Saint Francis University
ENVIRONMENTAL ENGINEERING

SAINT FRANCIS UNIVERSITY
FOUNDED 1847

Center For Watershed Research & Service
CWRS

Coupling Technical Assistance with Student Service Learning in Mine Water Reclamation

KELSEA J. GREEN, MORGAN C. WHITED AND WILLIAM H. J. STROSNIDER

IN ASSOCIATION WITH SAINT FRANCIS UNIVERSITY AND

THE CENTER FOR WATERSHED RESEARCH AND SERVICE

Overview

Our Structure and Partnerships

Specific Projects

Summer & Fall 2017 Plans

Center for what?

- Housed under Saint Francis University's Environmental Engineering program
  - 1,500 Undergraduate with 36 ENVEs

- The Center for Watershed Research and Service
  - Founded 2012
  - Offer project support, expert reviewed undergraduate research & community outreach/ awareness

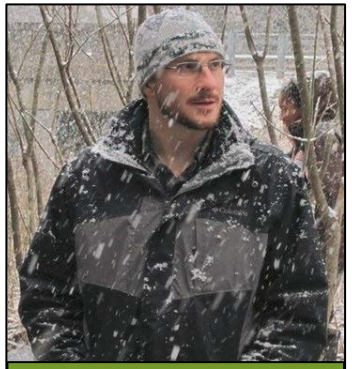
Mission

Expert *Assistance* + *Manpower* + *Time* = Watershed Restoration *Efforts Supported* + Reclamation *Knowledge Increased*

Center for who?

ENVE Students here this week:

- Ashley Rovder (Soph)
- Charles “CJ” Spellman (Sr)
- David Madl (Jr)
- Hannah Patton (Sr)
- Jack Gaughan (Soph)
- Josh Vinglish (Sr)
- Justin Hugo (Soph)
- Kevin Tomkowski (Sr)
- Lydia Mignogna (Sr)
- Staci Wolfe (Soph)
- Stefan Long (Sr)



Dr. Bill Strosnider

Morgan Whited

Dr. Julie LaBar

Dr. Rachel Wagner

Dr. Joel Bandstra

Kelsea Green

Specific Projects

Abandoned Mine Drainage Restoration focused!

- Stream Restoration Inc.
- BioMost Inc.
- County Conservation Districts
- Watershed Associations
- ASMR Conferences & Research (new to 2016/17!)

Teaming up with Stream Restoration Inc. & BioMost Inc.

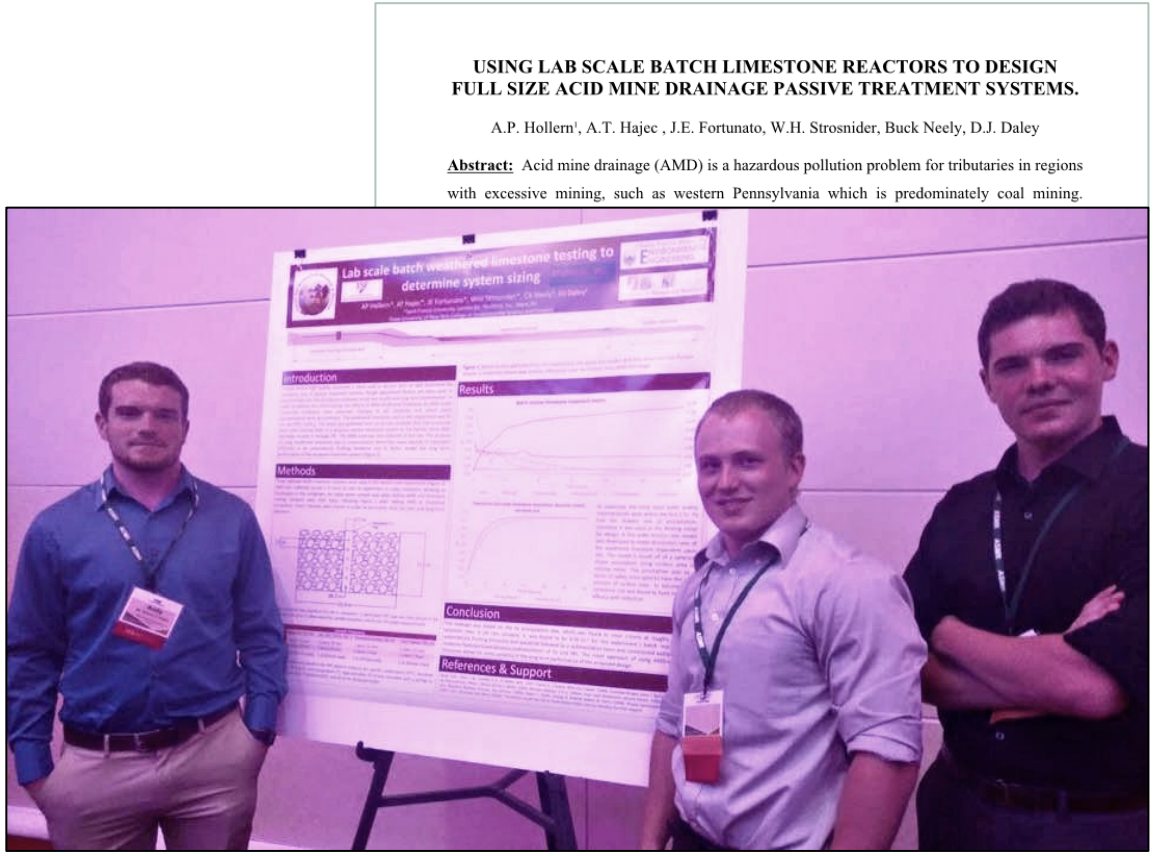
- Technical Assistance Grant Snapshot
  - Phase 1 & Phase 2
  - Local to our university, far for SRI
  - The “meat and potatoes” of hands-on learning!
- Puritan Treatment System project
  - Senior Project
    - Student monitoring & preliminary designs
- Neal Run System Evaluation
  - Incorporated into our Lab Measurements Course

