RECHARGE ENHANCEMENT AND AUTOMATED MONITORING OF A KARST AQUIFER IN CENTRAL TEXAS

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BMPs

Example of a permanent BMP (detention basin) located along MOPAC highway.
Example of a temporary BMP (silt fence) and sign that indicates the recharge zone.

Barton Springs Segment

Hydrologic Zones

Hydrostratigraphy

Location Map of Barton Springs
Sample Collection

Major Recharge Features on Onion Creek

Outline Recharge via Antioch Cave located in Onion Creek. This is the largest capacity recharge feature within the Barton Springs segment of the Edwards Aquifer.
Upgrades to Current BMP

- Installation of automated monitoring and operation system with telemetry.
- Improved water intake structure
- Increase flow into BMP
  - Add second opening with valve
  - Widen mouth of cave
  - Remove sediment from cave

Monitoring Data

- Continuous data with telemetry
  - Flow
  - pH
  - Turbidity
  - Conductivity
  - Dissolved oxygen
  - Temperature
  - Water level
- Periodic sampling of storm events and baseflow conditions
- Various stormwater parameters

Decision Process

- Analytical data will be used to correlate sediment and contaminant load to turbidity.
- Automated system will be programmed to open and close valves based on turbidity levels.
- The goal is to find the optimum point where contaminant reduction and recharge to the aquifer are maximized.

Major Recharge Features on Onion Creek

- Antioch Cave
- Barber Falls
- Crippled Crawfish Cave
- Crook Oak Cave

Crippled Crawfish Cave