Earth Science Institute II June 21, 2010
Day 1 Correlation of EarthComm Curriculum and HSCE's

EarthComm Curriculum Unit Code	
EDG1 = Earth's Dynamic Geospheres: Chapter 1, Volcanoes **EDG2** = Earth's Dynamic Geospheres: Chapter 2, Plate Tectonics **EDG2** = Earth's Dynamic Geospheres: Chapter 3, Earthquakes **EFS1** = Earth's Fluid Spheres: Chapter 1, Oceans **ENR1** = Earth's Natural Resources: Chapter 1, Energy Resources	**ENR3** = Earth's Natural Resources: Chapter 3, Water Resources **ESE1** = Earth System Evolution: Chapter 1, Astronomy **ESE2** = Earth System Evolution: Chapter 2, Climate Change **ESE3** = Earth System Evolution: Chapter 3, Changing Life

Artesian Well Location	
EarthComm Connections	ENR3 - Water Resources, Activity 2, p. R156 ENR3 - Water Resources, Activity 4, p. R169

Learning Outcomes:	**HSCE**
o Explain, using specific examples, how a change in one system affects other Earth systems.	E2.1C
o Compare and contrast surface water systems (lakes, rivers, streams, wetlands) and groundwater in regard to their relative sizes as Earth's freshwater reservoirs and the dynamics of water movement (inputs and outputs, residence times, sustainability).	E4.1A
o Explain the features and processes of groundwater systems and how the sustainability of North American aquifers has changed in recent history (e.g., the past 100 years) qualitatively using the concepts of recharge, residence time, inputs, and outputs.	E4.1B
o Explain how water quality in both groundwater and surface systems is impacted by land use decisions.	E4.1C

Centennial Mine Location	
EarthComm Connections	EDG1 - Volcanoes, Activity 3, p. G24 EDG1 – Plate Tectonics, Activity 3, p. G85

Learning Outcomes:	HSCE
o Discriminate between igneous, metamorphic, and sedimentary rocks and describe the processes that change one kind of rock into another.	E3.1A
o Explain the relationship between the rock cycle and plate tectonics theory in regard to the origins of igneous, sedimentary, and metamorphic rocks.	E3.1B
o Describe natural processes in which heat transfer in the Earth occurs by conduction, convection, and radiation.	E2.2C
o Describe the interior of the Earth (in terms of crust, mantle, and inner and outer cores) and where the magnetic field of the Earth is generated.	E3.2A
o Describe the differences between oceanic and continental crust (including density, age, and composition).	E3.2C

o Explain how plate tectonics accounts for the features and processes (sea floor spreading, mid-ocean ridges, subduction zones, earthquakes and volcanoes, mountain ranges) that occur on or near the Earth's surface.	E3.3A
o Explain why tectonic plates move using the concept of heat flowing through mantle convection, coupled with the cooling and sinking of aging ocean plates that result from their increased density.	E3.3B

Cliff Location	
EarthComm Connections	EDG1 – Plate Tectonics, Activity 2, p. G75 EDG1 – Earthquakes, Activity 4-p. G95

Learning Outcomes:	HSCE
o Describe natural processes in which heat transfer in the Earth occurs by conduction, convection, and radiation.	E2.2C
o Describe the differences between oceanic and continental crust (including density, age, and composition).	E3.2A
o Explain how plate tectonics accounts for the features and processes (sea floor spreading, mid-ocean ridges, subduction zones, earthquakes and volcanoes, mountain ranges) that occur on or near the Earth's surface.	E3.3A

Waterfall Location	
EarthComm Connections	EDG1 – Volcanoes, Activity 2-p. G16 ENR3 - Water Resources, Activity 2, p. R21 ENR3 - Water Resources, Activity 5, p. R186 EFS1 - Oceans, Activity 2, p. F14

Learning Outcomes:	HSCE
o Explain, using specific examples, how a change in one system affects other Earth systems.	E2.1C
o Compare and contrast surface water systems (lakes, rivers, streams, wetlands) and groundwater in regard to their relative sizes as Earth's freshwater reservoirs and the dynamics of water movement (inputs and outputs, residence times, sustainability).	E4.1A
o Explain how water quality in both groundwater and surface systems is impacted by land use decisions.	E4.1C
o Discriminate between igneous, metamorphic, and sedimentary rocks and describe the processes that change one kind of rock into another.	E3.1A
o Explain the relationship between the rock cycle and plate tectonics theory in regard to the origins of igneous, sedimentary, and metamorphic rocks.	E3.1B
o Analyze the interactions between the major systems (geosphere, atmosphere, hydrosphere, biosphere) that make up the Earth.	E2.1B
o Explain, using specific examples, how a change in one system	

affects other Earth systems. o Describe the major causes for the ocean's surface and deep water currents, including the prevailing winds, the Coriolis Effect, unequal heating of the earth, changes in water temperature and salinity in high latitudes, and basin shape.	E2.1C E4.2A

Brockway Mountain Location	
EarthComm Connections	ENR3 - Water Resources, Activity 8, p. R74 ENR3 - Water Resources Unit, pp. R80-R81

Learning Outcomes:	HSCE
o Explain why the Earth is essentially a closed system in terms of matter.	E2.1A
o Analyze the interactions between the major systems (geosphere, atmosphere, hydrosphere, and biosphere) that make up the Earth.	E2.1B
o Explain, using specific examples, how a change in one system affects other Earth systems.	E2.1C
o Identify differences in the origin and use of renewable (e.g., solar, wind, water, biomass) and nonrenewable (e.g., fossil fuels, nuclear [U-235]) sources of energy.	E2.2B
o Describe natural processes in which heat transfer in the Earth occurs by conduction, convection, and radiation.	E2.2C
o Describe renewable and nonrenewable sources of energy for human consumption (electricity, fuels), compare their effects on the environment, and include overall costs and benefits.	E2.4A

Hunter's Point Location	
EarthComm Connections	Inquiry, Nature of Science, All Units

Learning Outcomes:	HSCE
o Generate new questions that can be investigated in the laboratory or field.	E1.1A
o Evaluate the uncertainties or validity of scientific conclusions using an understanding of sources of measurement error, the challenges of controlling variables, accuracy of data analysis, logic of argument, logic of experimental design, and/or the dependence on underlying assumptions.	E1.1B
o Conduct scientific investigations using appropriate tools and techniques (e.g., selecting an instrument that measures the desired quantity—length, volume, weight, time interval, temperature—with the appropriate level of precision).	E1.1C
o Identify patterns in data and relate them to theoretical models.	E1.1D
o Describe a reason for a given conclusion using evidence from an investigation.	E1.1E

o Critique whether or not specific questions can be answered through scientific investigations.	E1.2A