Help with system audits

Phase 1: checked on and sampled sites within Blacklick Creek Watershed (2015)

Phase 2: More in 2017, led by Dr. LaBar!

Puritan Treatment System Renovations



K.C. Harvey Engineers

Neal Run System Evaluation

- Water Quality
- System Substrate
- Lab work for the students
  - Analytical equipment
  - QA/QC work
  - Technical report writing

Teaming up with Somerset County Conservation District

- Pollutant Loading Studies
  - Quemahoning Creek
    - Evaluating system success
  - Lamberts Run*
    - Evaluating system needs
    - Included in Field Measurements course

Lamberts Run, Image: Lydia Mignogna

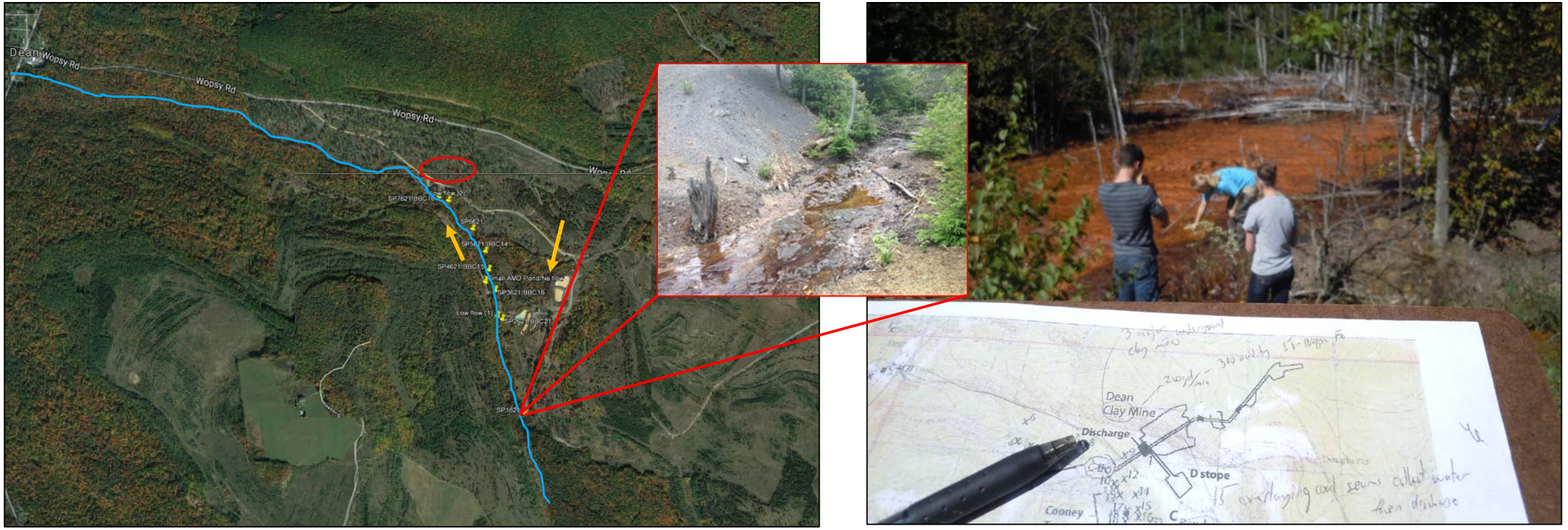
Teaming up with Blair County Conservation District

