

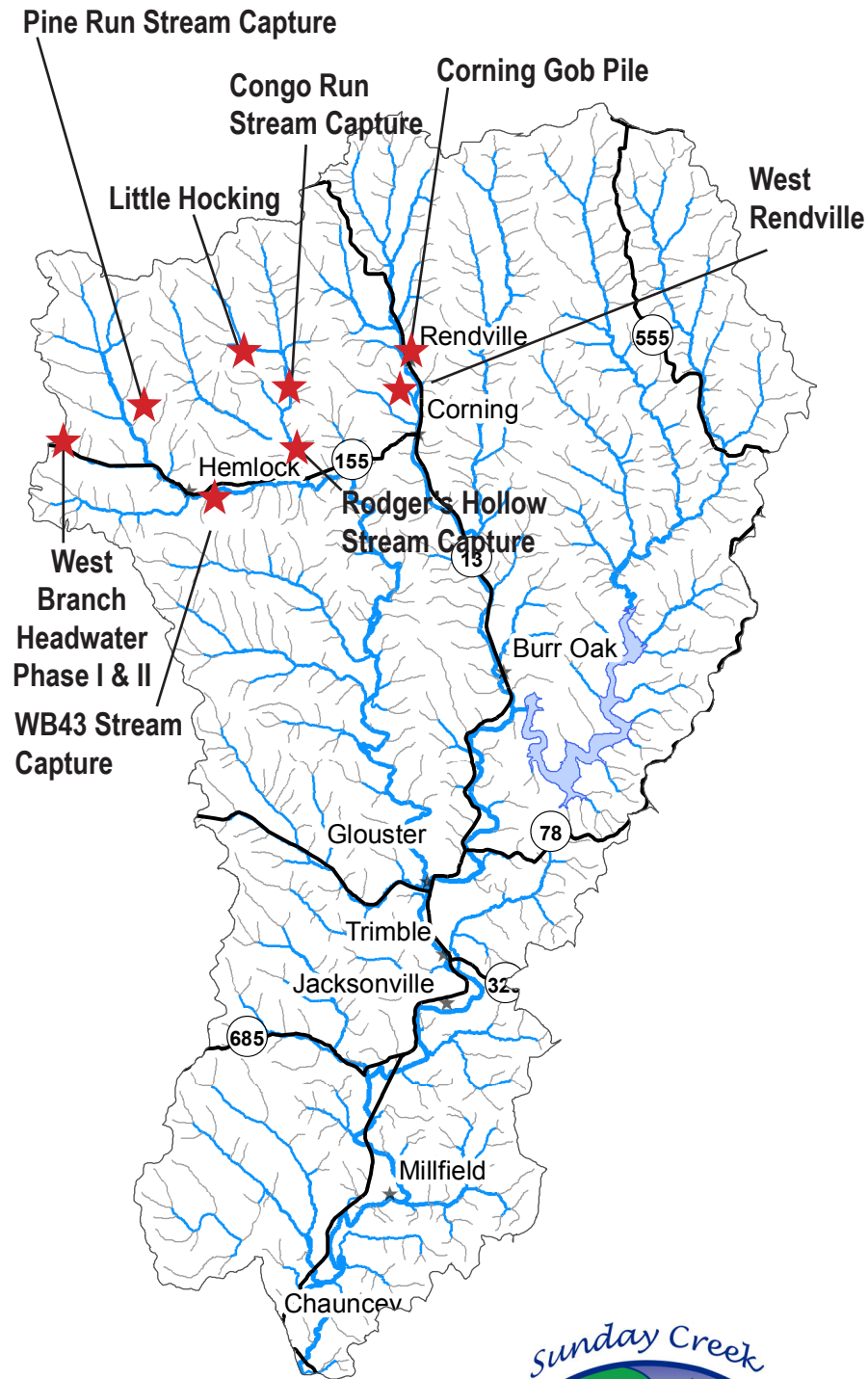
2011 NPS Report - Sunday Creek Watershed

