Texas Envirothon
AQUATICS
Non-point Source Pollution

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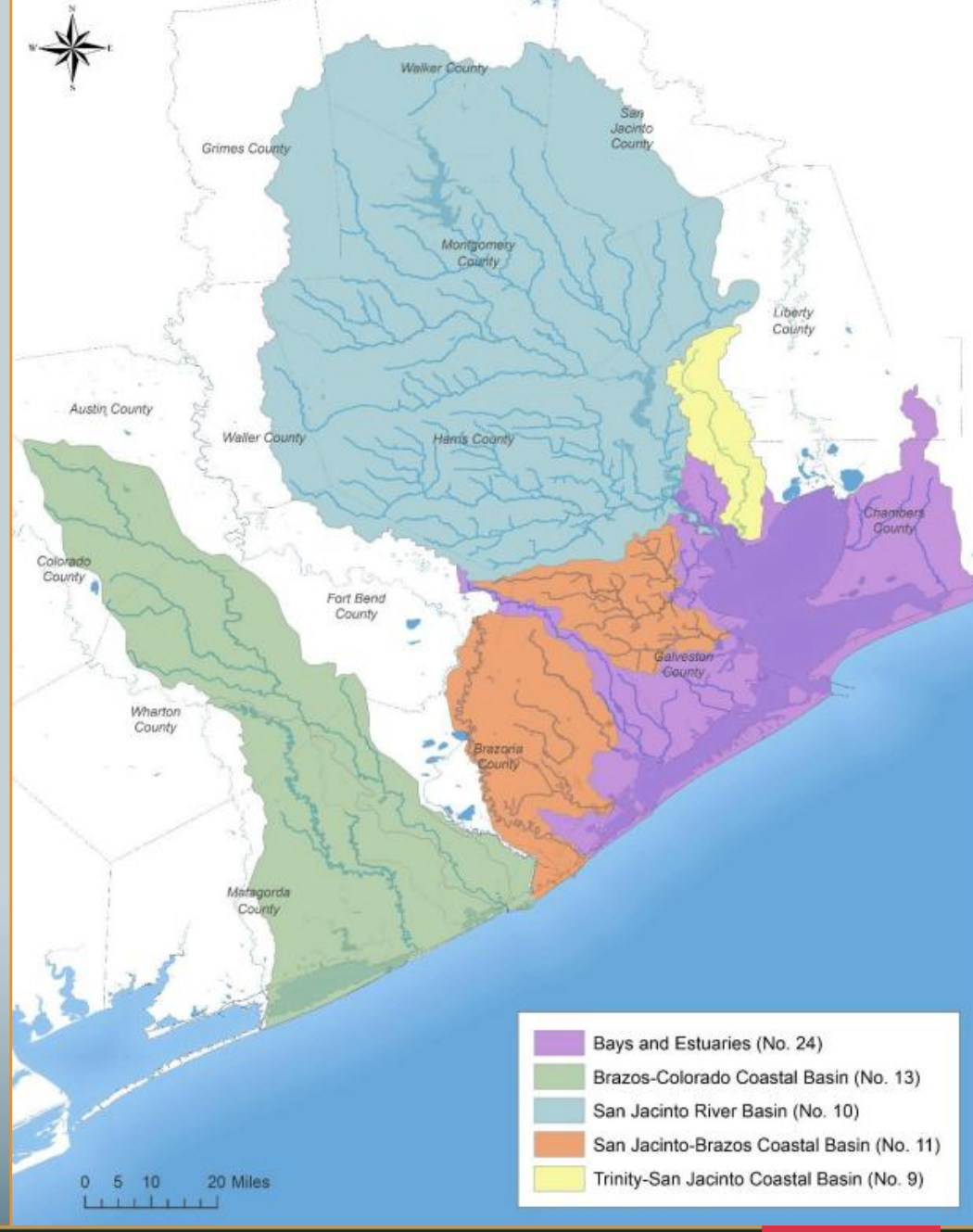
8:45-9:30

