PHENOMENA, DRIVING QUESTIONS AND STORYLINE

LAND, WATER, AND HUMAN INTERACTIONS

How do geoscience processes and human activities change Earth's surface?

Phenomenon	Driving Questions	Guiding Questions	Activities	PE	Storyline/Flow (How an activity leads to subsequent activities)
Land development by humans has an impact on the environment.	How can people mitigate the negative impact on the land and water when building new construction?	What is the human impact of building construction? (Activity 1)	1, 15, 16	MS-ESS3-3	Human population growth leads to the need for more use of land and water resources and more impact on these resources. Responsible development reduces this impact where possible.
		What location is best for a new school and fields? (Activity 15)			
		How can you design the new school and fields to mitigate the human impact on the environment? (Activity 16)			
Human activities disrupt water quality.	How do human activities on land negatively impact water quality?	Which liquid best dissolves salts? (Activity 2)	2, 3, 4. 5, 6	MS-ESS3-3	Substances dissolved in the earth's water affect water quality and animal habitats. Water movement is driven by gravity though and on top of soil. As it moves, it can pick up and dissolve contaminants such as excess nutrients from fertilizers. These contaminants reduce water quality.
		What can water-quality indicators show? (Activity 3)			
		How can organisms living in a stream indicate water quality? (Activity 4)			
		Can using fertilizers have harmful effects on the environment? (Activity 5)			
		How does nutrient runoff effect the environment? (Activity 6)			

PHENOMENA, DRIVING QUESTIONS AND STORYLINE

LAND, WATER, AND HUMAN INTERACTIONS

How do geoscience processes and human activities change Earth's surface?

Phenomenon	Driving Questions	Guiding Questions	Activities	PE	Storyline/Flow (How an activity leads to subsequent activities)
As water moves through the water cycle, it can dissolve and carry substances from one location to another.	How does the water movement through the water cycle move energy and matter?	Which liquid best dissolves salts? (Activity 2) How does moving water affect the areas through which it flows? (Activity 7) How does water move around the planet? (Activity 8) How can we mitigate modern society's harmful effects on Earth's water? (Activity 9)	2, 7, 8, 9	MS-ESS2-4	Water moving through the soil and on top the surface is part of a greater system of water movement. This global system is the water cycle and it moves water and contaminants around the planet.
Humans disrupt geologic processes.	How do human activities interact with the processes of erosion and deposition?	How does a topographic map show landforms? (Activity 10) How can topographic maps help you evaluate potential building sites? (Activity 11) How can we reduce the effects of ocean waves on coastal areas? (Activity 12) What happens when earth processes move soil and rocks from one place to another? (Activity 13) What has been the human impact on geologic processes of the Mississippi River Delta? (Activity 14)	10, 11, 12, 13, 14	MS-ES2-2	Water running through the land can move sediments from one location to another. The geologic processes of erosion and deposition have been occurring for millions of years but humans have disrupted this natural movement of materials and have changed land formations. Building on the land accelerates the movement of sediments. The outcome of theses geologic processes are altered when wetlands are filled in, farms are created, vegetation is removed, and/or the hard surfaces of buildings are installed.

PHENOMENA, DRIVING QUESTIONS AND STORYLINE

LAND, WATER, AND HUMAN INTERACTIONS

How do geoscience processes and human activities change Earth's surface?

Phenomenon	Driving Questions	Guiding Questions	Activities	PE	Storyline/Flow (How an activity leads to subsequent activities)
Engineering can help mitigate the problem of habitat destruction and land mismanagement.	How can we engineer structures to mitigate environmental impact?	How does moving water affect the areas it flows through? (Activity 7) How can we reduce the effects of waves on coastal areas? (Activity 12) What has been the human impact on geologic processes of the Mississippi River Delta? (Activity 14) How can you design the new school to mitigate the human impact on the environment? (Activity 16)	7, 12, 14, 16	MS-ETS1-1 MS-ETS1-2	Changes in the land and water can be monitored to help in the effort to mitigate impact. People can develop design solutions while building to reduce negative outcomes on the environment. Humans controlling water flow does not always reduce the impact, but thoughtful designs can be beneficial. Building designs can evaluated to determine how well they meet specific design criteria and constraints in an effort to reduce impact on the environment.