Success in Virginia's TMDL Program – Southwest Coalfields

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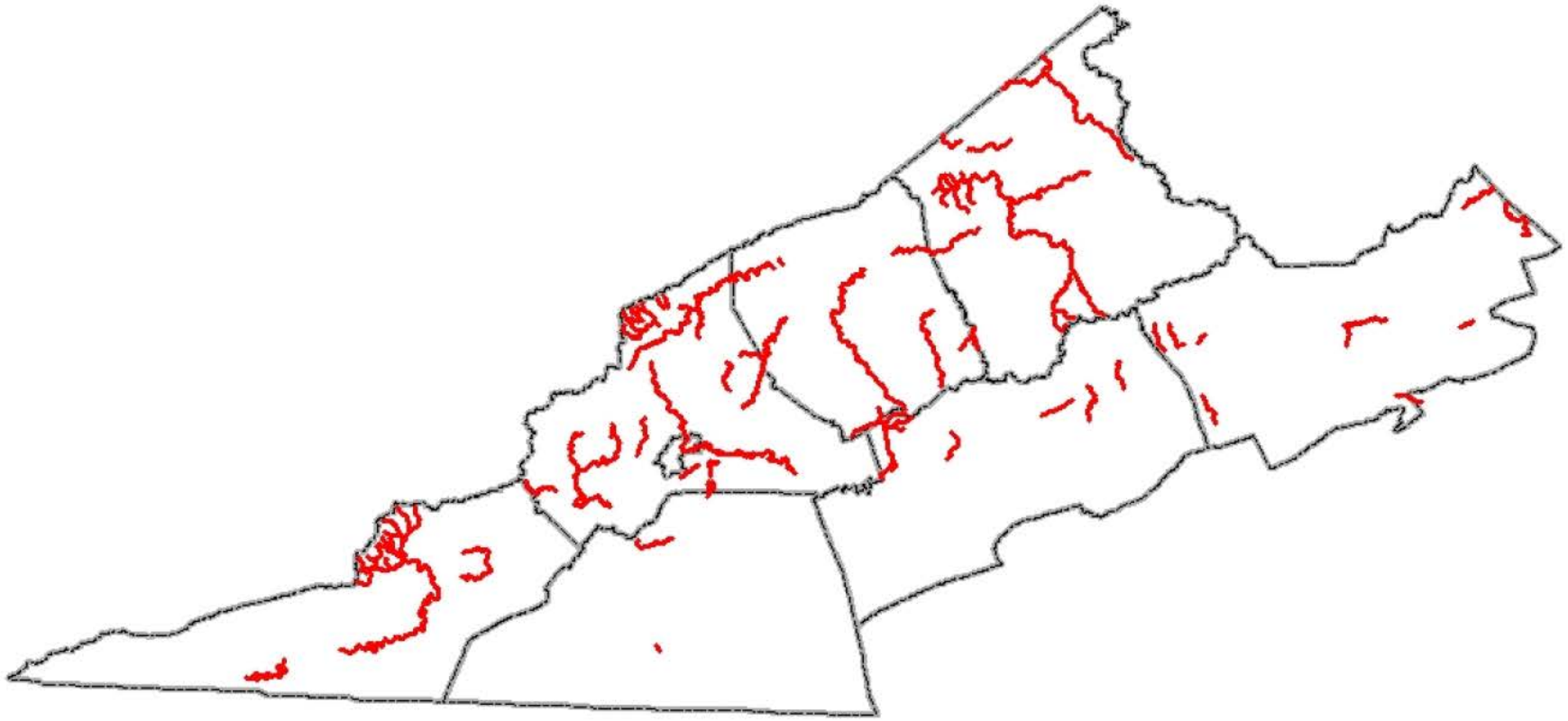
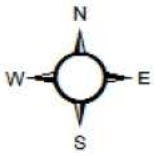
DEQ
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Overview

- In the southwest Virginia coalfields there are 15 total completed resource extraction benthic TMDLs.
  - 11 Traditional
  - 4 Phased
- Pollutants include:
  - Total Dissolved Solids
  - Total Suspended Solids → Sediment
  - Chloride
  - Manganese
  - Alkalinity

2012 SWRO
Benthic Impairments





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SWRO Resource Extraction TMDLs

