or operated any device or conduct any activities thereon which in the opinion of the said officer are contrary to good morals or are otherwise objectionable.

22. That the lessee will cooperate in programs for the management and improvement of fish and wildlife ~~and in furtherance thereof the leased premises will be subject to free public use for fishing and hunting. Hunting and fishing are permitted in accordance with all applicable Federal, State and local laws for the protection of fish and game except in prohibited areas designated by the said officer.~~

23. That, on or before the date of expiration of this lease or its termination by the lessee, the lessee shall at the lessee's cost vacate the leased property, remove the property of the lessee therefrom, and restore the leased property to as good order and condition as that existing upon the date of commencement of the term of this lease, less ordinary wear and tear and damage to the leased property covered by insurance and for which the Government shall receive or has received insurance funds in lieu of having the damaged property repaired, replaced, or restored. If, however, this lease is revoked, the lessee shall vacate the leased property, remove the property of the lessee therefrom, and restore the leased property to the condition aforesaid within such time as the Secretary of the Army may designate except as otherwise provided in Condition No. 28 hereof. In either event, and except as otherwise provided in Condition No. 28 hereof, if the lessee shall fail or neglect to remove the property of the lessee and so restore the leased property, then, at the option of the Secretary of the Army, the property of the lessee shall either become the property of the United States without compensation therefor, or the Secretary of the Army may cause it to be removed and the leased property to be so restored at the expense of the lessee, and no claim for damages against the United States or its officers or agents shall be created by or made on account of such removal and restoration work.

Exhibit 37

(ALTERNATE). That, on or before the date of expiration of this lease, or its termination by the lessee, the lessee shall at the lessee's cost vacate the leased property, remove the property of the lessee therefrom, and restore the premises to as good order and condition as that existing upon the date of commencement of the term of this lease, damages beyond the control of the lessee and due to fair wear and tear excepted. If, however, this lease is revoked, the lessee shall vacate the leased property, remove the property of the lessee therefrom, and restore the leased property to the condition aforesaid within such time as the Secretary of the Army may designate except as otherwise provided in Condition No. 28 hereof. In either event, and except as otherwise provided in Condition No. 28 hereof, if the lessee shall fail or neglect to remove the property of the lessee and so restore the leased property, then, at the option of the Secretary of the Army, the property of the lessee shall either become the property of the United States without compensation therefor, or the Secretary of the Army may cause it to be removed and the leased property so to be restored at the expense of the lessee, and no claim for damages against the United States or its officers or agents shall be created by or made on account of such removal and restoration work.

24. That if more than one lessee is named in this lease the obligations of said lessees herein contained shall be joint and several obligations.

25. That, except as otherwise specifically provided, any reference herein to "~~District Engineer~~ Corps of Engineers," "District Engineer," or "said officer" shall include his duly appointed successors and his authorized representatives.

26. That all notices to be given pursuant to this lease shall be addressed, if to the lessee, to The Board of Trustees, Juniata College, Huntingdon, Pennsylvania 16652

if to the Government, to the District Engineer, Corps of Engineers, Baltimore, Md, P.O. Box 1715, Baltimore, Maryland 21203

or as may from time to time otherwise be directed by the parties. Notice shall be deemed to have been duly given if and when inclosed in a properly sealed envelope, or wrapper, addressed as aforesaid, and deposited postage prepaid (or, if mailed by the Government, deposited under its franking privilege) in a post office or branch post office regularly maintained by the United States Government.

27. The lessee warrants that no person or selling agency has been employed or retained to solicit or secure this lease upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the lessee for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this lease without liability or in its discretion to require the lessee to pay, in addition to the lease rental or consideration, the full amount of such commission, percentage, brokerage, or contingent fee.

28. That in the event the United States revokes this lease or in any other manner materially reduces the area covered thereby or materially affects its use by the lessee prior to the date of expiration thereof, an equitable adjustment in the rental paid or thereafter to be paid under this lease shall be made. If the leased premises are used for agricultural purposes, the lessee shall have the right to harvest, gather, and remove from said land such crops as may have been planted or grown on said land, or, in the alternative, the said officer may require the lessee to vacate immediately and, if funds are available, compensation will be made to the lessee for the value of the crops remaining upon said land. Such adjustment of rental or right to harvest, gather, and remove said crops shall be evidenced by a supplemental agreement, in writing, executed by the said officer and the lessee: PROVIDED, HOWEVER, That none of the provisions of this paragraph shall apply in the event of revocation because of a breach by the lessee of any of the terms and conditions of this lease and the crops remaining upon said land shall become the property of the United States upon the effective date of such revocation.

DELETED

Exhibit 37

29. That the lessee shall make available, annually, to the District Engineer the results of any and all tests or experiments and the conclusions and/or findings of these tests and experiments. The lessee shall furnish on request copies of such related or back-up materials as may be useful to Federal or State agencies.

30. That the lessee shall cooperate with State and Federal agencies on projects dealing with environment, ecology, fish and wildlife, and recreation programs to the extent that such cooperation will not interfere with the lessee's use of the leased area.

31. That the lessee shall be responsible for posting of the leased area as required to control use of the area by the general public. Such postings, signs and locations shall be designated and approved by the said officer.

32. That the lessee shall cooperate with the Corps of Engineers in the development and presentation of an interpretive program for the general public and shall provide all pertinent data for such a program developed from the use of the leased area. The interpretive program shall be under the direct supervision of the District Engineer or his authorized representative.

33. That the lessee may establish an outdoor laboratory to study the inter-relationship of recreation and environment to develop activities that would enhance both functions.

34. That it is understood there shall be no residential facilities established under this lease.

35. That the lessee is required to coordinate the use of the leased area with other universities and institutes conducting similar type programs. Use of the area by others shall be approved by the said officer.

36. The grantee furnished as part of this contract an assurance (Exhibit "B") that he will comply with Title VI of the Civil Rights Act of 1964 (78 Stat. 241) and Department of Defense Directive 5500.11 issued pursuant thereto and published in Part 300 of Title 32, Code of Federal Regulations.

Exhibit 37

Before the execution of this lease, conditions were deleted, revised and added in the following manner:

Granting Clause and Conditions Nos. 2, 5, 8, 11, 22 and 25 were amended; and

Conditions Nos. 1 and 7 were revised; and

Conditions Nos. 3, 18, 23 and 28 were deleted; and

Conditions Nos. 29 thru 36 were added.

IN WITNESS WHEREOF I have hereunto set my hand by/authority of the/direction Assistant Secretary of the Army this 3rd *day of* February, 1975.

Gordon M. Hobbs
Assistant for Real Property
OASA (I&L)

THIS LEASE is also executed by the lessee this 28th *day of* March *,19* 73

Signed and sealed in the presence of:

[SEAL]
for the Board of Trustees of
Juniata College

(Post-Office Address)

Juniata College
Huntingdon, Pa. 16652

Exhibit 37

☆ U.S. GOVERNMENT PRINTING OFFICE: 1962—O-684267

L. ROBERT KIMBALL

CONSULTING ENGINEERS

CIVIL ENGINEERING
SANITARY ENGINEERING
MECHANICAL ENGINEERING
PHOTOGRAMMETRIC ENGINEERING
SOILS & SUBSURFACE INVESTIGATION
SURVEYING

615 WEST HIGHLAND AVE., ESPY BLDG. PENNSYLVANIA 16931 - PHONE (814) 472-7700
CABLE ADDRESS: KIMBALL EBENSBURG

February 7, 1974

Mr. John Binney, Superintendent
Huntingdon Area School District
Huntingdon, Pennsylvania 16652

Re: Raystown Lake Master Plan

Dear Mr. Binney:

Thank you so much for talking with me today regarding the Huntingdon Area School District's out lease on the Raystown Lake Project. Your interest and cooperation in the planning of the total project is greatly appreciated.

As we discussed, I would like to receive a copy of your lease, your program for your area, and any other comments on use that you would care to discuss.

Again, thanks for your interest in this matter.

Sincerely,

L. ROBERT KIMBALL

Duane L. Mohney
Landscape Architect

DLM/jay

Exhibit 38

HUNTINGDON AREA SCHOOLS
OFFICE OF THE SUPERINTENDENT
723 PORTLAND AVENUE
HUNTINGDON, PENNA. 16652
PHONE 643-4140

JOHN E. BINNEY
SUPERINTENDENT

CARL R. BRUNO
ASSISTANT SUPERINTENDENT

DONALD R. McCLOY
ELEMENTARY SUPERVISOR

HENRY J. STOUDT
ADMINISTRATIVE ASSISTANT

February 8, 1974

Mr. Duane Mohney
L. Robert Kimball Engineers
615 W. Highland Avenue
Ebensburg, PA 15931

Dear Mr. Mohney:

Enclosed are the items pertaining to the Raystown Project that you requested from this office.

We hope this material will be of help to you.

Very truly yours,

John E. Binney

John E. Binney
Superintendent

S
encls.

Exhibit 39

DEPARTMENT OF THE ARMY

LEASE

RIVER AND HARBOR OR FLOOD CONTROL PROPERTY

ON RAYSTOWN LAKE

No. DACW-31-1-72-634

THIS LEASE, made between the Secretary of the Army, of the first part, and Huntingdon Area School Board, Huntingdon, Pennsylvania

of the second part, WITNESSETH:

That the Secretary of the Army, by virtue of the authority contained in Title 10, United States Code, section 2667, and for the consideration hereinafter set forth, hereby leases to the party of the second part, hereinafter designated as the lessee, for a term of beginning 1 July *,19* 72 *and ending* 30 June *, 19* 73 *but revocable at will by the Secretary of the Army, the following described property for* educational *purposes:* outdoor on Tracts 1042, 1043 and 1044 containing approximately 10.36 acres of land of the Raystown Lake Flood Control Project as shown in red on the attached sketch and marked as Exhibit "A" attached hereto and made a part hereof

with rights of ingress and egress.

THIS LEASE is granted subject to the following conditions:

1. That the lessee shall pay to the United States rental in the amount of Twenty-five and 00/100 dollars ($ 25.00) *per annum, payable in advance, and the lessee shall also pay to the United States on demand any sum which may have to be expended after the expiration, revocation, or termination of this lease in restoring the premises to the condition required by Condition No. 23 hereof. Compensation shall be made payable to the Treasurer of the United States and forwarded by the lessee direct to* The District Engineer, U.S. Army Engineer District, Baltimore, P.O. Box 1715, Baltimore, Maryland 21203.

Exhibit 40

~~in addition to the land-use regulations to which reference is made in Condition No. 20~~ ~~[illegible]~~, the use and occupation of the property leased hereby shall be subject to the general [illegible]sion and approval of the officer having immediate jurisdiction over said property, hereinafter referred to as "said officer", and to such rules and regulations regarding ingress, egress, safety, sanitation, and security as may be prescribed by him from time to time.

3. That, as of the commencement date of this lease, an inventory and condition report of all personal property and improvements of the Government included in this lease shall be made by a representative of the Government and a representative of the lessee to reflect the then present condition of said property. A copy of said inventory and condition report shall be attached hereto and become a part hereof, as fully as if originally incorporated herein. Upon the expiration, revocation, or termination of this lease a similar inventory and condition report shall be prepared and submitted to the said officer, said inventory and condition report to constitute the basis for settlement by the lessee with said officer for leased property shown to be lost, damaged, or destroyed, any such property to be either replaced or restored to the condition required by Condition No. 23 hereof, or at the election of the Government reimbursement made therefor by the lessee at the then current market value thereof.

4. That the lessee has inspected and knows the condition of the leased property and it is understood that the same is hereby leased without any representation or warranty by the Government whatsoever, and without obligation on the part of the Government to make any alterations, repairs, or additions thereto.

5. That, subject to the limitations of Condition No. 23 hereof /Alternate with respect to the restoration of the leased property, all portions of the leased property shall at all times be protected and maintained in good order and condition by and at the expense of the lessee.

6. That the lessee shall neither transfer nor assign this lease or any property on the demised premises, nor sublet the demised premises or any part thereof or any property thereon, nor grant any interest, privilege, or license whatsoever in connection with this lease without permission in writing from the said officer.

7. That the right is hereby reserved to the United States, its officers, agents, and employees, to enter upon the said premises at any time and for any purpose necessary or convenient in connection with river and harbor and flood-control work, to remove timber therefrom, and to flood the leased premises whenever necessary, and the lessee shall have no claim for damages of any character on account thereof against the United States or any officer, agent, or employee thereof.

8. That the United States shall not be responsible for damages to property or injuries to persons which may arise from or be incident to the use and occupation of the said premises, or for damages to the property of the lessee, ~~or for injuries to the person of the lessee (if an individual)~~, or for damages to the property or injuries to the person of the lessee's officers, agents, servants, or employees, or others who may be on said premises at their invitation or the invitation of any one of them, arising from or incident to the flooding of the said premises by the Government or flooding from any other cause, or arising from or incident to any other Governmental activities; and the lessee shall hold the United States harmless from any and all such claims.

9. That the lessee shall at all times exercise due diligence in the protection of the demised premises against damage or destruction by fire and other causes.

10. That any property of the United States damaged or destroyed by the lessee incident to the lessee's use and occupation of the said property shall be promptly repaired or replaced by the lessee to the satisfaction of the said officer, or in lieu of such repair or replacement the lessee shall, if so required by the said officer, pay to the United States money in an amount sufficient to compensate for the loss sustained by the United States by reason of damages to or destruction of Government property.

11. That the lessee shall cut no timber, conduct no mining or drilling operations, remove no sand, gravel, or kindred substances from the ground, except in the exercise of mineral rights here-

Exhibit 40

... to the record o... r thereof, commit no waste of any k... or in any manner sub-... ange the contour or condition of the property hereby leased, except changes required in ... out soil and water conservation measures; but the lessee may salvage fallen or dead tim-... may be required for use as firewood.

12. That the lessee shall comply with all applicable laws, ordinances, and regulations of the State, county, and municipality wherein the said demised premises are located, with regard to construction, sanitation, licenses or permits to do business, and all other matters.

13. That the lessee shall not construct any permanent structure on the said demised premises, and shall not construct any temporary structure or advertising sign thereon without the prior written consent of the said officer.

14. That the lessee shall pay to the proper authority, when and as the same becomes due and payable, all taxes, assessments, and similar charges, which, at any time during the term of this lease, may be taxed, assessed, or imposed upon the Government or upon the lessee with respect to or upon the leased premises. In the event any taxes, assessments, or similar charges are imposed with the consent of the Congress upon property owned by the Government and included in this lease (as opposed to the leasehold interest of the lessee therein), this lease shall be renegotiated so as to accomplish an equitable reduction in the rental provided above, which shall not be greater than the difference between the amount of such taxes, assessments, or similar charges and the amount of any taxes, assessments, or similar charges which were imposed upon such lessee with respect to his leasehold interest in the premises prior to the granting of such consent by the Congress; provided that, in the event that the parties hereto are unable to agree, within ninety (90) days from the date of imposition of such taxes, assessments, or similar charges, on a rental which, in the opinion of the said officer constitutes a reasonable return to the Government on the leased property, then, in such event, the said officer shall have the right to determine the amount of the rental, which determination shall be binding on the lessee subject to appeal in accordance with Condition No. 15 of this lease.

15. (a) That, except as otherwise provided in this lease, any dispute concerning a question of fact arising under this lease which is not disposed of by agreement shall be decided by the said officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the lessee. The decision of the said officer shall be final and conclusive unless, within 30 days from the date of receipt of such copy, the lessee mails or otherwise furnishes to the said officer a written appeal addressed to the Secretary of the Army. The decision of the Secretary or his duly authorized representative for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence. In connection with any appeal proceeding under this condition, the lessee shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. Pending final decision of a dispute hereunder, the lessee shall proceed diligently with the performance of the contract and in accordance with the said officer's decision.

(b) This Condition does not preclude consideration of law questions in connection with decisions provided for in paragraph (a) above: Provided, that nothing in this Condition shall be construed as making final the decision of any administrative official, representative, or board on a question of law.

16. That this lease may be terminated by the lessee at any time by giving to the Secretary of the Army, through the said officer, at least ten (10) days' notice in writing provided that, in case of such termination, no refund by the United States of any rental theretofore paid shall be made, and provided further, that in the event the said notice is not given at least ten (10) days prior to the rental due date, the lessee shall be required to pay the rental for the period or term shown in Condition No. 1 hereof.

17. That the lessee shall pay the cost, as determined by the said officer, of producing and/or supplying any utilities and other services furnished by the Government or through Government-owned facilities for the use of the lessee, including the lessee's proportionate share of the cost of

maintenance of the Government-owned facilities by which such utilities or services are or supplied. The Government shall be under no obligation to furnish utilities or services. ...nt shall be made in the manner prescribed by the said officer upon bills rendered monthly.

18. That for such period as the lessee is in possession of the leased property pursuant to the provisions and conditions of this lease the lessee shall procure and maintain at the lessee's cost a standard fire and extended coverage insurance policy or policies on the leased property to the full insurable value thereof. The lessee shall procure such insurance from any responsible company or companies. The policy or policies evidencing such insurance shall provide that in the event of loss thereunder the proceeds of the policy or policies, at the election of the Government, shall be payable to the lessee to be used solely for the repair, restoration, or replacement of the property damaged or destroyed, any balance of the proceeds not required for the repair, restoration, or replacement of the property damaged or destroyed to be paid to the Government, and that in the event the Government does not elect by notice in writing to the insurer within sixty (60) days after the damage or destruction occurs to have the proceeds paid to the lessee for the purposes hereinabove set forth, then such proceeds shall be paid to the Government, provided however, that the insurer, after payment of any proceeds to the lessee in accordance with the provisions of the policy or policies, shall have no obligation or liability with respect to the use or disposition of the proceeds by the lessee. Nothing herein contained shall be construed as an obligation upon the Government to repair, restore, or replace the leased property or any part thereof.

19. That no Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this lease or to any benefits to arise therefrom. Nothing, however, herein contained shall be construed to extend to any incorporated company, if the lease be for the general benefit of such corporation or company.

20. That the lessee shall maintain, in a manner satisfactory to the said officer, terraces and other soil and water conservation structures that may be in existence upon said premises at the beginning of or that may be constructed during the term of this lease, and the use of the said leased premises by the lessee shall be in accordance with good soil conservation practices and with the land-use regulations attached hereto and made a part of this lease.

21. That the lessee shall not sell or deal in beer, wine, or any intoxicating liquors on the said leased premises, or permit on the said premises any gambling or games of chance, or install and operate or permit to be installed or operated any device or conduct any activities thereon which in the opinion of the said officer are contrary to good morals or are otherwise objectionable.

22. That the lessee will cooperate in programs for the management and improvement of fish and wildlife and in furtherance thereof the leased premises will be subject to free public use for fishing and hunting. Hunting and fishing are permitted in accordance with all applicable Federal, State and local laws for the protection of fish and game, except in prohibited areas designated by the said officer.

23. That, on or before the date of expiration of this lease or its termination by the lessee, the lessee shall at the lessee's cost vacate the leased property, remove the property of the lessee therefrom, and restore the leased property to as good order and condition as that existing upon the date of commencement of the term of this lease, less ordinary wear and tear and damage to the leased property covered by insurance and for which the Government shall receive or has received insurance funds in lieu of having the damaged property repaired, replaced, or restored. If, however, this lease is revoked, the lessee shall vacate the leased property, remove the property of the lessee therefrom, and restore the leased property to the condition aforesaid within such time as the Secretary of the Army may designate except as otherwise provided in Condition No. 28 hereof. In either event, and except as otherwise provided in Condition No. 28 hereof, if the lessee shall fail or neglect to remove the property of the lessee and so restore the leased property, then, at the option of the Secretary of the Army, the property of the lessee shall either become the property of the United States without compensation therefor, or the Secretary of the Army may cause it to be removed and the leased property to be so restored at the expense of the lessee, and no claim for damages against the United States or its officers or agents shall be created by or made on account of such removal and restoration work.

Exhibit 40

TERNATE). That, on or before the date of expiration of this lease, or its termination ssee, the lessee shall at the lessee's cost vacate the leased property, remove the property of ssee therefrom, and restore the premises to as good order and condition as that existing upon date of commencement of the term of this lease, damages beyond the control of the lessee and due to fair wear and tear excepted. If, however, this lease is revoked, the lessee shall vacate the leased property, remove the property of the lessee therefrom, and restore the leased property to the condition aforesaid within such time as the Secretary of the Army may designate except as otherwise provided in Condition No. 28 hereof. In either event, and except as otherwise provided in Condition No. 28 hereof, if the lessee shall fail or neglect to remove the property of the lessee and so restore the leased property, then, at the option of the Secretary of the Army, the property of the lessee shall either become the property of the United States without compensation therefor, or the Secretary of the Army may cause it to be removed and the leased property so to be restored at the expense of the lessee, and no claim for damages against the United States or its officers or agents shall be created by or made on account of such removal and restoration work.

24. That if more than one lessee is named in this lease the obligations of said lessees herein contained shall be joint and several obligations.

25. That, except as otherwise specifically provided, any reference herein to ~~"Division Engineer,"~~ "District Engineer," or "said officer" shall include his duly appointed successors and his authorized representatives.

26. That all notices to be given pursuant to this lease shall be addressed, if to the lessee, to John E. Binney, Superintendent, 723 Portland Ave., Huntingdon, Pennsylvania 16652

if to the Government, to the District Engineer, Corps of Engineers, P.O. Box 1715, Baltimore Maryland 21203

or as may from time to time otherwise be directed by the parties. Notice shall be deemed to have been duly given if and when inclosed in a properly sealed envelope, or wrapper, addressed as aforesaid, and deposited postage prepaid (or, if mailed by the Government, deposited under its franking privilege) in a post office or branch post office regularly maintained by the United States Government.

27. The lessee warrants that no person or selling agency has been employed or retained to solicit or secure this lease upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the lessee for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this lease without liability or in its discretion to require the lessee to pay, in addition to the lease rental or consideration, the full amount of such commission, percentage, brokerage, or contingent fee.

28. That in the event the United States revokes this lease or in any other manner materially reduces the area covered thereby or materially affects its use by the lessee prior to the date of expiration thereof, an equitable adjustment in the rental paid or thereafter to be paid under this lease shall be made. If the leased premises are used for agricultural purposes, the lessee shall have the right to harvest, gather, and remove from said land such crops as may have been planted or grown on said land, or, in the alternative, the said officer may require the lessee to vacate immediately and, if funds are available, compensation will be made to the lessee for the value of the crops remaining upon said land. Such adjustment of rental or right to harvest, gather, and remove said crops shall be evidenced by a supplemental agreement, in writing, executed by the said officer and the lessee: PROVIDED, HOWEVER, That none of the provisions of this paragraph shall apply in the event of revocation because of a breach by the lessee of any of the terms and conditions of this lease and the crops remaining upon said land shall become the property of the United States upon the effective date of such revocation.

29. That the lessee shall furnish a report of usage and programs, including maintenance and operation costs to this office at the termination of the lease and each successive renewal thereof, if any.

Exhibit 40

...e execution of this lease, conditions were deleted, revised and added in the following

...nditions 2, 5, 8 and 25 were amended.
Conditions 3, 18, First 23 and 28 were deleted.
Condition 29 was added.

IN WITNESS WHEREOF I have hereunto set my hand by authority of the Secretary of the Army this 28th *day of* February *, 19*72

David J Carson
... of the
U. S. ... Baltimore

THIS LEASE is also executed by the lessee this 21st *day of* February *, 19*72

Signed and sealed in the presence of:

Henry J. Staudt
Arlene H. Peoples

John E Beaney [SEAL]
723 Portland Ave
(Post-Office Address)
Huntingdon, Pa 16652

Exhibit 40

GOVERNMENT PRINTING OFFICE : 1962—O—684267

SUPPLEMENTAL AGREEMENT NO. 1
TO
DEPARTMENT OF THE ARMY LEASE
NO. DACW-31-1-72-634

WHEREAS, the Secretary of the Army granted the Huntingdon Area School Board, Huntingdon, Pennsylvania, a lease dated 28 February 1972, for a term of one (1) year, beginning 1 July 1972 and ending 30 June 1973, but revocable at the will of the Secretary of the Army, use of Tracts 1042, 1043, and 1044, containing approximately 10.36 acres of land for outdoor educational purposes,

WHEREAS, The Huntingdon Area School Board has requested the continued use of this area; and

WHEREAS, it has been determined that such continued use is in the best interest of the Government;

NOW THEREFORE, the granting clause of Department of the Army Lease No. DACW-31-1-72-634 is amended to read, beginning 1 July 1973 and ending 30 June 1974.

THAT ALL OTHER TERMS AND CONDITIONS of the aforesaid lease shall remain in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand by authority of the Secretary of the Army this 22nd day of August 1973.

David J. Caruso
DAVID J. CARUSO
Authorized Representative of
the District Engineer
U.S. Army Engineer District
Baltimore

THE TERMS AND CONDITIONS of this Supplemental Agreement No. 1 are hereby accepted this 24th day of August 1973.

HUNTINGDON AREA SCHOOL BOARD

BY John E. Bruning

TITLE Superintendent

Exhibit 40

SUPPLEMENTAL AGREEMENT NO. 2
TO
DEPARTMENT OF THE ARMY LEASE
NO. DACW-31-1-72-634

WHEREAS, the Secretary of the Army granted the Huntingdon Area School Board, Huntingdon, Pennsylvania, a lease dated 28 February 1972, for a term of one (1) year, beginning 1 July 1972 and ending 30 June 1973, but revocable at will by the Secretary of the Army, use of Tracts 1042, 1043 and 1044, containing approximately 10.36 acres of land for outdoor education purposes; and

WHEREAS, by Supplemental Agreement No. 1, dated 27 August 1973, the aforesaid lease was amended to extend the term of the lease for a period of one (1) year ending 30 June 1974; and

WHEREAS, the Huntingdon Area School Board has requested the continued use of this area; and

WHEREAS, it has been determined that such continued use can be made available for this purpose;

NOW THEREFORE, the granting clause of Department of the Army Lease No. DACW-31-1-72-634 is amended to read, beginning 1 July 1974 and ending 30 June 1975.

THAT ALL OTHER TERMS AND CONDITIONS of the aforesaid lease shall remain in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand by authority of the Secretary of the Army this 24th day of June 1974.

David J. Caruso
DAVID J. CARUSO
Authorized Representative of
the District Engineer
U.S. Army Engineer District,
Baltimore

The terms and conditions of this Supplemental Agreement No. 2 are hereby accepted this 13th day of June 1974.

HUNTINGDON AREA SCHOOL BOARD
BY [illegible]
TITLE Supt.

Exhibit 40

SUPPLEMENTAL AGREEMENT NO. 3
TO
DEPARTMENT OF THE ARMY LEASE
NO. DACW-31-1-72-634

WHEREAS, the Secretary of the Army granted the Huntingdon Area School Board, Huntingdon, Pennsylvania, a lease dated 28 February 1972, for a term of one (1) year, beginning 1 July 1972 and ending 30 June 1973, but revocable at will by the Secretary of the Army, use of Tract 1042, 1043 and 1044, Raystown Lake, containing approximately 10.36 acres of land for outdoor education purposes; and

WHEREAS, by Supplemental Agreement No. 1, dated 27 August 1973, the aforesaid lease was amended to extend the term of the lease for a period of one year, ending 30 June 1974; and

WHEREAS, by Supplemental Agreement No. 2, dated 24 June 1974, the aforesaid lease was amended to extend the term of the lease for a period of one year, ending 30 June 1975; and

WHEREAS, the Huntingdon Area School Board has requested the continued use of this area; and

WHEREAS, it has been determined that such continued use can be made available for this purpose;

NOW THEREFORE, the granting clause of Department of the Army Lease No. DACW-31-1-72-634 is amended to read, beginning 1 July 1975 and ending 30 June 1976.

THAT ALL OTHER TERMS AND CONDITIONS of the aforesaid lease shall remain in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand by authority of the Secretary of the Army this 27th day of May 1975.

B. J. FRANKEL
Chief, Real Estate Division

Exhibit 40

The terms and conditions of this Supplemental Agreement No. 3 are hereby accepted this 20th day of May 1975.

HUNTINGDON AREA SCHOOL BOARD

BY: _____

TITLE: Asst. Supt.

Exhibit 40

LEGEND

ALL SOILS AND GEOLOGIC MAP SERIES

0-15% Slope

15-30% Slope

30% Slope and Over

Dck / Cpo — Contact

PL — Property Line

TUSSEY MOUNTAIN

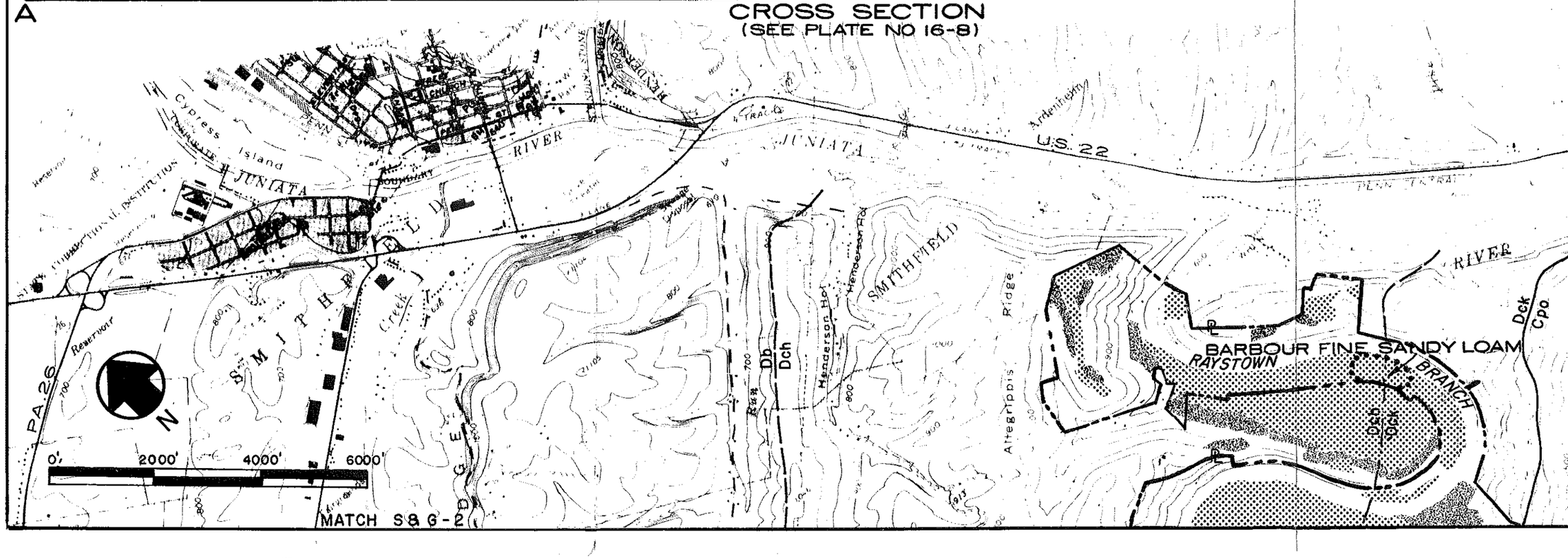
ORDOVICIAN — SILURIAN — DEVONIAN

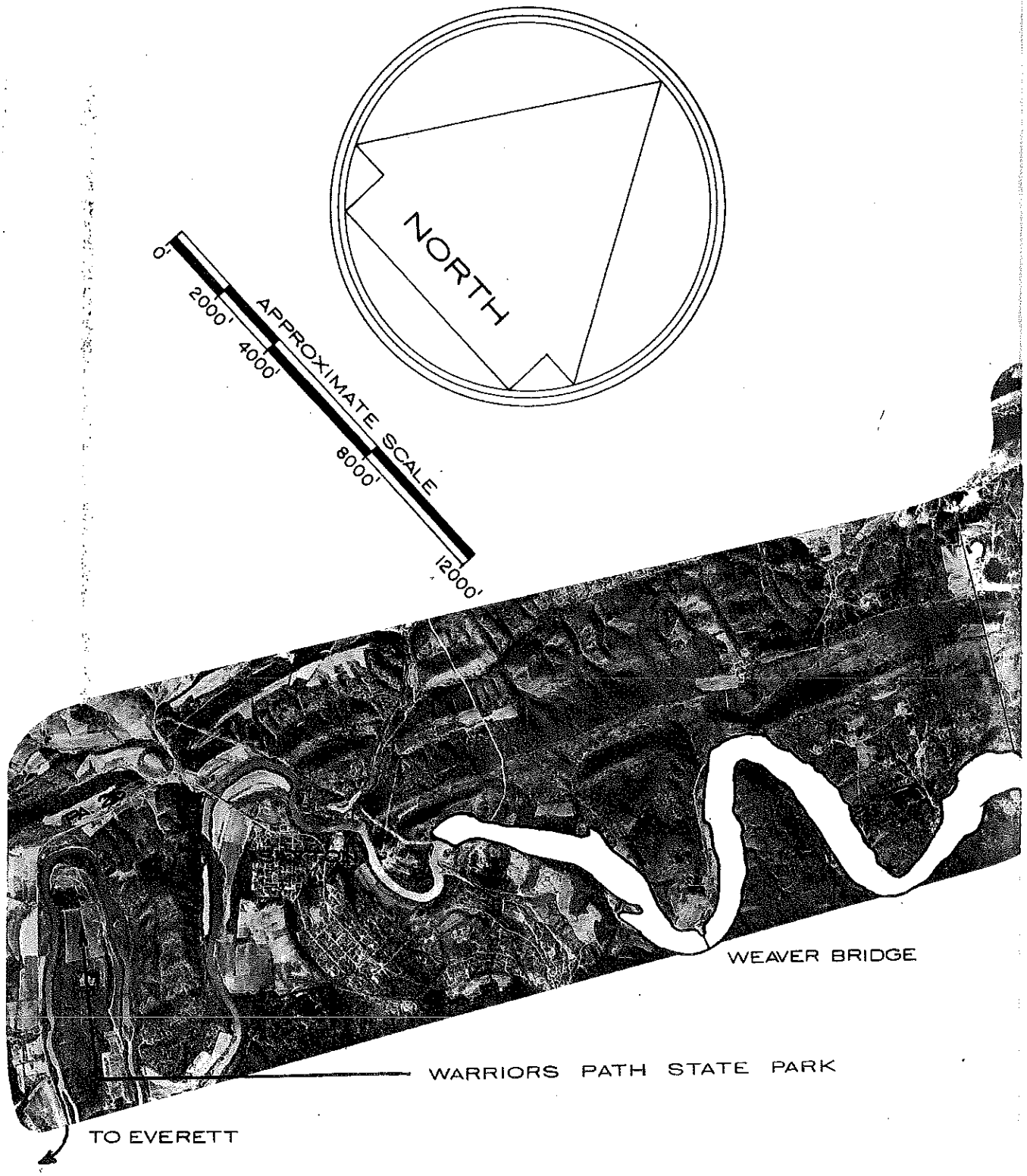
REEDSVILLE
OSWEGO
JUNIATA
TUSCARORA
CLINTON
McKENZIE (Smk)
BLOOMSBURG (Sb)
WILLS CREEK
TONOLOWAY
MARKLESBURG
KEYSER (Dk)
OLD PORT
NEEDMORE (Dnd)
MARCELLUS
MAHANTANGO
(Dhr) HARRELL
BRALLIER
CHEMUNG
RAYSTOWN RIVER
CATSKILL

Oru Oo Oj St Sc Swc Sw Dop Dm Dma Db Dch Dck

A

CROSS SECTION
(SEE PLATE NO 16-8)

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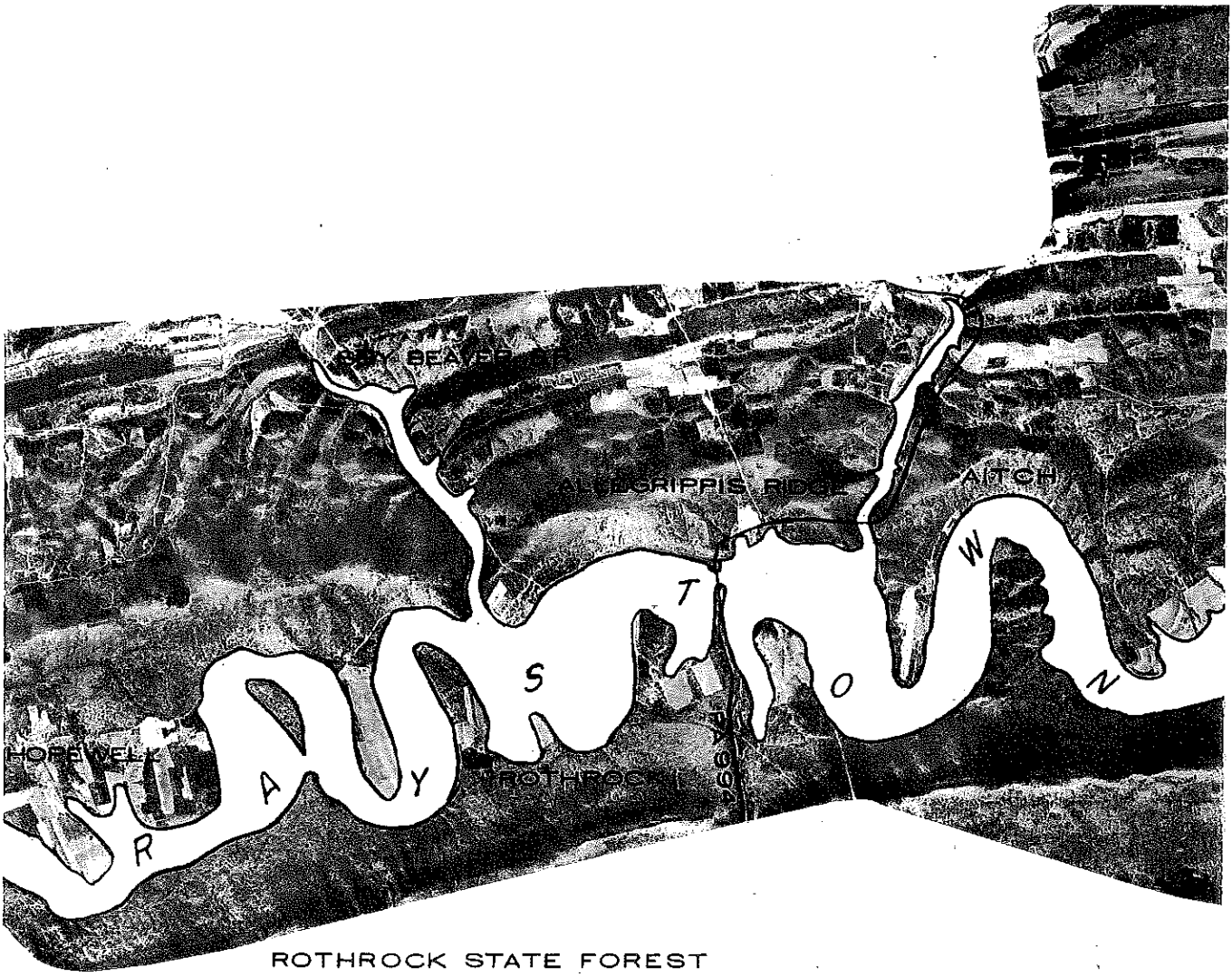
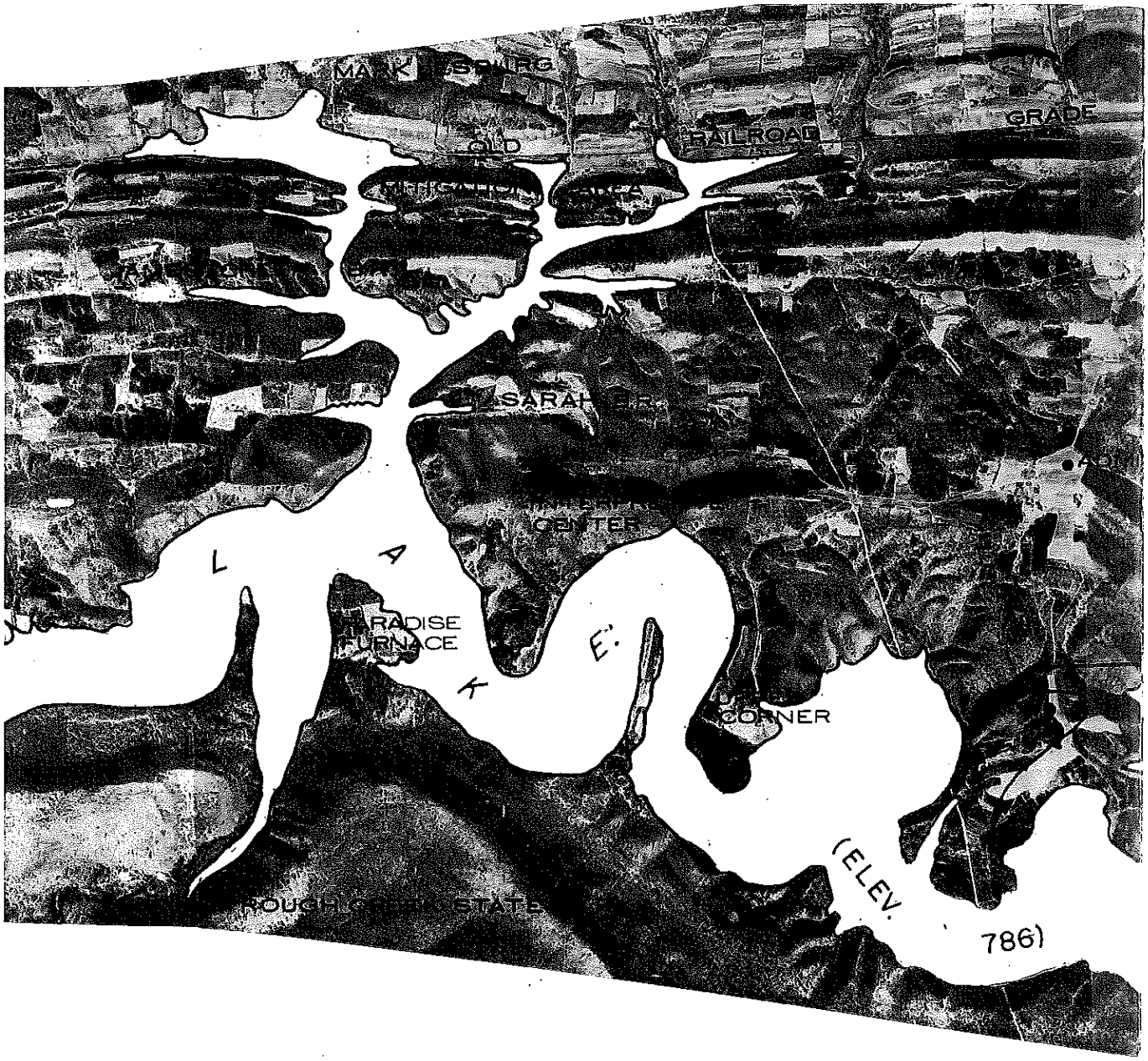
2000'
4000'
APPROXIMATE SCALE
8000'
12000'
WEAVER BRIDGE
WARRIORS PATH STATE PARK
TO EVERETT



ROTHROCK STATE FOREST


GRADE
RAILROAD
SARAH
CENTER
L A K E
PARADISE
FURNACE
CORNER
(ELEV.
786)



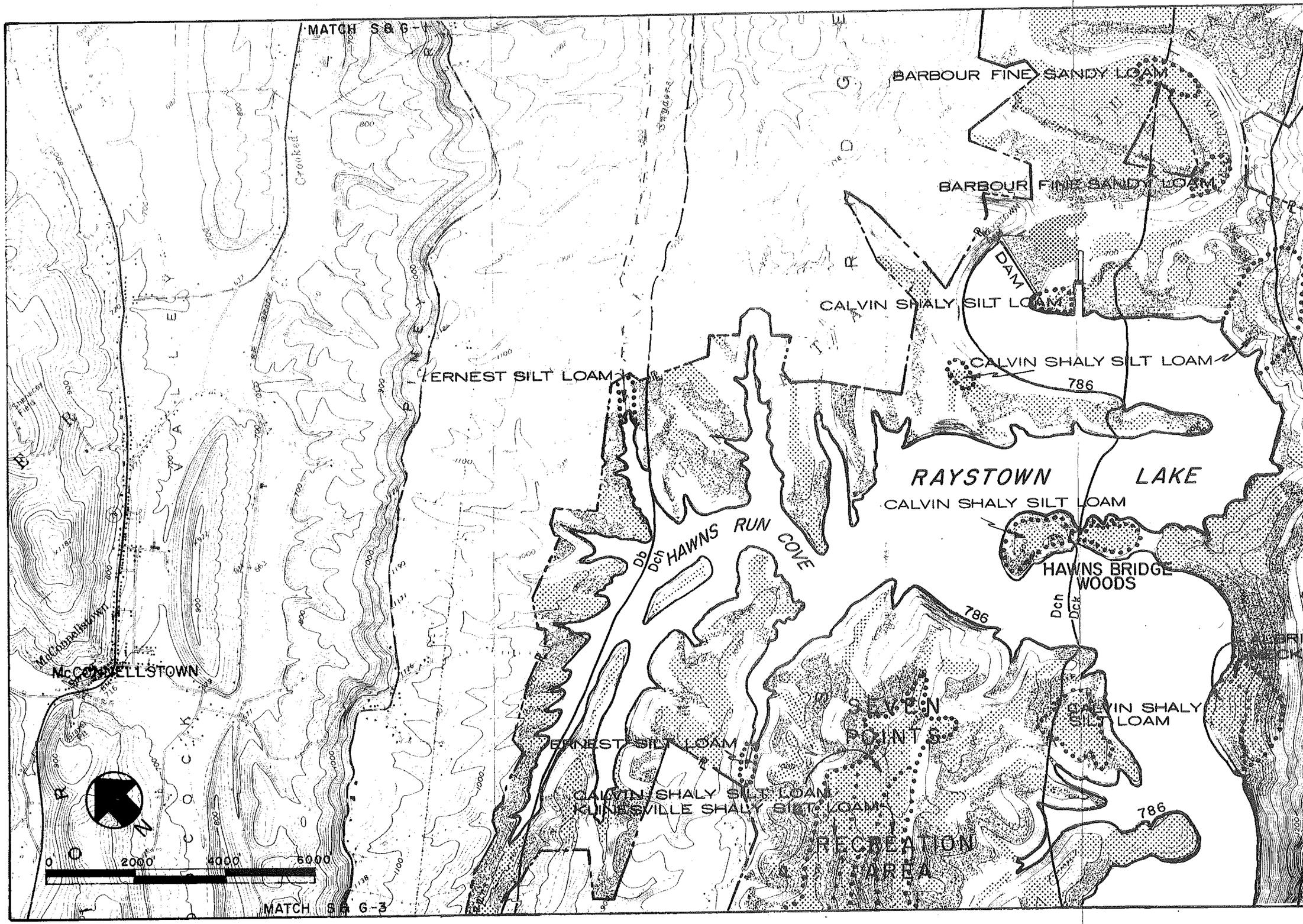
DEPARTMENT OF THE ARM
BALTIMORE DISTRICT CORPS OF ENGI
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVE
RAYSTOWN LAKE PROJE
AERIAL MOSAIC

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBE

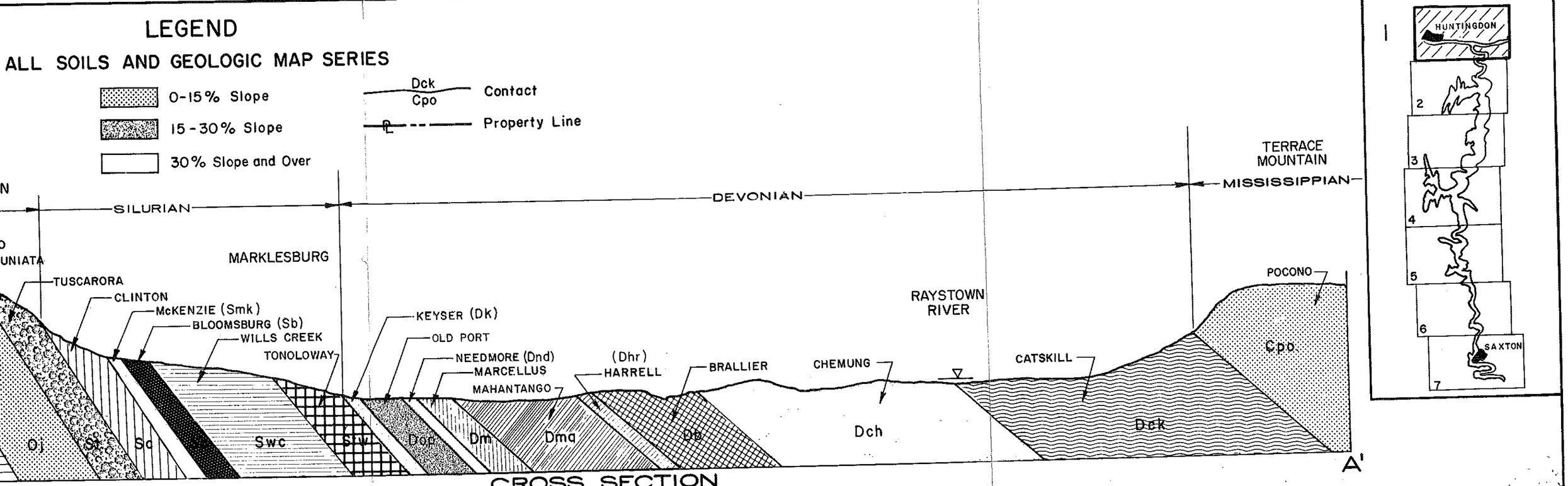
SCALE: AS NOTED | DATE 12/19/75 | SHEE

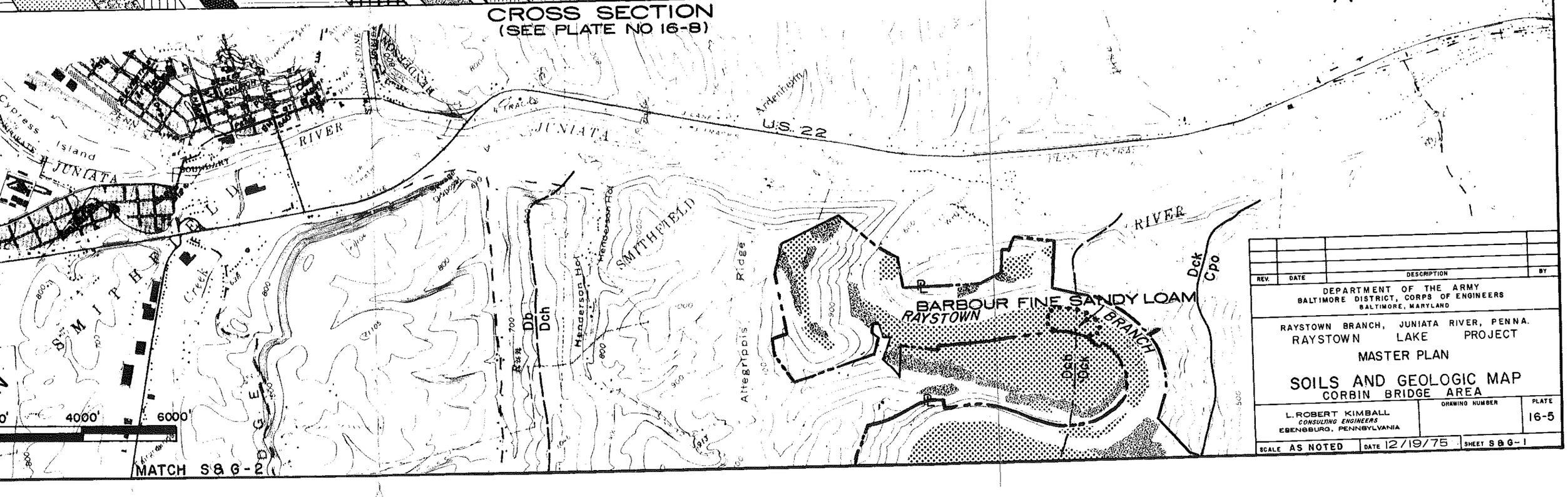

MATCH S&G-1
BARBOUR FINE SANDY LOAM
BARBOUR FINE SANDY LOAM
DAM
CALVIN SHALY SILT LOAM
CALVIN SHALY SILT LOAM
786
ERNEST SILT LOAM
RAYSTOWN LAKE
CALVIN SHALY SILT LOAM
HAWNS RUN COVE
Db
Dch
HAWNS BRIDGE WOODS
Dch
Dck
786
McCONNELLSTOWN
SEVEN POINTS
CALVIN SHALY SILT LOAM
ERNEST SILT LOAM
CALVIN SHALY SILT LOAM
KUINESVILLE SHALY SILT LOAM
786
RECREATION AREA
0
2000'
4000'
6000'
MATCH S&G-3

LEGEND

ALL SOILS AND GEOLOGIC MAP SERIES

- 0-15% Slope
- 15-30% Slope
- 30% Slope and Over
- Dck / Cpo — Contact
- ℄ - - - - Property Line





REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT
MASTER PLAN

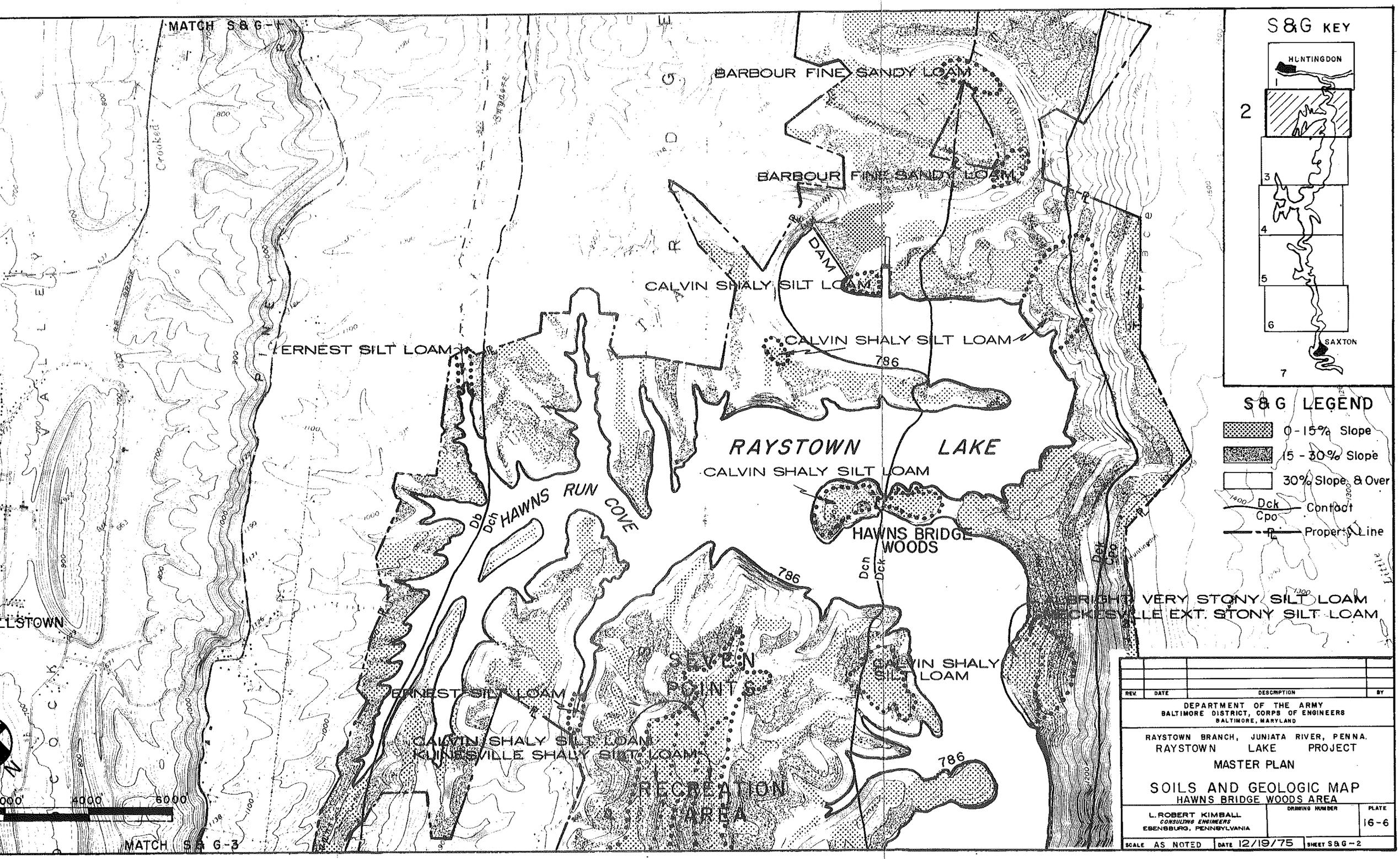
SOILS AND GEOLOGIC MAP
CORBIN BRIDGE AREA

