

**GREENVILLE DAM PROJECT**

**LIHI APPLICATION**

**ATTACHMENT #12**

**FACILITY DESCRIPTION**

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## BACKGROUND INFORMATION

Item 12: Please attach a description of the Facility, its mode of operation (*i.e.*, peaking/run of river) and a map of the Facility

### Facility Description:

The Greenville Dam Project (FERC No. 2441) is located in Norwich, CT on the Shetucket River approximately 1.3 river miles above the confluence with the Thames River and approximately 1.5 river miles below its confluence with the Quinebaug River. The dam is the first dam on the river and is subjected to tidal influence. The impoundment borders residential and multi-family zoned neighborhoods and the power canal passes through an area zoned for heavy industry. The average annual flow at the project is 2,216 cfs. The maximum gauged flow at the USGS Shetucket River gauge (No. 01122500) was 52,200 cfs on September 21, 1938 and the minimum gauged flow was 19 cfs on August 22 and October 24, 1949.

The project is composed of an impoundment, timber crib dam, fish passage facilities, gatehouse, a 3200 foot long canal, canal spillway, the Second Street powerhouse located at the canal end and additional powerhouse, known as the Tenth Street Station, located approximately 800 feet downstream from the canal headworks.

The Greenville Dam is situated at the head of tide on the Shetucket River, where it spans the river in a generally east-west direction. The gatehouse, canal, canal spillway, and powerhouse are located along the west bank. The Eight Street Bridge spans the canal and river approximately halfway between the dam and the Second Street powerhouse. The dam is of masonry and timber construction, with a spillway length of 399 feet, flashboard height of one foot, and a permanent crest elevation of approximately 20 feet (USGS datum).

The gatehouse is separated from the dam by masonry-lined earth fill embankment. The gatehouse has six timber gates, each approximately 11 feet wide by nine feet high, which admit water to the canal.

The canal is earth lined, approximately 3,200 feet in length, 70 feet wide and 13 feet deep. The canal runs parallel to the river. The canal spillway is constructed of concrete, masonry and timber material. There are twelve concrete formed spillway sections, each approximately 7.7 feet wide. The spillway crest elevation is approximately 19 feet (USGS datum), with an additional two feet of stop logs in each section.

The Second Street powerhouse is located at the end of the canal, approximately 3,200 feet downstream of the dam. The Second Street powerhouse contains two vertical Francis turbines with a combined output of 800 KW at a normal head of 17 feet and a total hydraulic capacity of 700 cubic feet per second (cfs).

The Tenth Street powerhouse is located 800 ft downstream from the canal headworks and includes a 15ft deep, 30 ft wide by 80 ft long concrete intake flume, a 23 ft wide by 80 ft long powerhouse containing one 1,400 KW turbine/generator unit and a short tailrace discharging into the bypass reach.