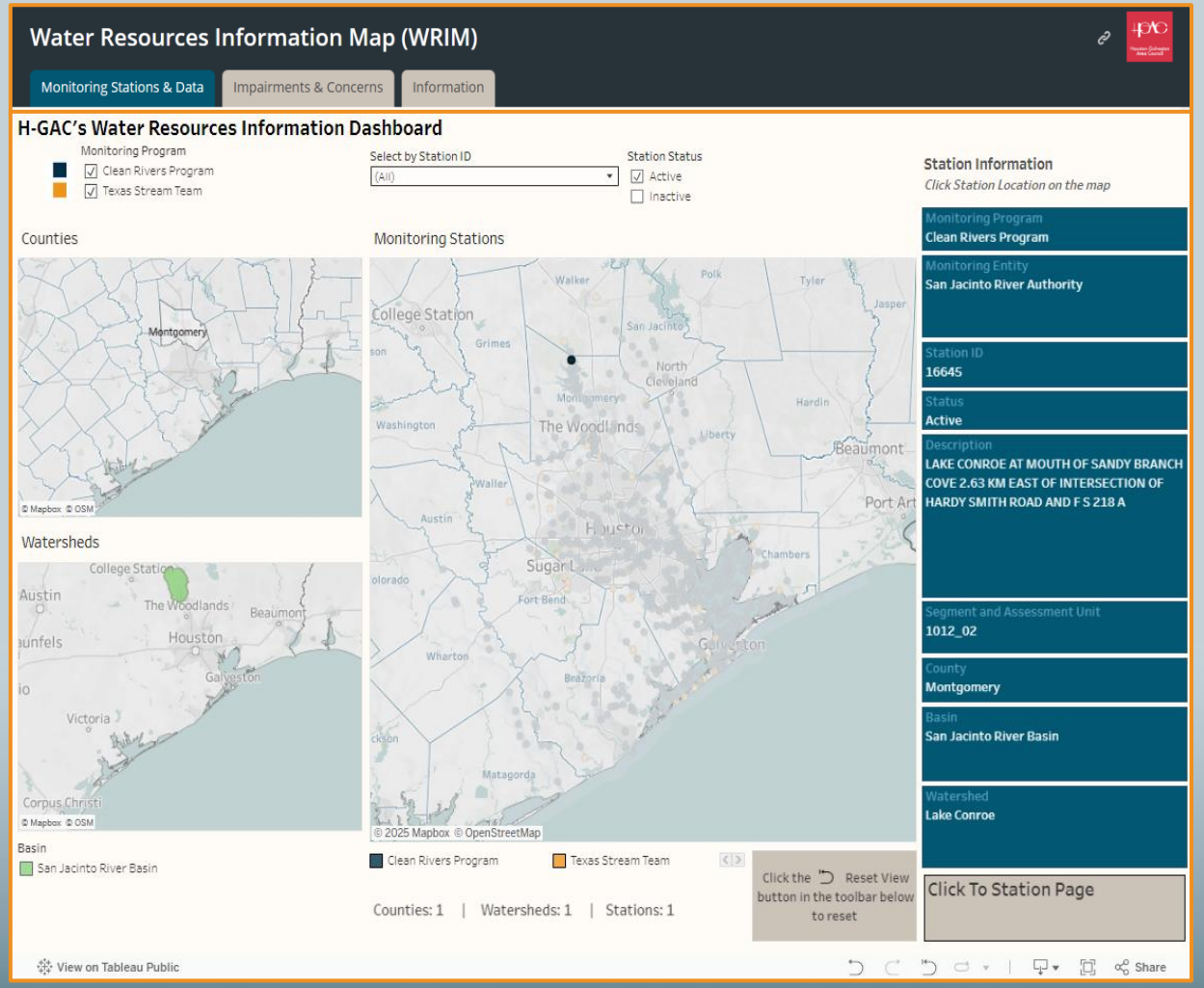
Texas Clean Rivers Program

- H-GAC is one of 12 regional authorities that partner with TCEQ to administer the CRP
- 4 river basins and coastal waters
- 15 counties
- 6 regional partner organizations

- **Program Objectives:**
  - Provide data for decision-making
  - Identify and evaluate water quality issues
  - Promote cooperative watershed planning
  - Recommend management strategies
  - Inform and engage stakeholders
  - Maintain efficient use of public funds



H-GAC's Water Resources Information Map (WRIM)



