Protecting the Landforms in Our Community:

A FIELD GUIDE

By: The Second Grade scholars at LEAD 359

TABLE OF CONTENTS

CHAPTER 1

The Challenge and the Impact

Why should we care about landforms and bodies of water in New York?

Have you ever heard of New York's changing shorelines?

A shoreline is where land and water meet. Shorelines are eroding and this affects people and animals. Flooding causes erosion and then people and animals homes are destroyed. Heavy rain causes water levels to rise which causes flooding. Flooding can also be caused by trash blocking the sewers and this affects the community we live in.

People are affected because their homes can be flooded or washed away. We interviewed Ja'Juan Gibson who works for the Bronx River Alliance. According to our interview with Ja'Juan, peoples houses can fall into the water because the land erodes. Animals are affected because they dig holes to live in that then get flooded and they have to relocate or move. According to Ja'Juan, too much water can sweep away animal homes.

In conclusion, shoreline erosion is affecting people and animals.

Erosion at the Bronx River Forest

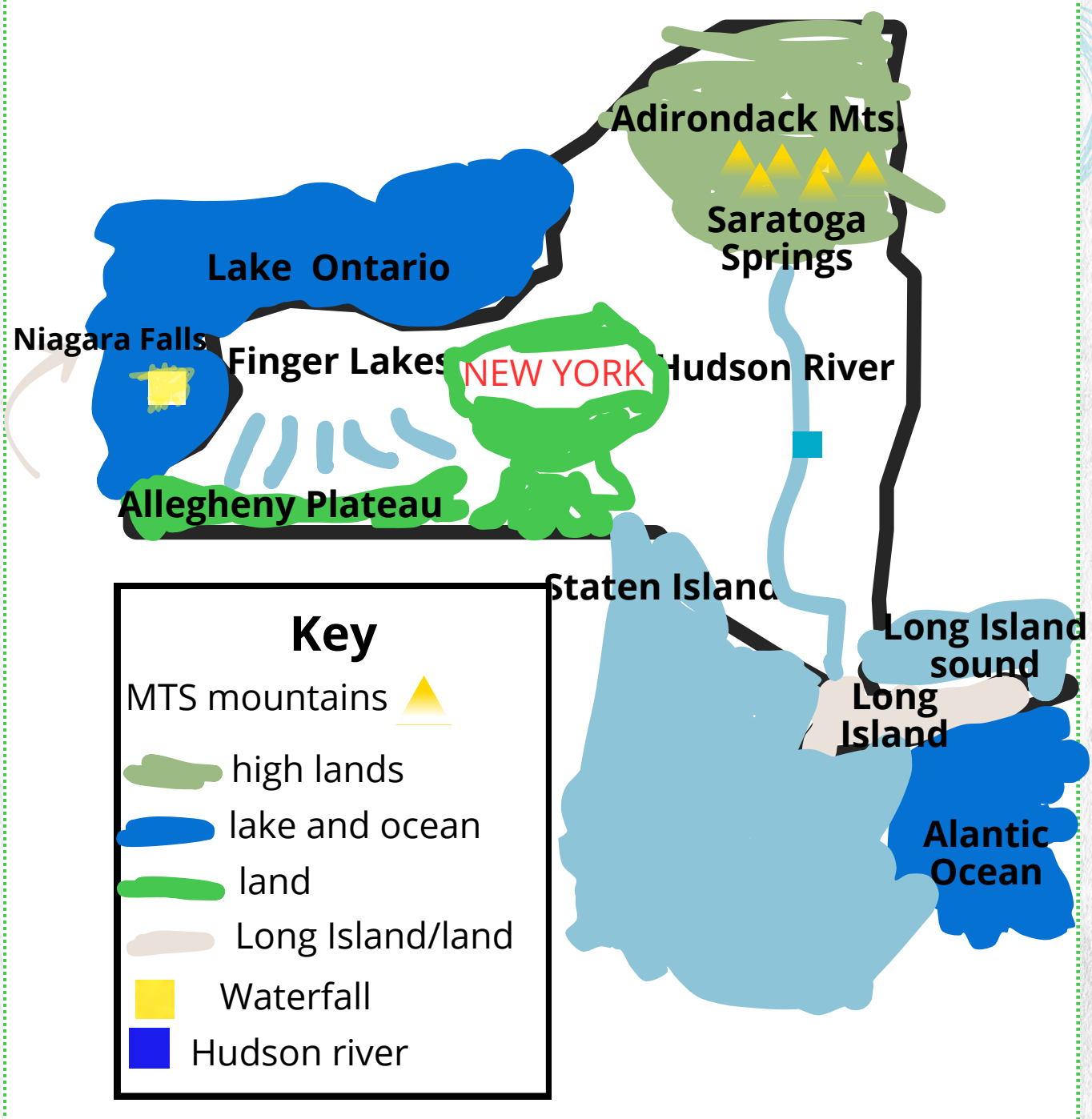
CHAPTER

2

Landforms & Bodies of Water in New York

Physical Map of New York

Here is a map of the landforms in New York.



Niagara Falls

How Niagara Falls Came to Be

Niagara Falls is a set of three very big and beautiful waterfalls that weren't always there. When the Ice Age ended, the ice started to melt, and lots of water began to flow. Over time, this made the big cliff and the waterfalls we call Niagara Falls.

Ice Age ended and ice melted and water began to flow.

- [x] SLOW
- [ ] FAST

Water moved across land and it came across a place where water wasn't all the same.

- [x] SLOW
- [ ] FAST

Powerful water washed away soft rock faster than hard rock and over time made big cliff and the water falls.

- [x] SLOW
- [ ] FAST

Niagara Falls

Adirondack Mountains

How the Adirondack Mountains Came to Be

The Adirondack Mountains in New York are unique forming a giant circle 160 miles across and a mile high unlike the usual mountain ranges. Rocks in these mountains are incredibly old, more than a billion years old.However the mountains themselves are quite new because they began forming about 5 million years ago new mountains from rocks.

The glacier moving slowly, sculpted the mountains appearance.

