

Current Status of the Leetown Hydrogeologic Assessment

- Funds needed to conduct the Leetown Hydrogeologic Assessment were allocated by Congressional Appropriation in February.
- Work actually began at the site in November of 2002.
- Although the project was delayed by 5 months, it appears the original timeframe and scope of work will be maintained.



Problem Statement

- The USGS BRD facility at Leetown depends on high quality ground water.
- Recent droughts in the region stretched available supplies to the limit.
- The recent addition of a USDA aquaculture research facility at the site resulted in additional demands on available water.
- Future expansion is dependent on developing additional sources of ground water.

Objectives of Leetown Hydrogeologic Assessment

- 1) Develop a detailed understanding of the hydrogeologic setting/properties of the Karst aquifer in the Leetown area, 2) Document the availability and quality of ground water in the area, 3) Evaluate patterns of land and water use that might impact ground water, 4) establish a monitoring network to determine ground-water availability/quality, and 5) Assess water availability as a function of drought/changes in land use.

Additional Objectives

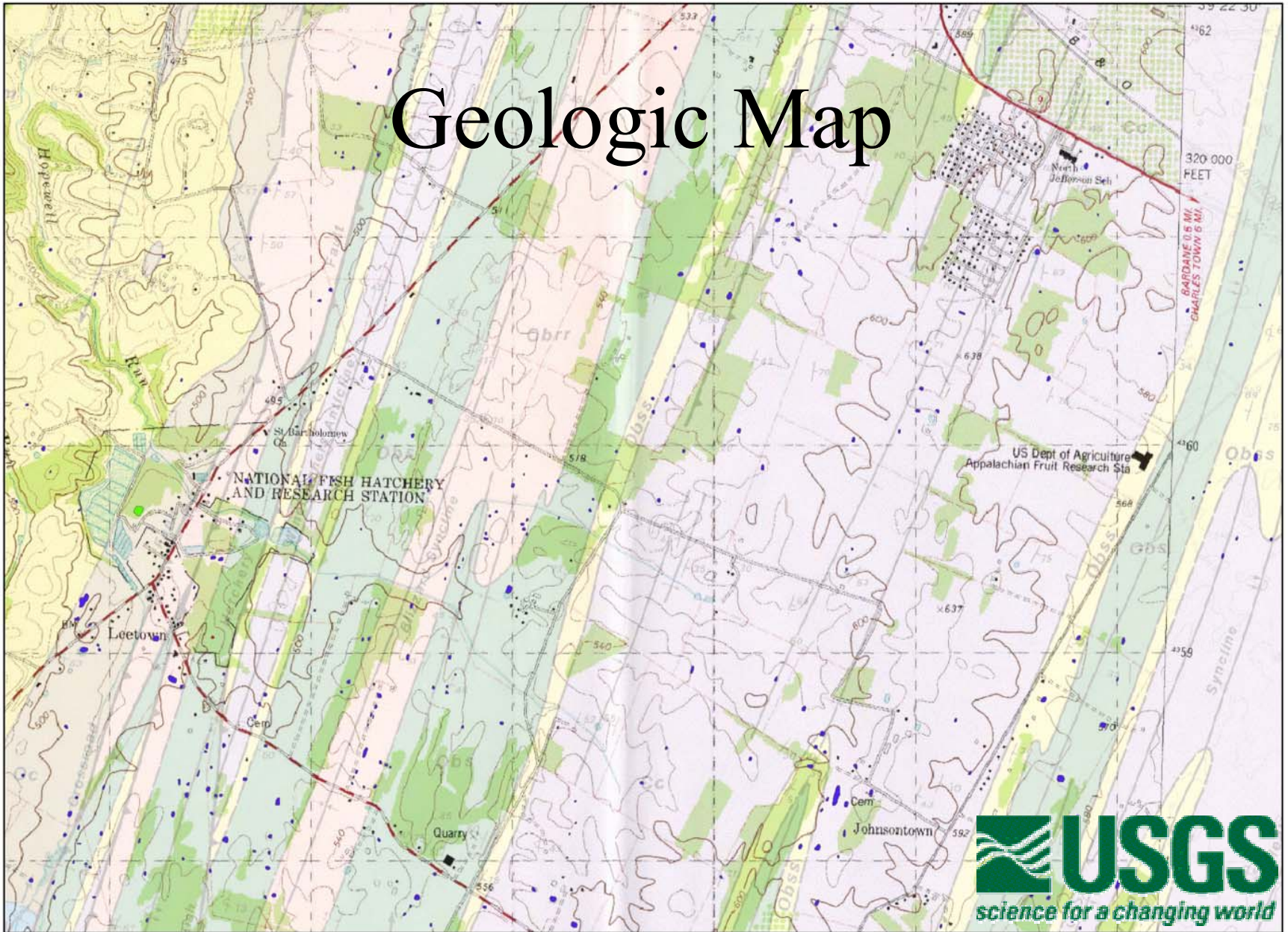
- The hydrogeologic assessment proposed for the Leetown Science Center contains both applied and research elements.
- In addition to helping the Center manage available ground-water resources, a major objective is to test and evaluate methods at the Center which can then be applied to hydrogeologically similar areas within the Great Valley and throughout the nation.



