



Lower Tuscan Aquifer

Monitoring, Recharge & Data Management Project

General Description PowerPoint



General Description Overview

- Project Purpose
- Project Overview
- Outreach
- Next Steps

Project Purpose

- Field Investigation that seeks to improve the scientific understanding of the properties of the Lower Tuscan Aquifer system (LTA).
 - Physical parameters affecting percolation of surface water to the LTA
 - Interaction between surface water and groundwater
 - Recharge contribution from other aquifers to the LTA
 - Measure standard aquifer properties and their variability
 - Identify natural recharge areas under current hydrologic conditions
 - Identify recharge areas under increase utilization
 - How additional pumping may impact the aquifer and surface water

Project Purpose

- Things this study will do:
 - Improve understanding of infiltration in regions near foothill streams
 - Evaluate surface water and groundwater interaction
 - Improve understanding of groundwater recharge to the LTA from streams, foothill areas, and other aquifers
 - Increase knowledge of hydrogeologic characteristics of the LTA
 - Enhance groundwater monitoring well network
- Develops a sound scientific foundation for understanding of the hydrology of the LTA

Project Purpose

- Things this study will not do:
 - Determine the safe yield of the LTA, locally or regionally
 - Determine the storage capacity of the N. Sacramento Valley
 - Study recharge from the Sacramento and Feather Rivers
 - Update the Butte Basin IWFM model
 - Identify the subsurface extent of the Tuscan Formation
- New production wells will NOT be installed
- Project is not connected to any water transfer programs

Project Overview

- CEQA Initial Study
- Develop Geodatabase
- Aquifer Recharge Assessment
- Aquifer Properties Assessment



Project Overview - CEQA Initial Study

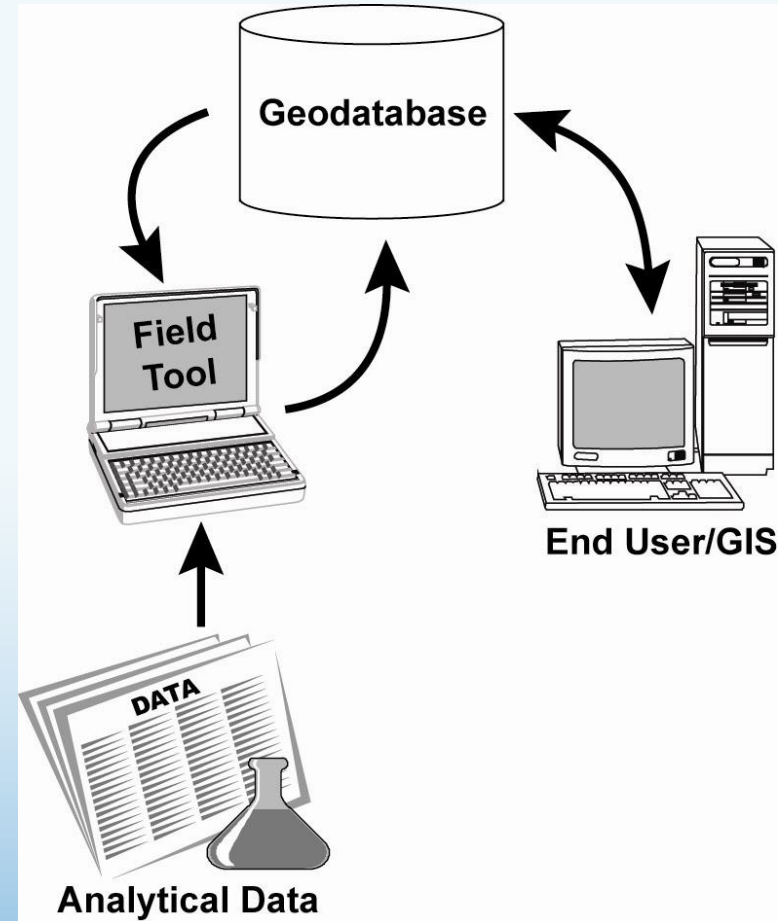
- Initial Study / Environmental Checklist
 - Describes Environmental Setting
 - Evaluates project activities compared to setting
 - Determines potential for environmental impacts
 - Identifies mitigation or avoidance measures

