

Scene 3 · MS4 Assessment

Black Branch 2

City of Lebanon TN

36.17004, -86.26836 · Generated October 23, 2026

OVERALL SCORE

6.5

Marginal



Front: Looking downstream, the channel is a very narrow, shallow stream with exposed flat rock substrate and scattered loose cobble/gravel. Water flows in a thin film over bedrock. Deciduous trees are bare on both banks, with open agricultural fields visible through the tree line to the left. A fallen log/debris jam partially spans the channel ahead.

Right: The right bank (left bank when facing downstream) shows a wooded riparian area with bare deciduous trees and a mix of green herbaceous ground cover emerging in early spring. Beyond the tree line, open agricultural/pasture fields are visible. The riparian buffer extends approximately 25-50 feet before transitioning to open land. A possible old structure or large debris is visible in the mid-ground.

Back: Looking upstream, the channel widens slightly and the water is somewhat deeper with a visible flowing surface over a sand/gravel/bedrock substrate. Trees with exposed root systems line the banks, especially on the right (left bank facing downstream) where significant root exposure and minor bank erosion is evident. Bare deciduous trees dominate with a few evergreens (cedars) visible. A fence line or wire is visible crossing the upper portion of the scene.

Left: The left bank (right bank when facing downstream) shows a steep, rocky bank with exposed flat limestone rock and scattered trees growing from the bank face. Beyond the narrow riparian strip, open agricultural/pasture land is visible with a red barn structure in the distance. The rock on the bank appears to be natural limestone layers consistent with local geology, though some flat pieces have somewhat angular edges. Hills/ridgeline visible in the far background.

Assessment Scores

Component	Score	Visual	Rating
Channel Condition	8		fair
Hydrologic Alteration	6		Fair
Sediment Deposition	7		Good
Left Bank Stability	6		Fair
Right Bank Stability	6		Fair
Left Vegetative Protection	6		Fair
Right Vegetative Protection	5		Fair
Riparian Canopy Cover	6		Fair
Floodplain Vegetation	3		Poor
Water Appearance	8		Good
Nutrient Enrichment	8		Good
Epifaunal Substrate	-		-

Urgency: MEDIUM TERM 6 12 MONTHS

Detailed Observations · Scene 3

Black Branch scene #3 is a small, bedrock-controlled headwater stream flowing through an agricultural landscape in Middle Tennessee. Water quality is good with clear water and no evidence of contamination or nutrient enrichment. The primary limitations are the narrow riparian buffer (particularly on the right bank), limited instream habitat diversity due to bedrock dominance and shallow depth, and poor velocity-depth regime variety. No stormwater infrastructure, outfalls, or illicit discharge indicators were observed. The stream channel is largely natural with no significant alterations, and the limestone bedrock provides inherent grade control. Buffer restoration and habitat enhancement through strategic woody debris placement would improve overall stream function.

Primary Stressors

riparian loss, sedimentation, bank erosion

Channel Assessment

Metric	Score	Notes
Channel Condition	8	The channel appears largely natural with no evidence of straightening, armoring, or significant alteration. The limestone bedrock substrate provides natural grade control. Minor lateral erosion is present upstream but not excessive for a natural stream. The channel appears to be in a naturally evolved state within its agricultural landscape.
Hydrologic Alteration	6	The stream shows slight incision through the limestone bedrock with banks approximately 3-4 feet high in places. The floodplain appears connected based on the low bank heights in some areas and evidence of flood deposits, but the agricultural land use and potential drainage alterations may have increased peak flows and altered hydrology somewhat. The bedrock channel limits further downcutting.
Sediment Deposition	7	The bedrock-controlled channel shows minimal sediment deposition. The exposed limestone bed has scattered loose rock fragments and minor gravel/sediment accumulation in low spots, but less than 30% of the visible bed is affected. The bedrock substrate prevents significant sediment storage.

Bank Assessment

Side	Stability	Veg. Protection	Erosion	Notes
Left	6	6	1_25_percent	Left bank shows natural limestone bedrock exposure in places with tree root stabilization. Minor undercutting visible upstream where trees have exposed root masses. Riparian corridor is narrow with agricultural fields beyond.
Right	6	5	1_25_percent	Right bank characterized by steep limestone rock faces with scattered trees. The narrow riparian buffer transitions quickly to open agricultural/pasture land with a barn visible. The exposed rock bank is naturally stable but the sparse vegetation and narrow buffer are limiting factors.

Riparian Assessment

Metric	Score/Value	Notes
Canopy Cover	6	During the current dormant season, canopy shade is limited to approximately 25-50% due to the mostly bare deciduous trees with some eastern red cedars providing evergreen cover. During the growing season, the shade would increase significantly to potentially 50-75% given the tree density visible. The mixture of deciduous and evergreen species provides some year-round shading.
Left Buffer Width	25 50ft	Score: 5/10
Right Buffer Width	10 25ft	Score: 4/10
TDEC 30ft Buffer Met?	L: Yes / R: No	The right bank riparian buffer appears inadequate relative to TDEC MS4 permit requirements. Agricultural land use encroaches close to the stream on the right bank. Buffer restoration through native tree and shrub planting would significantly improve filtering capacity, bank stability, and stream health. The left bank buffer is marginally adequate but would also benefit from widening.

Water Quality & Infrastructure · Scene 3

Water Quality Indicators

Metric	Score	Notes
Water Appearance	8	Water is very clear in the downstream and at-station views, with the bedrock substrate easily visible. The upstream view shows slightly more turbid/brownish water suggesting some disturbance from the surveyor's wading. Under undisturbed conditions, the water appears to have excellent clarity with objects visible on the bottom throughout. No sheen, film, or discoloration observed.
Nutrient Enrichment	8	Algae: minor
Manure/Waste	8	No manure or waste is directly visible in the stream or on banks. However, the adjacent agricultural/pasture land and the visible fence line suggest potential livestock use of adjacent fields. The fence may serve to exclude livestock from the stream corridor, which would be positive. No direct evidence of livestock access to the stream banks or manure in/hear the water.
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 visual stream survey inventory for Black Branch	medium	annual
Continue outfall mapping along this reach during subsequent survey scenes	medium	annual

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