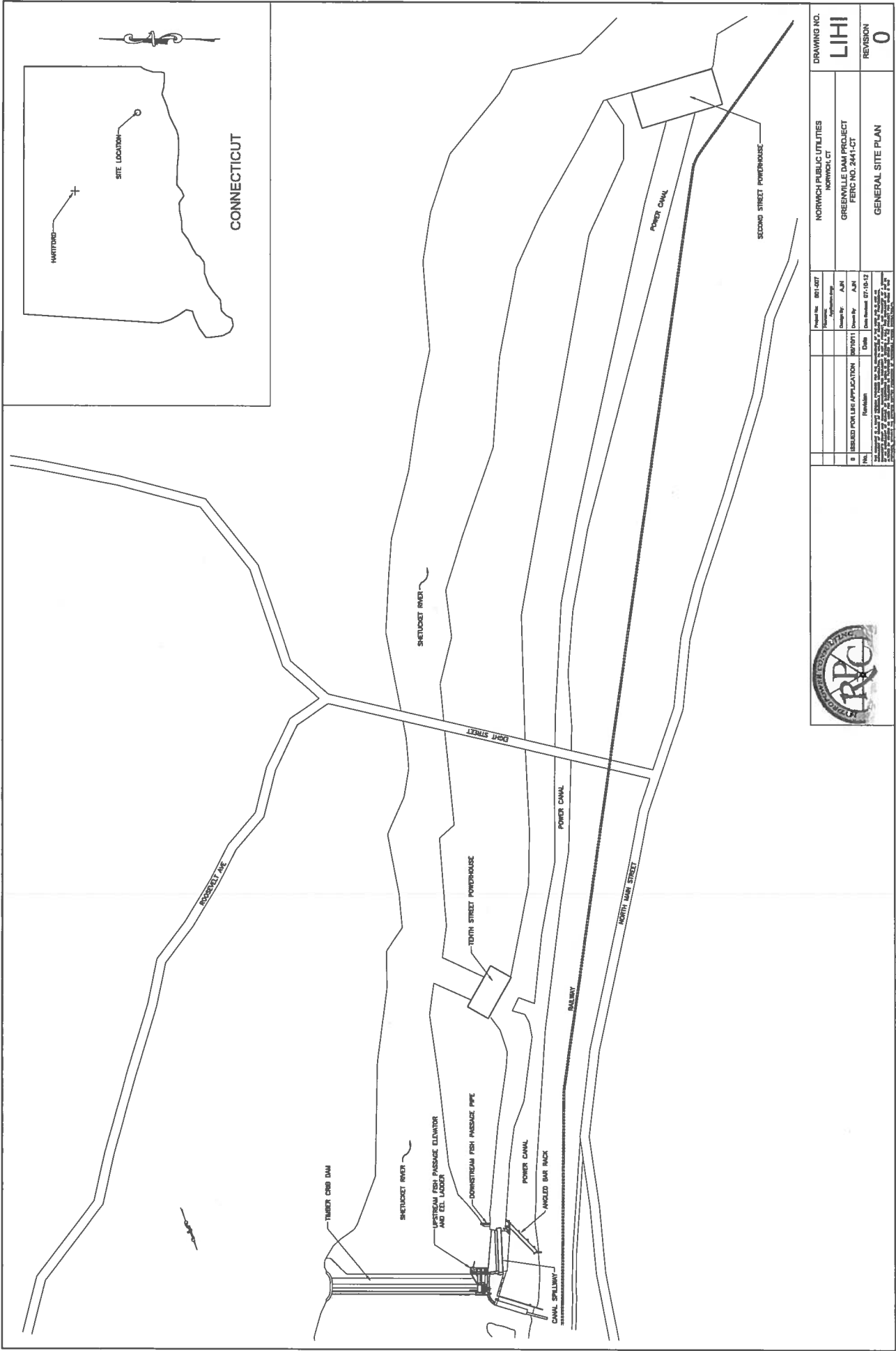
The upstream fish passage facility consists of an automated fish elevator system with associated attraction water system. The elevator system is comprised of a 43.5 ft long by 8 ft wide lower entrance and collection chamber and a 58 ft long 8 ft wide elevated exit flume. The lower chamber contains a vee-trap system, hopper with self crowding Braille, attraction water system and a dual stem downward opening entrance gate. The elevated flume is equipped with a floor attraction water screen, trapping facilities, attached viewing room and a maintenance gate for dewatering. Attraction flow is supplied through a series of pipes from the headpond and exit flume. The system has been operational since 1996 and has completed effectiveness testing requirements.

The downstream fish passage consist of an 1-inch clear angled bar racks, entrance chamber, buried transport pipe and submerged plunge pool. The angled bar rack is approximately 85 ft in length and 17 ft high and equipped with an automated rack cleaning system. The entrance chamber is approximately 9.5 ft long, 4 ft wide and 9.5 ft deep and equipped with a downward opening entrance flow control gate. A 36-inch buried steel transport pipe connects to the downstream end of the entrance chamber and discharges into the bypass reach. The river bed directly beneath the transport pipe has been excavated to form a deep pool for the deposit of migrants. The system has been operational since 1995 and has completed effectiveness testing requirements.

