**LEWISBURG AREA SCHOOL DISTRICT**

**LESSON PLAN**

**Teacher Name: \_\_\_\_\_Van Wagner\_\_\_\_\_\_ Class: \_\_\_\_\_\_\_\_\_AP Enviro**

**Topic: \_\_\_Frack focus and biobottle Date of Lesson: \_\_Class #76**

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| **LESSON ESSENTIAL QUESTION**: | **Big Idea:**  How do living things interact in positive and negative outcomes?  **Essential Question:**  In what ways to humans interfere with animals in the wild? |
| **STANDARD / LEARNING TARGET:** | **Core standards addressed with this lesson:**  **7.4.9.A:**  Compare and contrast the effect of the physical systems on people across **regions** of the United States.  **7.4.9.B:**  Compare and contrast the effect of people on the physical region across **regions** of the United States.  **7.4.12.A:** Analyze the global effects of changes in the physical systems.  **7.4.12.B:** Analyze the global effects of human activity on the physical systems.  **S11.D.1.3.3:** Explain factors (e.g., nutrient loading, turbidity, rate of flow, rate of deposition, biological diversity) that affect water quality and flow through a water system.  **4.8.10.C.** Analyze how human activities may cause changes in an ecosystem.  \* Analyze and evaluate changes in the environment that are the result of human activities.  \* Compare and contrast the environmental effects of different industrial strategies (e.g., energy generation, transportation, logging, mining, agriculture). |
| **ACTIVATING STRATEGIES**:  (Anticipatory Set) | Bell Ringer: What are the 4 criteria for something to be a mineral?  Solid  Naturally Occurring  Definite Chemical formula  Inorganic |
| **KEY VOCABULARY**: | Hydrologic, volume, velocity, consumption. |
| **RESOURCES:** | Teacher slide show, demonstration, and lecture. |
| **TEACHING STRATEGIES**: | Part II: Is natural gas a mineral?  According to PA state law it is. It is regulated under mineral rights.  Arg!  Begin Chapter 11 (assign limited chapter questions)  Complete Frack Focus Lab  Discuss Results.  Wrap-up bio bottles!  Assumptions about beginning:  pH of Limestone Run was 7 when added to bottle.  What is pH now?  What are key changes you can visually see?  Either return your contents outside or keep biobottle for home.  Lab Report MUST include a **photo** of your biobottle  Title  Purpose  Materials  Methods  Data / Calculations (must have AT LEAST these 3 topics)  pH  biotic changes over time  other physical / chemical changes over time  Discussion  Restate purpose  Restate key results  AT LEAST 2 sources of error  At least 1 question/ future study  **What would you do differently if you did this again?**  \*\*Hand in raw, data / observation notes with dates too. |
| **EXTENDED THINKING ACTIVITY / ASSIGNMENT:** | How does what we studied today relate to our daily lives? |
| **SUMMARIZATION/ CLOSURE:** | Exit Bell Ringer- how are you preparing for the AP exam? |