Tasks Scheduled for Completion in Fiscal Year 2003

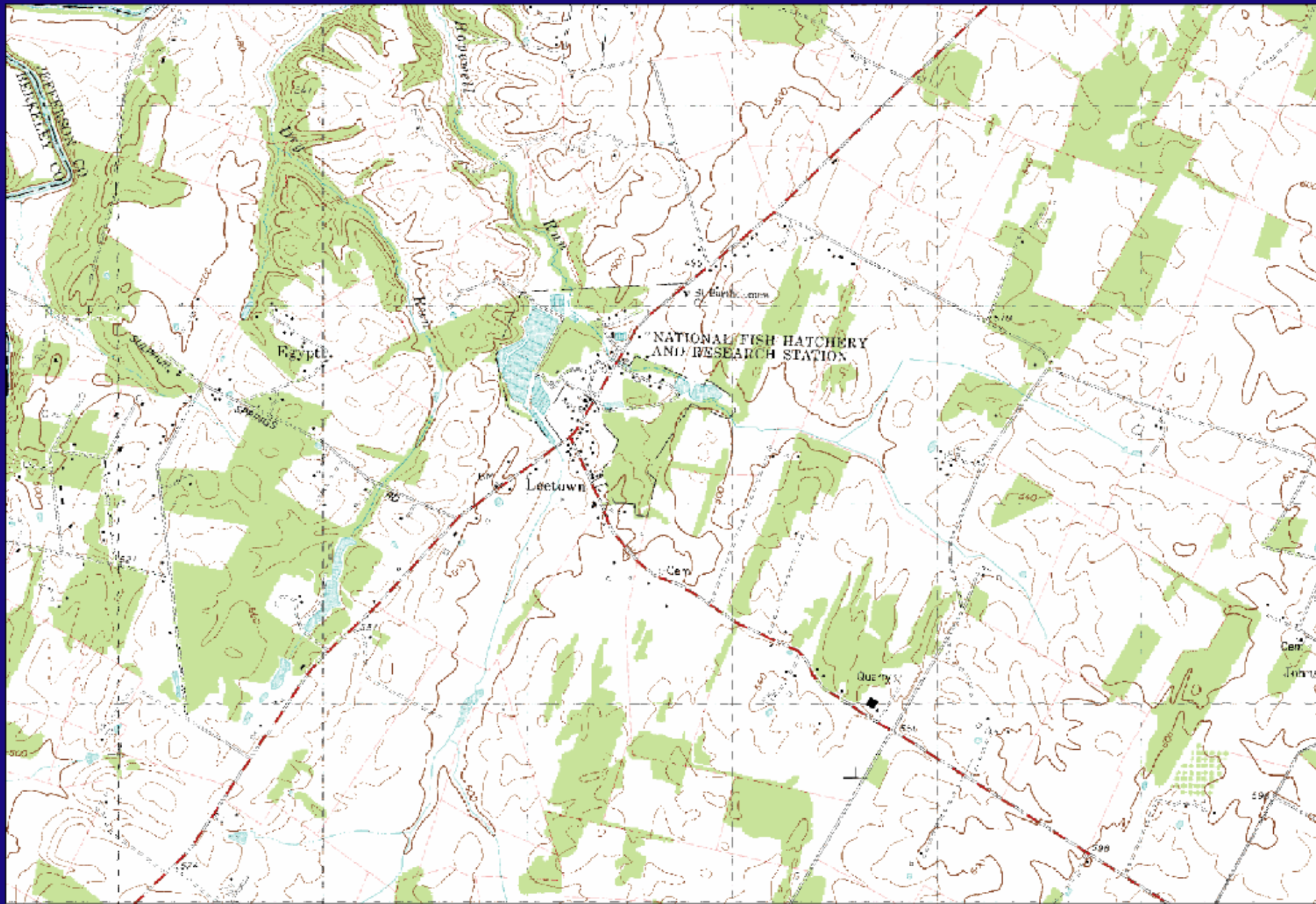
- Geologic, karst, and sinkhole mapping efforts continue and are proceeding well.
- Initial sites for surface geophysical surveys were recently identified and surveys are planned for the end of May.
- Preliminary sites for installation of 10 monitoring wells have been identified and drilling is scheduled to begin in July.

Geologic Map



Tasks Scheduled for Completion in Fiscal Year 2003 - Continued

- Sensors to monitor levels at two springs, a stream gaging station, and two precipitation gages have been installed at the facility.
- Borehole geophysical logging of the monitoring wells is scheduled for August and will employ several innovative methods.
- Analysis of borehole geophysical data will be conducted in September.



1:24,000

Leetown Science Center- quadrangle from 1978



1:24,000

Leetown Science Center and surrounding community- from 1:12,000 scale orthophoto quarter-quads, 1997

Approach to Achieving Project Objectives

- FY 2003 – conduct Karst/geologic mapping, surface/borehole geophysical surveys, and install monitoring wells. FY 2004 – prepare geologic/Karst maps, analyze geophysical data, conduct short term/long term aquifer tests, conduct water sampling, and prepare water-table map/preliminary report. FY2005 – Analyze water-quality/land use data and develop ground-water flow model. FY 2006 – Prepare final report.



Objectives of Berkeley County Fracture Trace Project

- To identify areas within the karst aquifer of Berkeley County where higher than average fracturing of bedrock occurs.
- To identify zones within the aquifer which may be especially susceptible to contamination by identifying fracture trace zones.
- To evaluate the water yielding capacity of fracture trace zones with respect to well yield and aquifer permeability.

Current Status of the Berkeley County Fracture Trace Project

- All available specific capacity data from past USGS investigations and a WVU thesis have been compiled and analyzed.
- Satellite imagery and aerial photography has been obtained and is currently being analyzed.
- Of 200 single well tests planned, approximately 40 have been completed.



Activities Planned for Berkeley County Project for FY 2003

- Continue conducting single well pump tests on approximately 150 wells this fiscal year.
- Continue acquisition and analysis of satellite imagery and aerial photographs.
- Begin analysis of well and remote sensing data to identify potential areas with higher than average fracture density and well yield.