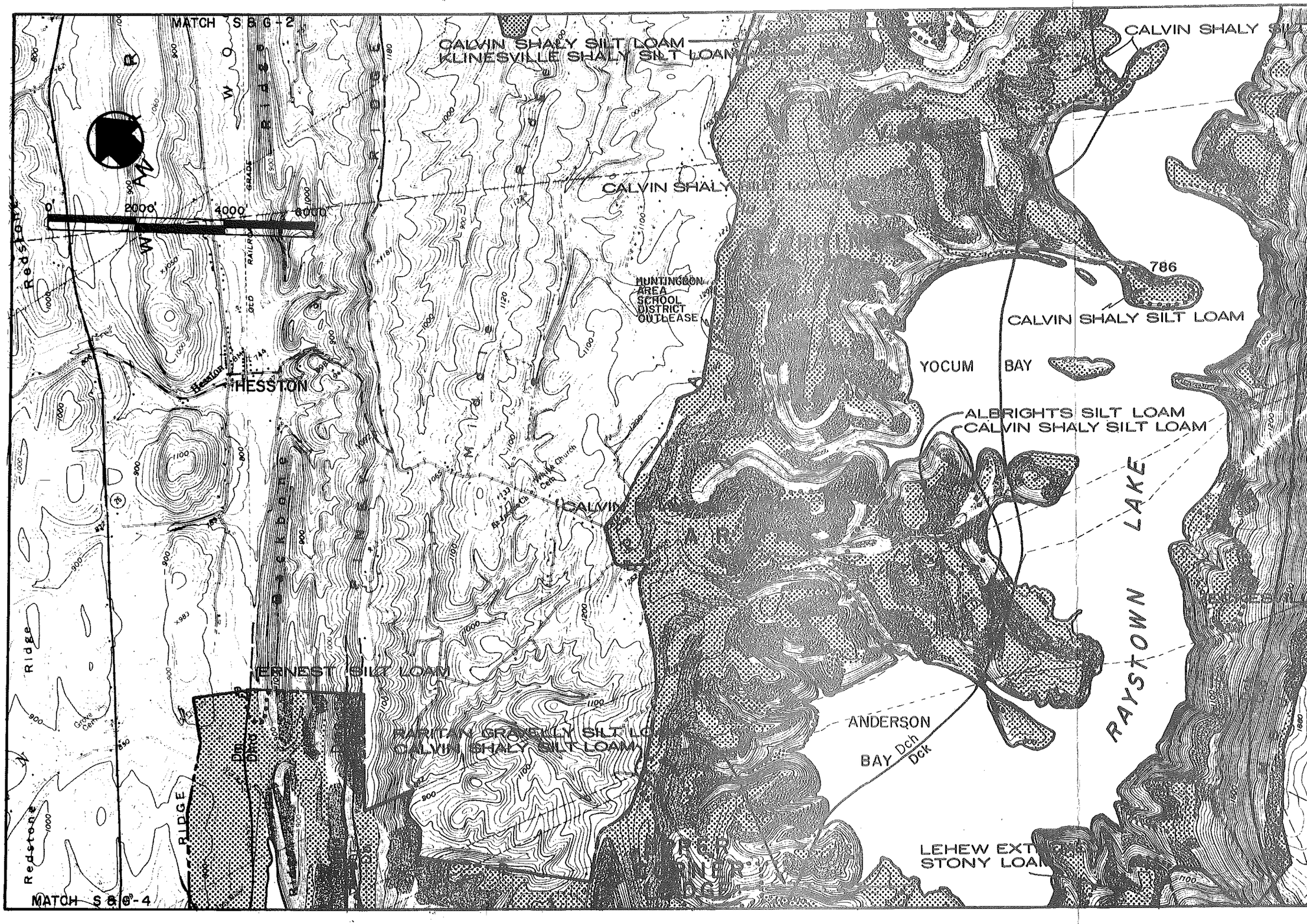
L. ROBERT KIMBALL
CONSULING ENGINEERS
EBENSBURG, PENNSYLVANIA

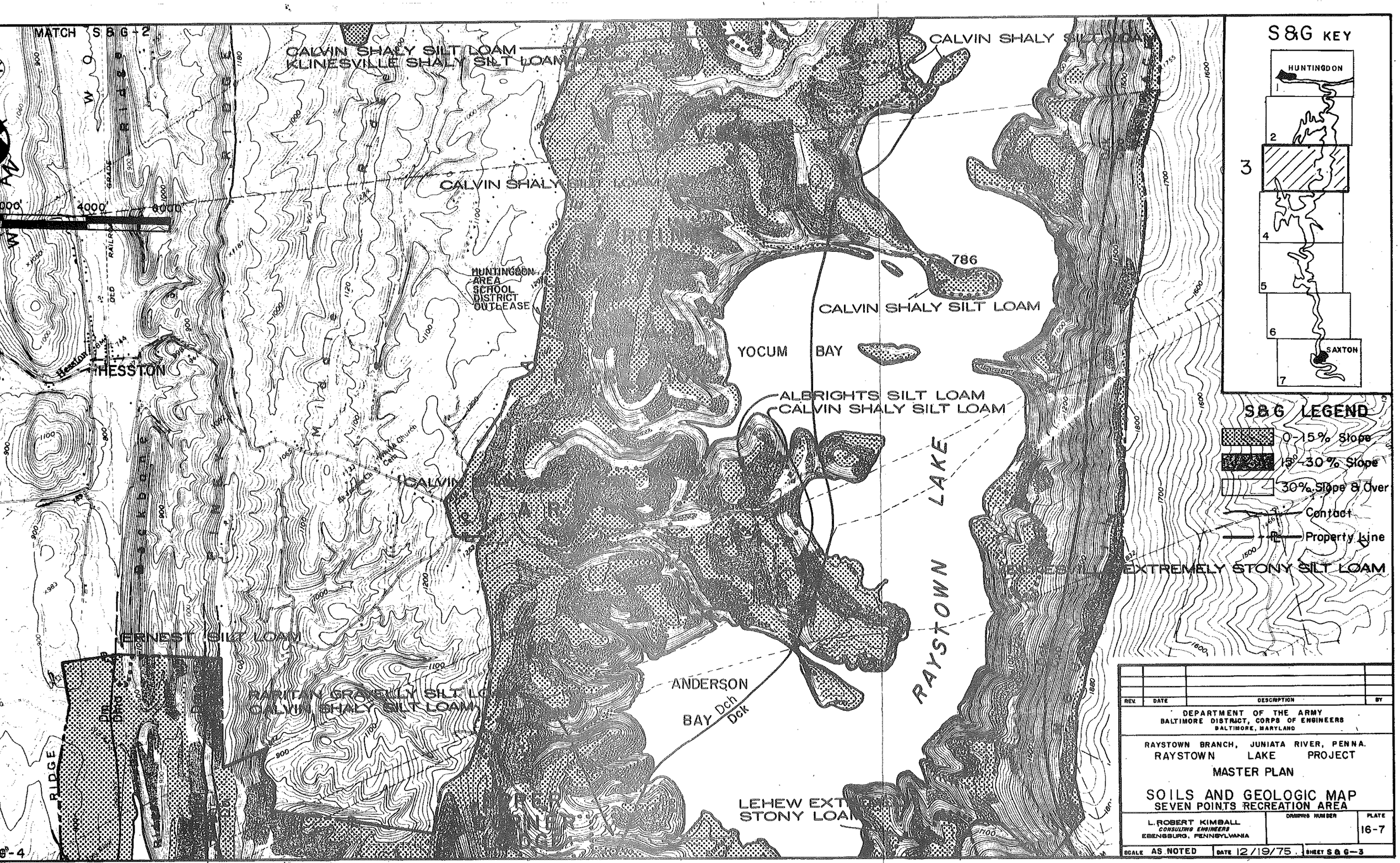
DRAWING NUMBER

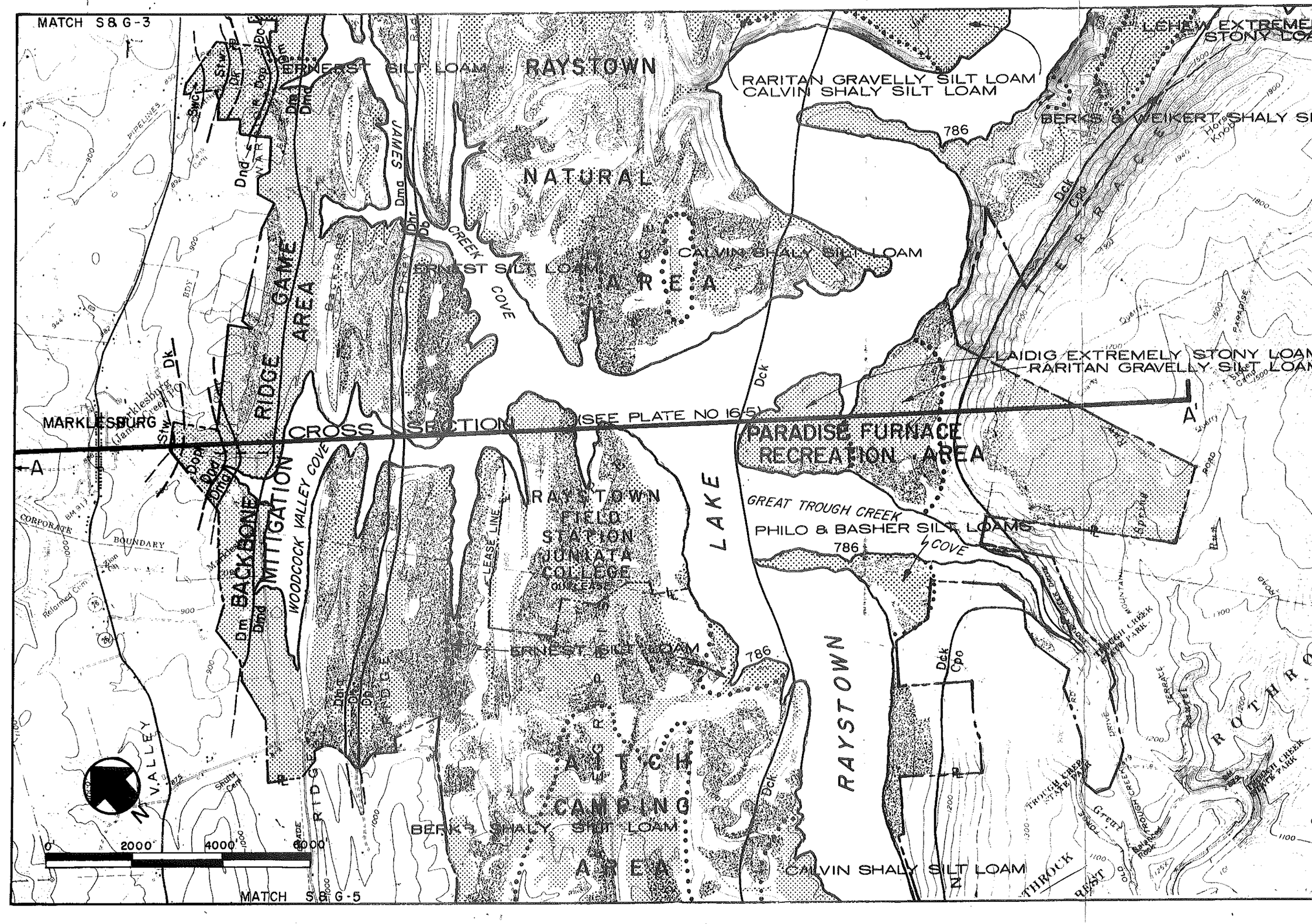
PLATE 16-5

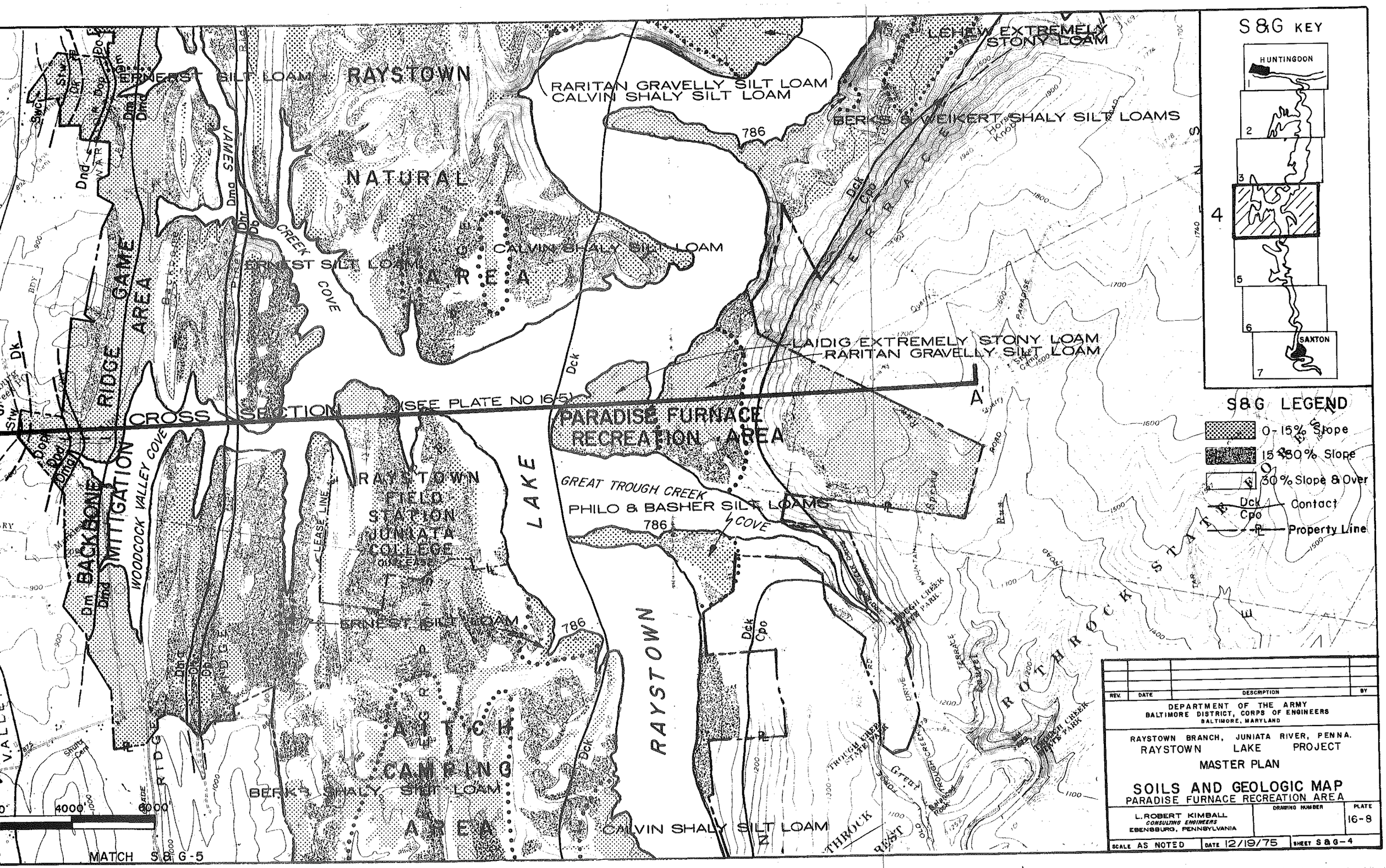
SCALE AS NOTED | DATE 12/19/75 | SHEET S & G-1


MATCH S&G-1
MATCH S&G-3
BARBOUR FINE SANDY LOAM
BARBOUR FINE SANDY LOAM
DAM
CALVIN SHALY SILT LOAM
CALVIN SHALY SILT LOAM
ERNEST SILT LOAM
786
RAYSTOWN LAKE
CALVIN SHALY SILT LOAM
HAWNS RUN COVE
HAWNS BRIDGE WOODS
Db
Dch
Dck
Cpo
786
786
SEVEN POINTS
CALVIN SHALY SILT LOAM
ERNEST SILT LOAM
CALVIN SHALY SILT LOAM
KUINESVILLE SHALY SILT LOAM
RECREATION AREA
VERY STONY SILT LOAM
EXT. STONY SILT LOAM
LLSTOWN
Crooked
4000
6000
S&G KEY
HUNTINGDON
SAXTON
1
2
3
4
5
6
7
S&G LEGEND
0-15% Slope
15-30% Slope
30% Slope & Over
Dck
Cpo
Contact
Property Line
REV.
DATE
DESCRIPTION
BY
DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND
RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT
MASTER PLAN
SOILS AND GEOLOGIC MAP
HAWNS BRIDGE WOODS AREA
L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA
DRAWING NUMBER
PLATE
16-6
SCALE AS NOTED
DATE 12/19/75
SHEET S&G-2


MATCH S B G-2
CALVIN SHALY SILT LOAM
KLINESVILLE SHALY SILT LOAM
CALVIN SHALY SILT LOAM
HUNTINGDON AREA SCHOOL DISTRICT OUTLEASE
786
CALVIN SHALY SILT LOAM
YOCUM BAY
ALBRIGHTS SILT LOAM
CALVIN SHALY SILT LOAM
RAYSTOWN LAKE
ANDERSON BAY Dch
Dck
HESSTON
Redstone Ridge
ERNEST SILT LOAM
RARITAN GRAVELLY SILT LOAM
CALVIN SHALY SILT LOAM
LEHEW EXTREMELY STONY LOAM
MATCH S B G-4
2000'
4000'
6000'


MATCH S&G-2
CALVIN SHALY SILT LOAM
KLINESVILLE SHALY SILT LOAM
CALVIN SHALY SILT LOAM
CALVIN SHALY SILT LOAM
HUNTINGDON AREA SCHOOL DISTRICT OUTLEASE
786
CALVIN SHALY SILT LOAM
YOCUM BAY
ALBRIGHTS SILT LOAM
CALVIN SHALY SILT LOAM
HESSTON
RAYSTOWN LAKE
EXTREMELY STONY SILT LOAM
ERNEST SILT LOAM
RARITAN GRAVELLY SILT LOAM
CALVIN SHALY SILT LOAM
ANDERSON BAY
Dch
Dck
LEHEW EXT
STONY LOAM
RIDGE
S&G KEY
HUNTINGDON
SAXTON
S&G LEGEND
0-15% Slope
15-30% Slope
30% Slope & Over
Contact
Property Line
REV. DATE DESCRIPTION BY
DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND
RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT
MASTER PLAN
SOILS AND GEOLOGIC MAP
SEVEN POINTS RECREATION AREA
L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA
DRAWING NUMBER
PLATE 16-7
SCALE AS NOTED
DATE 12/19/75
SHEET S&G-3


MATCH S&G-3
MATCH S&G-5
RAYSTOWN
NATURAL
AREA
ERNEST SILT LOAM
CALVIN SHALY SILT LOAM
RARITAN GRAVELLY SILT LOAM
CALVIN SHALY SILT LOAM
BERKS & WEIKERT SHALY SI
LEHEW EXTREME
STONY LOA
LAIDIG EXTREMELY STONY LOAM
RARITAN GRAVELLY SILT LOAM
JAMES CREEK COVE
RIDGE GAME AREA
BACKBONE MITIGATION
WOODCOCK VALLEY COVE
MARKLESBURG
CROSS SECTION
(SEE PLATE NO 16-5)
PARADISE FURNACE RECREATION AREA
GREAT TROUGH CREEK
PHILO & BASHER SILT LOAMS
COVE
RAYSTOWN FIELD STATION JUNIATA COLLEGE
LEASE LINE
LAKE
RAYSTOWN
ERNEST SILT LOAM
AITCH CAMPING AREA
BERKS SHALY SILT LOAM
CALVIN SHALY SILT LOAM
786
A
A'
CORPORATE BOUNDARY
VALLEY
0'
2000'
4000'
6000'
N



REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT
MASTER PLAN

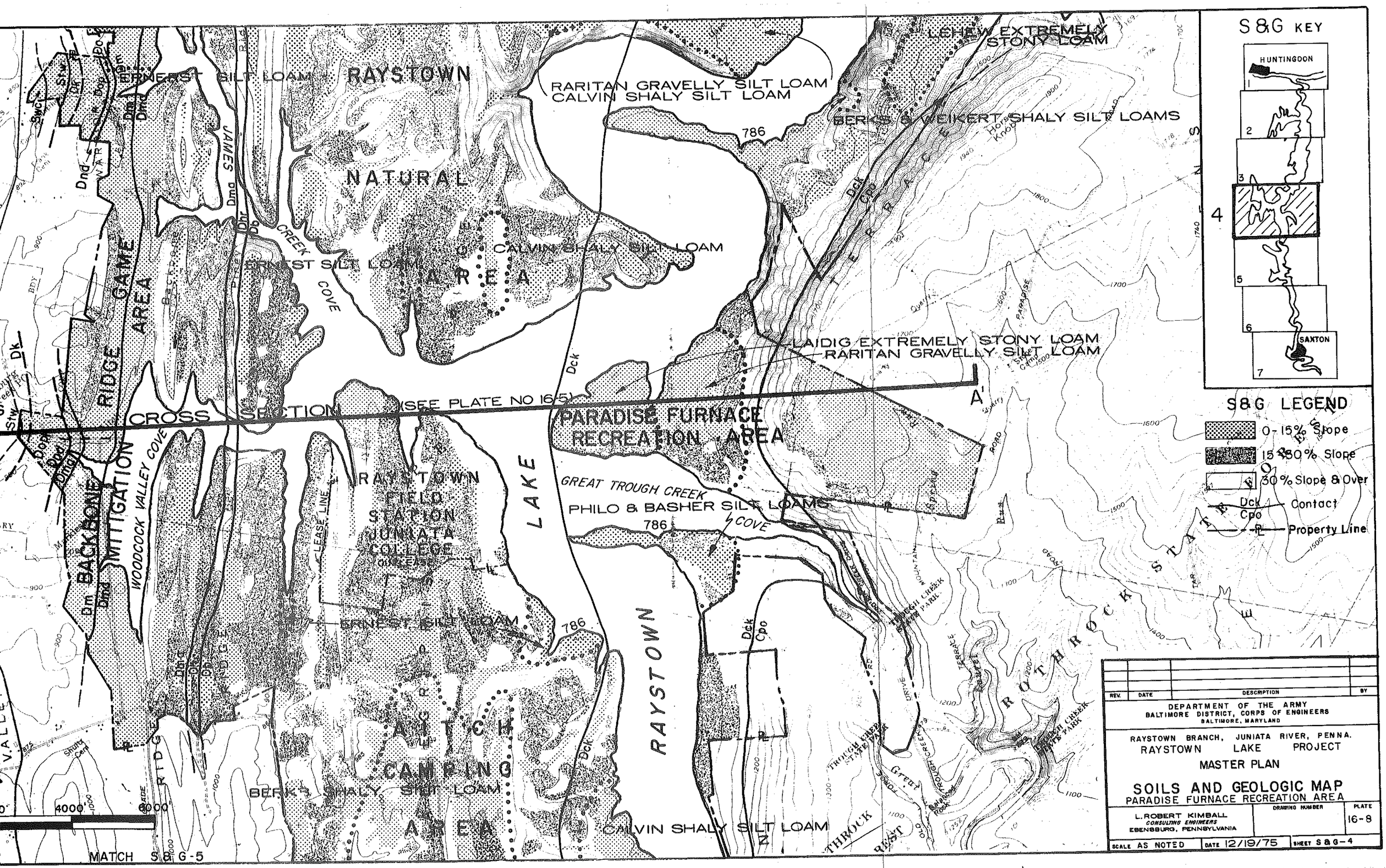
SOILS AND GEOLOGIC MAP
PARADISE FURNACE RECREATION AREA

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

PLATE 16-8

SCALE AS NOTED | DATE 12/19/75 | SHEET S&G-4



REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT
MASTER PLAN

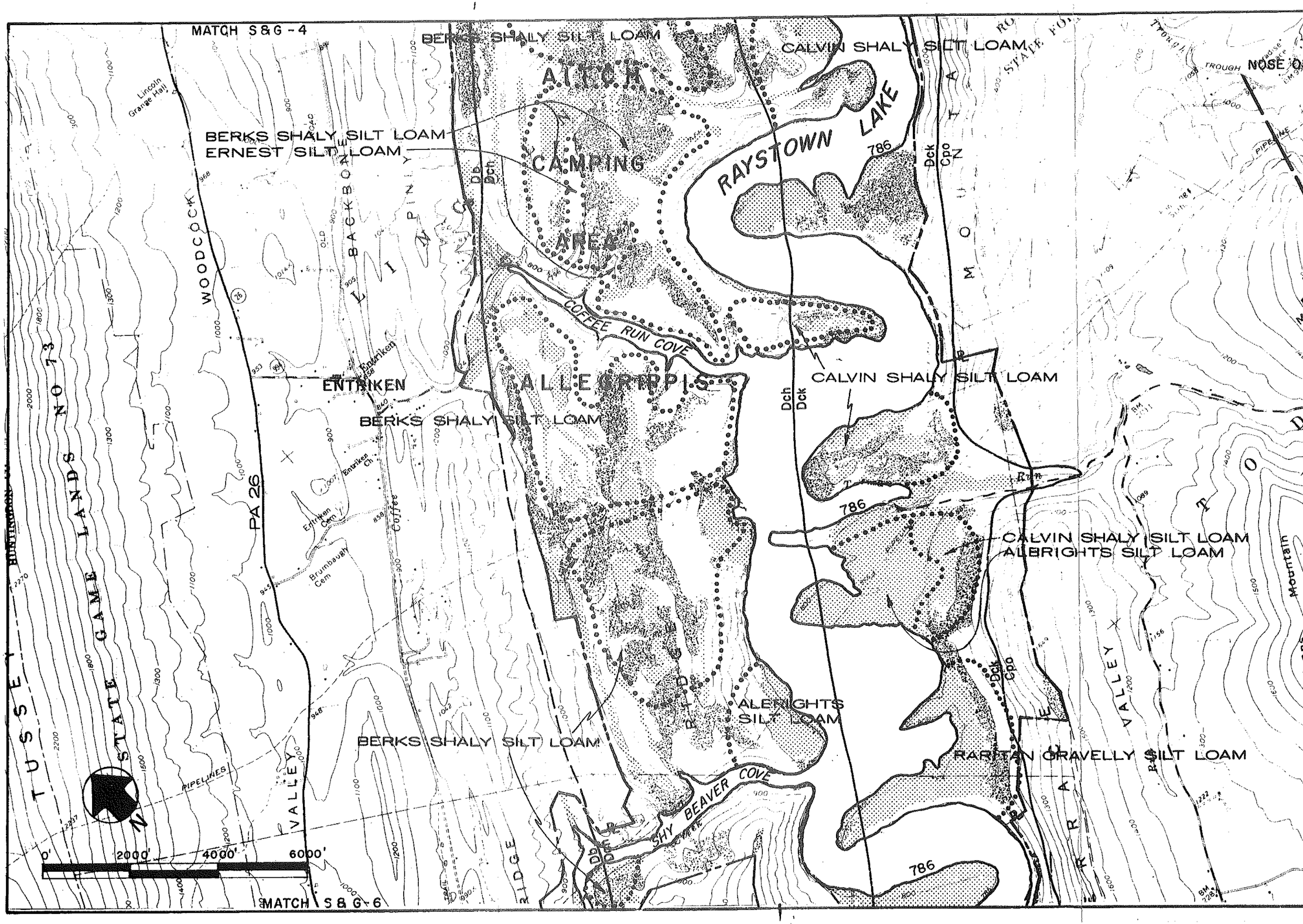
SOILS AND GEOLOGIC MAP
PARADISE FURNACE RECREATION AREA

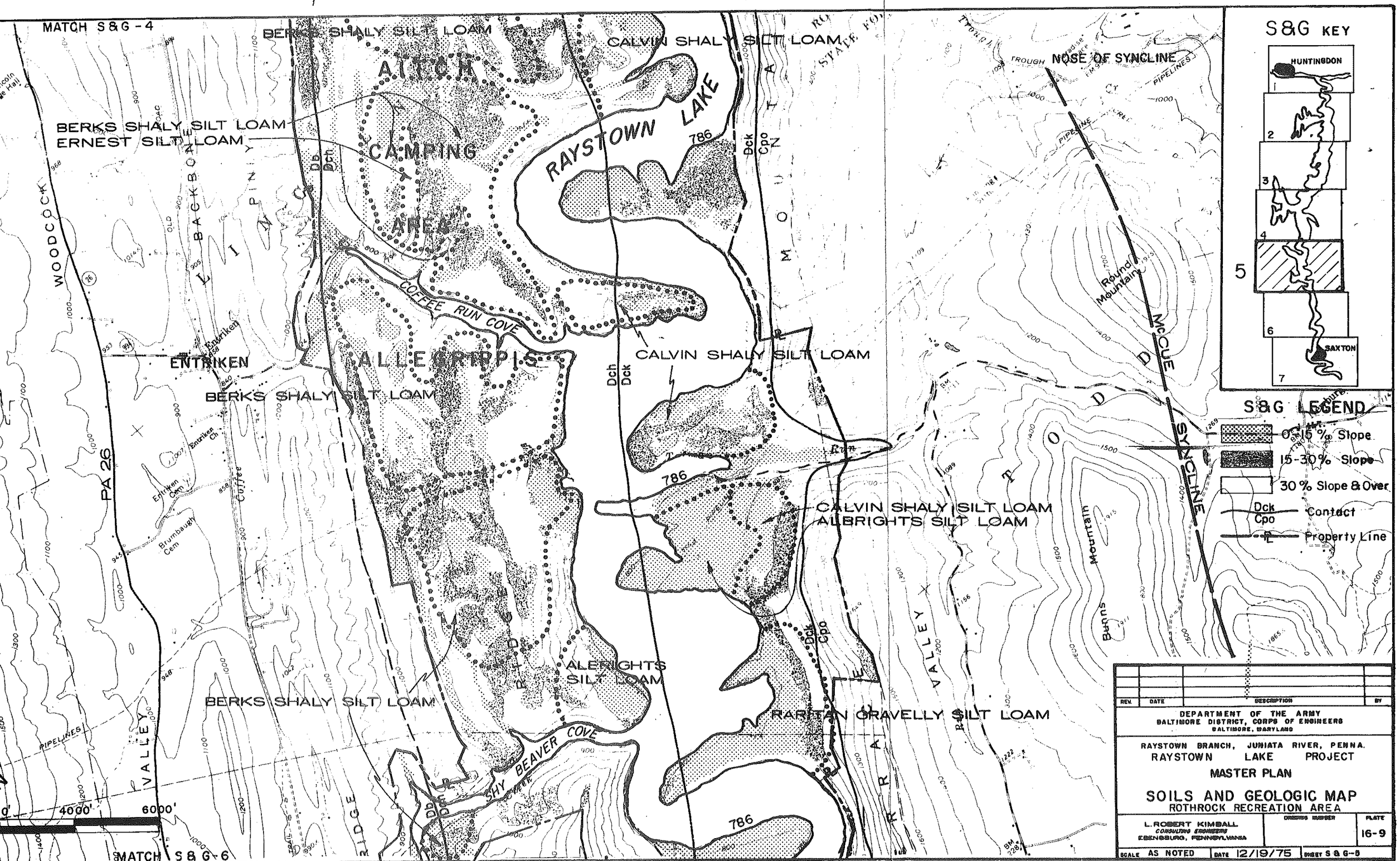
L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

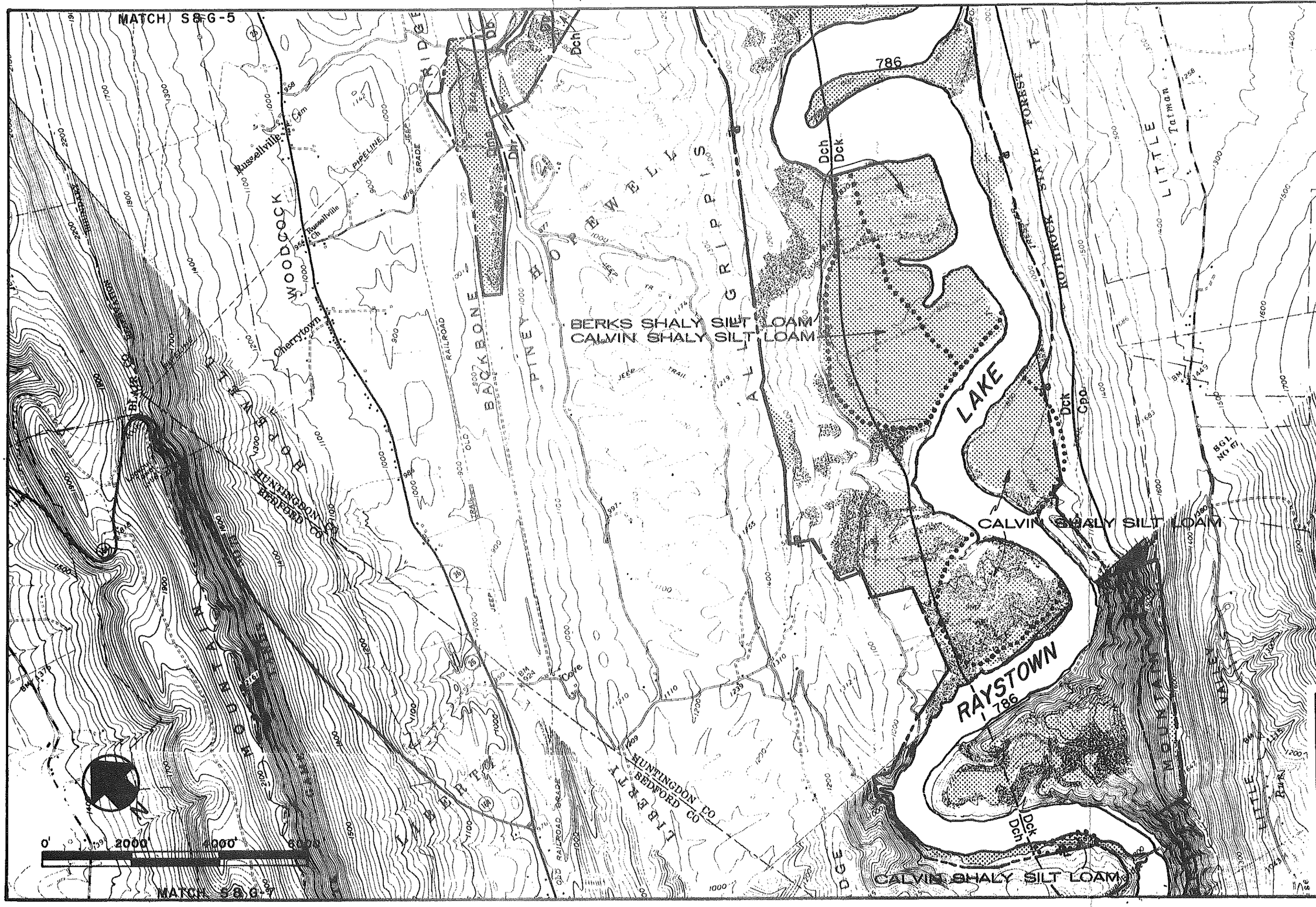
DRAWING NUMBER

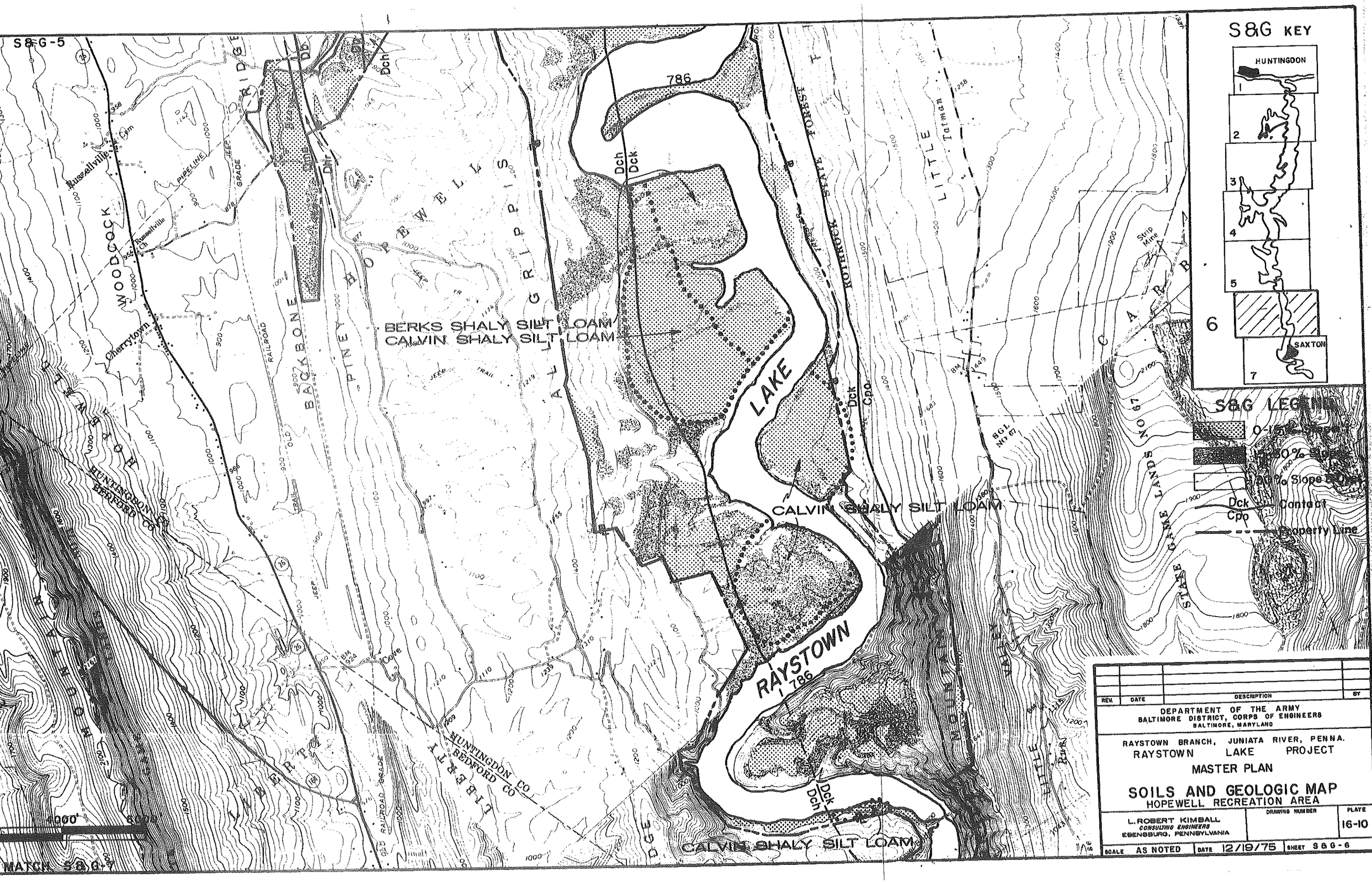
PLATE 16-8

SCALE AS NOTED | DATE 12/19/75 | SHEET S&G-4


MATCH S&G-4
BERKS SHALY SILT LOAM
CALVIN SHALY SILT LOAM
AITCH
CAMPING
AREA
RAYSTOWN LAKE
BERKS SHALY SILT LOAM
ERNEST SILT LOAM
COFFEE RUN COVE
ALLEGRIPPIS
ENTRIKEN
BERKS SHALY SILT LOAM
CALVIN SHALY SILT LOAM
CALVIN SHALY SILT LOAM
ALBRIGHTS SILT LOAM
ALBRIGHTS SILT LOAM
BERKS SHALY SILT LOAM
RARITAN GRAVELLY SILT LOAM
SHY BEAVER COVE
WOODCOCK
BACKBONE
PINEY
LINCOLN
PA 26
TUSSEY
STATE GAME LANDS NO 73
VALLEY
RIDGE
MOUNTAIN
RACE
VALLEY
786
Lincoln Grange Hall
Entriken
Entriken Cem
Brumbaugh Cem
Coffee
Run
Mountain
PIPELINES
0'
2000'
4000'
6000'
MATCH S&G-6


MATCH S&G-4
BERKS SHALY SILT LOAM
CALVIN SHALY SILT LOAM
AITCH
CAMPING
AREA
RAYSTOWN LAKE
BERKS SHALY SILT LOAM
ERNEST SILT LOAM
COFFEE RUN COVE
ALLEGRIPPIS
ENTRIKEN
BERKS SHALY SILT LOAM
CALVIN SHALY SILT LOAM
CALVIN SHALY SILT LOAM
ALBRIGHTS SILT LOAM
ALBRIGHTS SILT LOAM
BERKS SHALY SILT LOAM
RARITAN GRAVELLY SILT LOAM
SHY BEAVER COVE
NOSE OF SYNCLINE
Round Mountain
McCUE SYNCLINE
Bunns Mountain
WOODCOCK
PA 26
VALLEY
RIDGE
786
Dck
Cpo
Db
Dch
4000'
6000'
MATCH S&G-6
S&G KEY
HUNTINGDON
SAXTON
1
2
3
4
5
6
7
S&G LEGEND
0-15% Slope
15-30% Slope
30% Slope & Over
Contact
Property Line
REV.
DATE
DESCRIPTION
BY
DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND
RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT
MASTER PLAN
SOILS AND GEOLOGIC MAP
ROTHROCK RECREATION AREA
L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA
DRAWING NUMBER
PLATE
16-9
SCALE AS NOTED
DATE 12/19/75
SHEET S&G-5


MATCH S8G-5
MATCH S8G-7
BERKS SHALY SILT LOAM
CALVIN SHALY SILT LOAM
CALVIN SHALY SILT LOAM
CALVIN SHALY SILT LOAM
LAKE
RAYSTOWN
786
786
WOODCOCK
Russellville
Cherrytown
BACKBONE
PINEY
HOPEWELL
ALLEGRIPPIS
ROTHROCK STATE FOREST
LITTLE
Tatman
HUNTINGDON CO
BEDFORD CO
LIBERTY
Dch
Dck
Cpo
Cove
0'
2000'
4000'
6000'



REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT
MASTER PLAN

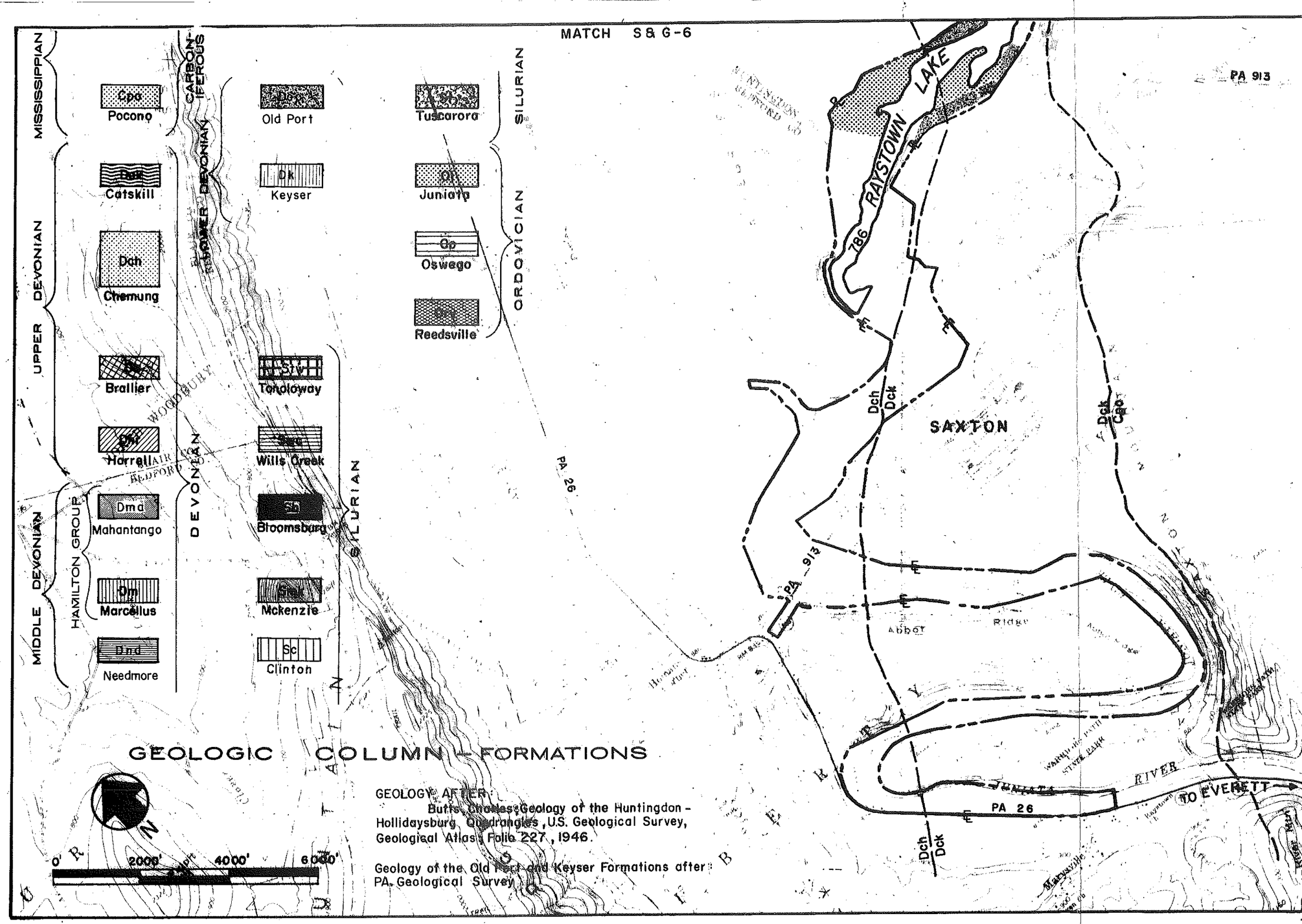
SOILS AND GEOLOGIC MAP
HOPEWELL RECREATION AREA

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

PLATE 16-10

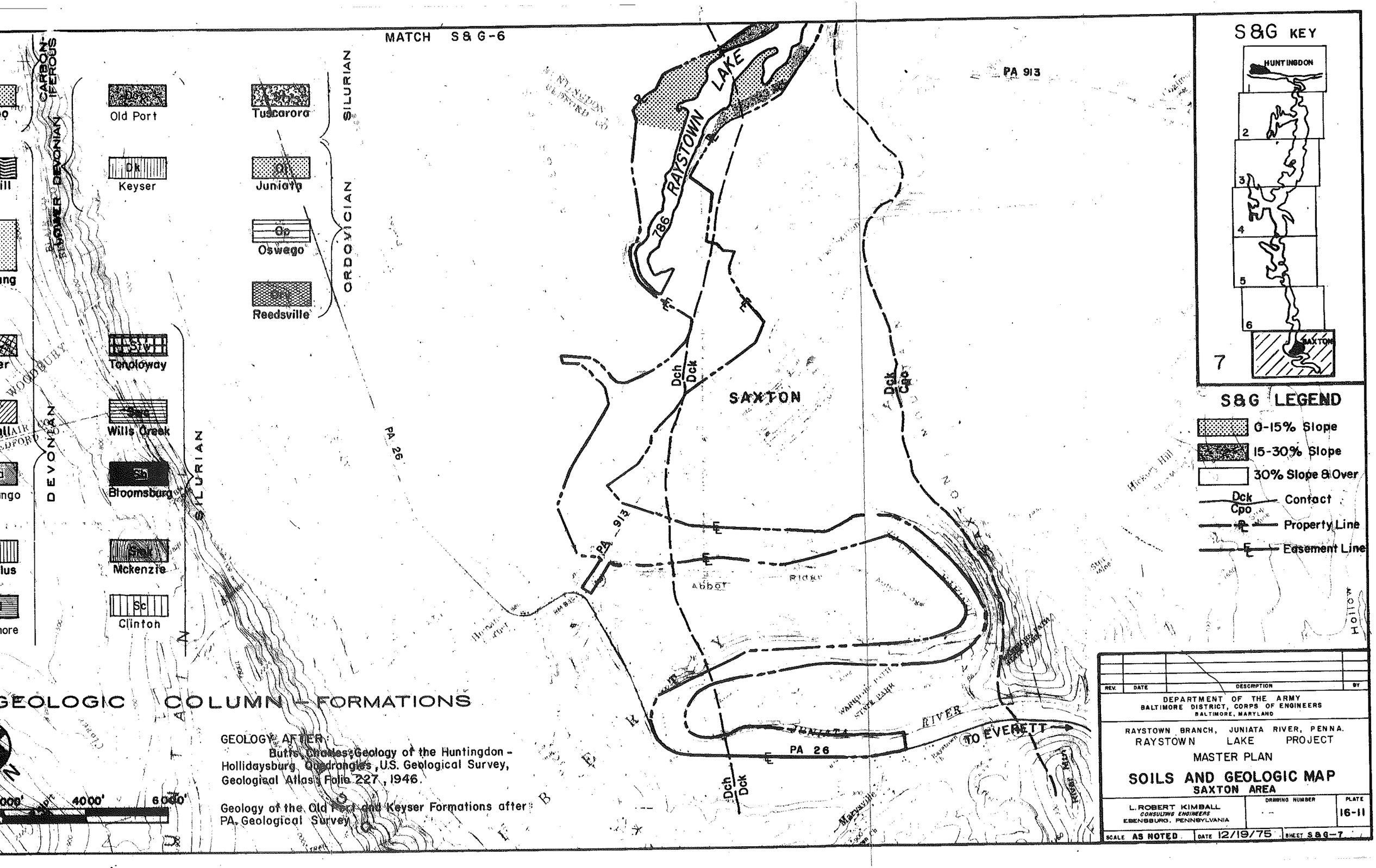
SCALE AS NOTED | DATE 12/19/75 | SHEET S&G-6



GEOLOGIC COLUMN – FORMATIONS

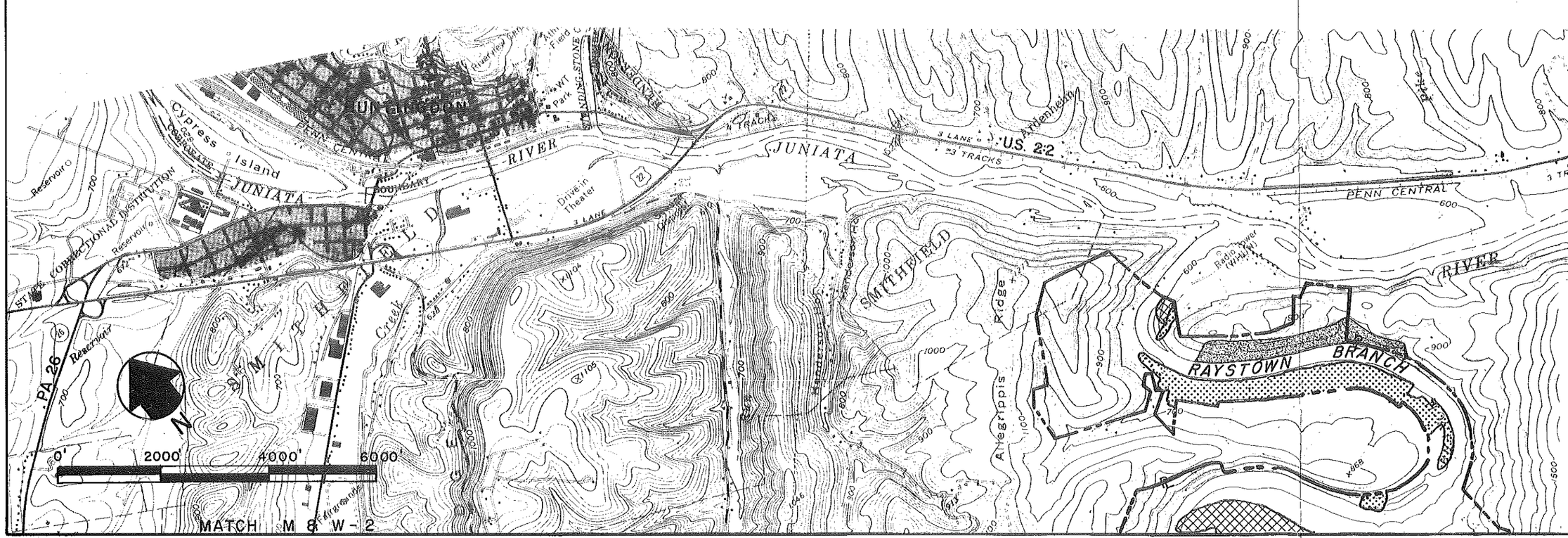
GEOLOGY AFTER:
Butts, Charles; Geology of the Huntingdon - Hollidaysburg Quadrangles, U.S. Geological Survey, Geological Atlas, Folio 227, 1946.

Geology of the Old Port and Keyser Formations after: PA. Geological Survey


MATCH S&G-6
CARBON-IFEROUS
LOWER DEVONIAN
DEVONIAN
SILURIAN
ORDOVICIAN
Old Port
Keyser
Tonoloway
Wills Creek
Bloomsburg
Mckenzie
Clinton
Tuscarora
Juniata
Oswego
Reedsville
RAYSTOWN LAKE
786
PA 913
PA 26
SAXTON
Dch
Dck
Cpo
Abbot Ridge
JUNIATA RIVER
TO EVERETT
GEOLOGIC COLUMN — FORMATIONS
GEOLOGY AFTER:
Butts, Charles; Geology of the Huntingdon - Hollidaysburg Quadrangles, U.S. Geological Survey, Geological Atlas, Folio 227, 1946.
Geology of the Old Port and Keyser Formations after PA. Geological Survey
4000'
6000'
S&G KEY
HUNTINGDON
SAXTON
7
S&G LEGEND
0-15% Slope
15-30% Slope
30% Slope & Over
Contact
Property Line
Easement Line
REV.
DATE
DESCRIPTION
BY
DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND
RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT
MASTER PLAN
SOILS AND GEOLOGIC MAP
SAXTON AREA
L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA
DRAWING NUMBER
PLATE
16-11
SCALE AS NOTED
DATE 12/19/75
SHEET S&G-7

LEGEND

- SHALE BARRENS
- MEADOW – OPEN AREAS
- HARDWOOD FOREST
- PINE FOREST
- FORMER PINE FOREST



LEGEND

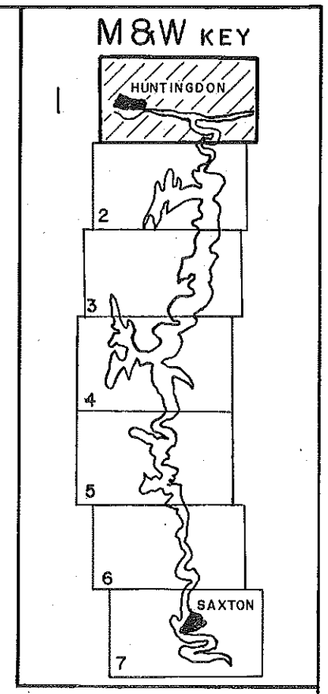
SHALE BARRENS

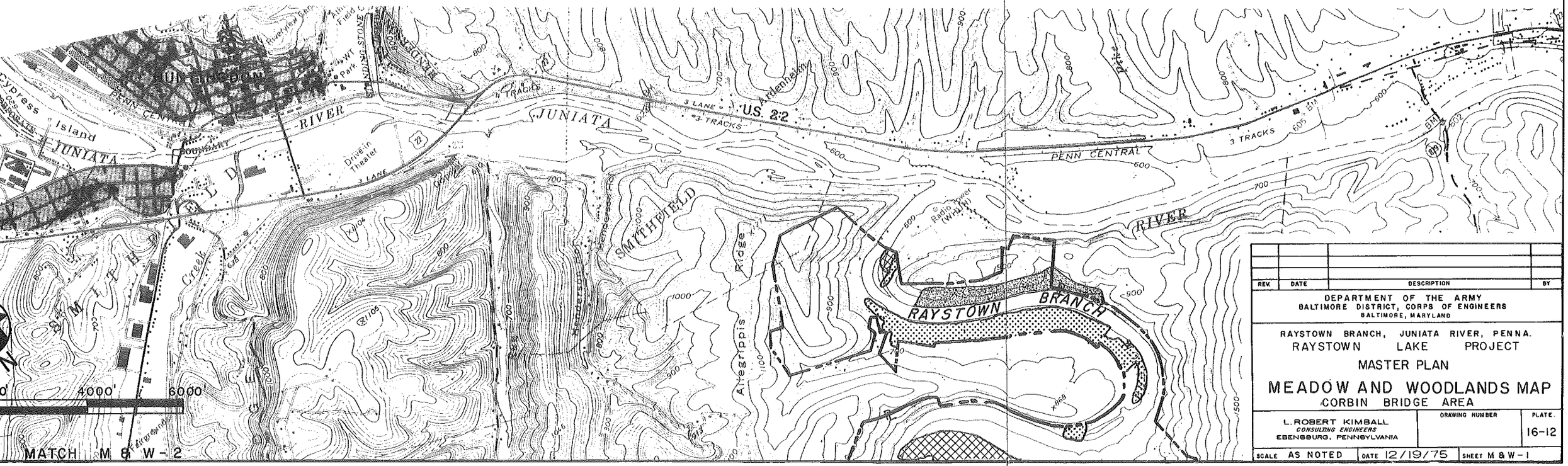
MEADOW – OPEN AREAS

HARDWOOD FOREST

PINE FOREST

FORMER PINE FOREST





REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT
MASTER PLAN

MEADOW AND WOODLANDS MAP
CORBIN BRIDGE AREA

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

PLATE 16-12

SCALE AS NOTED | DATE 12/19/75 | SHEET M & W-1

MARCH M & W

Crooked

DAM

RAYSTOWN LAKE

HAWNS RUN COVE

HAWNS RUN WOODS

SEVEN POINTS RECREATION AREA

MARCH M & W

MATCH M&W-1

MATCH M&W-3

Crooked

DAM

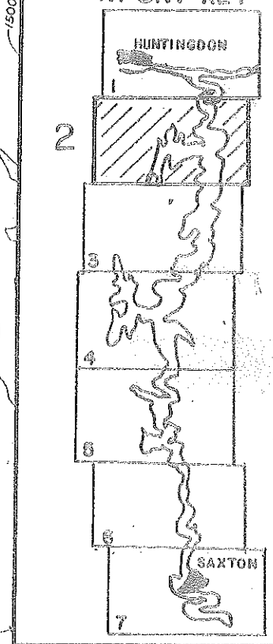
RAYSTOWN LAKE

HAWNS RUN COVE

HAWNS BRIDGE WOODS

SEVEN POINTS RECREATION AREA

M&W KEY



M&W LEGEND

- SHALE BARRENS
- MEADOW - OPEN AREAS
- HARDWOOD FOREST
- PINE FOREST
- FORMER PINE FOREST

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT
MASTER PLAN

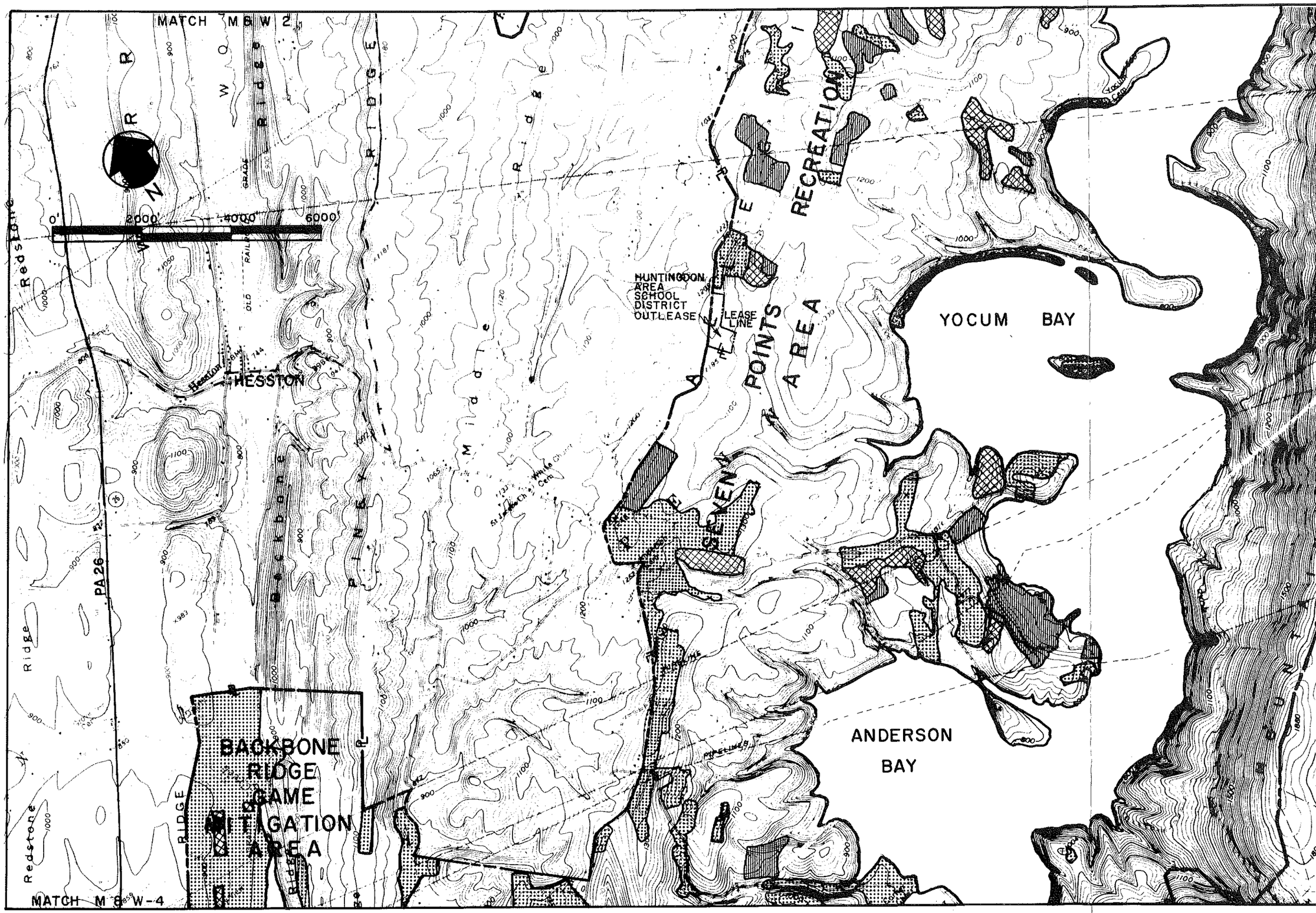
MEADOW AND WOODLANDS MAP
HAWNS BRIDGE WOODS AREA

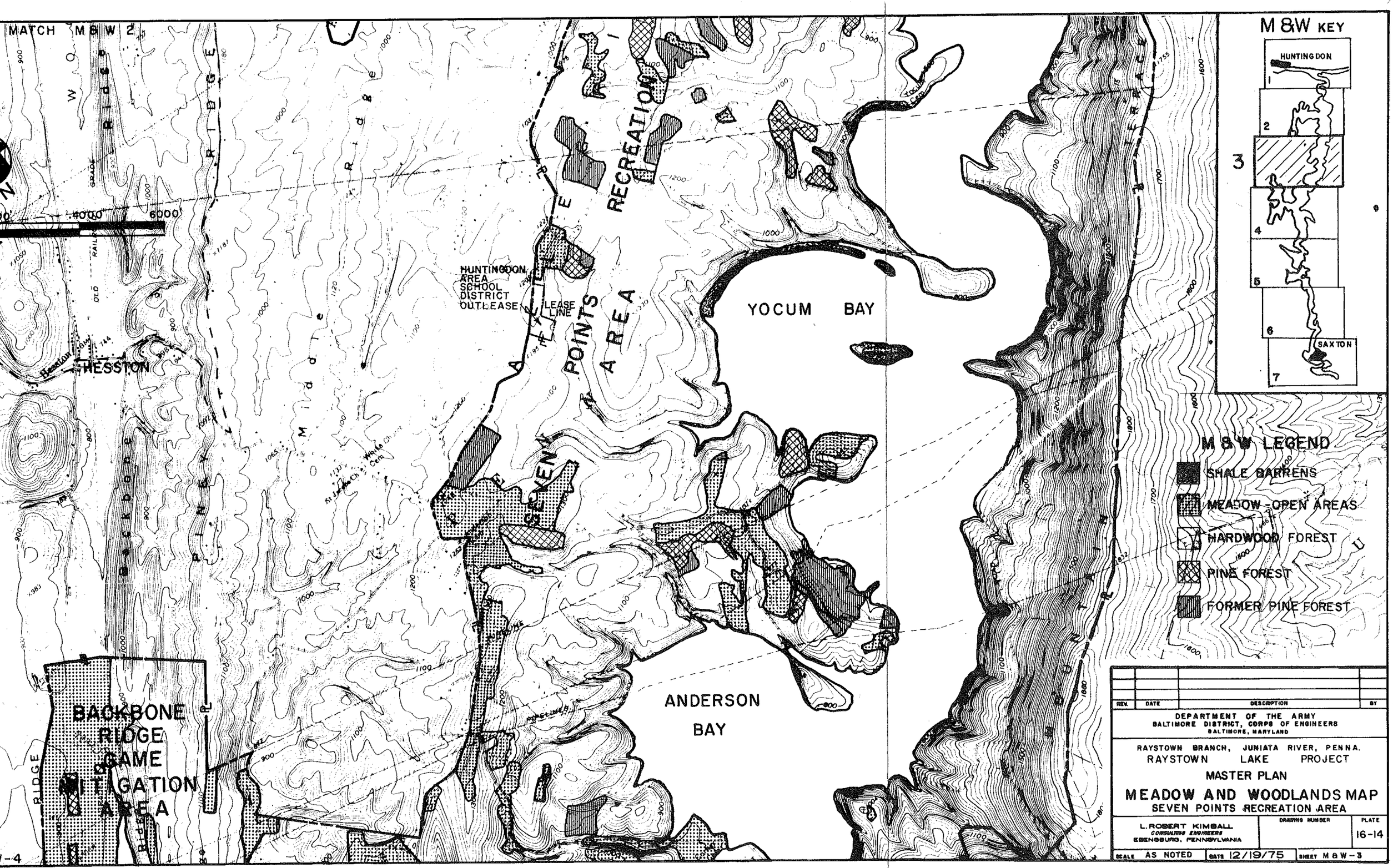
L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

