

Scene 16 · MS4 Assessment

Black Branch 2

City of Lebanon TN

36.17006, -86.26947 · Generated October 23, 2026

OVERALL SCORE

6.2

Marginal



Front: Looking downstream, a narrow stream channel is visible winding through a wooded riparian corridor. The left bank opens to a broad agricultural field (pasture/hay) with a red barn visible in the far distance. The channel bed is dominated by flat, layered limestone bedrock and cobble-sized rock fragments. Bare deciduous trees line both banks.

Right: The right bank rises moderately into a wooded hillside with bare deciduous trees and some eastern red cedar. The understory is sparse with dormant herbaceous vegetation and leaf litter. Through the trees, what appears to be exposed reddish-brown earth or a cleared area is visible on higher ground, possibly a field edge or disturbed area. A small amount of water is visible at the lower left edge of the frame.

Back: Looking upstream, the narrow stream channel continues through a corridor of dense bare deciduous trees and shrubs. The channel bed is exposed limestone bedrock with flat layered surfaces and rubble. A shallow flow of slightly turbid water moves across the bedrock surface. Vine tangles and dormant shrub thickets are visible on both sides of the channel, and the stream appears to bend slightly.

Left: The left bank transitions from a narrow riparian tree line into a broad, flat agricultural field (pasture or hay field) that extends to the horizon. Dormant grass covers the field, and a red barn/agricultural building is visible in the middle distance. The riparian buffer on this side is very narrow - only a single row of mature trees separates the stream from the open field. Some exposed soil and rock is visible at the bank toe.

Assessment Scores

Component	Score	Visual	Rating
Channel Condition	8		fair
Hydrologic Alteration	6		Fair
Sediment Deposition	8		Good
Left Bank Stability	6		Fair
Right Bank Stability	7		Good
Left Vegetative Protection	5		Fair
Right Vegetative Protection	6		Fair
Riparian Canopy Cover	5		Fair
Floodplain Vegetation	2		Poor
Water Appearance	7		Good
Nutrient Enrichment	8		Good
Epifaunal Substrate	-		-

Urgency: MEDIUM TERM 6 12 MONTHS

Detailed Observations · Scene 16

Black Branch at this location (scene #16 of 53) is a small, low-gradient headwater stream with a natural limestone bedrock channel in a rural agricultural setting near Lebanon, Tennessee. The stream's primary limitation is the severely inadequate riparian buffer on the left bank, where agricultural land (pasture/hay field) extends nearly to the stream's edge with only a single row of trees providing any buffer function. The right bank has a more adequate wooded buffer. Water quality appears fair with slightly turbid but generally acceptable conditions during dry weather low flow. Instream habitat is limited by the bedrock-dominated substrate and absence of large woody debris, resulting in poor velocity-depth diversity and limited fish and macroinvertebrate habitat. No stormwater infrastructure, outfalls, or illicit discharges were observed.

Primary Stressors

riparian loss, sedimentation, bank erosion

Channel Assessment

Metric	Score	Notes
Channel Condition	8	The channel appears natural with no evidence of straightening, riprap, or structural alteration. The bedrock substrate provides inherent grade control, limiting downcutting. Minor scour is evident but appears to be within natural range. The channel is slightly incised into the bedrock but this appears to be a natural feature of bedrock-controlled streams in this region.
Hydrologic Alteration	6	The stream appears slightly incised into its floodplain, with banks approximately 3-6 feet above the current water level. However, the broad agricultural floodplain on the left side suggests the stream still has some connection to its floodplain during larger events. Agricultural land use and potential drainage improvements in the watershed may have altered the hydrologic regime, increasing flashiness and reducing baseflow.
Sediment Deposition	8	Very little sediment deposition is visible. The bedrock substrate dominates and there are no significant point bars, mid-channel deposits, or pool filling. The bedrock-controlled channel naturally resists sediment accumulation, with loose fragments appearing to be locally derived from the bedrock rather than transported deposits.

Bank Assessment

Side	Stability	Veg. Protection	Erosion	Notes
Left	6	5	1_25_percent	Left bank transitions quickly from stream to agricultural field. Very narrow riparian buffer is the primary concern. The bedrock at the bank toe provides natural protection, but the lack of deep-rooted vegetation in the upper bank could lead to erosion during high flow events.
Right	7	6	1_25_percent	Right bank has a wider riparian buffer zone than the left, with the wooded area extending upslope. The bank appears more stable than the left bank due to greater root density and wider vegetated area.

Riparian Assessment

Metric	Score/Value	Notes
Canopy Cover	5	During winter leaf-off, current shade is minimal (under 25%). However, during growing season, the deciduous canopy from the trees along both banks would provide approximately 25-50% shade over the narrow channel. The left bank's single tree row and the right bank's wooded area combine to provide partial canopy coverage. The narrow channel width helps compensate for the limited buffer on the left.
Left Buffer Width	under 10ft	Score: 3/10
Right Buffer Width	25-50ft	Score: 6/10
TDEC 30ft Buffer Met?	L: No / R: Yes	The left bank represents a significant buffer deficiency. The flat agricultural field adjacent to the stream offers excellent restoration potential - establishing native trees and shrubs in a 30-60 foot buffer strip would be straightforward and highly beneficial. This should be flagged as a priority for TDEC MS4 permit section 4.2.5.4 compliance.

Water Quality & Infrastructure · Scene 16

Water Quality Indicators

Metric	Score	Notes
Water Appearance	7	Water appears slightly turbid with a brownish tint, but objects are visible on the bottom in the shallow areas. This coloration may be influenced by tannins from leaf litter decomposition (winter season) or minor sediment disturbance from the wading surveyor. Overall water quality appears fair to good for a small agricultural stream during low-flow conditions.
Nutrient Enrichment	8	Algae: minor
Manure/Waste	8	No evidence of manure, livestock access, or waste discharge is visible at this location. The agricultural field on the left bank appears to be hay/pasture but no livestock are currently visible and no livestock access points or trampled areas are evident along the bank. Fencing may be present but is not clearly visible from this vantage point.
Surface Contamination	-	Sheen: No · Foam: No · Odor: none

Stormwater Infrastructure

No outfall detected at this location.

Instream Habitat

Metric	Score	Notes
Epifaunal Substrate	-	

Stream Characteristics

Field	Value
Stream Type	perennial
Gradient	low_flat

Management Recommendations

Action	Priority	Timeline
Document the inadequate left-bank riparian buffer as a priority for buffer restoration under MS4 watershed management	high	90_days
Coordinate with agricultural landowner regarding voluntary buffer establishment program (NRCS Conservation Reserve Program or similar)	medium	annual

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