

Scene 40 · MS4 Assessment

Black Branch 2

City of Lebanon TN

36.16937, -86.27135 · Generated October 22, 2026

OVERALL SCORE

4.3

Poor



Front: Looking downstream, a very small stream channel is visible cutting through a rural residential landscape. The channel is narrow with low flow, bordered by dormant brown vegetation on the left and mowed grass lawn extending to the right. A white residential house with utility pole and power lines is visible in the mid-ground on the right side.

Right: View to the right bank (facing downstream) shows a wide expanse of mowed dormant lawn/pasture extending uphill toward scattered bare deciduous trees, a white outbuilding or shed in the far left, and an older barn with a red/rusted metal roof on the right. The landscape is open rural residential with very limited riparian buffer.

Back: Looking upstream, the small stream channel is visible running along the edge of mowed lawn on the left and dense dormant shrub/brush vegetation on the right. The channel appears narrow and incised with dark muddy water. Mowed grass extends directly to the channel edge on the left bank with no riparian buffer. Trees line the stream corridor in the distance.

Left: View to the left bank (facing downstream) shows the stream channel with dense dormant shrub and brush vegetation along the bank edge and beyond. An evergreen tree (likely eastern red cedar) stands prominently on the far bank. Open agricultural or pasture field is visible beyond the brush. Water pools are visible in the channel below, appearing brown and turbid. The stream appears incised below the surrounding landscape.

Assessment Scores

Component	Score	Visual	Rating
Channel Condition	5		marginal
Hydrologic Alteration	4		Fair
Sediment Deposition	4		Fair
Left Bank Stability	4		Fair
Right Bank Stability	3		Poor
Left Vegetative Protection	5		Fair
Right Vegetative Protection	3		Poor
Riparian Canopy Cover	2		Poor
Floodplain Vegetation	2		Poor
Water Appearance	4		Fair
Nutrient Enrichment	6		Fair
Epifaunal Substrate	-		-

Urgency: MEDIUM TERM 6 12 MONTHS

Detailed Observations · Scene 40

Black Branch at this location (scene 40 of 53) is a small headwater stream in poor condition, flowing through a rural residential landscape. The most significant impairment is the complete absence of riparian buffer on the right bank where mowed lawn extends to the channel edge, combined with moderate channel incision that has disconnected the stream from its floodplain. Instream habitat is severely degraded with mud substrate, no large woody debris, and very limited cover for aquatic life. The left bank retains a narrow strip of shrub vegetation but neither bank meets TDEC 30ft buffer minimums. Water quality appears moderately impaired by sedimentation. This reach is a strong candidate for riparian buffer restoration, particularly on the right bank, and would benefit from landowner engagement programs.

Primary Stressors

riparian loss, sedimentation, bank erosion

Channel Assessment

Metric	Score	Notes
Channel Condition	5	Channel is natural with no direct structural alteration, but shows moderate incision (estimated 3-6ft below surrounding grade) and evidence of downcutting. The channel is disconnected from its floodplain due to incision, likely exacerbated by adjacent land use changes (mowing to bank edge, loss of riparian buffer). No riprap or channelization, but the incision represents significant departure from reference condition.
Hydrologic Alteration	4	Stream appears moderately to deeply incised, with banks 3-6ft high in places. The channel is below the surrounding lawn/pasture level, limiting floodplain connection. Adjacent land use changes (increased impervious surface from residential structures, removal of riparian vegetation) likely contribute to flashier hydrology. Flood frequency access to floodplain is likely reduced to 5-10 year recurrence or greater.
Sediment Deposition	4	The channel bed appears to be dominated by fine sediment (mud/silt), suggesting significant sediment deposition. Pools appear partially filled with fine sediment. The mud substrate throughout indicates ongoing sedimentation issues, likely from erosion of exposed banks and overland runoff from adjacent mowed areas. Estimated 30-50% of bottom affected by fine sediment deposition.

Bank Assessment

Side	Stability	Veg. Protection	Erosion	Notes
Left	4	5	26_50_percent	Left bank has moderate brush/shrub cover providing some stability but is actively eroding in places. Dense dormant shrub thicket provides some protection but gaps allow ongoing erosion. Agricultural/pasture field visible beyond the brush strip on this bank.
Right	3	3	26_50_percent	Right bank is the more degraded of the two banks. Mowed lawn to bank edge provides essentially no riparian buffer. Grass provides minimal deep root structure for bank stabilization. This bank is a priority for riparian restoration. Adjacent residential structures and outbuildings are within 200ft of the stream.

Riparian Assessment

Metric	Score/Value	Notes
Canopy Cover	2	Very limited canopy cover over the stream. The UP face shows open sky with minimal tree canopy. Winter dormancy reveals bare branches, but even in full leaf season, the few scattered trees would provide less than 25% shade. The mowed lawn on the right bank ensures no shade from that side. Some shade may come from the left bank shrubs/brush but these are low-growing and provide minimal overstory shade.
Left Buffer Width	10 25ft	Score: 5/10
Right Buffer Width	none	Score: 1/10
TDEC 30ft Buffer Met?	L: No / R: No	Significant non-compliance with TDEC MS4 permit section 4.2.5.4 buffer requirements. The right bank is the highest priority for buffer restoration as it has essentially no natural buffer. The left bank buffer could be expanded to meet the 30ft minimum. Both banks have high restoration potential as the adjacent land appears to be low-intensity use (pasture/lawn) with willing landowner engagement potentially achievable.

Water Quality & Infrastructure · Scene 40

Water Quality Indicators

Metric	Score	Notes
Water Appearance	4	Water appears brown and turbid throughout the visible reach. Clarity is estimated at 0.5-1ft. No sheen, foam, or algal mats are visible. The brown coloration is likely due to fine sediment suspension and/or tannins from decaying organic matter. No strong odor indicators are apparent from the imagery. Conditions are between marginal and fair.
Nutrient Enrichment	6	Algae: none
Manure/Waste	8	No direct evidence of manure or waste in the stream or on the banks. No livestock are visible, and the mowed lawn suggests residential use rather than active livestock grazing. The agricultural field on the left bank side does not show evidence of livestock access to the stream. However, the adjacent agricultural use could be a potential source of runoff.
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 absence of riparian buffer on right bank and non-compliance with TDEC buffer requirements	high	30_days
Map this reach segment as a priority for buffer restoration in the MS4 stormwater management plan	high	90_days
Conduct follow-up dry weather screening during growing season to assess for illicit discharges and seasonal water quality changes	medium	90_days

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