

It's Raining, It's Pouring, It's Flooding! In Maricopa County

3RD—5TH GRADE
LESSON 5: SOLVE A
PROBLEM

Key Vocabulary

Weather	Conditions of the atmosphere over short periods of time.
Climate	How the atmosphere behaves over a long period of time.
Atmosphere	The gases that surround the Earth
Hydrosphere	All the waters on the Earth's surface, such as lakes and seas, and sometimes including water over Earth's surface, such as clouds
Precipitation	Rain, snow, sleet or hail that falls to the ground
Flash Flood	Sudden, fast water with little or no warning.
100-Year Flood	Having a 1% chance of an intense storm.
Hazard	Something that can cause harm
Rain Gage	A tool used to measure the amount of rain that falls.
Watershed	An area of land that drains to a particular lake, wash, stream, or river
Landform	A natural feature of the Earth's surface.
Monsoon	A change in weather pattern that brings moisture from the Gulf of California. The moisture combined with the heat fuels the storms known as the monsoon. Occurs between June 15 and September 30.
Dam	A barrier built across a river or stream to block the flow of water.
Levee	A raised area along the banks of a channel or stream (can be naturally occurring or man made)
Culvert	A tunnel carrying a stream or open drain under a road or railroad
Channel	A depressed linear area where water flows (can be natural or man made)
Retention Basin	An artificial lake with vegetation around the perimeter designed to hold back storm water
Urban	Having characteristics of a city or town
Pervious	A surface that allows liquid to pass through
Impervious	Not allowing liquid to pass through
Erosion	The gradual destruction of something from water, wind, or other natural agents.
Floodway	The channel of a river and the parts of the floodplain by it.
Floodplain	Low lying ground by a river and likely to flood.
Fresh Water	Water that does not come from the sea or ocean
Collection	When precipitation collects in the oceans, rivers, lakes, and streams.
Runoff	Water that runs off the ground due to gravity.



In this lesson, students will study rain gage data to determine the best solution to prevent a town from flooding when it rains.

Before the lesson

- Review vocabulary terms with students. You may break this up into several days. Students can keep a journal of terms. Use TPR to help students remember the terms. There are vocabulary cards included to assist with cooperative learning activities.

During the Lesson

- Have students go outside for 10 minutes to find evidence of weather. They will keep a journal to write down what they find. If available, they can also take pictures with phones or other mobile devices. Students should also look for evidence of water flow, structures, and other ways in which water may be controlled after a storm (or lack thereof).
- Have students return to the classroom and share evidence of weather. Create a graphic organizer of terms.
- Provide students with copies of the rain gage data. Students analyze the data and look for trends. Also provide students with soil information sheet.
- Provide students with the maps. What do they notice? What can they do to help protect the homes that are located in the floodplain?
- Students will work in teams of 4. Teams will consist of a project manager, engineer, planner, and landscape architect.
- Provide students with chart paper and have students create their design for their structure.

After the Lesson

- Students will present their project ideas in a carousel feedback format.
- Use the rubric to assess students' work as well as the process used to arrive at their solutions.
- Review key concepts using the SCOOT game.
- Provide students with the post assessment/survey.

Essential Question:

In what ways do meteorologists, hydrologists, planners, engineers, and landscape architects work together to control flooding, and save lives and properties?

Resources

<https://www.fema.gov/blog/2012-03-14/things-you-can-do-mitigate-against-flooding>

<http://apps.fcd.maricopa.gov/projects/projects-structures.aspx> (FCD Website with project info to use as examples)

Conditions of the atmosphere over short periods of time

How the atmosphere behaves over a long period of time

The gases that surround the Earth

All the waters on the Earth's surface, such as lakes and seas, and sometimes including water over Earth's surface, such as clouds.