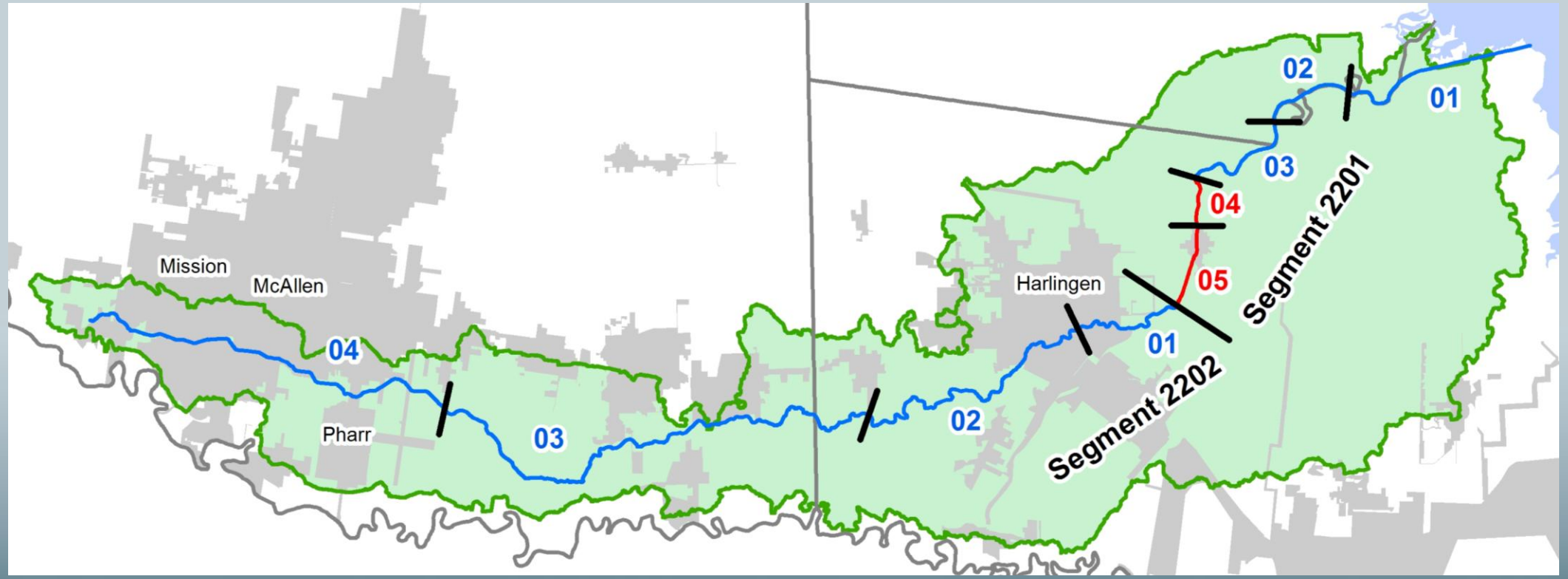
- H-GAC and partners monitor 319 sites for CRP.
  - Monthly to Quarterly
  - Quality Assured Data
  - Routine Monitoring
  - Data to SWQMIS and WRIM