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Sunday Creek Watershed Group (SCWG) is a nonprofit citizens group committed to restoring and preserving water quality through community interaction, conservation, and education in pursuit of a healthy ecosystem capable of supporting bio-diversity and recreation. Sunday Creek Watershed is a program of Rural Action, Inc., a non-profit group working to revitalize Appalachian Ohio. Sunday Creek Watershed covers 139 square miles (88,775 acres) and encompasses part of Perry, Athens, and Morgan Counties. Sunday Creek measures 27 miles long and starts flowing north of Corning and flows south through Chauncey where it enters into the Hocking River. Sunday Creek Watershed is primarily wooded (78%), 38% of the watershed has been deep mined for coal, and 15% of the land is public, owned by the Wayne National Forest. Major water quality impacts on Sunday Creek include acid mine drainage, improperly treated wastewater, illegal dumping, and sedimentation. The watershed group focuses restoration activities around these issues.

Since the group was founded in 1999, they have completed seven acid mine drainage reclamation projects within the Sunday Creek Watershed and are currently working on two new projects for next year. These projects have been funded by EPA Section 319 Grants and OSM Appalachian Clean Stream Initiative Grants with matching funds from the ODNR-DMRM. Over the last ten years, SCWG has also completed 17 upgrades of septic systems, planted thousands of trees, cleaned up over 200 tons of garbage, and educated thousands of children. The group is able to complete projects to improve water quality due to the strong partnerships of agency officials, residents, and other non-profits in the region. Sunday Creek Watershed Group completed their AM-DAT plan in 2003 and is currently working on updating this plan. The watershed group has also completed an updated watershed action plan that is now officially endorsed by the State of Ohio.

To learn more about the Sunday Creek Watershed Group, visit our website at www.sunday-creek.org or call 740.767.2225.



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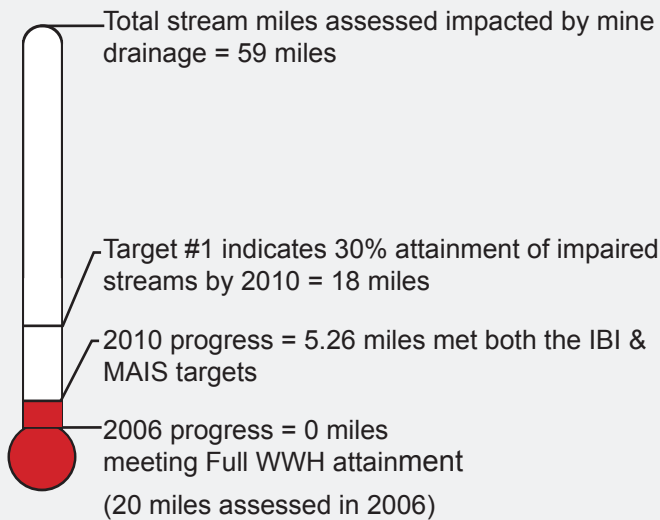
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Reductions

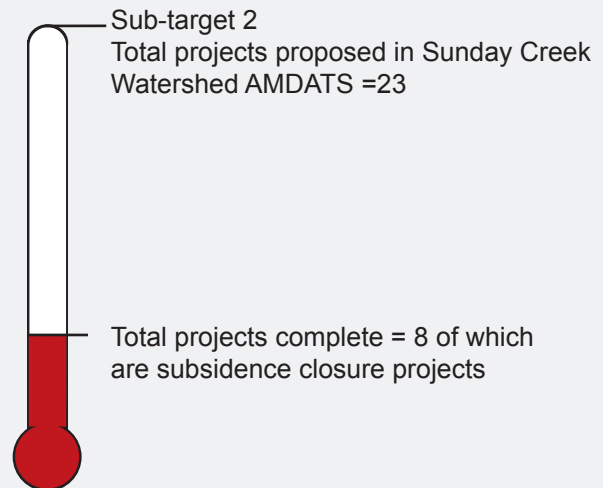
Project Name	Year Completed	Acres Captured	Agencies funding	Estimated water diverted from entering the deep mine
Congo Run CR-15	2004	72	ODNR-DMRM, OSM	24,000,000 gallons/yr
Pine Run	2007	138	ODNR-DMRM, OEPA	50,867,000 gallons/yr
Rodgers Hollow	2007	1,600	ODNR-DMRM, OEPA	589,290,000 gallons/y
Little Hocking	2009	286	ODNR-DMRM, OSM	105,400,000 gallons/yr
West Branch WB43	2010	65	ODNR-DMRM	26,000,000 gallons/yr
West Rendville	2011	240	ODNR-DMRM, OSM	88,464,000 gallons/yr

