

Team Name & School:

Teacher Name:

Green Heart Action Plan

Problem Definition/ Problem Statement

The Problem

Harris County, particularly around the Cloverleaf area, is home to numerous **oil refineries, petrochemical plants, and manufacturing facilities**. These industrial operations pose significant risks to local water systems through:

- **Groundwater contamination** — Chemicals and pollutants seeping into underground water sources that communities depend on for drinking water
- **Surface water pollution** — Industrial discharge and runoff flowing into bayous, streams, and local waterways
- **Chemical spills and leaks** — Accidental releases from storage tanks and pipelines
- **Long-term accumulation** — Decades of industrial activity have left residual contamination in soil and water

Root Cause of the Problem

1. **Factories Don't Have to Be Careful Enough**
 - Big oil and chemical companies operate in Cloverleaf without strict rules to stop them from polluting
 - Old pipes and equipment leak chemicals into the water
2. **Money Matters More Than Safety**
 - Companies save money by not fixing broken equipment or cleaning up spills



- They care more about making profits than protecting people's water
3. **Industries Were Built Too Close to Homes**
 - Long ago, factories were allowed to build right next to neighborhoods
 - Nobody stopped them from dumping waste into the ground and water for many years
 4. **Poor Neighborhoods Get Hit Hardest**
 - Cloverleaf residents have less power to say "no" to factories
 - Wealthier neighborhoods don't have factories near them
 5. **Old, Broken Systems**
 - Pipes and storage tanks are old and cracked, so chemicals leak out
 - Nobody checks the water often enough to catch problems early
 6. **Not Enough Punishment**
 - When companies break the rules, they don't get in serious trouble
 - The government doesn't make them stop or pay big fines

List at Least Three Credible Resources that Support Your Problem Statement

Resource 1: Harris County Flood Control District

- **Website:** hcfcd.org
- **Why It's Credible:** Official government agency that monitors water systems, flooding, and water quality in Harris County
- **Relevant Information:** Reports on surface water pollution, bayou contamination, and industrial runoff affecting local waterways

Resource 2: Texas Commission on Environmental Quality (TCEQ)

- **Website:** tceq.texas.gov



- **Why It's Credible:** State agency responsible for enforcing environmental laws and monitoring water quality
- **Relevant Information:** Water quality data, industrial facility permits, contamination reports, and enforcement actions against polluters in Harris County

Resource 3: Environmental Integrity Project

- **Website:** <https://www.environmentalintegrity.org/>
- **Focus:** Investigates industrial pollution and advocates for clean water
- **What to Search:** "Harris County," "Texas refineries," "water contamination"

Proposed Solution

Our Solution: Community Water Testing & Cleanup Action Plan

What We Will Do

Step 1: Test the Water

- Work with local experts to test water from homes, schools, and neighborhoods in Cloverleaf
- Find out exactly which areas have the worst contamination
- Share results with residents so they know if their water is safe

Step 2: Raise Community Awareness

- Create posters and videos showing where the pollution comes from
- Tell neighbors about the problem and what they can do to protect themselves



- Hold community meetings to discuss solutions

Step 3: Push for Better Rules & Enforcement

- Ask the city and state to make stronger rules for factories
- Demand that companies fix leaks and stop dumping chemicals
- Call for regular inspections and bigger fines for polluters

Step 4: Install Water Filters

- Help families install affordable water filters in their homes
- Provide clean water stations in schools and public places
- Make sure everyone has access to safe drinking water while we fix the bigger problem

Step 5: Hold Companies Accountable

- Collect evidence of pollution
- Report violations to environmental agencies
- Support legal action to make polluters clean up their mess

How We Will Measure Our Success

- ✓ Water quality tests show improvement
- ✓ Families have access to clean water
- ✓ Community knows about the problem
- ✓ Government takes action
- ✓ Media coverage increases awareness
- ✓ Students understand environmental justice



Who are Decision Makers We Need to Reach

Local Level (Cloverleaf/Harris County)

1. Harris County Commissioners

- Control county policies and environmental enforcement
- Can demand stricter regulations on factories

2. City Council Members

- Make local laws about water safety and zoning
- Can require companies to fix pollution

3. Harris County Flood Control District Director

- Oversees water systems and quality monitoring
- Can order cleanups and inspections

4. Local School Board

- Controls school water systems
- Can advocate for student health and safety

State Level (Texas)

