

Scene 49 · MS4 Assessment

Black Branch 2

City of Lebanon TN

36.16886, -86.27202 · Generated October 22, 2026

OVERALL SCORE

4.1

Poor



Front: Looking downstream toward a concrete box culvert under a road embankment. The culvert has concrete wingwalls on both sides and appears to be a single-cell box approximately 6-8 feet wide and 4-5 feet tall. Water is pooled in front of the culvert entrance with brown, turbid water. A utility pole with overhead power lines is visible on the left bank. The road embankment is grass-covered.

Right: Looking toward the right bank (left bank when facing downstream), showing a road embankment rising steeply with dormant grass and dead herbaceous vegetation. Overhead power lines cross the scene. In the background, a white building or structure is visible across a green grassy area. Scattered bare deciduous trees line the bank area. Dense tangles of dormant vines and brush are present at the bank edge.

Back: Looking upstream showing the stream channel flowing toward the camera through an agricultural/pastoral landscape. The water is brown and turbid with moderate flow. A large deciduous tree stands on the right bank with extensive vine growth. Both banks are low to moderate height with dormant grass and sparse woody vegetation. Open pasture or hayfields extend on both sides. A structure or house is visible in the far left background.

Left: Looking toward the left bank (right bank when facing downstream) showing open agricultural fields extending to the horizon. A red barn is visible in the middle distance. The bank edge is visible in the foreground with exposed soil, dormant roots, and debris. Yellow utility markers (likely gas pipeline) are visible in the field. Overhead power lines cross the scene. The bank shows moderate erosion with exposed roots and bare soil at the waterline.

Assessment Scores

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

Urgency: MEDIUM TERM 6 12 MONTHS

Detailed Observations · Scene 49

Black Branch at this location (#49 of 53) is a small perennial agricultural stream in poor overall condition near a concrete box culvert road crossing. The most critical issues are the severely degraded or absent riparian buffer on both banks, chronic sedimentation resulting in silt-dominated substrate and turbid water, and poor instream habitat diversity. Bank erosion is moderate, particularly on the right bank where agricultural fields extend to the stream edge. The concrete box culvert is in good structural condition but represents a potential fish barrier and channel modification point. No stormwater outfalls or illicit discharges were observed, but the road crossing lacks stormwater treatment BMPs. Riparian buffer restoration is the highest priority management action for this reach.

Primary Stressors

sedimentation, riparian loss, bank erosion, channelization

Channel Assessment

Metric	Score	Notes
Channel Condition	5	Channel is largely natural upstream but a concrete box culvert at this location represents significant local alteration. The channel appears to maintain a natural planform but is influenced by the road crossing. Some bank erosion and lateral instability evident but not severe downcutting.
Hydrologic Alteration	6	Stream appears to have some floodplain connection based on debris lines and flood deposits visible on banks. The channel is not deeply incised, with banks at moderate 3-6ft height. The culvert may cause some backwater effects and minor hydrologic alteration. Agricultural land use and road contribute to increased runoff.
Sediment Deposition	3	Significant sediment deposition evident from extremely turbid water. Pool upstream of culvert appears to be filling with fine sediment. The silt/mud substrate indicates chronic sedimentation. Agricultural land use without adequate riparian buffers contributes to sediment loading.

Bank Assessment

Side	Stability	Veg. Protection	Erosion	Notes
Left	4	4	26_50_percent	Left bank transitions from natural condition upstream to engineered condition at the culvert. Road embankment is grass-covered. Invasive vine tangles dominate the bank edge vegetation.
Right	3	3	26_50_percent	Right bank is more vulnerable due to agricultural land use extending close to the bank edge. Very narrow or absent riparian buffer. Utility markers in adjacent field suggest buried pipeline. Bank erosion more pronounced on this side.

Riparian Assessment

Metric	Score/Value	Notes
Canopy Cover	2	Canopy cover is very low. The bare winter trees provide essentially no shade currently, and even in full leaf the sparse tree canopy would provide less than 25% shade coverage over the stream. The open agricultural landscape allows extensive solar exposure.
Left Buffer Width	10 25ft	Score: 3/10
Right Buffer Width	under 10ft	Score: 2/10
TDEC 30ft Buffer Met?	L: No / R: No	Both banks fail to meet TDEC's minimum 30ft riparian buffer requirement. The right bank is especially deficient with agriculture extending to the stream edge. Buffer restoration potential is high given the low-intensity agricultural land use and available land area. Riparian planting would significantly benefit water quality and bank stability.

Water Quality & Infrastructure · Scene 49

Water Quality Indicators

Metric	Score	Notes
Water Appearance	3	Water is considerably turbid with a brown/muddy color. Visibility appears to be less than 1 foot, possibly under 0.5 feet given the opaque quality. The bed is not visible even in what appears to be shallow areas. This could be partly from recent precipitation but the chronic fine sediment substrate suggests persistent turbidity issues.
Nutrient Enrichment	7	Algae: none
Manure/Waste	7	No direct evidence of manure or waste observed. However, the agricultural setting with pastures extending near the stream and a red barn visible in the distance suggests potential livestock operations. No direct livestock access to the stream is visible at this location, and no manure or waste is observed in the channel. Fencing may be present but is not clearly visible.
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
Add concrete box culvert to outfall/crossing inventory with condition assessment	medium	90_days
Document culvert location for fish passage assessment and maintenance schedule	medium	90_days
Map buried utility crossing (gas pipeline markers visible) and assess potential impacts	low	annual

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