Six stream captures located in the Sunday Creek Watershed were closed and completed from 2004-2011. A total of 2401 acres surface drainage area drained year round into the deep mines and as a result of closing these subsidence holes 884,021,000 gallons per year were diverted from entering into the deep mine thus abating the generating of acid mine drainage. Expected additional alkaline loading from these closures returning clean water to the receiving streams is 986 lbs/day. As result of the Rodgers Hollow Subsidence closure, the deep mine discharge in Drakes has seen a reduction in acidity loads by 18 lbs/day.

Biological Health Performance



Completion



Costs

Design = \$289,544
Construction = \$1,676,162

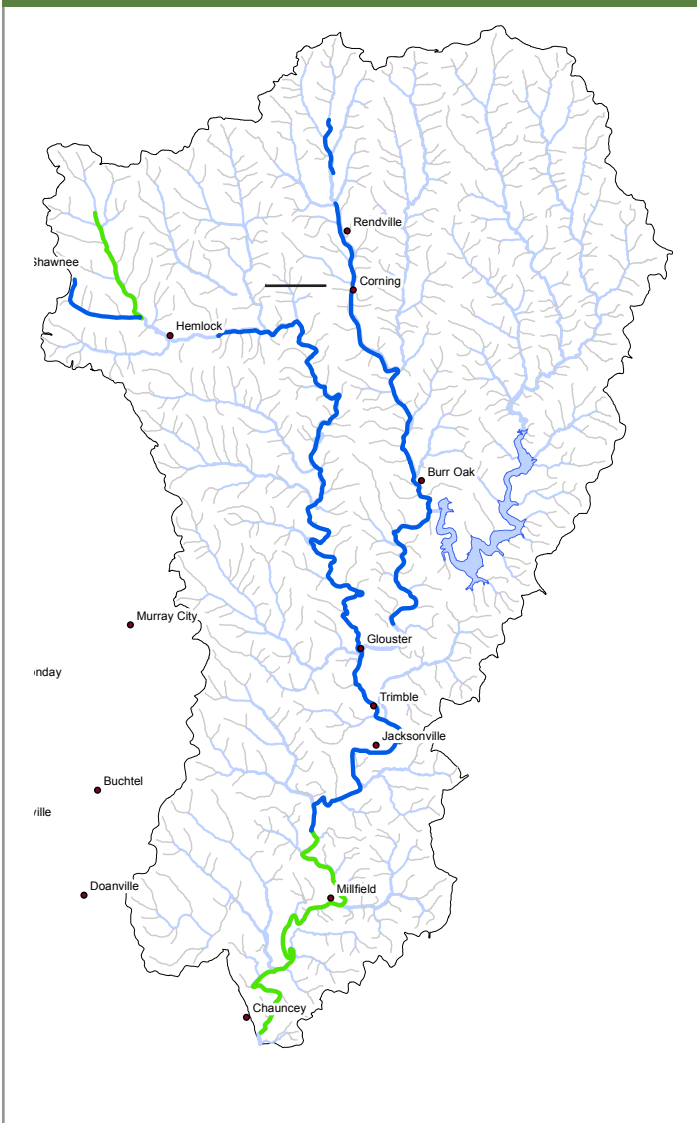
Total costs through 2011 = \$1,965,706
(excluding Congo Run CR-15 & WB 43 design)