- Mitigated Negative Declaration
 - Available on Website
 - Public review started May 10, 2010
 - Comment Period ended on June 11, 2010
 - Hearing before the Board of Supervisors on June 8, 2010
 - Anticipated adoption by the Board of Supervisors on June 22, 2010

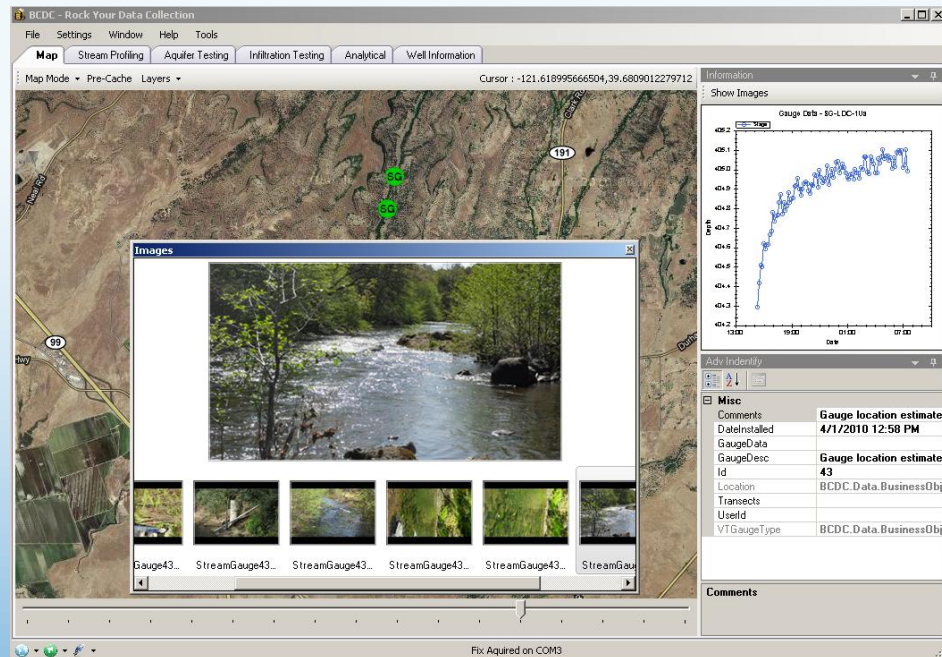
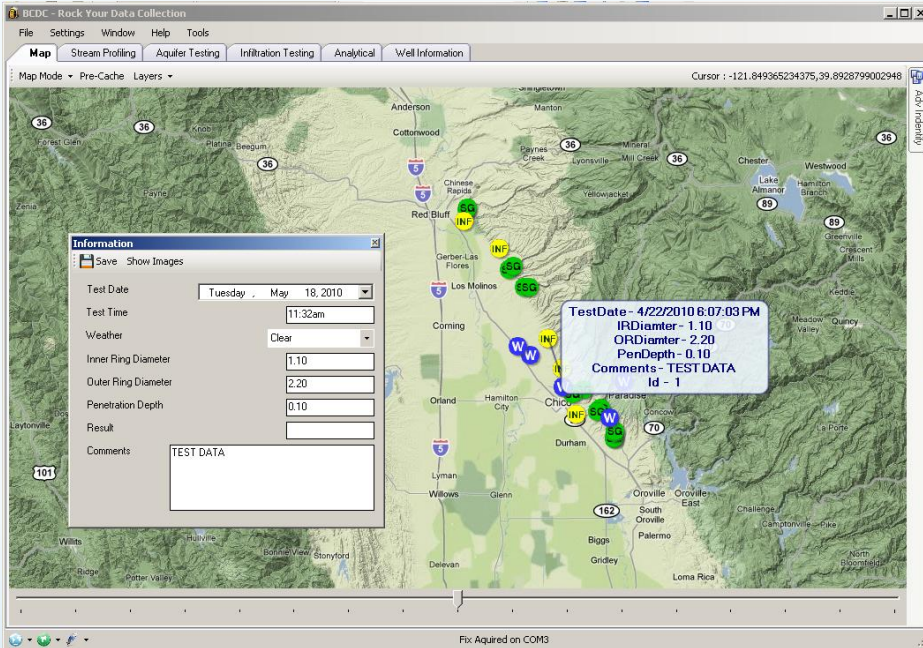


