

**BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION
APPLICATION FOR LICENSE FOR A
MINOR WATER POWER PROJECT
FOR
THE MARTINSVILLE - UPPER SECTION
WATER POWER PROJECT**

**JOHN L. 'JAY' BOERI JR.
WOODSTOCK, VERMONT
FEBRUARY, 1984**

BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION
APPLICATION FOR LICENSE FOR A
MINOR WATER POWER PROJECT (*)

1. John L. "Jay" Boeri Jr., a registered professional engineer, applies to the Federal Energy Regulatory Commission for a license for the Martinsville (Upper Section) water power project. The applicant's previous FERC project number is P-7373-000.

2. The location of the project is:

State or territory: Vermont
County: Windsor
Township or nearby town: Hartland
Stream: Lulls Brook

3. The exact name, address, and telephone number of the applicant is:

John L. "Jay" Boeri Jr.
RR2
Woodstock, Vermont 05091
802-436-2521

(*) The applicant's preliminary permit (FERC 7373) for the Martinsville water power project includes two separately developed sites. This license application is for the Martinsville (Upper Section) as described in that permit.

4. The exact name, address, and telephone number of each person authorized to act as agent for the applicant in this application:

John L. "Jay" Boeri Jr.
RR2
Woodstock, Vermont 05091
802-436-2521

Roger W. Lamson
P.O. Box 414
North Hartland, Vermont 05052
802-295-3316

5. The applicant is a citizen of the United States

6. (i) The statutory and regulatory requirements of the state in which the project would be located (Vermont) and that affect the project as proposed with respect to bed and banks and to appropriation, diversion, and use of water power purposes, and with respect to the right to engage in business of developing, transmitting, and distributing power and in any other business necessary to accomplish the purposes of the license under the Federal Power Act are:

(a) Federal Water Pollution Control Act, Section 401 (33 U.S.C. 1341). The Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, requires that water quality certification be issued for the proposed project. In Vermont, water quality certification is obtained from the Agency Of Environmental Conservation.

(b) Federal Water Pollution Control Act, Section 404 (33 U.S.C. 1341). Section 404 requires that a dredge and fill permit be issued by the U.S. Army Corps of Engineers for the placement of temporary or permanent fill material below normal high water level.

(c) The State of Vermont Agency of Environmental Conservation requires the submission of final plans, drawings and specifications for the proposed project to the agency for approval prior to start of construction.

(ii) The steps which the applicant has taken or plans to take to comply with each of the laws cited above are:

(a) The applicant has applied for and received certification for the proposed project pursuant to Sections 401(a) (1) and 401(d) of the Federal Water Pollution Control Act(P.L. 92-500) as amended, from the Agency of Environment Conservation. A copy of this certification is included in Appendix E-1 of Exhibit E of this application.

(b) The applicant will apply for a dredge and fill permit to the Army Corps of Engineers, New England Section pursuant to Section 404 of the Federal Water Pollution Control Act. However, it is expected that the proposed project will be authorized by the Nationwide Permitting system for small water power projects.

(c) After issuance of a license, the applicant will submit a set of final plans, drawings and specifications to the Vermont Agency of Environmental Conservation for approval.

7. Brief project description:

(i) proposed installed generating capacity is 250 kW

(ii) Check appropriate box:

existing dam unconstructed dam

existing dam, major modified project see section 4.40(b)(3)

8. Lands of the United States affected (shown on Exhibit G)

(i) National Forest	none
(ii) Indian Reservation	none
(iii) Public Lands under jurisdiction of	none
(iv) Other	none

(v) Total of U.S. Lands none

(vi) Check appropriate box

Surveyed land Unsurveyed land

9. Construction of the project is planned to start within 6 months and is to be completed within 14 months from the date of issuance of license.

10. This application is executed in the

State of Vermont
County of Windsor, SS:

by: John L. "Jay" Boeri Jr., being duly sworn, deposes and says, that the contents of this application are true to the best of his knowledge or belief. The undersigned applicant has signed this application this 8TH day of February, 1984.

By:

John L. Jay Boeri Jr.

Subscribed and sworn to before me, a Notary Public authorized by the state to notarize documents of the State of Vermont, this 8TH day of February, 1984.

Joseph W. Yarnall
Notary Public
Comm. Expires 7/10/87

SEAL

EXHIBIT A
PROJECT DESCRIPTION

Attachment 2

Description of Facility

The Martinsville Hydroelectric Project is comprised of a new concrete dam, 550 feet of penstock, a small powerhouse and separate control building. It is located on Lull Brook in Hartland.