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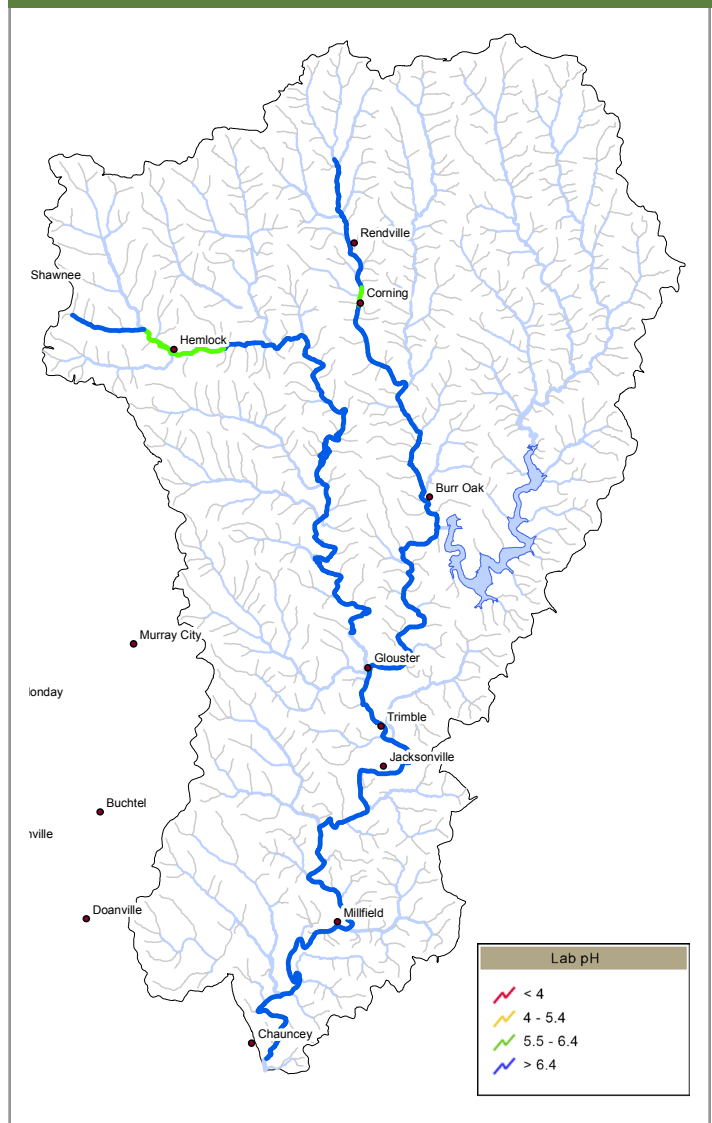
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Chemical Water Quality