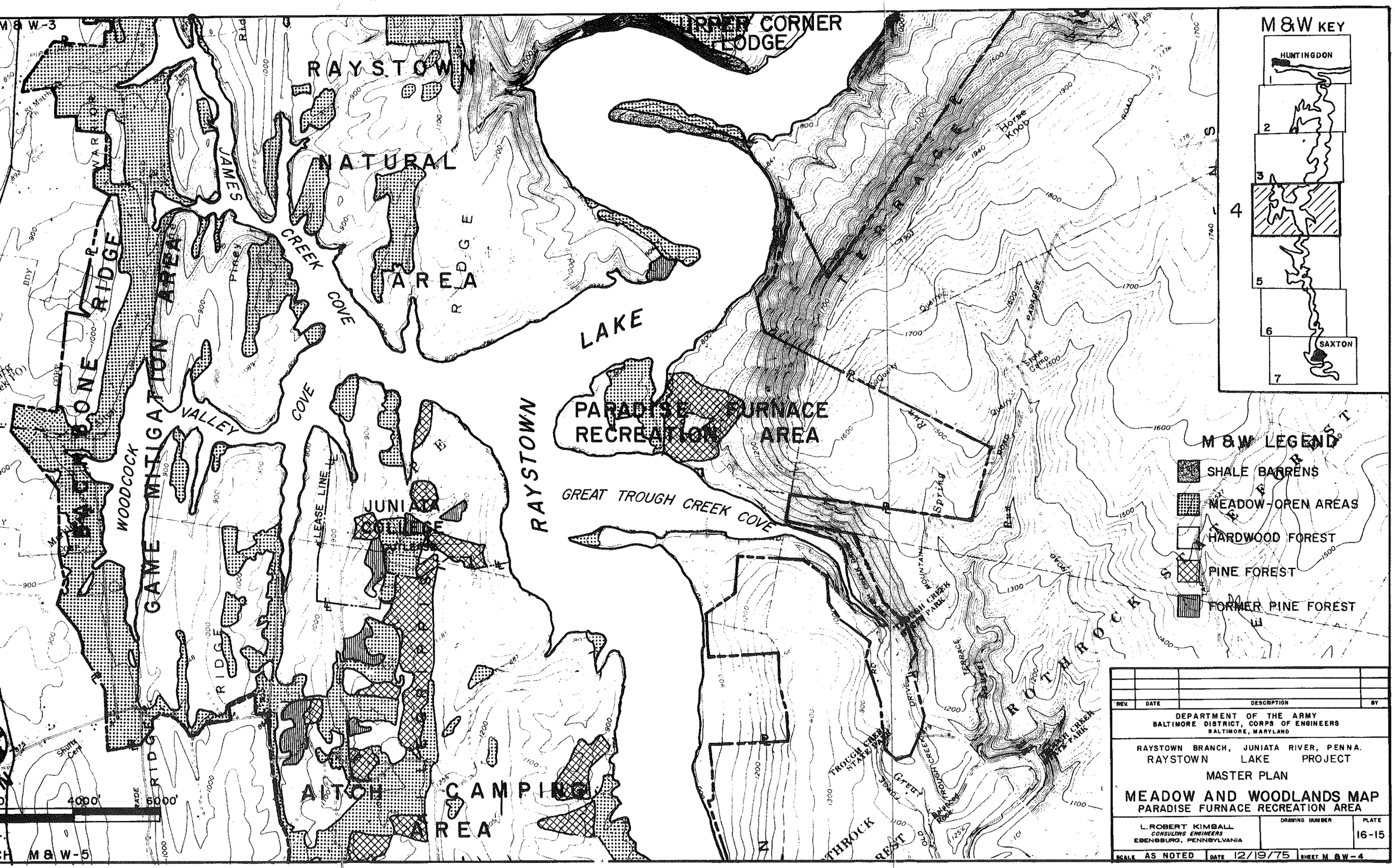
DRAWING NUMBER

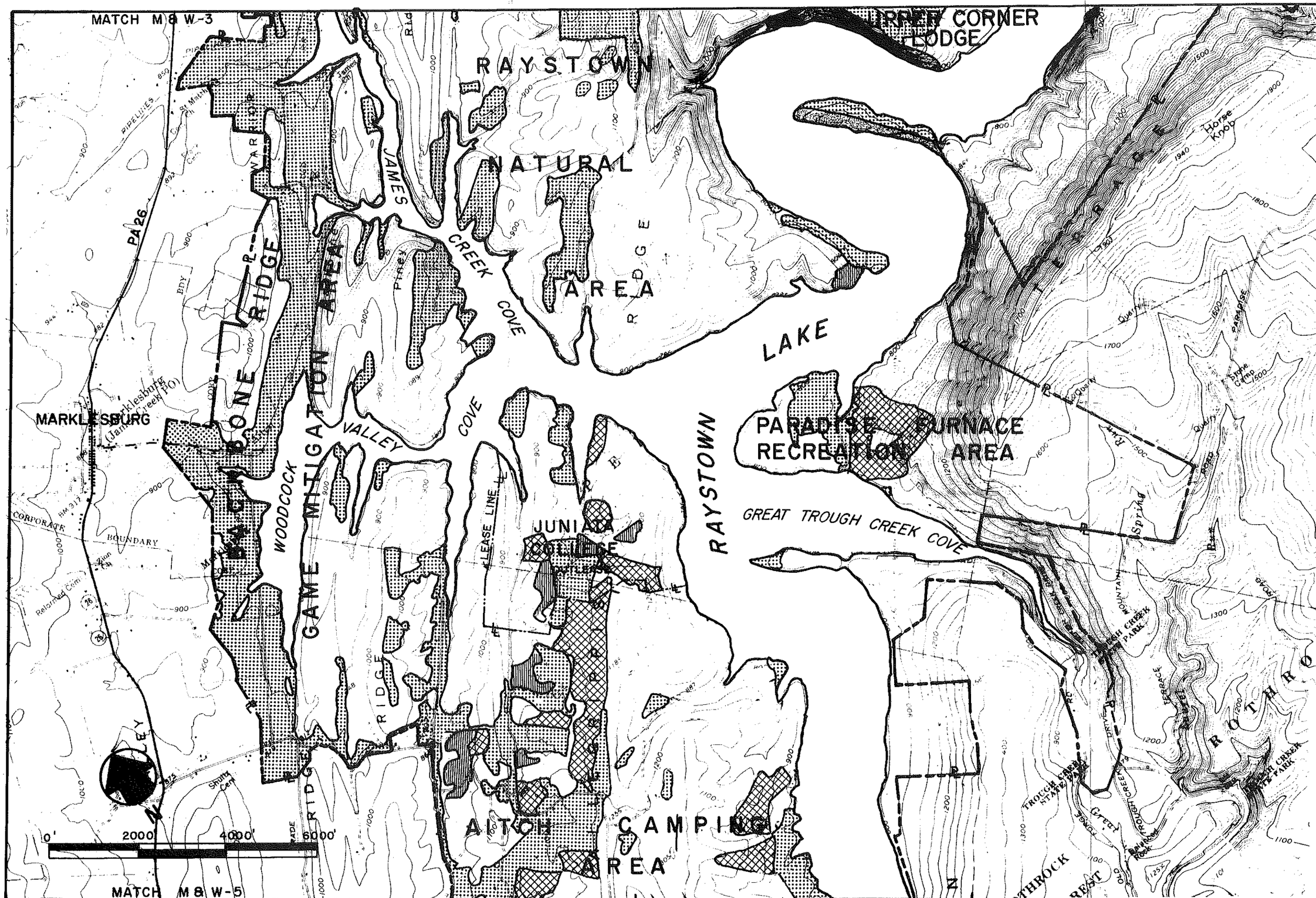
PLATE 16-13

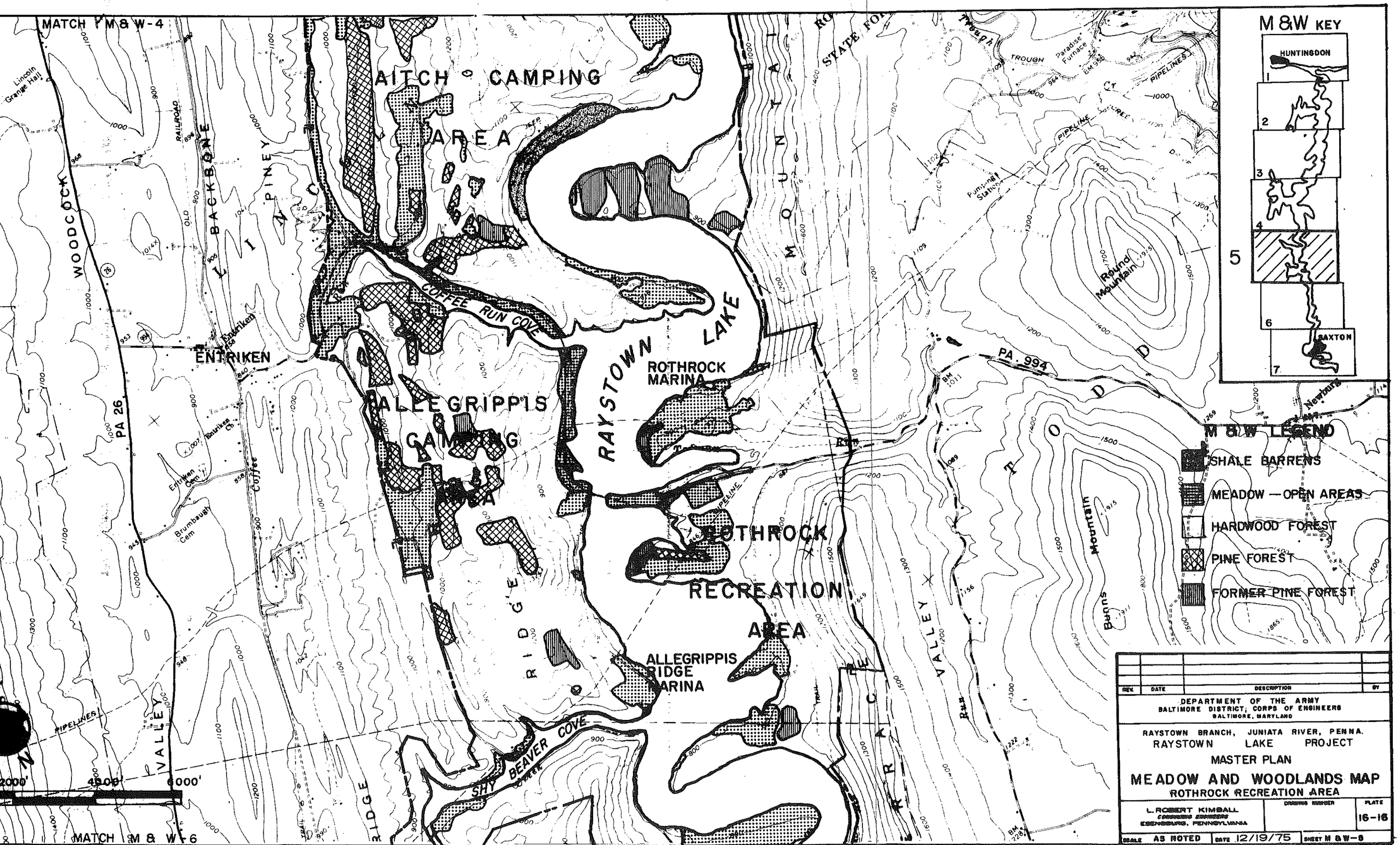
SCALE AS NOTED | DATE 12/19/75 | SHEET M&W-2

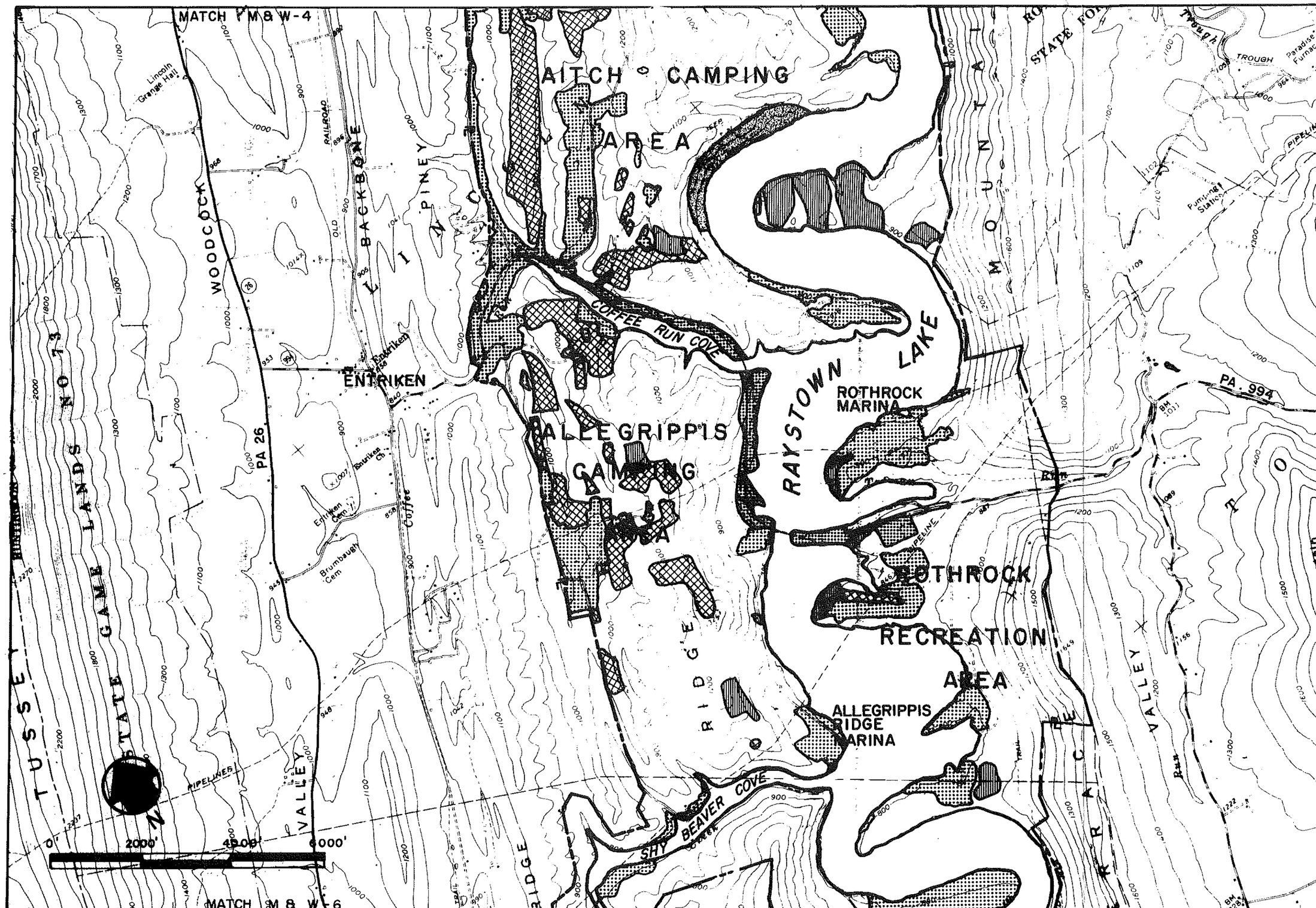

MATCH M & W 2
0'
2000'
4000'
6000'
HESSTON
HUNTINGDON AREA SCHOOL DISTRICT OUTLEASE
LEASE LINE
POINTS AREA
RECREATION
YOCUM BAY
ANDERSON BAY
BACKBONE RIDGE GAME MITIGATION AREA
PA 26
Redstone Ridge
Backbone Ridge
Middle Ridge
MATCH M & W-4

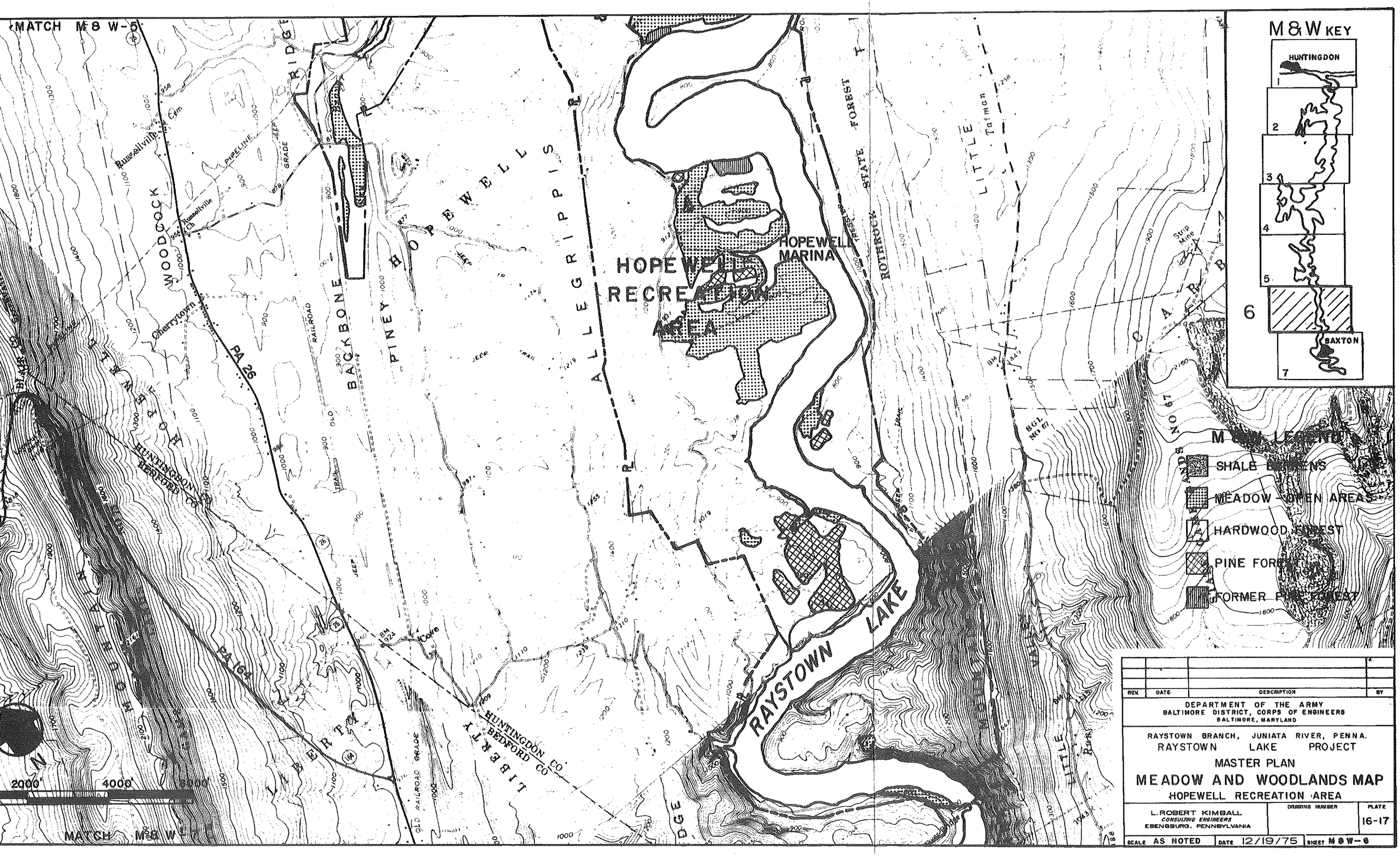

MATCH M&W 2
M&W KEY
HUNTINGDON
SAXTON
3
1
2
4
5
6
7
M&W LEGEND
SHALE BARRENS
MEADOW-OPEN AREAS
HARDWOOD FOREST
PINE FOREST
FORMER PINE FOREST
YOCUM BAY
ANDERSON BAY
HUNTINGDON AREA SCHOOL DISTRICT OUTLEASE
LEASE LINE
SEVEN POINTS RECREATION AREA
HESSTON
BACKBONE RIDGE GAME MITIGATION AREA
4000'
6000'
REV.
DATE
DESCRIPTION
BY
DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND
RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT
MASTER PLAN
MEADOW AND WOODLANDS MAP
SEVEN POINTS RECREATION AREA
L. ROBERT KIMBALL
CONSULTING ENGINEERS
ESENSBURG, PENNSYLVANIA
DRAWING NUMBER
PLATE
16-14
SCALE AS NOTED
DATE 12/19/75
SHEET M&W-3

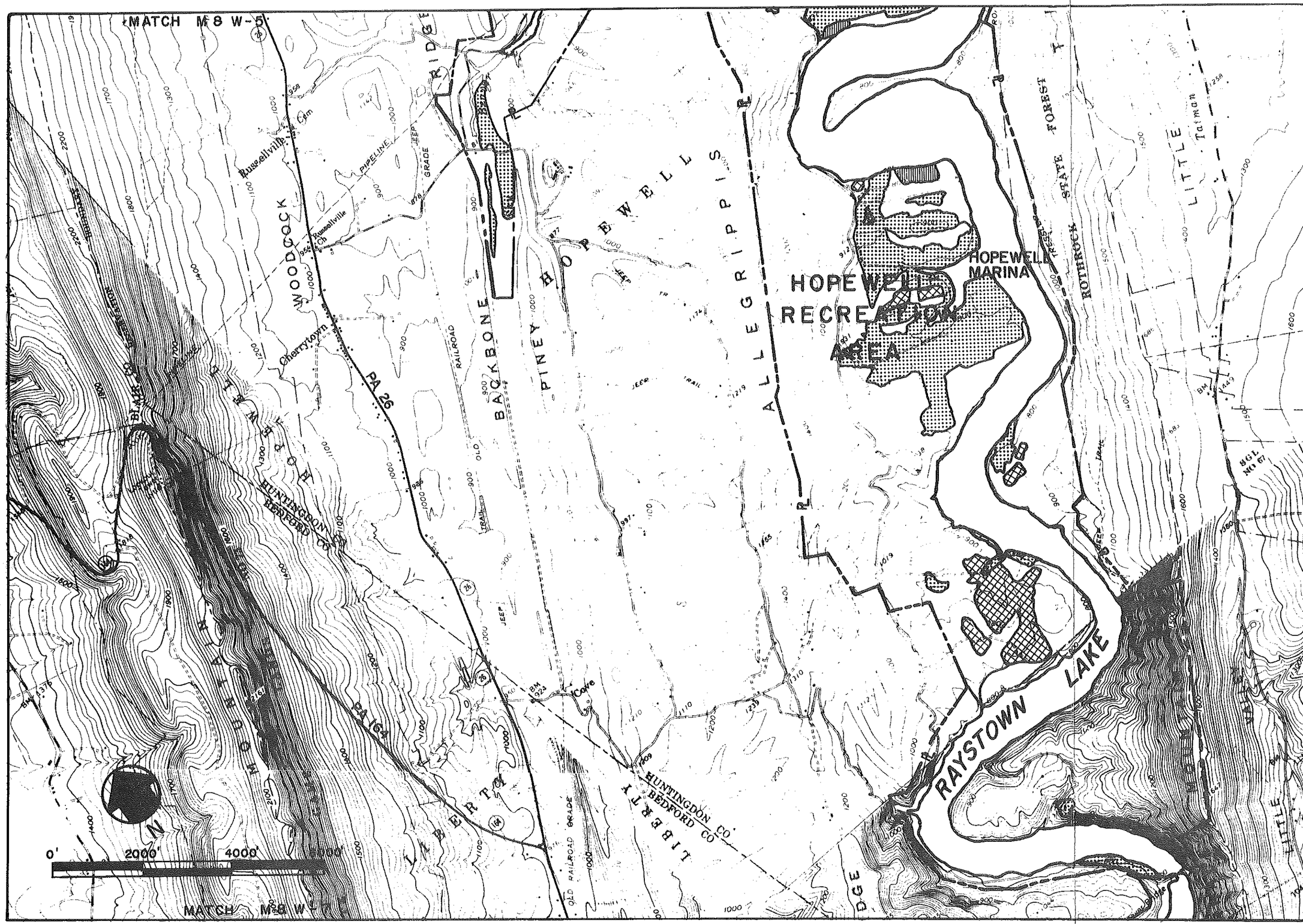

M & W-3
RAYSTOWN
NATURAL
AREA
UPPER CORNER
LODGE
JAMES
CREEK
COVE
LAKE
RAYSTOWN
PARADISE FURNACE
RECREATION AREA
GREAT TROUGH CREEK COVE
JUNIATA
COLLEGE
LEASE LINE
WOODCOCK
VALLEY
COVE
GAME MITIGATION AREA
RIDGE
BACKBONE RIDGE
AITCH CAMPING
AREA
Horse Knob
Stone Camp
Spring
TROUGH CREEK STATE PARK
ROTHROCK STATE FOREST
4000'
6000'
M & W-5
M & W KEY
HUNTINGDON
SAXTON
1
2
3
4
5
6
7
M & W LEGEND
SHALE BARRENS
MEADOW-OPEN AREAS
HARDWOOD FOREST
PINE FOREST
FORMER PINE FOREST
REV.
DATE
DESCRIPTION
BY
DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND
RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT
MASTER PLAN
MEADOW AND WOODLANDS MAP
PARADISE FURNACE RECREATION AREA
L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA
DRAWING NUMBER
PLATE
16-15
SCALE AS NOTED
DATE 12/19/75
SHEET M & W-4


MATCH M & W-3
UPPER CORNER LODGE
RAYSTOWN
NATURAL
AREA
JAMES
CREEK
COVE
RIDGE
LAKE
PA 26
MARKLESBURG
BACKBONE RIDGE
WOODCOCK
VALLEY
COVE
GAME MITIGATION AREA
PARADISE FURNACE RECREATION AREA
RAYSTOWN
GREAT TROUGH CREEK COVE
JUNIATA COLLEGE
LEASE LINE
CORPORATE BOUNDARY
Horse Knob
Spring
TROUGH CREEK STATE PARK
AITCH CAMPING AREA
0'
2000'
4000'
6000'
MATCH M & W-5


MATCH M & W-4
AITCH CAMPING AREA
COFFEE RUN COVE
RAYSTOWN LAKE
ROTHROCK MARINA
ALLEGRIPPIS CAMPING AREA
ROTHROCK RECREATION AREA
ALLEGRIPPIS RIDGE MARINA
SHY BEAVER COVE
ENTRIKEN
WOODCOCK
BACKBONE
PINEY
PA 26
PA. 994
Round Mountain
Bunns Mountain
Newburg
Paradise Furnace
Lincoln Grange Hall
Entriken Cem
Brumbaugh Cem
Coffee
Run
VALLEY
RIDGE
PIPELINES
2000'
4000'
6000'
MATCH M & W-6
M & W KEY
HUNTINGDON
SAXTON
5
M & W LEGEND
SHALE BARRENS
MEADOW — OPEN AREAS
HARDWOOD FOREST
PINE FOREST
FORMER PINE FOREST
REV.
DATE
DESCRIPTION
BY
DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT; CORPS OF ENGINEERS
BALTIMORE, MARYLAND
RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT
MASTER PLAN
MEADOW AND WOODLANDS MAP
ROTHROCK RECREATION AREA
L. ROBERT KIMBALL
CONSULTING ENGINEERS
ESENSBURG, PENNSYLVANIA
DRAWING NUMBER
PLATE
16-16
SCALE AS NOTED
DATE 12/19/75
SHEET M & W-6


MATCH M & W-4
AITCH CAMPING AREA
COFFEE RUN COVE
RAYSTOWN LAKE
ROTHROCK MARINA
ALLEGRIPPIS CAMPING AREA
ROTHROCK RECREATION AREA
ALLEGRIPPIS RIDGE MARINA
SHY BEAVER COVE
ENTRIKEN
WOODCOCK
BACKBONE
PINEY
PA 26
PA. 994
TUSSEY
STATE GAME LANDS NO 73
VALLEY
RIDGE
MOUNTAIN
STATE FOR
Lincoln Grange Hall
Entriken Cem
Brumbaugh Cem
Coffee
Pumping Station
PIPELINES
0'
2000'
4000'
6000'
MATCH M & W-6


MATCH M8 W-5
M&W KEY
HUNTINGDON
SAXTON
6
HOPEWELL RECREATION AREA
HOPEWELL MARINA
RAYSTOWN LAKE
ALLEGRIPPIS
BACKBONE
PINEY
HOPEWELL
WOODCOCK
LIBERTY
HUNTINGDON CO
BEDFORD CO
PA 26
PA 164
Cherrytown
Russellville
PIPELINE
GRADE
RAILROAD
OLD RAILROAD GRADE
JEEP TRAIL
ROTHROCK STATE FOREST
LITTLE
Tatman
Strip Mine
SHALE BOTTOMS
MEADOW - OPEN AREAS
HARDWOOD FOREST
PINE FOREST
FORMER PINE FOREST
2000'
4000'
MATCH M8 W-7
REV
DATE
DESCRIPTION
BY
DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND
RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT
MASTER PLAN
MEADOW AND WOODLANDS MAP
HOPEWELL RECREATION AREA
L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA
DRAWING NUMBER
PLATE
16-17
SCALE AS NOTED
DATE 12/19/75
SHEET M8W-6


MATCH M8 W-5
MATCH M8 W-7
HOPEWELL RECREATION AREA
HOPEWELL MARINA
RAYSTOWN LAKE
ALLEGRIPPIS
HOPEWELL
PINEY
BACKBONE
WOODCOCK
RIDGE
LIBERTY
HUNTINGDON CO
BEDFORD CO
PA 26
PA 164
Russellville
Cherrytown
Cove
ROTHROCK STATE FOREST
LITTLE
Tatman
PIPELINE
JEEP GRADE
RAILROAD
OLD RAILROAD GRADE
JEEP TRAIL
0'
2000'
4000'



REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

MEADOW AND WOODLANDS MAP
SAXTON AREA

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

PLATE 16-18

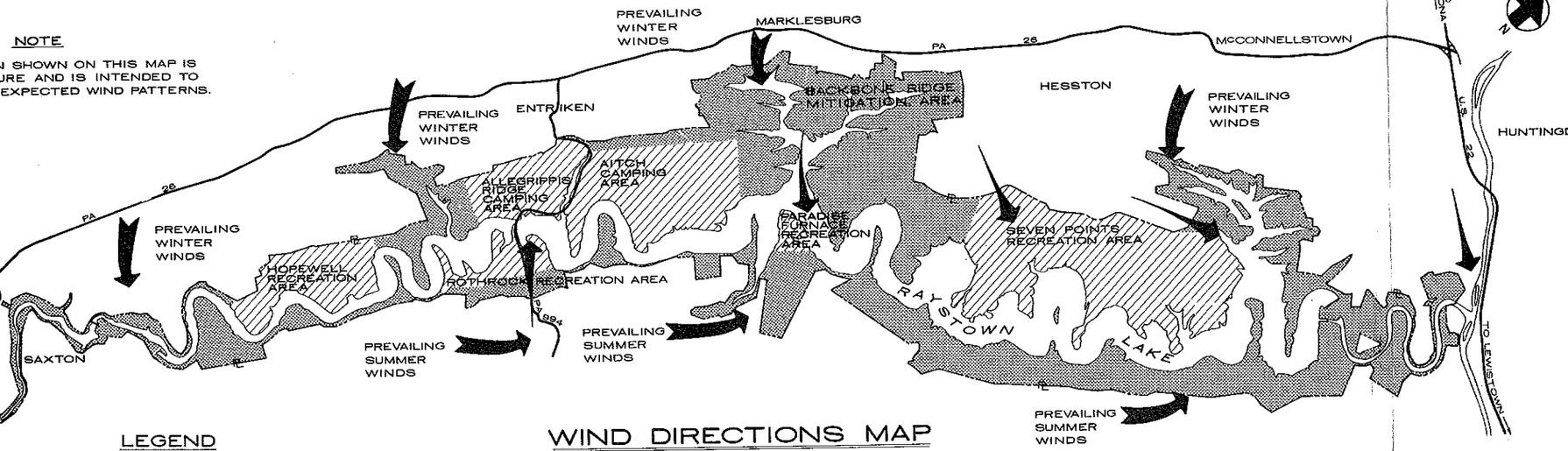
SCALE AS NOTED | DATE 12/19/75 | SHEET M&W-7



NORTH WOODBURY
BLAIR CO
BEDFORD CO
Creek
PA 26
Saxton
Middletown
Run
Grandview Cem
Puttstown
Sugar
Homans Corner
EASEMENT LINE
Abbot Ridge
Picnic Area
WARRIORS PATH STATE PARK
RIVER
Raystown Ch
0'
2000'
4000'
6000'

NOTE

N SHOWN ON THIS MAP IS
URE AND IS INTENDED TO
EXPECTED WIND PATTERNS.



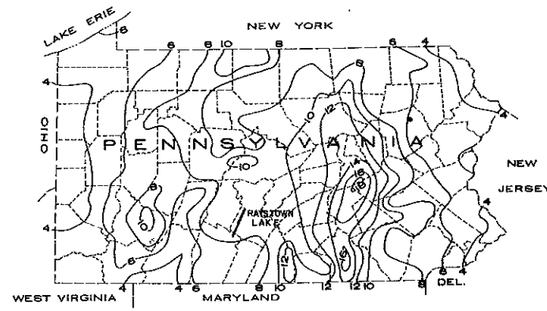
LEGEND

MAJOR WINDS

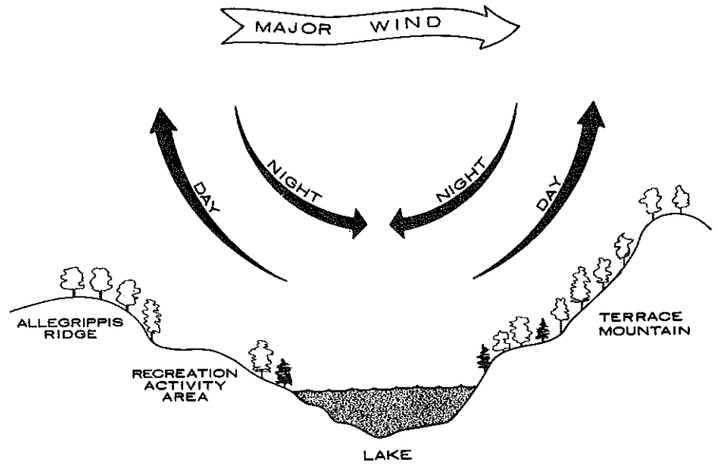
LOCAL WINDS

WIND DIRECTIONS MAP

0 4000' 8000' 12000' 16000' 20000' 24000'



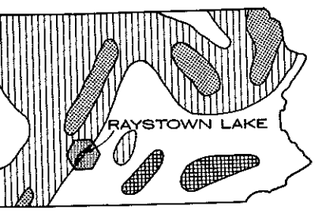
RAINFALL DURING AGNES STORM 1972



WIND DIAGRAM

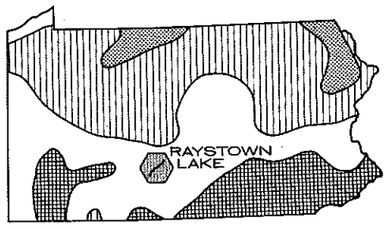
NO SCALE

PENNSYLVANIA CLIMATE DATA



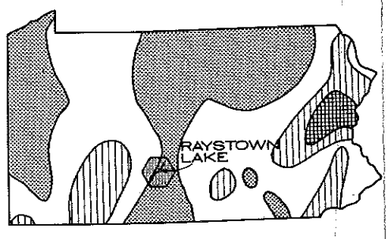
ILY MAXIMUM JULY TEMP. IN °F

NDER 80° / 80°-84° / 84°-88° / OVER 88°



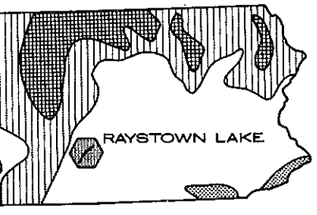
MEAN DAILY MINIMUM JANUARY TEMP. IN °F

UNDER 16° / 16°-20° / 20°-24° / OVER 24°



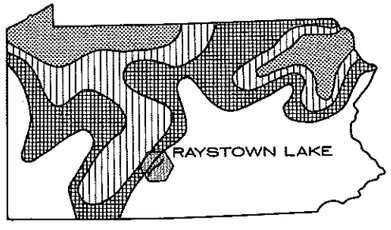
MEAN ANNUAL TOTAL PRECIPITATION IN INCHES

UNDER 40" / 40"-44" / 44"-48" / OVER 48"



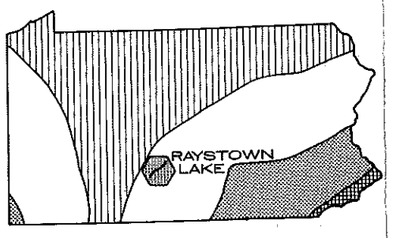
TH OF FREEZE-FREE PERIOD IN DAYS

NDER 120 DAYS / 120-150 DAYS / 150-180 DAYS / OVER 180 DAYS



AVERAGE ANNUAL SNOWFALL IN INCHES

OVER 60" / 48"-60" / 36"-48" / UNDER 36"



AVERAGE ANNUAL NO. DAYS WITH SNOW COVER 1" OR MORE

OVER 80 DAYS / 60-80 DAYS / 40-60 DAYS / LESS THAN 40 DAYS

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

CLIMATOLOGY

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

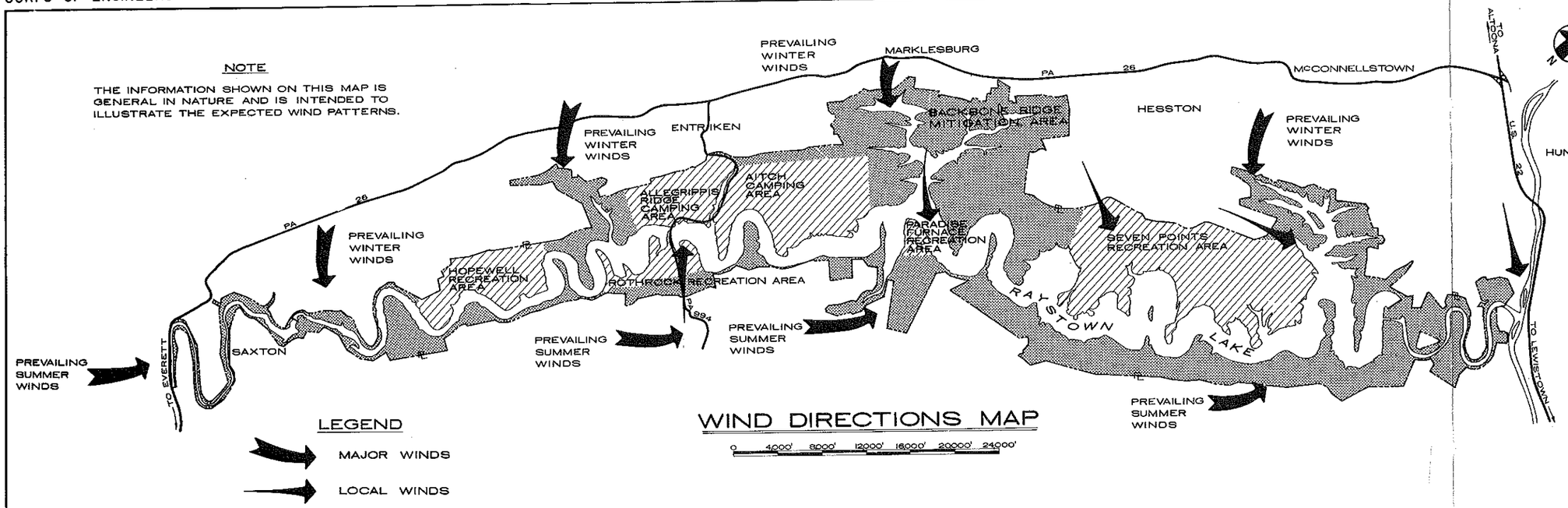
PLATE 16-19

SCALE AS NOTED | DATE 12/19/75 | SHEET OF

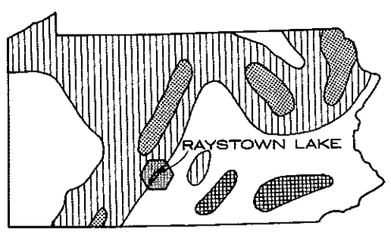
WEATHER SERVICE

NOTE

THE INFORMATION SHOWN ON THIS MAP IS GENERAL IN NATURE AND IS INTENDED TO ILLUSTRATE THE EXPECTED WIND PATTERNS.

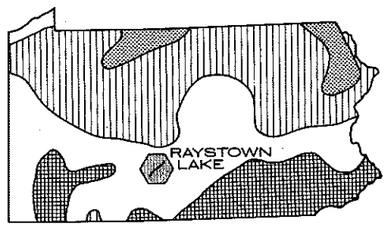


PENNSYLVANIA CLIMATE DATA



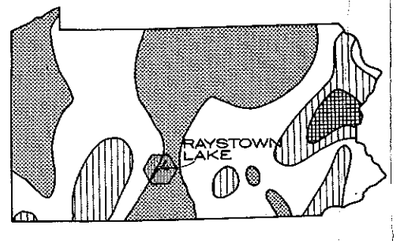
MEAN DAILY MAXIMUM JULY TEMP. IN °F

UNDER 80° | 84°-88°
80°-84° | OVER 88°



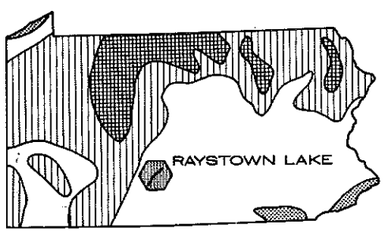
MEAN DAILY MINIMUM JANUARY TEMP. IN °F

UNDER 16° | 20°- 24°
16°-20° | OVER 24°



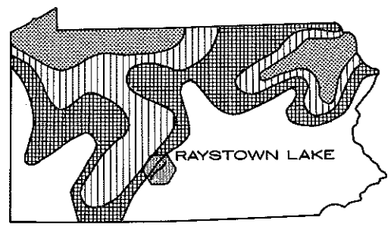
MEAN ANNUAL TOTAL PRECIPITATION IN INCHES

UNDER 40" | 44"-48"
40"-44" | OVER 48"



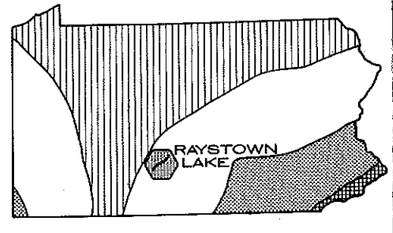
MEAN LENGTH OF FREEZE-FREE PERIOD IN DAYS

UNDER 120 DAYS | 150-180 DAYS
120-150 DAYS | OVER 180 DAYS



AVERAGE ANNUAL SNOWFALL IN INCHES

OVER 60" | 36"-48"
48"-60" | UNDER 36"



AVERAGE ANNUAL NO. DAYS WITH SNOW COVER 1" OR MORE

OVER 80 DAYS | 40-60 DAYS
60-80 DAYS | LESS THAN 40 DAYS

SOURCE OF CLIMATE DATA: NATIONAL WEATHER SERVICE

U. S. ARMY

ROPERTY

BACKBONE RIDGE GAME MITIGATION AREA

RAYSTOWN NATURAL AREA

RAYSTOWN LAKE

ROTHROCK STATE FOREST

TERRACE MOUNTAIN

LAND

FORESTED SLOPES & VALLEY WOODLOTS

FORESTED SLOPES:

MIXED OAKS
HICKORIES
BASSWOOD
CUCUMBER
TULIP POPLAR
BLACK LOCUST
RED MAPLE
SUGAR MAPLE
WHITE PINE
HEMLOCK

ABANDONED FIELDS & WATER SURFACE

GOLDENROD
WILD CRAB-APPLE
RED MAPLE
FLOWERING DOGWOOD
BLACK LOCUST
SASSAFRAS
HAWTHORNE
BLACK BIRCH
STAGHORN SUMAC
EASTERN REDBUD
BLACKBERRY
ELDERBERRY
ASPEN

F.S. & V.W.

ABANDONED FIELDS

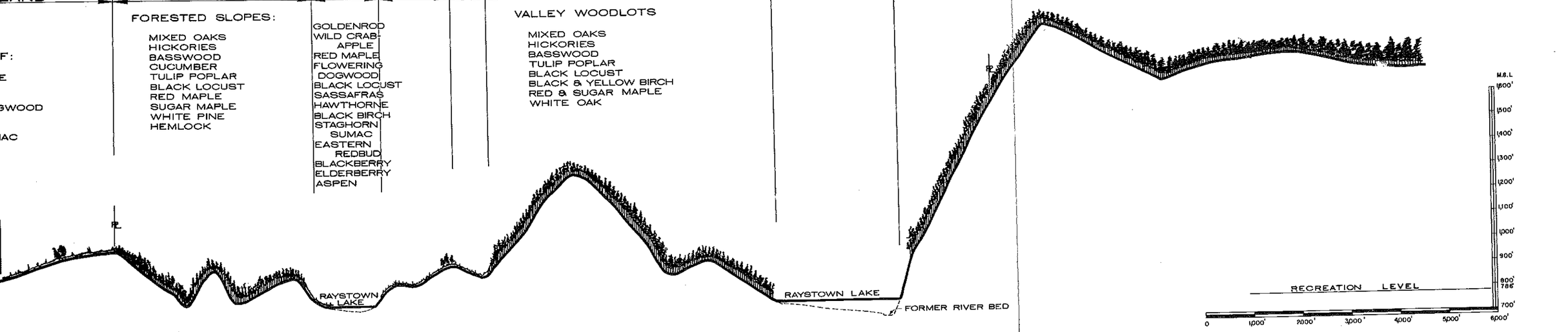
FORESTED SLOPES & VALLEY WOODLOTS

VALLEY WOODLOTS

MIXED OAKS
HICKORIES
BASSWOOD
TULIP POPLAR
BLACK LOCUST
BLACK & YELLOW BIRCH
RED & SUGAR MAPLE
WHITE OAK

WATER SURFACE

FORESTED SLOPES



INTERMITTENT RIDGES AND VALLEYS

VALLEY FLOOR

MOUNTAINSIDE

UPLANDS

30 FOR
GIC PROFILE

ECOLOGIC PROFILE



ECOLOGIC SUCCESSION

NO SCALE

MEADOW & FIELD	ABANDONED FIELD	THICKET	POLE TIMBER		SAW TIMBER	
CULTIVATED PASTURE GRASSES GOLDENROD	GOLDENROD, WEEDS BLACKBERRY ELDERBERRY CRABAPPLE HAWTHORNE STAGHORN SUMAC	GOLDENROD, WEEDS CRABAPPLE, HAWTHORNE STAGHORN SUMAC DOGWOODS, VIRGINIA CEDAR RED MAPLE BLACK BIRCH, VIRGINIA PINE	OAKS HICKORIES BIRCHES BASSWOOD TULIP POPLAR CUCUMBER	BLACK LOCUST RED MAPLE SUGAR MAPLE RED PINE	OAK HICKORIES BASSWOOD CUCUMBER TULIP POPLAR MAPLES	BIRCHES HEMLOCK WHITE PINE

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN
ECOLOGY

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

PLATE 16-20

SCALE AS NOTED | DATE 12/19/75 | SHEET OF

CORPS OF ENGINEERS

PRIVATE PROPERTY | BACKBONE RIDGE GAME MITIGATION AREA | RAYSTOWN NATURAL AREA | RAYSTOWN LAKE | ROTHROCK STATE FOR

FARM LAND | FORESTED SLOPES & VALLEY WOODLOTS | ABANDONED FIELDS & WATER SURFACE | F. S. & V. W. | ABANDONED FIELDS | FORESTED SLOPES & VALLEY WOODLOTS | WATER SURFACE | TERRACE MOUNTAIN | FORESTED SLOPES

OPEN FIELDS
CROP LANDS
PASTURE
HEDGE ROWS OF:

WILD CRABAPPLE
HAWTHORNE
BLACKBERRY
FLOWERING DOGWOOD
BLACK LOCUST
SASSAFRAS
STAGHORN SUMAC

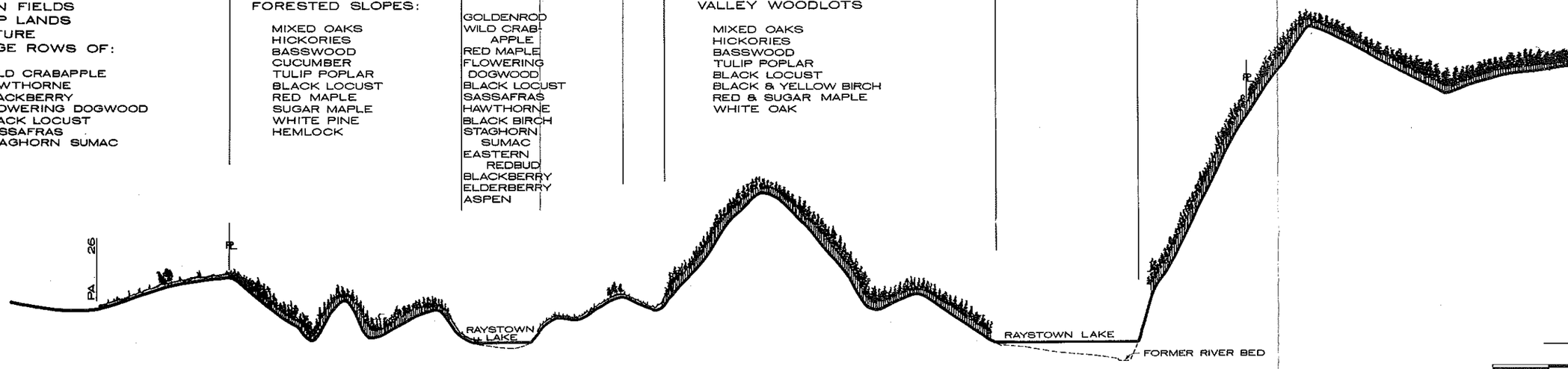
FORESTED SLOPES:

MIXED OAKS
HICKORIES
BASSWOOD
CUCUMBER
TULIP POPLAR
BLACK LOCUST
RED MAPLE
SUGAR MAPLE
WHITE PINE
HEMLOCK

GOLDENROD
WILD CRAB-APPLE
RED MAPLE
FLOWERING DOGWOOD
BLACK LOCUST
SASSAFRAS
HAWTHORNE
BLACK BIRCH
STAGHORN SUMAC
EASTERN REDBUD
BLACKBERRY
ELDERBERRY
ASPEN

VALLEY WOODLOTS

MIXED OAKS
HICKORIES
BASSWOOD
TULIP POPLAR
BLACK LOCUST
BLACK & YELLOW BIRCH
RED & SUGAR MAPLE
WHITE OAK



VALLEY | INTERMITTENT RIDGES AND VALLEYS | VALLEY FLOOR | MOUNTAINSIDE

NOTE: SEE PLATE 16-30 FOR LOCATION OF ECOLOGIC PROFILE

ECOLOGIC PROFILE



MARSH	MEADOW & FIELD	ABANDONED FIELD	THICKET	POLE TIMBER	SAW TIMBER
CATTAILS SEDGE MARSH GRASS	CULTIVATED PASTURE GRASSES GOLDENROD	GOLDENROD, WEEDS BLACKBERRY ELDERBERRY CRABAPPLE HAWTHORNE STAGHORN SUMAC	GOLDENROD, WEEDS CRABAPPLE, HAWTHORNE STAGHORN SUMAC DOGWOODS, VIRGINIA CEDAR RED MAPLE BLACK BIRCH, VIRGINIA PINE	OAKS HICKORIES BIRCHES BASSWOOD TULIP POPLAR CUCUMBER BLACK LOCUST RED MAPLE SUGAR MAPLE RED PINE	OAK HICKORIES BASSWOOD CUCUMBER TULIP POPLAR MAPLES BIRCHES HEMLOCK WHITE PINE

ECOLOGIC SUCCESSION

NO SCALE

HISTORIC INDIAN PATHS OF PENNSYLVANIA

1 2 3 5 10 15 20 25 30 Miles

NEW YORK

RAYSTOWN LAKE

BUFFALO SWAMP

GREAT SWAMP

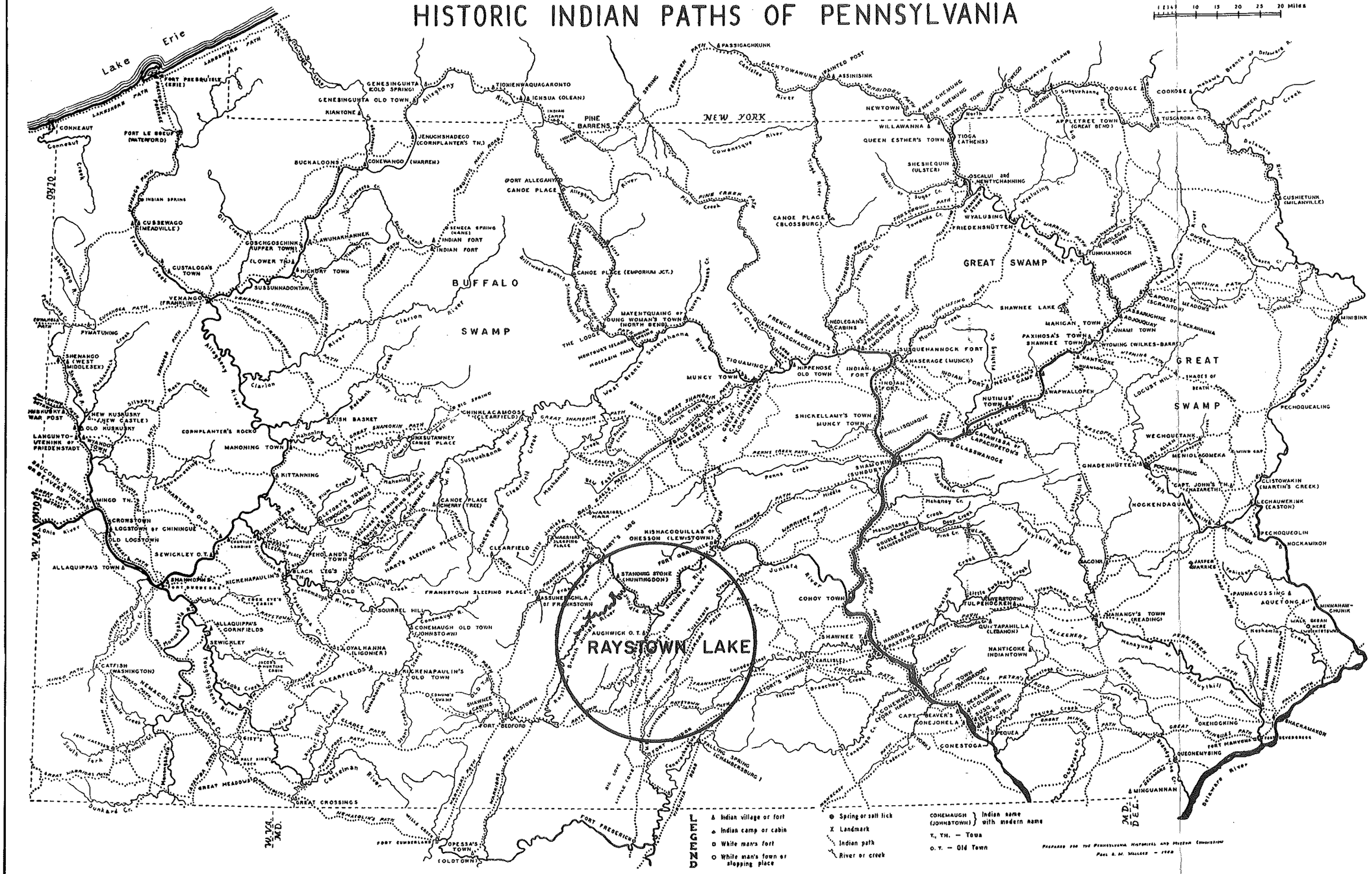
GREAT SWAMP

PINE BARRENS

NORTH

GENESINGUNTA (COLD SPRING)
GENESINGUNTA OLD TOWN
KIANTONE
TIONIENHAQUAGARONTO
ICHSUA (OLEAN)
JENUCHSHADEGO (CORNPLANTER'S TN.)
CONEWANGO (WARREN)
BUCKALOONS
PORT ALLEGANY
CANOE PLACE
GOSCHGOSCHINK (UPPER TOWN) (LOWER TOWN)
SUSSUNNADOHTAW
KINNAUGO - CHINNLACAMOOSE
FISH BASKET
CHINNLACAMOOSE (CLEARFIELD)
KITTANNING
CANOE PLACE (CHERRY TREE)
CLEARFIELD
BLACK LEG'S TN.
KICKENAPAULIN'S OLD TOWN
CONEMAUGH OLD TOWN (JOHNSTOWN)
OYAL HANNA (KLIGONIER)
KICKENAPAULIN'S OLD TOWN
FORT BEDFORD
OPESSA'S TOWN (OLDTOWN)
GREAT CROSSINGS
FORT CUMBERLAND
W. VA. MD.
PASSIGACHKUNK
CACHTOWAWUNK
PAINTED POST
ASSINISINK
NEW CHEMUNG
OLD CHEMUNG
TUTELO TOWN
WILLAWANNA
QUEEN ESTHER'S TOWN
TIOGA (ATHENS)
SHESHEQUIN (ULSTER)
OSCALUI and NEWTYCHANNING
CANOE PLACE (BLOSSBURG)
CANOE PLACE (EMPORIUM JCT.)
YOUNG WOMAN'S TOWN (NORTH BEND)
MAYENTQUAING or
FRENCH MARGARET'S
OTSTONWAKIN or
MONTOURSVILLE
SHAWNEE LAKE
SUSQUEHANNOCK FORT
CANASERAGE (MUNCY)
MUNCY TOWN
TIQUAMINGO
HIPPENOSE OLD TOWN
INDIAN FORT
SHICKELLAMY'S TOWN
MUNCY TOWN
CHILLISQUAQUE
NUTIMUS' TOWN
WAPWALLOPEN
NESCOPECK
LAPACHPETON'S TN.
GLASSWAHOGE
SHAMOKIN (SUNBURY)
KISHACOQUILLAS or
OHESSON (LEWISTOWN)
STANDING STONE (HUNTINGDON)
FRANKSTOWN SLEEPING PLACE
CONOY TOWN
SHAWNEE TN.
HARRIS'S FERRY
PAXTANG
CARLISLE
FORT'S SPRING
FORT LOUDOUN (CHAMBERSBURG)
FORT FREDERICK
OPEQUON
CONOCOCHEAGUE
CONOCOCHEAGUE (YORK HAVEN)
CAPT. BEAVER'S TN.
CONEJOHELA
GONESTOGA
DEKANOGA
COLUMBIA
FORTS
PEQUEA
QUITAPAHILLA (LEBANON)
NANTICOKE INDIANTOWN
MAHANGY'S TOWN (READING)
TULPEHOCKEN
TUNKHANNOCK
WYOLUTUMUNK
MAHICAN TOWN
PAKINOSA'S TOWN
SHAWNEE TOWN
WYOMING (WILKES-BARRE)
HANTCORE
NEEDLEGAN'S CAMP
SHADES OF DEATH
LOCUST HILL
WECHQUETANK
MENIOLAGOMEKA
POCHAPUCHKUG
CAPT. JOHN'S TN. (NAZARETH)
HOCKENDAQUA
JASPER WARRIKE
PAUNAGUSSING & AQUETONG
MINNAHAW-CHUNK
CUSHIETUNK (MILANVILLE)
MINISINK
PECHOQUEALING
CLISTOWAKIN (MARTIN'S CREEK)
LECHAUWERUNK (EASTON)
PECHOQUEOLIN
NOCKAMIXON
DAKENOCKING
SHACKAMAXON
QUEONEMYSING
MINGUANNAN
M.D. DEL.
OQUAGE
TUSCARORA O.T.
APPLETREE TOWN (GREAT BEND)
COOKOSE & MOHAWK Branch of Delaware R.
SHEHAWKEN
Popactan Creek
Delaware River
Susquehanna River
Juniata River
Allegheny River
Conemaugh River
Kiskiminetas River
Clarion River
Mahoning Creek
Redbank Creek
Sandy Lick Creek
Big Spring
Fishing Creek
Penns Creek
Shamokin Creek
Mahanoy Creek
Mahantango Creek
Schuylkill River
Tulpehocken Creek
Swatara Creek
Quittapahilla Creek
Conewago Creek
Codorus Creek
Yellow Breeches Creek
Conodoguinet Creek
Cowanesque River
Tioga River
Canisteo River
Chemung River
Susquehanna River
Towanda Creek
Wyalusing Creek
Sugar Creek
Meshoppen Creek
Tunkhannock Creek
Lackawanna River
Lackawaxen River
Shohola Creek
Minisink
Wallenpaupack Creek
Lehigh River
Perkiomen Creek
Manayunk
Schuylkill River
Brandywine Creek
Octoraro Creek

HISTORIC INDIAN PATHS OF PENNSYLVANIA


Lake Erie
NEW YORK
PINE BARRENS
BUFFALO SWAMP
GREAT SWAMP
GREAT SWAMP
RAYSTOWN LAKE
OHIO
W. VA.
MD.
DEL.
FORT PRESQU'ISLE (ERIE)
CONNEAUT
FORT LE BOEUF (WATERFORD)
GENESINGUHTA (COLD SPRING)
GENESINGUHTA OLD TOWN
KIANTONE
JENUGHSHADEGO (CORNPLANTER'S TN.)
ICHSUA (OLEAN)
TIONIENHAQUAGARONTO
BUCKALOONS
CONEWANGO (WARREN)
INDIAN SPRING
CUSSEWAGO (MEADVILLE)
GUSTALOGA'S TOWN
GOSCHGOSCHINK (UPPER TOWN)
KAUWAKHANNEK
SENECA SPRING (KANE)
INDIAN FORT
INDIAN FORT
KINDUSKY TOWN
LOWER TOWN
SUSSUNNADONTAW
VENANGO (FRANKLIN)
PYMATUNING
SHENANGO (WEST MIDDLESEX)
NEW KUSKUSKY (NEW CASTLE)
OLD KUSKUSKY
LANGUNTO-UTENINK or FRIEDENSTADT
WYANDOT TOWN
CORNPLANTER'S ROCKS
MAHONING TOWN
KITTANNING
FISH BASKET
CHINKLACAMOOSE (CLEARFIELD)
GUNSUTAWNEY CANOE PLACE
CANOE PLACE (TREE)
CROWSTOWN
LOGSTOWN or CHININGUE
OLD LOGSTOWN
MINGO TN.
SEWICKLEY O.T.
ALLAQUIPPA'S TOWN
SHANOPIN'S OLD TOWN
NICHENAPAULIN'S
BLACK LEG'S
OLD
SEWICKLEY
ALLAQUIPPA'S CORNFIELDS
CATFISH (WASHINGTON)
SQUIRREL HILL
LOYALHANNA (LIGONIER)
CONEMAUGH OLD TOWN (JOHNSTOWN)
NICKENAPAULIN'S OLD TOWN
OLD TOWN
SHAWNEE CABINS
RAYSTOWN
FORT BEDFORD
GREAT CROSSINGS
OPESSA'S TOWN (OLDTOWN)
FORT CUMBERLAND
FORT FREDERICK
PORT ALLEGANY
CANOE PLACE
CANOE PLACE (EMPORIUM JCT.)
MAYENTQUAING or YOUNG WOMAN'S TOWN (NORTH BEND)
THE LODGE
MUNCY TOWN
HIPPENOSE OLD TOWN
INDIAN FORT
INDIAN FORT
SHICKELLAMY'S TOWN
MUNCY TOWN
CHILLISQUAQUE
CATAWISSA or LAPACHPETONS
GLASSWANOGE
SHAMOKIN (SUNBURY)
HISHACOQUILLAS or OHESSON (LEWISTOWN)
STANDING STONE (HUNTINGDON)
FRANKSTOWN SLEEPING PLACE
JUNIATA
CONOY TOWN
SHAWNEE TN.
HARRIS'S FERRY or PAXTANG
CARLISLE
CONOY TOWN
CAPT. BEAVER'S or GONEJOHELA
CONESTOGA
PEQUEA
NANTICOKE INDIANTOWN
TULPEHOCKEN
QUITAPAHILLA (LEBANON)
HANNAH'S TOWN (READING)
PAUNACUSSING & AQUETONG
MINNAHAWCHUNIK
MINGUANNAN
TUSCARORA O.T.
APPLETREE TOWN (GREAT BEND)
QUEEN ESTHER'S TOWN
TIOGA (ATHENS)
WILLAWANNA
NEWTOWN
OLD CHEMUNG
NEW CHEMUNG
SHESHEQUIN (ULSTER)
OSCALUI and NEWTYCHANNING
WYALUSING
FRIEDENSHÜTTEN
CANOE PLACE (BLOSSBURG)
TUNKHANNOCK
SHAWNEE LAKE
MAHICAN TOWN
PAXINOSA'S TOWN & SHAWNEE TOWN
SUSQUEHANNOCK FORT
CANASERAGE (MUNCY)
NEGLEGANY'S CABINS
OTSTONWAKIN or FRENCHTOWN or MONTOURSVILLE
NEGLEGANY'S CAMP
NUTIMUS' TOWN
WAPWALLOPEN
WYOMING (WILKES-BARRE)
SHAHOLA
MINISINK
PECHOQUEALING
WECHQUETANK
MENIOLAGOMEKA
POCHAPUCHNUC
GNADENHÜTTEN
HOCKENDAQUA
CLISTOWAKIN (MARTIN'S CREEK)
LECHAUWEKINK (EASTON)
PECHOQUEOLIN
HOCKAMIXON
JASPER MARKES
CAPT. JOHN'S TN. (NAZARETH)
GUSHIETUNK (MILANVILLE)
POPACTON
SHEHAWKEN
COOKOSE & MOHAWK Branch of Delaware R.
OQUAGE
CHOCONUT
OWEGO
SAHWAYEHTA ISLAND
SHAWANESE PATH
WARRIORS PATH
INDIAN PATH
PENNS CREEK PATH
GREAT SHAMOKIN PATH
GREAT WARRIORS PATH
NEGLEGANY'S PATH
SHAWANESE PATH
WYOMING PATH
MINISINK PATH
PENNSYLVANIA PATH
LANDSMORE PATH
FORBIDDEN PATH
PINE CREEK PATH
SHESHEQUIN PATH
TOWANDA PATH
WARRIORS PATH
SCHUYLKILL PATH
PERKIOMEN PATH
ALLEGHENY PATH
GREAT SHAMOKIN PATH
GREAT WARRIORS PATH
GREAT MINGO PATH
GREAT MINISINK PATH
GREAT INDIAN PATH
FORT MANWYNE
OKEHOCKING
SHACKAMAXON
QUEONEMYSING
BEVERBRAKES
Susquehanna River
Allegheny River
Ohio River
Delaware River
Kiskiminetas River
Conemaugh River
Juniata River
Schuylkill River
Lehigh River
Monongahela River
Youghiogheny River
Clarion River
Redbank Creek
Sandy Lick Cr.
Mahoning Cr.
Fishing Cr.
Loyalhanna Cr.
Chartiers Cr.
Raccoon Cr.
Beaver Cr.
Shenango R.
Neshannock Cr.
Slippery Rock Creek
Pymatuning Creek
Connoquenessing Cr.
Connoquenessing Creek
Big Sandy Cr.
Redstone Cr.
Cheat River
Casselman River
Castleman River
Dunkard Cr.
Tenmile Creek
Ten Mile Cr.
Indian Cr.
Quemahoning Cr.
Stony Creek
Shade Cr.
Blacklick Cr.
Yellow Creek
Bushkill Cr.
Lackawaxen R.
Lackawanna R.
Tunkhannock Cr.
Meshoppen Cr.
Wyalusing Cr.
Towanda Cr.
Sugar Cr.
Tioga R.
Cowanesque River
Canisteo River
Chemung River
Owego Cr.
Susquehanna R.
W. Br. Susquehanna R.
Tioga River
Pine Creek
Lycoming Cr.
Loyalsock Cr.
Muncy Cr.
Penns Creek
Shamokin Cr.
Mahanoy Cr.
Mahantango Creek
Pine Cr.
Deep Creek
Schuylkill River
Maiden Creek
Tulpehocken Cr.
Conewago Cr.
Codorus Cr.
Little Conewago Cr.
Yellow Breeches
Conodoguinet Cr.
Big Spring
Falling Spring (Chambersburg)
Licking Creek
Big Cove
Little Cove
Sideling Hill Creek
Town Hill Creek
Wills Creek
Evitts Creek
Warriors Mark
Warriors Path
Frankstown Path
Kittanning Path
Kittanning Old Town
Charter's Landing
Charter's Old Town
Shannopin's Old Town
Nicholas Cresap's Old Town
Old Town
Old Tulpehocken
Old Shawnee Town
Old Peter's Road
Old Town Run
Old Town Hollow
Old Town Creek
Old Town Gap
Old Town Mountain
Old Town Spring
Old Town Path
Old Town Road
Old Town Hill

ND

RY

OAD TOP MOUNTAIN RAILROAD (ABD)

NDIAN TRAIL

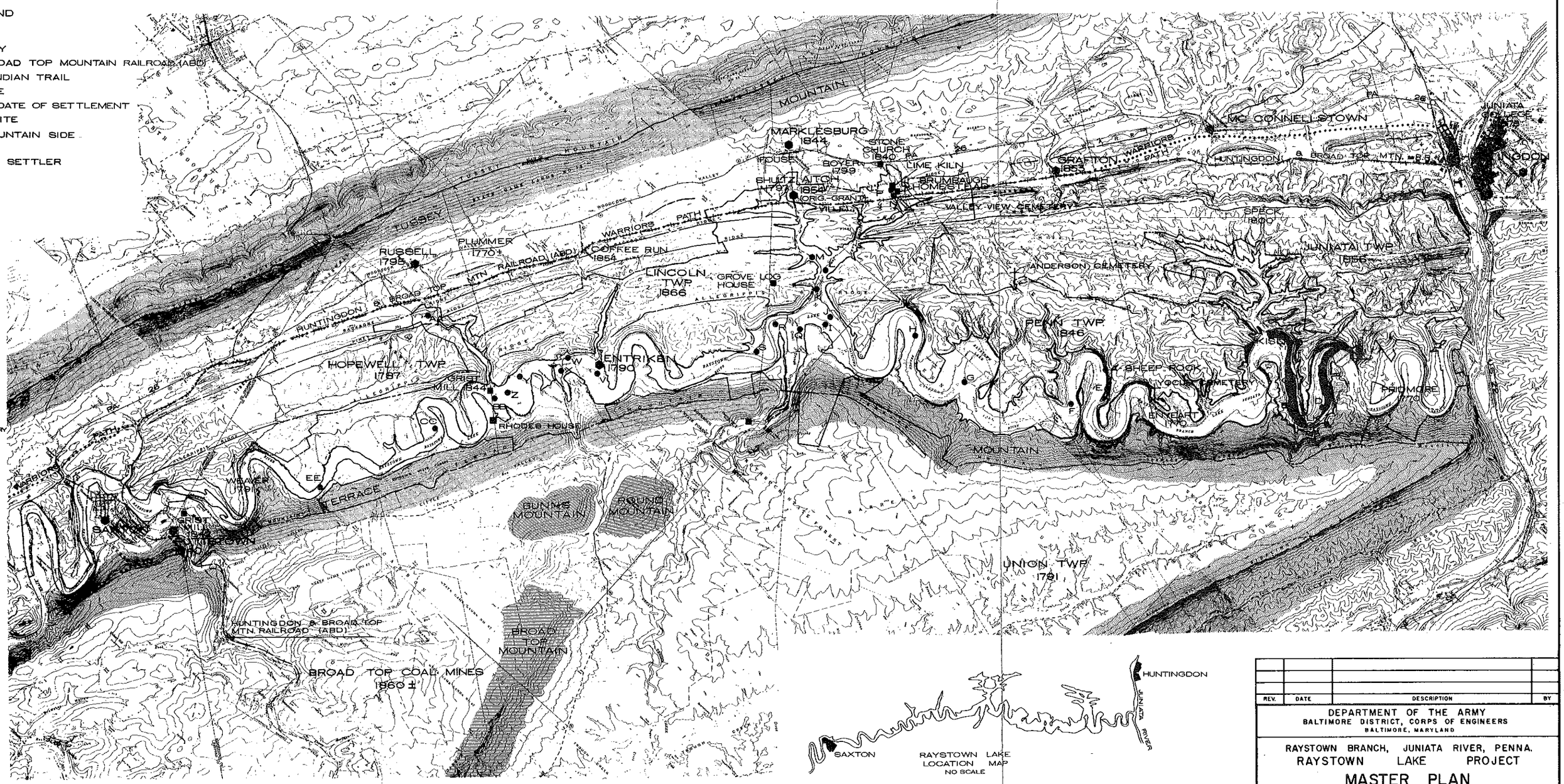
E

DATE OF SETTLEMENT

ITE

UNTAIN SIDE

/ SETTLER



RAYSTOWN LAKE
LOCATION MAP
NO SCALE

NOTE:
LEVELS REFER TO OCCUPATIONAL LEVELS AS DETERMINED BY SHEEP ROCK SHELTER ARCHEOLOGICAL EXCAVATIONS, 1960-1968.

