

FEDERAL ENERGY REGULATORY COMMISSION LICENSING FOR MICROHYDROPOWER UTILIZING MINE DRAINAGE

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2015 Joint Conference ASMR and ARRI

Outline

- ▣ Project Overview
- ▣ Site Description
- ▣ Hydroelectric Basics
- ▣ Permits/Licenses/etc.
- ▣ FERC (off-grid)
- ▣ Construction
- ▣ Electric Generation
- ▣ FERC (grid-tied)
- ▣ Final Remarks
- ▣ Acknowledgements

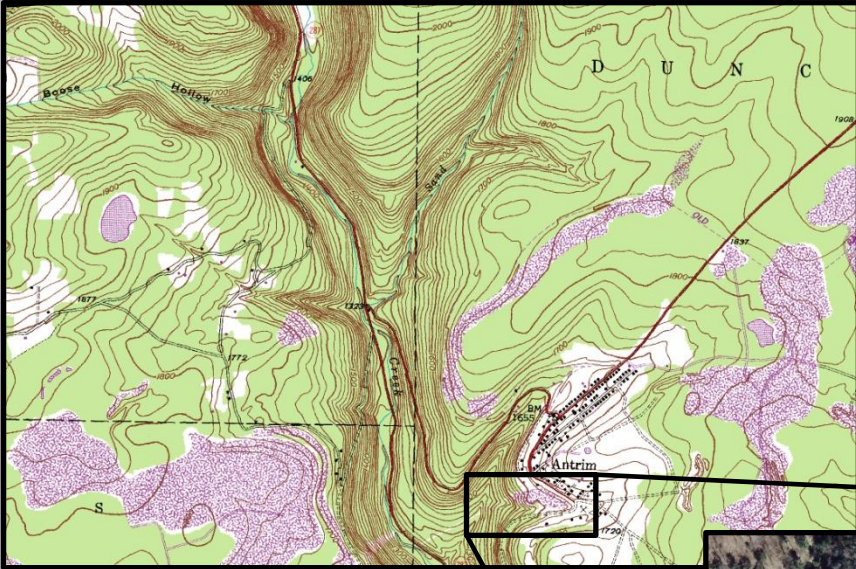
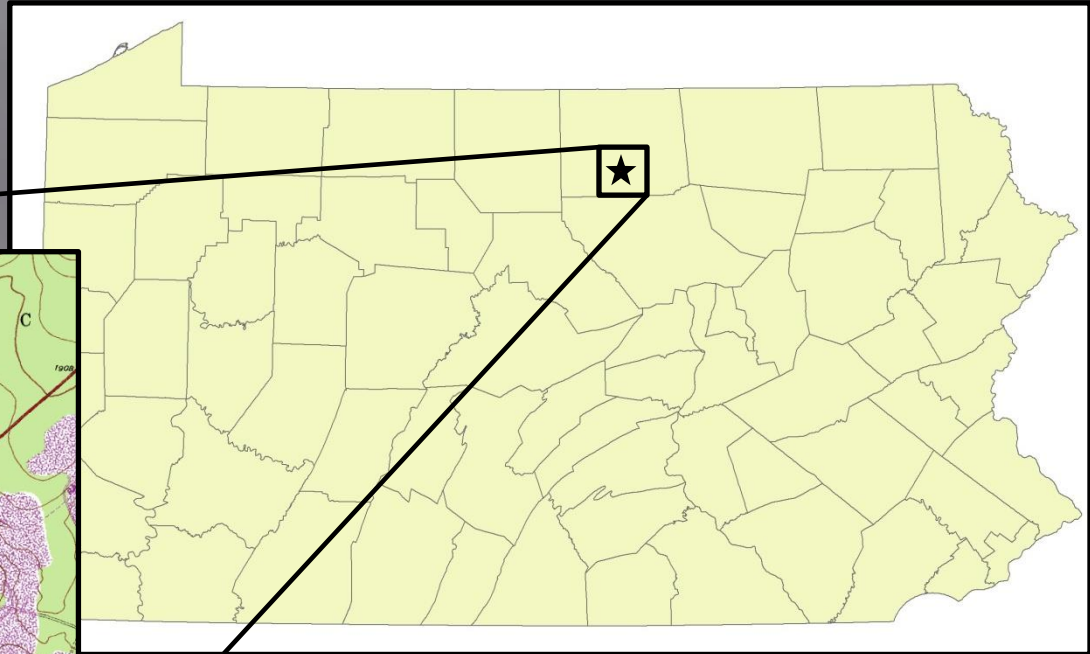