Sunday Creek baseline pH



Sunday Creek 2011 pH



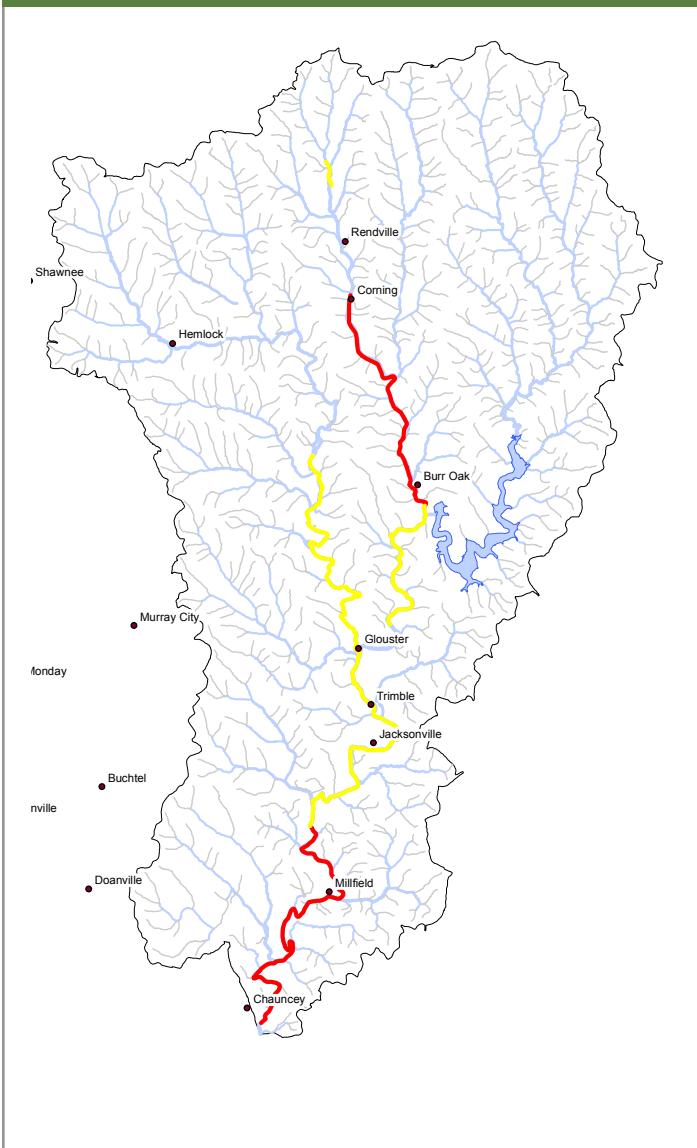
Water quality along the West Branch of Sunday Creek was degrading from baseline conditions in 2001 to 2007. Values of average pH dropped from >6.4 to 4.0-5.4 range in 2005 to 2006 and remained constant in 2007. When the subsidence features increased in Rodger's Hollow, funneling more water into the mine that generated AMD and discharged it into West Branch of Sunday Creek, the water quality decreased. However, since the subsidence closure in Rodger's Hollow in late 2007, the 2008 data for the first time shows an increase in pH along this stream segment. The average pH in 2007 at site WB 003 was 4.83, in 2008 5.97, in 2009 6.08, in 2010 6.25, and 6.51 in 2011.

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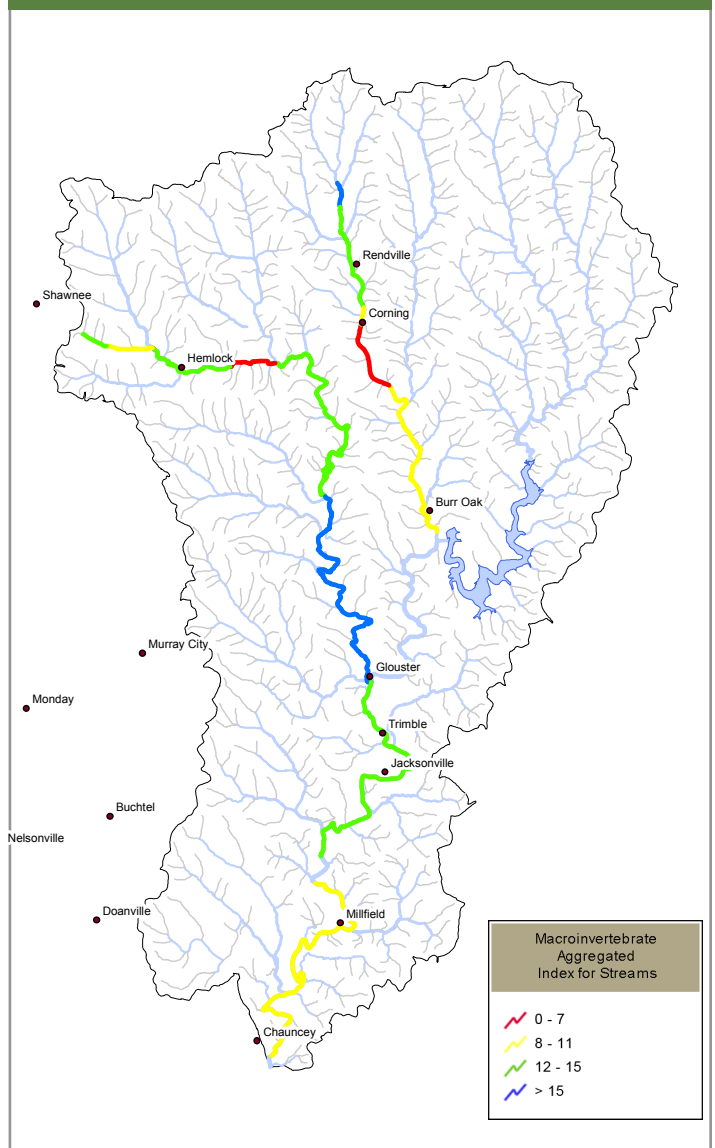
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Biological Water Quality

