

Attachment 1

**The University of Pittsburgh Master Agreement**  
**Contract number: 44000011482**  
**Agency Request - Work Plan**

*(Agency to complete and provide to University)*

*If University Principal Investigator is known, please incorporate their contact info below, otherwise complete and forward this form to:*

*Jennifer E. Woodward, PhD*

*Email: [jew7@pitt.edu](mailto:jew7@pitt.edu)*

*Phone: 412-624-7405*

**Agency and Project Name:**

Pennsylvania Department of Environmental Protection  
Bureau of Mining Programs

“The Effects of Subsidence Resulting from Underground Bituminous Coal Mining on Surface Structures and Features and on Water Resources: Fifth Act 54 Five-year Report.”

**Objective:**

The objective of the project is to prepare a report that summarizes all structure, land, stream, water supply and wetland impacts that have occurred during from the period of August 21, 2013 through August 20, 2018. The information contained in the report is derived from various sources including permit applications, map records, inspectors' observations, investigation files, mine subsidence insurance records, geographic data layers, and surveys of mine operators and property owners.

Is this a continuation of services?  YES  NO

If yes, previous Purchase Order Number: \_\_\_\_\_

**Time Frame of Project (enter dates):**

From: From start date of the Purchase Order

To: January 31, 2020

**Project Site:** *(Please list location where work will be performed)*

University of Pittsburgh  
Department of Geology and Environmental Science  
200 SRCC  
4107 O'Hara Street  
Pittsburgh, PA 15260

**Statement of Work:** *(Include here or as separate attachment)*

In 1994, the Pennsylvania General Assembly amended the Bituminous Mine Subsidence and Land Conservation Act by removing the absolute protection afforded to dwellings in place on April 27, 1966 and by adding new requirements relating to the repair of subsidence damage and the replacement of water supplies affected by underground mining operations. Due to this amendment change, the General Assembly included a statutory section requiring the PADEP to compile information regarding the effects of underground mining on surface structures and features and on water resources, including sources of public and private water supplies. The General Assembly further directed the PADEP to utilize the service of professionals or institutions recognized in the field in preparing this assessment.

**Confidential Information:** *(If Agency confidential information will be part of this scope of work, please provide details on what is considered confidential. If no Agency confidential information is involved, insert 'N/A')*

The UNIVERSITY agrees to protect the confidentiality of the COMMONWEALTH'S information. The COMMONWEALTH agrees to protect the confidentiality of UNIVERSITY'S confidential information. In order for information to be deemed confidential, the party claiming confidentiality must designate the information as "confidential" in such a way as to give notice to the other party. The parties agree that such confidential information shall not be copied, in whole or in part, except when essential for authorized use under this Contract. Each copy of such confidential information shall be marked by the party making the copy with all notices appearing in the original. Upon termination or cancellation of this Contract or any license granted hereunder, the receiving party will return to the disclosing party all copies of the confidential information in the receiving party's possession, (other than one copy of copyrighted works, which may be maintained for archival purposes only). Both parties agree that a material breach of these requirements may, after failure to cure within the period specified in this Contract, and at the discretion of the non-breaching party, result in termination for default.

**Review of Copyright Ownership:** Both parties shall discuss the anticipated intellectual property (IP) that will be developed as part of the scope of work for Project Tasks and shall mutually designate the copyrightable works to be created and the ownership thereof. To facilitate this discussion, the Agency has attached its proposed inventory of copyrightable works to be created and has proposed, in consultation with Agency Legal Counsel, a designation of the item(s) as either 1) a Work Made for Hire/University Receives a Non-Exclusive License or 2) Purchase Orders Vesting Title in the University and Granting a Non-Exclusive License for the Commonwealth.

- a.) Work Made for Hire / University Receives a Non-Exclusive License

**Reporting:** (Standard reporting is monthly. List additional or different reporting requirements that are required for the project)

- 1) September 01, 2017 – Project begins
- 2) March 2018 – Progress meeting
- 3) June 2018 – Progress meeting
- 4) September 2018 - Progress meeting
- 5) January 2019 - Progress meeting
- 6) April 30, 2019 – Draft of final report submitted to the Department
- 7) May 31, 2019 – Department returns comments on final report to the University
- 8) August 31, 2019 – Final report provided to Department

**Federal Pass Through Information:**

If funding for this project stems from a Federal Agency, the source of these funds must be disclosed notifying the University of the respective percentages of state funds and federal funds that will be utilized for payment for this project. The following information is required for the University to provide a quote.

Prime Award Number: S17AP20001  
Federal Agency: Department of the Interior  
Sub-Agency: Office of Surface Mining Reclamation and Enforcement

Allowable indirect cost percentage for Federal Agency/Sub-Agency above:  
Catalog of Federal Domestic Assistance (CFDA) number (if applicable):

Percentage of federal funding: 50 %  
Percentage of state funding: 50 %

If at any time, the funding sources or percentages are changed it is the responsibility of the Agency to notify the University. If Federal funds are increased, the University has the right to revise the indirect costs at that time or anytime that the percentage of Federal Funds has increased. The Agency will be responsible for payment of additional costs associated with the change in funding source or change in funding percentages.

