

Scene 4 · MS4 Assessment

Black Branch 2

City of Lebanon TN

36.17006, -86.26841 · Generated October 23, 2026

OVERALL SCORE

6.2

Marginal



Front: Looking downstream, a very small stream channel is visible with shallow water flowing over a limestone/flat rock substrate. The channel is narrow (approximately 3-5 feet wide) and flanked by dense dormant vegetation including cedars (eastern red cedar) and deciduous trees. Flat tabular rocks are exposed as mid-channel bars and bed substrate.

Right: Looking toward the right bank (when facing downstream), dense dormant vegetation is visible including eastern red cedar trees and tangled deciduous shrubs and vines. The bank rises moderately from the channel with a mix of grass and dormant herbaceous cover. The vegetation is thick but largely bare of leaves, suggesting winter dormancy. Some cedars retain green foliage.

Back: Looking upstream, the narrow stream channel stretches away with a rocky limestone bed clearly exposed. Water is very shallow, flowing in a thin ribbon over flat rock substrate. The channel is flanked by cedars and deciduous trees on both sides, with an open agricultural field visible through the trees on the right (which corresponds to the left bank when facing downstream). The rocky bed shows natural layered limestone with some larger cobble/flat rock pieces.

Left: Looking toward the left bank (when facing downstream), an expansive open agricultural field (pasture/hay) is visible beyond a narrow strip of riparian trees. A red barn and farm structures are visible in the distance approximately 500+ feet from the stream. The bank itself is moderately high with exposed roots and rock. The riparian buffer on this side appears thin, with the agricultural field encroaching relatively close to the channel. A fluorescent green hard hat or safety equipment is visible at the bottom of frame, confirming backpack-pole survey method.

Assessment Scores

Component	Score	Visual	Rating
Channel Condition	7		fair
Hydrologic Alteration	5		Fair
Sediment Deposition	6		Fair
Left Bank Stability	5		Fair
Right Bank Stability	7		Good
Left Vegetative Protection	4		Fair
Right Vegetative Protection	7		Good
Riparian Canopy Cover	7		Good
Floodplain Vegetation	2		Poor
Water Appearance	6		Fair
Nutrient Enrichment	8		Good
Epifaunal Substrate	-		-

Urgency: MEDIUM TERM 6 12 MONTHS

Detailed Observations · Scene 4

Black Branch 24 at scene #4 is a small headwater stream in marginal condition flowing through a rural agricultural landscape near Lebanon, Tennessee. The channel retains natural limestone substrate and reasonable water quality, but is significantly impacted by a narrow riparian buffer on the left bank where pasture/hay field encroaches close to the channel. The stream shows moderate incision, limited pool habitat, and reduced depth diversity that constrains aquatic life potential. Priority management actions should focus on riparian buffer restoration on the left bank and improved agricultural runoff management to maintain and enhance this headwater stream's ecological function.

Primary Stressors

riparian loss, sedimentation, bank erosion

Channel Assessment

Metric	Score	Notes
Channel Condition	7	The channel appears largely natural with no direct structural modifications. However, the moderate incision (banks are 3-6 ft on the left side) and disconnection from the floodplain suggest some degree of downcutting, likely related to land use changes in the watershed. The channel geometry appears relatively stable at present with natural bed substrate intact.
Hydrologic Alteration	5	The channel shows moderate incision, particularly evident on the left bank where banks are 3-6 ft high and steep. Adjacent agricultural land use suggests altered hydrology from drainage modifications. The low flow condition with significant exposed substrate suggests the channel may be oversized relative to current baseflow, indicating flashy hydrology typical of agricultural watersheds.
Sediment Deposition	6	Some sediment deposition is evident as gravel and flat rock accumulation in the mid-channel area visible in the front view. The substrate appears to be a mix of bedrock-influenced limestone pieces and transported gravel. Approximately 10-25% of the visible bed shows signs of active deposition. Pools appear limited, suggesting some infilling.

Bank Assessment

Side	Stability	Veg. Protection	Erosion	Notes
Left	5	4	26_50_percent	Left bank is steeper and more eroded than right bank. The narrow riparian buffer transitions rapidly to open agricultural pasture/hay field. Root exposure is moderate indicating active bank erosion. Red barn and farm structures visible approximately 500+ ft from stream.
Right	7	7	1_25_percent	Right bank is more stable than left, with denser vegetation and lower bank heights in places. Cedar trees provide good root stabilization. The riparian buffer appears wider on this side, contributing to better bank stability.

Riparian Assessment

Metric	Score/Value	Notes
Canopy Cover	7	Currently in winter with bare deciduous trees, the canopy provides moderate shade. In summer with full leaf-out, the combination of evergreen cedars and deciduous trees would likely provide 50-75% shade. The narrow buffer on the left side allows more light penetration. For a warmwater stream, this represents a reasonable shade level providing a mix of conditions.
Left Buffer Width	10 25ft	Score: 3/10
Right Buffer Width	25 50ft	Score: 6/10
TDEC 30ft Buffer Met?	L: No / R: Yes	The left bank riparian buffer is inadequate, with agricultural pasture/hay field encroaching close to the channel. Buffer restoration on the left side through tree planting and exclusion fencing would significantly improve filtering capacity and bank stability. The right side buffer is marginal but more adequate.

Water Quality & Infrastructure · Scene 4

Water Quality Indicators

Metric	Score	Notes
Water Appearance	6	Water has a slightly brownish/tea coloration but the bed is clearly visible through the shallow depth. Clarity appears moderate - not heavily turbid but not crystal clear either. The brown tint could be from natural tannins or minor sediment. No sheen, foam, or unusual coloration noted. The shallow depth makes clarity assessment somewhat limited.
Nutrient Enrichment	8	Algae: minor
Manure/Waste	7	No direct evidence of manure or waste is visible in the stream or on banks. However, the adjacent agricultural field (visible in left view) with red barn/farm structures in the distance suggests potential livestock operations nearby. No obvious livestock access to the stream is visible at this point, but the narrow buffer raises concern about potential manure transport during storm events.
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 this reach as part of the visual stream survey inventory for Black Branch 24	medium	annual
Continue dry weather screening along the reach to check for any agricultural discharge inputs	medium	annual

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