4000' 0 4000' 8000' 12000' 16000' 20000'
SCALE

ARRIVAL
LINE

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

SCENIC VALUES AND HERITAGE SITES

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

PLATE 16-22

SCALE: AS NOTED | DATE 12/19/75 | SHEET OF

LEGEND

- LAKE SHORE
- PROJECT BOUNDARY
- HUNTINGDON & BROAD TOP MOUNTAIN RAILROAD (ABD)
- WARRIORS PATH INDIAN TRAIL
- ARCHEOLOGIC SITE
- COMMUNITY WITH DATE OF SETTLEMENT
- EARLY HISTORIC SITE
- MAJOR SCENIC MOUNTAIN SIDE
- MAJOR RIDGE

PLUMMER 1770± — EARLY SETTLER

NORTH

PERIOD — HISTORIC

2000 A.D. 1974 A.D.
SUSQUEHANNOCK
1580 – LEVEL 1
SUSQUEHANNOCK
OWASCO
MONONGAHELA
1000 A.D.
CLEMSON'S ISLAND & SHENK'S FERRY
700 A.D. – LEVEL 2
500 A.D.

PERIOD — WOODLAND

A.D.
B.C.
500 B.C. – LEVEL 3
1000 B.C. – LEVEL 4
1500 B.C. – LEVEL 5
2000 B.C.
3000 B.C. – LEVEL 6
4000 B.C.
5000 B.C. – LEVEL 7
6000 B.C.
7000 B.C. DECIDUOUS FOREST / CONIFEROUS FOREST
8000 B.C. – LEVEL 8 MAN'S ARRIVAL

PERIOD — ARCHAIC

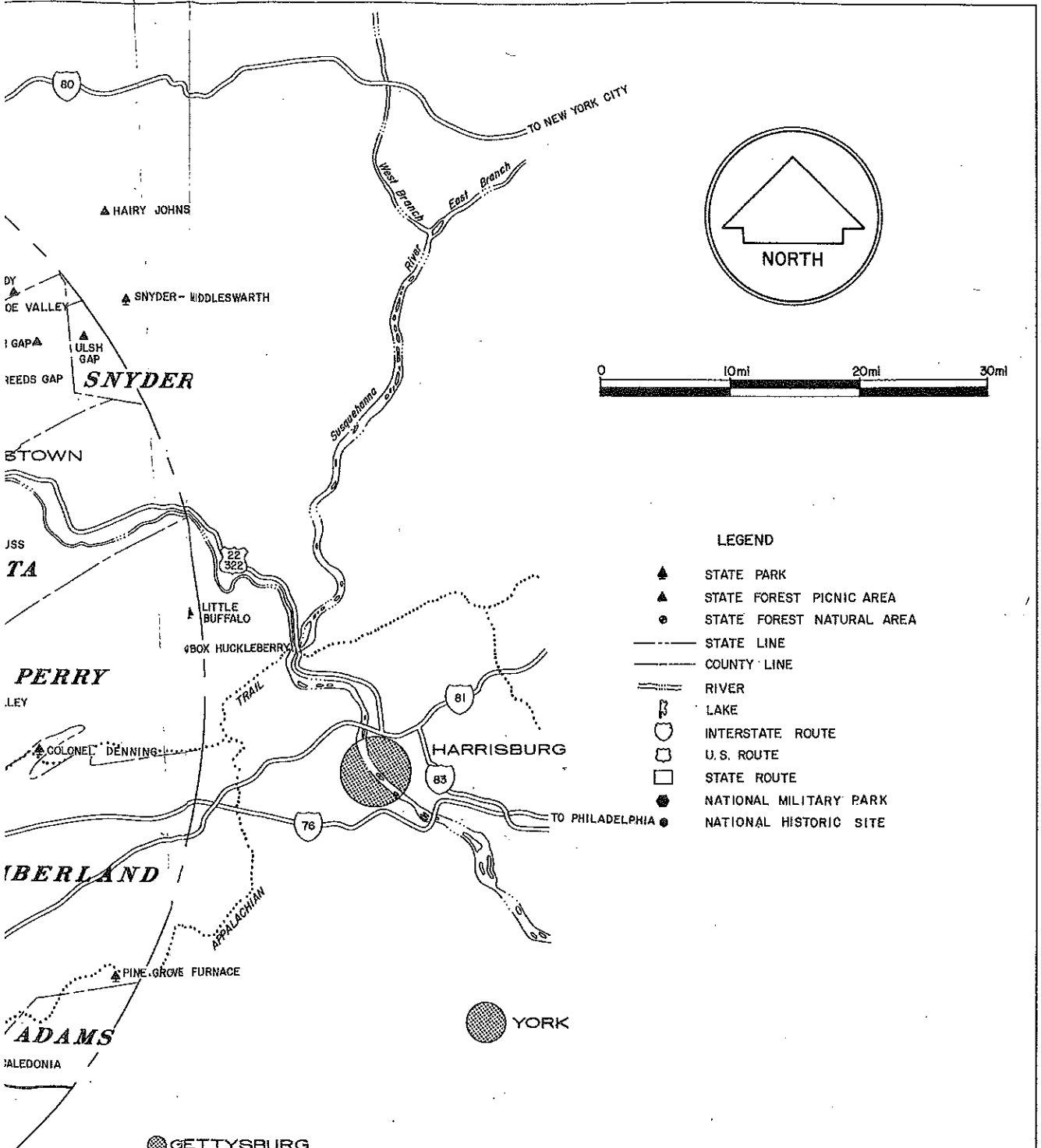
RAYSTOWN TIME LINE

NOTE:
LEVELS REFER TO OCCUPATIONAL LEVELS AS DETERMINED BY SHEEP ROCK SHELTER ARCHEOLOGICAL EXCAVATIONS, 1960-1968.

4,000' 0 4,000' 8,000' 12,000' 16,000' 20,000'
SCALE

RAYSTOWN LAKE LOCATION MAP
NO SCALE

U. S. ARMY



GETTYSBURG

GETTYSBURG NATIONAL MILITARY PARK

PENNSYLVANIA

MARYLAND

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

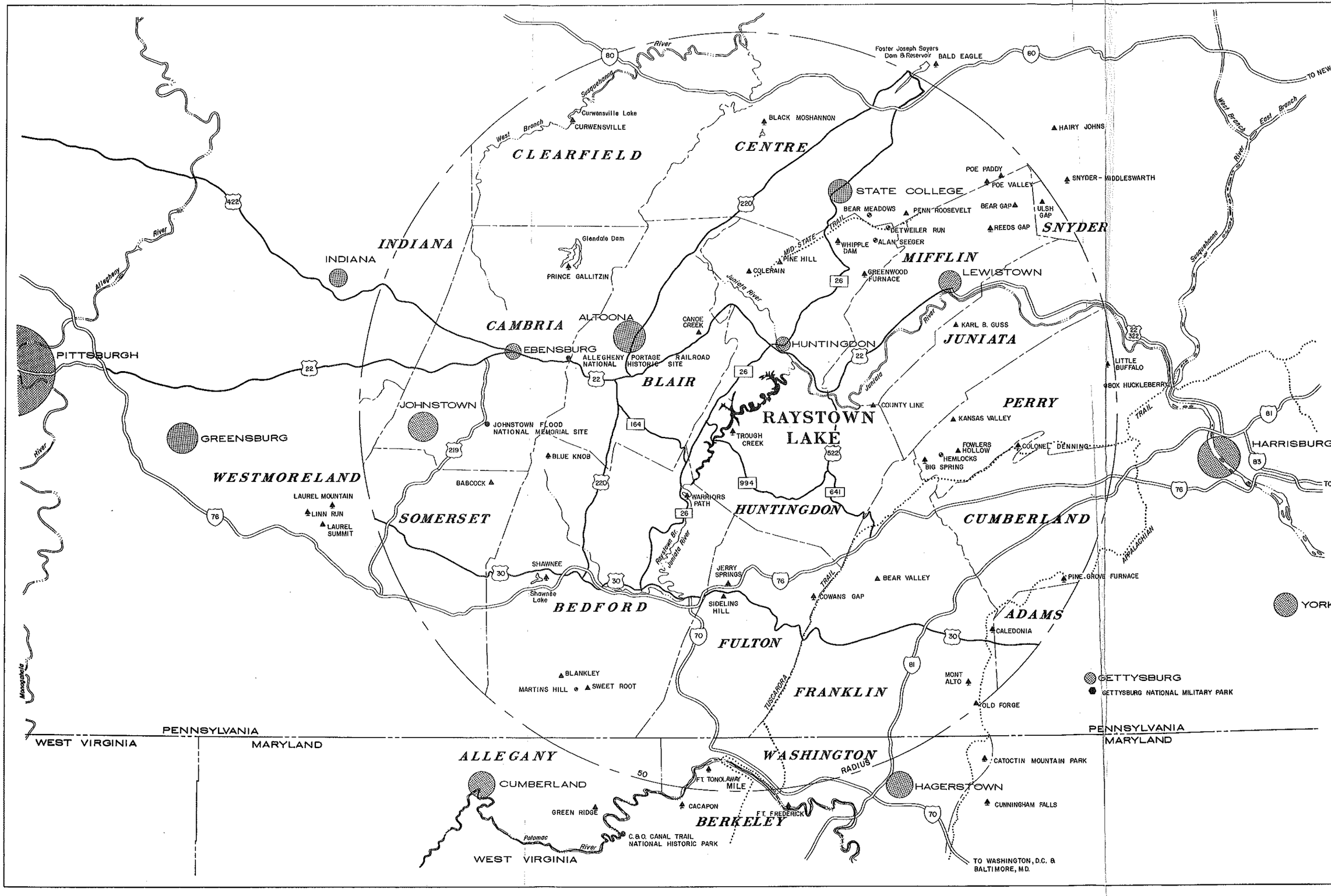
COMPETING RECREATION AREAS

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

PLATE 16-23

SCALE AS NOTED | DATE 12/19/75 | SHEET OF


Foster Joseph Sayers Dam & Reservoir
BALD EAGLE
Susquehanna River
Curwensville Lake
CURWENSVILLE
West Branch
CLEARFIELD
BLACK MOSHANNON
CENTRE
HAIRY JOHNS
West Branch
East Branch
Susquehanna River
TO NEW
POE PADDY
POE VALLEY
SNYDER-MIDDLESWARTH
STATE COLLEGE
BEAR MEADOWS
PENN-ROOSEVELT
BEAR GAP
ULSH GAP
DETWEILER RUN
REEDS GAP
SNYDER
MID-STATE TRAIL
WHIPPLE DAM
ALAN SEEGER
PINE HILL
COLERAIN
GREENWOOD FURNACE
MIFFLIN
LEWISTOWN
Juniata River
Glendale Dam
PRINCE GALLITZIN
INDIANA
INDIANA
Allegheny River
CAMBRIA
ALTOONA
CANOE CREEK
KARL B. GUSS
JUNIATA
PITTSBURGH
EBENSBURG
ALLEGHENY NATIONAL
PORTAGE HISTORIC
RAILROAD SITE
HUNTINGDON
Juniata River
LITTLE BUFFALO
BOX HUCKLEBERRY
BLAIR
JOHNSTOWN
JOHNSTOWN FLOOD NATIONAL MEMORIAL SITE
COUNTY LINE
PERRY
RAYSTOWN LAKE
TROUGH CREEK
KANSAS VALLEY
GREENSBURG
FOWLERS HOLLOW
COLONEL DENNING
HEMLOCKS
BIG SPRING
HARRISBURG
BLUE KNOB
WESTMORELAND
BABCOCK
WARRIORS PATH
LAUREL MOUNTAIN
LINN RUN
LAUREL SUMMIT
SOMERSET
HUNTINGDON
CUMBERLAND
Raystown Br. of Juniata River
SHAWNEE
Shawnee Lake
JERRY SPRINGS
BEAR VALLEY
PINE GROVE FURNACE
APPALACHIAN TRAIL
COWANS GAP
SIDELING HILL
BEDFORD
ADAMS
CALEDONIA
YORK
FULTON
BLANKLEY
MARTINS HILL
SWEET ROOT
TUSCARORA
FRANKLIN
MONT ALTO
OLD FORGE
GETTYSBURG
GETTYSBURG NATIONAL MILITARY PARK
Monongahela River
PENNSYLVANIA
WEST VIRGINIA
MARYLAND
PENNSYLVANIA
MARYLAND
ALLEGANY
WASHINGTON
CATOCTIN MOUNTAIN PARK
50 MILE RADIUS
FT. TONOLAWAY
CUMBERLAND
HAGERSTOWN
CACAPON
GREEN RIDGE
FT. FREDERICK
CUNNINGHAM FALLS
BERKELEY
Potomac River
C. & O. CANAL TRAIL NATIONAL HISTORIC PARK
WEST VIRGINIA
TO WASHINGTON, D.C. & BALTIMORE, MD.

U.S. ARMY

BLAIR CO.

HUSTON TWP.

WOODBURY TWP.

HUNTINGDON CO.

PENN TWP.

PORTER TWP.

WALKER TWP.

N. WOODBURY TWP.

MARKLESBURG

PA 26

McCONNELLSTOWN

HESSTON

L.R. 31037

L.R. 31085

T-438

SMITHFIELD TWP.

TO ALTOONA

U.S. 22

HUNTINGDON

JUNIATA TWP.

L.R. 31032

L.R. 31109

T-434

T-440

T-430

HENDERSON TWP.

PA 164

PA 26

L.R. 31025

LINCOLN TWP.

T-405

PA 994

L.R. 31037

ORD CO.

HOPEWELL TWP

BERTY TWP.

RAYSTOWN LAKE

L.R. 31019

L.R. 31118

L.R. 31020

TOD TWP.

CASS TWP.

UNION TWP.

L.R. 31110

JUNIATA RIVER

TO LEWISTOWN

TOP

CARBON TWP.

PA 994

LEGEND

- INTENSIVE USE
- NSITY
- DENSITY
- ERVICES
- LOW DENSITY USE
- EA
- REST LANDS
- DLIFE LANDS
- TROL (SEE PLATE 16-25 FOR DETAILED AREAS)

U.S. 22 — UNITED STATES HIGHWAY

PA 26 / L.R. 31118 — PENNSYLVANIA & LEGISLATIVE ROUTE

T-438 — TOWNSHIP ROAD

COUNTY BOUNDARY LINE

TOWNSHIP BOUNDARY LINE

PROJECT PROPERTY LINE

NORTH

SCALE IN MILES

1 mile 0 1 2 3 4

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

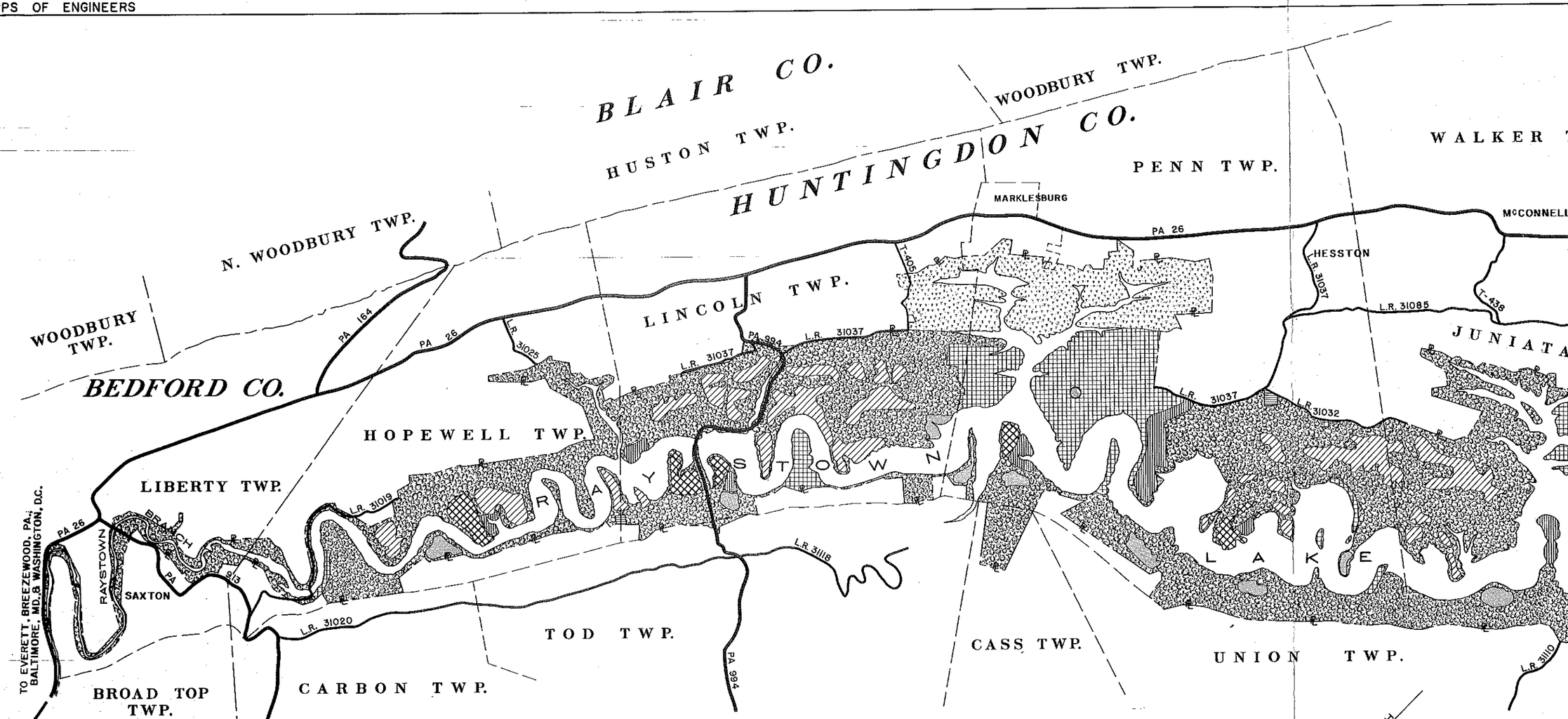
PROPOSED LAND USE

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

PLATE 16-24

SCALE: AS NOTED | DATE 12/19/75 | SHEET OF



LEGEND

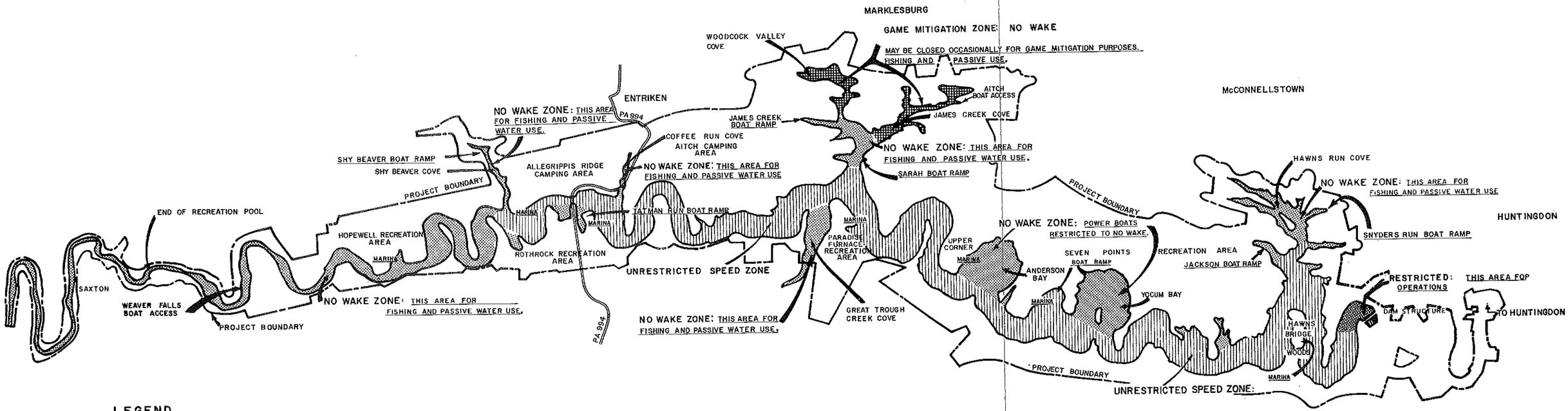
- RECREATION - INTENSIVE USE
  - HIGH – DENSITY
  - MEDIUM – DENSITY
  - VISITOR SERVICES
- RECREATION - LOW DENSITY USE
- NATURAL AREA
- RESERVE FOREST LANDS
- FISH AND WILDLIFE LANDS
- OPERATIONAL
- WATER CONTROL (SEE PLATE 16-25 FOR DETAILED AREAS)

- U.S. 22 — UNITED STATES HIGHWAY
- PA 26 / L.R. 31118 — PENNSYLVANIA & LEGISLATIVE ROUTE
- T-438 — TOWNSHIP ROAD
- COUNTY BOUNDARY LINE
- TOWNSHIP BOUNDARY LINE
- PROJECT PROPERTY LINE

NORTH

SCALE IN MILES
1 mile 0 1 2 3 4

U. S. ARMY



LEGEND

- NO WAKE ZONE
- UNRESTRICTED SPEED ZONE
- GAME MITIGATION ZONE
- RESTRICTED

NORTH

GRAPHIC SCALE IN MILES
1 1/2 0 1 2 3

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

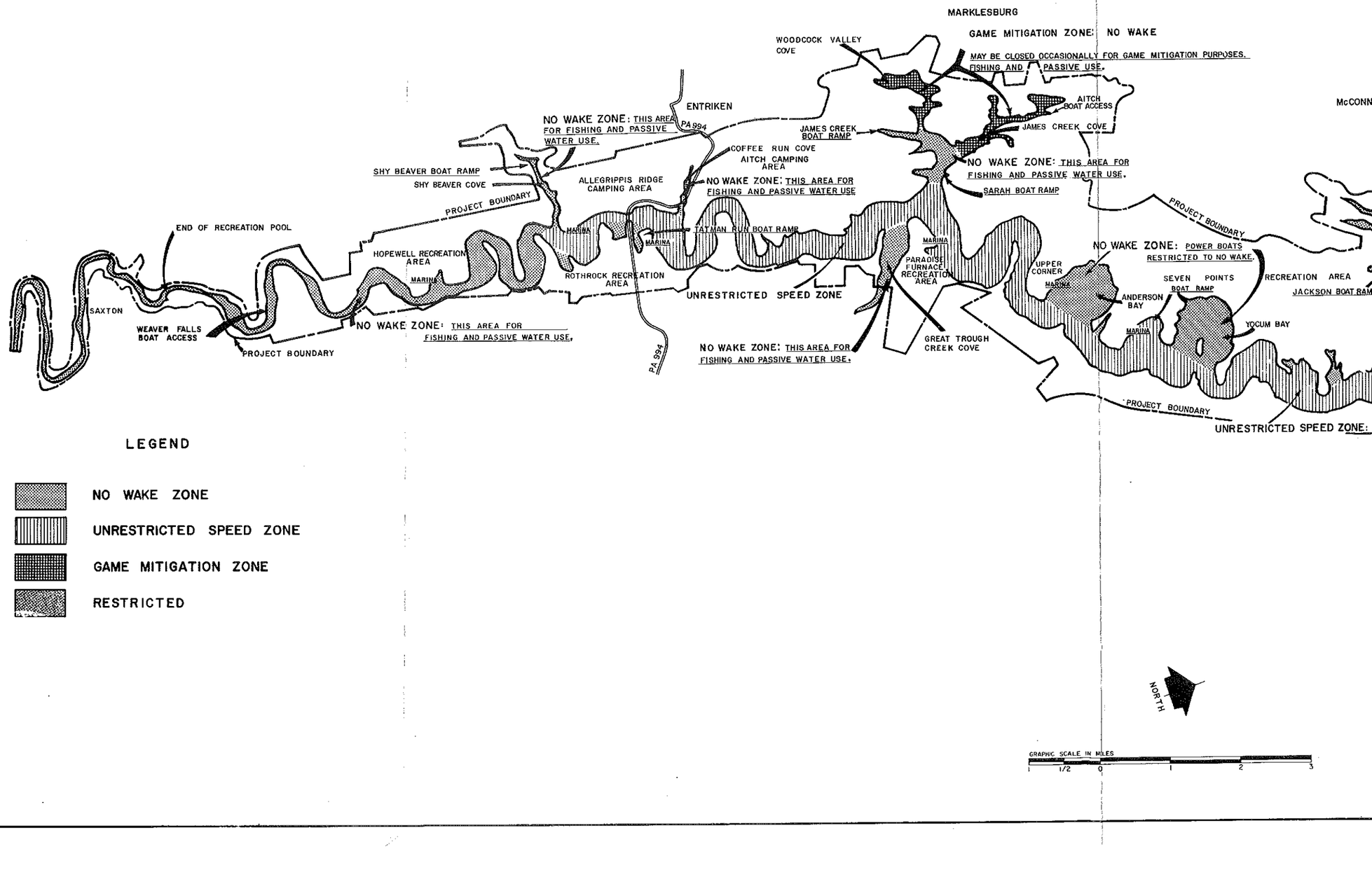
WATER SURFACE CONTROL PLAN

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

PLATE 16-25

SCALE: AS NOTED | DATE 12/19/75 | SHEET OF



LEGEND

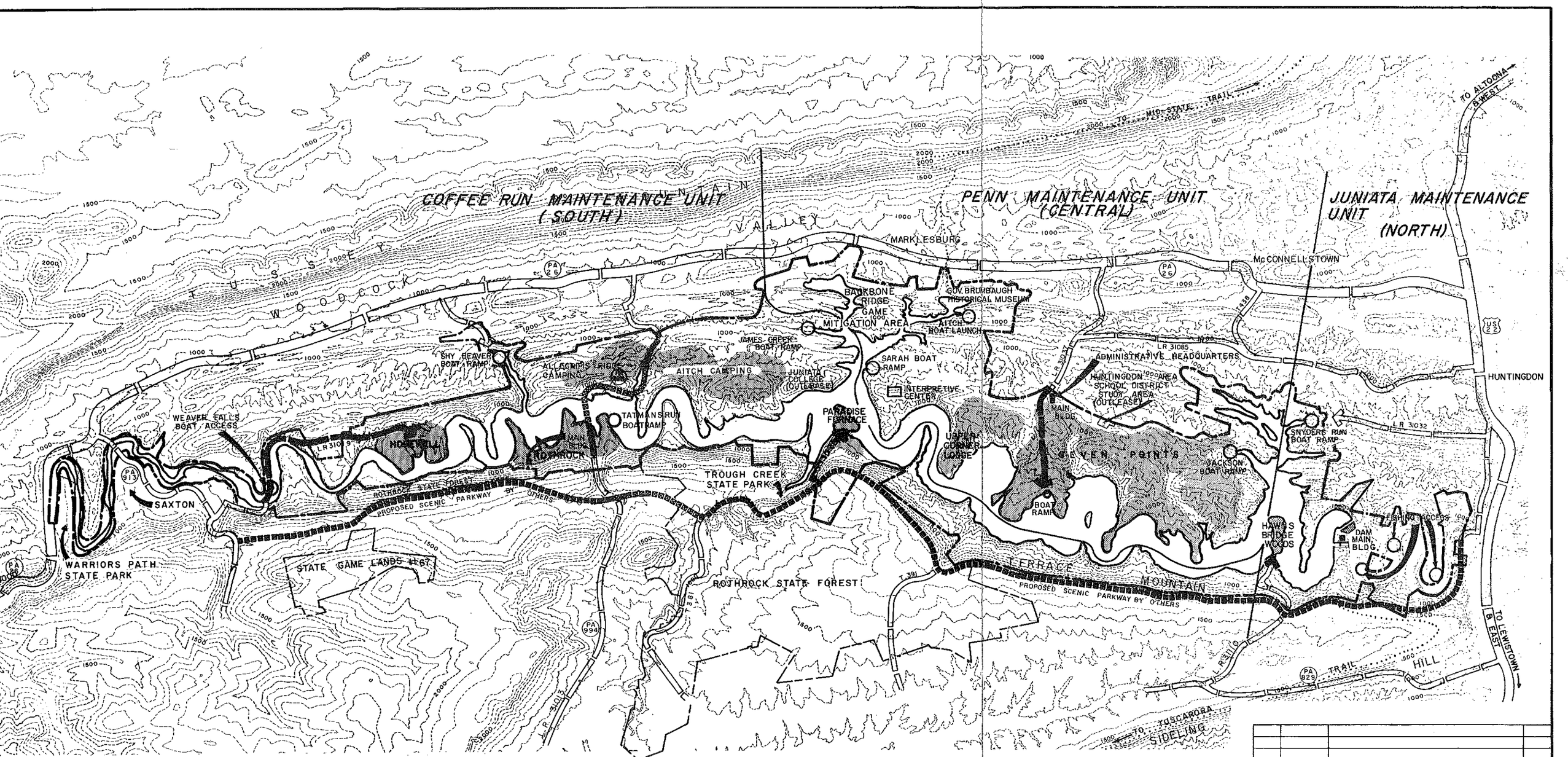
- NO WAKE ZONE
- UNRESTRICTED SPEED ZONE
- GAME MITIGATION ZONE
- RESTRICTED

NORTH

GRAPHIC SCALE IN MILES

1 1/2 0 1 2 3

U. S. ARMY



EXISTING MAJOR STATE OR FEDERAL HWY
EXISTING ACCESS ROAD
EXISTING ACCESS ROAD TO BE IMPROVED
PROPOSED ACCESS ROAD, 20 TO 24 FT WIDE
HIGHWAY RELOCATED BY CORPS OF ENGINEERS
PROPOSED SCENIC PARKWAY BY OTHERS
PROJECT BOUNDARY
STATE FOREST BOUNDARY
PROPOSED HIKING TRAIL BY OTHERS

NORTH

GRAPHIC SCALE IN MILES
1 1/2 0 1 2 3

REV	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN
GENERAL PLAN

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

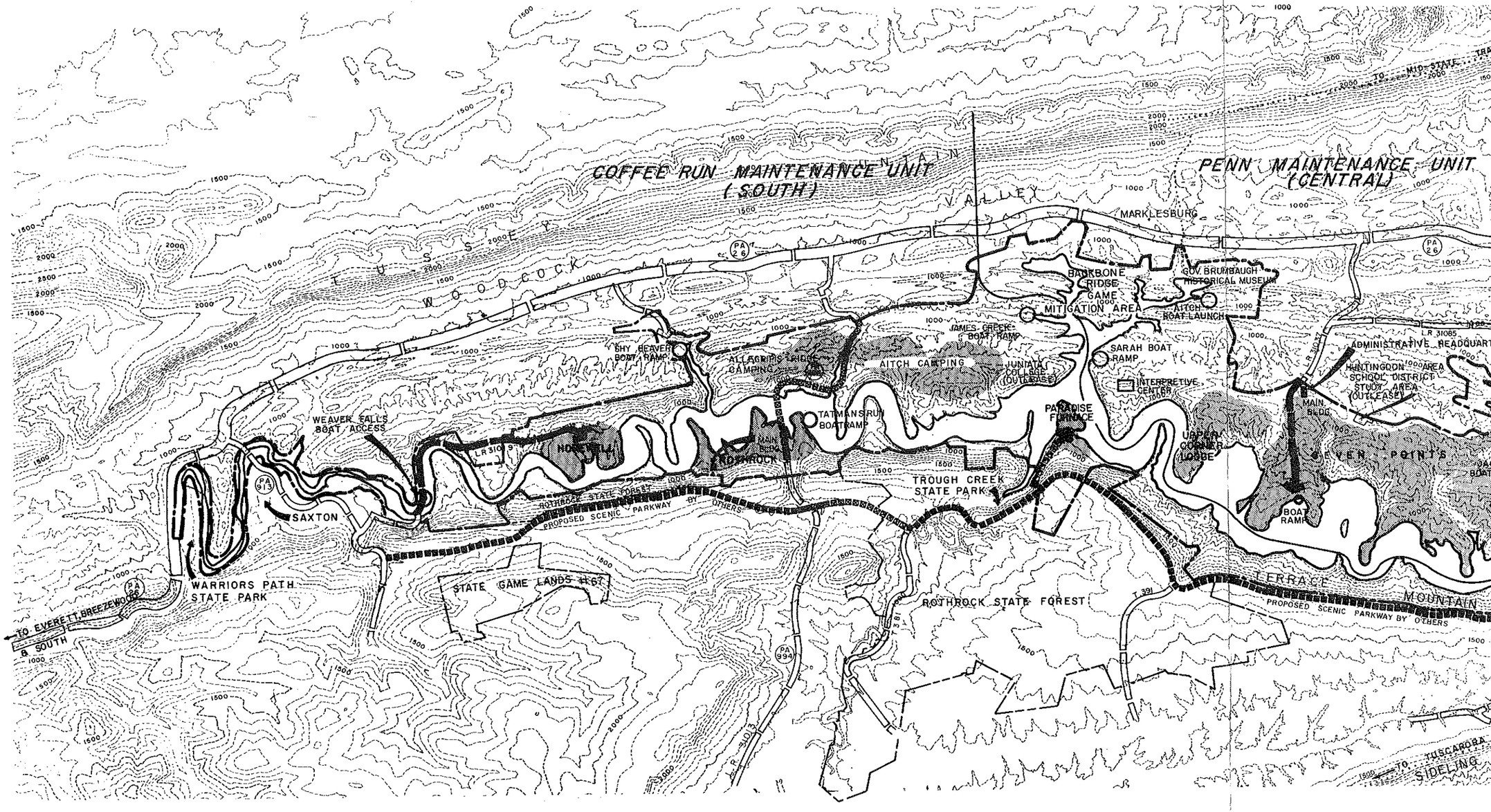
DRAWING NUMBER

PLATE 16-26

SCALE: AS NOTED | DATE 12/19/75 | SHEET OF

RTY, GRAY, AND ASSOCIATES; LANDSCAPE ARCHITECTS AND ENGINEERS; MONROEVILLE, PA. DEC. 1968

CORPS OF ENGINEERS



EXISTING MAJOR STATE OR FEDERAL HWY
EXISTING ACCESS ROAD
EXISTING ACCESS ROAD TO BE IMPROVED
PROPOSED ACCESS ROAD, 20 TO 24 FT WIDE
HIGHWAY RELOCATED BY CORPS OF ENGINEERS
PROPOSED SCENIC PARKWAY BY OTHERS
PROJECT BOUNDARY
STATE FOREST BOUNDARY
PROPOSED HIKING TRAIL BY OTHERS

NORTH

GRAPHIC SCALE IN MILES
1 1/2 0 1 2 3

FROM ORIGINAL BY FAHRINGER, McCARTY, GRAY, AND ASSOCIATES; LANDSCAPE ARCHITECTS AND ENGINEERS; MONROEVILLE, PA. DEC. 1968

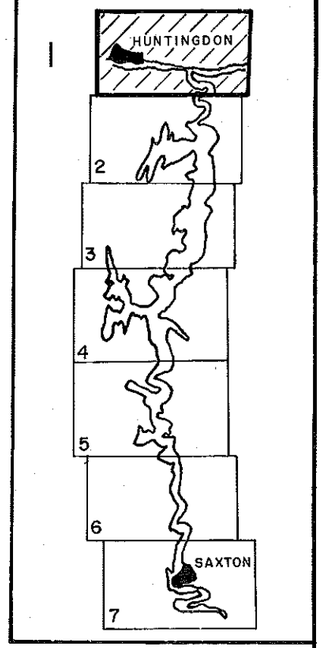
LEGEND

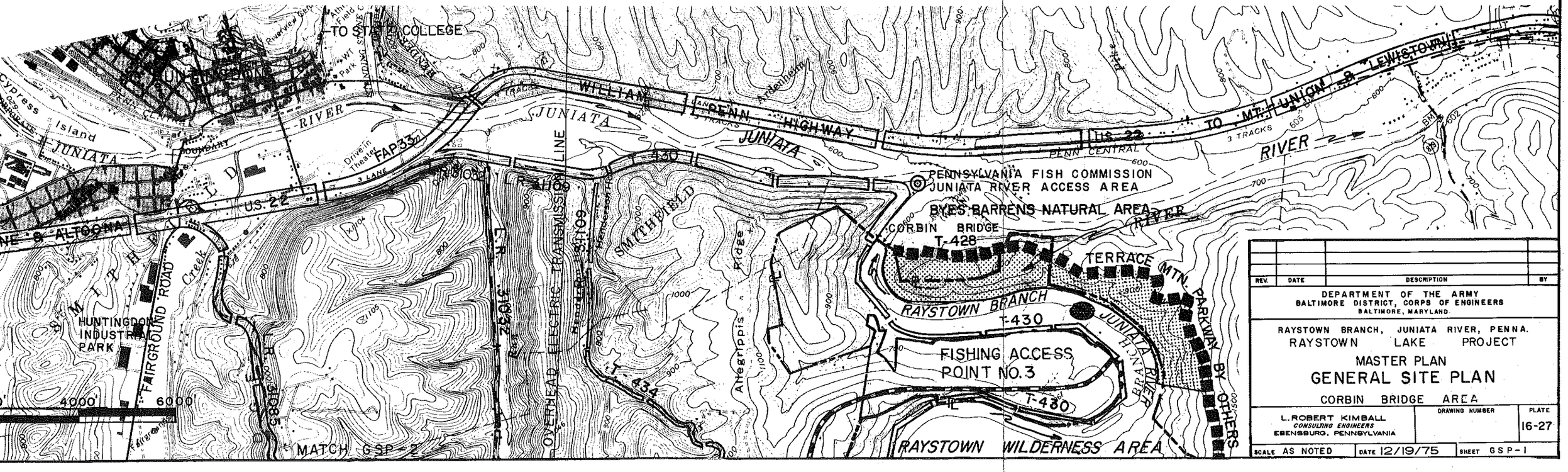
GENERAL SITE PLAN SERIES

- EXISTING MAJOR STATE OR FEDERAL HWY.
- EXISTING ACCESS ROAD.
- EXISTING CIRCULATION ROAD
- EXISTING ACCESS ROAD TO BE IMPROVED
- PROPOSED CIRCULATION ROAD BY CONCESSIONAIRE
- EXISTING CIRCULATION ROAD TO BE IMPROVED
- PROPOSED HEAVY USE CIRCULATION ROAD - 18 FT. WIDE
- PROPOSED LIGHT USE CIRCULATION ROAD - 16 FT. WIDE
- HIKING TRAIL
- PROPOSED SCENIC PARKWAY BY OTHERS
- HIGHWAY RELOCATED BY CORPS OF ENGINEERS
- PROPOSED ACCESS ROAD - 20 TO 24 FT. WIDE
- LAKE BOUNDARY
- SEWAGE TREATMENT PLANT
- WATER SOURCE
- WATER STORAGE
- CAMPING CONTROL STATIONS
- PROJECT PROPERTY LINE
- (7) TURNAROUND (NUMBER)
- (12) GATE (NUMBER)
- (19) BARRICADE (NUMBER)

- DEVELOPMENT BY CONCESSIONAIRE
- PICNIC AREA
- DRIVE-TO CAMPING AREA
- HIKE-TO/BOAT-IN CAMPING
- GROUP CAMPING
- OVERLOOK
- BOAT RAMP
- BOAT TIE-UP
- MARINA
- BEACH
- FISHING ACCESS POINT
- BARRENS NATURAL AREA
- STATE LANDS

GSP KEY





REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

GENERAL SITE PLAN

CORBIN BRIDGE AREA

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

PLATE 16-27

SCALE AS NOTED | DATE 12/19/75 | SHEET GSP-1

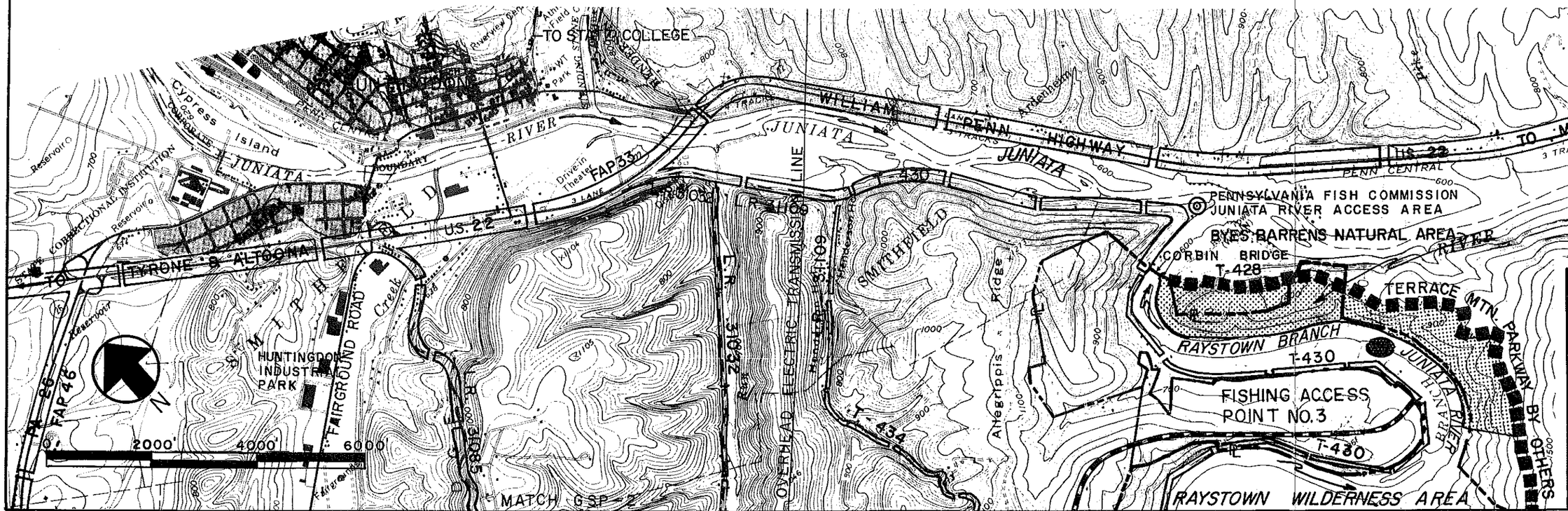
LEGEND

ALL GENERAL SITE PLAN SERIES

- EXISTING MAJOR STATE OR FEDERAL HWY.
- EXISTING ACCESS ROAD.
- EXISTING CIRCULATION ROAD
- EXISTING ACCESS ROAD TO BE IMPROVED
- PROPOSED CIRCULATION ROAD BY CONCESSIONAIRE
- EXISTING CIRCULATION ROAD TO BE IMPROVED
- PROPOSED HEAVY USE CIRCULATION ROAD - 18 FT. WIDE
- PROPOSED LIGHT USE CIRCULATION ROAD - 16 FT. WIDE
- HIKING TRAIL
- PROPOSED SCENIC PARKWAY BY OTHERS
- HIGHWAY RELOCATED BY CORPS OF ENGINEERS
- PROPOSED ACCESS ROAD - 20 TO 24 FT. WIDE
- LAKE BOUNDARY
- SEWAGE TREATMENT PLANT
- WATER SOURCE
- WATER STORAGE
- CAMPING CONTROL STATIONS
- PROJECT PROPERTY LINE
- (7) TURNAROUND (NUMBER)
- (12) GATE (NUMBER)
- (19) BARRICADE (NUMBER)

- DEVELOPMENT BY CONCESSIONAIRE
- PICNIC AREA
- DRIVE-TO CAMPING AREA
- HIKE-TO/BOAT-IN CAMPING
- GROUP CAMPING

- OVERLOOK
- BOAT RAMP
- BOAT TIE-UP
- MARINA
- BEACH
- FISHING ACCESS POINT
- BARRENS NATURAL AREA
- STATE LANDS



MATCH GSP-1

SMITHFIELD TWP.
JUNIATA TWP.

Crooked

ROAD

T.R. 31032

SNYDERS RUN ROAD

HENDERSON HOLLOW ROAD

T-434

T-440

(1)

HEFFNERS HILL

T.R. 31030

T.R. 31035

T.R. 31033

T.R. 31117

PARKS ROAD

Overhead Electric Transmission Line

SNYDERS RUN BOAT RAMP

HAWNS BRIDGE

HUNTINGDON BARRENS NATURAL AREA

T-430

RIVER ROAD

FISHING ACCESS POINT NO. 2

OUTBUILDING

T-430

FISHING ACCESS POINT NO. 1

JUNIATA MAIN BLDG.

GATED SPILLWAY

OUTLET TUNNEL

UNGATED SPILLWAY

DAM

OVERLOOK

RIDENOUR OVERLOOKS

BOAT TIE-UP

CORBINS CABIN

TERRACE

TO TUSCARORA TRAIL

T-428

MOUNTAIN

PARKWAY

OVERLOOK

RIDENOUR BARRENS NATURAL AREA

BARRENS

786

HAWNS BRIDGE WOODS MARINA

HAWNS BRIDGE WOODS BARRENS NATURAL AREA

OLD SPILLWAY

LAKE

RUN COVE

PARKS ISLAND

RAYSTOWN TRAIL WEST

HAWNS

REEDS

(2)

(3)

JACKSON BOAT RAMP

TRAIL

SEVEN POINTS CAMPING AREA NORTH

BOWSER'S ORCHARD

BOAT TIE-UP

BOAT TIE-UP

SHELTER

RAYSTOWN ROAD

HAWN ROAD

OWERS

T-428

LR31410

Little

FORMER GAUGING STATION

RAYSTOWN

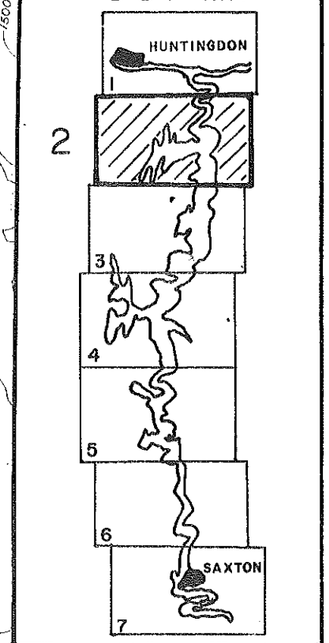
T-438

QUARRY

0' 4000' 6000'

MATCH GSP-3

GSP KEY



LEGEND – See Plate 16-27

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

GENERAL SITE PLAN

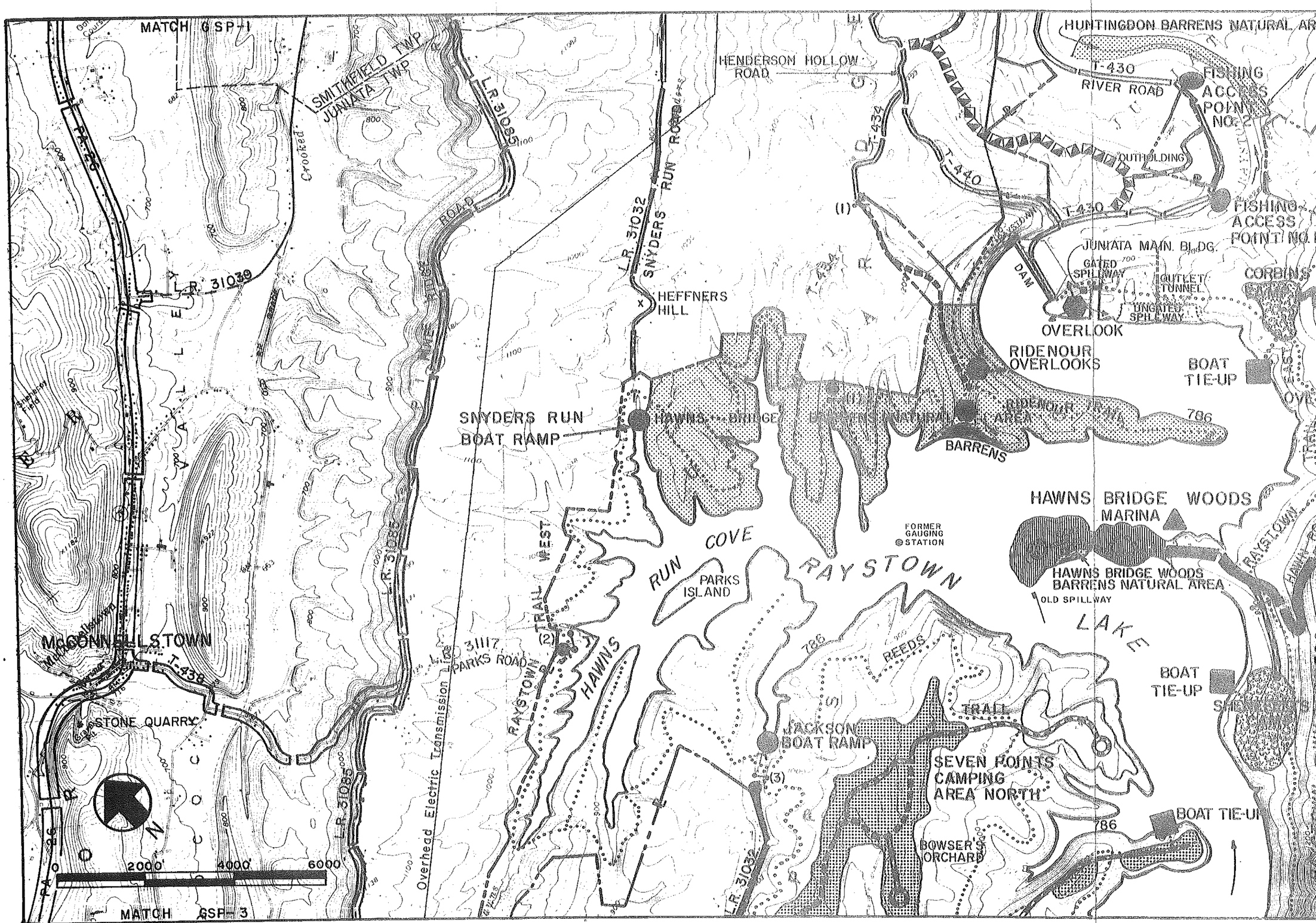
HAWNS BRIDGE WOODS AREA

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

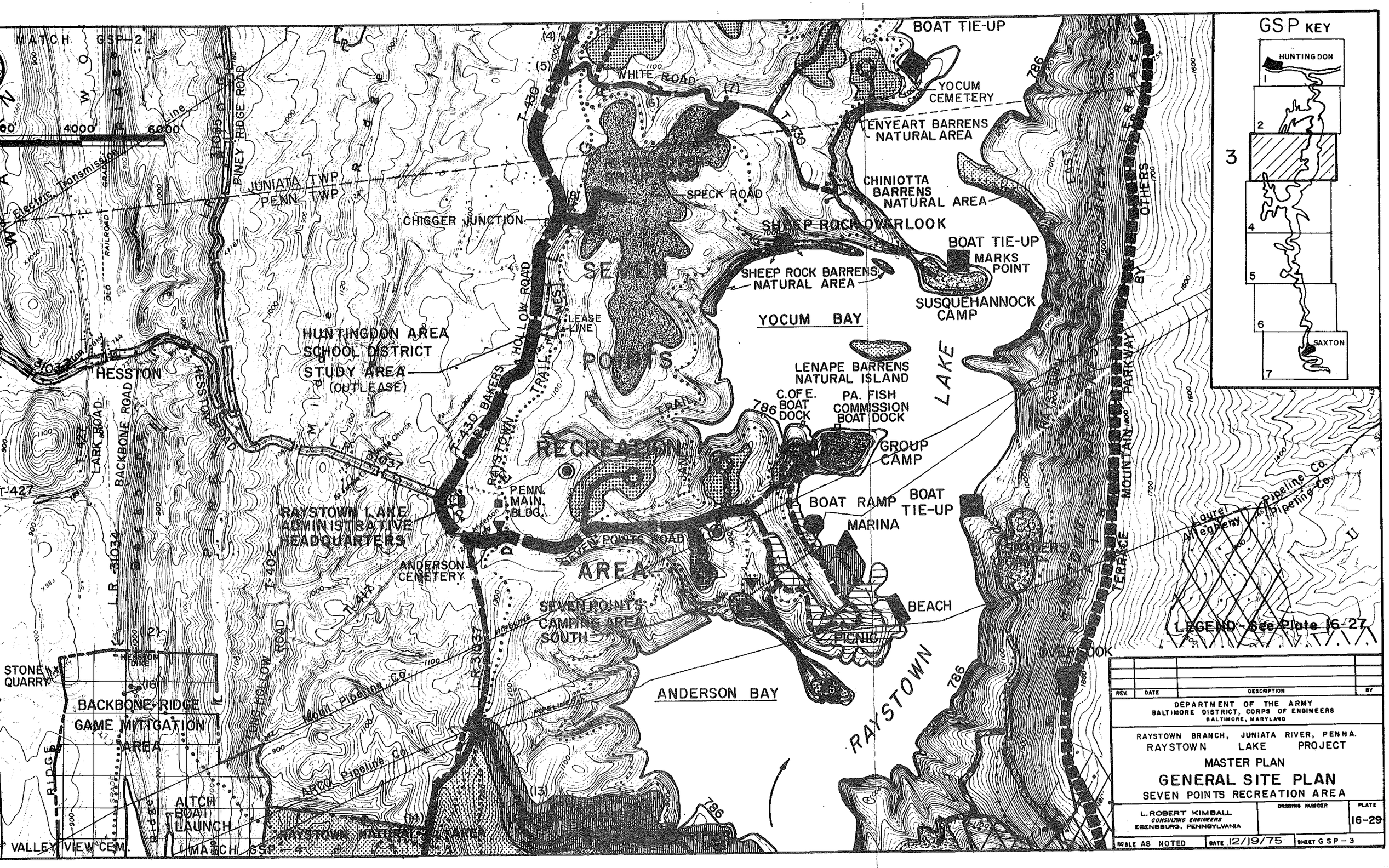
DRAWING NUMBER

PLATE 16-28

SCALE AS NOTED | DATE 12/19/75 | SHEET GSP-2



MATCH GSP-1
SMITHFIELD TWP
JUNIATA TWP
L.R. 31085
Crooked
PA. 26
L.R. 31039
L.R. 31032
SNYDERS RUN ROAD
HENDERSON HOLLOW ROAD
HUNTINGDON BARRENS NATURAL AR
T-430
RIVER ROAD
FISHING ACCESS POINT NO. 2
OUTHOLDING
T-434
T-440
FISHING ACCESS POINT NO.
JUNIATA MAIN. BLDG.
GATED SPILLWAY
OUTLET TUNNEL
UNGATED SPILLWAY
DAM
CORBINS
HEFFNERS HILL
OVERLOOK
RIDENOUR OVERLOOKS
BOAT TIE-UP
SNYDERS RUN BOAT RAMP
HAWNS BRIDGE
BARRENS NATURAL AREA
RIDENOUR TRAIL
786
BARRENS
HAWNS BRIDGE WOODS MARINA
FORMER GAUGING STATION
RUN COVE
RAYSTOWN
PARKS ISLAND
HAWNS BRIDGE WOODS BARRENS NATURAL AREA
OLD SPILLWAY
LAKE
McCONNELLSTOWN
T-438
L.R. 31117
PARKS ROAD
RAYSTOWN TRAIL WEST
HAWNS
REEDS
TRAIL
BOAT TIE-UP
STONE QUARRY
JACKSON BOAT RAMP
SEVEN POINTS CAMPING AREA NORTH
BOAT TIE-UP
BOWSER'S ORCHARD
Overhead Electric Transmission Line
L.R. 31085
L.R. 31032
0 2000' 4000' 6000'
MATCH GSP-3



REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

GENERAL SITE PLAN

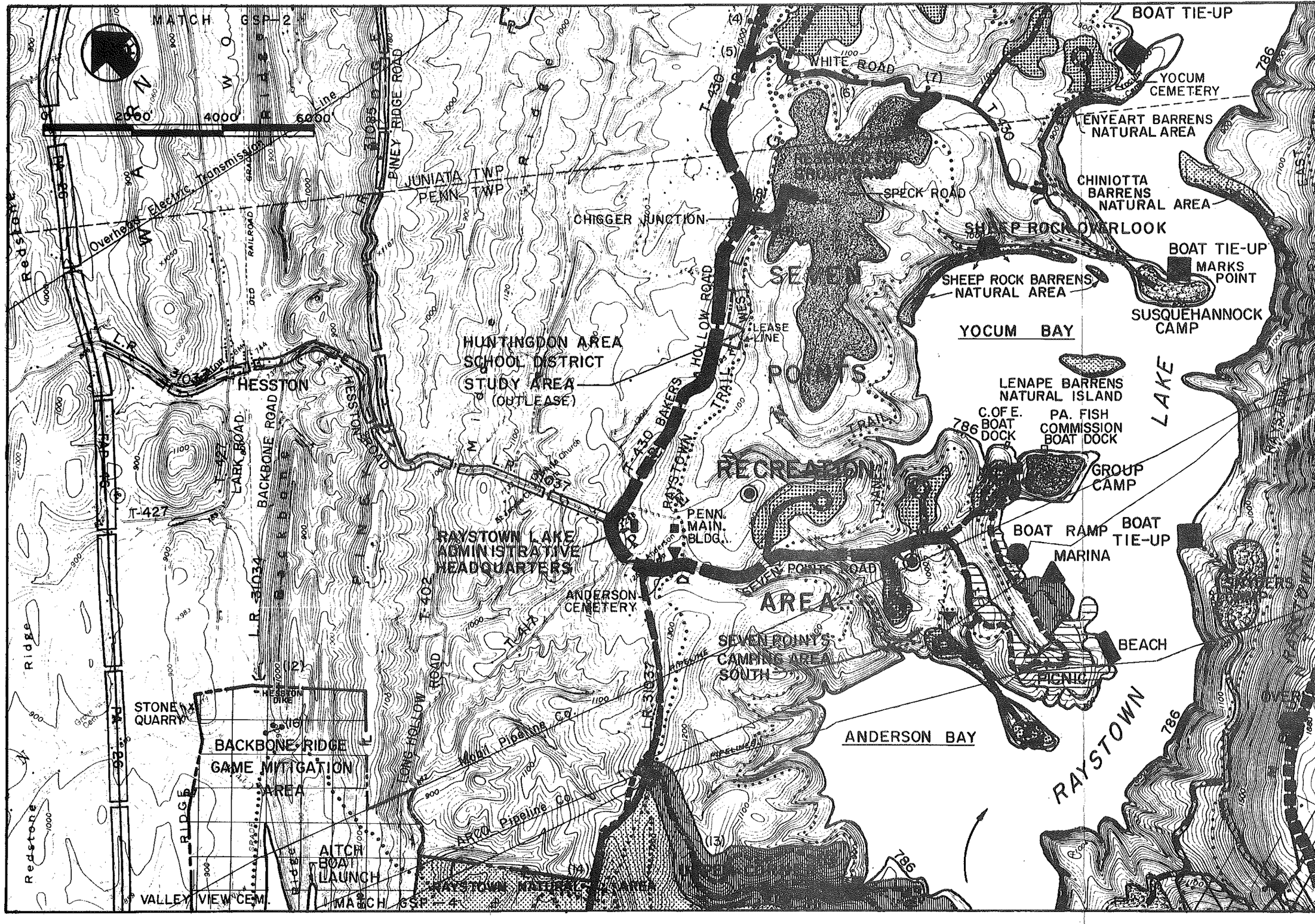
SEVEN POINTS RECREATION AREA

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

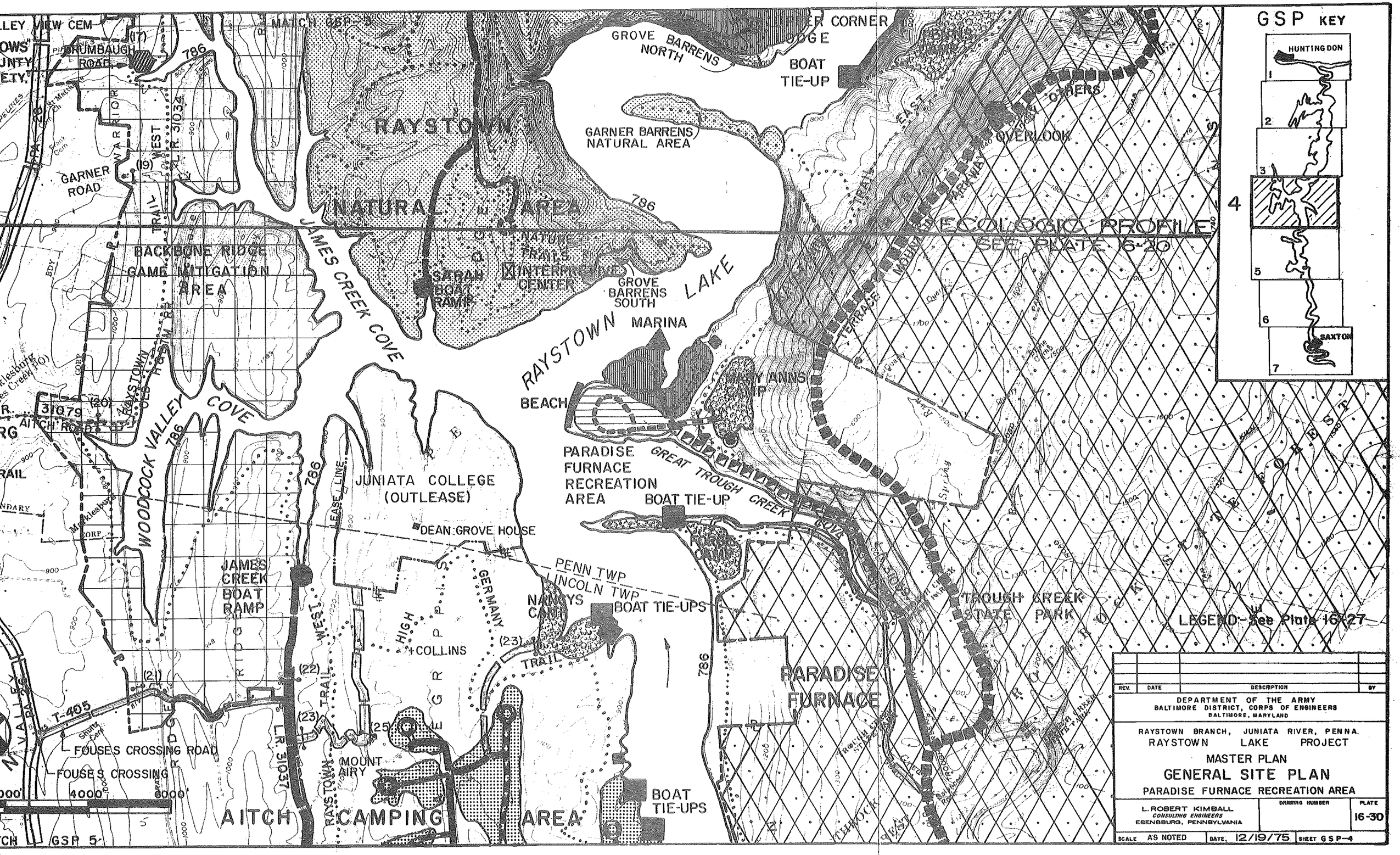
DRAWING NUMBER

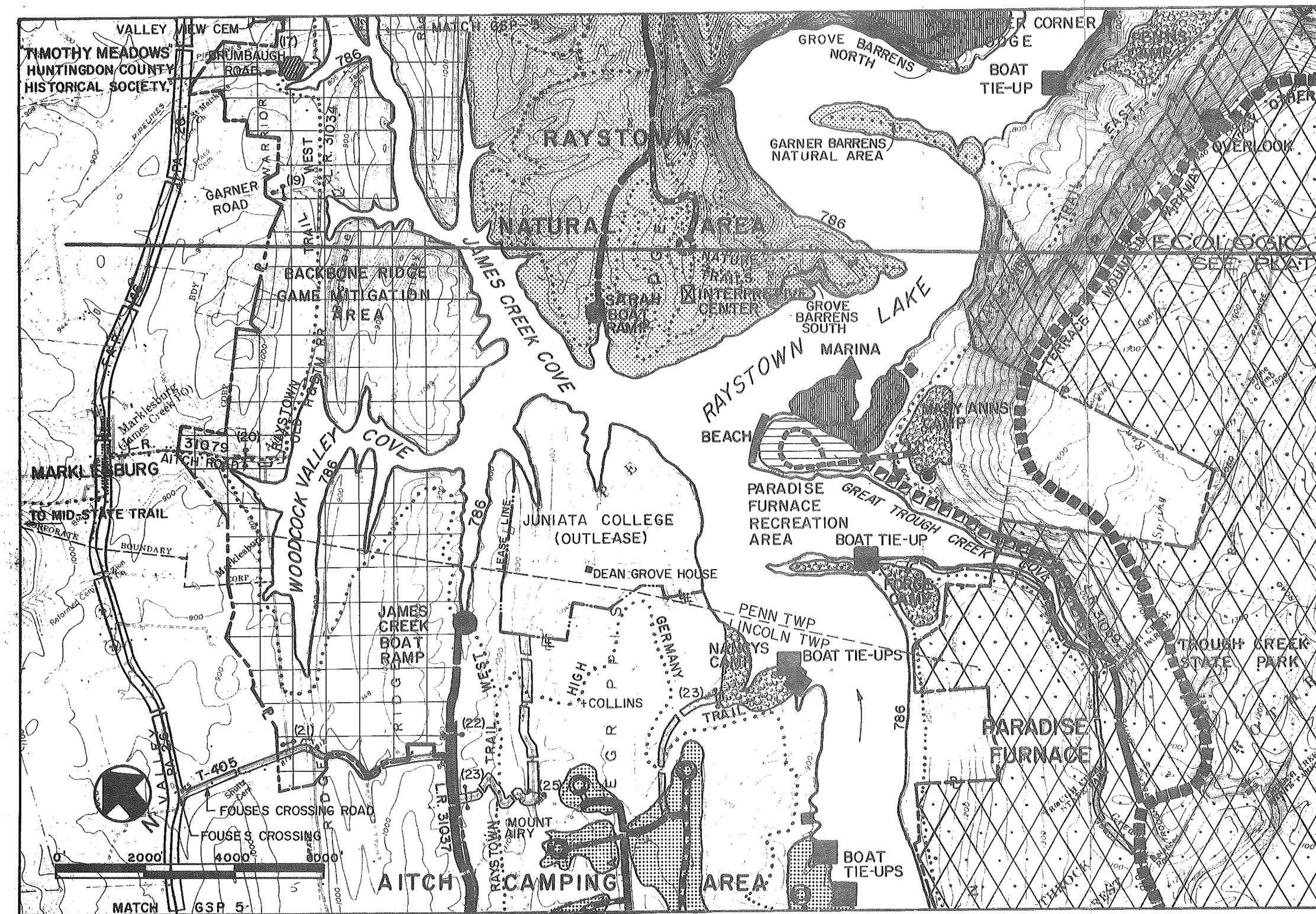
PLATE 16-29

SCALE AS NOTED | DATE 12/19/75 | SHEET GSP-3

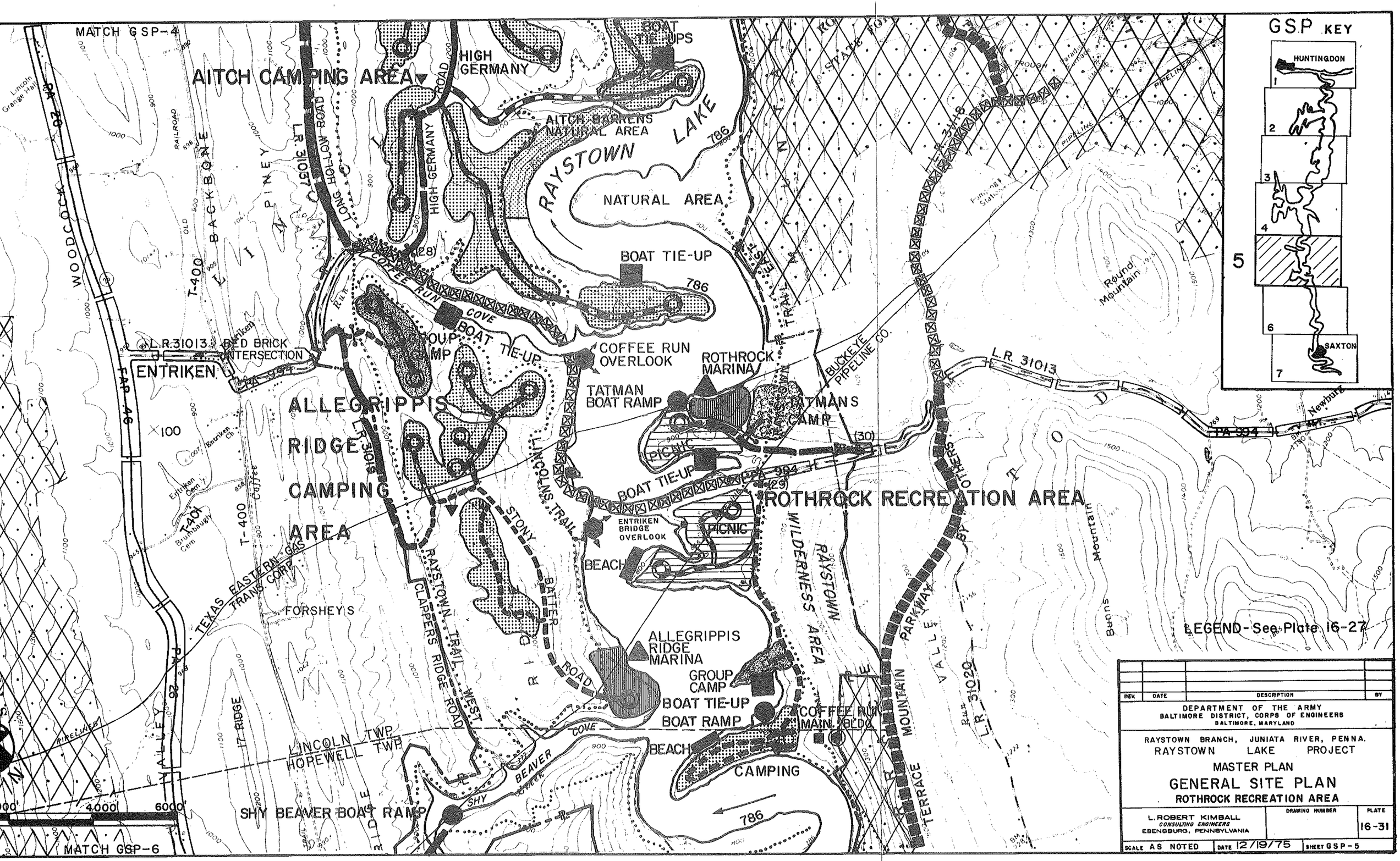


MATCH GSP-2
2000'
4000'
6000'
Overhead Electric Transmission Line
JUNIATA TWP
PENN TWP
PINEY RIDGE ROAD
CHIGGER JUNCTION
WHITE ROAD
SPECK ROAD
BOAT TIE-UP
YOCUM CEMETERY
ENYEART BARRENS NATURAL AREA
CHINIOTTA BARRENS NATURAL AREA
SHEEP ROCK OVERLOOK
BOAT TIE-UP
MARKS POINT
SHEEP ROCK BARRENS NATURAL AREA
SUSQUEHANNOCK CAMP
YOCUM BAY
LENAPE BARRENS NATURAL ISLAND
C.OF E. BOAT DOCK
PA. FISH COMMISSION BOAT DOCK
GROUP CAMP
BOAT RAMP
BOAT TIE-UP
MARINA
BEACH
PICNIC
LAKE
RAYSTOWN
HUNTINGDON AREA SCHOOL DISTRICT STUDY AREA (OUTLEASE)
LEASE LINE
SEVEN POINTS RECREATION AREA
HOLLOW ROAD
BAKERS
RAYSTOWN TRAIL
HESSTON
HESSTON ROAD
BACKBONE ROAD
LARK ROAD
T-427
T-430
T-402
T-417
L.R. 31034
L.R. 31037
PENN. MAIN. BLDG.
RAYSTOWN LAKE ADMINISTRATIVE HEADQUARTERS
ANDERSON CEMETERY
SEVEN POINTS ROAD
SEVEN POINTS CAMPING AREA SOUTH
ANDERSON BAY
STONE QUARRY
HESSTON DIKE
BACKBONE RIDGE GAME MITIGATION AREA
LONG HOLLOW ROAD
Mobil Pipeline Co.
ARCO Pipeline Co.
AITCH BOAT LAUNCH
RAYSTOWN NATURAL AREA
VALLEY VIEW CEM.
MATCH GSP-4
Redstone Ridge
786

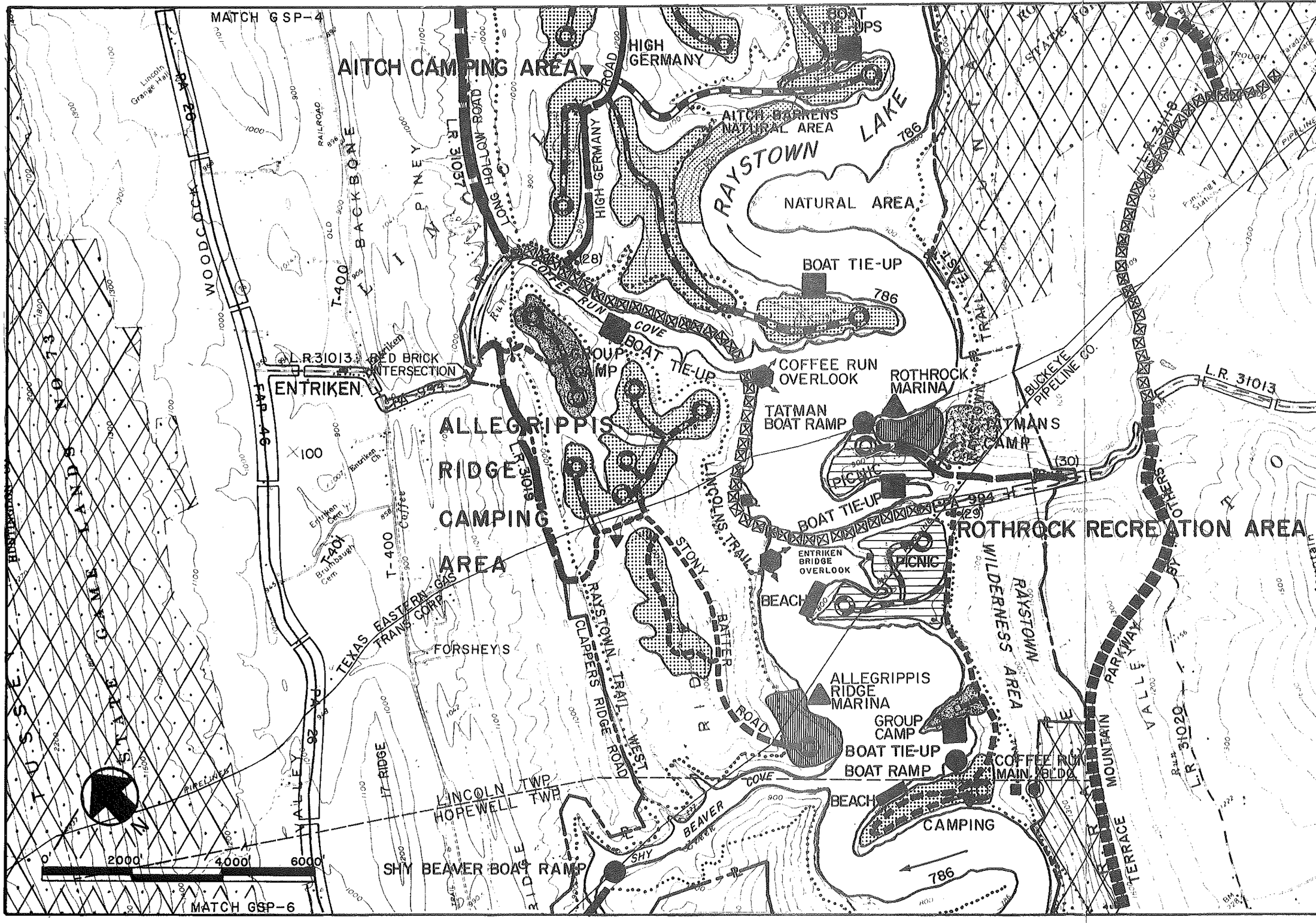

GSP KEY
HUNTINGDON
SAXTON
4
RAYSTOWN NATURAL AREA
GROVE BARRENS NORTH
GARNER BARRENS NATURAL AREA
BOAT TIE-UP
OVERLOOK
ECOLOGIC PROFILE
SEE PLATE 16-20
BACKBONE RIDGE GAME MITIGATION AREA
JAMES CREEK COVE
SARAH BOAT RAMP
NATURE TRAILS
INTERPRETIVE CENTER
GROVE BARRENS SOUTH
RAYSTOWN LAKE
MARINA
BEACH
MARY ANNS CAMP
PARADISE FURNACE RECREATION AREA
GREAT TROUGH CREEK COVE
BOAT TIE-UP
JUNIATA COLLEGE (OUTLEASE)
DEAN GROVE HOUSE
WOODCOCK VALLEY COVE
JAMES CREEK BOAT RAMP
PENN TWP
LINCOLN TWP
NANCYS CAMP
BOAT TIE-UPS
GERMANY
HIGH
COLLINS
TROUGH CREEK STATE PARK
PARADISE FURNACE
FOUSES CROSSING ROAD
FOUSES CROSSING
MOUNT AIRY
AITCH CAMPING AREA
BOAT TIE-UPS
LEGEND-See Plate 16-27
REV. DATE DESCRIPTION BY
DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND
RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT
MASTER PLAN
GENERAL SITE PLAN
PARADISE FURNACE RECREATION AREA
L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA
DRAWING NUMBER
PLATE 16-30
SCALE AS NOTED
DATE 12/19/75
SHEET GSP-4



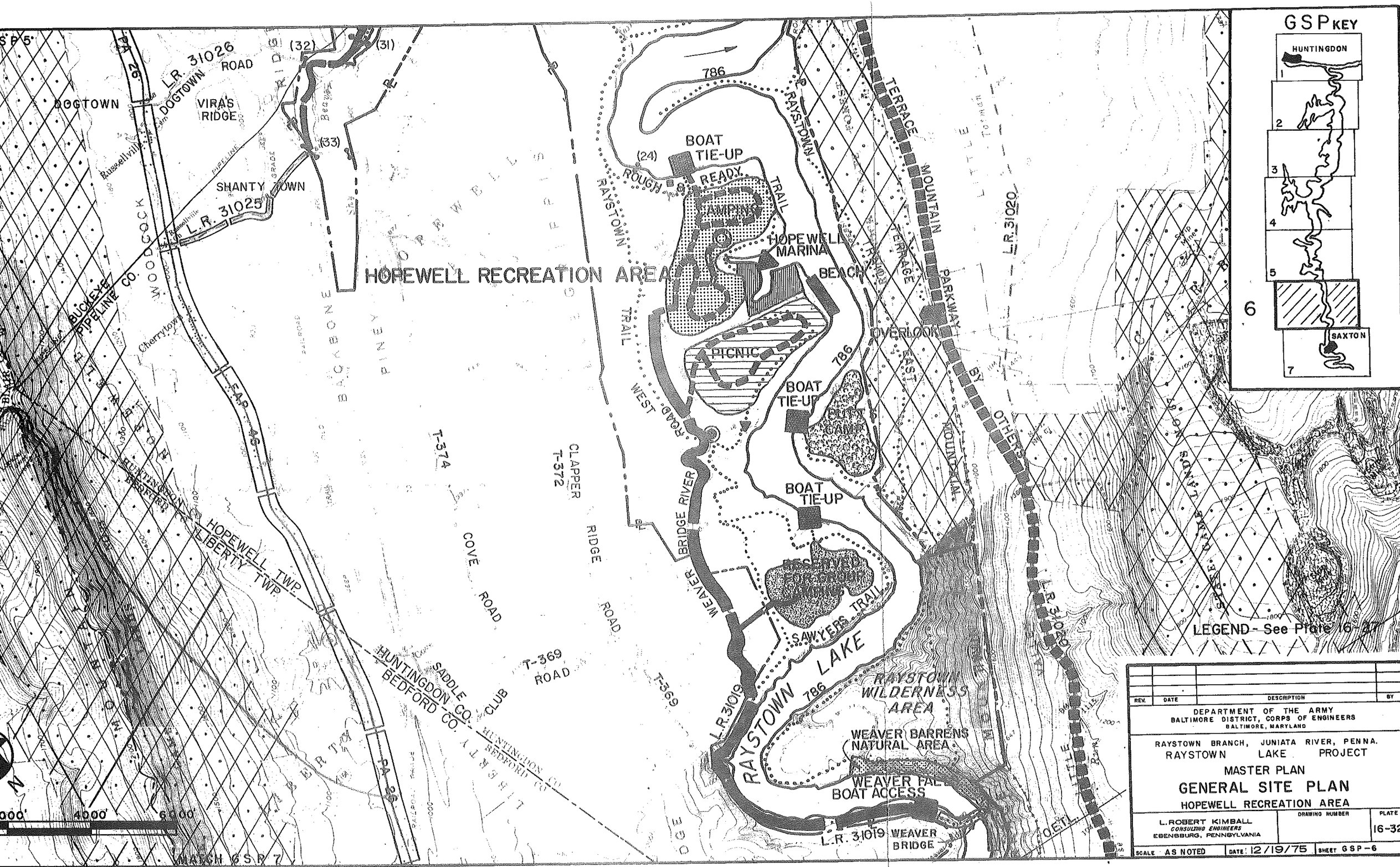
VALLEY VIEW CEM
TIMOTHY MEADOWS
HUNTINGDON COUNTY
HISTORICAL SOCIETY
BRUMBAUGH ROAD
MATCH GSP 5
GROVE BARRENS NORTH
BOAT TIE-UP
RAYSTOWN
NATURAL AREA
GARNER BARRENS NATURAL AREA
GARNER ROAD
WARRIOR TRAIL
WEST
L.R. 31034
BACKBONE RIDGE GAME MITIGATION AREA
JAMES CREEK COVE
SARAH BOAT RAMP
NATURE TRAILS
INTERPRETIVE CENTER
GROVE BARRENS SOUTH
RAYSTOWN LAKE
MARINA
BEACH
MARY ANNS CAMP
TERRACE MOUNTAIN PARKWAY
OVERLOOK
ECOLOGIC
SEE PLAT
Marklesburg (James Creek PO)
L.R. 31079
AITCH ROAD
MARKLESBURG
TO MID-STATE TRAIL
WOODCOCK VALLEY COVE
JUNIATA COLLEGE (OUTLEASE)
DEAN GROVE HOUSE
PARADISE FURNACE RECREATION AREA
GREAT TROUGH CREEK
BOAT TIE-UP
PENN TWP
LINCOLN TWP
NANCYS CAMP
BOAT TIE-UPS
JAMES CREEK BOAT RAMP
HIGH
GERMANY
COLLINS
TRAIL
TROUGH CREEK STATE PARK
PARADISE FURNACE
T-405
FOUSES CROSSING ROAD
FOUSES CROSSING
L.R. 31037
MOUNT AIRY
RAYSTOWN
AITCH CAMPING AREA
BOAT TIE-UPS
0' 2000' 4000' 6000'
MATCH GSP 5



MATCH GSP-4
AITCH CAMPING AREA
HIGH GERMANY
BOAT TIE-UPS
AITCH BARRENS NATURAL AREA
RAYSTOWN LAKE
NATURAL AREA
BOAT TIE-UP
786
COFFEE RUN COVE
BOAT TIE-UP
COFFEE RUN OVERLOOK
ROTHROCK MARINA
TATMAN BOAT RAMP
TATMANS CAMP
PICNIC
BOAT TIE-UP
ENTRIKEN BRIDGE OVERLOOK
PICNIC
BEACH
ROTHROCK RECREATION AREA
ALLEGRIPPIS RIDGE CAMPING AREA
ALLEGRIPPIS RIDGE MARINA
GROUP CAMP
BOAT TIE-UP
BOAT RAMP
COFFEE RUN MAIN. BLDG.
BEACH
CAMPING
SHY BEAVER BOAT RAMP
SHY BEAVER COVE
LINCOLN TWP
HOPEWELL TWP
ENTRIKEN
RED BRICK INTERSECTION
L.R. 31013
L.R. 31037
L.R. 31019
L.R. 31118
L.R. 31020
PA 994
PA 26
T-400
T-401
WOODCOCK
BACKBONE
PINEY
LONG HOLLOW ROAD
HIGH GERMANY ROAD
COFFEE RUN
STONY BATTER ROAD
RAYSTOWN TRAIL WEST
CLAPPERS RIDGE ROAD
LINCOLNS TRAIL
RAYSTOWN WILDERNESS AREA
RAYSTOWN PARKWAY
TERRACE MOUNTAIN
BUCKEYE PIPELINE CO.
TEXAS EASTERN GAS TRANS. CORP.
FORSHEYS
17 RIDGE
Round Mountain
Bunns Mountain
Newburg
Lincoln Grange Hall
Entriken Cem
Brumbaugh Cem
Coffee Run
Run
Pipelines
Pumping Station
Paradise Furnace
Trough
Lincoln Trail
Rail Road
Old
Coffee
Entriken Ch
Cem
Run
Cove
Creek
Ridge
Valley
Mountain
Rail
Road
Pipeline
Trough
Lincoln
Grange Hall
Rail Road
Coffee
Run
Cove
Creek
Ridge
Valley
Mountain
Rail
Road
Pipeline
Pipelines
Pumping Station
Newburg
Bunns
Round Mountain
4000'
6000'
MATCH GSP-6
GSP KEY
HUNTINGDON
SAXTON
1
2
3
4
5
6
7
LEGEND - See Plate 16-27
REV. DATE DESCRIPTION BY
DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND
RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT
MASTER PLAN
GENERAL SITE PLAN
ROTHROCK RECREATION AREA
L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA
DRAWING NUMBER
PLATE 16-31
SCALE AS NOTED
DATE 12/19/75
SHEET GSP-5



MATCH GSP-4
AITCH CAMPING AREA
HIGH GERMANY
BOAT TIE-UPS
AITCH BARRENS NATURAL AREA
RAYSTOWN LAKE
NATURAL AREA
786
BOAT TIE-UP
COFFEE RUN COVE
BOAT TIE-UP
GROUP CAMP
COFFEE RUN OVERLOOK
ROTHROCK MARINA
TATMAN BOAT RAMP
TATMANS CAMP
BUCKEYE PIPELINE CO.
L.R. 31013
L.R. 31037
LONG HOLLOW ROAD
HIGH GERMANY ROAD
WOODCOCK
BACKBONE
PINEY
T-400
L.R. 31013
RED BRICK INTERSECTION
ENTRIKEN
FAP 46
ALLEGRIPPIS RIDGE CAMPING AREA
L.R. 31019
PICNIC
BOAT TIE-UP
ROTHROCK RECREATION AREA
ENTRIKEN BRIDGE OVERLOOK
PICNIC
BEACH
STONY BATTER ROAD
RAYSTOWN TRAIL WEST
CLAPPERS RIDGE ROAD
TEXAS EASTERN GAS TRANS. CORP.
FORSHEYS
ALLEGRIPPIS RIDGE MARINA
GROUP CAMP
BOAT TIE-UP
BOAT RAMP
COFFEE RUN MAIN BLDG.
BEACH
CAMPING
LINCOLN TWP.
HOPEWELL TWP.
SHY BEAVER COVE
SHY BEAVER BOAT RAMP
786
WILDERNESS AREA
RAYSTOWN
TERRACE MOUNTAIN PARKWAY
L.R. 31020
0' 2000' 4000' 6000'
MATCH GSP-6



REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

GENERAL SITE PLAN

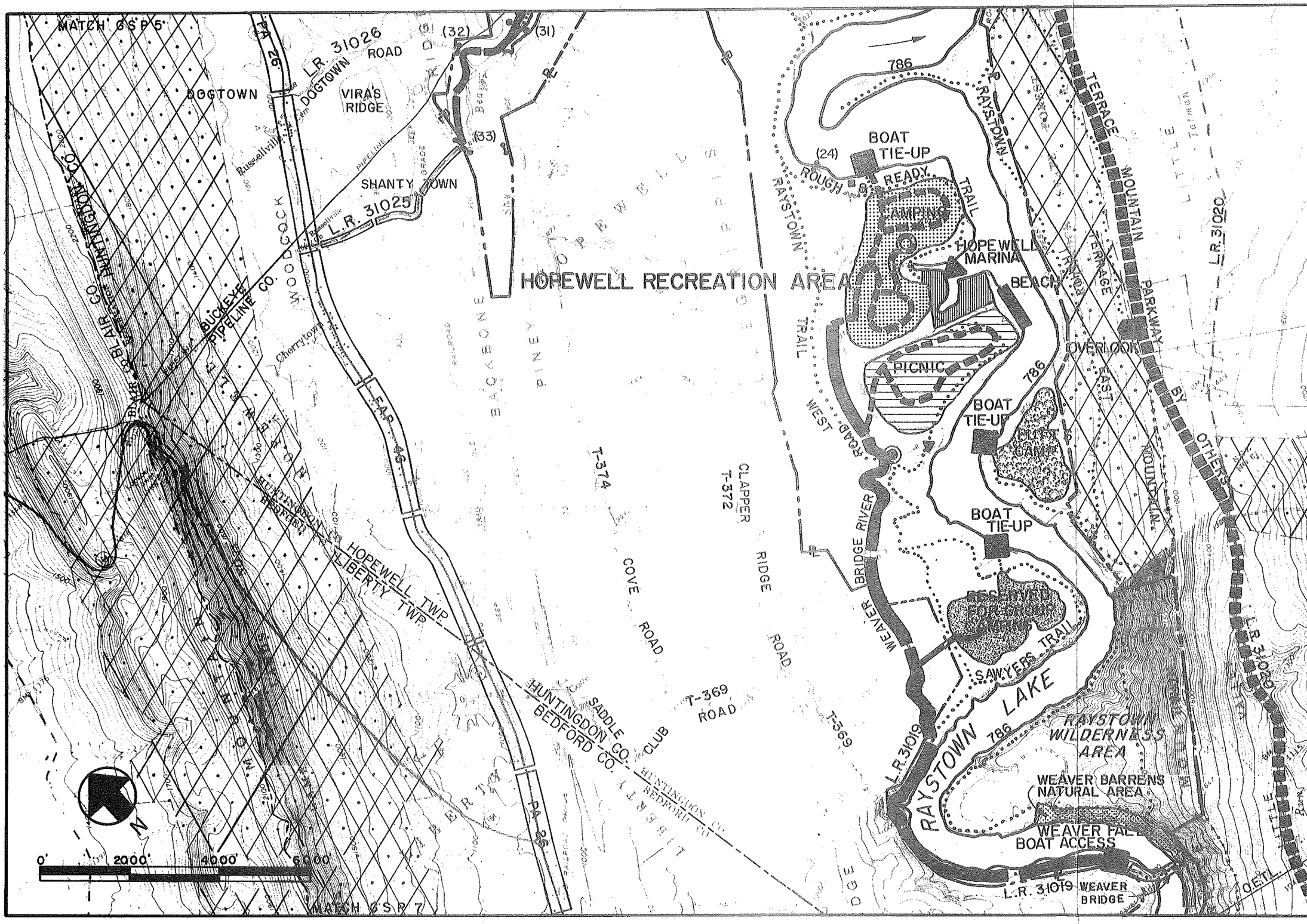
HOPEWELL RECREATION AREA

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

PLATE 16-32

SCALE AS NOTED | DATE: 12/19/75 | SHEET GSP-6



MATCH GSP 5
L.R. 31026
DOGTOWN ROAD
DOGTOWN
VIRA'S RIDGE
SHANTY TOWN
L.R. 31025
PA 26
(32)
(31)
(33)
HOPEWELL RECREATION AREA
BACKBONE
PINEY
BLAIR CO.
HUNTINGDON CO.
BUCKEYE PIPELINE CO.
WOODCOCK
Cherrytown
FAP 46
HOPEWELL TWP.
LIBERTY TWP.
HUNTINGDON CO.
BEDFORD CO.
SADDLE CLUB
T-374
T-372
CLAPPER
COVE ROAD
RIDGE ROAD
T-369 ROAD
T-369
786
BOAT TIE-UP
(24)
ROUGH & READY TRAIL
CAMPING
HOPEWELL MARINA
BEACH
PICNIC
RAYSTOWN TRAIL
WEST ROAD
WEAVER BRIDGE RIVER
BOAT TIE-UP
BOAT TIE-UP
RESERVED FOR GROUP CAMPING
SAWYERS TRAIL
RAYSTOWN LAKE
RAYSTOWN WILDERNESS AREA
WEAVER BARRENS NATURAL AREA
WEAVER FALL BOAT ACCESS
L.R. 31019
WEAVER BRIDGE
TERRACE MOUNTAIN PARKWAY
OVERLOOK
EAST MOUNTAIN
OTHERS
L.R. 31020
L.R. 31019
0' 2000' 4000' 6000'
MATCH GSP 7

MATCH GSP-6

HOPEWELL TWP.
HUNTINGDON CO.
BEDFORD CO.
LIBERTY TWP.

T-359

T86

LR 31019

LR 31020

LR 31018

PA. 913

COALMONT

CARBON TWP.

HUNTINGDON CO.
BEDFORD CO.

SR 22

TERRACE

BROAD TOP TWP.

PA 26

OVERHEAD ELECTRIC TRANSMISSION LINES

END OF RECREATION LAKE AT BASE OF DAM

SAXTON BARRENS NATURAL AREA

SAXTON

MOUNTAIN

LIBERTY TWP

TRAIL

EASEMENT LINE

GAUGING STATION

Abbot Ridge

WARRIORS PATH STATE PARK

PA 26

TO EVERETT, WASHINGTON & BALTIMORE

Hickory Hill

Stump Mines

0 4000' 6000'

GSP KEY

HUNTINGDON

1 2 3 4 5 6

SAXTON

7

LEGEND - See Plate 16-27

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

GENERAL SITE PLAN

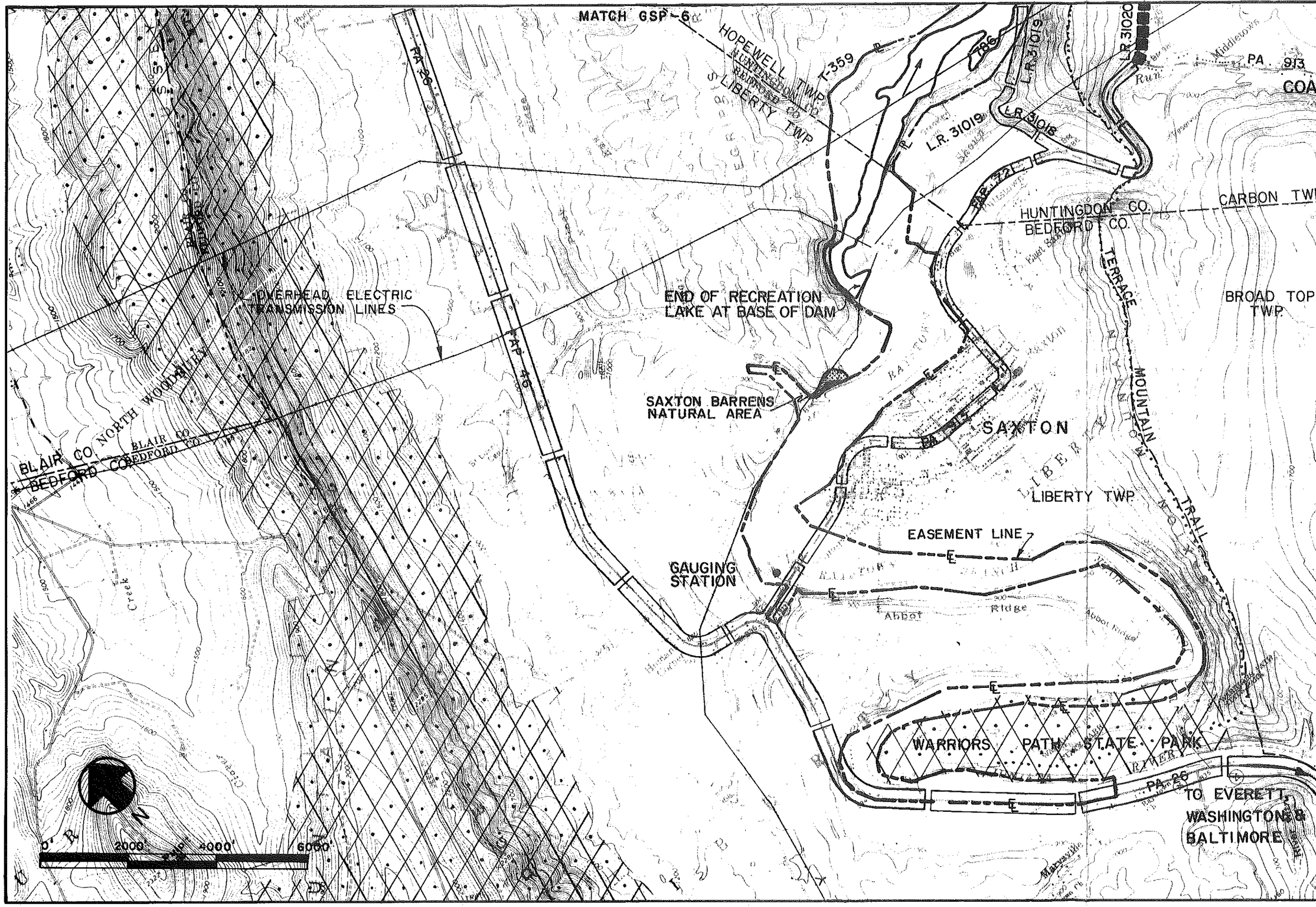
SAXTON AREA

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

PLATE 16-33

SCALE AS NOTED | DATE 12/19/75 | SHEET GSP-7


MATCH GSP-6
HOPEWELL TWP.
LIBERTY TWP.
T-359
L.R. 31019
L.R. 31018
L.R. 31020
PA. 913
COA
CARBON TWP
HUNTINGDON CO.
BEDFORD CO.
TERRACE MOUNTAIN TRAIL
BROAD TOP TWP.
OVERHEAD ELECTRIC TRANSMISSION LINES
END OF RECREATION LAKE AT BASE OF DAM
SAXTON BARRENS NATURAL AREA
SAXTON
LIBERTY TWP.
EASEMENT LINE
GAUGING STATION
Abbot Ridge
WARRIORS PATH STATE PARK
PA. 26
TO EVERETT, WASHINGTON & BALTIMORE
BLAIR CO.
BEDFORD CO.
NORTH WOODBURY
Creek
0' 2000' 4000' 6000'

U. S. ARMY

MATCH LINE
TO RAYSTOWN TRAIL WEST

FISHING PIER (PLATE 16-45)

TRAILER SANITARY STATION

FAMILY CAMPING 25 UNITS

VALLEY CAMP

JAMES TRAIL

ACCESS ROAD

PICNIC AREA (PLATE 16-45)

FAMILY CAMPING 53 UNITS (FUTURE)

BAY CAMP

FAMILY CAMPING 12 UNITS

CORPS OF ENGINEERS BOAT DOCK

PICNIC AREA (PLATE 16-45)

BOAT RAMP

SEVEN POINTS

BAY DRIVE

CONCESSIONAIRE DEVELOPMENT- MARINA

NEW ATLANTIC PIPELINE

PENNSYLVANIA FISH COMMISSION BOAT DOCK AND SERVICE FACILITIES

PICNIC AREA (PLATE 16-45)

MARINA

A. DRY STORAGE AND MONORAIL
B. PARKING FOR 400 CARS AND 60 CAR TRAILERS
C. FUEL & BOATING SUPPLIES
D. SLIPS FOR 400 BOATS
E. RESTAURANT AND ADMINISTRATION
F. BOAT LAUNCH
G. GENERAL STORE

MOBIL PIPELINE CO.

FISHING PIER (PLATE 16-45)

FISHING PIER (PLATE 16-45)

BEACH (PLATE 16-44)

A. PARKING FOR 450 CARS
B. BATHHOUSE

NEW LAUREL PIPELINE

ALLEGHENY PIPELINE CO.

LAUREL PIPELINE CO.

GRAPHIC SCALE IN FEET
300 150 0 300 600 900 1200

KEY MAP
NO SCALE
HUNTINGDON
SAXTON

EAGE ABOVE ON POOL	309
EAGE ABOVE OOL	243
AGE ABOVE GUIDE RIZ. FROM EL. 812)	129
	EXTENSIVE
	ROLLING

LEGEND

- CONCESSIONAIRE DEVELOPMENT
- NEW ROAD, 14 FT. WIDTH
- NEW ROAD, 18 FT. WIDTH
- NEW ROAD, 24 FT. WIDTH
- COMFORT STATION - TYPE "A"
- WASHHOUSE
- BATHHOUSE
- FORMER ROAD, IMPROVED, 18 FT. WIDTH
- FORMER ROAD, IMPROVED, 24 FT. WIDTH
- FORMER ROAD, REMOVED
- WALKWAY
- CONCESSIONAIRE BUILDING
- PROPOSED TRAIL
- EXISTING TRAIL
- FLOOD CONTROL POOL (EL. 812)
- NORMAL RECREATION POOL (EL. 786)
- TEN YEAR DRAWDOWN (EL. 775)
- EXISTING TREE COVER
- PROPOSED PLANTING
- COMFORT STATION - TYPE "B"
- GROUP PICNIC SHELTER
- SEWAGE TREATMENT PLANT
- TRAILER SANITARY STATION

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

SEVEN POINTS RECREATION AREA
PROPOSED DEVELOPMENT

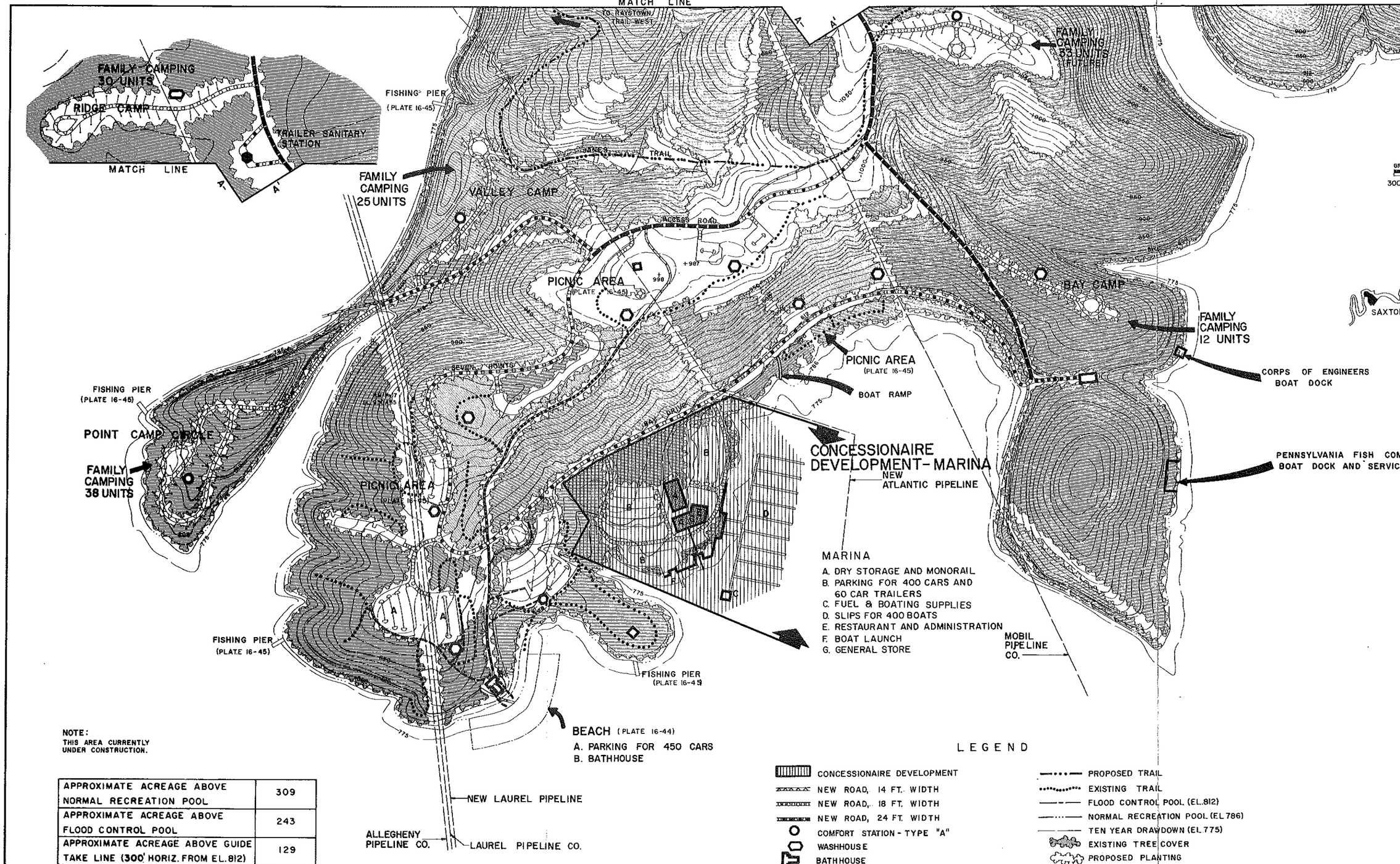
L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

PLATE 16-34

SCALE AS NOTED | DATE 12/19/75 | SHEET OF

CORPS OF ENGINEERS



NOTE:
THIS AREA CURRENTLY UNDER CONSTRUCTION.

APPROXIMATE ACREAGE ABOVE NORMAL RECREATION POOL	309
APPROXIMATE ACREAGE ABOVE FLOOD CONTROL POOL	243
APPROXIMATE ACREAGE ABOVE GUIDE TAKE LINE (300' HORIZ. FROM EL. 812)	129
TREE COVER	EXTENSIVE
TERRAIN	ROLLING

LEGEND

- CONCESSIONAIRE DEVELOPMENT
- NEW ROAD, 14 FT. WIDTH
- NEW ROAD, 18 FT. WIDTH
- NEW ROAD, 24 FT. WIDTH
- COMFORT STATION - TYPE "A"
- WASHHOUSE
- BATHHOUSE
- FORMER ROAD, IMPROVED, 18 FT. WIDTH
- FORMER ROAD, IMPROVED, 24 FT. WIDTH
- FORMER ROAD, REMOVED
- WALKWAY
- CONCESSIONAIRE BUILDING
- PROPOSED TRAIL
- EXISTING TRAIL
- FLOOD CONTROL POOL (EL. 812)
- NORMAL RECREATION POOL (EL 786)
- TEN YEAR DRAWDOWN (EL 775)
- EXISTING TREE COVER
- PROPOSED PLANTING
- COMFORT STATION - TYPE "B"
- GROUP PICNIC SHELTER
- SEWAGE TREATMENT PLANT
- TRAILER SANITARY STATION

U. S. ARMY

MATCH LINE

TO RAYSTOWN TRAIL WEST

FISHING PIER (PLATE 16-45)

TRAILER SANITARY STATION

FAMILY CAMPING 25 UNITS

VALLEY CAMP

ACCESS ROAD

PICNIC AREA (PLATE 16-45)

FAMILY CAMPING 33 UNITS (FUTURE)

BAY CAMP

FAMILY CAMPING 12 UNITS

CORPS OF ENGINEERS BOAT DOCK

PICNIC AREA (PLATE 16-45)

BOAT RAMP

CONCESSIONAIRE DEVELOPMENT- MARINA

NEW ATLANTIC PIPELINE

MARINA

A. DRY STORAGE AND MONORAIL
B. PARKING FOR 400 CARS AND 60 CAR TRAILERS
C. FUEL AND BOATING SUPPLIES
D. SLIPS FOR 400 BOATS
E. RESTAURANT AND ADMINISTRATION
F. BOAT LAUNCH
G. GENERAL STORE

MOBIL PIPELINE CO.

PENNSYLVANIA FISH COMMISSION BOAT DOCK AND SERVICE FACILITIES

FISHING PIER (PLATE 16-45)

FISHING PIER (PLATE 16-45)

BEACH (PLATE 16-44)

A. PARKING FOR 450 CARS
B. BATHHOUSE

NEW LAUREL PIPELINE

ALLEGHENY PIPELINE CO.

LAUREL PIPELINE CO.