Antrim Project Overview

- ▣ Babb Creek Watershed Association (BCWA) awarded an Energy Harvest Grant
- ▣ Goals: reduce annual operating costs and generate revenue
- ▣ BioMost, Inc. selected for design-build
- ▣ Design Focus
 - utilize as much of the flow as possible
 - eliminate electric bill
 - grid-tied
 - generate & sell excess power



Site Location



Pre-Existing Treatment Plant



Hydroelectric Basics

▣ Terminology

- **Forebay** – pond or basin of sufficient size to stabilize and control the flow of water to the penstock
- **Penstock** – pipe to convey water, under pressure, from the forebay to the turbine
- **Powerhouse** – an electricity generating station, location of turbine
- **Tailrace** – channel to convey the water from the turbine to the discharge point

Permits/Licenses/etc.

- ▣ **Local** – Building Permit (shed)
- ▣ **State** – GP4 (discharge point)
- ▣ **Federal** – Federal Energy Regulatory Commission (FERC)

Note:

<1 acre proposed to be disturbed



Federal Energy Regulatory Commission (FERC)

- ▣ To license or not license?
- ▣ “Behind the Meter”
 - Net Energy Metering Rider (NEMR)
- ▣ License/Waiver
 - a.) navigable waters
 - b.) occupy U.S. lands
 - c.) U.S. government dam
 - d.) “jurisdictional waterway, and the project affects the interests of interstate or foreign commerce”



FERC Submission: Declaration of Intention/Intent (DI)

05/21/10 – DI submitted to determine FERC jurisdiction to be grid-tied

- (1) US navigable water
- (2) US public lands or reservations
- (3) surplus water or waterpower from govt. dam
- (4) Congressional Commerce Clause jurisdiction waterway , constructed/modified after 8/26/1935 , and affects interests of interstate or foreign commerce

08/16/10 – FERC found license required as project to be constructed after 8/26/1935 on Commerce Clause waterway , to be connected to interstate grid

09/10/10 –DI submitted to determine FERC jurisdiction to be off-grid

11/18/10 – FERC finding that license not required

Declaration of Intention

The location of the project:

State: Pennsylvania
Town: Antrim
Street: 129 Antrim Main St., Wellsboro, PA 16901-8534
County: Tioga
Stream: Unnamed Tributary to Wilson Creek (Babb Creek Watershed)
River Basin Name: Susquehanna River
Township, Range, and Meridian: Duncan Township (Latitude: 41° 37' 45" Longitude: 77° 17' 25")

The exact name, business address, telephone number, FAX number and E-Mail address of the applicant are:

Antrim Treatment Trust
c/o Woodlands Bank
Trust & Investment Services
Attn: Thomas Burkholder, Vice President & Trust Officer
2450 E. Third Street, Williamsport, PA 17701
Telephone: (570) 320-2468
Fax: (570) 327-1732
E-Mail: wbwebmail@woodlandsbank.com