- [x] SLOW
- [ ] FAST

Hot magma pushed land up,forming the Adirondack mountains.

- [x] SLOW
- [ ] FAST

Heat expands up and pushes land causing a mountain.

- [x] SLOW
- [ ] FAST

Adirondack Mountains

Howe Caverns

How Howe Caverns Came to Be

Howe Caverns came to be because they were formed through a series of fascinating natural processes. Inside the Howe Caverns, today water continues to drip, shaping the Howe Caverns.

Sea creatures died and their shells on the seafloor formed layers of limestone.

- [x] SLOW
- [ ] FAST

Limestone layers were exposed to the surface and began to erode due to water action.

- [x] SLOW
- [ ] FAST

Water with carbon dioxide seeped through cracks in the limestones and dissolved the rocks creating underground passages.

- [x] SLOW
- [ ] FAST

Howe Caverns

Lake Erie and Lake Ontario

How Lake Erie and Lake Ontario Came to Be

Lake Erie and Lake Ontario are two of the Great Lakes. These are some of the biggest lakes in the world.

When the world started to warm up, the glacier melted and turned to water.

- [x] SLOW
- [ ] FAST

The water filled up deep holes and valleys that the glacier had made in the ground.

- [ ] SLOW
- [x] FAST

Glaciers shaped the land around them by moving dirt and rock.

- [x] SLOW
- [ ] FAST

Lake Erie and Lake Ontario

Manhattan

How Manhattan Came to Be

Manhattan is a bustling island at the heart of New York City that stretches back millions of years.

It was formed naturally over time by a combination of tectonic movment

- [ ] SLOW
- [x] FAST

Huge sheets of ice moved across the land around 20,000 years ago.

- [x] SLOW
- [ ] FAST

The slow joining and breaking away of landmasses

- [x] SLOW
- [ ] FAST

Manhattan

CHAPTER 3

Changing Landforms and Shorelines

How Landforms Change Quickly and Slowly

Landforms can change slowly and quickly. Landforms are a natural feature of the earths surface, like mountains ,valleys or plains. Landforms change quickly because of big weather events. For example, tectonic plates cause earthquakes and as a result the land splits into pieces. However, landforms change slowly because of weathering and erosion. For example, waves can crash into rocks and it chips or breaks off pieces of rocks so it makes the rock smaller overtime. To summarize, landforms can change slowly and quickly.

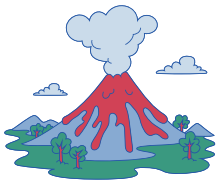
Erosion causes slow changes.