Geodatabase Overview

- Purpose and Benefits
 - GIS compatible
 - Improves data quality
 - Enhances data transfer and use
- Geodatabase Implementation
 - Project database
 - GIS integration
 - Field tool



Geodatabase Overview



Aquifer Recharge Assessment Dual-ring Infiltrometer Testing

- Soil Infiltration Testing
 - Double-ring infiltrometer
 - Soil profile and log
 - Grain size distribution
- 10 Sites Distributed on Lower Tuscan Outcrops
- Verify Butte Basin Groundwater Model input parameters.



Aquifer Recharge Assessment Stream Gauging

- Six Creeks
 - Little Dry, Butte, Big Chico, Deer, Mill, and Antelope
- Stage Discharge Ratings curve development
 - Stream Pro for discharge measurements
- Two gauges per creek
- Continuous stream stage and temperature measurements



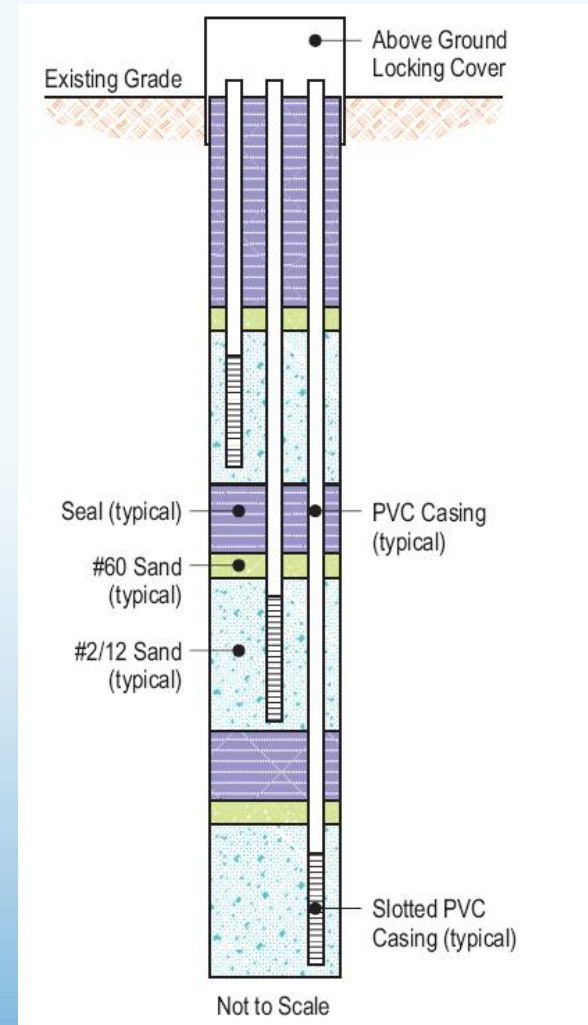
Aquifer Recharge Assessment Stream-Aquifer Interaction

- Groundwater temperature profiles adjacent to streams
- Temperature used as a tracer
- Assess flux rates of stream loss into groundwater
 - Streambed permeability
 - Shallow slug tests