An upstream eel ladder is attached to the upstream fish passage system. The eel ladder consists of an elevated 20-inch wide aluminum trough with strip drain interior surface and aluminum cover plate. Water for the eel ladder is supplied by a submersible electric pump located within a vertical standpipe near the fish ladder exit flume. The system has been operational since 2003 and has completed effectiveness testing requirements.

## Project Operation

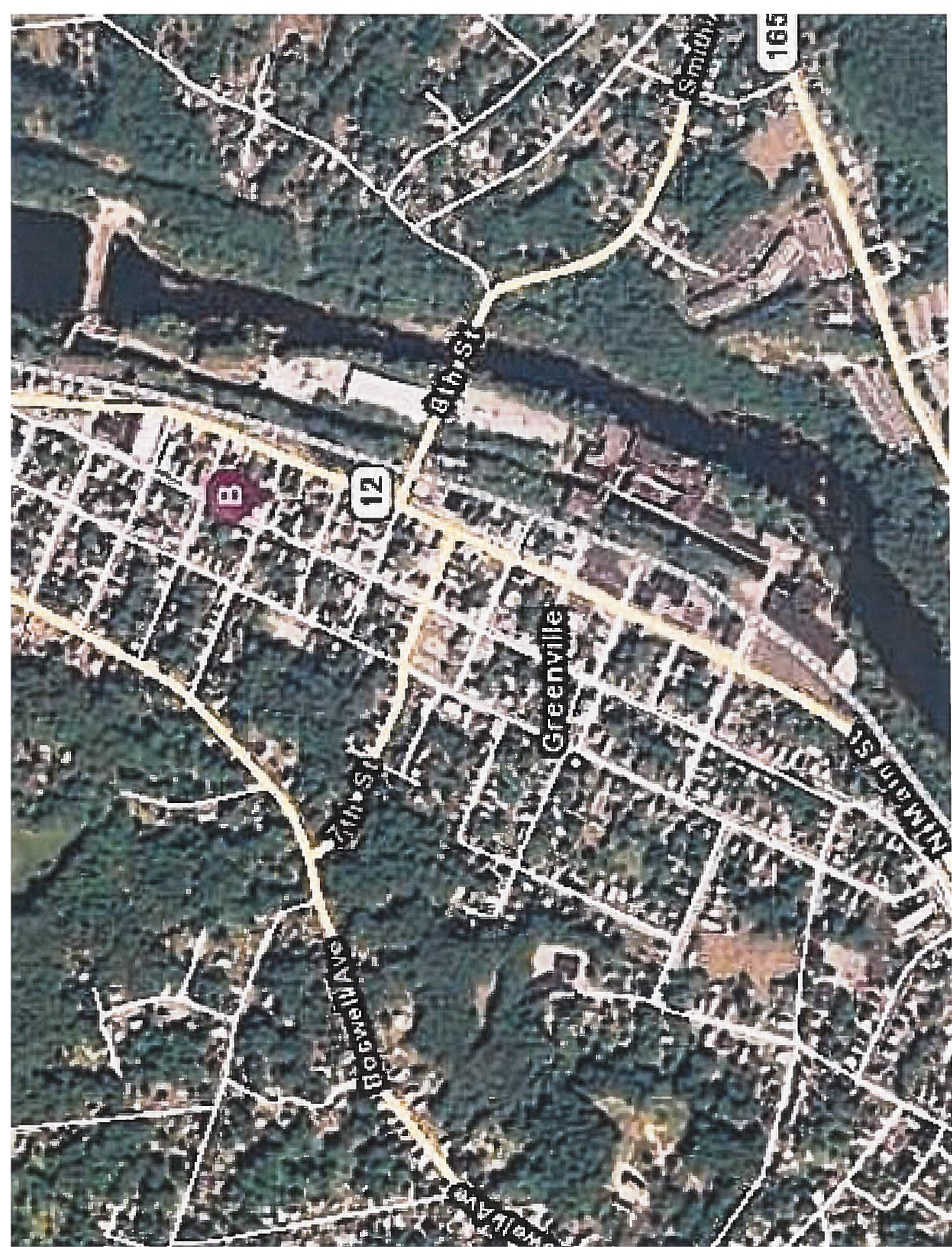
The Greenville Project is operated as a run-of-river facility with a the headpond maintained at a stable elevation within 2-inches of the top of boards, except during spillage events. A continuous minimum flow of 250 cfs or inflow is released through a combination of spillway flashboard notches and the fish passage facilities. 100 cfs of the minimum flow is released through the upstream fish passage system, 50 cfs through the downstream fish passage system and the remaining 100 cfs released through flashboard notches across the dam.