Signature attesting to Funds appropriated for Project:

 5/1/17  
Agency Head or Designee Date

(The Agency has the option to competitively solicit the procurement with other suppliers if the University's proposed budget is not considered reasonable).

Attachment 2

The University of Pittsburgh Master Agreement  
Contract No. 440001 1482  
DRAFT UNIVERSITY Response - Project Template  
(To be completed by UNIVERSITY and returned to requesting Commonwealth Agency)

**Scope of Work:** - Specify the research project period of performance, etc. from Exhibit A, Special Terms and Conditions, Section 3.C.(b) – Scope of Work Requirements.  
The period of performance is September 1, 2017 to February 28, 2020. See Exhibit A for Scope of Work.

**Cost Information:** (attach detailed and summary budgets in Excel format)

The total estimated cost of this project is \$ \$794,305.

The contract line items and budget line items shall be provided in the following:

Personnel: \$408,725

Operational (Includes Expendable Equipment and Supplies): \$2,750

Subcontracting (Includes Purchased Services): \$159,419

Travel: \$4,900

Administrative Fees (Sometimes referred as Overhead, Indirect Cost, or F&A): \$218,511

Capital Equipment: none

The University shall provide cost to purchase and the cost to rent the required capital good or capital equipment for the time period of the project. Agency will review and determine the method to acquire the required good or equipment. The decision of rental or purchase shall be at the sole discretion of the Agency. All capital equipment remains commonwealth property.

**Management Plan and Staffing:**

“Key Personnel” are defined as individuals who contribute to the scientific development or execution of a project in a substantive way. The program director/principal investigator (PD/PI) is always considered Key Personnel. The PD/PI may designate other Key Personnel if applicable and necessary for the Scope of Work. Key Personnel who have not yet been named shall be identified when they join the project. When new Key Personnel are named, the Principal Investigator will notify the Commonwealth Agency in writing prior to charging their time to the project.


	<b>University of Pittsburgh Staff</b>	<b>Carnegie Museum of Natural History Staff:</b>
Key Personnel:	<u>Daniel Bain, PhD (PI)</u>	<u>Steven Tonsor, PhD (co-PI)</u>
	Post-doctoral Researcher	<u>Alison Hale, PhD (co-PI)</u>
	Graduate Student Researcher	
	Undergraduate Students	
	<u>Anthony Iannacchione, PhD (co-PI)</u>	
	Graduate Student Researcher	
	Undergraduate Student Researcher	

**Review of Copyright Ownership:**

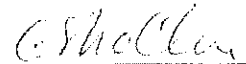
The University has reviewed the Agency's proposed IP inventory and proposes the following for further discussion:

**Approvals:**

The University of Pittsburgh Principal Investigator:

	6/14/17
Name and Title Daniel Bain, Assistant Professor	Date

The University of Pittsburgh Authorized Official:

	Christine McClure	6/23/17
Name and Title	Associate Director	Date

Commonwealth Agency Approval to proceed with "Final".

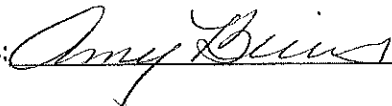
Agency must check one of the boxes below before forwarding to University in order to receive "final" budget.

Capital Equipment:     Purchase         Rent

Commonwealth Agency's Authorized Approver:

Date: August 23, 2017

Name and Title: Amy Berrios, Administrative Officer, Bureau of Mining Programs

Signature: 

This approves the attached University of Pittsburgh budget designated "August 22, 2017 REVISED BUDGET" submitted by Daniel J. Bain, PI, University of Pittsburgh, Department of Geology and Environmental Science. The total amount of the August 22, 2017 budget is \$792,558.

## Exhibit A – Scope of Work

The University of Pittsburgh Master Agreement  
Contract No. 44000 11482  
DRAFT UNIVERSITY Response – Project Template

The DEP will provide the following:

- Structure, water supply, and stream impact data from the Bituminous Underground Mining Information System (BUMIS) in a useable format for the period of August 21, 2013 through August 20, 2018.
- Access to necessary maps (e.g. Topographical, Six-month projection, Environmental Resource, Operations, Subsidence control plan, USDA Soil), application permit files, wetland data, stream monitoring information, biological scoring information, well monitoring data, GIS data and any other information that may be available to use for the assessment .
- A Project Manager for the Bureau of Mining Programs. This person can also serve as a liaison to industry representatives or other Bureaus within the Department of Environmental Protection (DEP).
- A contact person for the California DMO. This person can also serve as a liaison to industry representatives.
- A schedule for regular updates via phone, email, or in person to ensure effective communication is taking place.
- A schedule for quarterly billing.

The deliverable item will be a comprehensive report including all supporting data and analysis used to produce findings in the report.