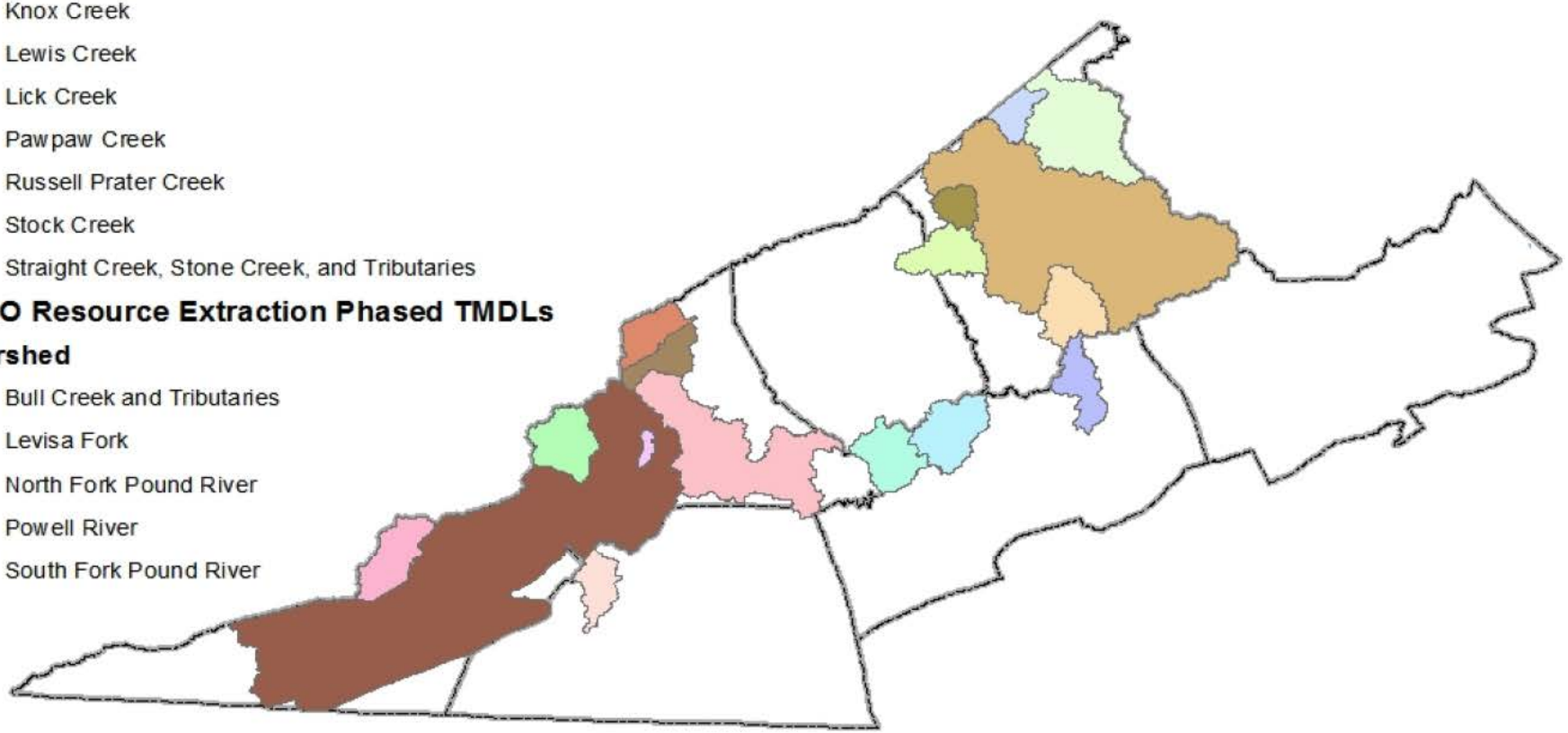
Watershed

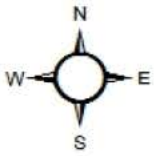
- Black Creek and Tributaries
- Callahan Creek
- Dumps Creek
- Garden Creek
- Guest River
- Knox Creek
- Lewis Creek
- Lick Creek
- Pawpaw Creek
- Russell Prater Creek
- Stock Creek
- Straight Creek, Stone Creek, and Tributaries

SWRO Resource Extraction Phased TMDLs

Watershed

- Bull Creek and Tributaries
- Levisa Fork
- North Fork Pound River
- Powell River
- South Fork Pound River