Rain, snow, sleet, or hail that falls to the ground

3rd – 5th Grade
Lesson 5

Sudden, fast water with little or no warning

Having a 1% chance of an intense storm

Something that can cause harm

The gases that surround the Earth

- Atmosphere

How the atmosphere behaves over a long period of time

- Climate

Conditions of the atmosphere over short periods of time

- Weather

Rain, snow, sleet, or hail that falls to the ground

- Precipitation

All the waters on the Earth's surface, such as lakes and seas, and sometimes including water over Earth's surface, such as clouds.

- Hydrosphere

Something that can cause harm

- Hazard

Having a 1% chance of an intense storm

- 100-year flood

Sudden, fast water with little or no warning

- Flash Flood

A tool used to measure the amount of rain that falls

An area of land that drains to a particular lake, wash, stream or river

A natural feature of the Earth's surface

A change in weather pattern that brings moisture from the Gulf of California. The moisture combined with the heat fuels these storms. Occurs between June 15 and September 30.

A barrier built across a river or stream to block the flow of water.

A raised area along the banks of a channel or stream (can be naturally occurring or man-made)

A tunnel carrying a stream or open drain under a road or railroad

A depressed linear area where water flows (can be natural or man-made)

An artificial lake with vegetation around the perimeter designed to hold back storm water

A natural feature of the Earth's surface

- Landform

An area of land that drains to a particular lake, wash, stream or river

- Watershed

- A tool used to measure the amount of rain that falls

- Rain gage

A raised area along the banks of a channel or stream (can be naturally occurring or man-made)

- Levee

A barrier built across a river or stream to block the flow of water.

- Dam

A change in weather pattern that brings moisture from the Gulf of California. The moisture combined with the heat fuels these storms. Occurs between June 15 and September 30.

- Monsoon

An artificial lake with vegetation around the perimeter designed to hold back storm water

- Retention Basin

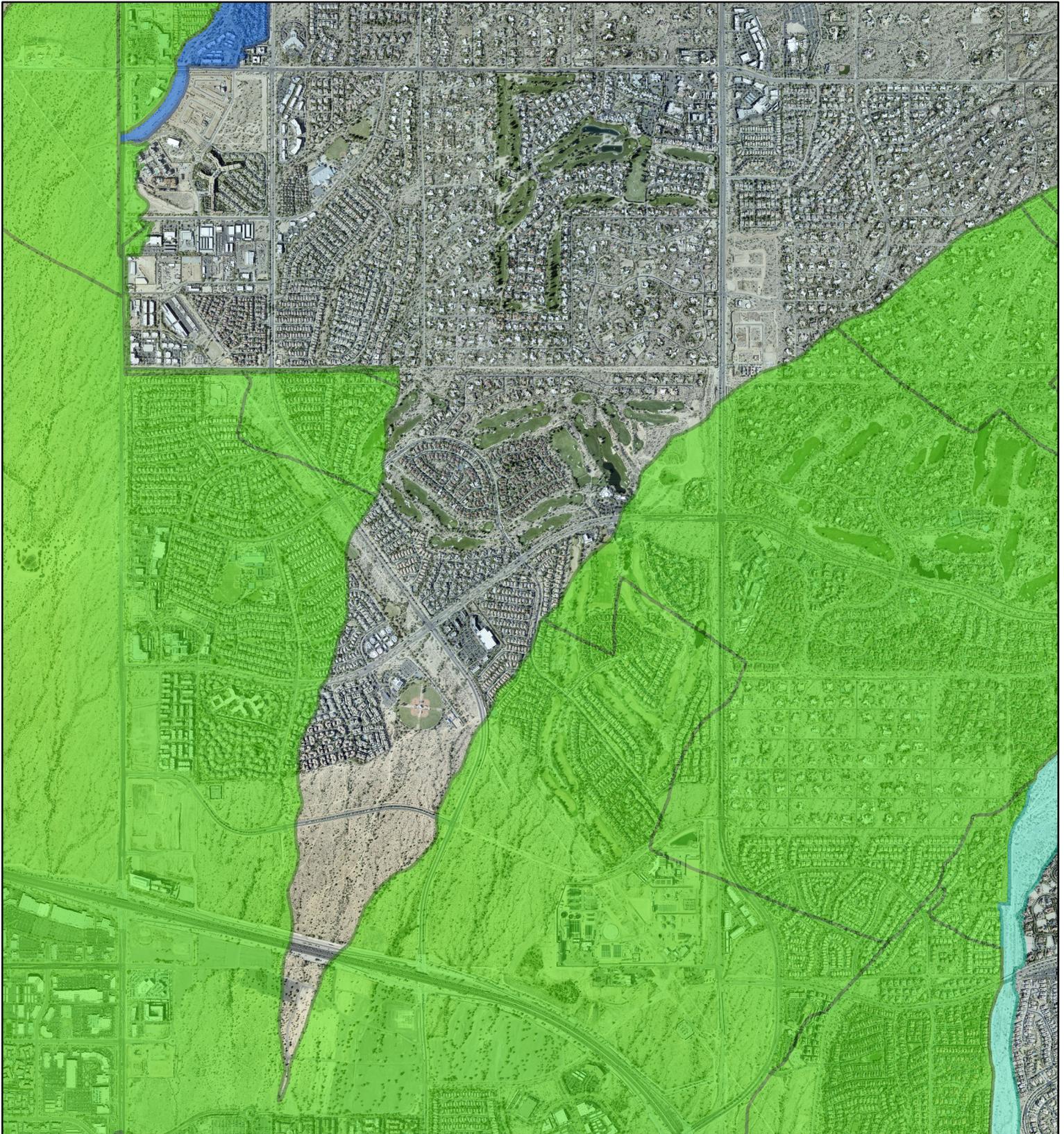
A depressed linear area where water flows (can be natural or man-made)