Sunday Creek baseline MAIS



Sunday Creek 2011 MAIS



MAIS samples were collected throughout Sunday Creek at established annual monitoring stations from 2001 through 2011.

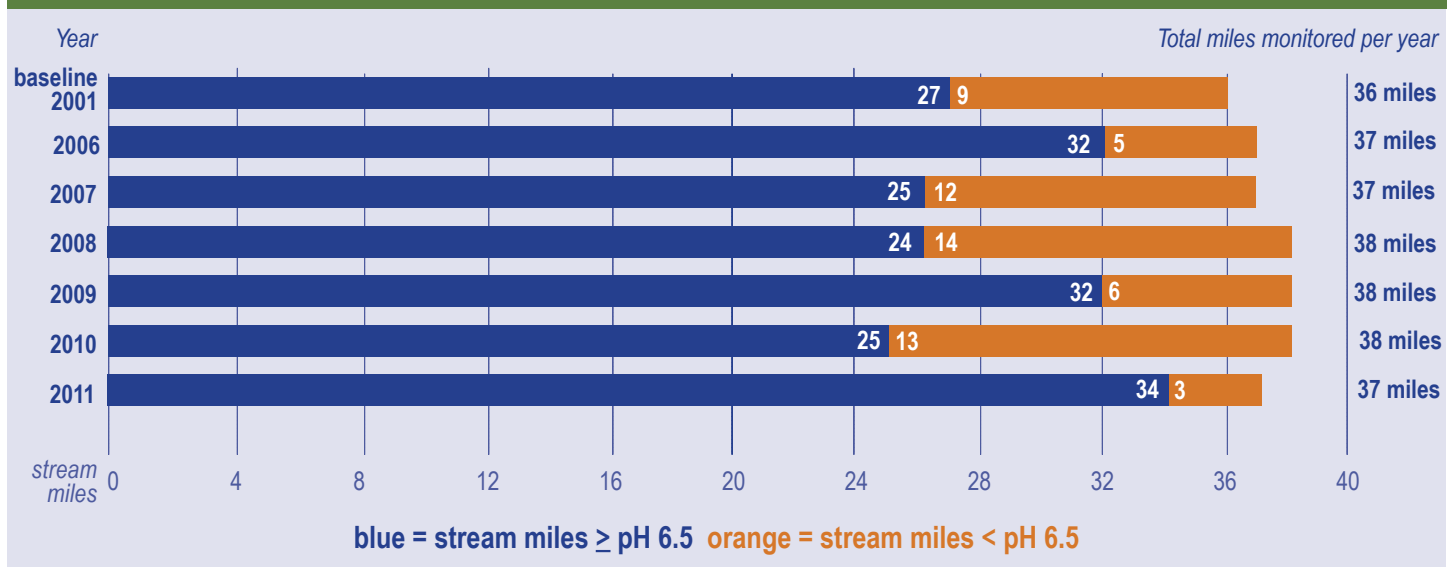
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Chemical Water Quality

There are approximately 38 stream miles monitored each year along the mainstem of Sunday Creek and major tributary West Branch. A restoration target for pH has been set to 6.5. Since 2007 there have been increases and decreases in the number of stream miles that meet this target. In 2007 nearly 25 miles of the 35 monitored met this target. In 2008, this number remained constant. In 2009 a 25% increase was recorded with 32 stream miles of the 38 monitored met the pH target of 6.5. While in 2010, only 25 of the 38 miles met the target. In 2011, the number of stream miles meeting the pH target were as high as they have ever been with 34 of the 37 miles monitored meeting the pH target of 6.5 (Figure A).