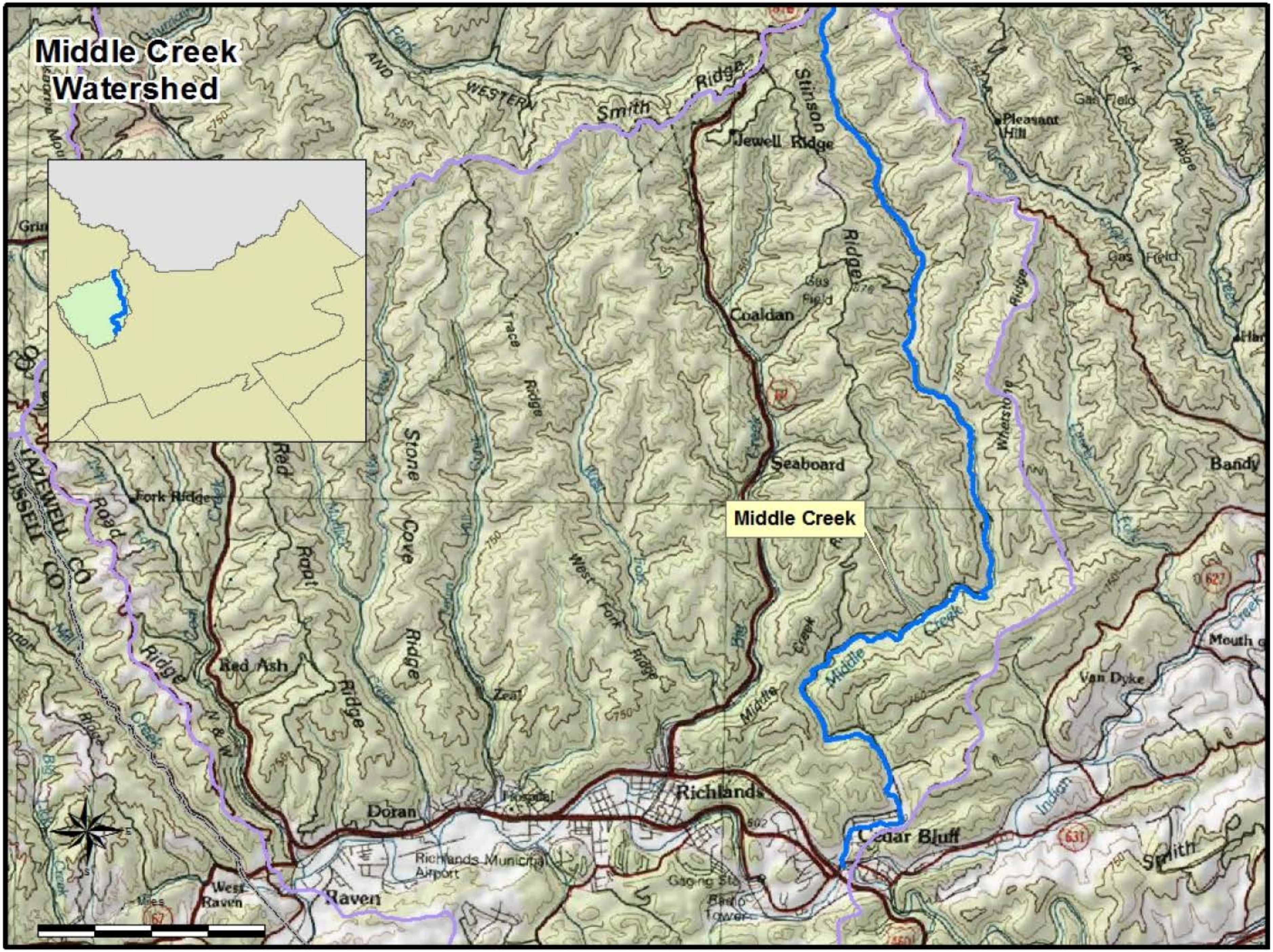
DEQ
Virginia Department of Environmental Quality

TMDL Development

- Development of resource extraction TMDLs is a cooperative process between the Department of Mines, Minerals, and Energy and the Department of Environmental Quality.
- DMME handles the technical side and DEQ handles public participation and EPA submittal.

Past Success – Middle Creek

- An 11 mile segment of Middle Creek was added to the 1998 303(d) list for violations of the general water quality standard.
- From 2000 to 2005 all former mining sites were ultimately reclaimed to unmanaged forestlands.
- DEQ and DMME had already contracted development of the TMDL, however water quality improvements were achieved before the TMDL was completed and Middle Creek was delisted.
- Funding for this project was came from a performance bond forfeiture.