GRAPHIC SCALE IN FEET

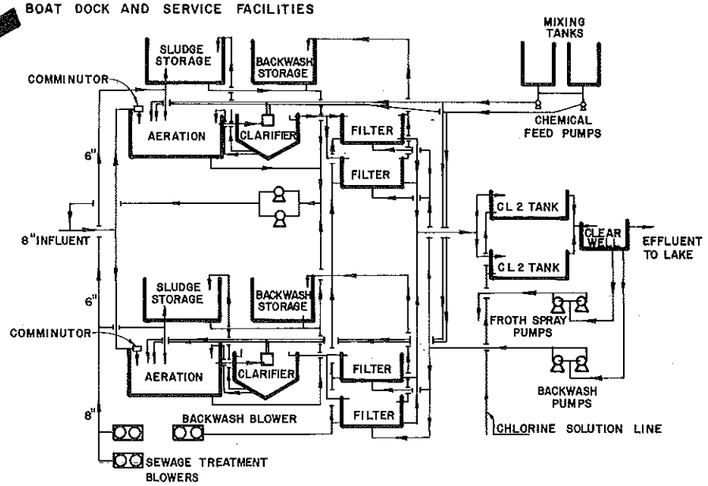
300 150 0 300 600 900 1200

HUNTINGDON

SAXTON

KEY MAP

NO SCALE



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EAGE ABOVE ON. POOL	309
EAGE ABOVE OOL	243
AGE ABOVE GUIDE RIZ. FROM EL. 812)	129
	EXTENSIVE
	ROLLING

LEGEND

- SANITARY SEWER-GRAVITY
- SANITARY SEWER-FORCE MAIN
- SEWAGE OUTFALL
- SEWAGE PUMPING STATION
- NEW ROAD, 14 FT. WIDTH
- NEW ROAD, 18 FT. WIDTH
- NEW ROAD, 24 FT. WIDTH
- COMFORT STATION- TYPE "A"
- WASHHOUSE
- FORMER ROAD, IMPROVED, 18 FT. WIDTH
- FORMER ROAD, IMPROVED, 24 FT. WIDTH
- FORMER ROAD, REMOVED
- BATHHOUSE
- WALK WAY
- CONCESSIONAIRE DEVELOPMENT
- CONCESSIONAIRE BUILDING
- WATER MAIN
- WATER SOURCE
- WATER STORAGE
- EXISTING TRAIL
- FLOOD CONTROL POOL (EL. 812)
- NORMAL RECREATION POOL (EL. 786)
- TEN YEAR DRAWDOWN (EL. 775)
- EXISTING TREE COVER
- PROPOSED PLANTING
- COMFORT STATION- TYPE "B"
- GROUP PICNIC SHELTER
- SEWAGE TREATMENT PLANT
- PROPOSED TRAIL
- TRAILER SANITARY STATION

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

SEVEN POINTS RECREATION AREA DIAGRAMMATIC SEWER AND WATER PLAN

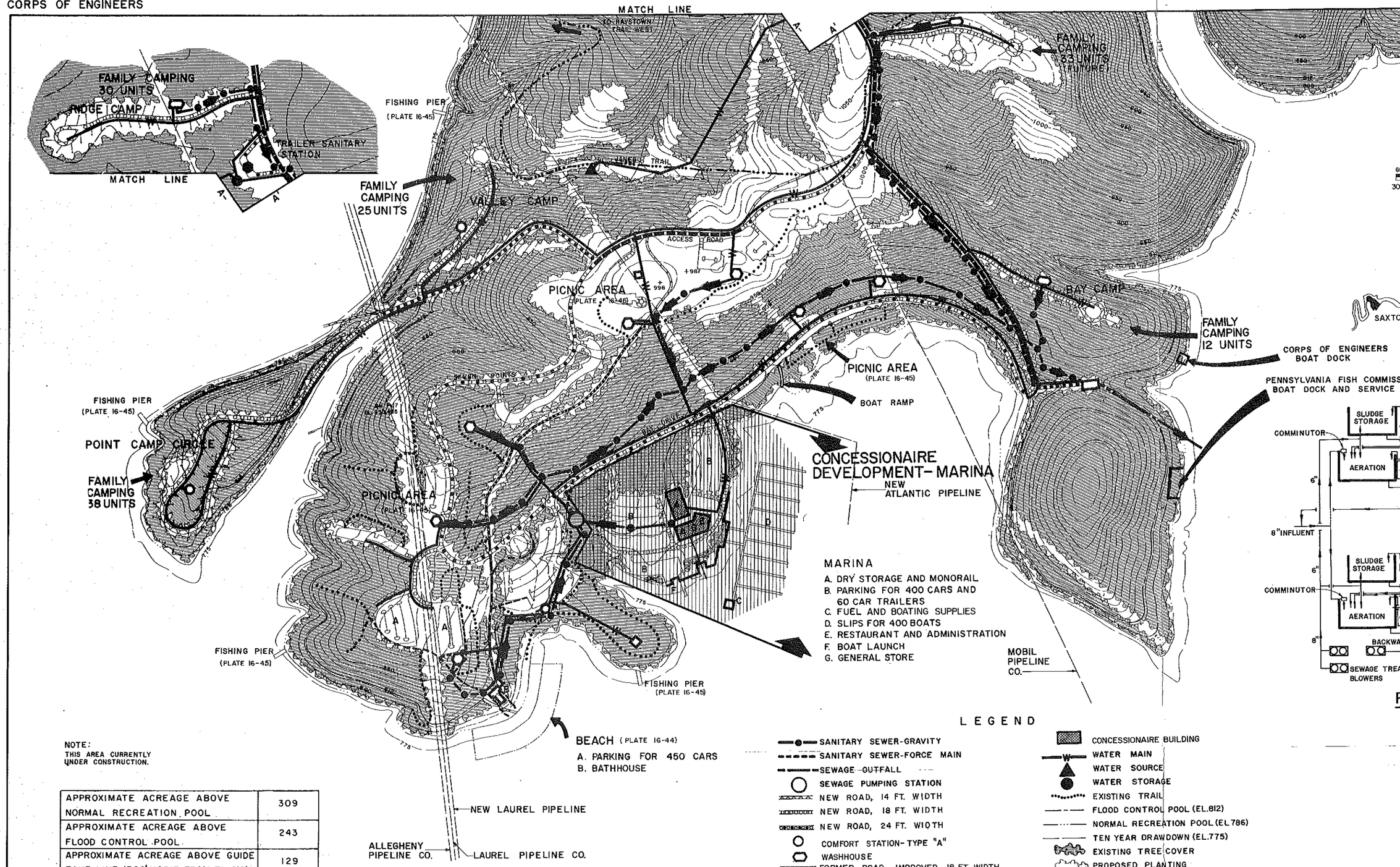
L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

PLATE 16-35

SCALE: AS NOTED | DATE 12/19/75 | SHEET OF

CORPS OF ENGINEERS



NOTE:
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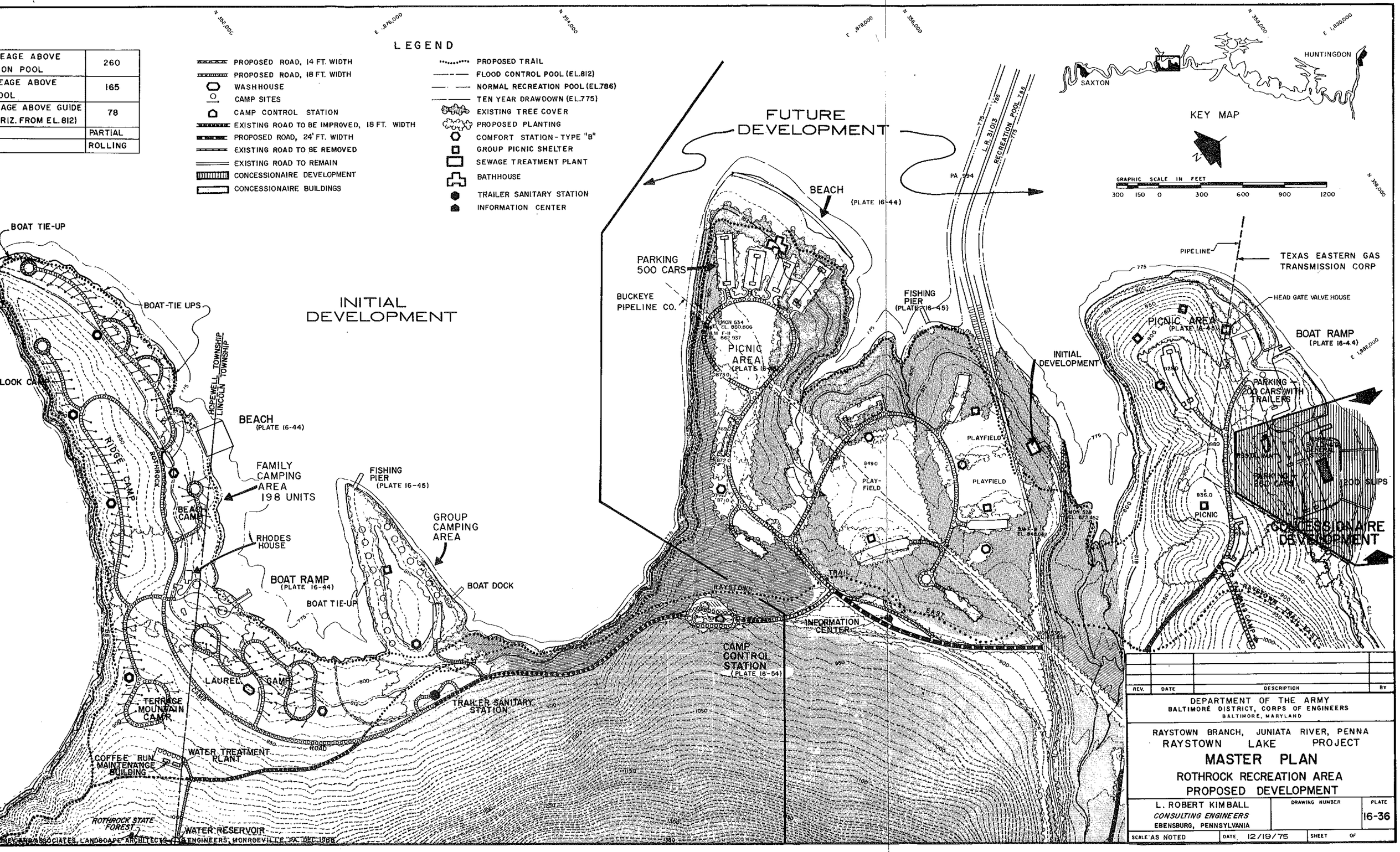
APPROXIMATE ACREAGE ABOVE NORMAL RECREATION POOL	309
APPROXIMATE ACREAGE ABOVE FLOOD CONTROL POOL	243
APPROXIMATE ACREAGE ABOVE GUIDE TAKE LINE (300' HORIZ. FROM EL. 812)	129
TREE COVER	EXTENSIVE
TERRAIN	ROLLING

LEGEND

- SANITARY SEWER-GRAVITY
- SANITARY SEWER-FORCE MAIN
- SEWAGE OUTFALL
- SEWAGE PUMPING STATION
- NEW ROAD, 14 FT. WIDTH
- NEW ROAD, 18 FT. WIDTH
- NEW ROAD, 24 FT. WIDTH
- COMFORT STATION- TYPE "A"
- WASHHOUSE
- FORMER ROAD, IMPROVED, 18 FT. WIDTH
- FORMER ROAD, IMPROVED, 24 FT. WIDTH
- FORMER ROAD, REMOVED
- BATHHOUSE
- WALK WAY
- CONCESSIONAIRE DEVELOPMENT
- CONCESSIONAIRE BUILDING
- WATER MAIN
- WATER SOURCE
- WATER STORAGE
- EXISTING TRAIL
- FLOOD CONTROL POOL (EL. 812)
- NORMAL RECREATION POOL (EL. 786)
- TEN YEAR DRAWDOWN (EL. 775)
- EXISTING TREE COVER
- PROPOSED PLANTING
- COMFORT STATION- TYPE "B"
- GROUP PICNIC SHELTER
- SEWAGE TREATMENT PLANT
- PROPOSED TRAIL
- TRAILER SANITARY STATION



REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA
RAYSTOWN LAKE PROJECT

MASTER PLAN

ROTHROCK RECREATION AREA
PROPOSED DEVELOPMENT

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

PLATE 16-36

SCALE AS NOTED | DATE 12/19/75 | SHEET OF

...ARE ASSOCIATES, LANDSCAPE ARCHITECTS & ENGINEERS, MONROEVILLE, PA. DEC. 1968

APPROXIMATE ACREAGE ABOVE NORMAL RECREATION POOL	260
APPROXIMATE ACREAGE ABOVE FLOOD CONTROL POOL	165
APPROXIMATE ACREAGE ABOVE GUIDE TAKE LINE (300' HORIZ. FROM EL. 812)	78
TREE COVER	PARTIAL
TERRAIN	ROLLING

LEGEND

- PROPOSED ROAD, 14 FT. WIDTH
- PROPOSED ROAD, 18 FT. WIDTH
- WASHHOUSE
- CAMP SITES
- CAMP CONTROL STATION
- EXISTING ROAD TO BE IMPROVED, 18 FT. WIDTH
- PROPOSED ROAD, 24' FT. WIDTH
- EXISTING ROAD TO BE REMOVED
- EXISTING ROAD TO REMAIN
- CONCESSIONAIRE DEVELOPMENT
- CONCESSIONAIRE BUILDINGS
- PROPOSED TRAIL
- FLOOD CONTROL POOL (EL.812)
- NORMAL RECREATION POOL (EL.786)
- TEN YEAR DRAWDOWN (EL.775)
- EXISTING TREE COVER
- PROPOSED PLANTING
- COMFORT STATION - TYPE "B"
- GROUP PICNIC SHELTER
- SEWAGE TREATMENT PLANT
- BATHHOUSE
- TRAILER SANITARY STATION
- INFORMATION CENTER

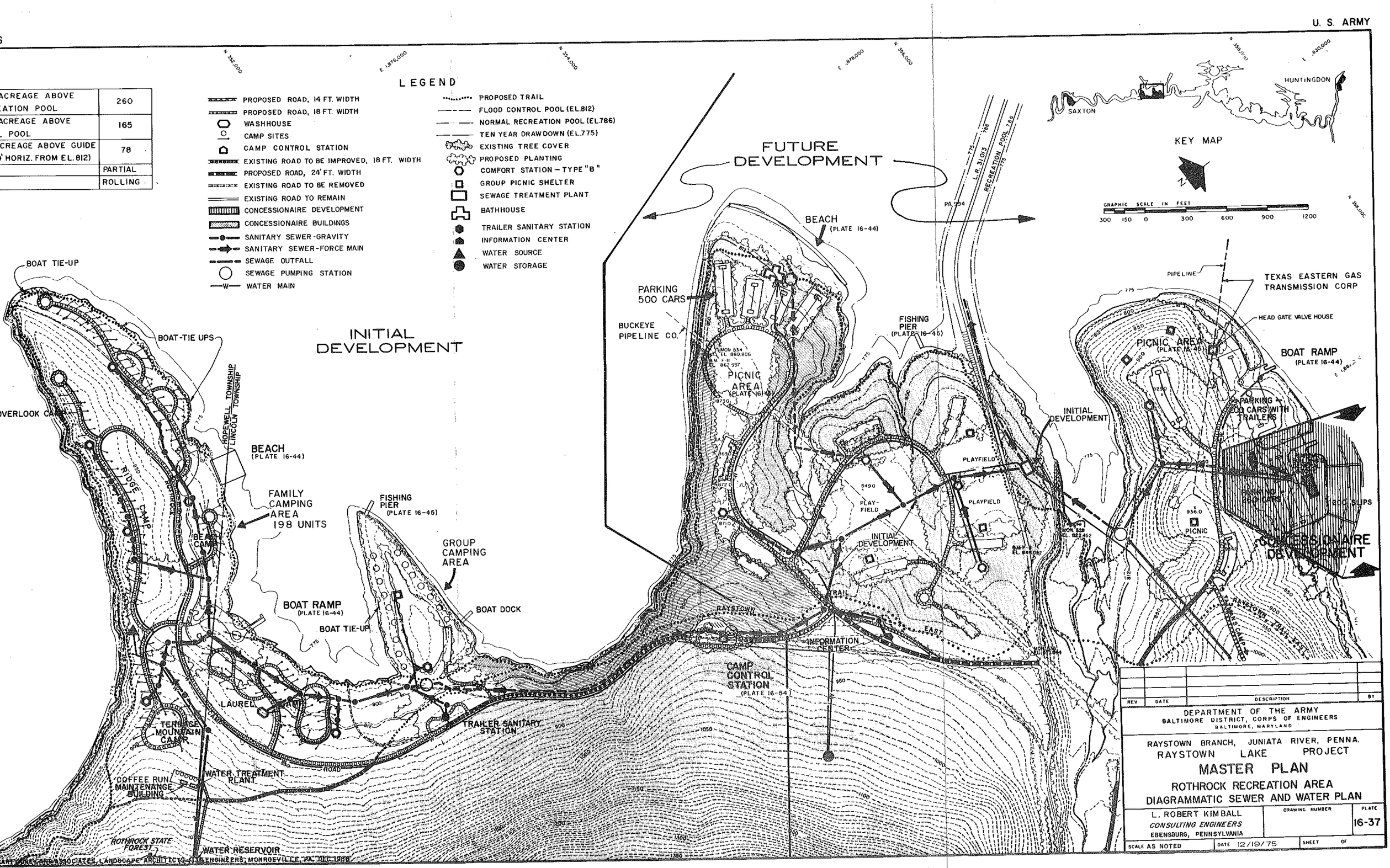
INITIAL DEVELOPMENT

BOAT TIE-UP
BOAT-TIE UPS
OVERLOOK CAMP
RIDGE CAMP
ROTHROCK
HOPEWELL TOWNSHIP
LINCOLN TOWNSHIP
BEACH (PLATE 16-44)
FAMILY CAMPING AREA 198 UNITS
BEACH CAMP
RHODES HOUSE
FISHING PIER (PLATE 16-45)
GROUP CAMPING AREA
BOAT RAMP (PLATE 16-44)
BOAT TIE-UP
BOAT DOCK
LAUREL CAMP
TERRACE MOUNTAIN CAMP
ROAD
TRAILER SANITARY STATION
COFFEE RUN MAINTENANCE BUILDING
WATER TREATMENT PLANT
ROTHROCK STATE FOREST
WATER RESERVOIR

FUTURE DEVELOPMENT

BEACH (PLATE 16-44)
PARKING 500 CARS
BUCKEYE PIPELINE CO.
FISHING PIER (PLATE 16-45)
PICNIC AREA (PLATE 16-43)
MON 534 EL. 860.806
BM F-11 EL. 862.937
INITIAL DEVELOPMENT
PLAYFIELD
PLAY-FIELD
PA 994
L.R. 31013
RECREATION POOL 786
SAXTO
TRAIL
RAYSTOWN
EAST
INFORMATION CENTER
CAMP CONTROL STATION (PLATE 16-64)

FROM ORIGINAL BY FAHRINGER, McCARTHY & RIVER ASSOCIATES, LANDSCAPE ARCHITECTS & ENGINEERS, MONROEVILLE, PA. DEC. 1958



REV	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

ROTHROCK RECREATION AREA
DIAGRAMMATIC SEWER AND WATER PLAN

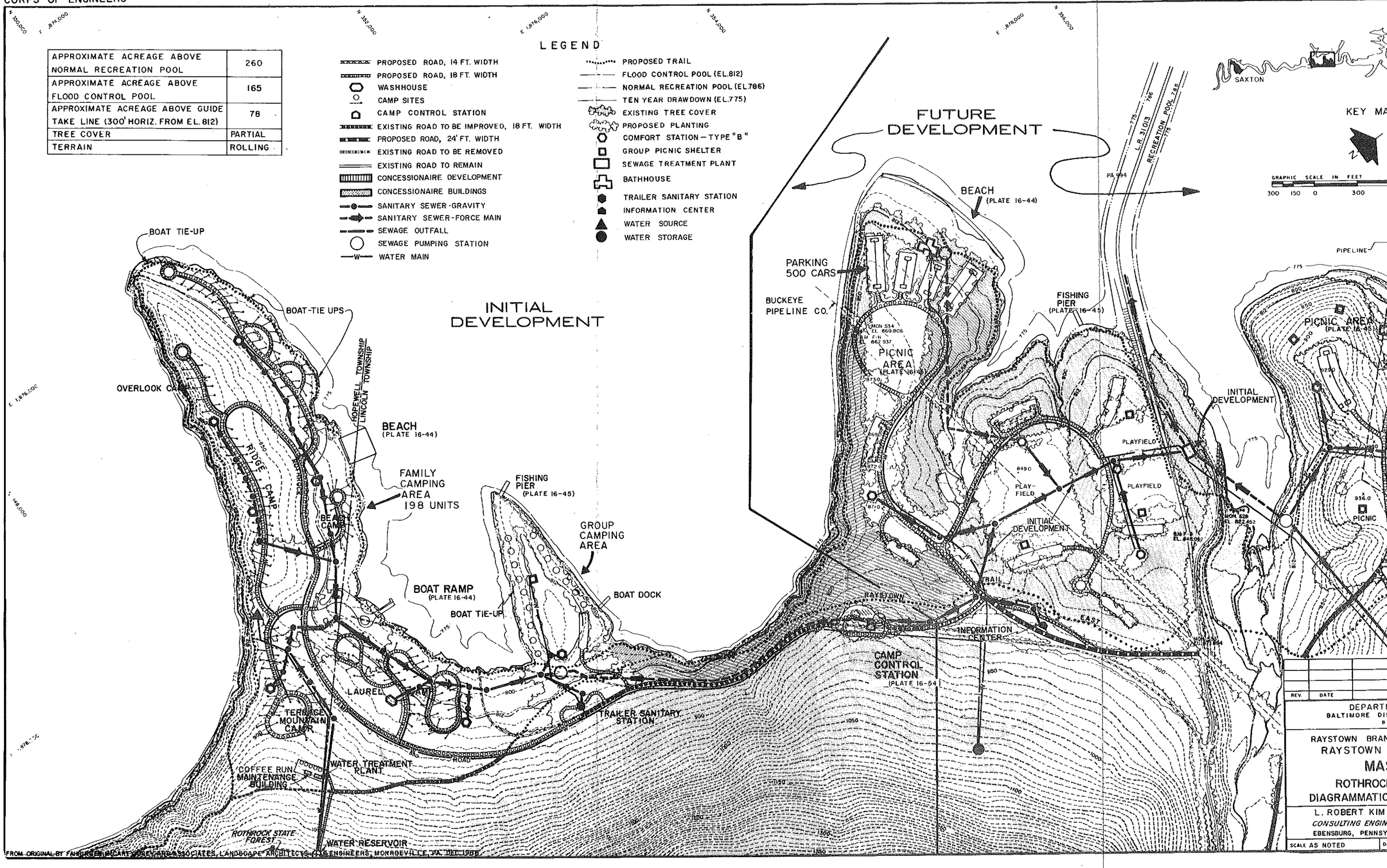
L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

PLATE 16-37

SCALE AS NOTED | DATE 12/19/75 | SHEET OF

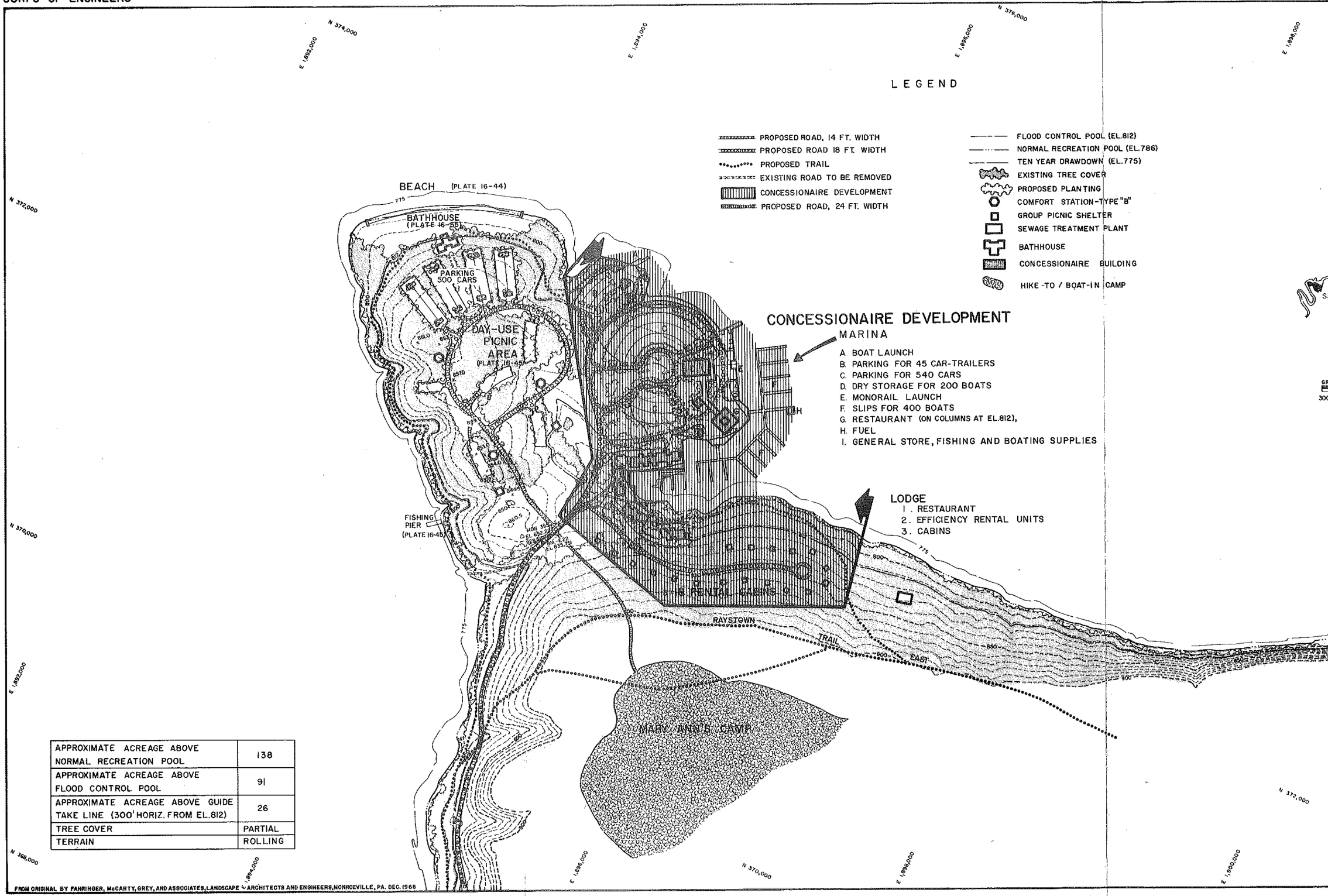
CORPS OF ENGINEERS



APPROXIMATE ACREAGE ABOVE NORMAL RECREATION POOL	260
APPROXIMATE ACREAGE ABOVE FLOOD CONTROL POOL	165
APPROXIMATE ACREAGE ABOVE GUIDE TAKE LINE (300' HORIZ. FROM EL. 812)	78
TREE COVER	PARTIAL
TERRAIN	ROLLING

FROM ORIGINAL BY FAHRINGER McCARTHY & ASSOCIATES, LANDSCAPE ARCHITECTS & ENGINEERS, MONROEVILLE, PA. DEC. 1968

CORPS OF ENGINEERS



APPROXIMATE ACREAGE ABOVE NORMAL RECREATION POOL	138
APPROXIMATE ACREAGE ABOVE FLOOD CONTROL POOL	91
APPROXIMATE ACREAGE ABOVE GUIDE TAKE LINE (300' HORIZ. FROM EL.812)	26
TREE COVER	PARTIAL
TERRAIN	ROLLING

FROM ORIGINAL BY FAHRINGER, McCARTY, GREY, AND ASSOCIATES, LANDSCAPE & ARCHITECTS AND ENGINEERS, MONROEVILLE, PA. DEC. 1966

U. S. ARMY

N 374,000 E 1,892,000 E 1,894,000 E 1,896,000 N 376,000 E 1,898,000 E 1,900,000

LEGEND

- PROPOSED ROAD, 14 FT. WIDTH
- PROPOSED ROAD 18 FT. WIDTH
- PROPOSED TRAIL
- EXISTING ROAD TO BE REMOVED
- CONCESSIONAIRE DEVELOPMENT
- PROPOSED ROAD, 24 FT. WIDTH
- FLOOD CONTROL POOL (EL.812)
- NORMAL RECREATION POOL (EL.786)
- TEN YEAR DRAWDOWN (EL.775)
- EXISTING TREE COVER
- PROPOSED PLANTING
- COMFORT STATION-TYPE "B"
- GROUP PICNIC SHELTER
- SEWAGE TREATMENT PLANT
- BATHHOUSE
- CONCESSIONAIRE BUILDING
- HIKE-TO / BOAT-IN CAMP

BEACH (PLATE 16-44)

BATHHOUSE (PLATE 16-25)

PARKING 500 CARS

DAY-USE PICNIC AREA (PLATE 16-45)

FISHING PIER (PLATE 16-45)

CONCESSIONAIRE DEVELOPMENT

MARINA

A. BOAT LAUNCH
B. PARKING FOR 45 CAR-TRAILERS
C. PARKING FOR 540 CARS
D. DRY STORAGE FOR 200 BOATS
E. MONORAIL LAUNCH
F. SLIPS FOR 400 BOATS
G. RESTAURANT (ON COLUMNS AT EL.812),
H. FUEL
I. GENERAL STORE, FISHING AND BOATING SUPPLIES

LODGE
1. RESTAURANT
2. EFFICIENCY RENTAL UNITS
3. CABINS

RENTAL CABINS

RAYSTOWN TRAIL EAST

MARY ANN'S CAMP

HUNTINGDON

SAXTON

KEY MAP

N

GRAPHIC SCALE IN FEET
300 150 0 300 600 900 1200

ABOVE POOL	138
ABOVE	91
ABOVE GUIDE FROM EL.812)	26
	PARTIAL
	ROLLING

UD ASSOCIATES, LANDSCAPE ARCHITECTS AND ENGINEERS, MONROEVILLE, PA. DEC. 1968

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

PARADISE FURNACE RECREATION AREA PROPOSED DEVELOPMENT

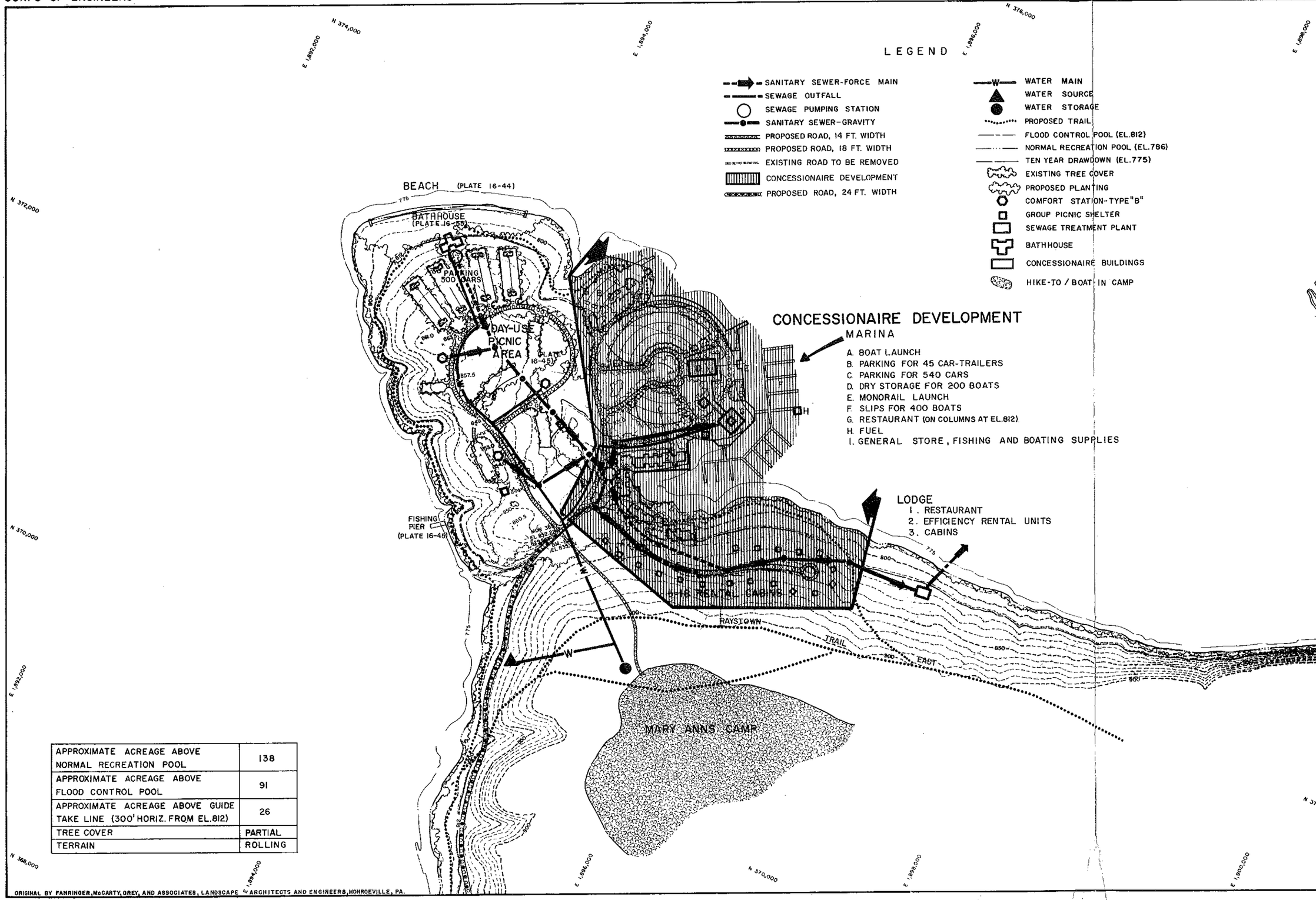
L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

PLATE 16-38

SCALE AS NOTED | DATE 12/19/75 | SHEET OF

CORPS OF ENGINEERS



APPROXIMATE ACREAGE ABOVE NORMAL RECREATION POOL	138
APPROXIMATE ACREAGE ABOVE FLOOD CONTROL POOL	91
APPROXIMATE ACREAGE ABOVE GUIDE TAKE LINE (300' HORIZ. FROM EL.812)	26
TREE COVER	PARTIAL
TERRAIN	ROLLING

ORIGINAL BY FAHRINGER, McCARTY, GREY, AND ASSOCIATES, LANDSCAPE & ARCHITECTS AND ENGINEERS, MONROEVILLE, PA.

LEGEND

- SANITARY SEWER-FORCE MAIN
- SEWAGE OUTFALL
- SEWAGE PUMPING STATION
- SANITARY SEWER-GRAVITY
- PROPOSED ROAD, 14 FT. WIDTH
- PROPOSED ROAD, 18 FT. WIDTH
- EXISTING ROAD TO BE REMOVED
- CONCESSIONAIRE DEVELOPMENT
- PROPOSED ROAD, 24 FT. WIDTH
- WATER MAIN
- WATER SOURCE
- WATER STORAGE
- PROPOSED TRAIL
- FLOOD CONTROL POOL (EL.812)
- NORMAL RECREATION POOL (EL.786)
- TEN YEAR DRAWDOWN (EL.775)
- EXISTING TREE COVER
- PROPOSED PLANTING
- COMFORT STATION-TYPE"B"
- GROUP PICNIC SHELTER
- SEWAGE TREATMENT PLANT
- BATHHOUSE
- CONCESSIONAIRE BUILDINGS
- HIKE-TO / BOAT-IN CAMP

BEACH (PLATE 16-44)

BATHHOUSE (PLATE 16-25)

PARKING 500 CARS

DAY-USE PICNIC AREA (PLATE 16-45)

FISHING PIER (PLATE 16-45)

CONCESSIONAIRE DEVELOPMENT

MARINA

A. BOAT LAUNCH
B. PARKING FOR 45 CAR-TRAILERS
C. PARKING FOR 540 CARS
D. DRY STORAGE FOR 200 BOATS
E. MONORAIL LAUNCH
F. SLIPS FOR 400 BOATS
G. RESTAURANT (ON COLUMNS AT EL.812)
H. FUEL
I. GENERAL STORE, FISHING AND BOATING SUPPLIES

LODGE
1. RESTAURANT
2. EFFICIENCY RENTAL UNITS
3. CABINS

76 RENTAL CABINS

RAYSTOWN TRAIL EAST

MARY ANNS CAMP

HUNTINGDON

SAXTON

KEY MAP

GRAPHIC SCALE IN FEET
300 150 0 300 600 900 1200

AGE ABOVE ON POOL	138
AGE ABOVE OOL	91
AGE ABOVE GUIDE ORIZ. FROM EL.812)	26
	PARTIAL
	ROLLING

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

PARADISE FURNACE RECREATION AREA DIAGRAMMATIC SEWER AND WATER PLAN

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

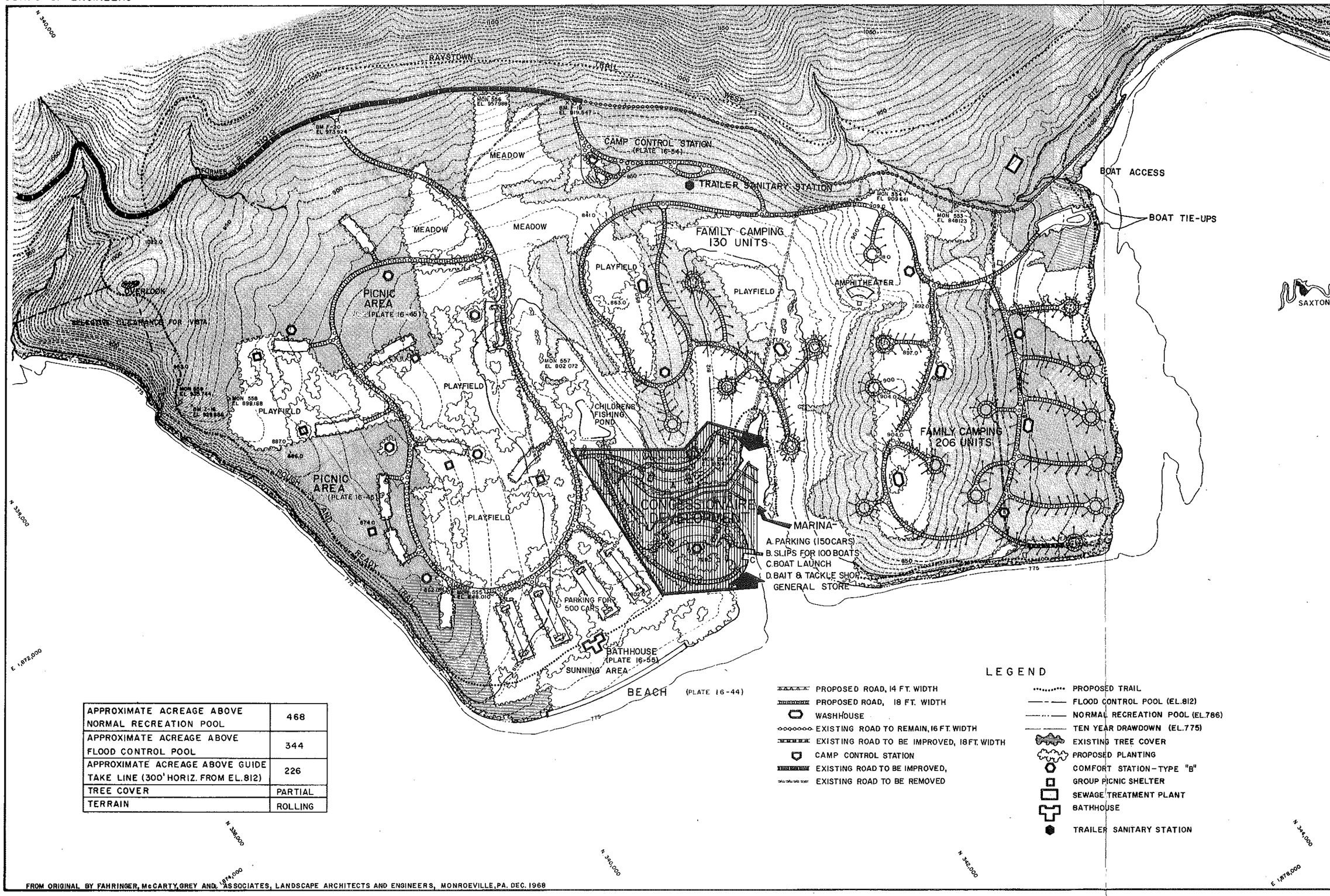
DRAWING NUMBER

PLATE 16-39

SCALE AS NOTED | DATE 12/19/75 | SHEET OF

ND ASSOCIATES, LANDSCAPE & ARCHITECTS AND ENGINEERS, MONROEVILLE, PA.

CORPS OF ENGINEERS



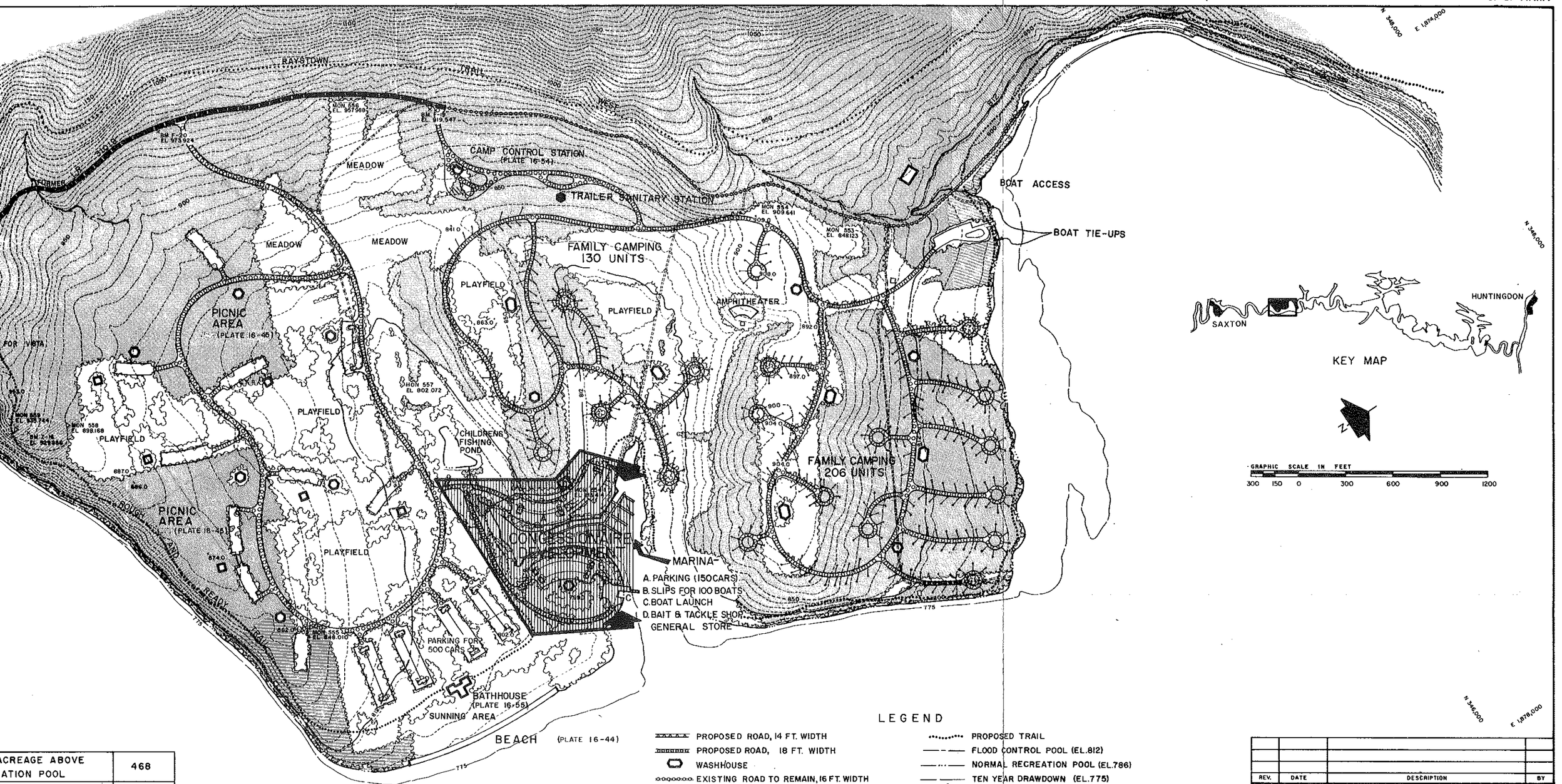
APPROXIMATE ACREAGE ABOVE NORMAL RECREATION POOL	468
APPROXIMATE ACREAGE ABOVE FLOOD CONTROL POOL	344
APPROXIMATE ACREAGE ABOVE GUIDE TAKE LINE (300' HORIZ. FROM EL.812)	226
TREE COVER	PARTIAL
TERRAIN	ROLLING

LEGEND

- PROPOSED ROAD, 14 FT. WIDTH
- PROPOSED ROAD, 18 FT. WIDTH
- WASHHOUSE
- EXISTING ROAD TO REMAIN, 16 FT. WIDTH
- EXISTING ROAD TO BE IMPROVED, 18 FT. WIDTH
- CAMP CONTROL STATION
- EXISTING ROAD TO BE IMPROVED,
- EXISTING ROAD TO BE REMOVED
- PROPOSED TRAIL
- FLOOD CONTROL POOL (EL.812)
- NORMAL RECREATION POOL (EL.786)
- TEN YEAR DRAWDOWN (EL.775)
- EXISTING TREE COVER
- PROPOSED PLANTING
- COMFORT STATION – TYPE "B"
- GROUP PICNIC SHELTER
- SEWAGE TREATMENT PLANT
- BATHHOUSE
- TRAILER SANITARY STATION

FROM ORIGINAL BY FAHRINGER, McCARTY, GREY AND ASSOCIATES, LANDSCAPE ARCHITECTS AND ENGINEERS, MONROEVILLE, PA. DEC. 1968

U. S. ARMY



ACREAGE ABOVE ATION POOL	468
ACREAGE ABOVE . POOL	344
CREAGE ABOVE GUIDE HORIZ. FROM EL. 812)	226
	PARTIAL
	ROLLING

LEGEND

- PROPOSED ROAD, 14 FT. WIDTH
- PROPOSED ROAD, 18 FT. WIDTH
- WASHHOUSE
- EXISTING ROAD TO REMAIN, 16 FT. WIDTH
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- CAMP CONTROL STATION
- EXISTING ROAD TO BE IMPROVED,
- EXISTING ROAD TO BE REMOVED
- PROPOSED TRAIL
- FLOOD CONTROL POOL (EL. 812)
- NORMAL RECREATION POOL (EL. 786)
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- EXISTING TREE COVER
- PROPOSED PLANTING
- COMFORT STATION - TYPE "B"
- GROUP PICNIC SHELTER
- SEWAGE TREATMENT PLANT
- BATHHOUSE
- TRAILER SANITARY STATION

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN
HOPEWELL RECREATION AREA
PROPOSED DEVELOPMENT

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

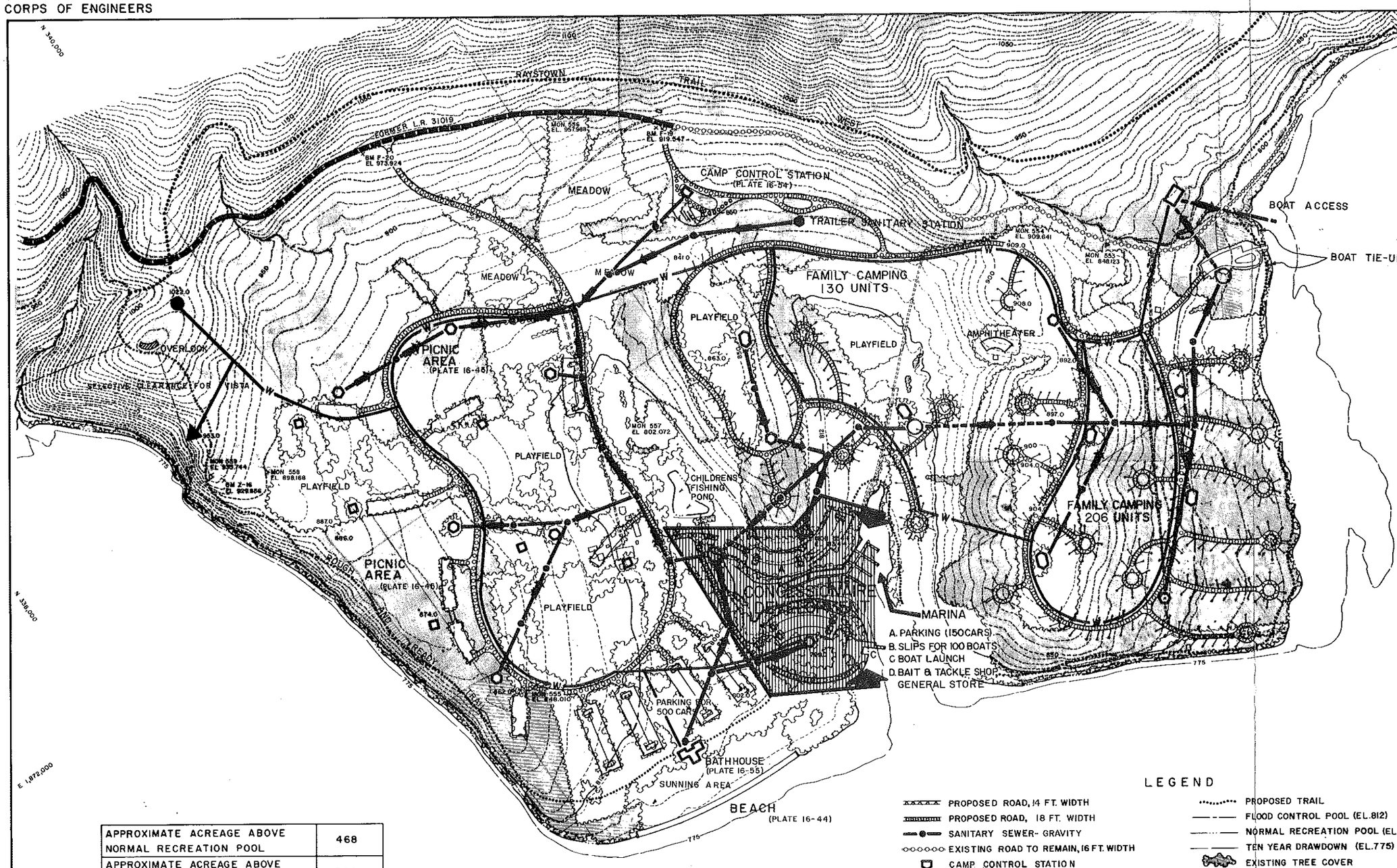
DRAWING NUMBER

PLATE 16-40

SCALE AS NOTED | DATE 12/19/75 | SHEET OF

RTY, GREY AND ASSOCIATES, LANDSCAPE ARCHITECTS AND ENGINEERS, MONROEVILLE, PA. DEC. 1968

CORPS OF ENGINEERS



APPROXIMATE ACREAGE ABOVE NORMAL RECREATION POOL	468
APPROXIMATE ACREAGE ABOVE FLOOD CONTROL POOL	344
APPROXIMATE ACREAGE ABOVE GUIDE TAKE LINE (300' HORIZ. FROM EL.812)	226
TREE COVER	PARTIAL
TERRAIN	ROLLING

LEGEND

- PROPOSED ROAD, 14 FT. WIDTH
- PROPOSED ROAD, 18 FT. WIDTH
- SANITARY SEWER- GRAVITY
- EXISTING ROAD TO REMAIN, 16 FT. WIDTH
- CAMP CONTROL STATION
- TRAILER SANITARY STATION
- EXISTING ROAD TO BE IMPROVED, 24 FT. WIDTH
- SANITARY SEWER-FORCE MAIN
- WASHHOUSE
- SEWAGE OUTFALL
- EXISTING ROAD TO BE REMOVED
- EXISTING ROAD TO BE IMPROVED, 18 FT. WIDTH
- PROPOSED TRAIL
- FLOOD CONTROL POOL (EL.812)
- NORMAL RECREATION POOL (EL.786)
- TEN YEAR DRAWDOWN (EL.775)
- EXISTING TREE COVER
- PROPOSED PLANTING
- COMFORT STATION-TYPE "B"
- GROUP PICNIC SHELTER
- SEWAGE TREATMENT PLANT
- BATHHOUSE
- SEWAGE PUMPING STATION
- WATER MAIN
- WATER SOURCE
- WATER STORAGE

FROM ORIGINAL BY FAHRINGER, McCARTY, GREY AND ASSOCIATES, LANDSCAPE ARCHITECTS AND ENGINEERS, MONROEVILLE, PA. DEC. 1968

U. S. ARMY

RAYSTOWN TRAIL

CORNER LR 31019

MON 555 EL. 957.988

BM F-20 EL 973.924

BM F-19 EL. 913.647

CAMP CONTROL STATION (PLATE 16-54)

TRAILER SANITARY STATION

MEADOW

MEADOW

MEADOW

PICNIC AREA (PLATE 16-46)

FAMILY CAMPING 130 UNITS

PLAYFIELD

PLAYFIELD

AMPHITHEATER

MON 554 EL. 909.641

MON 553 EL. 846.123

BOAT ACCESS

BOAT TIE-UPS

SAXTON

HUNTINGDON

KEY MAP

MON 557 EL. 802.072

CHILDRENS FISHING POND

PLAYFIELD

MON 556 EL. 898.168

BM Z-16 EL. 823.856

PLAYFIELD

FAMILY CAMPING 206 UNITS

CONCESSIONAIRE

MARINA

A. PARKING (150 CARS)
B. SLIPS FOR 100 BOATS
C. BOAT LAUNCH
D. BAIT & TACKLE SHOP GENERAL STORE

PICNIC AREA (PLATE 16-45)

ROUGH

PARKING FOR 500 CARS

MON 555 EL. 848.010

BATHHOUSE (PLATE 16-55)

SUNNING AREA

BEACH (PLATE 16-44)

GRAPHIC SCALE IN FEET

300 150 0 300 600 900 1200

N 348,000 E 1,874,000

N 348,000

N 346,000 E 1,876,000

N 344,000

N 342,000

N 340,000

N 338,000 E 1,874,000

E 1,878,000

TE ACREAGE ABOVE CREATION POOL	468
TE ACREAGE ABOVE TROL POOL	344
E ACREAGE ABOVE GUIDE (300' HORIZ. FROM EL.812)	226
R	PARTIAL
	ROLLING

LEGEND

- PROPOSED ROAD, 14 FT. WIDTH
- PROPOSED ROAD, 18 FT. WIDTH
- SANITARY SEWER- GRAVITY
- EXISTING ROAD TO REMAIN, 16 FT. WIDTH
- CAMP CONTROL STATION
- TRAILER SANITARY STATION
- EXISTING ROAD TO BE IMPROVED, 24 FT. WIDTH
- SANITARY SEWER-FORCE MAIN
- WASHHOUSE
- SEWAGE OUTFALL
- EXISTING ROAD TO BE REMOVED
- EXISTING ROAD TO BE IMPROVED, 18 FT. WIDTH
- PROPOSED TRAIL
- FLOOD CONTROL POOL (EL.812)
- NORMAL RECREATION POOL (EL.786)
- TEN YEAR DRAWDOWN (EL.775)
- EXISTING TREE COVER
- PROPOSED PLANTING
- COMFORT STATION-TYPE "B"
- GROUP PICNIC SHELTER
- SEWAGE TREATMENT PLANT
- BATHHOUSE
- SEWAGE PUMPING STATION
- W WATER MAIN
- WATER SOURCE
- WATER STORAGE

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

HOPEWELL RECREATION AREA
DIAGRAMMATIC SEWER AND WATER PLAN

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

PLATE 16-41

SCALE AS NOTED | DATE: 12/19/75 | SHEET OF

McCARTY, GREY AND ASSOCIATES, LANDSCAPE ARCHITECTS AND ENGINEERS, MONROEVILLE, PA DEC. 1968

CORPS OF ENGINEERS

APPROXIMATE ACREAGE ABOVE NORMAL RECREATION POOL	73
APPROXIMATE ACREAGE ABOVE FLOOD CONTROL POOL	54
APPROXIMATE ACREAGE ABOVE GUIDE TAKE LINE (300' HORIZ. FROM EL. 812)	7
TREE COVER	PARTIAL
TERRAIN	ROLLING

27 TWO AND FOUR BEDROOM RENTAL CABINS

HAWNS BRIDGE WOODS BARRENS NATURAL AREA

LODGE
100 EFFICIENCY RENTAL UNITS

CONCESSIONAIRE DEVELOPMENT

MARINA

A. FUEL
B. DRY STORAGE FOR 200 BOATS
C. RESTAURANT
D. TWO MONORAIL BOAT LAUNCHES
E. TRAVEL LIFT BOAT LAUNCH
F. BOAT LAUNCH
G. PARKING FOR 400 CARS
H. SLIPS FOR 300 BOATS
I. GENERAL STORE, FISHING AND BOATING SUPPLIES

CAUSEWAY
MIN. ELEV.- 801.26
(50 YR FLOOD + ELEV. 800.00) + 1.5

LEGEND

- PROPOSED ROAD, 12 FT. WIDTH
- PROPOSED ROAD, 18' FT. WIDTH
- EXISTING, NEW ROAD
- EXISTING ROAD TO BE REMOVED
- EXISTING ROAD TO REMAIN
- CONCESSIONAIRE DEVELOPMENT
- PROPOSED TRAIL
- FLOOD CONTROL POOL (EL. 812)
- NORMAL RECREATION POOL (EL. 786)
- TEN YEAR DRAWDOWN (EL. 775)
- EXISTING TREE COVER
- PROPOSED PLANTING
- CONCESSIONAIRE BUILDING
- BARRENS NATURAL AREA

SAXTON

FROM ORIGINAL BY FAHRINGER, McCARTY, GREY AND ASSOCIATES, LANDSCAPE ARCHITECTS AND ENGINEERS, MONROEVILLE, PA. DEC. 1968

U. S. ARMY

APPROXIMATE ACREAGE ABOVE NORMAL RECREATION POOL	73
APPROXIMATE ACREAGE ABOVE FLOOD CONTROL POOL	54
APPROXIMATE ACREAGE ABOVE GUIDE TAKE LINE (300' HORIZ. FROM EL. 812)	7
TREE COVER	PARTIAL
TERRAIN	ROLLING

27 TWO AND FOUR BEDROOM RENTAL CABINS

HAWNS BRIDGE WOODS BARRENS NATURAL AREA

LODGE 100 EFFICIENCY RENTAL UNITS

CONCESSIONAIRE DEVELOPMENT

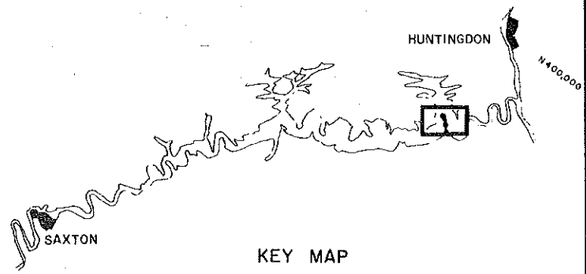
MARINA

A. FUEL
B. DRY STORAGE FOR 200 BOATS
C. RESTAURANT
D. TWO MONORAIL BOAT LAUNCHES
E. TRAVEL LIFT BOAT LAUNCH
F. BOAT LAUNCH
G. PARKING FOR 400 CARS
H. SLIPS FOR 300 BOATS
I. GENERAL STORE, FISHING AND BOATING SUPPLIES

CAUSEWAY
MIN. ELEV.- 801.25
(50 YR FLOOD=ELEV. 800.00)

LEGEND

- PROPOSED ROAD, 12FT. WIDTH
- PROPOSED ROAD, 18' FT. WIDTH
- EXISTING, NEW ROAD
- EXISTING ROAD TO BE REMOVED
- EXISTING ROAD TO REMAIN
- CONCESSIONAIRE DEVELOPMENT
- PROPOSED TRAIL
- FLOOD CONTROL POOL (EL.812)
- NORMAL RECREATION POOL (EL.786)
- TEN YEAR DRAWDOWN (EL.775)
- EXISTING TREE COVER
- PROPOSED PLANTING
- CONCESSIONAIRE BUILDING
- BARRENS NATURAL AREA



KEY MAP

GRAPHIC SCALE IN FEET
300 150 0 300 600 900 1200

N

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN
HAWNS BRIDGE WOODS PROPOSED DEVELOPMENT

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

PLATE 16-42

SCALE AS NOTED | DATE 12/19/75 | SHEET OF

McCARTY, GREY AND ASSOCIATES, LANDSCAPE ARCHITECTS AND ENGINEERS, MONROEVILLE, PA. DEC. 1968

CORPS OF ENGINEERS

LEGEND

- PROPOSED ROAD, 16 FT. WIDTH
- EXISTING ROAD TO BE IMPROVED, 18 FT. WIDTH
- EXISTING ROAD TO BE REMOVED
- PROPOSED TRAIL
- CONCESSIONAIRE DEVELOPMENT
- CONCESSIONAIRE BUILDING
- PROPOSED ROAD 12 FT. WIDTH
- FLOOD CONTROL POOL (EL. 812)
- NORMAL RECREATION POOL (EL. 786)
- TEN YEAR DRAWDOWN (EL. 775)
- EXISTING TREE COVER
- PROPOSED PLANTING
- BARRENS NATURAL AREA

GROVE BARRENS NORTH

150 RENTAL UNITS

175 RENTAL UNITS

CONCESSIONAIRE DEVELOPMENT

MAIN LODGE
(PLATES 16-47 & 48)

A. RESTAURANTS
B. LOBBY
C. ROOMS - 200
D. POOL RECREATION AREA
E. PARKING
F. TENNIS COURTS - 5
G. BEACH
H. PRO SHOP: TENNIS

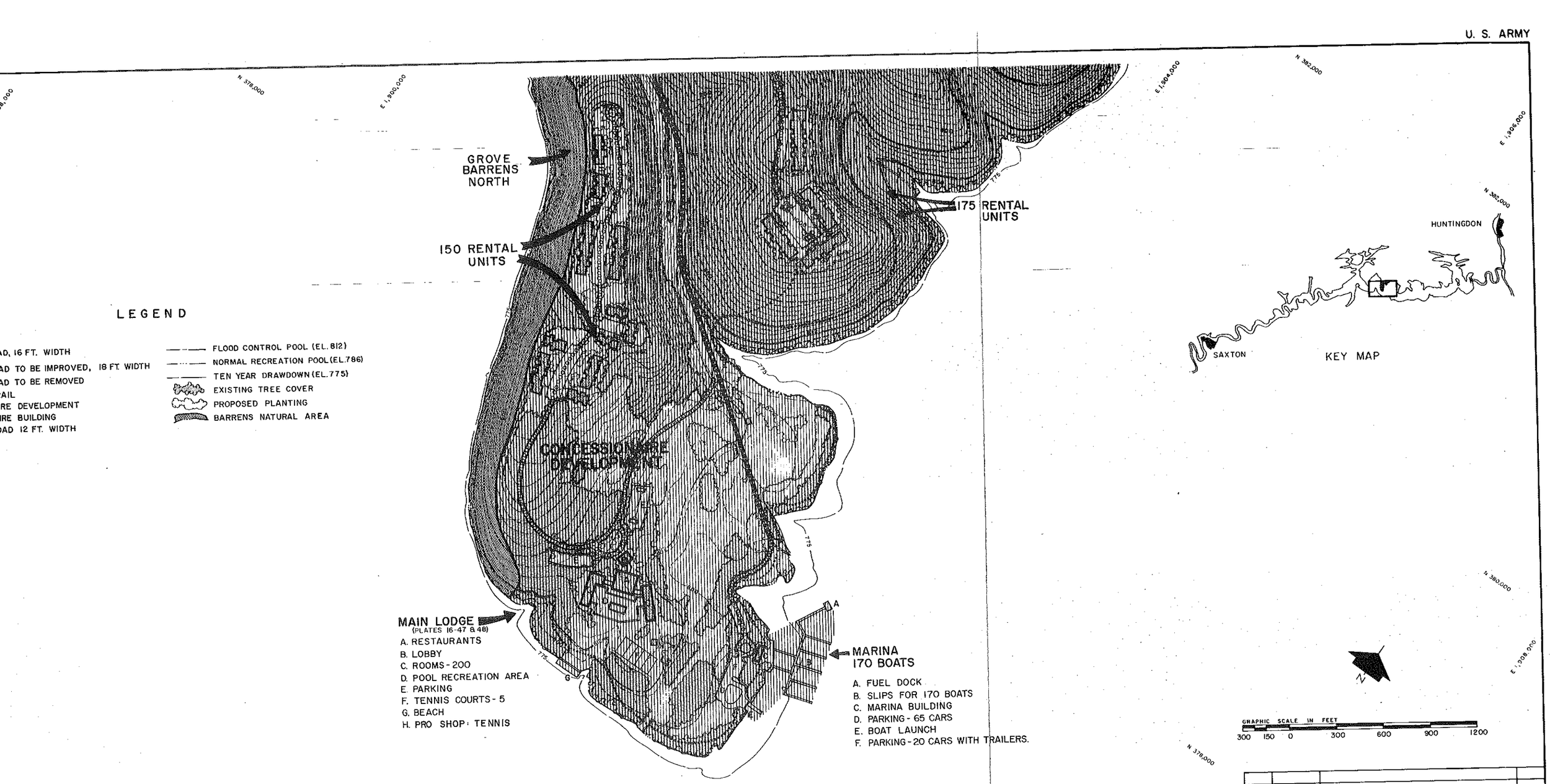
MARINA
170 BOATS

A. FUEL DOCK
B. SLIPS FOR 170 BOATS
C. MARINA BUILDING
D. PARKING - 65 CARS
E. BOAT LAUNCH
F. PARKING - 20 CARS WITH TRAILERS.