Non-point Source Pollution

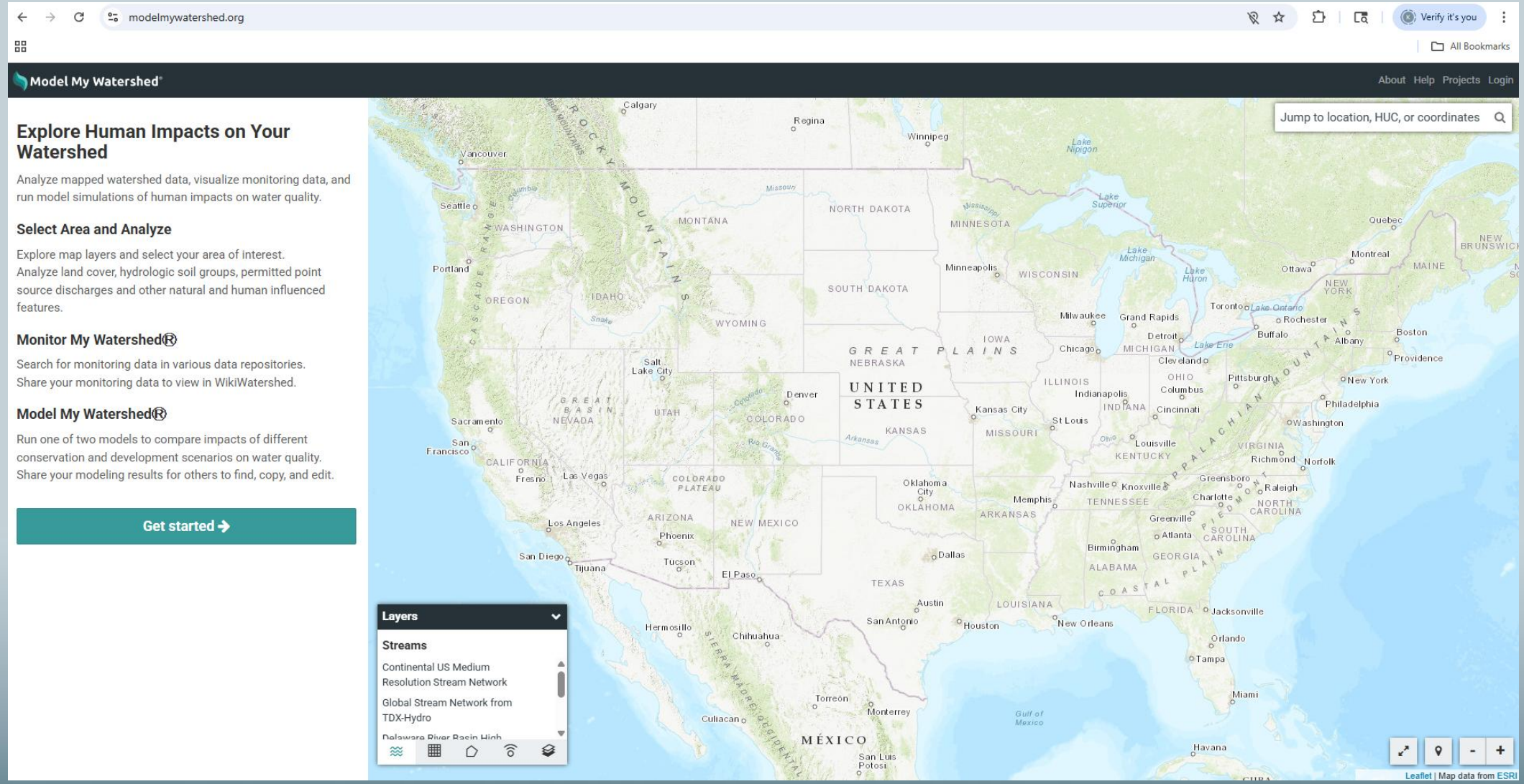
- Leading cause of water quality issues
- Cycled throughout earth systems
- Water is the universal solvent, so most end up in aquatic systems.

Watershed Approach to Management

- Manage by Watershed
- Assess by Segment – Assessment Unit



Model My Watershed



Impairments – Texas 303(d) List

- Watershed Action Planning
- Total Maximum Daily Load (TMDL)
- Implementation Plan (I-Plan)
- Permit Reviews

2024 Integrated Report

Impairments – Texas 303(d) List

- Category 4 – not suitable for a TMDL, or a TMDL has already been approved
  - 4a: TMDL approved
  - 4b: other measures expected to result in attainment
  - 4c: Impairment not caused by a pollutant
- Category 5 – Suitable for a TMDL
  - 5a: TMDL underway, scheduled, or will be scheduled
  - 5b: Review will be conducted to determine management strategy
  - 5c: Additional data are needed
  - 5n: Specific to Chlorophyll-a, additional study needed
  - 5r: WPP underway or accepted by EPA

Texas Surface Water Quality Standards

- Recreational Use
  - Pathogen Indicator Bacteria: *E. coli* or Enterococci
- Aquatic Life Use
  - Dissolved Oxygen
- General Use
  - Nutrients: Nitrate, Total Phosphorus, Ammonia