Middle Creek Watershed
Middle Creek
Smith Ridge
Jewell Ridge
Stinson Ridge
Pleasant Hill
Gas Field
Coaldan
Seaboard
Bandy
Wheatstone Ridge
Trace Ridge
Stone Cove Ridge
Red Root Ridge
Red Ash
Fork Ridge
West Fork Ridge
Zeal
Doran
Hospital
Richlands
Richlands Municipal Airport
Cedar Bluff
Van Dyke
Mouth of
Raven
West Raven
Gaging Sta
Radio Tower
Indian Creek
TAZEWELL CO
RUSSELL CO
N & W
Miles

Past Success – Black Creek

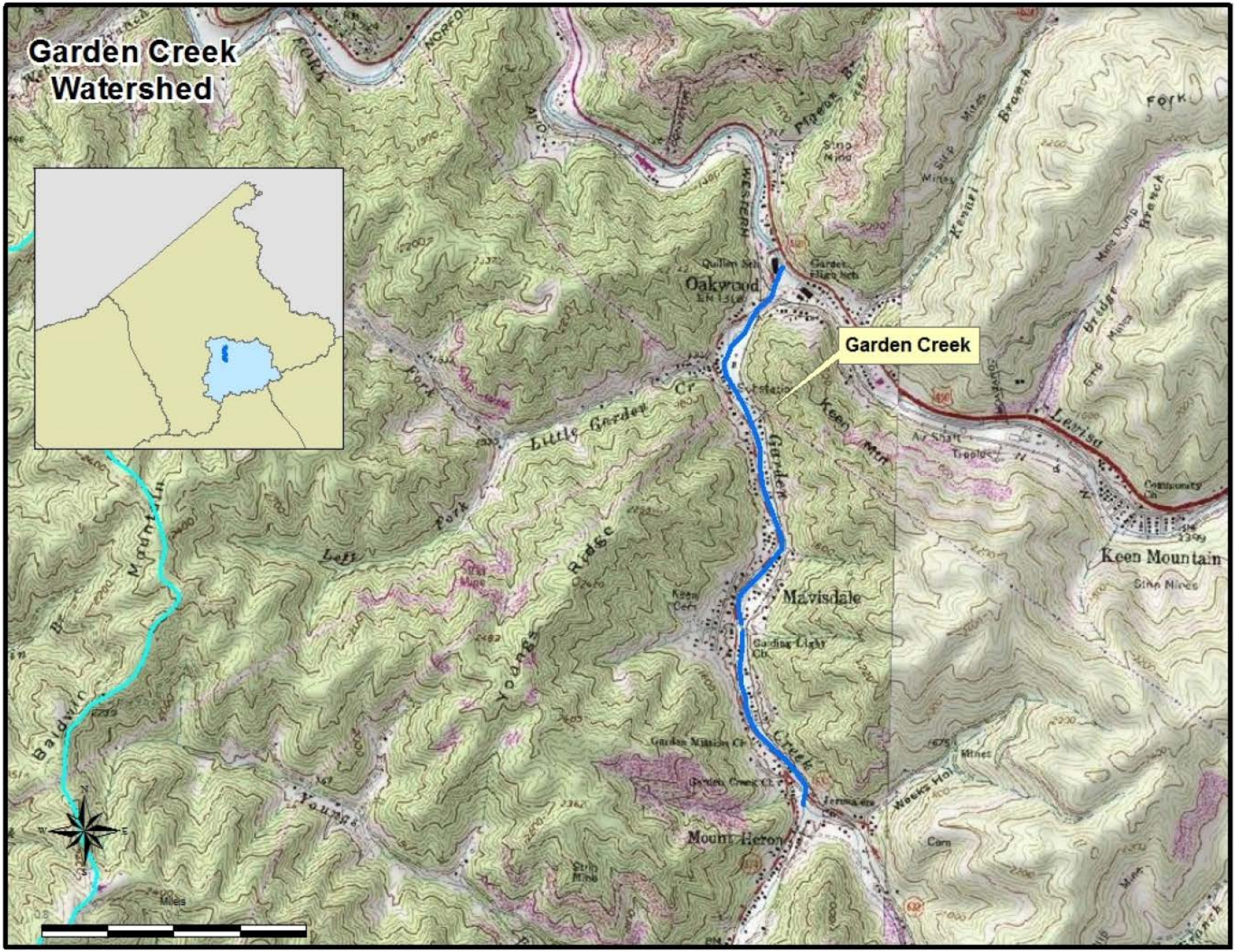
- 5.98 miles of Black Creek for added to the 1998 303(d) list for violations of the general water quality standard.
- The cause of the benthic impairment was identified as specific chemical stressors that originate from acid mine drainage.
- In 2002, DMME approved a re-mining and reclamation plan for the Red River Coal Company in the Black Creek watershed. Approximately 300 acres of abandoned mine lands have been restored.
- Funding for supplemental projects in this watershed were supported by the National Fish and Wildlife Foundation, EPA CWA section 319 and the U.S. Office of Surface Mining.