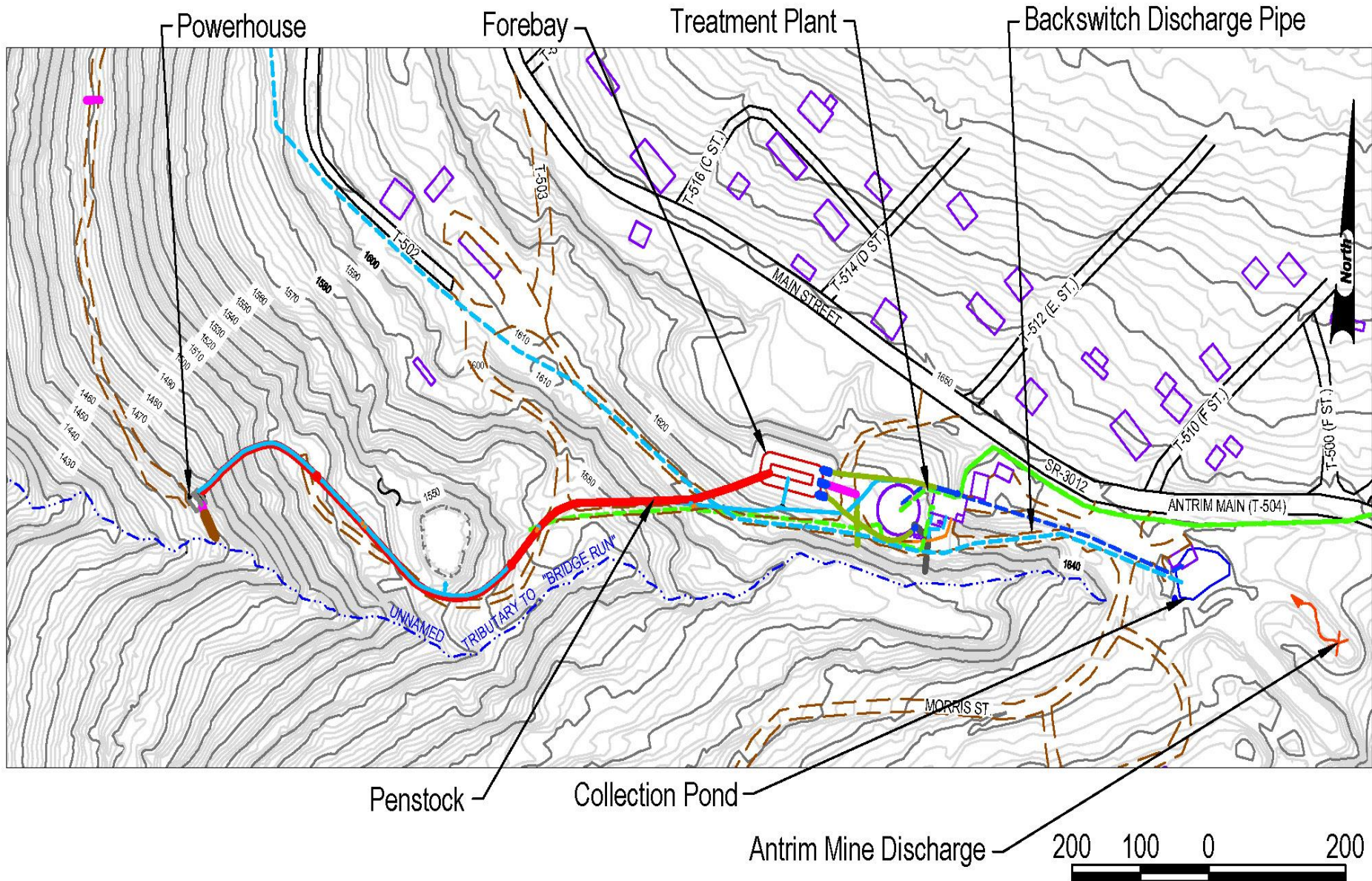
The exact name, business address, telephone number, FAX number and E-Mail address of the person authorized to act as agent for the applicant is:

Bryan J. Page
BioMost, Inc.
434 Spring St. Ext., Mars, PA 16046
Telephone: (724) 776-0161
Fax: (724) 776-0166
E-Mail: bmi@biomost.com

The exact name, business address, telephone number, FAX number and E-Mail address of the local electric utility company is:

First Energy
2800 Centre Ave., Reading, PA 19605
Telephone: (610) 929-3601
Fax: (330) 315-9587

Site Overview



Forebay Construction



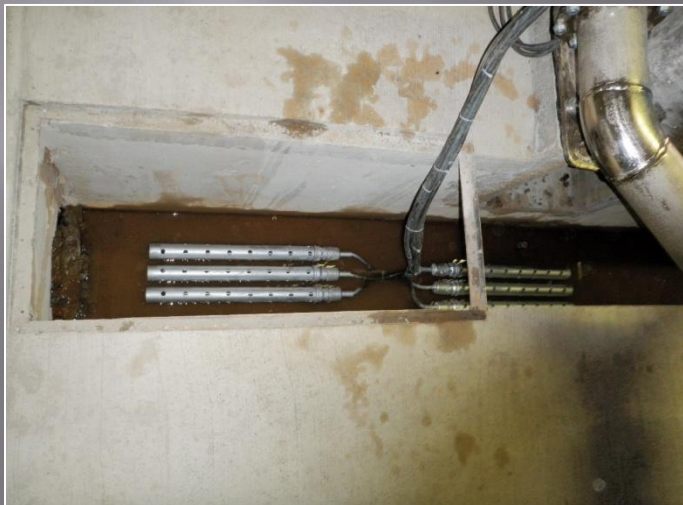
Penstock Installation



Powerhouse Construction



GENERATING POWER!!!