- Channel

A tunnel carrying a stream or open drain under a road or railroad

- Culvert

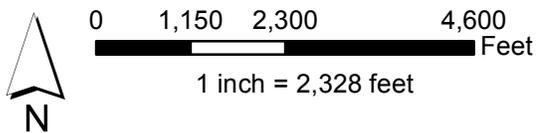
This document cannot be used for floodplain determinations. Current studies, erosion setbacks and other factors may also affect the floodplain status of the property. The information shown for pending floodplains are the best technical information available at this time to determine the one percent chance flood and are subject to change.



Current FEMA Flood Zones



Current Pending Flood Zones



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Floodplain Management & Services
 2801 West Durango Street
 Phoenix, Arizona 85009
 Phone: (602) 506-2419
 Fax: (602) 372-6232
<http://www.fcd.maricopa.gov/Floodplain/floodplain.aspx>

Having characteristics
of a city or town

A surface that allows
liquid to pass through

Not allowing liquid to
pass through

The gradual destruction of
something from water, wind,
or other natural agents

The channel of a river and the
parts of the floodplain by it

Low lying ground by a river
and likely to flood

Water that does not come
from the sea or ocean

When precipitation
collects in the oceans,
rivers, lakes, and streams

Water that runs off the
ground due to gravity

Not allowing liquid to pass through

- Impervious

A surface that allows liquid to pass through

- Pervious

Having characteristics of a city or town

- Urban

Low lying ground by a river and likely to flood

- Floodplain

The channel of a river and the parts of the floodplain by it

- Floodway

The gradual destruction of something from water, wind, or other natural agents

- Erosion

Water that runs off the ground due to gravity

- Runoff

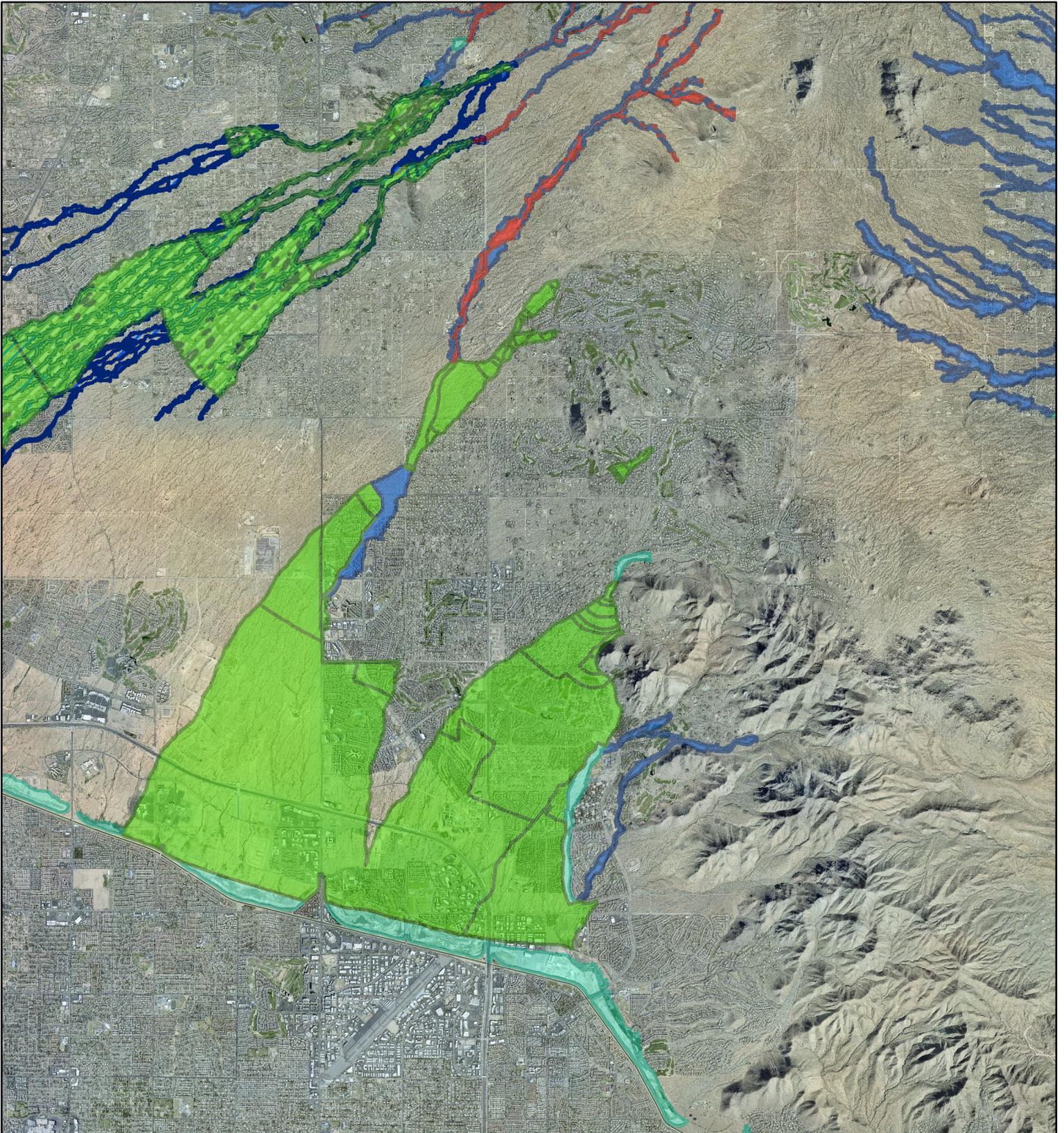
When precipitation collects in the oceans, rivers, lakes, and streams

- Collection

Water that does not come from the sea or ocean

- Fresh Water

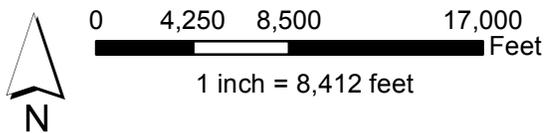
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Current Pending Flood Zones