Black Creek Watershed
Black Creek
Ridge
Creek
Black
Beech
Hollow
Josephine
Dorchester
Blackwood
Dorchester Junction
Strip mines

2012 Delisting – Garden Creek

Parameter	Initial Listing	Size	Source
Benthic Macroinvertebrates	2006	3.60 miles	Subsurface coal mining and permitted coal mining discharges

- 4 of the 8 samples collected at 6AGAR000.16 violated the chronic freshwater standard for chloride.


Garden Creek
Watershed
Garden Creek
Oakwood
Mavisdale
Keen Mountain
Mount Heron
Miles

Garden Creek

- In 2005, DMME-DMLR entered into a penalty order with CONSOL for VPDES violations to Garden Creek.
- One of the SEPs in the penalty was that CONSOL pay for the development of the benthic TMDL.

Garden Creek

- The benthic TMDL was completed in 2007 and approved by EPA on 11/04/2007.
- CONSOL has constructed a reverse osmosis facility to treat mine water from the Buchanan No. 1 mine.

Garden Creek – Reverse Osmosis Plant

Garden Creek RO Plant & Diffuser

Garden Creek

- In 2008, DEQ approved a Level III monitoring plan for the collection of chloride data by CONSOL in Garden Creek and the Levisa Fork.
- Data collected in 2008, 2009, and 2010 show 0 violations in 23 samples.
- The chloride impairment on Garden Creek and the Levisa Fork was delisted in the 2012 Water Quality Assessment Integrated Report.

2014 *DRAFT* Delistings

- For the 2014 Water Quality Assessment Integrated Report, DEQ has submitted for delisting:
  - Swords Creek – Russell County
  - Gin Creek – Lee County
  - Stone Creek – Lee County

