Schroeder River Watch 2024

7th Grade Enriched Science

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Step by Step TSS Sampling Guide

1. Set up the filtration apparatus, insert a filter, and apply vacuum.
2. Wet the filter with a small volume of deionized water to seat it.
3. Shake the sample vigorously and then measure out the predetermined sample volume using a graduated cylinder. Record the volume filtered in liters on the bench sheet.
4. Rinse the graduated cylinder and filter with three 20 mL volumes of DI, allowing complete drainage between washings.
5. Continue suction for three minutes after filtration is complete.
6. Carefully transfer the filter to an aluminum weighing dish, and place filter on a cookie sheet or similar device.
7. Place filters on sheet into an oven set to 104 ± 1ºC and dry for a minimum of one hour.
8. Remove filters from oven and transfer them to a desiccator to cool to room temperature. i. Weigh one sample filter to the nearest 0.1mg. On the bench sheet record the sample ID and the mass (Mass 1) in the “Weight check” section.
9. Record the mass as “Mass 2” in the Weight check section of the bench sheet. If the mass of the filter increases less than 0.5 mg or the change in the mass of the solids is less than 4% of the previously measured mass, then continue with TSS calculations.
10. If the mass of the filter increases by more than 0.5 mg, repeat steps 15.4.g.
11. i. until the filter mass increase is less than 0.5 mg or the change in the mass of the solids is less than 4% of the previously measured mass. Record each additional mass on the bench sheet as “Mass 3”, “Mass 4”, etc. Use the back of the bench sheet if necessary.
12. l. Record the Oven Dry Mass (in mg) on the bench sheet.
13. m. Calculate TSS as described below.
14. n. Dump remaining sample down the drain, remove label, and rinse with tap water to remove any solids from the bottle. Wash bottles according to the Bottle Prep non-Metals SOP 0150R01.