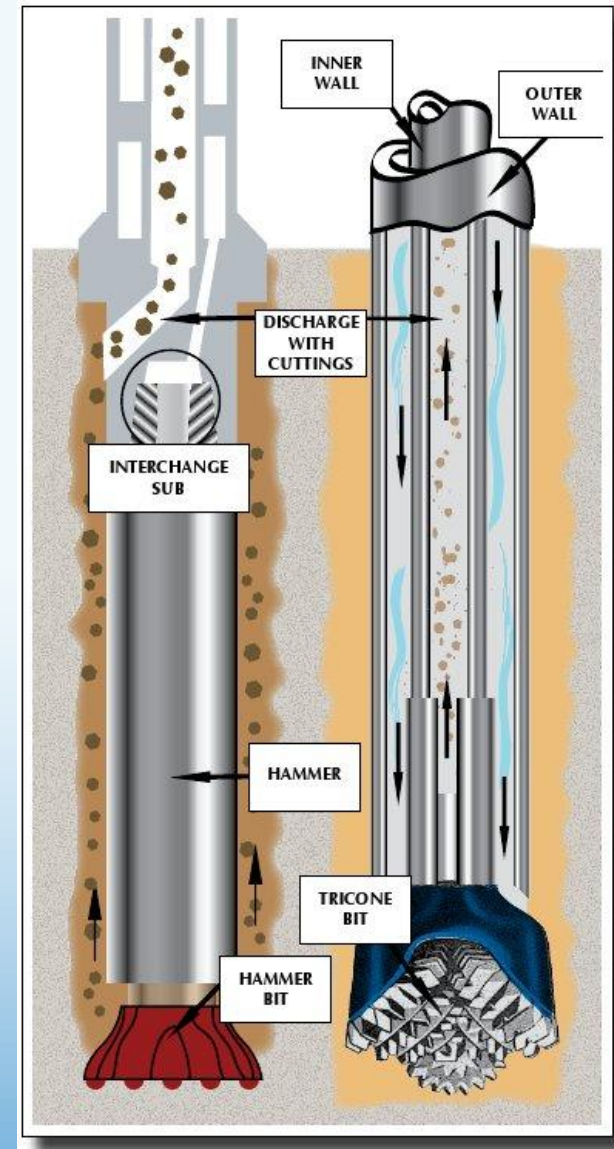
Aquifer Properties Assessment Installation of Groundwater Monitoring Wells

- Multiple completion wells are used to assess interaction between distinct zones of Lower Tuscan
- Additional refinement of understanding of subsurface hydrogeology
- Wells small diameter (2.5 inch) cannot be used as production wells.



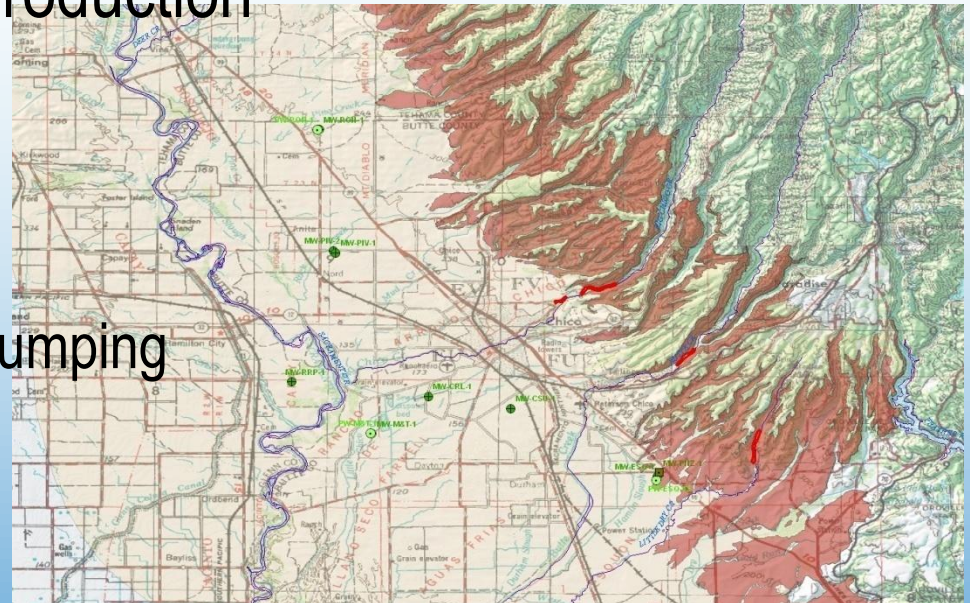
Aquifer Properties Assessment Drilling Methods