### **Assessment Items**

#### **A.) Mining Operations**

Determine and report the number of acres of land undermined during the pre-determined period (organized by longwall, room-and-pillar, and retreat mining methods).

Map/Illustrate the acres of land undermined during the pre-determined period by mining operation, organized by longwall, room-and-pillar, and retreat mining methods.

#### **B.) Structure Impacts**

Determine and report the number of structures undermined (during the pre-determined period) organized by longwall, room-and-pillar, and retreat mining methods.

Map/Illustrate the location of structures undermined during the pre-determined period by mining operation, organized by longwall, room-and-pillar, and retreat mining methods.

Evaluate and report structure impacts in the following categories: a.) no reported subsidence effects, b.) reported subsidence effects c.) deemed by the DEP to be affected by mining-induced subsidence.

Evaluate and report the outcome of all the claims made for structure damage and subsidence including time required for determination, repairs, and resolution of the claim.

### **C.) Water Supply Impacts (e.g. wells, springs)**

Determine the number of water supplies undermined during the pre-determined period (categorized by longwall, room-and-pillar, and retreat mining methods and by type of supply).

Map/Illustrate the number of water supplies undermined during the pre-determined period by mining operation, organized by longwall, room-and-pillar, and retreat mining methods.

Compile the number of water supplies reporting diminution or degradation for the following categories: a.) no reported effects, b.) reported to be affected by mining, c.) deemed by the DEP to be adversely affected by mining.

Complete an analysis of the outcome of all the claims reporting diminution or degradation, including time required for determination, installation of temporary supplies, and final resolution of the claim. How many claims required litigation? Are there any long-standing unresolved claims? Assess why some claims take longer than others.

### **D.) Groundwater**

Compile the number of groundwater wells vs the number of public water supplies used for stream augmentation.

Complete an evaluation of the hydrologic monitoring data related to groundwater effects. Are the methods and sampling frequency adequate? Are the data reported realistic, complete and of useable quality?

### **E.) Streams**

Evaluate the reported hydrologic monitoring data related to streams, stream flow measurements, and piezometer data. Are the methods and frequency of sampling being used since the fourth report adequate? Are the data sets realistic, complete and of useable quality?

Determine the total lengths of streams undermined during the pre-determined period organized by longwall, room-and-pillar, and retreat mining methods.

Compile and report the stream reaches (in linear feet and meters) by the following categories: a.) no reported effects, b.) affected by mining-induced pooling, c.) affected by mining-induced flow loss.

Map/Illustrate the length of streams undermined during the pre-determined period by mining operation, organized by longwall, room-and-pillar, and retreat mining methods). Distribute the stream reaches (in linear feet and meters) into the following categories: a.) no reported effects, b.) affected by mining-induced pooling, c.) affected by mining-induced flow loss.

Compile and evaluate the number of claims of stream flow loss and pooling.

Evaluate the results of all the claims made for stream flow loss and pooling, including timelines for determination, repair, and resolution of the claim.

Compare the pre and post mining biological scores on five pre-determined stream sections.

Identify all stream mitigation projects that occurred during the pre-determined period and evaluate the effectiveness of stream mitigation and recovery in terms of the roles of PADEP and operators, and the timeline and outcome (flow and biology).

#### **F.) Wetlands**

Compile the acreage of wetland areas undermined, categorized by the type, size, and hydrology of the wetland (organized by longwall, room-and-pillar, and retreat mining methods)

Compile the acreage of the impacted wetland areas undermined, categorized by the type, size, and hydrology of the wetland (organized by longwall, room-and-pillar, and retreat mining methods)

Identify and describe all wetland mitigation projects that occurred. Compare net wetland loss to gain by type, acreage, function, and hydrology. Was the habitat created comparable to the habitat lost?

#### **G.) Final Report (due August 20, 2019)**

A draft report must be provided to the DEP no later than April 30, 2019 and a final report by no more than one year after August 20, 2018, when data collection ends. The final version of the report must be suitable for presentation to the *Governor, the General Assembly, and to the Citizens Advisory Council.*

The report must contain the following sections:

- i) Introduction: Provides specific background on requirements of the report and what is covered in this specific report. Includes explanation of acronyms, definitions, timeline, and data, and methods used.
- ii) Structures: Documentation of structural impacts in the 5-year period. Include reports of general land subsidence.
- iii) Water Supplies: Documentation of water supply losses and impacts reported in the 5-year time frame.
- iv) Groundwater: Documentation of general impacts to the groundwater regime in the 5-year time frame.
- v) Streams: Documentation of the impacts of longwall, room-and-pillar, and retreat mining methods to streams in the 5-year period.
- vi) Wetlands: Documentation of wetland impacts during the 5-year period.
- vii) Recommendations: In a list format. Program improvements can be suggested.
- viii) Summary and Conclusions: Overall evaluation of the program for this assessment period.

Include maps that illustrate the assessment items and a bibliography.