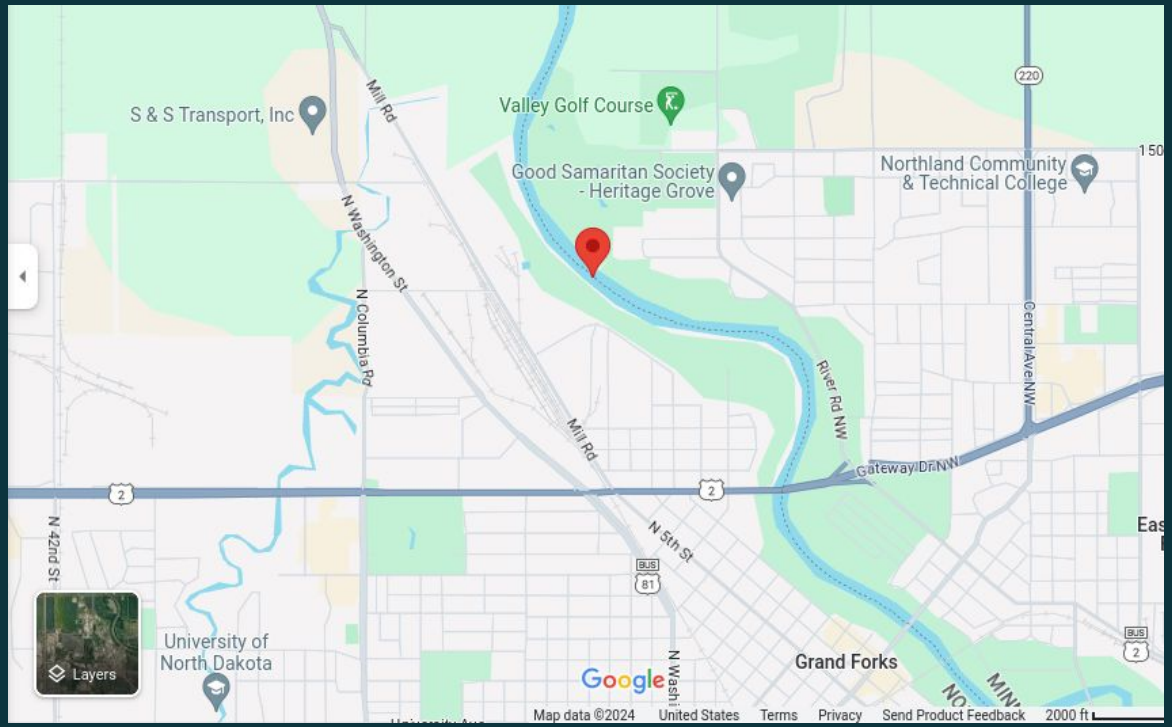
Step by Step DO Sampling Guide

1. Carefully fill a 300-mL glass Biological Oxygen Demand (BOD) stoppered bottle brim-full with sample water.
2. Immediately add 2 mL of manganese sulfate to the collection bottle by inserting the calibrated pipette just below the surface of the liquid. (If the reagent is added above the sample surface, you will introduce oxygen into the sample.) Squeeze the pipette slowly so no bubbles are introduced via the pipette.
3. Add 2 mL of alkali-iodide-azide reagent in the same manner.
4. Stopper the bottle with care to be sure no air is introduced. Mix the sample by inverting several times. Check for air bubbles; discard the sample and start over if any are seen. If oxygen is present, a brownish-orange cloud of precipitate or floc will appear. When this floc has settle to the bottom, mix the sample by turning it upside down several times and let it settle again.
5. Add 2 mL of concentrated sulfuric acid via a pipette held just above the surface of the sample. Carefully stopper and invert several times to dissolve the floc. At this point, the sample is "fixed" and can be stored for up to 8 hours if kept in a cool, dark place. As an added precaution, squirt distilled water along the stopper, and cap the bottle with aluminum foil and a rubber band during the storage period.
6. In a glass flask, titrate 201 mL of the sample with sodium thiosulfate to a pale straw color. Titrate by slowly dropping titrant solution from a calibrated pipette into the flask and continually stirring or swirling the sample water.
7. Add 2 mL of starch solution so a blue color forms.
8. Continue slowly titrating until the sample turns clear. As this experiment reaches the endpoint, it will take only one drop of the titrant to eliminate the blue color. Be especially careful that each drop is fully mixed into the sample before adding the next. It is sometimes helpful to hold the flask up to a white sheet of paper to check for absence of the blue color.
9. The concentration of dissolved oxygen in the sample is equivalent to the number of milliliters of titrant used. Each mL of sodium thiosulfate added in steps 6 and 8 equals 1 mg/L dissolved oxygen.

Step by Step PH Sampling Guide

1.Get a clean container.
2.Fill the clean container with a water sample deep enough to cover the test strip.
3.Dip a pH test strip into the water sample for a few seconds.
4.When the strip changes color, match it to the color chart provided to discover the pH levels of your water.
5.pH tests strips are widely available.

Map including sampling sites



Coordinates, 47°56'35.2"N 97°03'03.4"W

Site description

-Site name the North Forks Landing Boating Access

-Road Names near sit- Alpha Ave, Mill Road, Red Dot Pl, Near 19th St NW, 20th St NW N 7th st and N 6th st

-Location of site - The Red River

-Site Code - S000-008

-The Red-River water levels go down in the summer but it doesn't dry out. In the spring the river levels rises significantly depending on the amount of snow the surrounding area get’s

Reference mark description: The surrounding area is woods, there is a bridge and a boat landing nearby, there is also a rapids near to.

Note- photos were taken during winter.

