

Project Fact Sheet Shawmut Project

General Information

Project Name: Shawmut
FERC No: 2322
River: Kennebec
License Expiration: 1/31/2021
Generating Capacity: 8.740 MW
Operation: Run-of-River
Dam Height: 40 feet

Physiography

River Mile: 66
Drainage Area: 4,200 square miles
Avg. Annual Flow: 3,600 cfs

Reservoir

Storage Volume: 390 acre-feet (gross)
Surface Area: 1,310.0 acres
Length: 12.0 miles

WQ Classification

Reservoir: Class C
Tailwater: Class B

Minimum Flow Run-of river, 2,110 cfs minimum flow.

Project Generating Facilities

Number of Units: 8	Turbine Design/Type	Generator Rating	Hydraulic Capacity
Unit 1	Francis/ horizontal	0.750 MW	650 cfs
Unit 2	Francis/ horizontal	0.750 MW	650 cfs
Unit 3	Francis/ horizontal	0.750 MW	650 cfs
Unit 4	Francis/ horizontal	0.750 MW	650 cfs
Unit 5	Francis/ horizontal	0.750 MW	650 cfs
Unit 6	Francis/ horizontal	0.900 MW	650 cfs
Unit 7	Propeller/horizontal	2.200 MW	1,200 cfs
Unit 8	Propeller/horizontal	2.200 MW	1,200 cfs

Generating Unit Details

Units	Turbine Design/Type	Hydraulic Capacity	Rotation Speed (rpm)	Number of Blades/Buckets	Francis Turbine			Propeller Turbine	Max Flow		Peak Flow		Min Flow	
					Runner Diameter Inlet (in)	Runner Diameter Outlet (in)	Runner Inlet Height (in)		Runner Diameter (in)	CFS	Effic. (%)	CFS	Effic. (%)	CFS
Unit 1	Francis/ horizontal	650 cfs	200.0	10 X 4	33	53.4 X 2	33.5 X 2	N/A	648	74	581	79	400	49
Unit 2	Francis/ horizontal	650 cfs	200.0	10 X 4	33	53.4 X 2	33.5 X 2	N/A	645	76	583	80	438	39
Unit 3	Francis/ horizontal	650 cfs	200.0	10 X 4	33	53.4 X 2	33.5 X 2	N/A	641	78	581	80	453	38
Unit 4	Francis/ horizontal	650 cfs	200.0	13 X 4	33	53.4 X 2	33.5 X 2	N/A	672	67	539	77	367	64
Unit 5	Francis/ horizontal	650 cfs	200.0	10 X 4	33	53.4 X 2	33.5 X 2	N/A	742	67	520	80	326	52
Unit 6	Francis/ horizontal	650 cfs	200.0	13 X 4	33	53.4 X 2	33.5 X 2	N/A	667	74	575	79	264	35
Unit 7	Propeller/horizontal	1,200 cfs	900.0	3	N/A	N/A	N/A	108	N/A	N/A	1,312	74	N/A	N/A
Unit 8	Propeller/horizontal	1,200 cfs	900.0 speed increasers	3	N/A	N/A	N/A	108	N/A	N/A	1,347	75	N/A	N/A

Other Project Features

Normal Station Head 23.0 feet

Spillway: Spillway (1,135 feet), consists of 380 feet of hinged flashboards, 730 feet of rubber dam and a 25 foot wide log sluice near the center of the spillway section.

Spill Gate(s): Log sluice (25 feet wide by 8 feet deep)

Bypass Section: None

Forebay/Canal: Intake consists of a head gate structure, a 240 feet long forebay, 10 foot wide by 7 deep Taintor gate, 6 foot wide by 6 foot high deep gate and unit intake trash racks.

Trash Racks:

Location Full depth trash racks located just upstream of units.
Rack Spacing Units 1-6, 1.5 inches; Units 7-8, 3.5 inches
Bar Thickness ???
Velocity Velocity to be calculated
Maintenance Manually operated trash rake
Trash gate located next to unit #6 (4 feet wide by 22 inches deep)

Trash Gate:

Fish Passage Facilities

Upstream

Facility Type: None, target fish species captured at Lockwood are transported above Shawmut.
Installation Date: No earlier than May 1, 2012 based on 1998 KHDG settlement agreement
Operation: N/A
Operation Season: N/A
Design Capacity: N/A
Design Flow: N/A
Flow/Attraction Q: N/A
Species: Atlantic salmon, American shad, River herring

Passage Numbers:	<u>Salmon</u> N/A (fish are currently trucked around Shawmut)	<u>Shad</u> N/A (fish are currently trucked around Shawmut)	<u>River Herring</u> N/A (fish are currently trucked around Shawmut)
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New/Additional Passage Plans: No earlier than May 1, 2012 based on 1998 KHDG settlement agreement

Survival or Effectiveness Studies: N/A

Downstream

Facility Type: Interim passage consists of an existing surface sluice which discharges into a 3 foot deep man made plunge pool. Sluice is located next to Unit #6 (4 feet wide by 22 inches deep). Fish can also pass via spill along the 1,135-foot-long spillway.

Installation Date: 2000

Operation: N/A

Operation Season: April 1 – December 30 annually

Design Capacity: N/A

Flow/Attraction Q: Sluice passes 30 to 35 cfs with all stoplogs removed. River flow in excess of the station capacity of 6,700 cfs is spilled via the rubber dam, hinged flashboards or log sluice.

Diversion/Screening: None currently. New downstream bypass facility is in the design and agency consultation phase and will include angled racks leading to sluice gate.

Species: Atlantic salmon, American shad, Alewife

New/Additional Passage Plans: New downstream bypass facility is in the design and agency consultation phase. New facility will include angled racks leading to sluice gate.

Survival or Effectiveness Studies: Will take place after the new bypass facility is installed.

Biological Studies

Instream Flow: None

Water Quality: None specific to Shawmut. WQ data for the Kennebec River is provided by the MDEP in the *2010 Integrated Water Monitoring and Assessment Report* available at: www.maine.gov/dep/blwg/docmonitoring/305b/2010/report.pdf and in *Kennebec River Modeling Report Final* dated April 2000, and *1998 Kennebec River Survey*, both available at: www.maine.gov/dep/blwg/docmonitoring/modelinganddatareports/index.htm.

Other Studies: None

Attachments

1) Flow Data

- a) Monthly and Annual Flow Duration Curves
- b) Mean, Median, Q20 and Q80 flows
- c) USGS gage data web access address - Kennebec River at Bingham, near Madison, at North Sidney, and on Sebasicook River near Pittsfield

2) Project Aerial Photos

3) Fishway Photos – N/A

4) Project Design Drawings/Plans

5) Fishway Design Drawings Plans – Downstream fishway design is presently in the agency consultation phase.

6) WQ Classification & Standards

7) Description of Typical Turbine Operation generally run units 7 and 8 then 1-6 as needed.

8) High Water Guidelines

9) Reservoir Bathymetry - None

10) Fish Passage Effectiveness Studies (Bibliography) – None

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