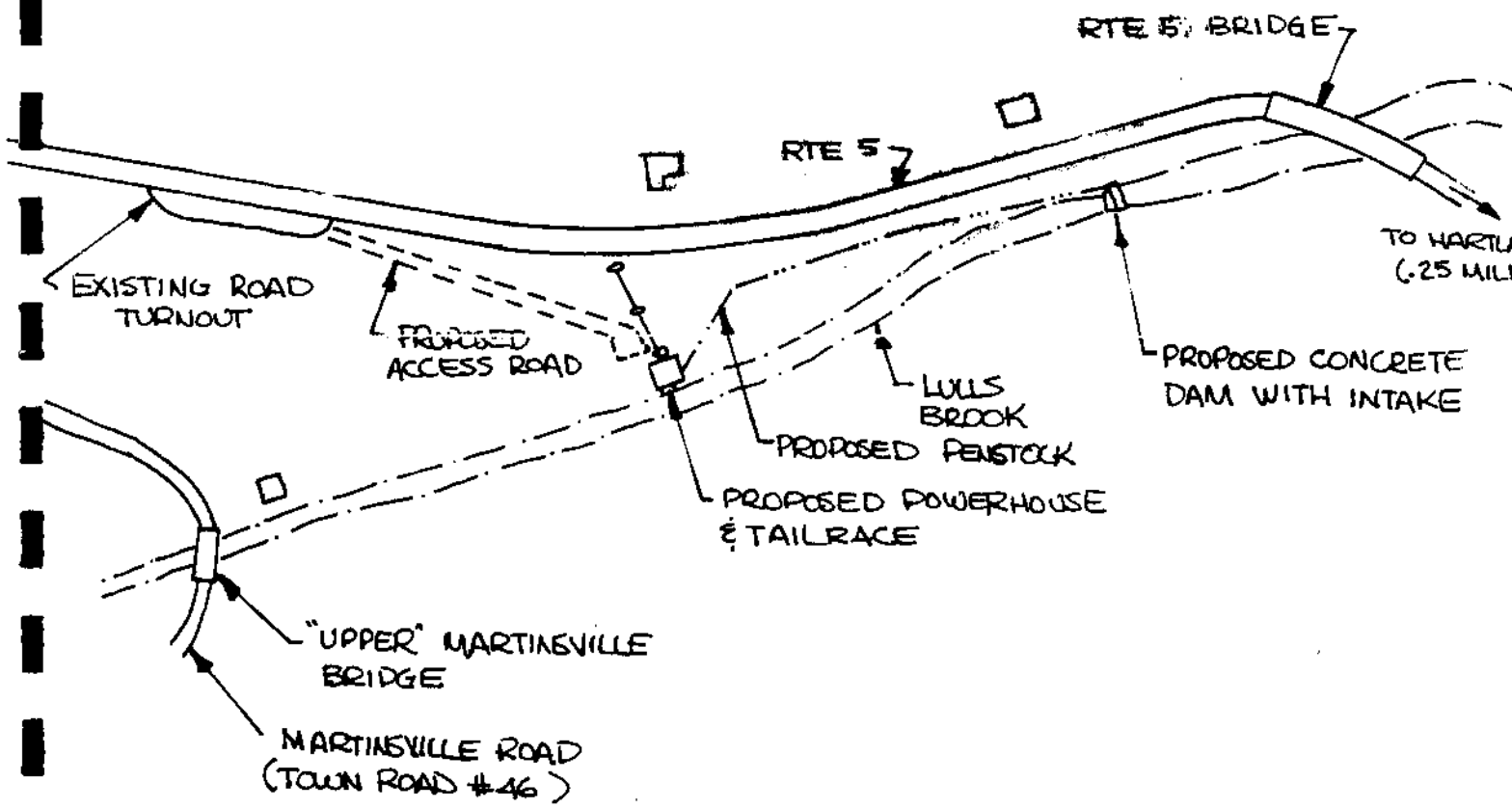
The dam is approximately 45 feet in length, 15 feet in height with provisions for 4 feet of flashboards. Surface area of the impoundment is less than one quarter of an acre.

A 36" diameter penstock will conduct water approximately 490 feet to the powerhouse resulting in a head of 98 feet. The upper reach of the penstock is made of wood and the lower 100 feet is steel. Cradles and anticreep blocks are installed at appropriate intervals.

The powerhouse has a floor area of 400 square feet and is constructed of reinforced concrete abutments and slabs with a wood frame superstructure. The building contains two new, twin horizontal floor-mounted cross flow turbine generator units and some switchgear. Generators are an induction type with a nameplate capacity of 140 kW each.

The control building, sixty feet from the powerhouse, contains turbine controls and protective relays. Control and level sensing design will provide for unmanned operations. Primary transmission line is overhead, approximately 75 feet in length, leading to 3-100 KVA single phase, pole mounted transformers. Secondary transmission is approximately 125 feet in conduit to the powerhouse.

The FERC project no. is 7373-VT. Estimated annual production is 1.03 million kWh.



LEGEND

- · — LULLS BROOK
- ··· — PENSTOCK
- ○ — NEW 3φ TRANSMISSION
- - - ROADWAY

□ DWELLING

MARTINSVILLE (UPPER SECTION) PROJECT	
PROJECT MAP	
SCALE: 1" = 200'	

FIGURE 2

EXHIBIT E
ENVIRONMENTAL REPORT

EXHIBIT E - ENVIRONMENTAL REPORT:

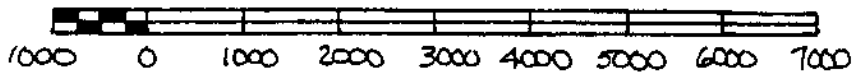
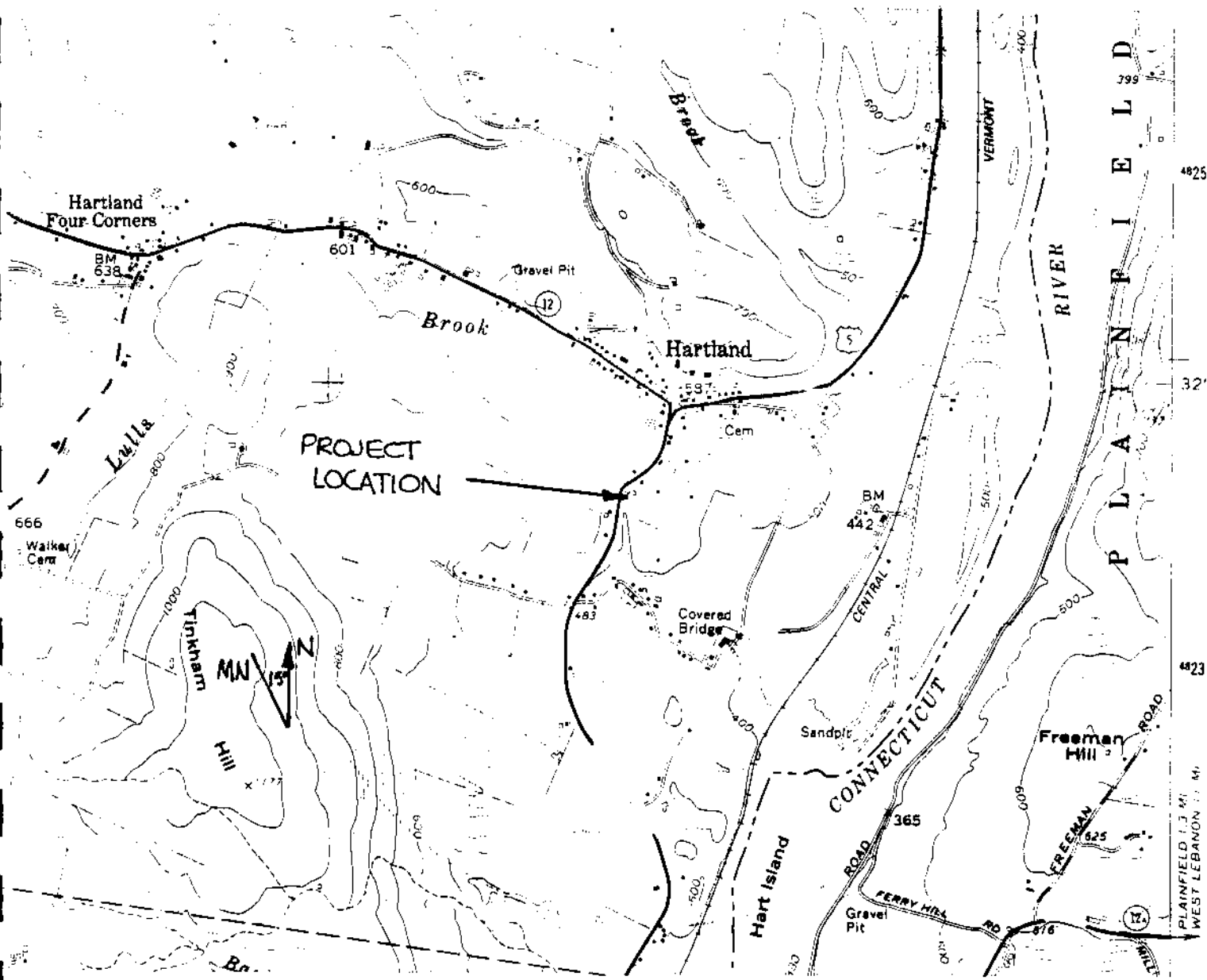
(i) Description of Setting: The proposed Martinsville Water Power Project is located in the Town of Hartland, on Lulls Brook, approximately 1.2 miles upstream from its confluence with the Connecticut River. The headwaters of the brook originate on the eastern slopes of the hills in the Jenneville section of Hartland and flow in an easterly direction. The watershed is approximately 6 miles long with a maximum width of 4 miles. (see figures 1 & 2)

The drainage basin area is predominantly rural. The population of the only town in the area, Hartland, is approximately 2,800. Typically, the area's density is 20 persons per square mile or less outside the town's 3 village districts.

Land in the vicinity of the project area consists primarily of steep-sided hills and irregularly-crested ridges that rise abruptly from relatively narrow valleys. A large portion, (80%) of the area is forested.

The valley has a variable climate characterized by short periods of heavy rain in the summer and longer periods of less intense rain and snow in the winter. The mean annual precipitation based upon 98 years of record over the basin is 38.7 inches. The annual precipitation is normally rather uniformly distributed throughout the year. The average annual temperature in the basin is 43.4 degrees Fahrenheit.

Vegetative Cover: The Hartland study area lies within the Eastern Deciduous Forest, New England section, of the



SCALE 1:24000



FIGURE 1

American toad, bullfrog, greenfrog, pickerel frog, snapping turtle and the Eastern painted turtle. The species observed appear to be common in the project area.

The wooded hillsides, shrub areas and small streams bordering the reservoir provide habitat for many other species common to this part of Vermont and it can be assumed that many of them do occur in the project area. The wooded hillsides are likely habitat for red-backed salamanders, spring peepers, wood frogs, leopard frogs, Eastern garter snake, smooth green snake and the Eastern milk snake. Small streams flowing into the Lulls Brook are potential habitat for the dusky salamander, spring salamander and two-lined salamander.

About 50 species of birds were observed during May and June of 1983 in the project vicinity. They are mallard, wood duck, red-tailed hawk, spotted sandpiper, morning dove, chimney swift, ruby-throated hummingbird, belted kingfisher, yellow flicker, eastern kingbird, great crested flycatcher, eastern phoebe, alder flycatcher, least flycatcher, eastern wood pewee, tree swallow, bank swallow, rough-winged swallow, barn swallow, bluejay, common crow, black-capped chickadee, white breasted nuthatch, gray catbird, american robin, veery, starling, yellow-throat vireo, warbling vireo, black-and-white warbler, nashville warbler, yellow warbler, black-throat blue warbler, black-throat green warbler, chestnut-sided warbler, ovenbird, common yellowthroat, american redstart, house sparrow, red-winged blackbird, northern oriole, common grackle, brow-headed cowbird, scarlet tanager, rose-breasted grosbeak, american goldfinch, rufous-sided towhee, chipping

hemlock-white pine Northern Hardwood Region. Long before the War Between The States, this original forest cover was removed to clear the land for agriculture and for lumber. Later, second growth stands of white pine grew up on abandoned farms and pasture lands. In most regions, this second growth pine was logged and replaced by a mixed hardwood forest.