07/18/12 Antrim Microhydropower Project Dedication



PA DEP Secretary Michael Krancer
Timothy P. Danehy, QEP, Project Designer

FERC Submission: Minor Hydroelectric Project

(≤ 5 MW; FERC revised nationwide to ≤ 10 MW)

Stage 1:

Step 1: Initial Consultation Document
05/22/13 – ICD with newspaper for upcoming public meeting submitted to FERC & 79 stakeholders

Step 2: Joint Meeting and Site Visit

06/11/13 – Joint Agency/Public Meeting

Step 3: Develop Requested Study Plans

NA – no requests

Stage 2:

Step 1: Conduct Requested Study(ies)

NA – no requests

Step 2: Draft Exemption Application

NA – no requests

Step 3: Exempt. App. Comment Solicitation

NA – no requests

Stage 3:

Step 1: Final Exemption Application

07/08/13 – submitted to FERC

08/30/13 – FERC denies exemption with option to file for license “Your project would utilize the flow of a natural spring (i.e., drainage from old mines) that is collected in a pond, passes through a treatment plant, enters a forebay and then travels through 872 feet of penstock before reaching the powerhouse. As you describe your project, it would neither be located at the site of an existing dam nor use the flows from a natural water feature to generate power. Therefore, your project does not qualify for a 5-MW exemption.”



FERC Submission: Traditional License Application

12/12/13 – TLA submitted to FERC

01/08/14 – notice in The Wellsboro Gazette

01/24/14 – proof-of-publication to FERC

02/20/14 – FERC issues “Notice of Application Accepted for Filing with the Commission, Intent to Waive Scoping, Soliciting Motions to Intervene and Protests, Ready for Environmental Analysis, and Soliciting Comments, Terms and Conditions, Recommendations, and Prescriptions, and Establishing an Expedited Schedule for Processing”

09/03/14 – FERC issues traditional license (30-year term limit)

148 FERC ¶ 62,173

UNITED STATES OF AMERICA

FEDERAL ENERGY REGULATORY COMMISSION

Antrim Treatment Trust Project No. 14537-001

ORDER ISSUING ORIGINAL LICENSE

(September 3, 2014)

INTRODUCTION

On December 12, 2013, Antrim Treatment Trust (Antrim Trust) filed, pursuant to Part I of the Federal Power Act (FPA),¹ an application for an original license to construct, operate, and maintain its proposed Antrim Micro-Hydropower Project No. 14537 (Antrim Project or project). The proposed 40-kilowatt (kW) project will be located on an unnamed tributary to Bridge Run in Duncan Township, Tioga County, Pennsylvania. The project will not occupy federal land. As discussed below, this order issues an original minor license for the project.

FERC Submission: Post-License Submissions

- ▣ Public Safety Plan
 - ▣ Operation Compliance Monitoring Plan
 - ▣ Contract Plans and Specifications
 - ▣ Supporting Design Report
 - ▣ Temporary Construction Emergency Action Plan
 - ▣ Quality Control Inspection Program
-
- ▣ 02/02/15 – submitted Public Safety Plan to FERC
 - ▣ 04/14/15 – FERC completed review - no comments

License/Declaration of Intent/NEMR

FERC

Off-Grid

On-Grid

Net Producer

Net Consumer

Declaration of Intent (DI)
~1-2 months
(not under FERC jurisdiction)

License/
Exemption

“Behind the Meter”
NEMR
(not under FERC jurisdiction)

Exemption

Traditional
Licensing Process
(TLP)
~1-2 years+

Alternative
Licensing Process
(ALP)
~2 years+

Integrated
Licensing Process
(ILP)
~2 years+

Conduit
Exemption
<1 year

10 MW
Exemption
~ 1 year+

Appx. times do not include pre-application consultation, time to conduct studies, etc.

Antrim Power Overview

- ▣ 160' Vertical Head
- ▣ <500 – 2,000+ gpm
- ▣ <11 – 40 kW

On-Grid Configuration

- ▣ 1,500 gpm average
- ▣ 280,000 kWh/Year
 - ~\$13,000/Year Savings
 - ~\$8,000/Year Revenue
 - Estimated 10-year payback



Concluding Remarks

**First FERC-Issued Traditional
Micro-Hydropower License
using Mine Drainage
SEPTEMBER 3, 2014**

148FERC¶62,173 - Project No. 14537-001

Opportunity for long-term sustainability
for water treatment!!!

Future generators to be made in
America!!!



Acknowledgements

- ▣ Babb Creek Watershed Association
 - Bill Beacom & Denny Walbridge
- ▣ PA DEP, Mario Carrello & Mike Smith
- ▣ Antrim Treatment Trust
- ▣ Ellingham Electric
- ▣ J&S Construction
- ▣ Signor Brothers Contracting
- ▣ WPCAMR
- ▣ EPCAMR
- ▣ Bruce Leavitt
- ▣ ARIPPA