Swords Creek

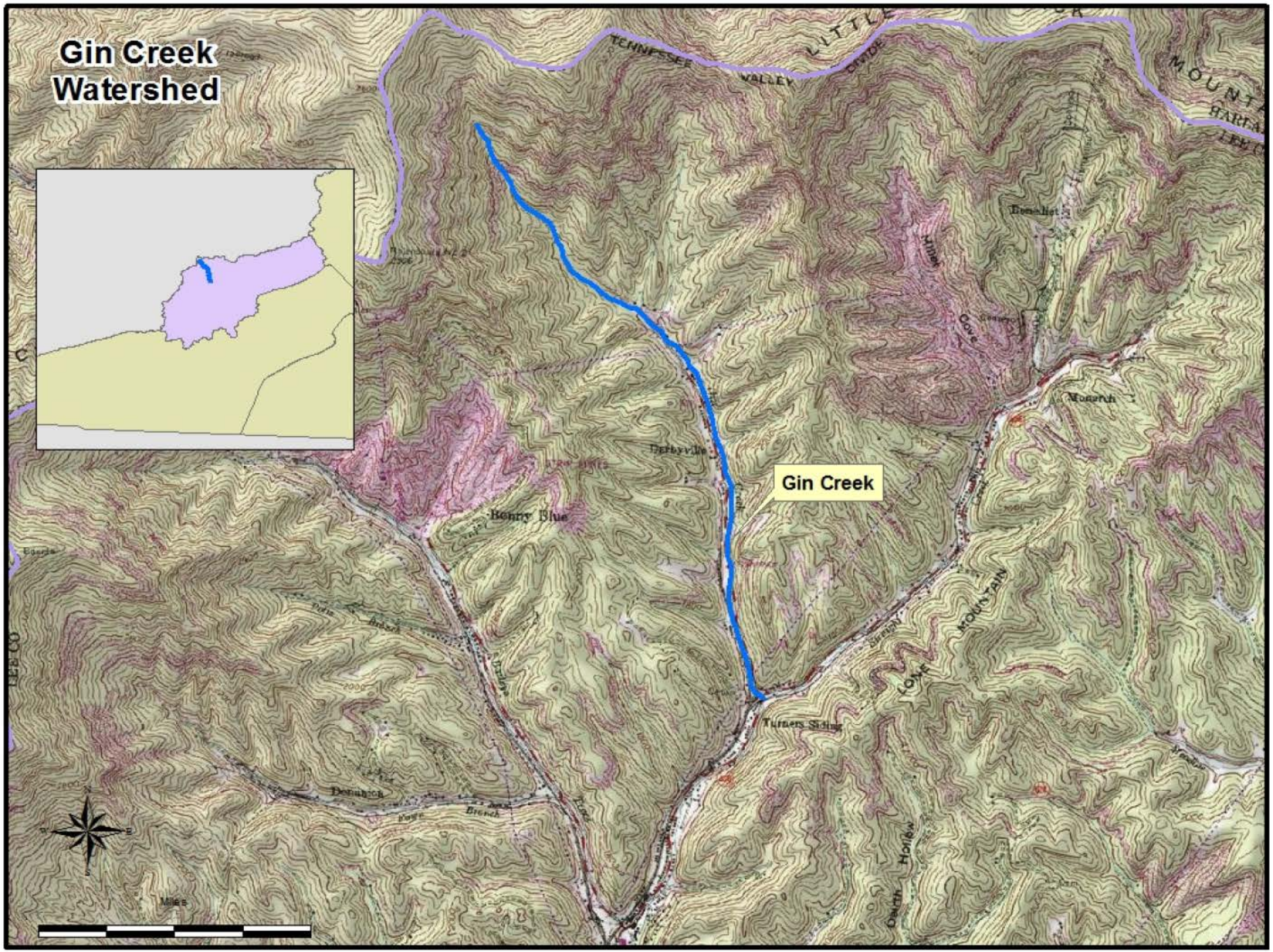
Parameter	Initial Listing	Size	Supporting Data
Benthic Macroinvertebrates	2002	2.91 miles	2012 VSCI Scores: 62 and 74

- Biological monitoring at station 6BSWO001.81 has been rated as impaired since 1995.


Swords Creek Watershed
6BSWO001.81
Swords Creek
Swords Creek
Dye
Stone
Branch
Groundhog
Sample
NORFOLK
CLINCH
N
W
E
S
Miles
0.8
0.4