In the area surrounding the proposed project, most of the area is farm or woodlands. The agricultural land is mainly used for corn and forage crops for dairying. The woodlands (50%) are dominated by white pine on the sandy soil. Eastern hemlock is abundant, forming a hemlock-white pine-beech-yellow birch-sugar maple community. On the drier sites red oak, white oak, red and sugar maple are the dominant trees. Other tree species include red spruce, basswood, and butternut hickory. The understory is dominated by seedlings of the canopy tree species along with Christmas fern, spinulose wood fern, hay-scented fern, maidenhair fern and clubmosses.

Fish and Wildlife: Lull Brook is predominantly a brook trout stream.

Other species of fish observed in the brook were spottail shiner, common shiner, bluegill and whitesucker.

Eleven species of amphibians and eight species of reptiles have been recorded in Windsor County according to D.P. Kibbie, Vermont Institute of Natural Science Newsletter (March, 1980). Four of these and three additional species were observed in and around the project area as follows: red-spotted newt,

sparrow, field sparrow, white-throat sparrow, and song sparrow.

A comparison with other birds in the State indicates that there are no unique species in the Hartland area. The only detectable impact upon birds that could be associated with the proposed project is the elimination of very limited habitat in the area of the proposed powerhouse. Because that habitat has already been disturbed, however, additional activities here displace only a very few birds, if any.

No Federally listed or proposed endangered or threatened species or critical habitat under the jurisdiction of the Department of the Interior is known to exist in the impact area, except for possible occasional and transient individuals.

The State of Vermont lists forty-two species of plants as endangered in Windsor County, Vermont. None of these were sighted during field investigation. If any stations of these plants are discovered during further investigations or construction, appropriate measures will be taken, so it is very unlikely they would be affected.

Water Quality and Quantity: Water quality and quantity in the project area varies with the season. The mean annual precipitation is 38.7 inches. The extremes vary from a June record low of 0.06 inches to an October record high of 12.9 inches. Approximately 50 percent of the annual snowfall (average 87.9 inches at Woodstock, Vt.) occurs during January and February.

The mean annual flow in Lulls Brook at the proposed project site is 31 cfs. A flow duration curve is presented in figure 3. The brook (class B water) is designated Water Management Type I or II. This designation requires that dissolved oxygen levels do not

