**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?SolidNaturally OccurringDefinite Chemical formulaInorganic |
| **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 LabDiscuss 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 biobottleTitlePurposeMaterialsMethodsData / Calculations (must have AT LEAST these 3 topics) pH biotic changes over time other physical / chemical changes over timeDiscussion Restate purpose Restate key results AT LEAST 2 sources of errorAt 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? |