Gin Creek

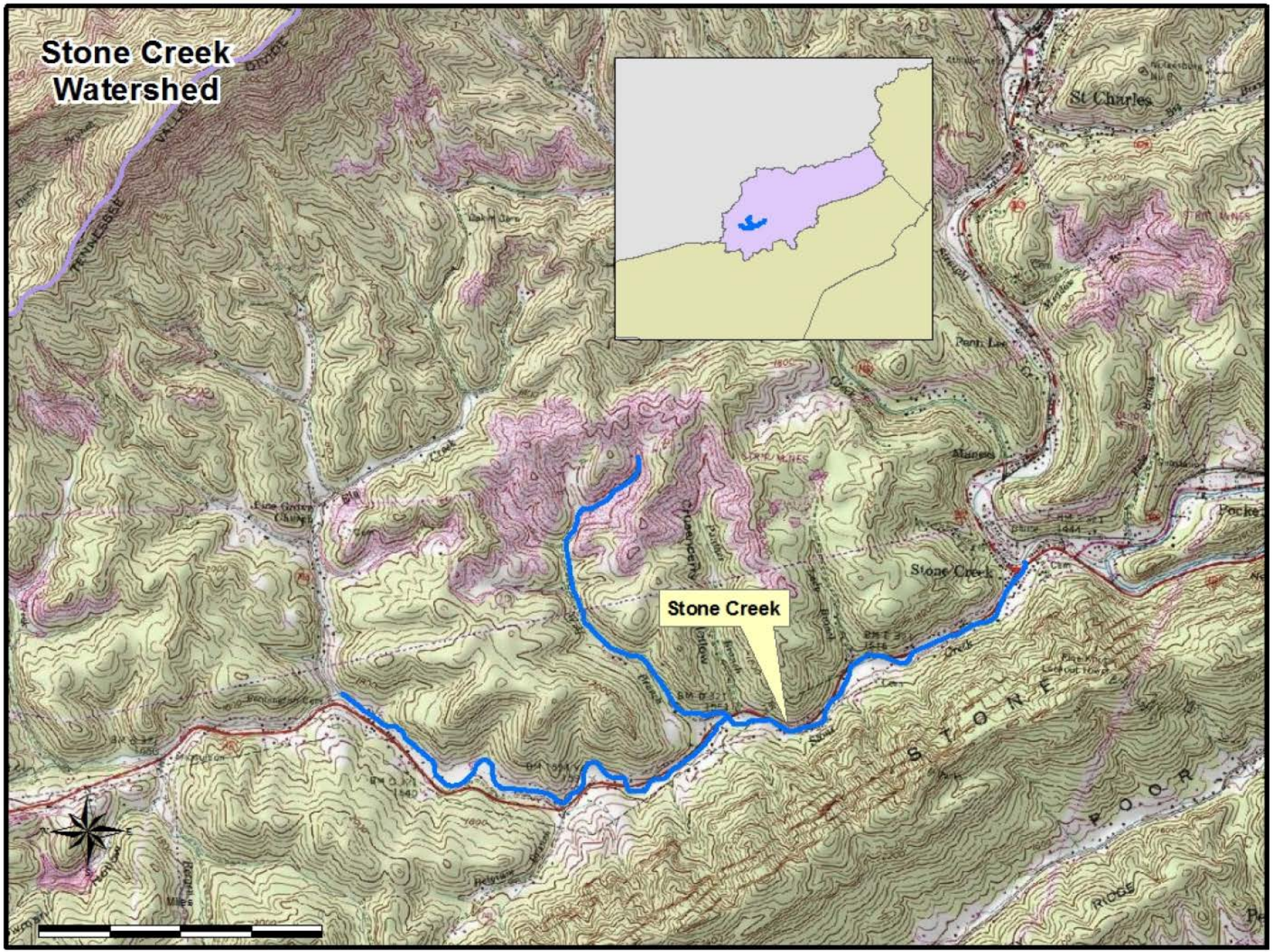
- A 2.59 mile long segment of Gin Creek was listed as impaired on the 2002 303(d) list for violation of the general water quality standard.
- The source of the impairment was a combination of impacts from abandoned mine lands and acid mine drainage.
- VSCI scores in 2011 indicate that Gin Creek is fully supporting with a 62 and 82.
- There is currently one active coal permit in the Gin Creek watershed. Mining was finished in 2008 and 20 acres of the permit area has been reclaimed. This site will remain under a performance bond for three more years to ensure a successful post mining land use of forest.


Gin Creek Watershed
Gin Creek
Derbyville
Berry Blue
Turners Siding
Monarch
Miles

Stone Creek

Parameter	Initial Listing	Size	Supporting Data
Benthic Macroinvertebrates	2002	3.33 miles	VSCI Scores: 2011 – 68 2013 - 76

- The source of the benthic impairment was a combination of impacts from abandoned mine lands and acid mine drainage.
- Over 215 acres of mined lands have been reclaimed in Stone Creek, primarily to forest. In addition, DMME has completed three important abandoned mine land reclamation projects that address acid mine drainage and landslides.


Stone Creek Watershed
Stone Creek
St Charles
Stone Creek
STORE
POOR
RIDGE

Ely Creek AMD Treatment

BEFORE 2008

AFTER 2013

Stone Creek Outdoor Classroom & Community Park

Improving……

Stream Name	Initial Listing	Size	Source
Dumps Creek	2002	3.53 miles	Coal Mining and impacts from Abandoned Mine Lands

- A TMDL was developed in 2003 that identified total dissolved solids as the most probable stressor in the watershed.
- A TMDL Implementation Plan was developed in 2008 that identified best management practices needed for Dumps Creek to meet the water quality standard.