Recreational Use

- Non-point Sources
  - Leaking or failing OSSFs
  - Malfunctioning Infrastructure (cross connects, leaks, overflows)
  - Fecal contamination
    - Wildlife
    - Livestock
    - Pets
    - Recreational Vehicles
- BMPs
  - Inspect, repair, replace OSSFs
  - Report spills to the proper authority
  - Protect our pipes: never put fats, oils, grease, or wipes down the drain
  - Limit direct access of livestock to waterways
  - Scoop the poop: pick up after your pets and properly dispose of waste
  - Pump it don't dump it: proper disposal of RV and boat wastewater

Aquatic Life Use/General Use

- Non-point Sources
  - Soil erosion
  - Fertilizer
  - Organic debris
  - Fecal contamination
  - Atmospheric Deposition
  - Wastewater
- BMPs
  - Pervious pavement
  - Rain garden/rain barrel
  - Silt fences and storm drain filters
  - Native plants
  - Test soil to customize fertilizing and don't fertilize before rain
  - Properly dispose of yard waste, or re-use it
  - Protective buffers

Envirothon 2026: Non-Point Source Pollution – It Begins at Home

NPS "At Home" Checklist
Simple Steps for Students, Families, and Community Members

- Reduce fertilizer and pesticide use:
  - Test your soil before applying fertilizer.
  - Follow label instructions—never overapply.
  - Avoid applying chemicals before rain.
- Manage pet waste:
  - Always pick up after pets—in the yard and on walks.
  - Dispose of pet waste in the trash.
- Maintain your wastewater system:
  - If you have an on-site sewage facility (OSSF) have your system inspected and pumped regularly.
  - Keep accurate records of maintenance and repairs.
  - Never pour fats, oils, grease, wipes, paint, or chemicals down drains.
- Prevent household chemical leaks/spills:
  - Store chemicals in sealed containers, away from rain.
  - Never pour hazardous substances on the ground, into drains, or storm sewers.
  - Participate in local hazardous waste collection days.
- Yard waste:
  - Compost or mulch clippings and leaves.
  - Never dump grass, leaves, or brush into ditches, storm drains, or waterways.
- Smart watering:
  - Water lawns early or late to reduce runoff/evaporation.
  - Use drought-tolerant, native plants.
  - Redirect downspouts to vegetated areas or rain gardens, not driveways.
  - Install rain barrels to retain stormwater for everyday watering.
- Limit impervious surfaces:
  - Use gravel, interlocking pavers, or permeable stones for patios and walkways.
- Car care:
  - Fix oil and fluid leaks promptly.
  - Wash your car at a commercial car wash or on the lawn—not in the driveway.
- Community action:
  - Report spills, overflows, or other hazards to the proper authority.
  - Participate in or help organize stream cleanups, storm drain marking, or education events.
  - Share what you learn with friends and neighbors.

It Begins at Home- Checklist

- Steps that everyone can take to reduce their non-point source pollution footprint.