5. Texas Commission on Environmental Quality (TCEQ)

- Enforces state environmental laws
- Can fine companies and force cleanups

6. Texas State Representatives & Senators

- Make state laws about water protection



- Can increase funding for cleanup efforts

7. Texas Attorney General

- Can take legal action against polluters
- Represents the public interest

Federal Level

8. U.S. Environmental Protection Agency (EPA) Regional Office

- Enforces national water safety laws
- Can investigate and shut down major polluters

9. U.S. Congressional Representatives

- Can push for federal funding and oversight
- Can investigate industrial violations

Industry & Corporate Level

10. Oil Refinery & Chemical Plant Managers

- Make decisions about pollution prevention
- Can invest in better equipment and safety

11. Company Environmental Officers

- Responsible for compliance and cleanup

Community & Advocacy Level

12. Environmental Justice Organizations

- Partner with communities to demand change



- Help amplify student voices

13. Local Media (News Reporters)

- Can expose problems and pressure decision-makers
- Help spread awareness

14. Community Leaders & Neighborhood Associations

- Mobilize residents to demand action

Priority Order (Start Here)

1. **Local City Council & County Commissioners** — Easiest to reach, can take immediate action
2. **TCEQ** — State authority over water quality
3. **Local News** — Amplify your message
4. **EPA** — Federal oversight for serious violations
5. **Community Organizations** — Partner for bigger impact

Our 3-5 Step Plan for Change

Step 1: Research & Document the Problem

- Students test water quality in Cloverleaf using testing kits
- Collect data from homes, schools, and neighborhoods
- Research which factories are causing the most pollution
- Create a report showing exactly where contamination is worst
- **Timeline:** Weeks 1-4



- **Success Measure:** Complete water quality report with evidence

Step 2: Raise Community Awareness

- Create posters, videos, and social media posts about water contamination
- Hold a community meeting to share findings with residents
- Teach neighbors how to protect themselves (boiling water, using filters)
- Partner with local environmental organizations to spread the message
- **Timeline:** Weeks 5-8
- **Success Measure:** 50+ community members informed; media coverage

Step 3: Install Water Filters & Provide Clean Water Access

- Distribute affordable water filters to 30-50 families
- Set up clean water stations at schools and public places
- Train residents how to use and maintain filters
- Monitor water quality improvements in homes
- **Timeline:** Weeks 9-12
- **Success Measure:** Families have safe drinking water; contamination levels drop

Step 4: Demand Action from Decision-Makers

- Present findings to City Council and County Commissioners
- File complaints with TCEQ (Texas Commission on Environmental Quality)
- Request EPA investigation of major polluters
- Demand new rules to prevent future contamination
- **Timeline:** Weeks 13-16
- **Success Measure:** Government agencies investigate; new regulations proposed

Step 5: Sustain Long-Term Change

- Monitor water quality over time to track improvements
- Organize ongoing community meetings
- Support legal action against major polluters



- Advocate for permanent cleanup funding
- Build partnerships with environmental organizations for continued oversight
- **Timeline:** Ongoing (Weeks 17+)
- **Success Measure:** Contamination levels continue to drop; lasting policy changes

Overall Timeline: 4+ Months

This plan moves from **research** → **awareness** → **immediate action** → **policy change** → **long-term impact**

Impact & Equity

Who Will Benefit? (Impact)

Immediate Benefits:

- **Families in Cloverleaf** — Access to safe, clean drinking water
- **Students** — Healthier school environment and safe water to drink
- **Children & Elderly** — Most vulnerable to water contamination; protected from illness
- **Low-income residents** — Who can't afford bottled water or moving away

Long-Term Benefits:

- **Entire Harris County** — Stricter pollution rules protect everyone
- **Future generations** — Cleaner water and healthier environment
- **Local economy** — Healthier communities are more productive
- **Wildlife & ecosystems** — Bayous and waterways recover from pollution

Equity: Making Sure It's Fair



The Problem: Environmental Injustice

- Cloverleaf residents—mostly lower-income and communities of color—live next to factories
- Wealthier neighborhoods don't have this pollution problem
- Poor families can't afford to move away or buy expensive filters
- **This is unfair and unjust**

What Help We Need to Be Successful

Priority Needs (Start Here)

1. **Water testing kits** — Essential to collect data
2. **Expert mentors** — To guide student work
3. **Community connections** — To reach affected residents
4. **Funding** — To buy filters and supplies
5. **Media support** — To amplify the message

