

Scene 5 · MS4 Assessment

Black Branch 2

City of Lebanon TN

36.17007, -86.26847 · Generated October 23, 2026

OVERALL SCORE

5.3

Marginal



Front: Looking downstream through dense shrubby vegetation along a very small stream channel. Flat limestone-like rock fragments visible in the channel bed forming a rocky substrate. Agricultural fields and a red barn/structure visible in the background through the bare branches on the left side. The channel appears narrow and shallow with minimal water flow.

Right: Dense thicket of shrubs and small trees covering the right bank, with very little visibility through the vegetation. The bank rises moderately with dense herbaceous ground cover and dormant shrubby growth. Early spring green-up just beginning with scattered small green leaves emerging. The density of the shrub layer suggests possible invasive species such as bush honeysuckle or multiflora rose.

Back: Looking upstream, a very small stream channel is visible with shallow brown-tinted water flowing over a rocky and muddy substrate. The left bank shows dense shrubs and small trees. A larger fallen log spans partially across the channel creating a minor debris jam. The right bank is vegetated with trees and shrubs, some showing early spring leaf emergence. An evergreen tree (likely cedar) is visible in the upper right.

Left: Looking at the left bank, mature deciduous trees with bare branches frame the view. Beyond the immediate riparian corridor, open agricultural fields are clearly visible extending to the horizon with a red structure (barn) visible in the far distance. The bank area shows some woody debris and sparse ground cover. A small area of standing water or very shallow pool is visible at the base of the bank near the channel.

Assessment Scores

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

Urgency: MEDIUM TERM 6 12 MONTHS

Detailed Observations · Scene 5

Black Branch at this location is a small headwater stream in marginal condition, significantly influenced by adjacent agricultural land use. The stream is moderately incised and disconnected from its floodplain, with a narrow and inadequate riparian buffer particularly on the left bank where agricultural fields encroach close to the channel. Instream habitat is limited by uniform shallow flow, embedded substrate, and sparse large woody debris. No stormwater infrastructure or outfalls were observed, and no illicit discharges are suspected. The primary management need is riparian buffer restoration on the left bank to meet TDEC minimum standards and reduce sediment inputs from agricultural runoff.

Primary Stressors

sedimentation, riparian loss, bank erosion

Channel Assessment

Metric	Score	Notes
Channel Condition	6	Channel appears natural with no direct structural modifications. However, the channel shows moderate incision relative to the surrounding floodplain, likely a result of increased runoff from adjacent agricultural land use. The channel is disconnected from its floodplain, indicating past hydrologic alteration from land use change rather than direct channel modification.
Hydrologic Alteration	4	The channel shows moderate incision with banks approximately 3-6 feet high relative to a narrow channel. This disconnect from the floodplain suggests reduced flood frequency. Agricultural land use in the watershed has likely altered hydrology through increased peak flows and reduced infiltration. The stream appears to be adjusting to altered flow regime.
Sediment Deposition	5	Moderate fine sediment deposition visible between rock fragments in the bed. The brown water color suggests ongoing sediment transport. Some fine sediment accumulation in low-velocity areas. The substrate mix of gravel and mud indicates moderate sedimentation from agricultural runoff, affecting perhaps 20-30% of the bed.

Bank Assessment

Side	Stability	Veg. Protection	Erosion	Notes
Left	5	5	1_25_percent	Left bank has narrow riparian buffer with agricultural fields immediately beyond. Bank is moderately high and shows some erosion. Mature deciduous trees provide limited root protection. Buffer width appears to be approximately 10-25 feet in most areas.
Right	6	6	1_25_percent	Right bank has denser vegetation than left bank, primarily dense shrub thicket. Wider riparian buffer appears present on this side. Some potential invasive shrubs noted. Overall more stable than the left bank.

Riparian Assessment

Metric	Score/Value	Notes
Canopy Cover	5	During early spring with partial leaf-out, current canopy cover is approximately 25-50%. When fully leafed in summer, coverage over the narrow channel would likely increase to 50-75% due to the overhanging tree branches visible in the UP face. The narrow channel width allows moderate canopy closure even from a relatively thin riparian strip.
Left Buffer Width	10 25ft	Score: 3/10
Right Buffer Width	25 50ft	Score: 5/10
TDEC 30ft Buffer Met?	L: No / R: Yes	Left bank riparian buffer does not meet TDEC minimum 30ft standard. Agricultural field encroaches close to the stream bank. Buffer restoration through planting native trees and shrubs on the left bank would be highly beneficial and relatively straightforward given the flat agricultural terrain. Right bank buffer is marginal but appears to meet minimum standards.

Water Quality & Infrastructure · Scene 5

Water Quality Indicators

Metric	Score	Notes
Water Appearance	5	Water has a brown tint suggesting suspended sediment or tannins. Visibility appears to be approximately 0.5-1 foot based on the ability to see the substrate in the shallow areas. No oil sheen, foam, or algal mats observed. The brown color may be partly natural from leaf litter decomposition in a wooded headwater stream, but agricultural sediment contribution is likely.
Nutrient Enrichment	7	Algae: minor
Manure/Waste	7	No direct evidence of manure or waste in the stream. No livestock are visible and no fencing damage suggesting livestock access. However, the adjacent agricultural fields could include pasture or row crops. The red barn visible in the distance suggests farm operations nearby, but no direct waste evidence is observed at this location.
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 inadequate riparian buffer on left bank for TDEC buffer compliance tracking	medium	90_days
Verify no agricultural runoff BMPs are needed based on upstream land use review	medium	90_days

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