DAILY FLOW DURATION CURVE FOR LULLS BROOK
LOCATION : RTE 5 BRIDGE , HARTLAND ,VERMONT
DRAINAGE AREA : 21 SQ.MILES

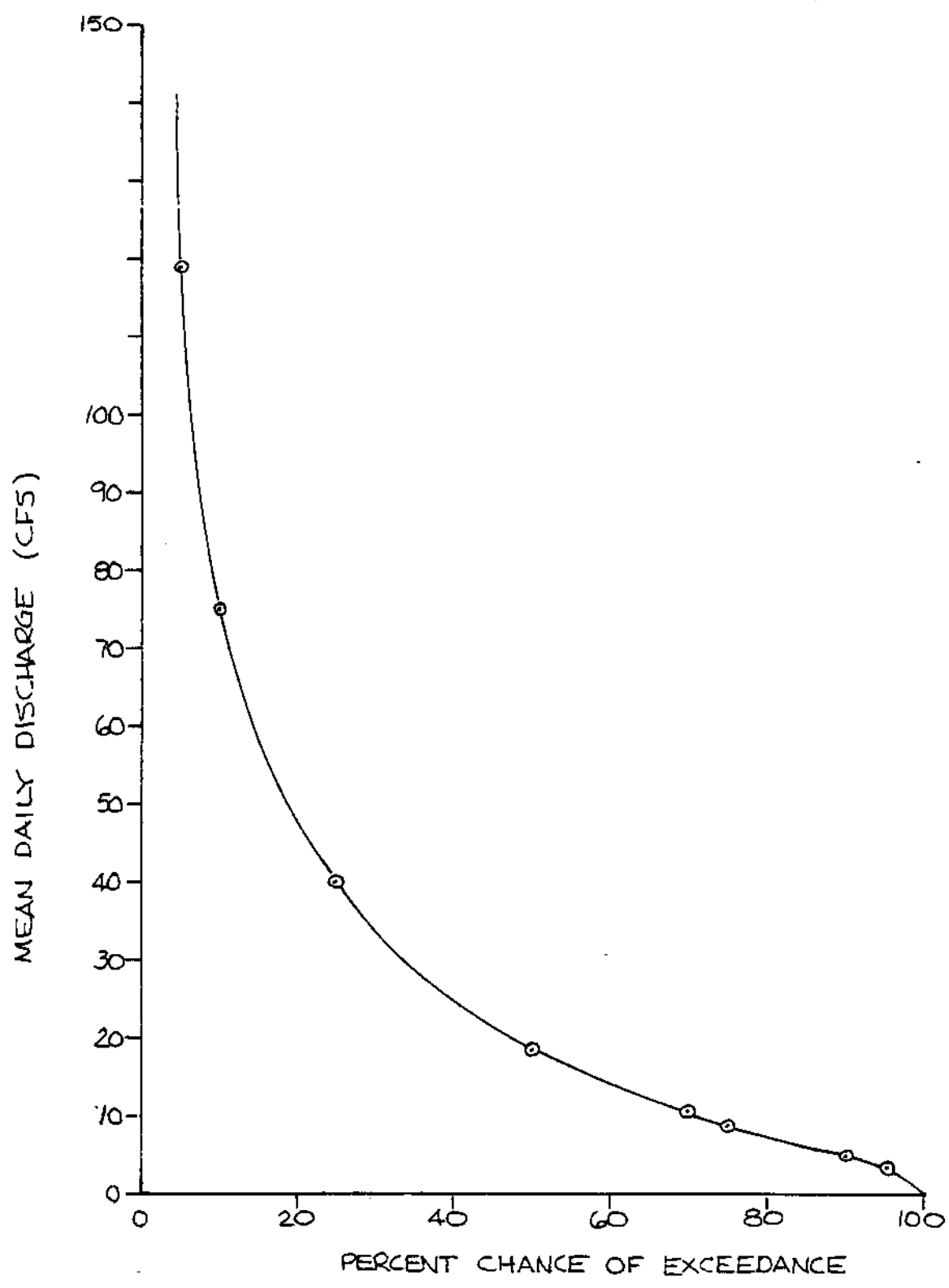


FIG. 3
E-7

JLB 7-30-8

fall below 75 percent of saturation or less than 6 milligrams/liter in cold water fisheries unless naturally occurring. Turbidity is not to exceed 10 std. units in cold water fisheries nor 25 units in warm.

Land and Water Uses: Water and land uses in and around the project area are typical of most rural areas. There are no sewage treatment plants in the Lulls Brook drainage basin.

According to the Vermont Department of Public Health there are no public water supplies that draw upon Lulls Brook for a water source. No proposed consumptive uses of, or water treatment facilities on, the project waters have been identified. Project area land use is for agricultural and forestry purposes. The same fields which are farmed today were in cultivation at the time when the project area was last used for water power (C. 1938). The two activities operated in harmony at that time. No change has occurred which is likely to alter previous circumstances.

Since the impacts of the proposed project are limited to those in the 440' of bypass reach, none of the existing land and water uses will be affected.

Recreation: Because of the general lack of accessibility and steep terrain within the project boundaries, there is a very limited interest in bank fishing, typically for brook trout. The project will not interfere with this bank fishing in any way except, of course, during construction.

Aesthetics:

There is a scenic quality within the project boundaries, but that is totally obscured from outside public viewing by steep terrain, a band of trees and vegetation, and a narrow highly traveled state highway.

The construction of the powerhouse and associated structures will have little effect upon visual quality of the area, as it will not be visible from areas frequented by the public.

Historic and Archeological : In the 1940's, most of the mechanical equipment at the then abandoned power house was removed from the site. In the ensuing years, the powerhouse and penstock collapsed and only remain as rotted timbers in a stone foundation. The wooden crib dam was washed away in the 1973 flood. For these reasons, no historic value is seen within the project boundaries. The State Historic Preservation Division has determined no project properties are eligible for inclusion in the National Register of Historic Places.

(ii) Environmental Impacts

The environmental impacts due to the construction and operation of the proposed Martinsville Water Power Project should be minimal since the project will develop hydroelectric potential at the sites of former water power projects.

As the surface area of the proposed impoundment is only 1/4 acre and is entirely underlain by exposed bedrock, vegetative cover along the banks and in shallow water along the edges of the impoundment will not be adversely affected. Amphibians, reptiles, and mammals utilizing the edges of the impoundment are anticipated to adapt readily to a new water level.

Generation releases will not differ substantially from present unregulated flow because the project has negligible storage and is of a run of the river mode. Therefore, it is expected that fish and wildlife will not be significantly affected in the impoundment area or downstream of the tailrace. In the 440' of penstock bypass an instantaneous minimum flow of 2 cfs (this equals the 7Q10) will be maintained. Because of the steep gradient of the streambed in the bypass region (average grade of 20%) and the exposed bedrock along this section with lack of vegetation, no significant alteration to fish or wildlife habitat will occur.

Water quality of Lulls Brook should not be significantly affected by the construction or operation of the project. While diversions of flows through the powerhouse could potentially have an adverse effect on the dissolved oxygen levels, two factors indicate that there is little potential for this situation to occur. First, the aeration potential of the brook above and below the project is high due to steep stream gradient. Secondly, the potential for low dissolved oxygen levels due to diversions occurs during periods when stream flow is low and water temperature is high. This situation normally occurs during the summer or early fall months. During these periods, flows in the brook will be less than the minimum capacity of the generating unit and all flows will be discharged as presently occurs.

All clearing for construction will be confined to less than one acre. Construction will exert little or no impact on the populations in the area. Localized erosion around the construction site will be minimized by sound construction plans and safeguards.

All construction debris will be transported to an approved disposal area. Excavated material will be graded at the construction site or trucked from the site. During construction, it is possible that dislodging of some debris from the bottom of the reservoir area may result. If this should occur the applicant will remove any such debris from the downstream riverbed. Increase in turbidity of the water will be prevented by the use of filtration barriers when necessary.

During operation, trash rack debris will be properly disposed of. There will be no chemical or oil wastes as the turbine runner is enclosed in a steel pressure case with all shafting bearings external.

The applicant will apply for a dredge and fill permit to the Army Corps of Engineers, New England Division pursuant to Section 404 of the Federal Water Pollution Control Act.

As the proposed project is in a steep sided ravine with a steep gradient channel, the aesthetic and recreational uses are presently very limited. In their letter dated Nov. 30, 1983, the Vermont Agency For Environmental Conservation stated " access to the site is practically impossible and dangerous at best. " Accordingly, aesthetic and recreational impacts are minimal.