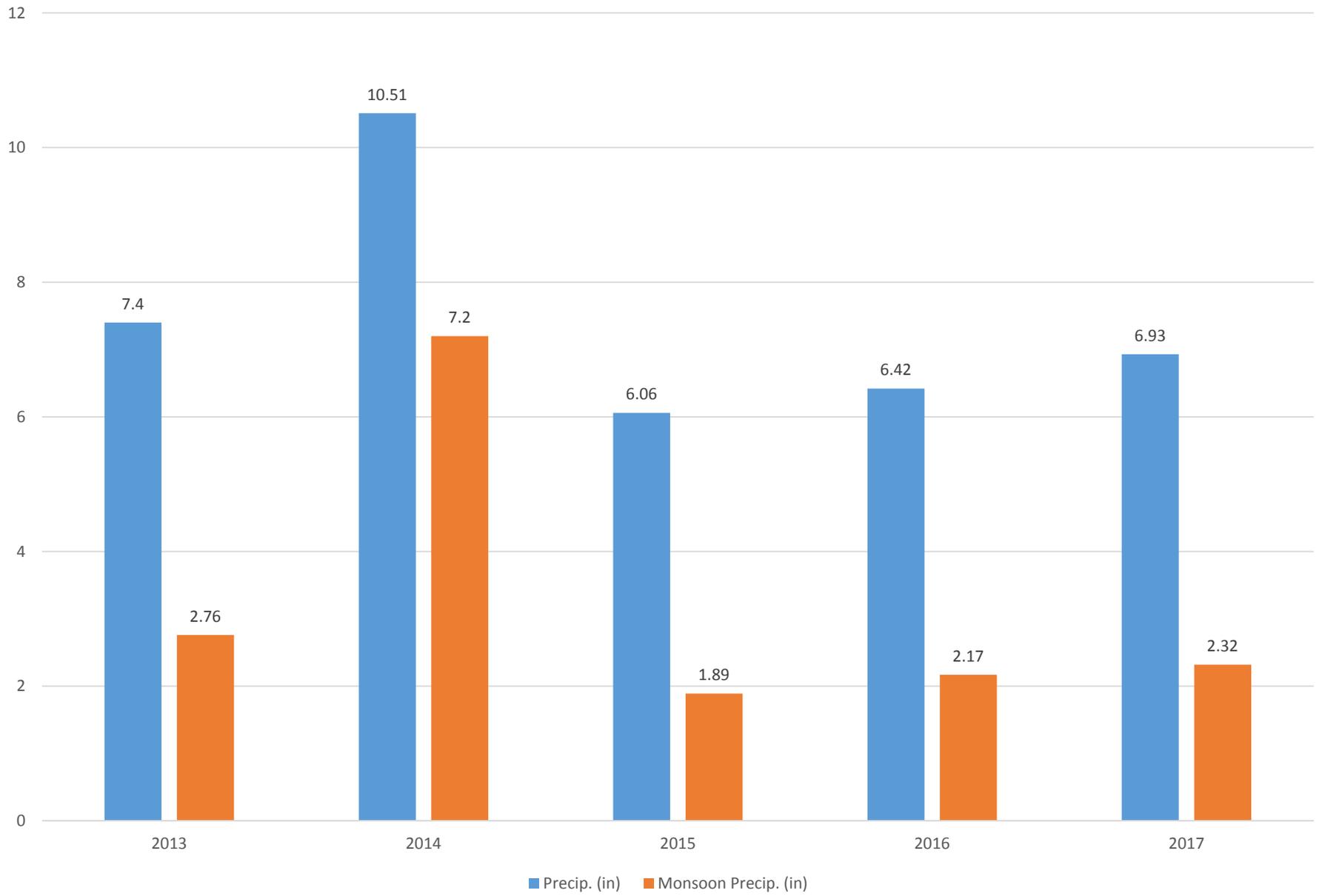


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Rain Gage 2 Rain Totals





Weather Evidence

Directions: Go outside and look for evidence of weather. When you find evidence of weather or a structure that can help control the flow of water, record it on the sheet. You may also take a picture of your evidence if you have a camera available for use.

Evidence	Location