



# A DAY AT THE PLAYA

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- I. Objectives
- Students will learn about the formation, discovery, and existence of playa lakes in the Lubbock area.
  - Students will identify the separate layers that comprise a playa lake.
  - Students will understand the importance of these playa lakes in relation to the natural environment as well as the City of Lubbock.
- II. Materials (all enough for each student)
- Pie Pan
  - Dirt
  - Grass plug\*
  - Modeling Clay
  - Green or blue food coloring
  - Measuring Cup
- III. Introduction
- We'll be discussing something that we have a lot of in this area, but that many times goes unnoticed by people.
    - How many of you have seen these small lakes that are all over the city – by the Mall, by Godeke Library, or any of the others?
    - Stop and think for a moment... how many of those lakes have you seen around Lubbock? (Allow students to answer.)
      - There are 108 of these lakes just in the area within the city limits and 1086 in Lubbock County!
        - 35 are owned by the City of Lubbock and these are the ones people usually think of. These are the lakes located in city parks.
        - All of the others are privately owned.
      - In the Llano Estacado region (West Texas plains through eastern New Mexico), scientists have counted 19,000 but it is estimated there may be 35,000 in this area and as many as 60,000 in the Great Plains region!
        - Since there are no creeks or rivers to feed these small lakes, many dry up making it difficult to tell whether it is a lake or not.
          - Ephemeral – short lived (ephemeral nature sometimes wet and sometimes dry)
    - Can anyone tell me what these small lakes are called? (Playa lakes.)
    - Today you will be learning more about playa lakes than most people in the entire City of Lubbock know!
    - Playas are a unique feature in the Great Plains region, 95% of all the worlds playas are in this area.
- DEFINITION OF PLAYA: small, shallow wetlands
- IV. Name & Origin of Playa Lakes
- How in the world did these small lakes get the name “playa?”
    - In 1541, Francisco Vasquez de Coronado and his group of Spanish explorers landed in Mexico and

began working their way north, looking for the Seven Cities of Cibola (gold), keeping maps and journals as they traveled.

- Upon reaching this area, they found a lot of grass and very little water. They soon discovered what Coronado described as “a shallow, bowl-shaped depression a stone’s throw across.” Some contained fresh water and some contained salt water.
- They reminded Coronado of the beaches back in Spain, and he documented these small lakes as they traveled, calling them “playas,” the Spanish word for beach!

b. How do you think these playas could have formed? (Allow students to answer.)

- There are three theories, which do you think is correct?
  1. Theory #1: During the ice age, fluctuations (dips) in the movement of glaciers over this area caused depressions, which filled up with water after the ice melted.
  2. Theory #2: Depressions were formed at buffalo wallows (areas where buffaloes enjoyed rolling around in the dirt... their preferred style of bathing!) or by the blowing of the wind.
  3. Theory #3: Small amounts of acid or corrosive in the rain seeped down into the layer of ground containing caliche. As the caliche dissolved, a depression formed and gradually filled with water.

#### V. How Playa Lakes Are Used

a. If available, draw on a blackboard or whiteboard a chart with two columns, the first labeled “Us” and the second labeled “Nature.”

b. Playa Lakes are used in many different ways...

1. How does nature use the playa lakes? (Allow students to answer, and jot down their answers on the chart. If there are not enough answers to work with, add the following.)

- a. Playas have their own ecosystem.
- b. They are a haven for wildlife and a stop for migrating birds.
- c. They are a natural area for rainwater to collect (drainage).

2. How do we use the playa lakes? (Allow students to answer, and jot down their answers on the chart. Add the following if they weren’t mentioned.)

- a. Recreation (picnics, jogging, feeding ducks, etc.)
- b. Fishing

i. Fishing?! Where did the fish come from? (Playas have to be stocked since there are no creeks or rivers to allow fish access.)

c. Stormwater drainage.

i. How many of you have seen the steel grates set in the curb of the streets? What are those used for? (To drain rainwater when it floods.) And where do they lead? (NOT to the sewer! They are connected via pipe to the closest playa lake!)

ii. Using playa lakes for stormwater drainage leads us to another problem...