Earthquakes cause fast changes.

The Causes and Effects of Changing Landforms

Weathering breaks down rocks into smaller pieces and erosion moves them to a new location

Magma from a volcano hardens into solid.



Tectonic plates move around causing earthquakes which pushes land up or breaks it apart

Changing Landforms

Shorelines change shape and new rivers, canyons and valleys are formed

Hardened lava turns into new mountains or an island is created

New mountains and valleys are formed because of land being pushed up or apart

CHAPTER 4

Addressing the Challenge

Solution: Living Shorelines

How It Works

Oysters are sea creatures that make special cement substance that help them stick together and stick to other materials. The roots of plants grow deep into the soil and hold it tight so the water can't carry it away.

How It Solves the Problem

Reefs that act like barriers these reefs slow down the water before it hits the shore making it much gentler. This means less soil gets washed away. Plant roots act like a net catching the soil and keeping the beach from getting smaller.

Living Shorelines

Solution: Sea Walls

How It Works

Sea walls are made of tough material like concrete. They are built high so they can keep water away from destroying shorelines. The big waves that come in are blocked by the wall.

How It Solves the Problem

Sea walls solve the problem because when the waves hit the sea wall the water bounces back. This keeps the water from washing away sand and soil. This stops the beaches from getting smaller and keeps the land from wearing away.

Sea Walls

Solution: Storm Surge Barriers

How It Works

Imagine a big door that can open and close! When the water is calm boats and wildlife can move freely through the open door. When a big storm comes and the sea tries to push too much water toward the land these barriers can close stopping the water from coming in too fast and too strong.

How It Solves the Problem

This is really important because big storm can lead to flooding and lots of fast erosion of our shorelines by stopping the big waves and slowing down the water these barriers help keep the beaches and land from washing away .

Storm Surge Barriers

ABOUT THE AUTHORS

Madison A.

Madison attends Concourse Village Elementary School. She loves drawing and playing outside. She wants to protect the shorelines because shoreline erosion affects both people and animals.

Danica A.

Danica is 8 years old and she likes to use her laptop at home. She also likes to play games with her classmates. Danica goes to Concourse Village Elementary School and her favorite subject is gym, art, ELA and science. She is learning about landforms and she wants to know “How can we save the shorelines?”.

ABOUT THE AUTHORS

Abdoullah B.

Abdoullah is 7 years old and he goes to Concourse Village Elementary School. He plays games and soccer. Shorelines are eroding and Abdoullah thinks we should save them because it is the home of animals. If they continue to erode, it will wash away so Abdoullah says, ‘please save the shoreline from eroding.”

Emdallayee B.

Emdallayee is 9 years old. He is American and African. He attends Concourse Village Elementary School. He loves math, physical education and science. He enjoys soccer. Also, he is good at typing on a computer. Emdallayee thinks landforms are cool to see. He likes plateaus, streams and waterfalls. He knows that if land keeps getting eroded we won’t have enough land to use.

ABOUT THE AUTHORS

Christopher B.

Christopher likes soccer, football and music. He likes dancing but is shy. He is also into shows and movies.

Rowell C.

Rowell Cabrera is 9 years old. He likes reading and math because it is good for him. The problem he worked on is that people have to move because flooding. Erosion is causing people to move and we have to help solve the problem.

ABOUT THE AUTHORS

Ashley C.

Ashley is a 7 year old girl. She likes learning about shorelines and she knows that erosion is bad because erosion can make houses fall in rivers and the water levels rise. Additionally, Ashley likes to play games with her friends.

Yassielies D.

Yassielies is 8 years old and she likes flowers and plants. She is from the Bronx and she has many friends. She also loves her family. Yassielies wants to learn more about saving her cities environment.

ABOUT THE AUTHORS

Noah J.

Noah is an 8 year old boy that loves playing with his sister. He loves games and going to school. Noah thinks that if erosion keeps happening then there is going to be no homes or land. He thinks that we need to keep working to stop erosion.

Riley J.

Riley is a scholar at Concourse Village Elementary School. He enjoys watching tv and playing games. He also enjoys soccer. Riley thinks saving the shoreline is important becauseif it keeps eroding people won't have beaches and animals will lose their homes.