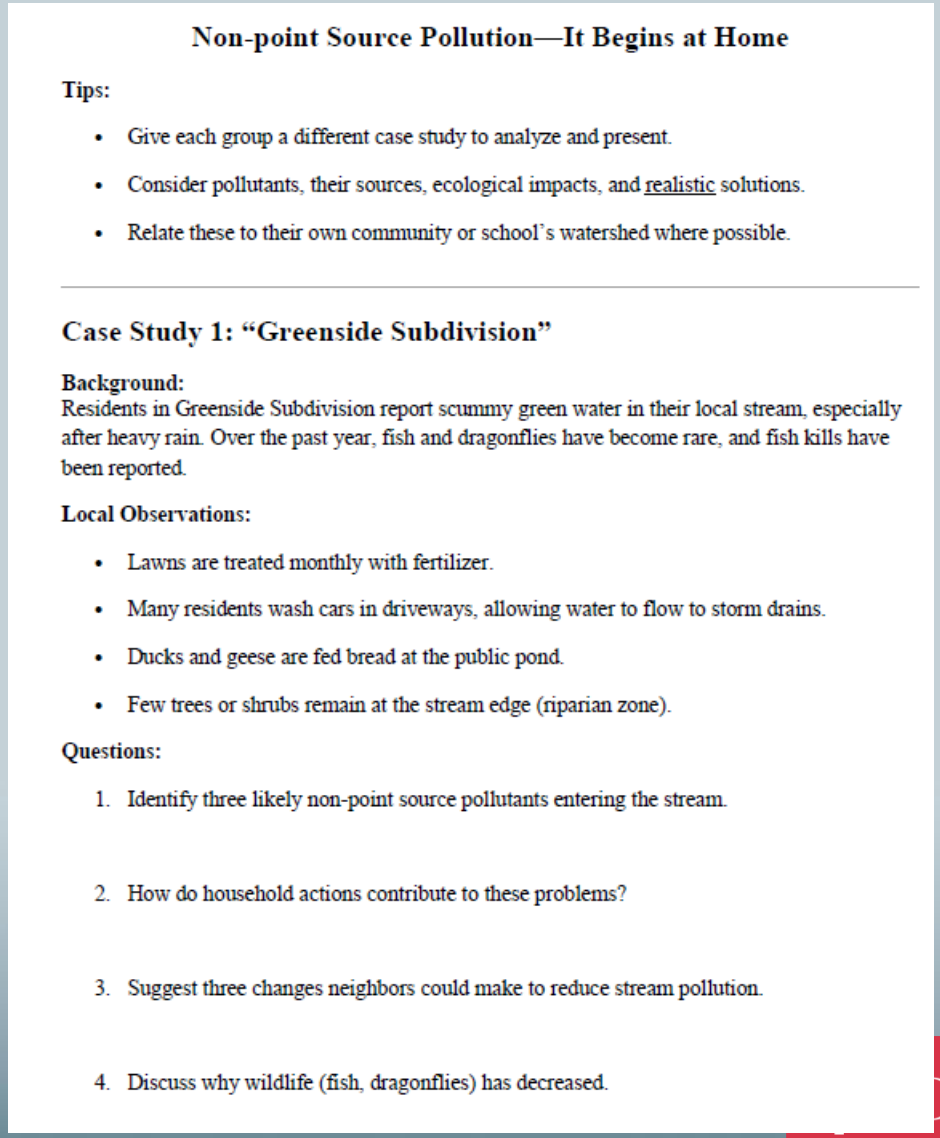
Other Water Quality Parameters

- Suspended Solids/Sediments
- pH
- Debris- Macro and Micro
- Heavy Metals
- Pharmaceuticals/Hormones/Endocrine Disruption Chemicals
- Volatile Organic Compounds (VOCs) & other Toxic Chemicals
- PFAs
- Salts
- Radioactive Materials

Non-point Source Case Studies

- Background
- Observations
- Questions

- 4 different watersheds
  - Greenside Subdivision
  - Edge of the Field – Runoff in Farm Country
  - Urban Jungle – Stowmwater Issues in a Metro City
  - The Suburban Lake – Homeowners' Choices Matter



Non-point Source Pollution—It Begins at Home

Tips:

- Give each group a different case study to analyze and present.
- Consider pollutants, their sources, ecological impacts, and realistic solutions.
- Relate these to their own community or school's watershed where possible.

Case Study 1: "Greenside Subdivision"

Background:
Residents in Greenside Subdivision report scummy green water in their local stream, especially after heavy rain. Over the past year, fish and dragonflies have become rare, and fish kills have been reported.

Local Observations:

- Lawns are treated monthly with fertilizer.
- Many residents wash cars in driveways, allowing water to flow to storm drains.
- Ducks and geese are fed bread at the public pond.
- Few trees or shrubs remain at the stream edge (riparian zone).

Questions:

1. Identify three likely non-point source pollutants entering the stream.
2. How do household actions contribute to these problems?
3. Suggest three changes neighbors could make to reduce stream pollution.
4. Discuss why wildlife (fish, dragonflies) has decreased.

Resources

- Stroud Water Research Center: Model My Watershed
- EPA: How's my Waterway tool
- EPA: Urban Runoff: National Measurement Measures
- EPA: Green Infrastructure
- TCEQ: Surface Water Quality Web Reporting Tool
- TCEQ: Surface Water Quality Segment Viewer
- H-GAC: Water Resources Information Map

Success Stories/Examples

- City Initiative: Minnesota Pollution Control Agency: 8th Street Stormwater Planters
- City Initiative: Hillsborough Partnership street-side bioswale
- Summary Article: Small Acts Building Urban Climate Resilience