APPROXIMATE ACREAGE ABOVE NORMAL RECREATION POOL	228
APPROXIMATE ACREAGE ABOVE FLOOD CONTROL POOL	93
APPROXIMATE ACREAGE ABOVE GUIDE TAKE LINE (300' HORIZ. FROM EL. 812)	36
TREE COVER	PARTIAL
TERRAIN	ROLLING

FROM ORIGINAL BY FAHRINGER, McCARTY, GREY AND ASSOCIATES, LANDSCAPE ARCHITECTS AND ENGINEERS, MONROEVILLE, PA. DEC. 1968

U. S. ARMY



LEGEND

AD, 16 FT. WIDTH
AD TO BE IMPROVED, 18 FT. WIDTH
AD TO BE REMOVED
AIL
RE DEVELOPMENT
IRE BUILDING
OAD 12 FT. WIDTH

FLOOD CONTROL POOL (EL. 812)
NORMAL RECREATION POOL (EL. 786)
TEN YEAR DRAWDOWN (EL. 775)
EXISTING TREE COVER
PROPOSED PLANTING
BARRENS NATURAL AREA

REAGE ABOVE TION POOL	228
REAGE ABOVE POOL	93
REAGE ABOVE GUIDE HORIZ. FROM EL. 812)	36
	PARTIAL
	ROLLING

GRAPHIC SCALE IN FEET
300 150 0 300 600 900 1200

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

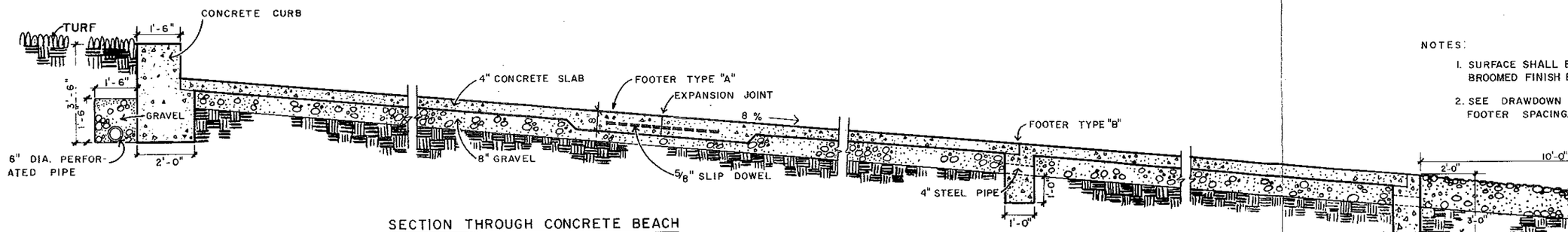
MASTER PLAN
UPPER CORNER LODGE AREA
PROPOSED DEVELOPMENT

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER
PLATE 16-43

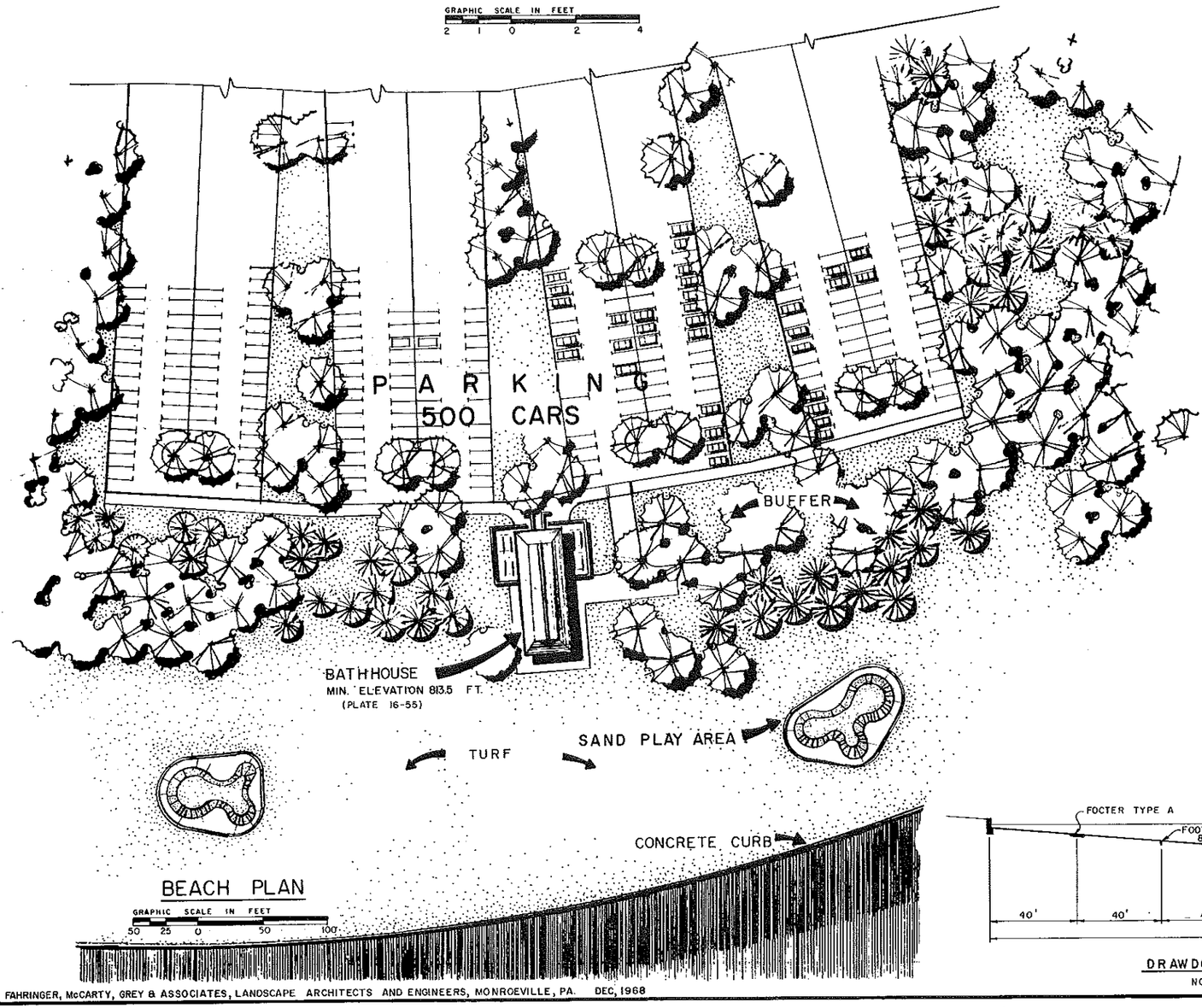
SCALE AS NOTED | DATE 12/19/75 | SHEET OF

CARTY, GREY AND ASSOCIATES, LANDSCAPE ARCHITECTS AND ENGINEERS, MONROEVILLE, PA. DEC. 1968



SECTION THROUGH CONCRETE BEACH

GRAPHIC SCALE IN FEET
2 1 0 2 4

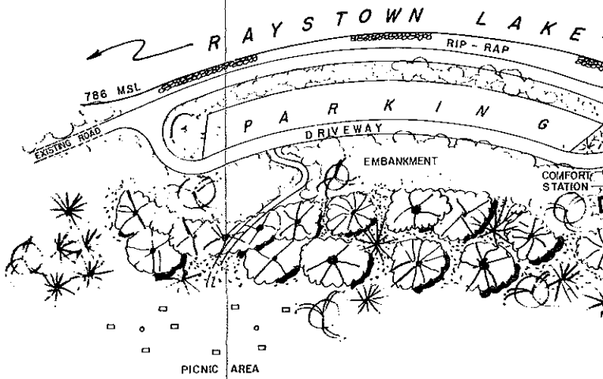


BEACH PLAN

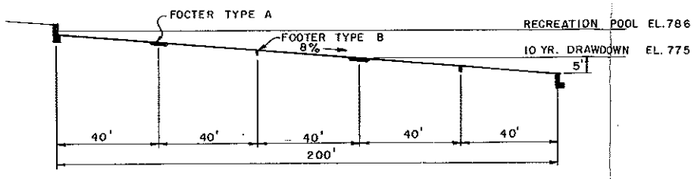
GRAPHIC SCALE IN FEET
50 25 0 50 100

NOTES:

1. SURFACE SHALL B
BROOMED FINISH E
2. SEE DRAWDOWN
FOOTER SPACING

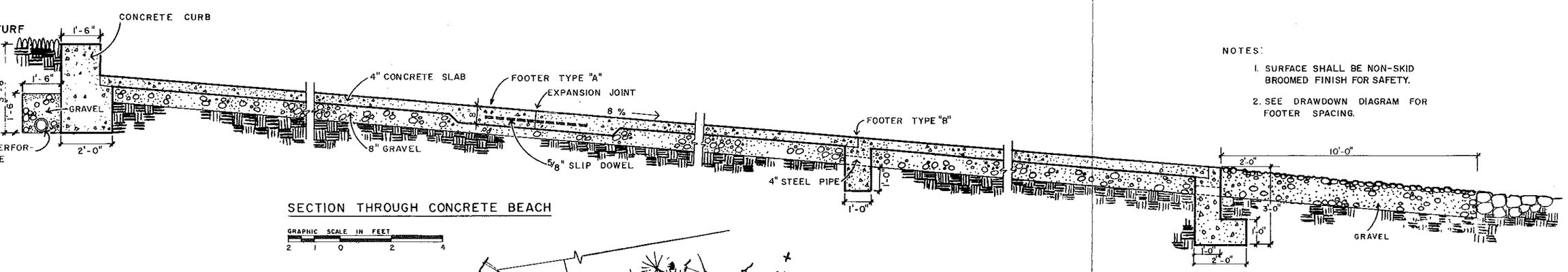


TYPICAL BOAT RAMP FACILITY
NO SCALE



DRAWDOWN DIAGRAM
NO SCALE

FROM ORIGINAL BY FAHRINGER, McCARTY, GREY & ASSOCIATES, LANDSCAPE ARCHITECTS AND ENGINEERS, MONROEVILLE, PA. DEC, 1968

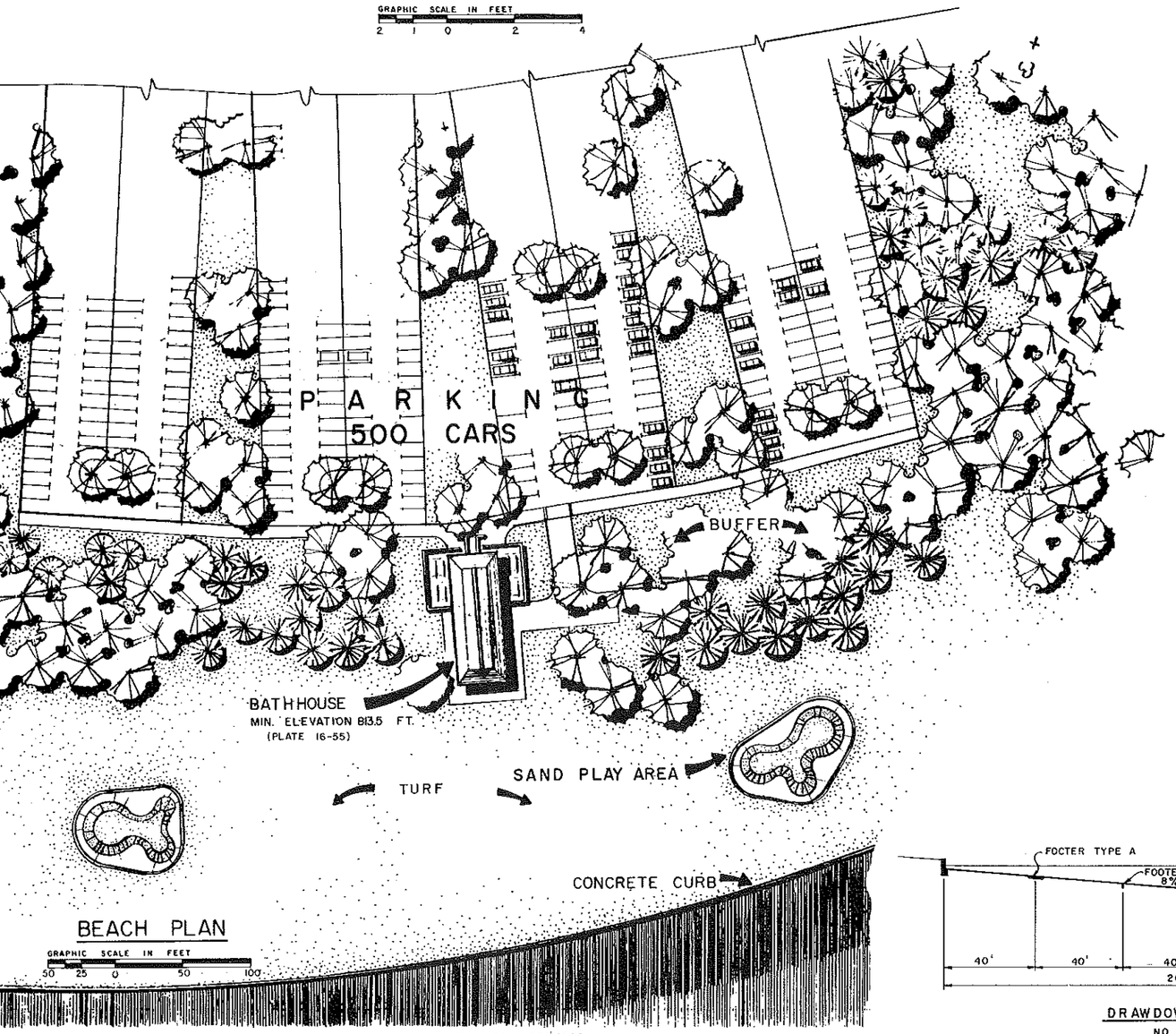


SECTION THROUGH CONCRETE BEACH

GRAPHIC SCALE IN FEET
2 1 0 2 4

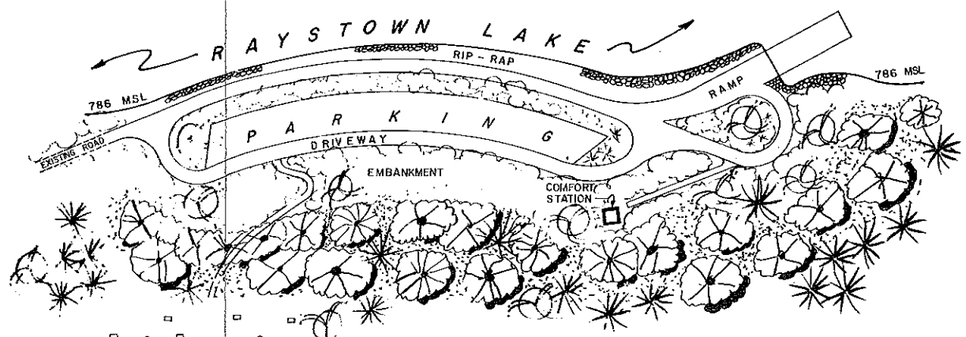
NOTES:

1. SURFACE SHALL BE NON-SKID BROOMED FINISH FOR SAFETY.
2. SEE DRAWDOWN DIAGRAM FOR FOOTER SPACING.



BEACH PLAN

GRAPHIC SCALE IN FEET
50 25 0 50 100

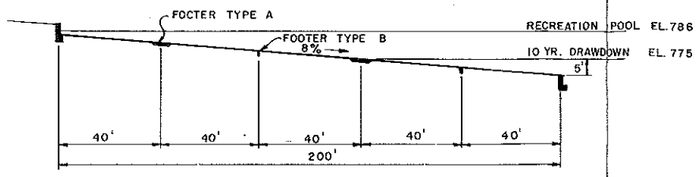


NOTE:

1. ALL BOAT RAMPS TO HAVE A SLOPE OF FOURTEEN PERCENT (14%).
2. ALL BOAT RAMPS TO BE CONCRETE WITH ROUGH FINISH FOR SAFETY.
3. DETAIL SECTION OF BOAT RAMP SIMILAR TO CONCRETE BEACH DETAIL.

TYPICAL BOAT RAMP FACILITY

NO SCALE



DRAWDOWN DIAGRAM

NO SCALE

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

TYPICAL BEACH LAYOUT AND BOAT RAMP

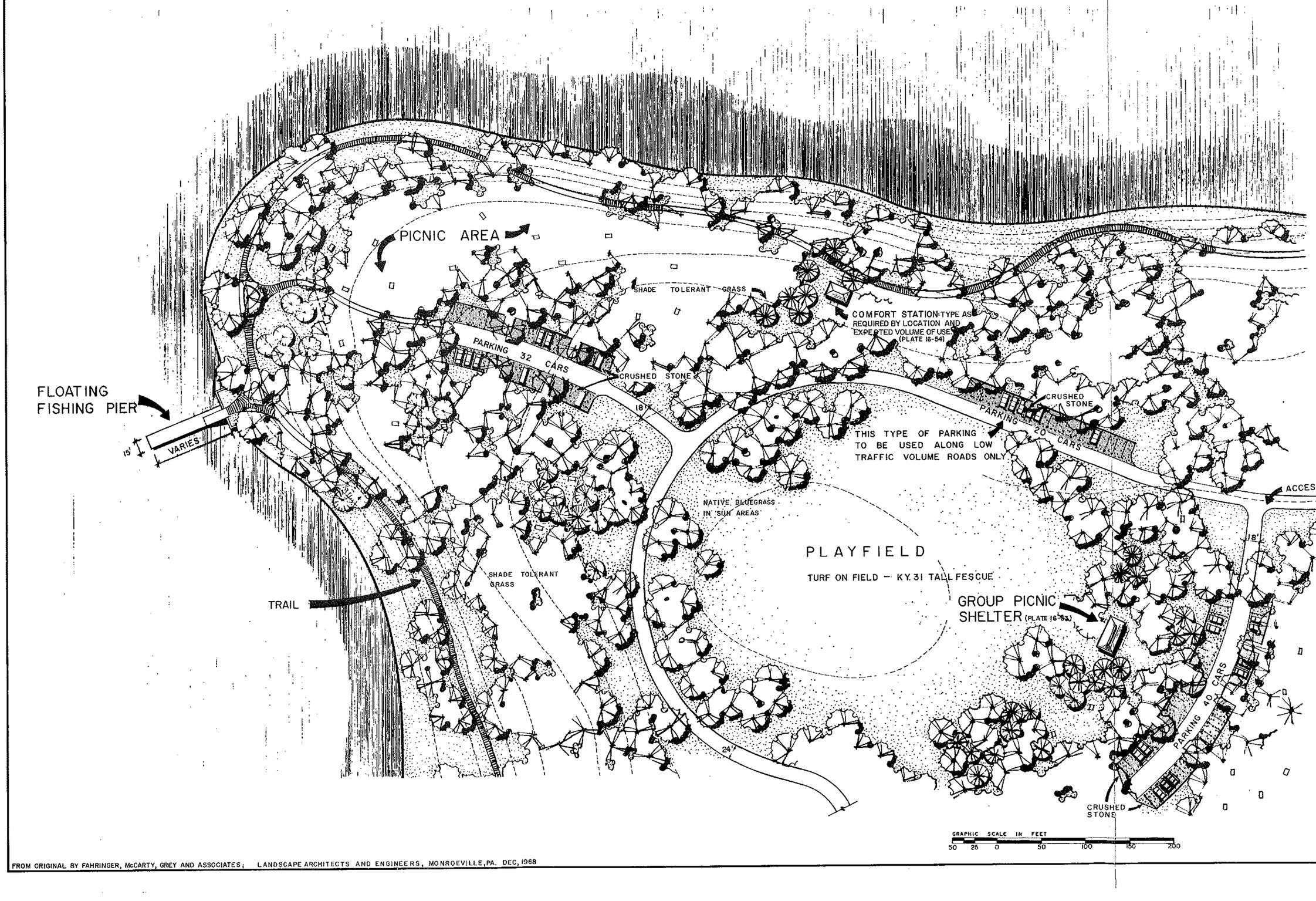
L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

PLATE 16-44

SCALE: AS NOTED | DATE 12/19/75 | SHEET OF

ARTY, GREY & ASSOCIATES, LANDSCAPE ARCHITECTS AND ENGINEERS, MONROEVILLE, PA. DEC, 1968



FROM ORIGINAL BY FAHRINGER, McCARTY, GREY AND ASSOCIATES; LANDSCAPE ARCHITECTS AND ENGINEERS, MONROEVILLE, PA. DEC, 1968

PICNIC AREA

SHADE TOLERANT GRASS

COMFORT STATION: TYPE AS REQUIRED BY LOCATION AND EXPECTED VOLUME OF USE, (PLATE 16-54)

PARKING 32 CARS

CRUSHED STONE

18'

THIS TYPE OF PARKING TO BE USED ALONG LOW TRAFFIC VOLUME ROADS ONLY

CRUSHED STONE

PARKING 20 CARS

ACCESS ROAD 24' WIDTH TO MAIN ROAD

NATIVE BLUEGRASS IN SUN AREAS

PLAYFIELD

TURF ON FIELD – KY. 31 TALL FESCUE

SHADE TOLERANT GRASS

TRAIL

GROUP PICNIC SHELTER (PLATE 16-53)

COMFORT STATION: TYPE AS REQUIRED BY LOCATION AND EXPECTED VOLUME OF USE, (PLATE 16-54).

PARKING 40 CARS

CRUSHED STONE

24'

GRAPHIC SCALE IN FEET

50 25 0 50 100 150 200

NOTES:

1. PICNIC AREAS- TABLES ARE TO BE SPACED A MINIMUM OF 50 FT. APART WITH ONE PARKING SPACE PER TABLE.

2 PICNIC SHELTERS TO HAVE A MINIMUM OF 300 SQ. FT. OF FLOOR AREA AND A MAXIMUM OF 750 SQ. FT., SHOULD BE LOCATED NEAR PARKING.

3. COMFORT STATIONS TO BE LOCATED ABOVE MAXIMUM FLOOD LEVEL, (APPROX. EL. 812) EACH STATION SERVES AN AREA HAVING A RADIUS OF APPROX. 600 FT.

4. TRAIL SYSTEM TO TRAVERSE THE PERIMETER OF THE LAKE, RELATING THE PICNIC AND CAMPING AREAS TO THE FACILITIES ALONG THE WATERS EDGE.

5. PATHS AND AREA AROUND PICNIC TABLES TO BE COVERED WITH WOOD CHIPS PRODUCED WHEN BRUSH IS CLEARED.

6. PLANT ONLY NATIVE TREES AND SHRUBS.

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

TYPICAL PICNIC LAYOUT & FISHING PIER

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

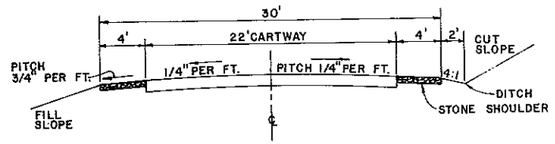
DRAWING NUMBER

PLATE 16-45

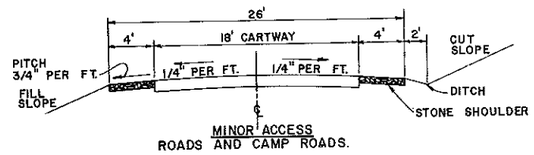
SCALE: AS NOTED | DATE: 12/19/75 | SHEET OF

EY AND ASSOCIATES; LANDSCAPE ARCHITECTS AND ENGINEERS, MONROEVILLE, PA. DEC, 1968

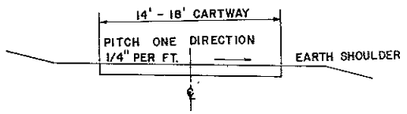
CORPS OF ENGINEERS



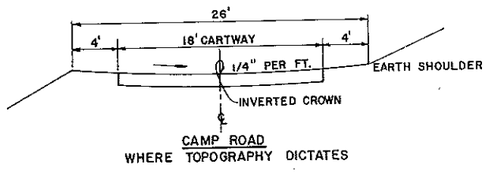
MAJOR ACCESS ROAD



MINOR ACCESS
ROADS AND CAMP ROADS.

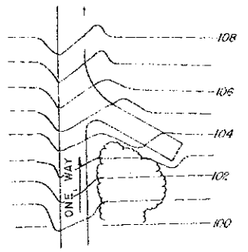


CAMP ROAD
(ONE WAY - 14', TWO WAY - 18')
AS TOPOGRAPHY DICTATES.

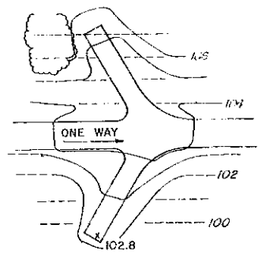


CAMP ROAD
WHERE TOPOGRAPHY DICTATES

CUTS AND FILLS LESS THAN 3 FEET

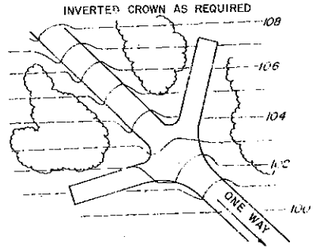


ROAD PERPENDICULAR TO CONTOURS



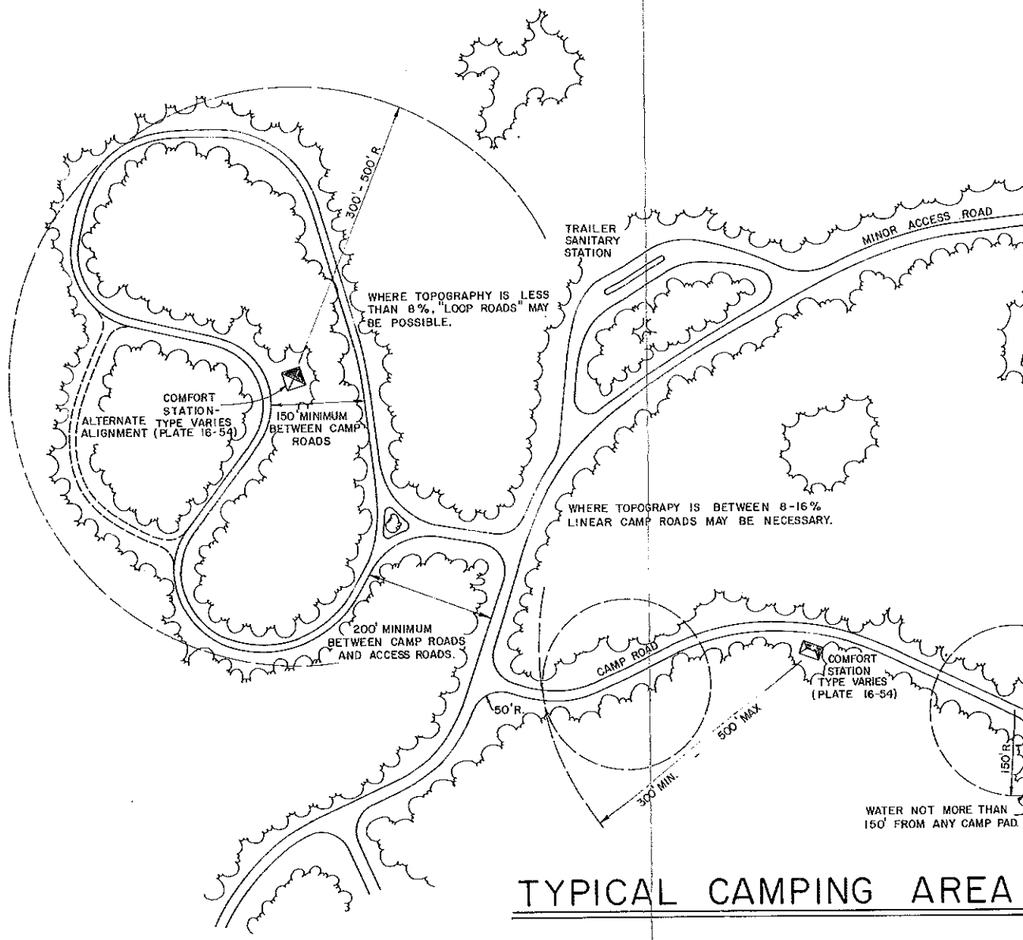
ROAD PARALLEL TO CONTOURS

CUTS AND FILLS AT A MAXIMUM



ROAD OBLIQUE TO CONTOURS

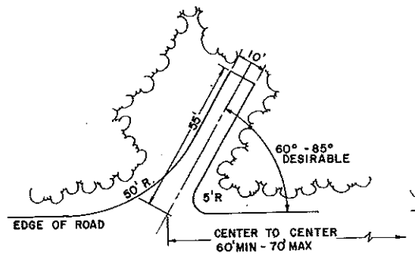
8% GRADE OR LESS



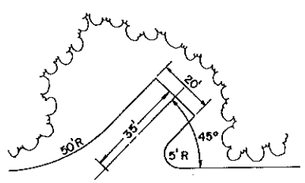
TYPICAL CAMPING AREA

TYPICAL ROAD SECTIONS

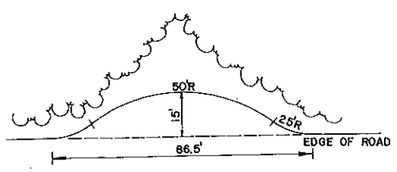
ONE-WAY CAMP ROADS



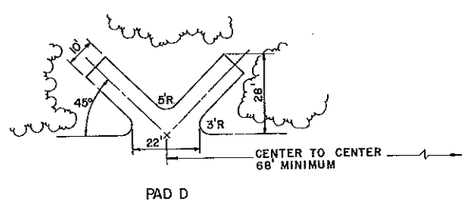
PAD A



PAD B



PAD C



PAD D

SIDE SLOPES ON PADS

ON THE DOOR SIDE OF THE CAMP PADS, SLOPES OF 1 ON 4 ARE DESIRABLE. THE REMAINING SIDES ARE RECOMMENDED TO BE GRADED ON SLOPES OF 1 ON 3.

GRADING

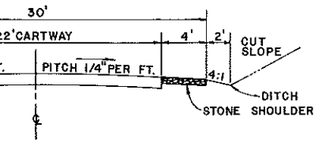
PADS ON GRADE ARE THE MOST DESIRABLE. A 3 FOOT BANK. (CUT OR FILL) SHOULD BE MAXIMUM FOR 90% OF THE PADS; 10% OF THE PADS MAY HAVE A BANK GREATER THAN 3 FEET.

SLOPES ON CAMP PADS

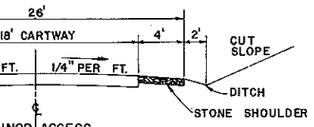
UPHILL SLOPED CAMP PADS - 3% MAXIMUM GRADES.
DOWNHILL SLOPED CAMP PADS - 3% MAXIMUM GRADES.

TYPICAL CAMP PADS

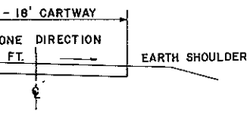
U. S. ARMY



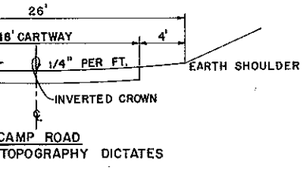
R ACCESS ROAD



INOR ACCESS
ND CAMP ROADS.



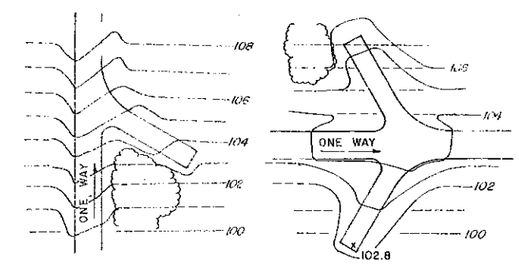
CAMP ROAD
AY - 14', TWO WAY - 18')
OGRAPHY DICTATES.



CAMP ROAD
TOPOGRAPHY DICTATES

ROAD SECTIONS

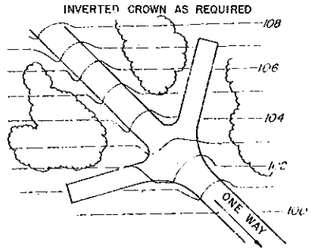
CUTS AND FILLS LESS THAN 3 FEET



ROAD PERPENDICULAR TO CONTOURS

ROAD PARALLEL TO CONTOURS

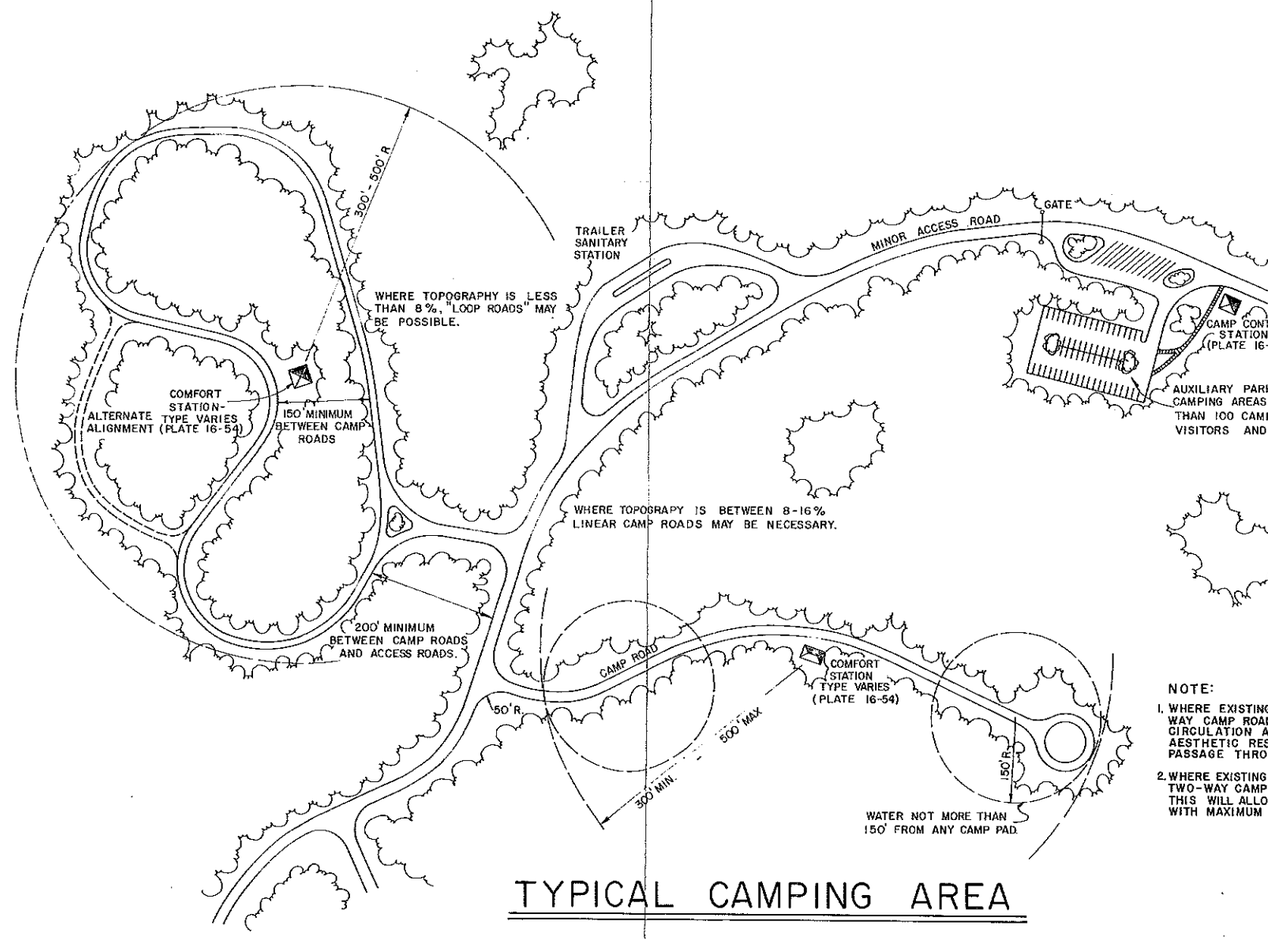
CUTS AND FILLS AT A MAXIMUM



ROAD OBLIQUE TO CONTOURS

8% GRADE OR LESS

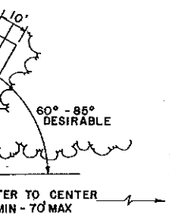
ONE-WAY CAMP ROADS

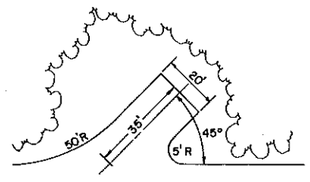


TYPICAL CAMPING AREA

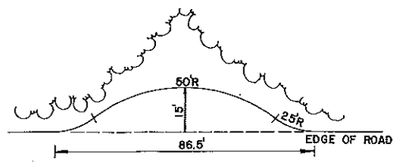
NOTE:

1. WHERE EXISTING GRADES ARE LESS THAN 8%, ONE WAY CAMP ROADS WILL PROVIDE BETTER CIRCULATION AND A MORE PLEASING AESTHETIC RESULT, BY CREATING A NARROWER PASSAGE THROUGH WOODED AREAS.
2. WHERE EXISTING GRADES ARE GREATER THAN 8% TWO-WAY CAMP ROADS SHOULD BE CONSIDERED. THIS WILL ALLOW CAMP PADS TO BE GRADED WITH MAXIMUM 3 FOOT CUTS AND FILLS.

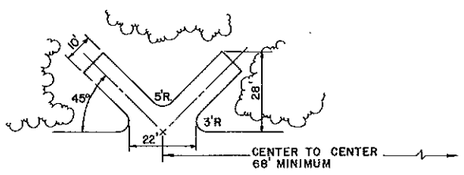




PAD B



PAD C



PAD D

TYPICAL CAMP PADS

SIDE SLOPES ON PADS

ON THE DOOR SIDE OF THE CAMP PADS, SLOPES OF 1 ON 4 ARE DESIRABLE. THE REMAINING SIDES ARE RECOMMENDED TO BE GRADED ON SLOPES OF 1 ON 3.

GRADING

PADS ON GRADE ARE THE MOST DESIRABLE. A 3 FOOT BANK (CUT OR FILL) SHOULD BE MAXIMUM FOR 90% OF THE PADS; 10% OF THE PADS MAY HAVE A BANK GREATER THAN 3 FEET.

SLOPES ON CAMP PADS

UPHILL SLOPED CAMP PADS - 3% MAXIMUM GRADES.
DOWNHILL SLOPED CAMP PADS - 3% MAXIMUM GRADES.

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN
TYPICAL LAYOUT- CAMPING AREAS & ROAD SECTIONS

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

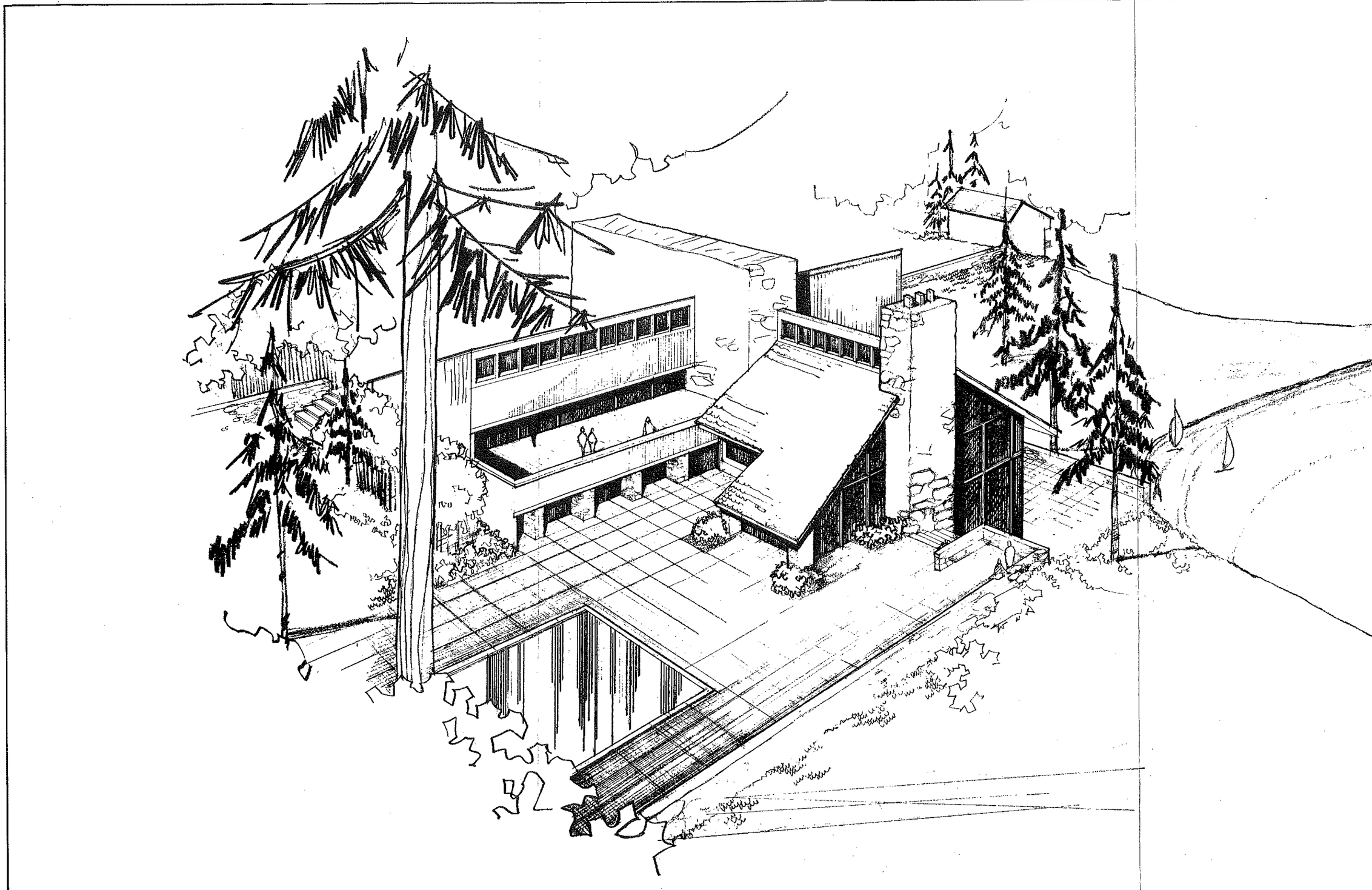
DRAWING NUMBER

PLATE 16-46

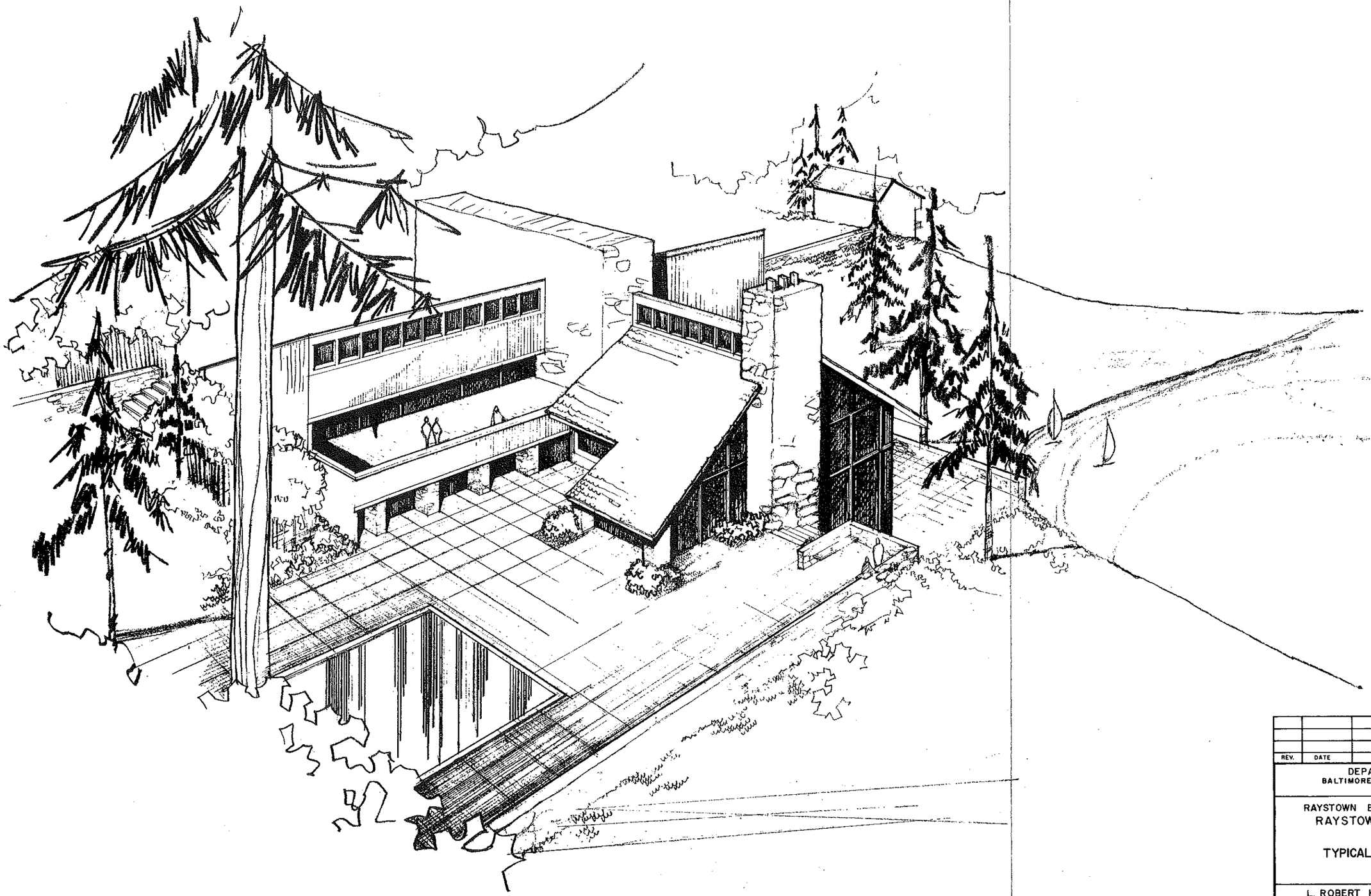
SCALE

DATE 12/19/75

SHEET OF



U. S. ARMY



REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

TYPICAL LODGE - PERSPECTIVE

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

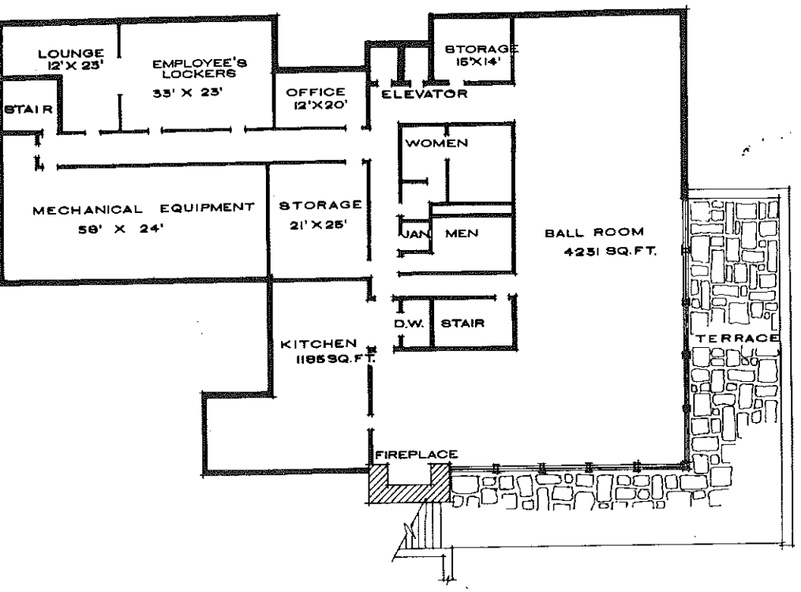
DRAWING NUMBER

PLATE 16-47

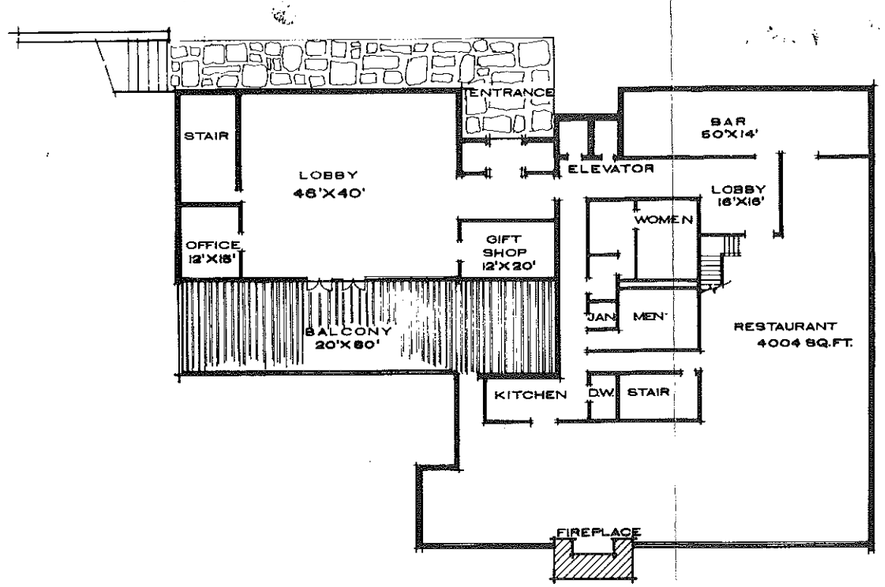
SCALE

DATE 12/19/75

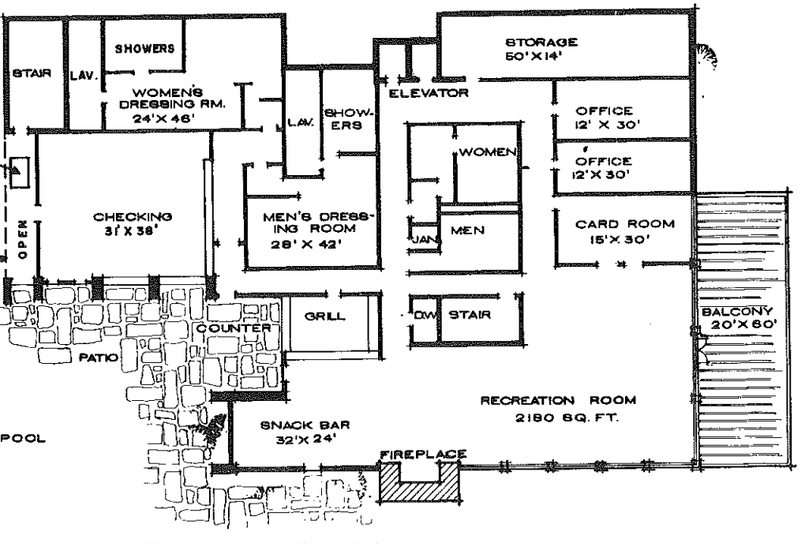
SHEET OF



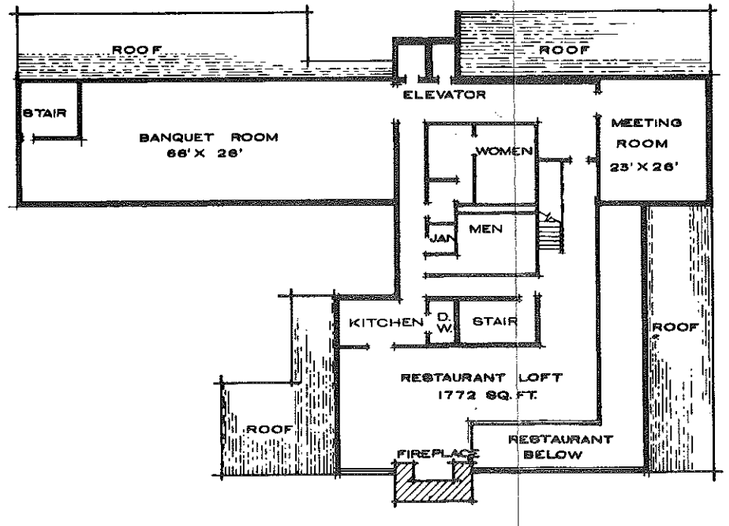
BASEMENT FLOOR PLAN



SECOND FLOOR PLAN



FIRST FLOOR PLAN



THIRD FLOOR PLAN

GRAPHIC SCALE
0 5 10 20 40

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

TYPICAL LODGE FLOOR PLAN

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

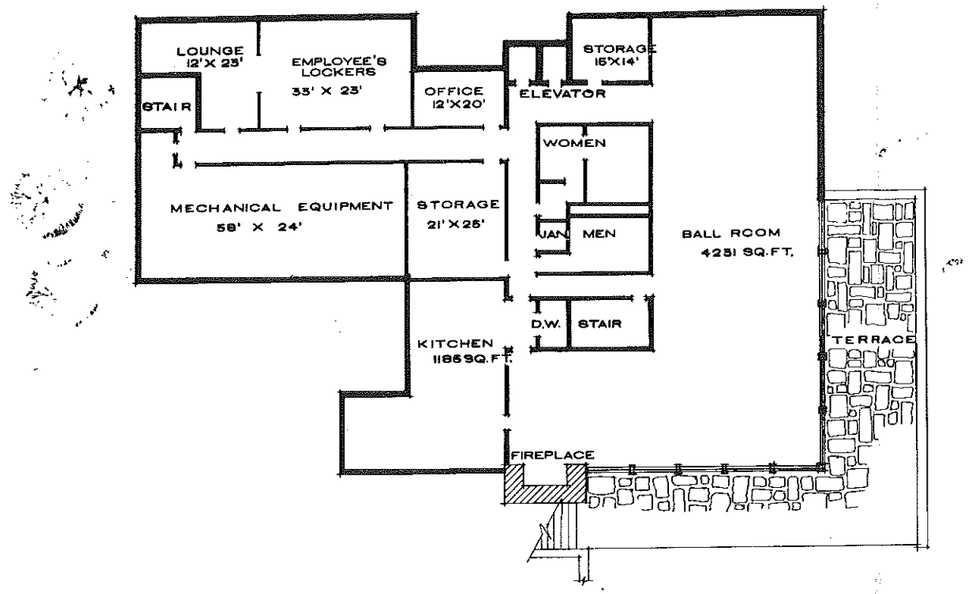
DRAWING NUMBER

PLATE 16-48

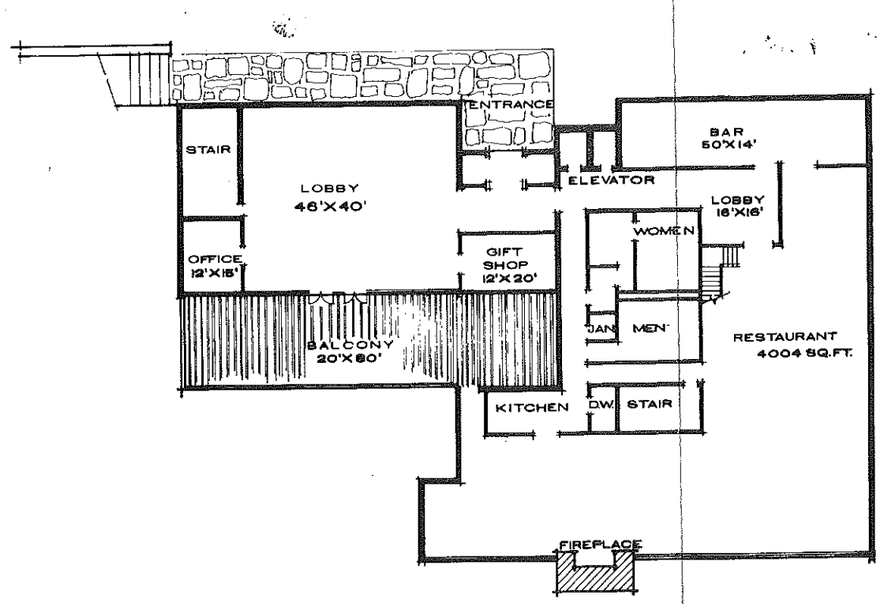
SCALE AS NOTED | DATE 12/19/75 | SHEET OF

R-1 FEB '77

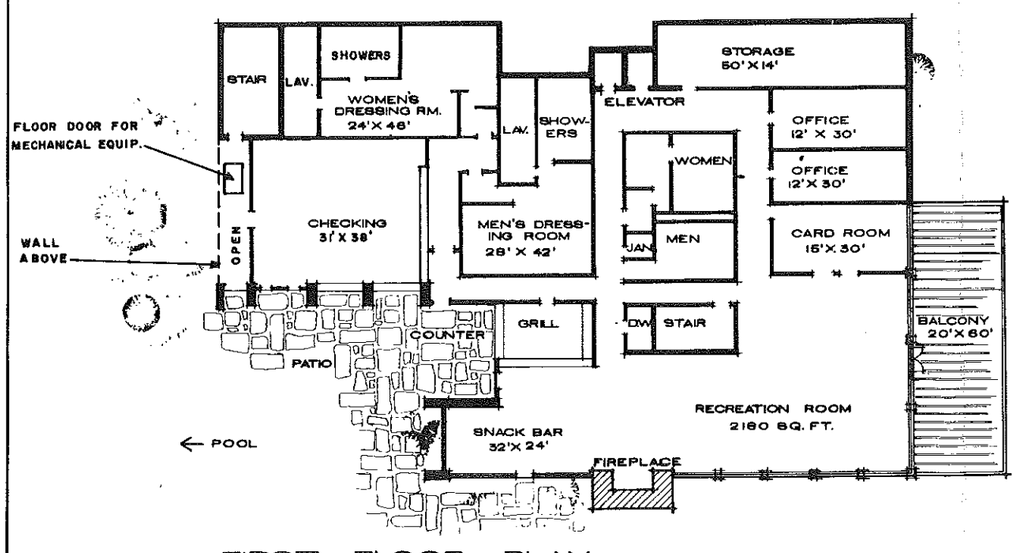
CORPS OF ENGINEERS



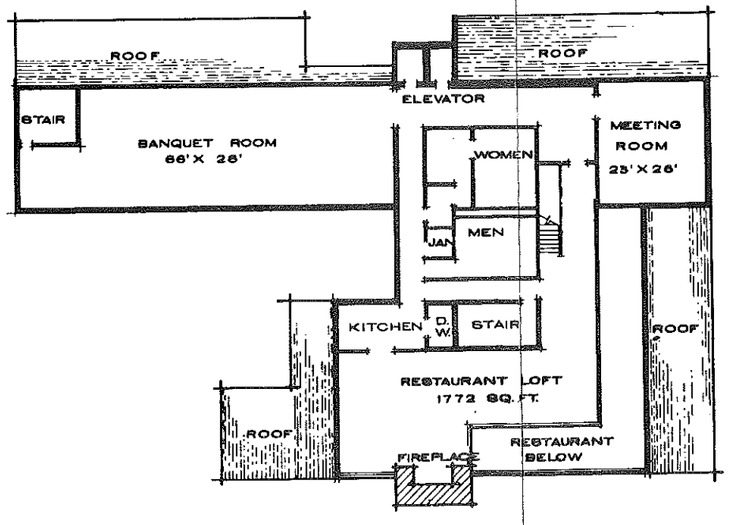
BASEMENT FLOOR PLAN



SECOND FLOOR PLAN



FIRST FLOOR PLAN



THIRD FLOOR PLAN

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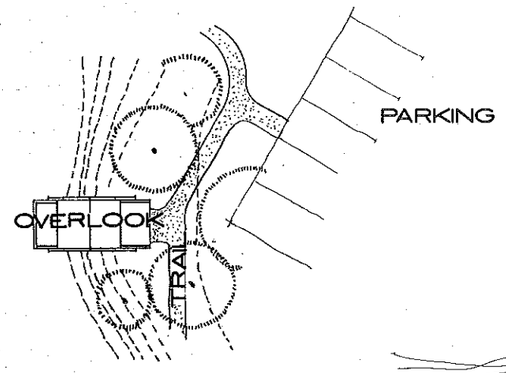
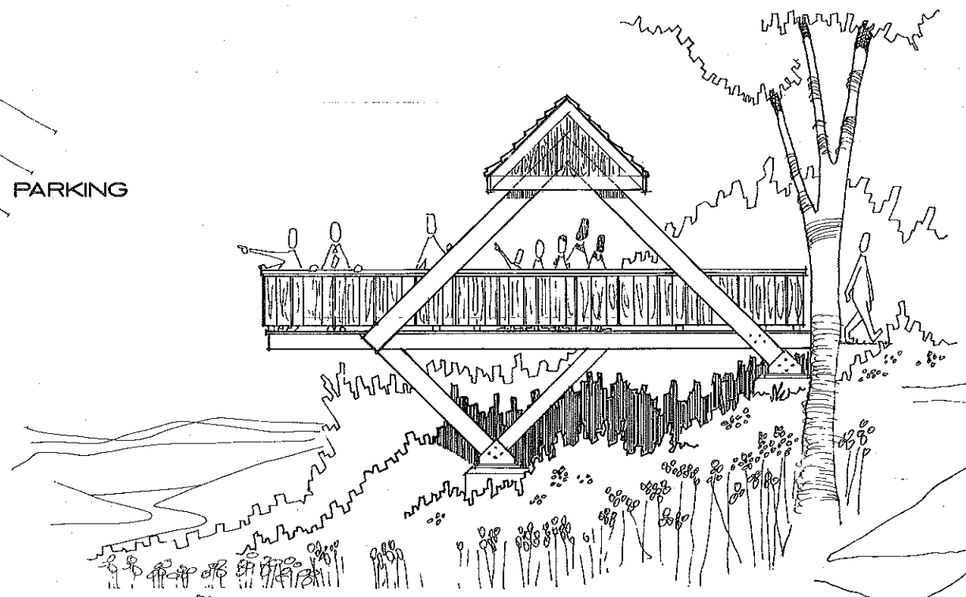
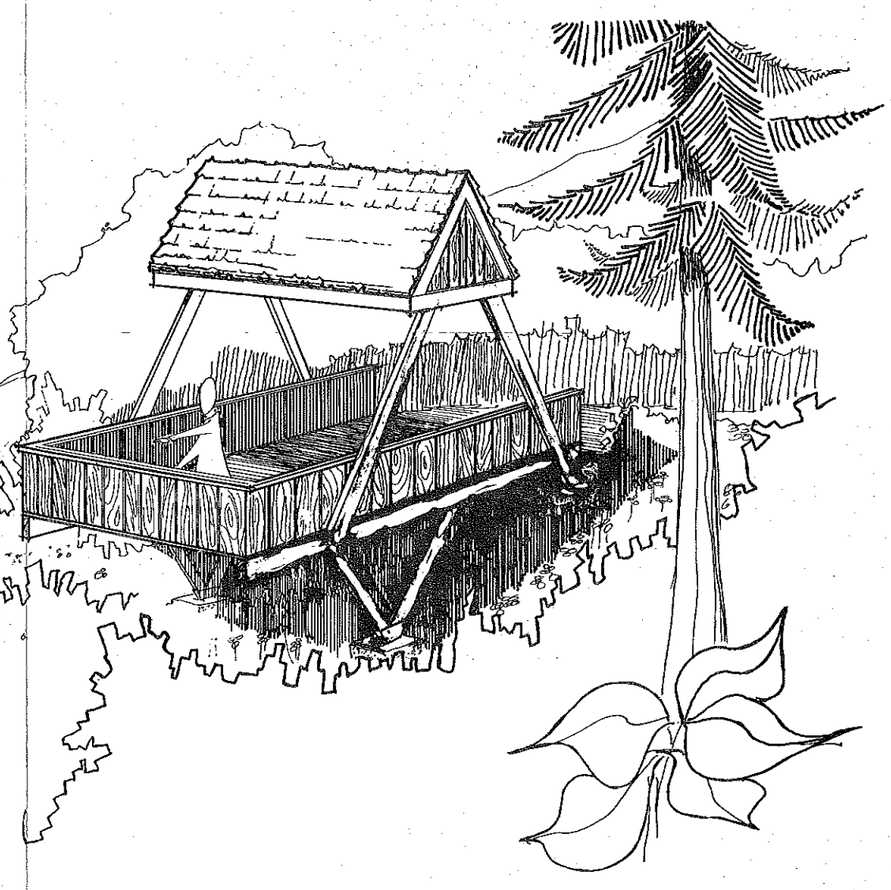
U. S. ARMY



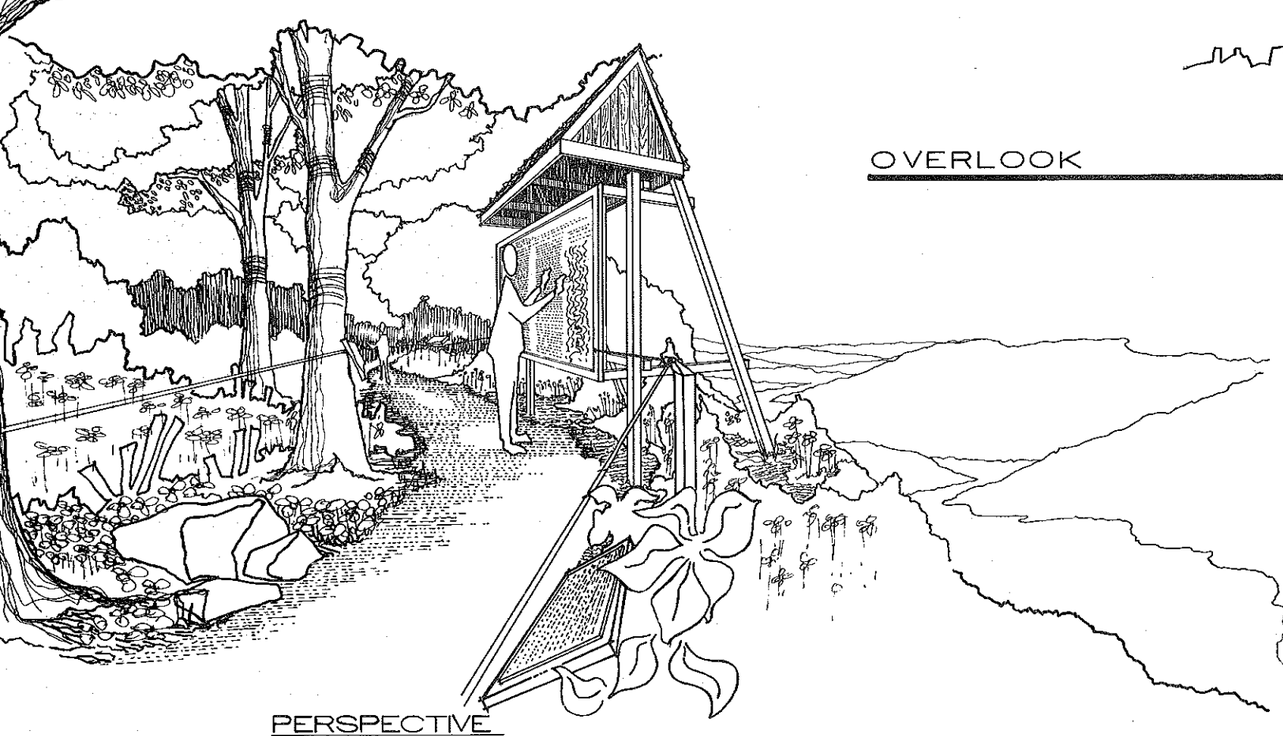
SCHEMATIC SITE PLAN



ELEVATION



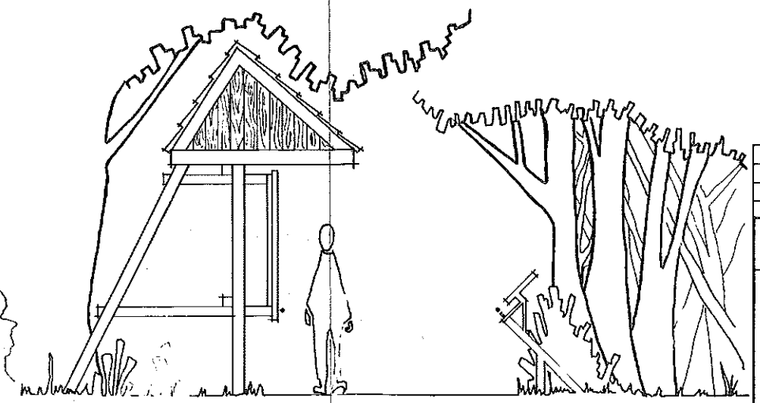
PERSPECTIVE



PERSPECTIVE

OVERLOOK

TRAIL FOR THE HANDICAPPED



ELEVATION

GRAPHIC SCALE

0 5 10

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

OVERLOOKS AND TRAIL FOR THE HANDICAPPED

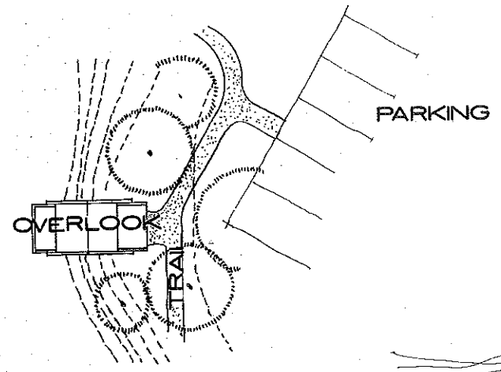
L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