DRAWING NO.		NORWICH PUBLIC UTILITIES		DRAFTING NO.	
		NORWICH, CT		LIHI	
		GREENVILLE DAM PROJECT		REVISION	
		FERC NO. 2441-CT		0	
		GENERAL SITE PLAN			

Project No.	881-127	Drawn By	ALH	Check By	ALH
Issued For	LIHI APPLICATION	Date	3/1/91	Drawn By	ALH
Rev.	1	Date	3/1/91	Drawn By	ALH
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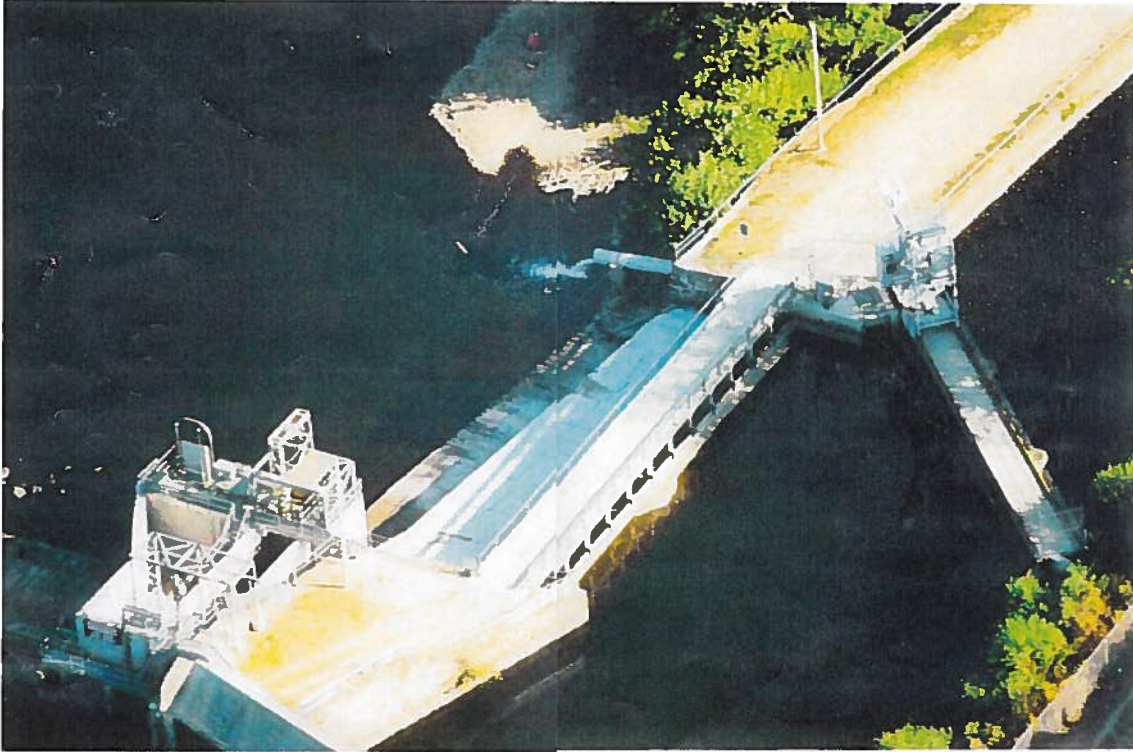