Figure A. Sunday Creek pH



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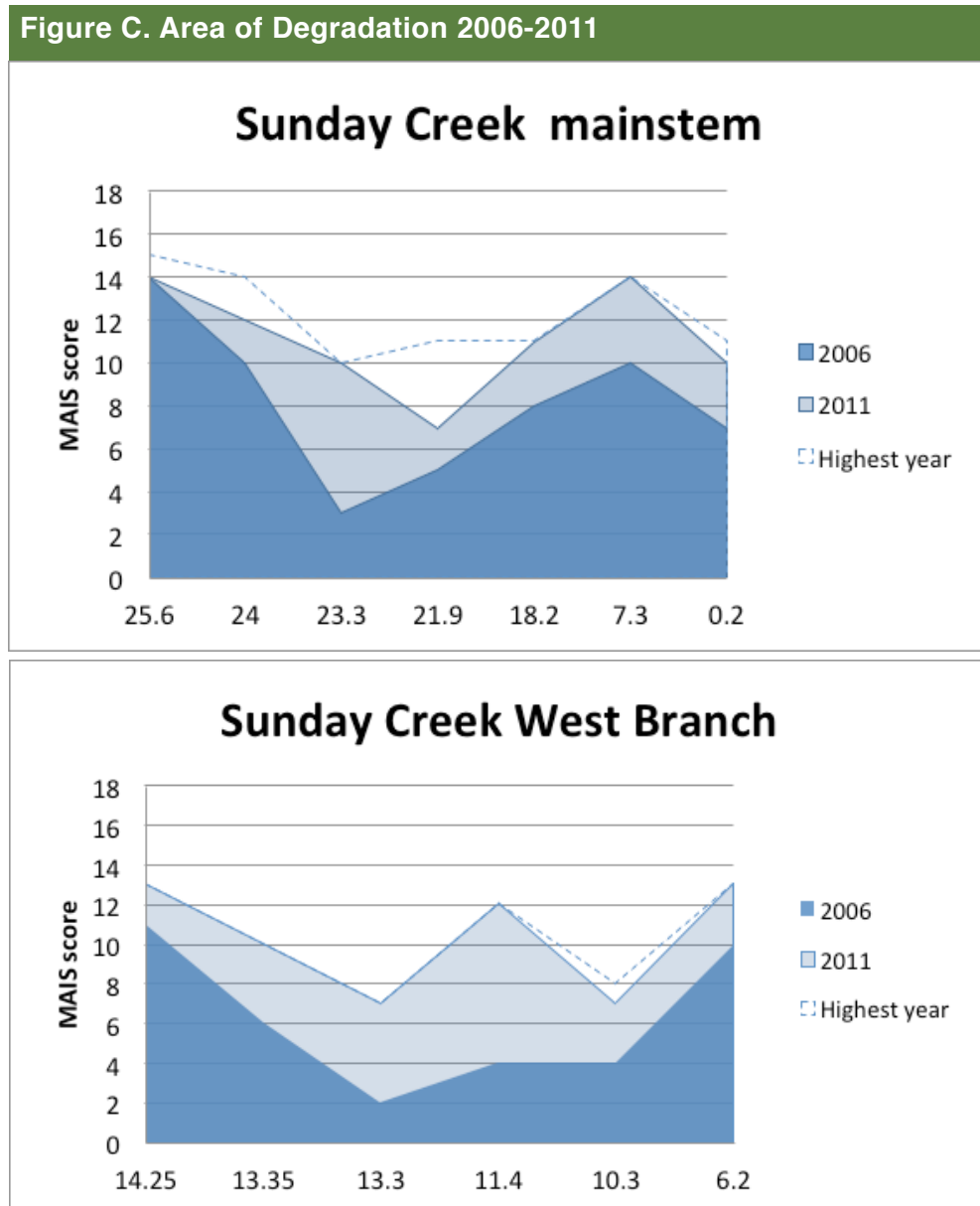
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Biological Water Quality