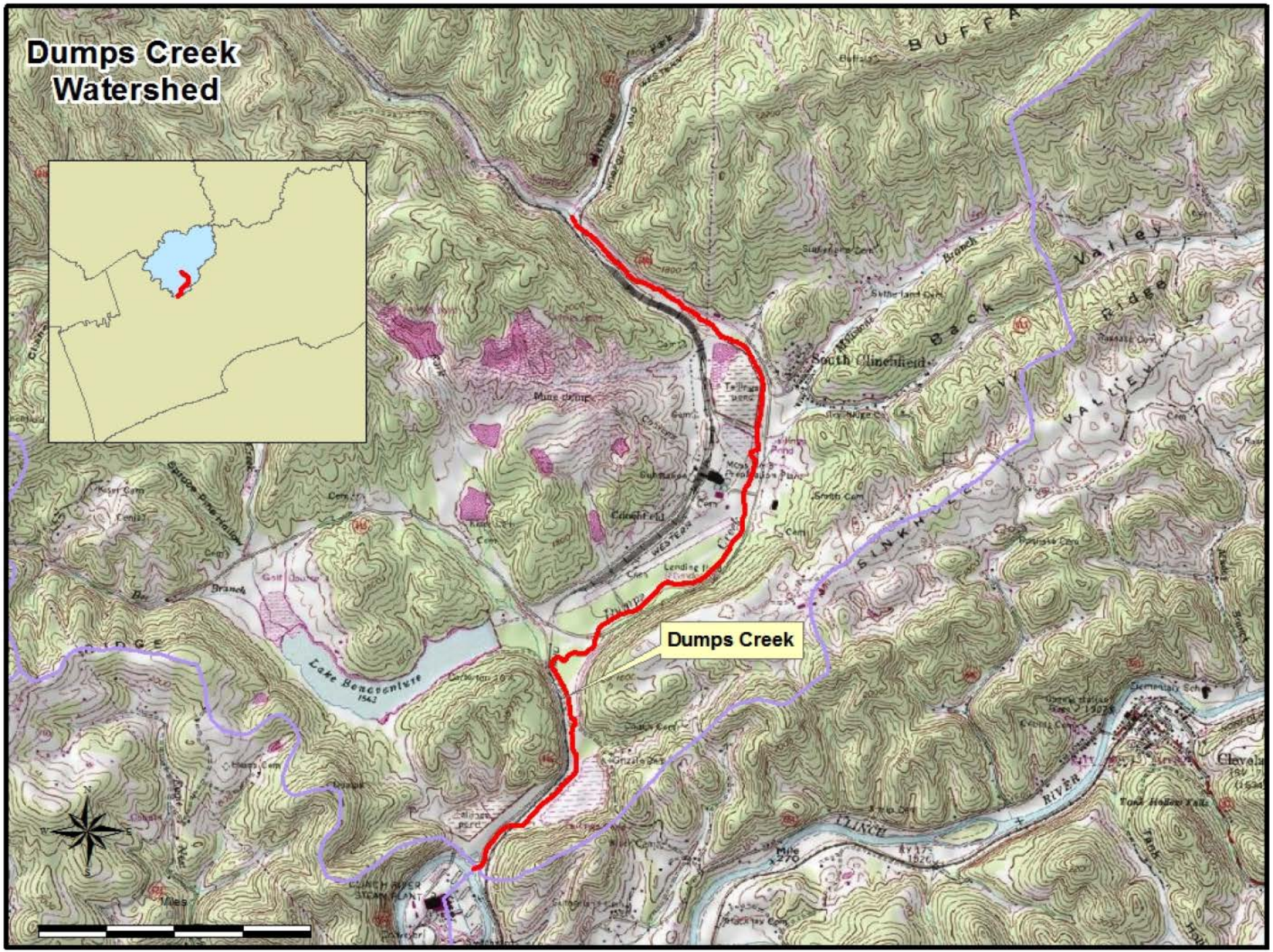
Dumps Creek

- In 2008, DMME entered into a Settlement Agreement with Dickenson-Russell Coal Company, a subsidiary of Alpha Natural Resources, for failure to comply with the wasteload allocations for TDS set by the TMDL.
- Since that time, the permittee has been working to meet all the actions described in the Settlement Agreement.
- Alpha was required to collect benthic macroinvertebrates samples at a DEQ monitoring station in the watershed.

Dumps Creek

- In addition to the Settlement Agreement, other improvement activities have been conducted by the state and coal industry in a cooperative effort to restore the watershed.
- Previously mined areas have been successfully reclaimed and underground mine water pumping to the watershed has been significantly reduced.

Hurricane Fork Gob Pile


Dumps Creek Watershed
Dumps Creek
South Clinchfield
Lake Bencenviere
CLINCH RIVER STEAM PLANT
Miles

Dumps Creek

- Benthic data collection began in 2013 and continues in 2014.
- Recent data indicates biological health in the watershed is recovering and meeting DEQ's biological standards.

Questions

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