- Dual-Tube Reverse circulation
 - Depth discrete sampling
 - Lithology
 - Water Production
 - Field testing of water quality
- Mud Rotary back-up method
 - Mixed cuttings log
 - E-log



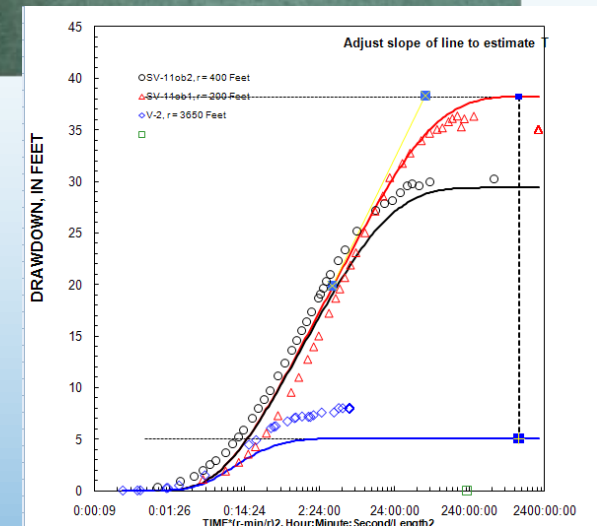
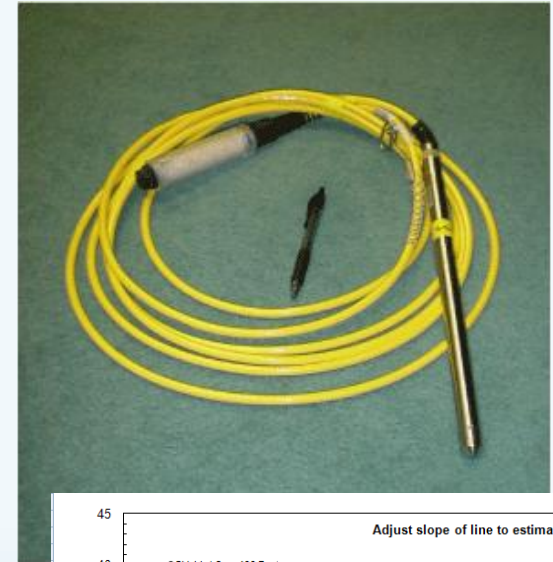
Aquifer Properties Assessment Aquifer Performance Testing

- Review of existing aquifer tests
 - Deer Creek, Rancho Esquon, Chico Municipal Airport, Koppers Superfund Site
 - Verify Butte Basin Model input parameters
- Use existing wells under normal operating conditions (no new production wells)
 - Testing to occur in 2011
 - Water is used for irrigation
 - Aquifer assessed from typical pumping practices



Aquifer Properties Assessment Aquifer Performance Testing

- Measure groundwater level data with pressure transducers
 - Production well, monitoring wells, adjacent production wells.
- Production rates and cycles
 - Measure flow rate at production well and identified nearby interfering production wells
 - Limit interference for analysis
- Measure groundwater quality parameters
- Calculate Tuscan aquifer parameters



Outreach

- 1st Public meeting in July
- Butte, Tehama, and Glenn County advisory committee meetings
- Website and newsletter – 1st newsletter July 21st
- Outreach message – Field investigation works to increase understanding of the aquifer.



Summer Schedule

- Establish stream gauges
- Perform infiltration testing
- Install monitoring wells
- Public workshop July 21st

Closing Message

- Project Purpose is to increase understanding of the Lower Tuscan Aquifer as a *system*.
- Project tasks work together to acquire, compile, and share collected data