- If you were to go walking down the street right now, what would you see in the street and along the curbs? (Allow students to answer, and jot down answers on the board, if available.)

1. Some examples: rocks, dirt, trash, broken glass, thrown-out food, dead plants, dead animals, leaked oil, leaked gasoline, other automobile fluids.

- And where does all of this go when it floods? (To the playas!)

- All of this brings up our #1 problem with playa lakes... pollution. Some people will even throw trash directly into the playas even though there are trash cans out there! But not all of the pollution is man-made...

How many of you have seen, twice a year, the huge numbers of migrating geese in the sky?

- a. Playa lakes give them a place to rest. Often there will be hundreds (or even more!) of geese stopping at each lake in Lubbock every day!
  - b. They rest, they swim, they eat, and they go to the bathroom, depositing large amounts of fecal coli form (birdy poo-poo).
- At every playa lake there is a sign posted... what does it say? (No swimming!)
    1. Now you know why! The water in the playa lakes is filthy! If you get a cut while playing or swimming in the water, you can get a serious infection!
    2. Another reason: not all playas are perfectly bowl-shaped. There may be drop-offs under the water that are unsafe.

#### VI. Natural vs. Man-made

- a. Are playa lakes natural, or can they be man-made as well? (Have students raise their hands to vote.)
- b. Playa lakes are natural, not man-made.
  - In 1970, a proposition was approved to build a large shopping mall on top of a playa lake. In order to do this, the playa lake was filled in and a “new playa” was dug across the street from the original lake.
  - The South Plains Mall was then built on that lake.
  - Problem: when we look at that area, we see the mall... when nature looks at that area, it sees a playa lake! And it wants to fill it up!
  - The “new playa” dug across the street did not behave like a normal playa lake, and flooded easily with little rainwater.
  - Ever since then, we’ve had serious flooding problems in the parking lot of the South Plains Mall, as well as general problems with flooding in many other playas in the area as well.
- c. The flooding solution
  - A pipe was built connecting many of the playa lakes in Lubbock together.
  - What happens when you connect one playa that is flooding to another playa that isn’t? (The water levels even out.)
  - This pipe leads out to McAlister Park by Cinemark Movies 16 (where the Legacy Play Village is located). Lake McAlister is a playa lake. Other water flows east of town and eventually flows into Buffalo Springs Lake then to Ransom Canyon and eventually the Brazos River. Once the excess rainwater drains out, it will begin to refill!
  - We know it has been working so far, because you can now park in the part of the South Plains Mall parking lot that used to be flooded all the time!

#### VII. Activity – The Anatomy of a Playa Lake

a. The next thing we will discuss are the ground layers that actually make up a playa lake. And to do this, we will be creating a model... Pass out and explain:

Build a playa pie

- 1 pie pan per group of 4 or 5
- 2 cups of soil per group
- Place soil in pie pan making a shallow depression near the center
- ½ stick of modeling clay per group
- Make a small round thin shape with clay and place at bottom of depression (This is your playa lake)
- 1 plug of grass per group/(natural grasslands)
- Plant the grass on one side of the playa

CONTINUED

- Blue or green food coloring - (pollution from runoff)
- Roll out a rectangle piece of clay. Place on another side of the playa but not connected and press 2 drop of food coloring on top - (this is to represent the streets)
- 1 measuring cup of water
- Pour small amount of water over grass area and write down observations
- Pour small amount of water over street area and write down observations
- Pour remaining water over soil area and write down observations

VIII. Conclusion

- a. This is all information that we encourage you to share with others, especially since you know much more now about playa lakes than most of the people in Lubbock!
- b. Questions?

\*Special Note: If materials are requested for this lesson, please give extra notice so that the grass plugs may be planted and grown to a sufficient size.