The biological quality along the Sunday Creek mainstem reflects the longitudinal pattern in water chemistry, with a sharp decline immediately below the Corning discharge (RM 24), followed by gradual improvement to RM 7.3, just upstream of the Truetown discharge (Figure B). While the biological quality for the first mile immediately downstream of the Corning discharge is consistently poor (since 2006), most of the sites between RM 21.9 and 7.3 have shown good potential for recovery, in that they have achieved notably higher scores in some years (highest year, dashed line). However, for most sites these gains were transient and lost in subsequent years.

However, the lowermost site near the mouth (RM 0.2) shows a solid and statistically significant trend of improvement over the past ten years, a good reflection of the cumulative effects of restoration activities in the watershed. More improvements in biological quality are seen in the West Branch compared to the mainstem, with four of the six monitoring sites reporting the highest biological scores since 2006 (Figure C). Three sites in the West Branch now show significant long-term improvement in macroinvertebrate scores: the site at RM 13.3, which supported almost no macroinvertebrates in 2005 (MAIS score of "1"), the mouth (RM 6.2), which has attained a score of "13" for two consecutive years, and the headwaters site (WBHW 03) (Figure D).

Figure C. Area of Degradation 2006-2011



The blue dashed line identifies the highest MAIS score ever achieved at that site throughout the monitoring time period.

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Biological Water Quality

Figure D. Sunday Creek MAIS Regressions

RM	2001	2002	2003	2005	2006	2007	2008	2009	2010	2011	Linear trends	P-value	yrs
Mainstem													
24				12	10	10	14	12	13	12	no change	0.346	7
23.3				5	3	2	7	12	5	10	no change	0.142	7
21.9	2	1	2	11	5	5	9	2	3	7	no change	0.332	10
18.2	5	9	8	10	8	10	5	7	8	11	no change	0.904	10
7.3	10	11	11	11	10	10	10	12	11	14	no change	0.123	10
0.2	4	2	3	8	7	3	6	11	8	10	improved	0.012	10
West Branch													
WBHW 50					11	10	11	8	12	13	no change	0.679	6
WBHW 03				5	6	4	8	6	8	10	improved	0.036	7
13.3				1	2	2	5	5	7	7	improved	0.0004	7
11.4				8	4	2	7	9	5	12	no change	0.272	7
10.3				8	4	3	4	8	4	7	no change	0.878	7
6.2				7	10	8	10	10	13	13	improved	0.008	7

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TIMELINE OF THE SUNDAY CREEK WATERSHED PROJECT MILESTONES & AMD PROJECTS

1999

- Sunday Creek Watershed Group founded

2000

- Rural Action added VISTA volunteer to SCWG staff

2001

- SCWG hired first Watershed Coordinator, funded for six years

2002

2003

- Sunday Creek Watershed AMDAT completed
- SCWG Watershed Action Plan conditionally endorsed by the State of Ohio

2004

- Congo Subsidence/ Stream Capture Project completed

2005

- Sunday Creek Watershed TMDL Study completed

2006

- SCWG Coordinator funded for three more years

2007

- Pine Run Stream Capture Project completed
- Rodger's Hollow Stream Capture Project completed
- Corning Gob Pile Reclamation Project completed

2008

2009

- Congo Run (CR-11/ Little Hocking) Stream Capture Project completed
- SCWG Coordinator funded for three more years
- Rural Action added AmeriCorps volunteer to SCWG staff

2010

- West Branch Headwaters Phase I Project completed
- West Branch 43 Stream Capture Project completed

2011

- SCWG Watershed Action Plan officially endorsed by the State of Ohio
- West Branch Headwaters Phase II Project completed
- West Rendville Stream Capture Project completed