The vicinity of the powerhouse, and tailrace areas will be restricted during construction for safety reasons. Proper warning systems will be used during blasting, operation of construction equipment and transportation of materials and equipment.

Appropriate warning signs will be posted to insure adequate safety precautions are met during operation of the power facility.

(iii) Agency Consultations :

A draft of this environment report was submitted to the following agencies for review and comment :

National Marine Fisheries Service, NOAA

U.S. Department of Interior

U.S. Fish and Wildlife Service

Regional Environmental Officer

U.S. Army Corps of Engineers, New England Division

U.S. Environmental Protection Agency

State

Vermont Division for Historic Preservation

Vermont Public Service Board

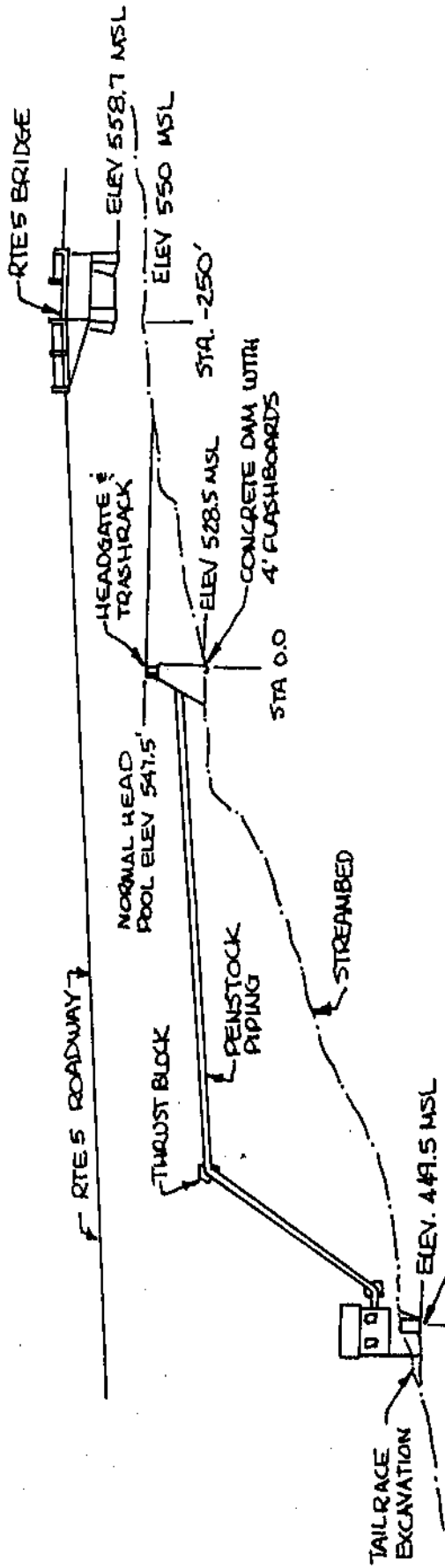
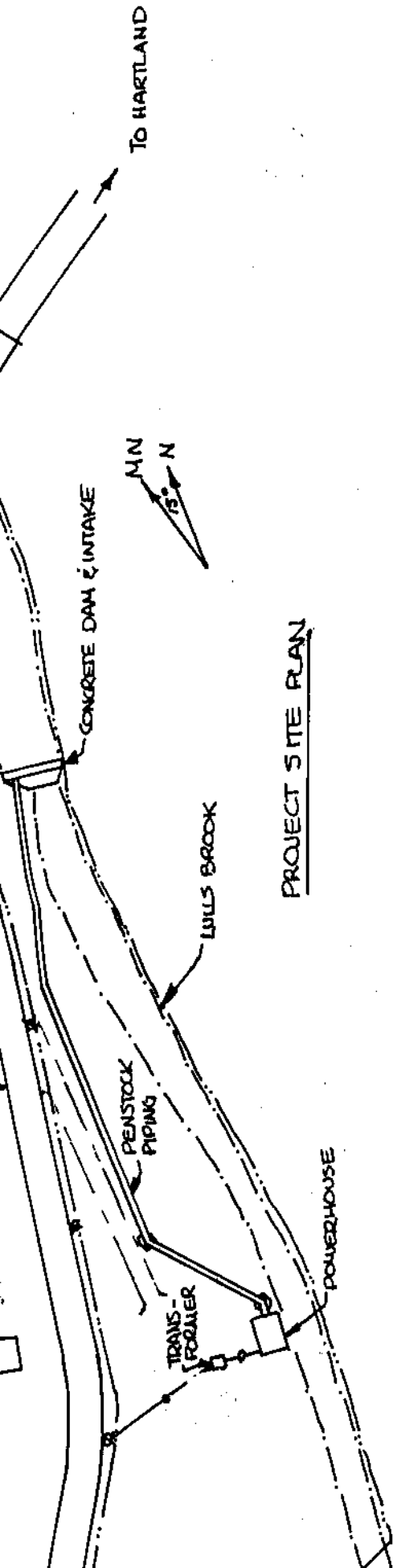
Vermont Agency of Environmental Conservation

Department of Fish and Game

Department of Forest, Parks, and Recreation

Department of Water Resources

A copy of letters transmitting the draft environmental report and requesting agency review and comment are included in appendix E-2. All agencies responded except the Corps of Engineers and the Vermont Public Service Board. Copies of agency comment letters are included in Appendix E-2. A copy of this license application has been sent to all the agencies which received copies of the draft environment report as listed above.