Reference mark 1

Reference mar 2

Geographic Location

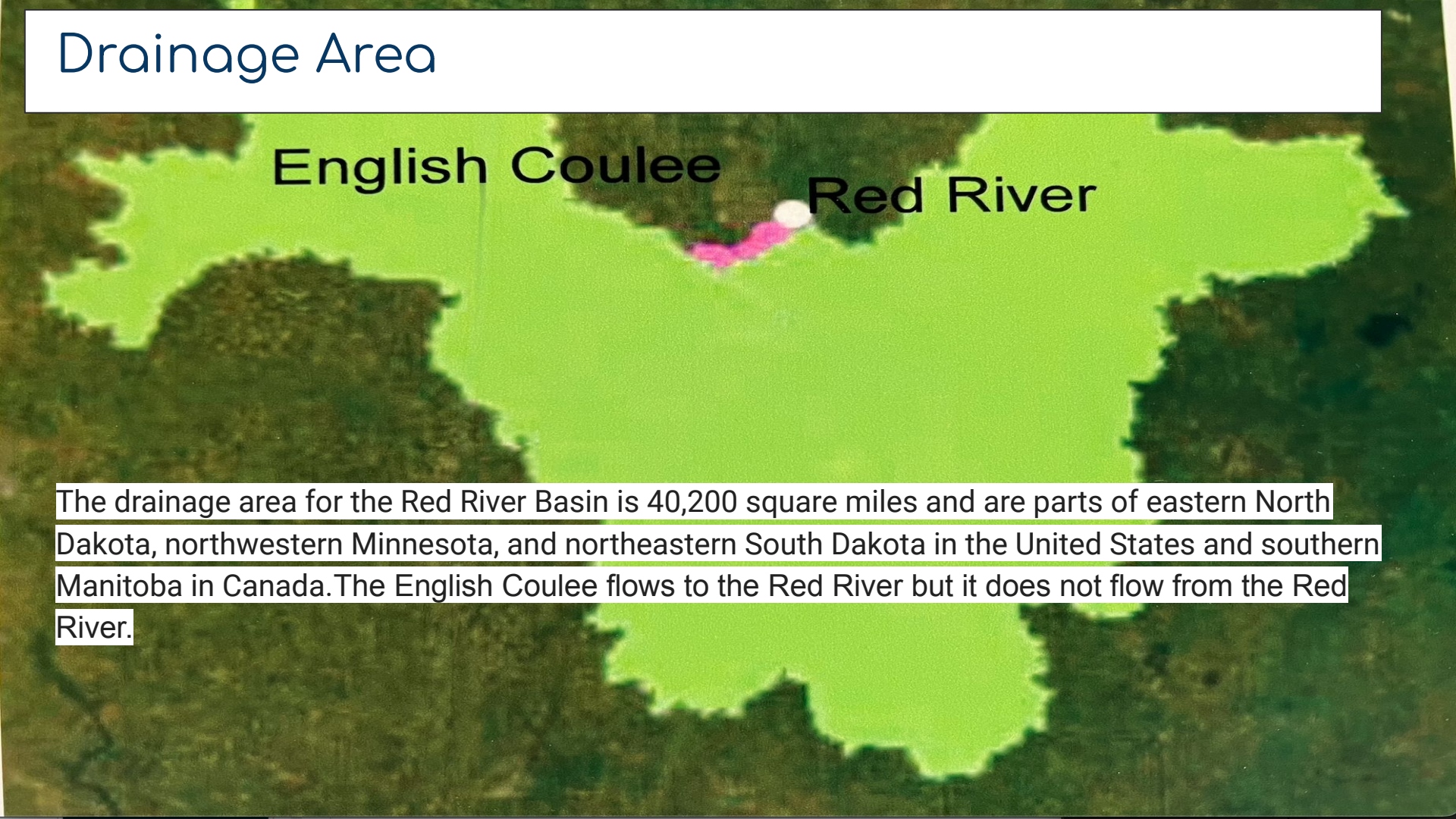
Latitude: 47°56'35.2"N

Longitude: 97°03'03.4"W

Downstream

Upstream

Drainage Area



The drainage area for the Red River Basin is 40,200 square miles and are parts of eastern North Dakota, northwestern Minnesota, and northeastern South Dakota in the United States and southern Manitoba in Canada.The English Coulee flows to the Red River but it does not flow from the Red River.

Historical Notes

The red river historically has not gone dry in the summer but the water levels can get low, the river usually floods in the spring which is a cause of the snow melting after winter. In 1997 there was a lot of snow and it melted quickly so it caused a big flood that ruined many houses in the grand forks area. In grand forks the floods were so dangerous after winter so the wall was built, the wall has saved parts of the town several times.