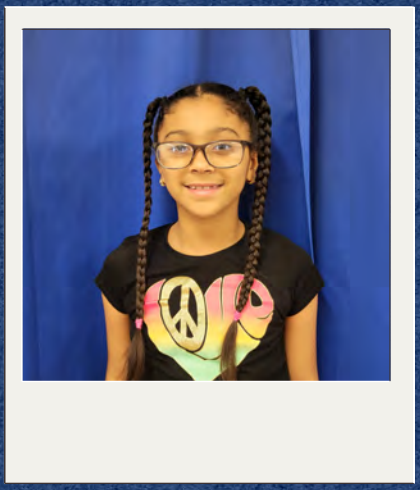
ABOUT THE AUTHORS

Safiatou K.

Safiatou is 8 years old and she goes to Concourse Village Elementary School. She likes to play games and learning about the environment. She thinks that it is important to protect landforms and shorelines because it's our home. Furthermore, she thinks shorelines are important because animals need homes but they are being washed away.

Limay M.

Limay is a girl who is 8 years old. She loves to learn and investigate things. She goes to Concourse Village Elementary School. Limay learned that shorelines are where land and water meet. People can get hurt and animals can die. She is worried about what can happen to the shoreline if it continues to erode.



ABOUT THE AUTHORS

Letizia N. A.

Letizia is and 8 year old girl. She is African American and Italian. Letizia loves art and gymnastics because she thinks it is fun. It is important to save the shorelines because if they erode the water will get polluted and animals can die!

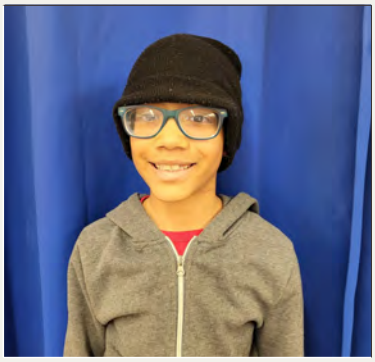
Javier L.

Javier is a student at Concourse Village Elementary School. He is 9 years old and he thinks saving the environment helps people. He learned that a shoreline is where water meets land.

ABOUT THE AUTHORS

Angel N.

Angel is 9 years old and he goes to Concourse Village Elementary School. He likes to add and subtract and he likes going to school. Angel likes living things like flowers. He thinks protecting landforms is important because if a piece of land breaks away then this is called erosion. Angel thinks that we must work together to save the shoreline.



Ashley P.

Ashley is a scholar at Concourse Village Elementary School. She is 9 years old and likes to play basketball and do gymnastics. Also, sometimes she likes to read or do math games with friends. She thinks that it is important to care for out environment and keep animals safe.

ABOUT THE AUTHORS

Aaron P. O.

Aaron is 9 years old and he likes math. He likes learning about different landforms and bodies of water. He thinks that we need shorelines because some animals dig holes to live in near the shorelines. So we must continue to save the shorelines.

Aiden P. O.

Aiden is 9 years old and he likes to do Science and play with his friends. He lives in the Bronx and is a student at Concourse Village Elementary School. He likes to meet new people as well. Aiden likes learning about nature, landforms and shorelines. Aiden thinks that saving the shoreline from erosion is important for the community.

ABOUT THE AUTHORS

Jadiel R.

Jadie is 9 years old and he goes to Concourse Village Elementary School. His favorite subject is science and he likes learning about tectonic plates. He knows that they cause earthquakes and it breaks the land into different pieces. He stated that this causes erosion. He believes that we need to save the shorelines from erosion.

Jayden R.

Jayden is 9 years old and lives in the Bronx. He likes to play and his favorite subject is Science. He thinks it is important to save the environment.

ABOUT THE AUTHORS

Cataleya R. R.

Cataleya is an 8 year old girl who is Mexican and Puerto Rican. Cataleya loves to learn about landforms. She knows that shorelines are eroding. Cataleya loves doing math and learning new things. Shorelines are being washed away and she thinks that it is important because shorelines are where animals live and animals help us humans. If we don't take care of mother nature then mother nature won't take care of us.

Kimberly V.

Kimberly is a student at Concourse Village Elementary School. She enjoys reading books about fiction stories and doing math. She lives in the Bronx and is 9 years old in the 2nd grade. She thinks that helping the environment is important because it's our home and we must care for those that live near the shorelines because they might die and animals actually help our community.