INTAKE, PENSTOCK, & POWERHOUSE PROFILE

ELEVATION 1" = 25'

SCALE

MARTINSVILLE (UPPER SECTION)
WATER POWER PROJECT

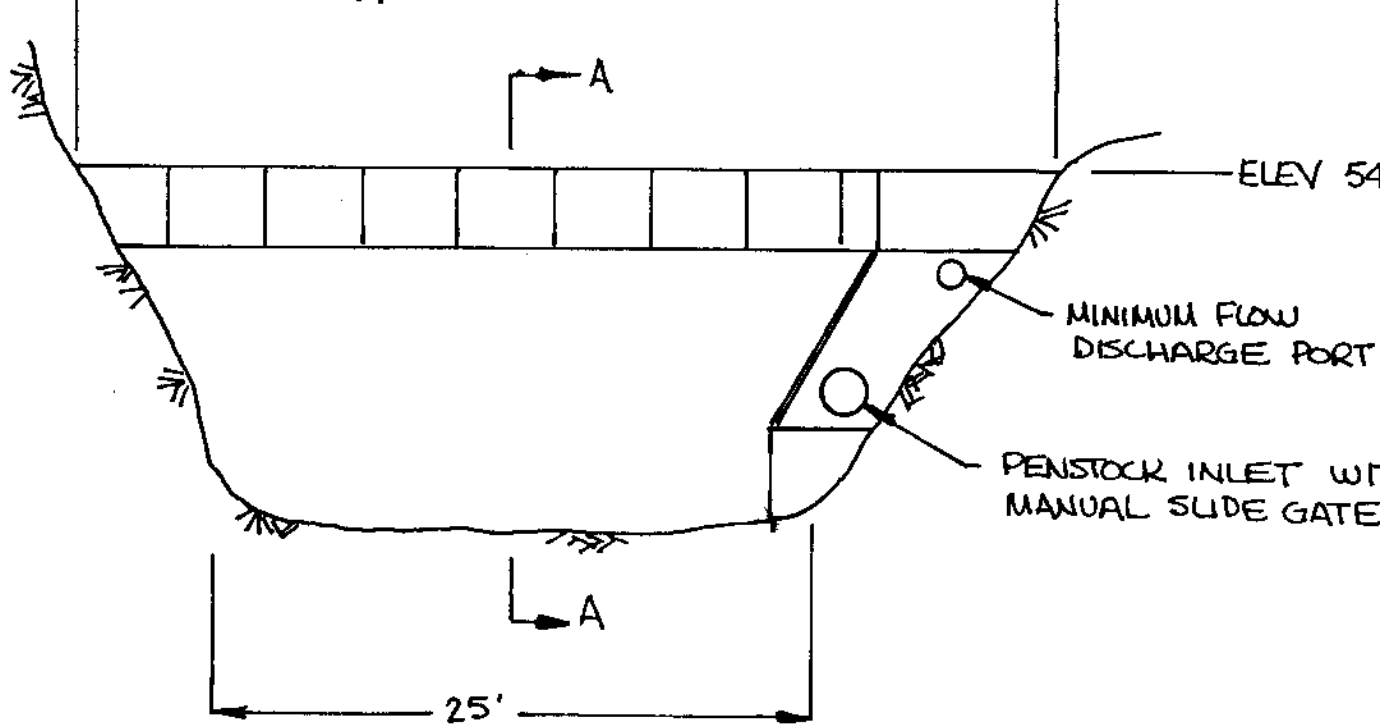
PROJECT SITE PLAN & PROFILE FEATURES

PLATE 1, EXHIBIT F-1

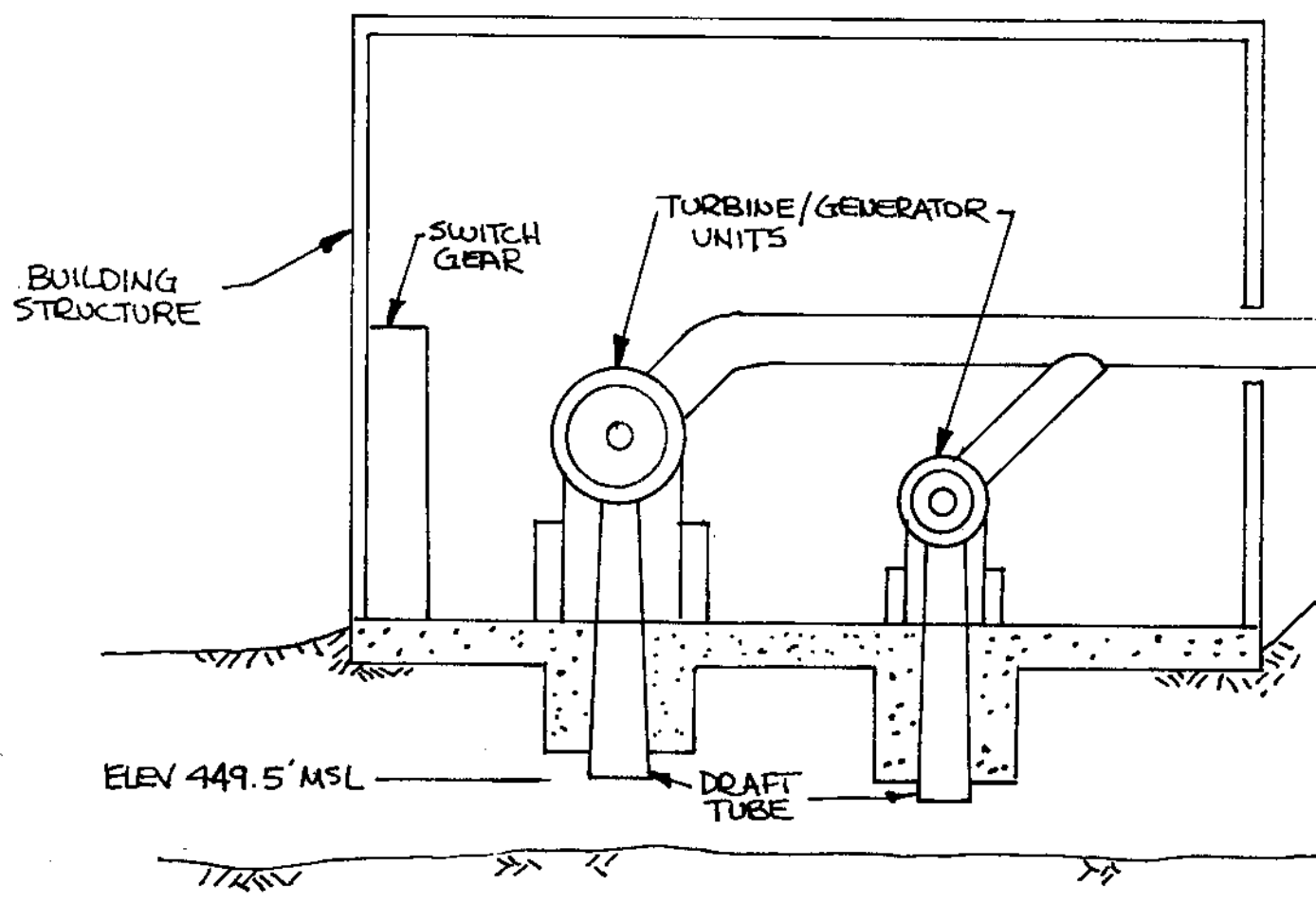
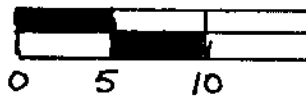
SCALE: 1" = 50'