Photo 12A: Greenville Dam, Fish Elevator, Downstream Fish Passage System and Canal



Photo 12B: Greenville Timber Crib Dam





Photo 12C: Upstream Fish Elevator and Eel Ladder



Photo 12D: Canal Angled Bar Rack and Downstream Fish Bypass Inlet





Photo 12E: Canal Gate House and Side Spillway



Photo 12F: 10th Street Development Intake Channel and Powerhouse



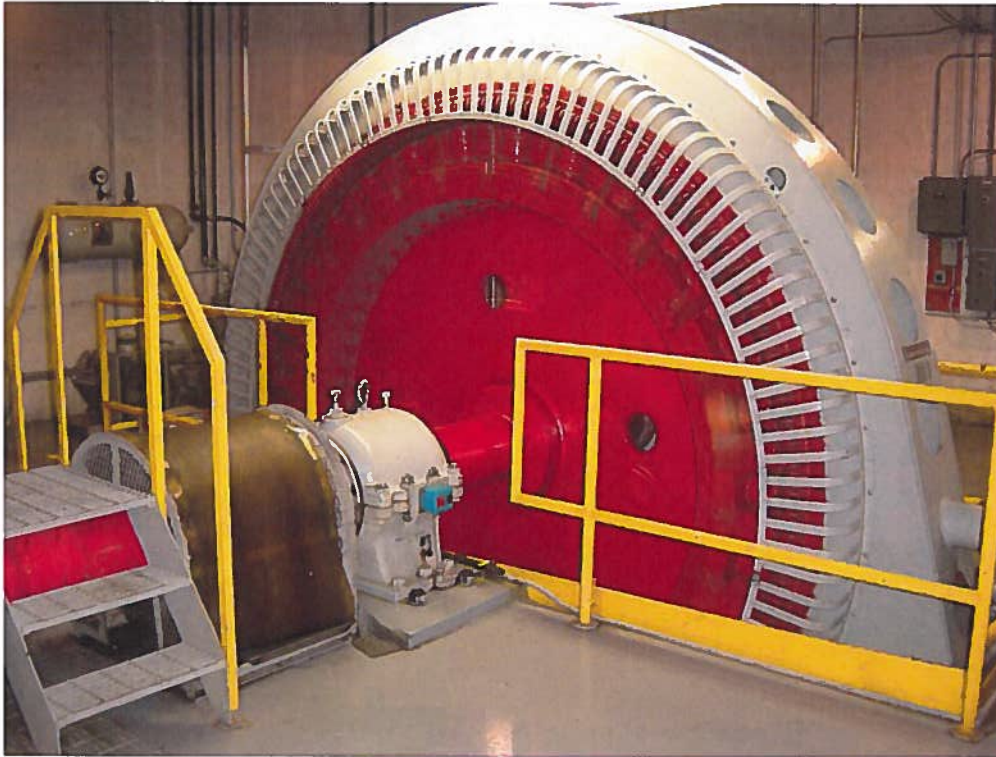


Photo 12G: 10th Street Development Generator



Photo 12H: 2nd Street Development Powerhouse



Photo 12I: 2nd Street Development Generators



TAFTSVILLE HYDROELECTRIC  
PROJECT (UNLICENSED)

QUINEBAUG RIVER

SHELTUCKET RIVER

TUNNEL HYDROELECTRIC  
PROJECT (UNLICENSED)

**GREENVILLE**  
FERC NO. 2441

THAMES RIVER

# GREENVILLE BASIN MAP

ATLANTIC OCEAN