

Scene 7 · MS4 Assessment

Black Branch 2

City of Lebanon TN

36.17007, -86.26862 · Generated October 23, 2026

OVERALL SCORE

4.7

Marginal



Front: Looking downstream, a narrow stream channel is visible with very low flow winding through exposed flat rock substrate. The left bank shows agricultural fields beyond a thin riparian corridor. Trees are leafless with some Eastern red cedars providing evergreen cover. Flat, angular rock pieces line the bank and channel bed.

Right: The right bank (left bank when facing downstream) shows a steep, densely vegetated slope with bare deciduous trees and thick understory brush. Flat limestone rock pieces are visible at the base of the bank where it meets the channel. The slope rises moderately with dense tangled vegetation including vines and shrubs.

Back: Looking upstream, the channel continues as a narrow, shallow stream with very low flow over exposed limestone bedrock and cobble substrate. A large fallen tree with extensively exposed root mass spans near the channel, indicating significant bank erosion and undercutting. Dense riparian vegetation lines both banks with bare deciduous trees and some cedars.

Left: The left bank (right bank when facing downstream) shows trees at the bank edge with an open agricultural field visible beyond. The riparian buffer is very narrow, perhaps only 10-30 feet wide with scattered trees and shrubs before giving way to open cropland. Flat limestone rock pieces are visible along the bank toe. A red structure or vehicle is visible in the distant agricultural landscape.

Assessment Scores

Component	Score	Visual	Rating
Channel Condition	5		marginal
Hydrologic Alteration	4		Fair
Sediment Deposition	5		Fair
Left Bank Stability	4		Fair
Right Bank Stability	3		Poor
Left Vegetative Protection	4		Fair
Right Vegetative Protection	5		Fair
Riparian Canopy Cover	5		Fair
Floodplain Vegetation	2		Poor
Water Appearance	6		Fair
Nutrient Enrichment	7		Good
Epifaunal Substrate	-		-

Urgency: MEDIUM TERM 6 12 MONTHS

Detailed Observations · Scene 7

Black Branch at this location is a small, headwater stream in marginal condition, classified as a Rosgen F-type entrenched channel with active bank erosion and moderate incision. The most significant issues are the inadequate left bank riparian buffer adjacent to agricultural fields (less than 30 feet, below TDEC minimum), active mass bank failure evidenced by fallen trees with exposed root systems, and disconnection from the historic floodplain. Water quality appears fair at current low flow conditions with no evidence of illicit discharge, but the narrow buffer and adjacent agricultural land use pose ongoing risks for sediment and nutrient loading. No stormwater infrastructure or outfalls were observed in this reach.

Primary Stressors

bank erosion, riparian loss, sedimentation, channelization

Channel Assessment

Metric	Score	Notes
Channel Condition	5	Channel appears natural without direct structural modifications, but shows evidence of incision and active bank erosion including undercutting and tree falls. The narrow, incised character suggests hydrologic alteration from surrounding agricultural land use changes rather than direct channel modification. Score of 5 reflects moderate downcutting without direct engineering alterations.
Hydrologic Alteration	4	Channel shows moderate incision with banks 3-6 feet above the stream bed. Agricultural land use changes in the watershed have likely increased peak flows and contributed to channel downcutting. The stream appears moderately disconnected from its floodplain. Flooding of adjacent agricultural fields is likely infrequent.
Sediment Deposition	5	Some fine sediment deposition visible between limestone cobbles and gravel. Channel bed appears relatively stable with natural limestone substrate exposed. Fine sediment fills approximately 20-30% of interstitial spaces. No major bar formations visible but fine sediment infilling is evident.

Bank Assessment

Side	Stability	Veg. Protection	Erosion	Notes
Left	4	4	26_50_percent	Left bank transitions quickly from stream to agricultural field with a narrow riparian corridor of 10-30 feet. Active erosion is visible at the bank toe. Some trees showing root exposure. The narrow buffer is insufficient for long-term bank stability given the agricultural land use.
Right	3	5	26_50_percent	Right bank shows more severe erosion than left bank, with evidence of mass wasting including fallen trees with exposed root systems. The bank is steeper and taller on this side, suggesting the stream is actively migrating laterally. Dense understory vegetation provides some resistance but is being undermined.

Riparian Assessment

Metric	Score/Value	Notes
Canopy Cover	5	During winter dormancy, canopy cover is approximately 25-40% from bare deciduous branches and scattered Eastern red cedars. During growing season, coverage would increase to approximately 50-70% based on branch density observed in the upward view. The narrow buffer on the left side limits full canopy coverage over the channel.
Left Buffer Width	10 25ft	Score: 3/10
Right Buffer Width	50 100ft	Score: 6/10
TDEC 30ft Buffer Met?	L: No / R: Yes	Left bank buffer is non-compliant with TDEC MS4 permit section 4.2.5.4 minimum 30ft riparian buffer requirement. Agricultural field cultivation extends to within approximately 10-25 feet of the stream bank. Buffer restoration on the left bank should be a priority. The right bank buffer appears to meet minimum requirements.

Water Quality & Infrastructure · Scene 7

Water Quality Indicators

Metric	Score	Notes
Water Appearance	6	Water has a slight brown tint but is relatively clear at current low flow. The brown coloration may be from tannins or slight turbidity. Objects are visible through the shallow water. No sheen, film, or abnormal conditions observed. Score of 6 reflects slightly impaired clarity with natural brown coloration.
Nutrient Enrichment	7	Algae: minor
Manure/Waste	8	No direct evidence of manure or livestock waste in the stream or on banks. The adjacent agricultural fields appear to be cropland rather than pasture, with no evidence of livestock access. However, the proximity of agricultural operations suggests potential for nutrient and sediment 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 left bank riparian buffer deficiency for TDEC MS4 buffer compliance records	high	30_days
Continue outfall mapping along this reach to identify any agricultural drainage inputs	medium	90_days
Complete visual stream survey documentation for this reach segment	medium	90_days

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