- Monitoring of Little Juniata Watershed *
  - Student internships and Co-op
  - Collection of hydraulic data
  - Collection of water quality data
    - Can the stream obtain a new designation?!

Teaming up with Clearfield Creek Watershed Association

- Brubaker Run
  - Stream and Discharge Pollutant Loading Study
  - Included in Field Measurements Course
- Bradley Run*
  - Included in multiple courses
- Swank Open Limestone Channel & Research*
  - Included in student research
- Weir Building and Installs
  - Incorporated into both summer research and Fluid Mechanics courses

Brubaker Run: AMD Influence Reconnaissance



Bradley Run In-Situ Co-treatment

Swank OLC: Monitoring & Research

CWRS: Installing Weirs since 2008!

Teaming up with ASMR

- ASMR Preceding Geo-referencing Research*
- ASMR Student Chapter
- Bringing undergrad students to ASMR Conferences!
  - Tupelo, MS (3 students)
  - Oklahoma City, OK (2 students)
  - Spokane, WA (12 students)
  - Morgantown, WV (11 students)

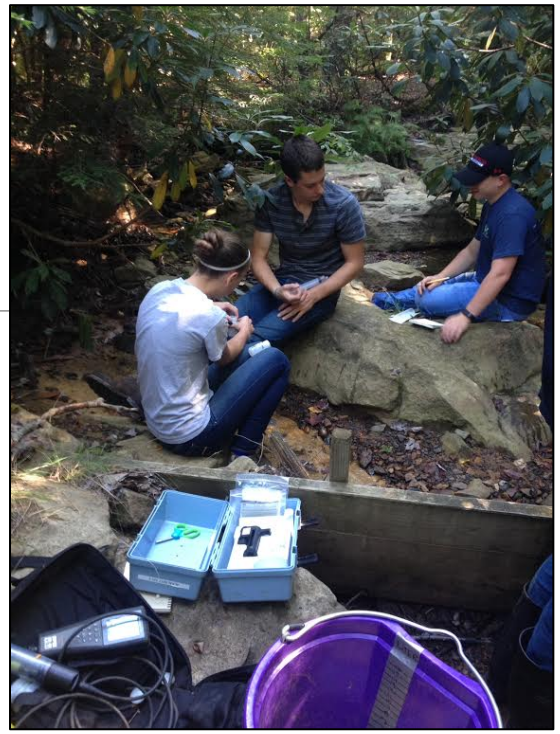
General Volunteer Work

- Stream garbage clean ups
- Tree planting for various organizations
- Native Transplanting
- Outreach Events

What's Next for CWRS?

- Finish pollutant monitoring studies
  - Start others!
- Aid in 2nd phase of SRI snapshot work.
- Aid in work to get Puritan system renovations up and running!
- Continue to go after funding for building weirs at the drop of a hat.
- Continue monitoring Bradley Run site since new municipal treatment plant is on-line.
- ASMR Geolocation continuation, we hope!

Student Experience in Summary



- Hands-on Field experience to back up in-class concepts
- Research and class projects with results affecting real world, real time decisions
- Conference opportunities and domain knowledge for professional networking
- Gain knowledge and respect of the organizations involved in reclamation as well as the steps to fund/design/ implement these initiatives

Acknowledgments

Morgan Whited

Dr. Julie Labar

Dr. Bill Strosnider

Dr. Art Rose

Melissa Reckner and The Kiski-Connemaugh Stream Team

Stream Restoration Inc.

BioMost Inc.

Somerset County Conservation District

James Eckenrode and Blair County Conservation District

Questions? Comments?