0 50 100 150 200

- LEGEND
- WILLS BROOK EMBANKMENT
 - - - PROJECT BOUNDARIES
 - EXISTING 3/4" TRANSMISSION LINE
 - NEW 3/4" TRANSMISSION LINE
 - EXISTING DWELLING

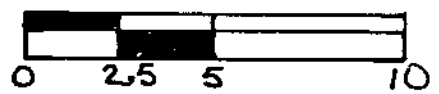


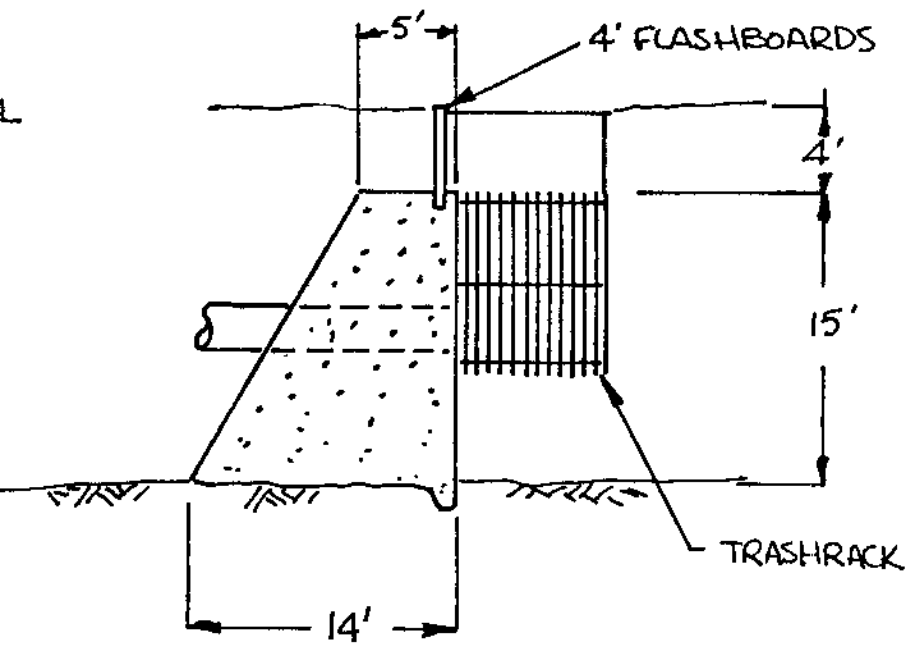
DAM PROFILE SCALE: 1"=10'



POWERHOUSE SECTION

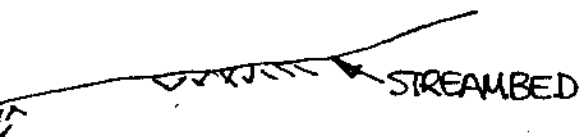
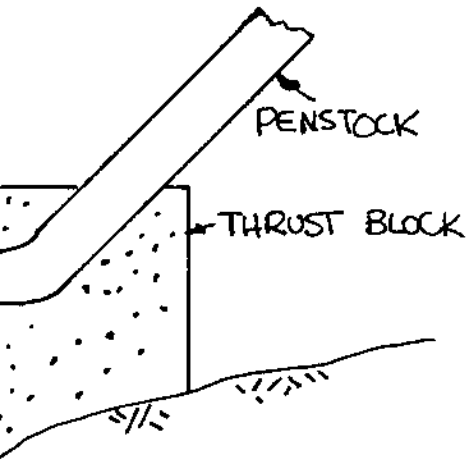
SCALE: 1"=5'





SECTION A-A
DAM SECTION

SCALE: 1" = 10'



MARTINSVILLE (UPPER SECTION) PROJECT

SECTIONS & PROFILES

PLATE 2, EXHIBIT F-2

SCALE: AS SHOWN