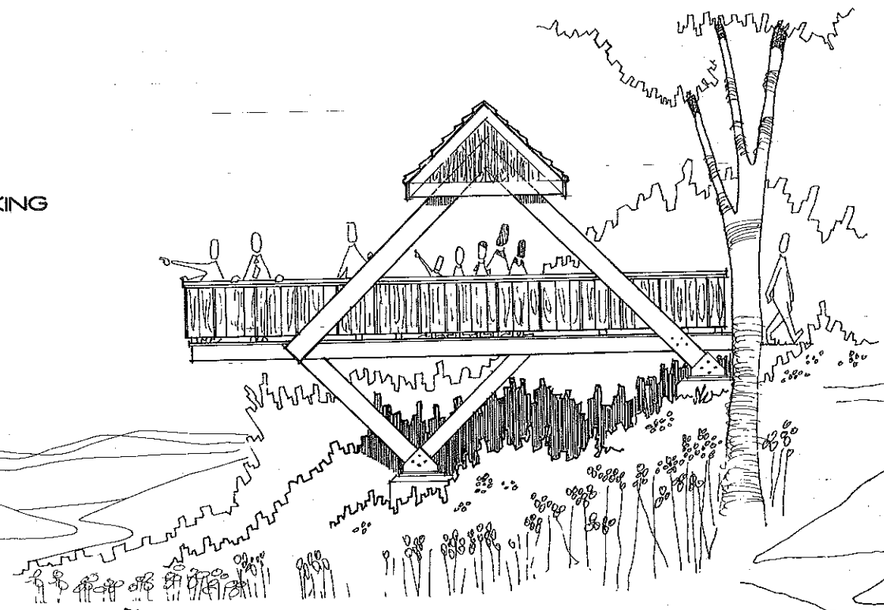
PLATE 16-49

SCALE AS NOTED | DATE 12/19/75 | SHEET OF

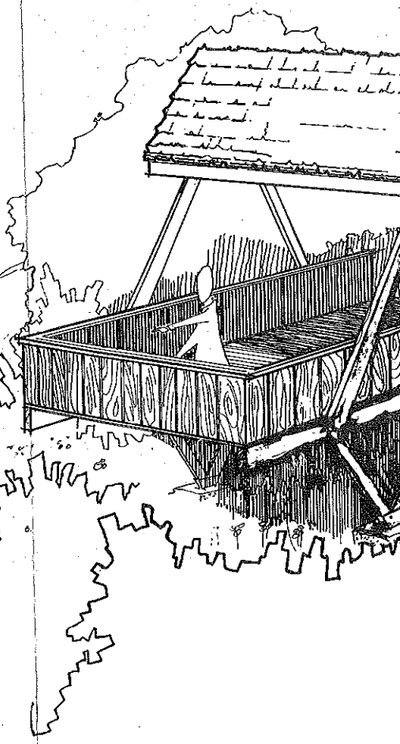
CORPS OF ENGINEERS



SCHEMATIC SITE PLAN

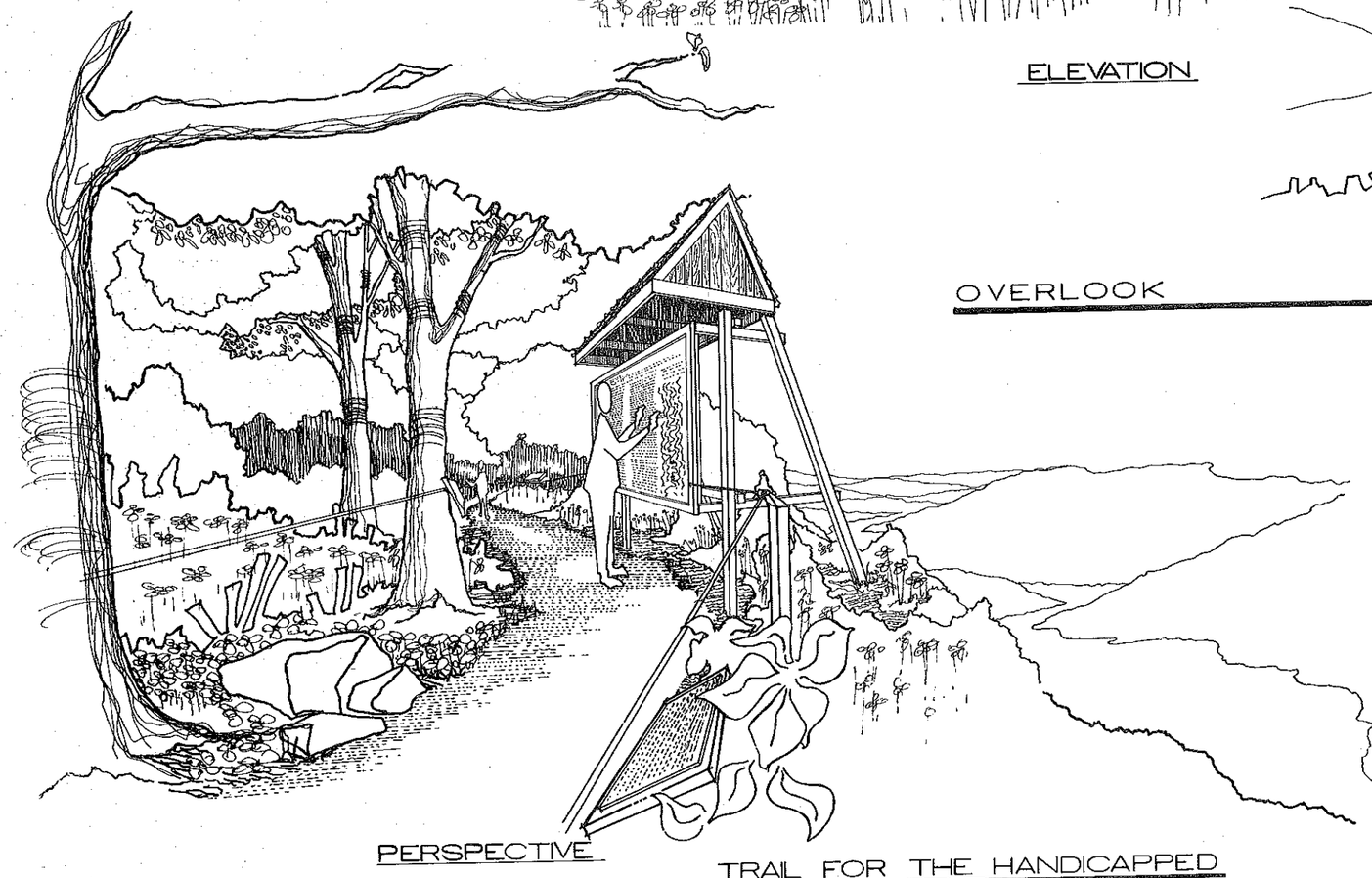


ELEVATION

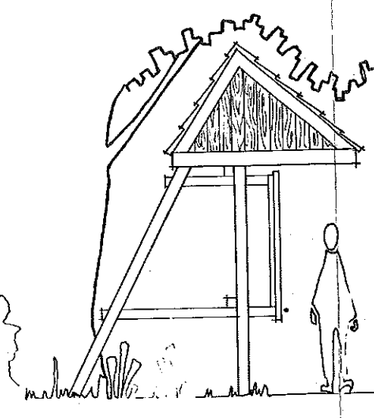


PERSPECTIVE

OVERLOOK



PERSPECTIVE



ELEVATION

TRAIL FOR THE HANDICAPPED



U. S. ARMY



REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

INTERPRETIVE CENTER PERSPECTIVE

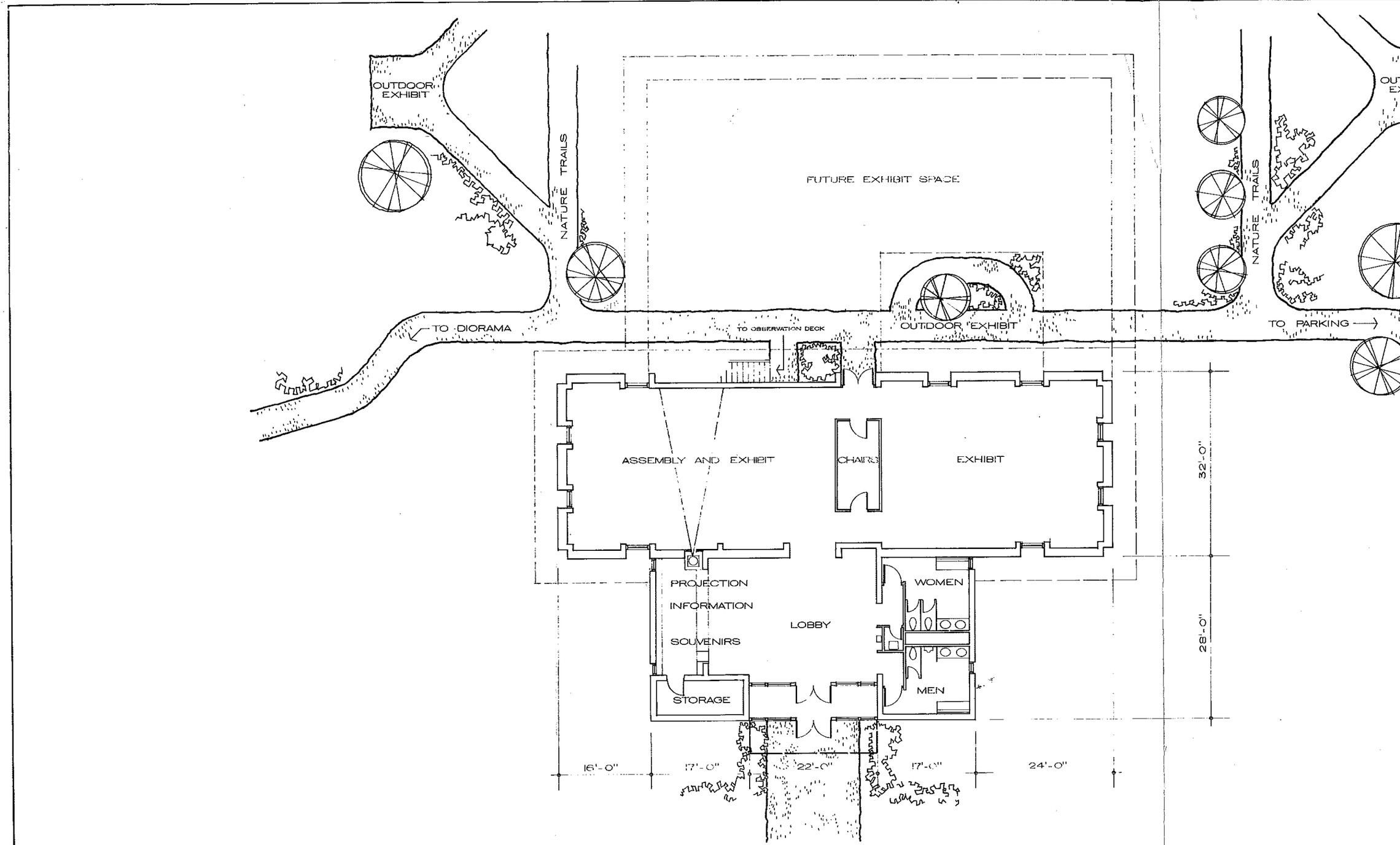
L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

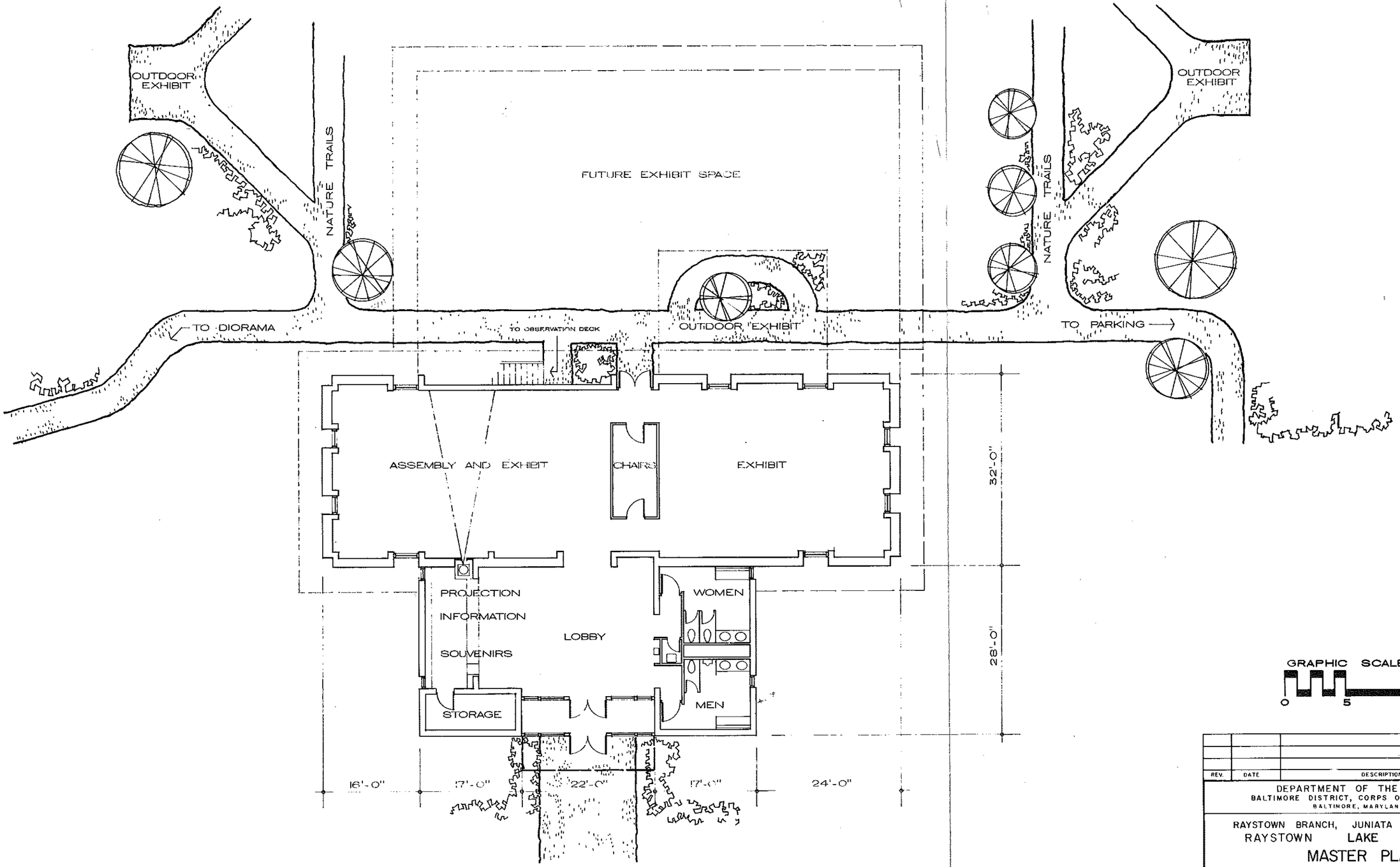
PLATE 16-50

SCALE NONE | DATE 12/19/75 | SHEET OF

CORPS OF ENGINEERS



U. S. ARMY



GRAPHIC SCALE
0 5 10

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

INTERPRETIVE CENTER FLOOR PLAN

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

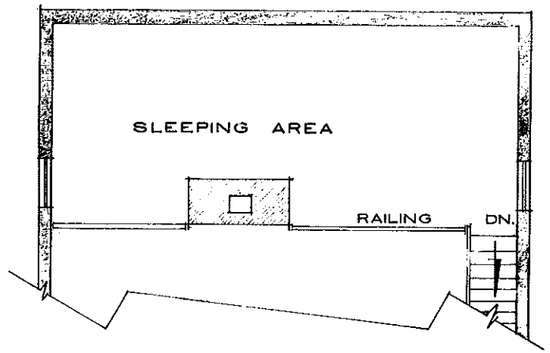
DRAWING NUMBER

PLATE 16-51

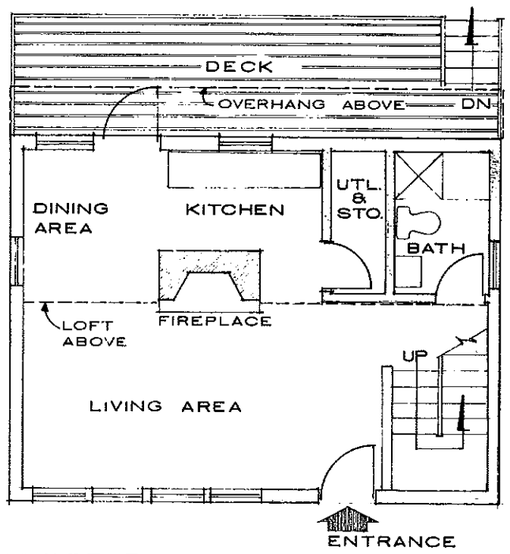
SCALE AS NOTED | DATE 12/19/75 | SHEET OF



N – PERSPECTIVE



SLEEPING LOFT PLAN



FLOOR PLAN

GRAPHIC SCALE
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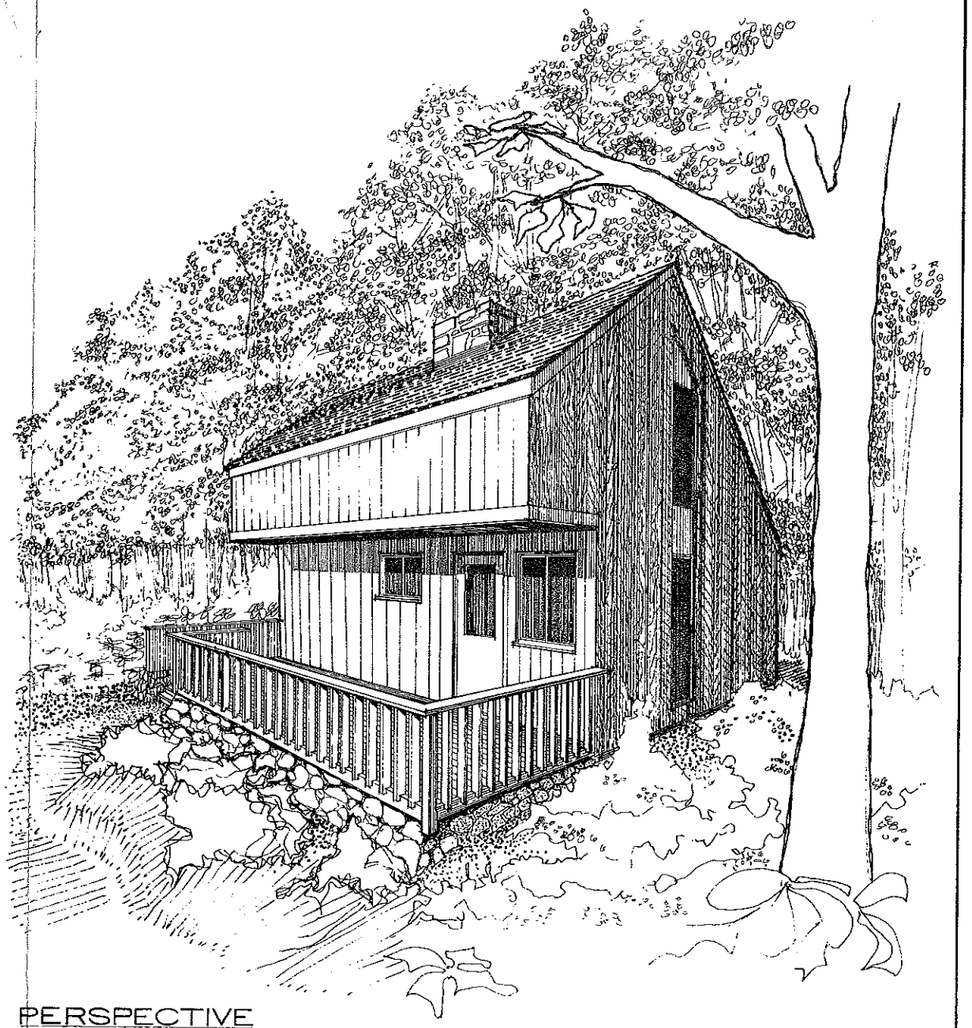


PERSPECTIVE

REV	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

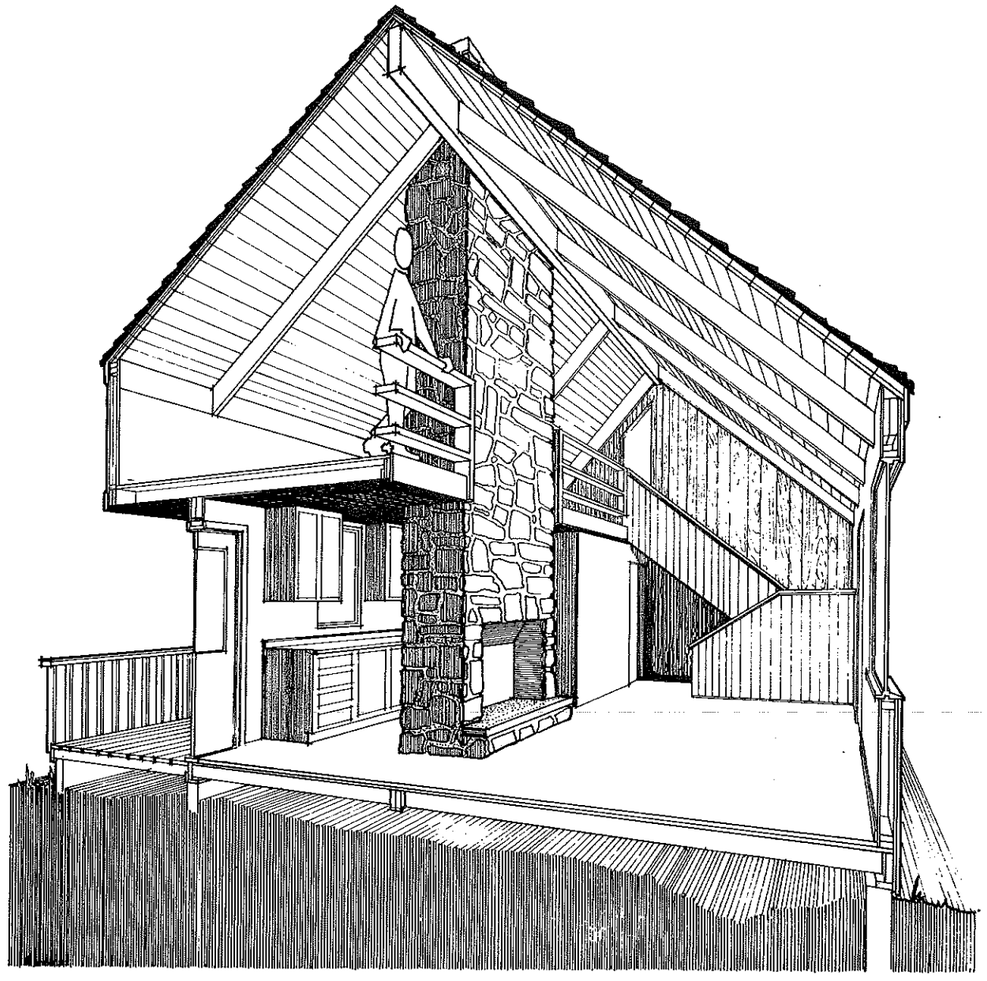
RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT
MASTER PLAN
TYPICAL RENTAL CABINS
(CONCESSIONAIRE)

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

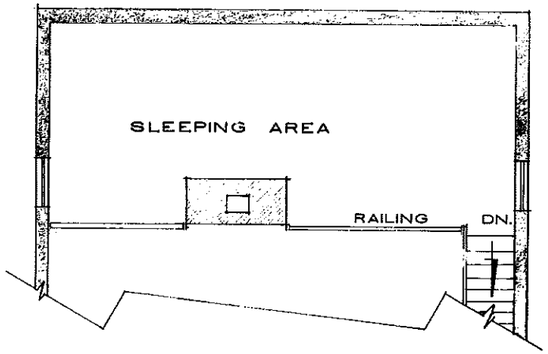
DRAWING NUMBER

PLATE 16-52

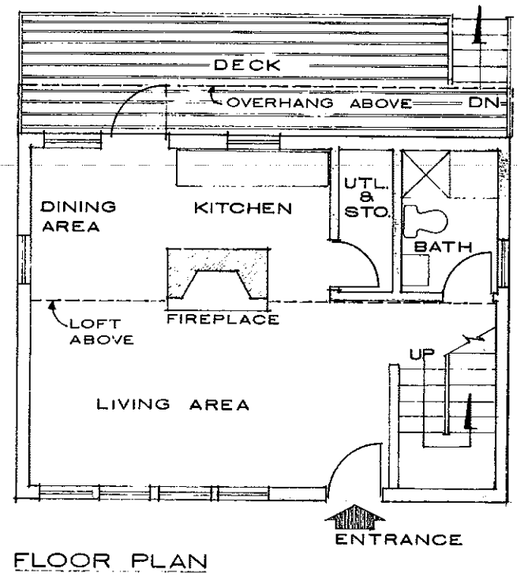
SCALE AS NOTED | DATE 12/19/75 | SHEET OF



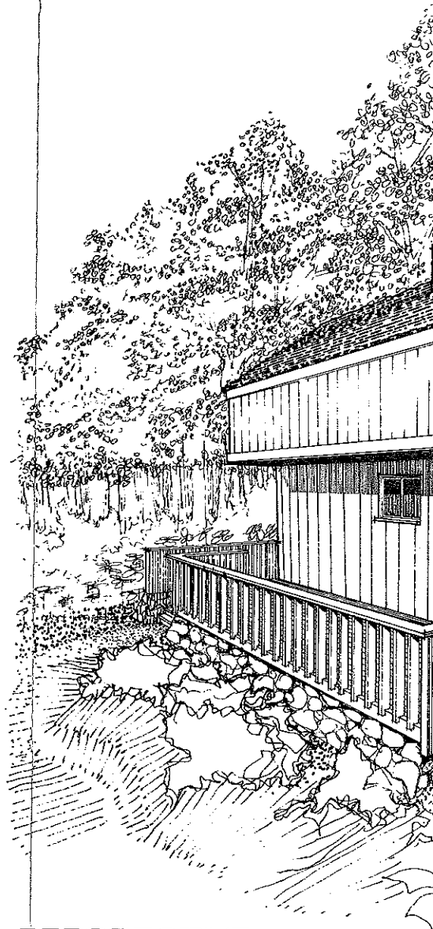
SECTION - PERSPECTIVE



SLEEPING LOFT PLAN



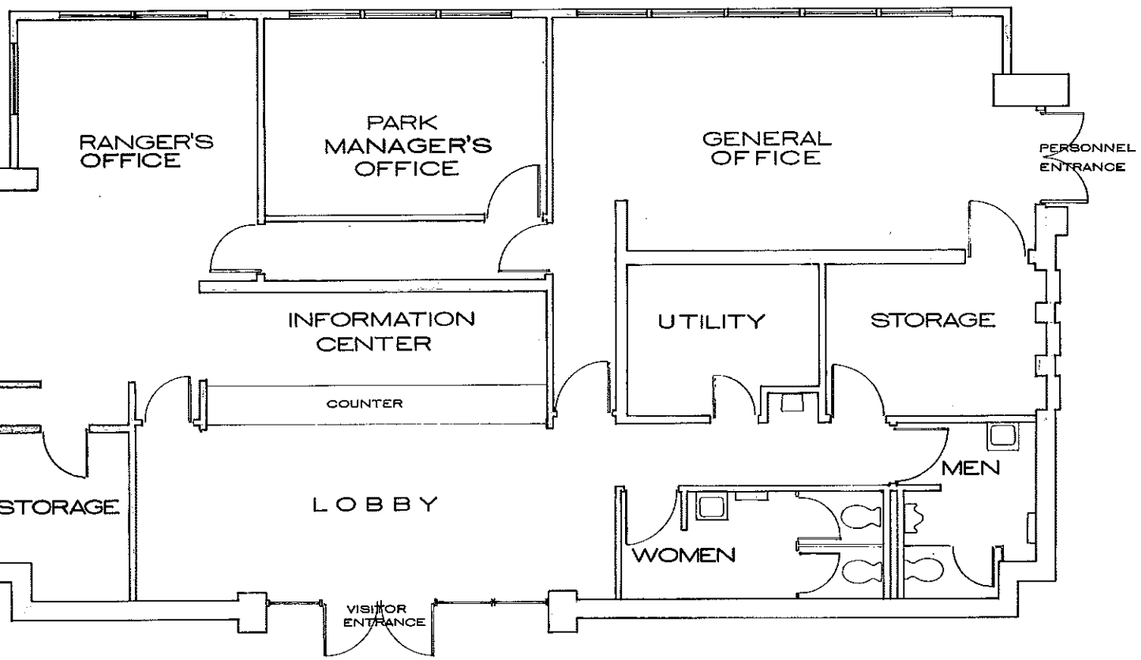
FLOOR PLAN



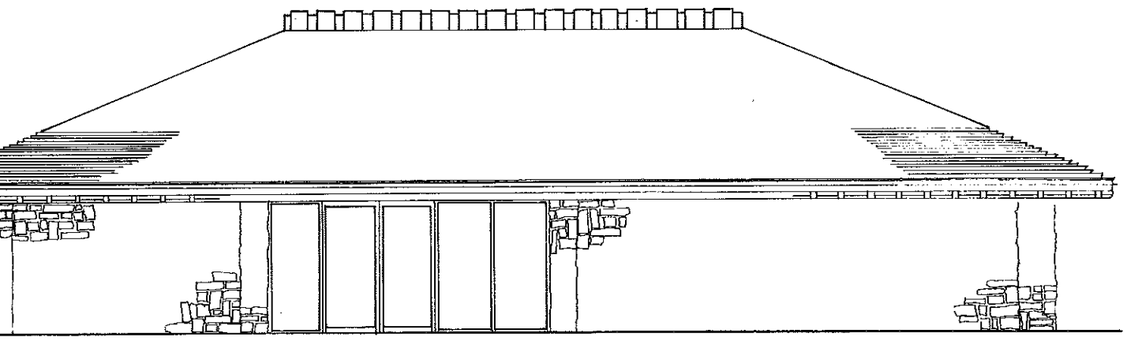
PERSPECTIVE

GRAPHIC SCALE
0 5 10

U. S. ARMY

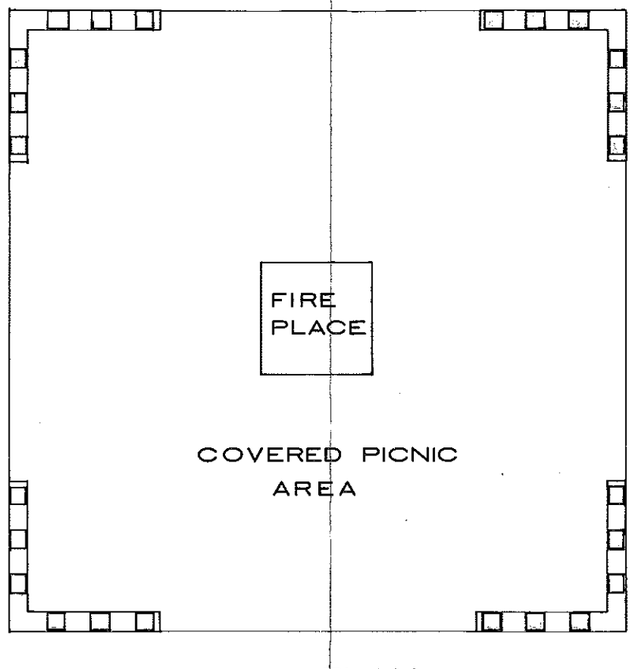


PLAN

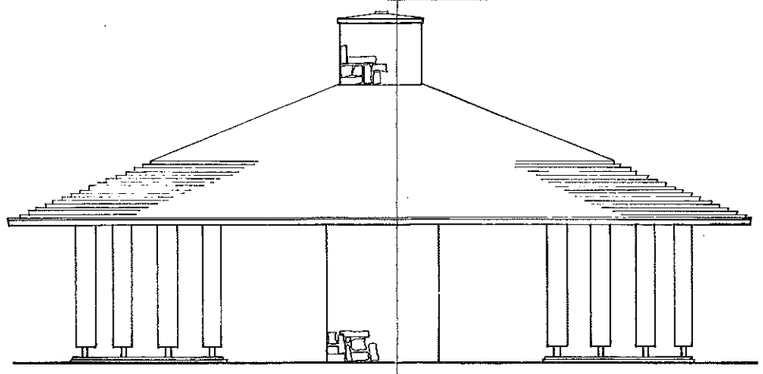


ELEVATION

ADMINISTRATION BUILDING



PLAN



ELEVATION

PICNIC SHELTER

GRAPHIC SCALE
0 5 10

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

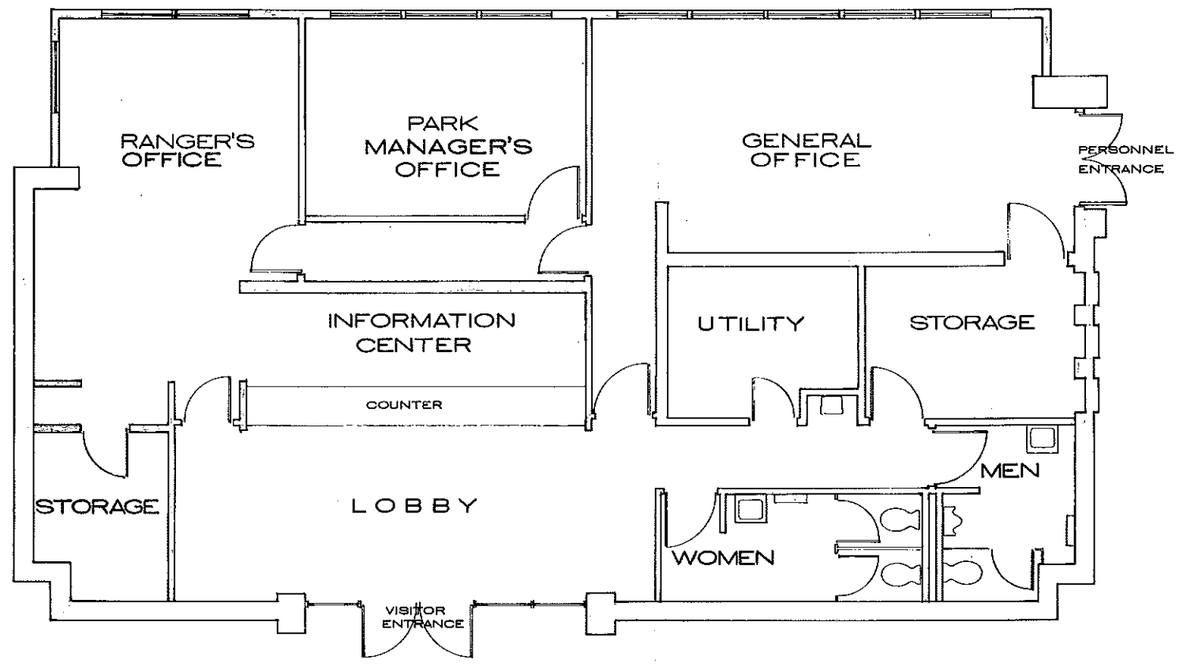
EXISTING ADMINISTRATION BUILDING & PICNIC SHELTERS

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

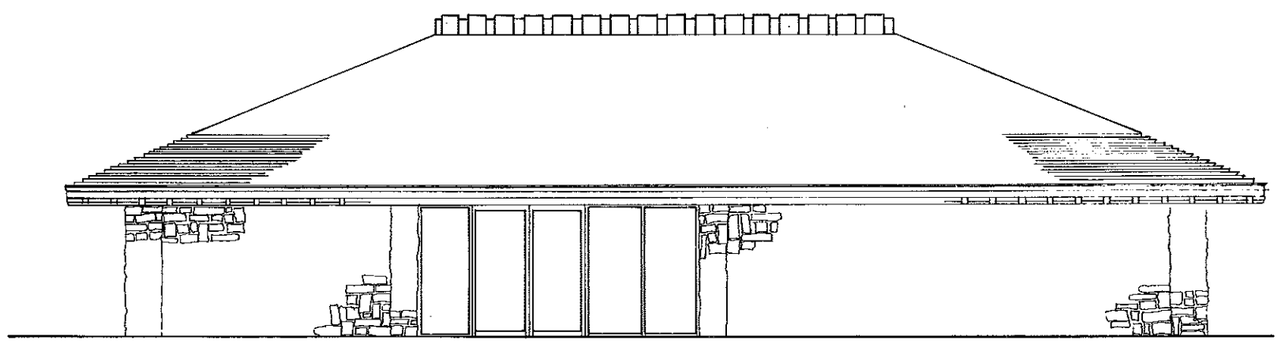
DRAWING NUMBER

PLATE 16-53

SCALE AS NOTED | DATE 12/19/75 | SHEET OF

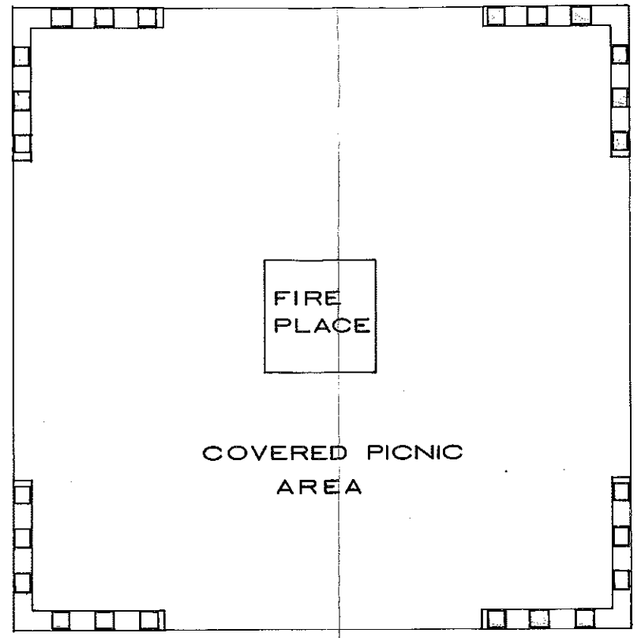


PLAN



ELEVATION

ADMINISTRATION BUILDING



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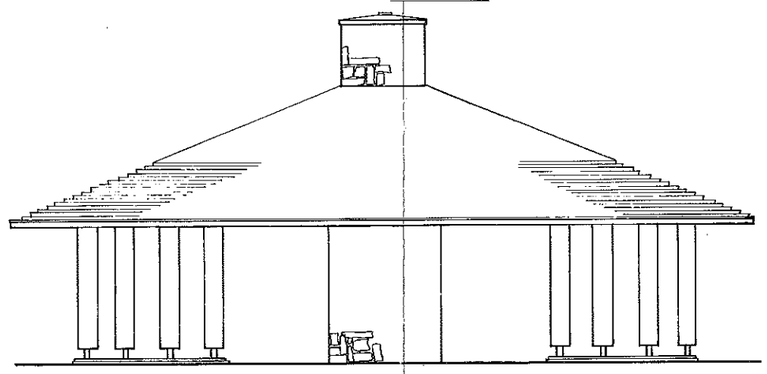
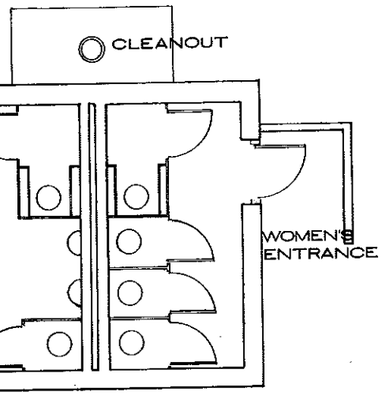
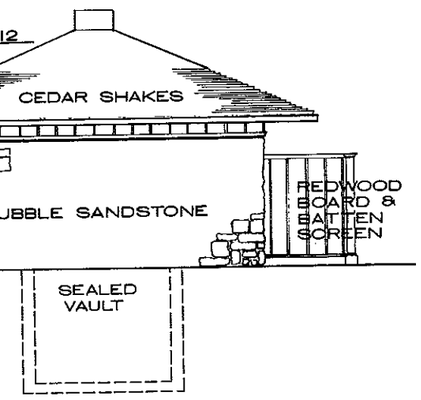


ELEVATION

PICNIC SHELTER

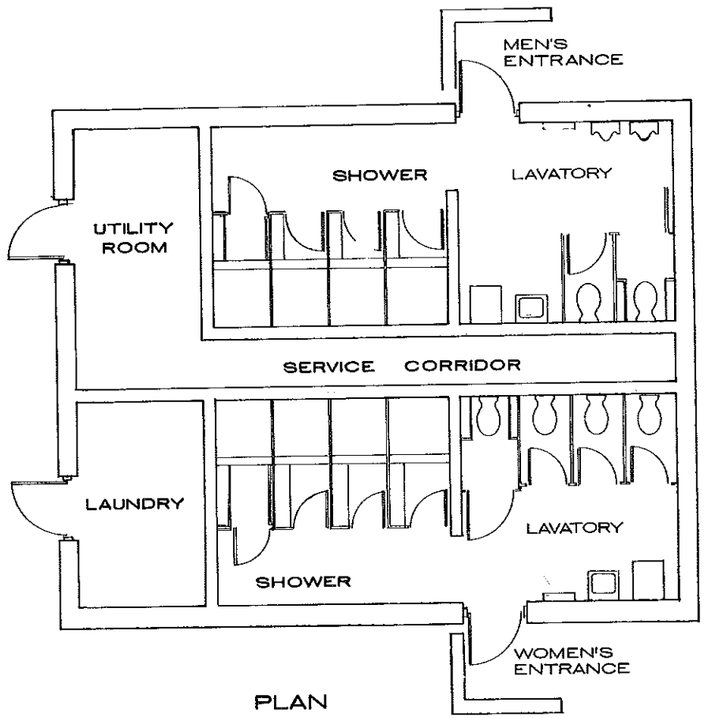


PLAN



ELEVATION

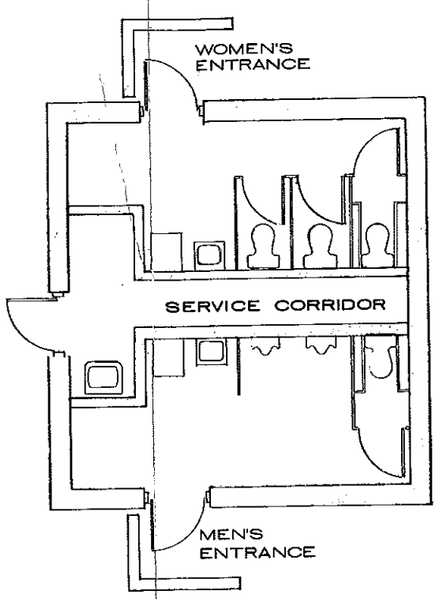
MFORT STATION
TYPE A



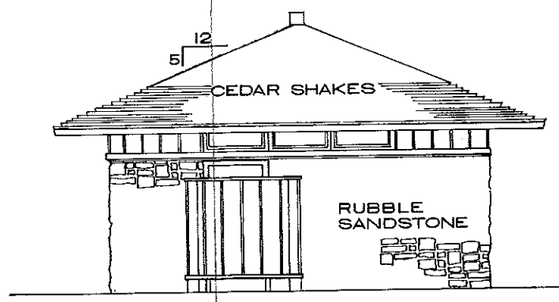
PLAN

ELEVATION

WASHHOUSE

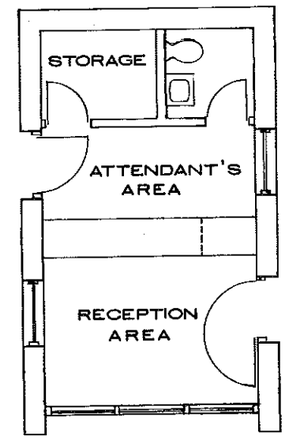


PLAN

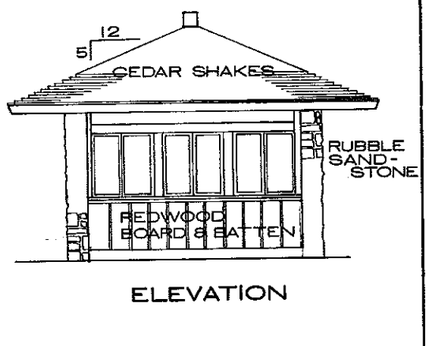


ELEVATION

COMFORT STATION
TYPE B



PLAN



ELEVATION

CAMP CONTROL STATION

GRAPHIC SCALE
0 5 10

REV	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

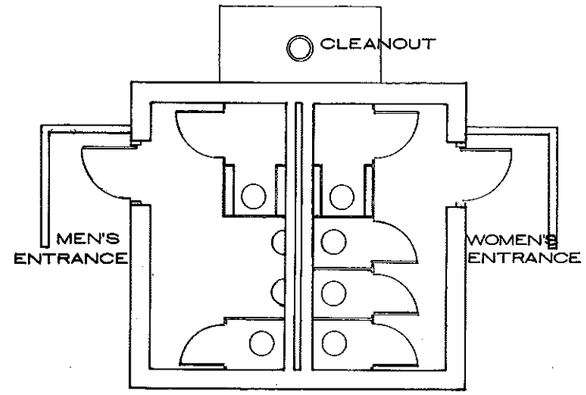
EXISTING COMFORT STATION,
WASHHOUSE, & CAMP CONTROL STATION

L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

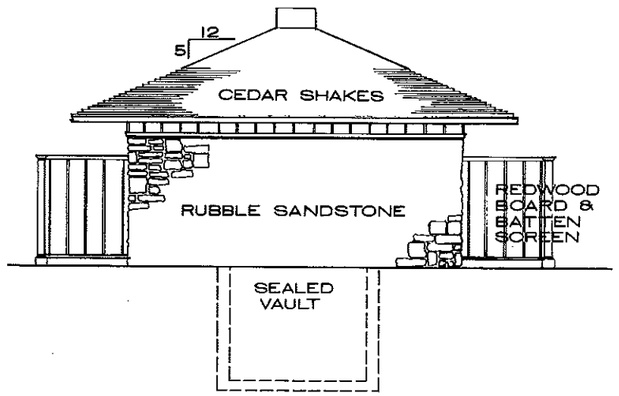
DRAWING NUMBER

PLATE 16-54

SCALE AS NOTED | DATE 12/19/75 | SHEET OF

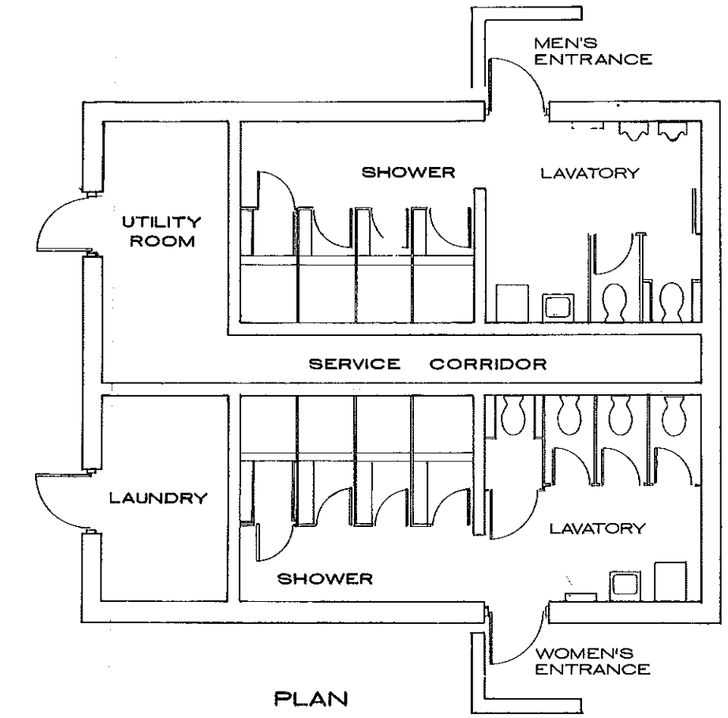


PLAN

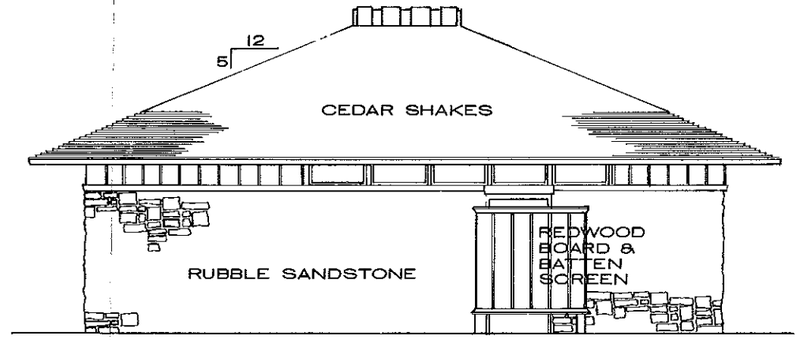


ELEVATION

COMFORT STATION
TYPE A

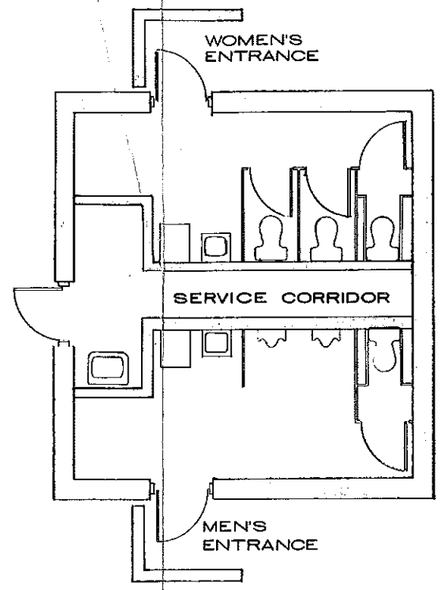


PLAN

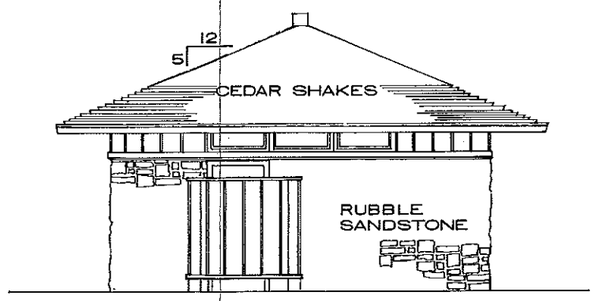


ELEVATION

WASHHOUSE

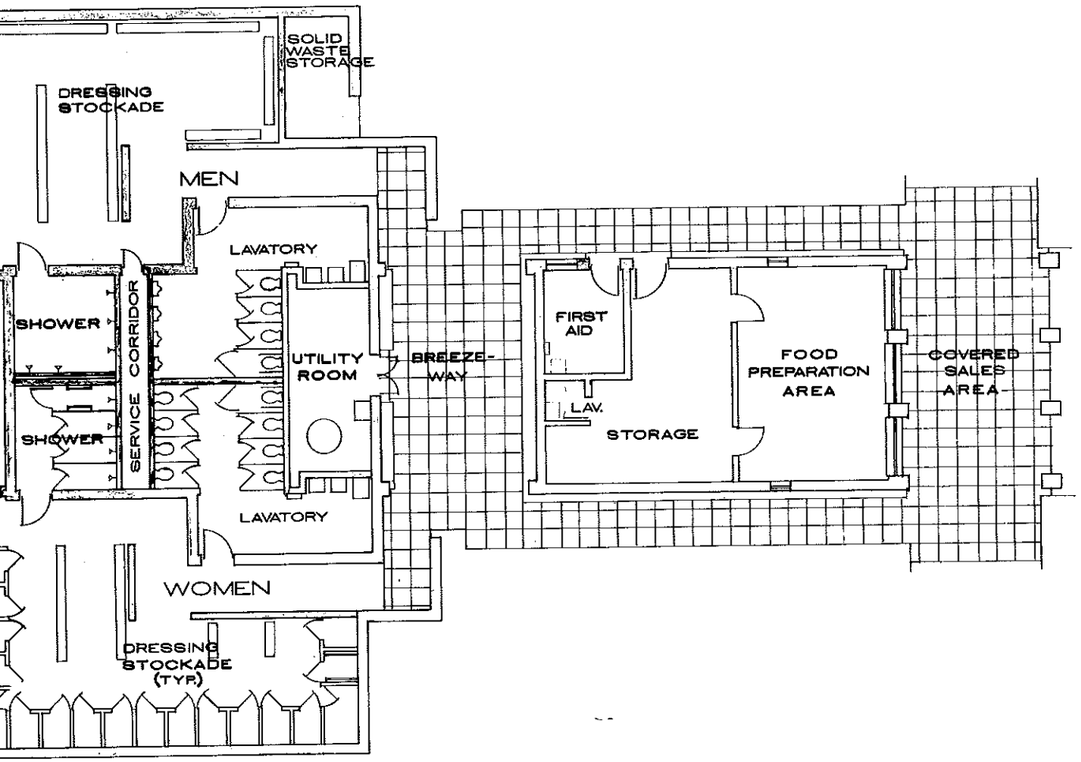


PLAN



ELEVATION

COMFORT STATION
TYPE B



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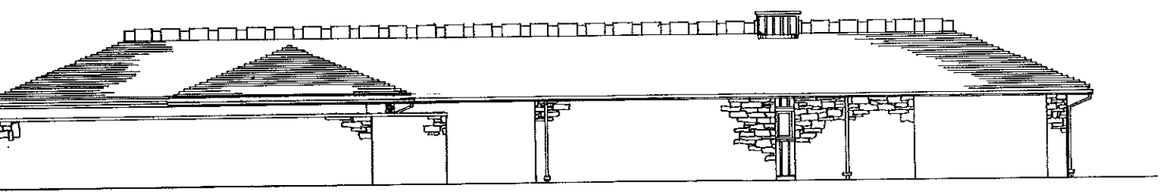
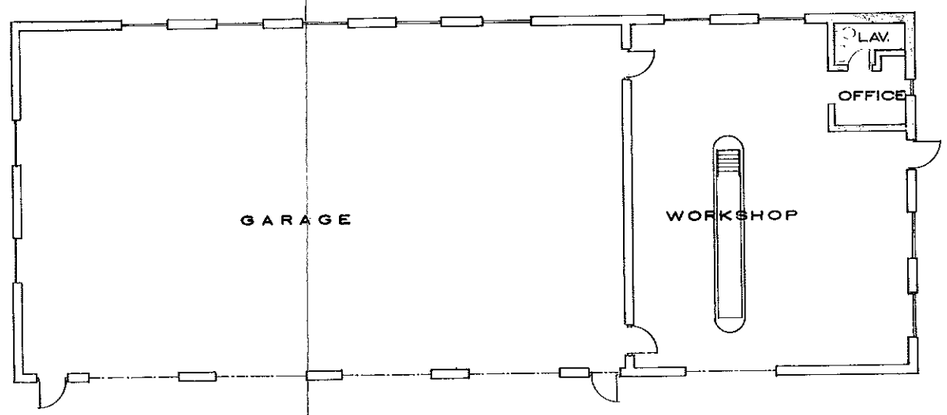
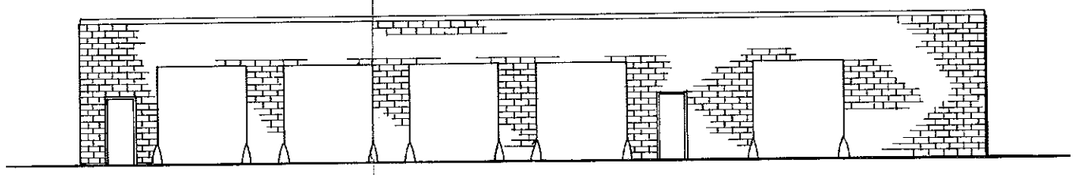


LEVATION

ATHHOUSE



PLAN



ELEVATION

MAINTENANCE BUILDING

GRAPHIC SCALE

0 5 10 20

REV.	DATE	DESCRIPTION	BY

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
BALTIMORE, MARYLAND

RAYSTOWN BRANCH, JUNIATA RIVER, PENNA.
RAYSTOWN LAKE PROJECT

MASTER PLAN

EXISTING BATHHOUSE & MAINTENANCE BUILDING

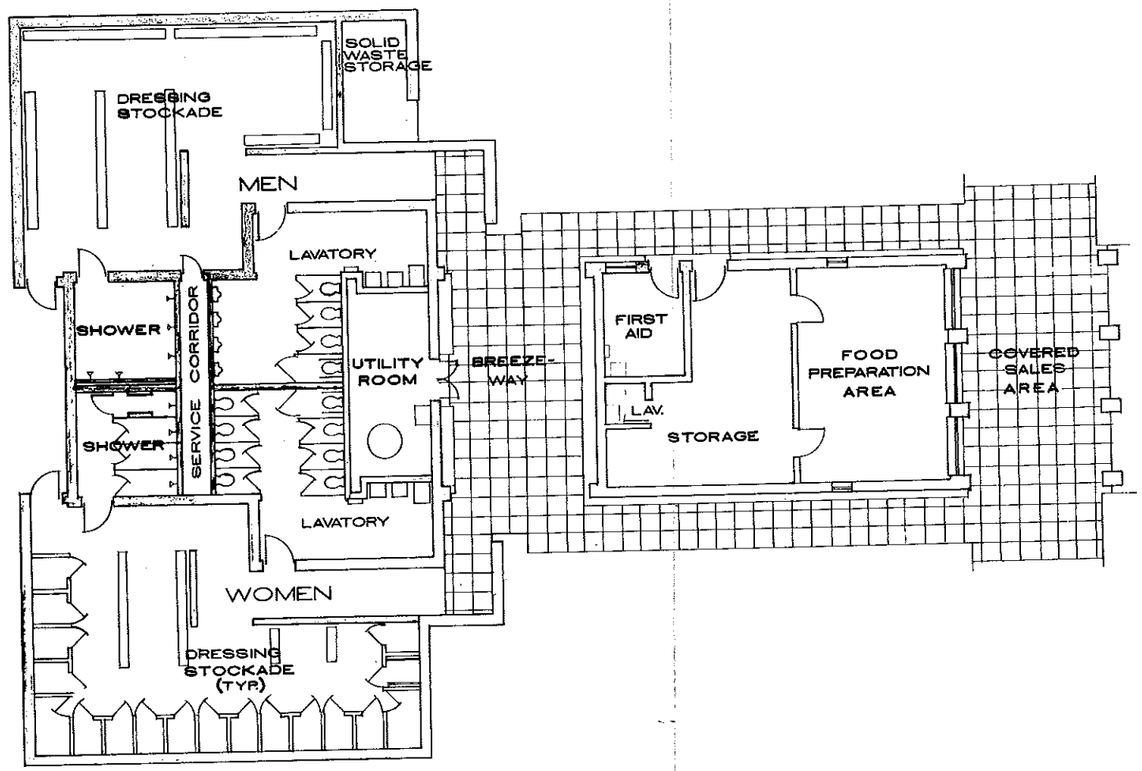
L. ROBERT KIMBALL
CONSULTING ENGINEERS
EBENSBURG, PENNSYLVANIA

DRAWING NUMBER

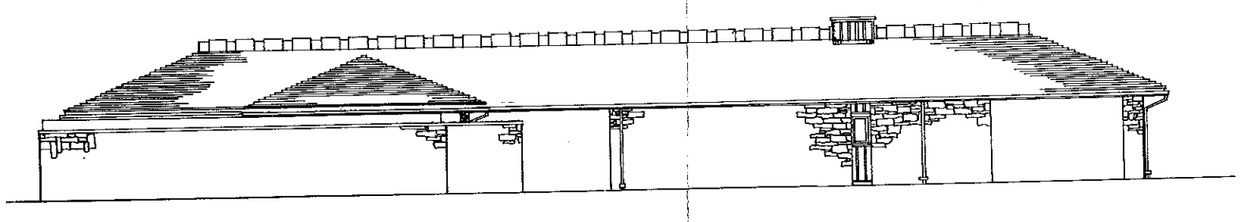
PLATE 16-55

SCALE AS NOTED | DATE 12/19/75 | SHEET OF

CORPS OF ENGINEERS

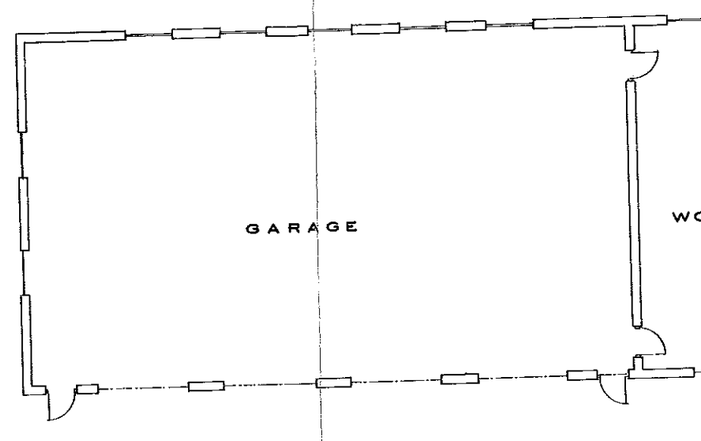


PLAN

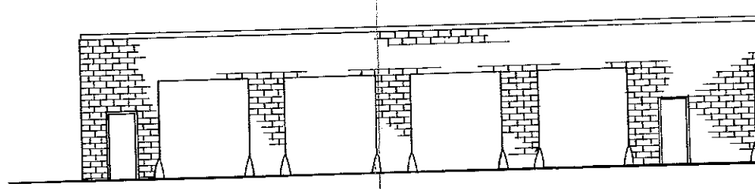


ELEVATION

BATHHOUSE



PLAN



ELEVATION

MAINTENANCE BULDING