

Scene 10 · MS4 Assessment

Black Branch 2

City of Lebanon TN

36.17006, -86.26881 - Generated October 23, 2026

OVERALL SCORE

5.5

Marginal



Front: Looking downstream, the view shows a narrow stream channel flowing through a riparian corridor of bare deciduous trees. To the left, open agricultural pasture/hay fields extend to the horizon with a red barn visible in the far distance. The right bank has a narrow wooded riparian buffer with exposed rock and some green understory vegetation beginning to emerge. Flat limestone/shale rock slabs are visible along the right bank edge.

Right: The right bank (looking downstream) shows a narrow riparian buffer of deciduous trees and dense understory shrubs/vines, all mostly bare or just beginning to leaf out. Behind the riparian buffer, open agricultural pastureland is visible through the vegetation. A large fallen tree spans across the area. The bank appears moderately steep with exposed roots and soil. Green ground cover (possibly invasive) is emerging at ground level.

Back: Looking upstream, the stream channel is visible as a narrow, shallow flow over exposed bedrock and flat limestone/shale substrate. The channel curves slightly through a wooded riparian corridor. Both banks show bare deciduous trees with some shrub understory. The right bank (from this perspective, which is the left bank looking downstream) has prominent flat rock slabs along the channel edge. The left side shows dense low vegetation and scattered trees.

Left: The left bank (looking downstream) shows a very narrow riparian tree line of mature sycamore and other deciduous trees, then immediately transitions to open agricultural pasture/hay field extending to the distant treeline on rolling hills. The bank edge has exposed flat limestone/shale rock with leaf litter and debris. A fence post or old structure may be visible. The buffer between the stream and the open field is extremely narrow, perhaps only 10-30 feet wide.

Assessment Scores

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

Urgency: MEDIUM TERM 6 12 MONTHS

Detailed Observations · Scene 10

Black Branch at this location is a small headwater limestone bedrock stream flowing through an agricultural landscape in rural Middle Tennessee. The stream is moderately to severely impaired, primarily due to inadequate riparian buffers (especially the left bank at 10-25ft, below TDEC's 30ft minimum), channel entrenchment disconnecting the floodplain, and limited instream habitat diversity. Water quality indicators are relatively good with no evidence of illicit discharge, but the shallow bedrock channel offers poor pool development and limited fish/macrobenthic habitat. Invasive bush honeysuckle and Japanese honeysuckle are colonizing the narrow riparian zone. Priority management actions include riparian buffer restoration on both banks, particularly the left bank, and invasive species management.

Primary Stressors

riparian loss, sedimentation, bank erosion

Channel Assessment

Metric	Score	Notes
Channel Condition	6	The channel appears natural with no direct structural alterations, but shows evidence of moderate incision into bedrock. The channel is entrenched below the surrounding floodplain level, suggesting past or ongoing downcutting, likely exacerbated by agricultural land use changes in the watershed. The bedrock-controlled channel limits further downcutting but the incision has disconnected the stream from its floodplain.
Hydrologic Alteration	5	The channel appears moderately incised with banks 3-6 feet high relative to the water surface. The floodplain is at a notably higher elevation than the active channel, suggesting the stream only accesses its floodplain during significant flood events. Agricultural land use has likely increased runoff peaks and contributed to incision. No dams or withdrawals visible.
Sediment Deposition	6	The bedrock-dominated channel shows relatively little sediment deposition. A thin veneer of silt/fine sediment covers portions of the bedrock bed, visible in the down-facing image. The bedrock substrate limits deposition in most of the channel. Minor sediment accumulation is present but not significantly altering channel morphology.

Bank Assessment

Side	Stability	Veg. Protection	Erosion	Notes
Left	5	4	1_25_percent	Left bank has extremely narrow riparian buffer transitioning to open agricultural pasture/hay fields. Sycamore trees provide some canopy but the buffer is inadequate for effective filtering. Possible fence line along the bank edge may indicate livestock management.
Right	5	5	1_25_percent	Right bank has a somewhat wider riparian buffer than the left but still transitions to agricultural land. Dense understory of shrubs and vines likely includes invasive species. A large fallen tree indicates some bank instability. Moderate root exposure and undercutting present.

Riparian Assessment

Metric	Score/Value	Notes
Canopy Cover	6	During dormant season, canopy provides minimal shade (currently under 25%). However, during full leaf-out, the mature sycamores and other deciduous trees would provide approximately 40-60% shade over the channel. The narrow buffer, particularly on the left bank, limits canopy coverage. Scored as 6 considering the seasonal context and projected summer shade conditions.
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 is non-compliant with TDEC MS4 permit section 4.2.5.4 minimum 30ft buffer requirement. Agricultural pasture/hay field extends to within approximately 10-25 feet of the channel. Right bank meets minimum standard but not enhanced protection requirements. Buffer restoration along both banks, particularly the left, would significantly improve stream health and is a high priority recommendation.

Water Quality & Infrastructure · Scene 10

Water Quality Indicators

Metric	Score	Notes
Water Appearance	6	Water has a slight brownish tint but the bedrock substrate is clearly visible through the shallow water. No oil sheen, foam, or algal mats are visible. The brownish color likely reflects natural tannins and some fine sediment rather than pollution. Clarity appears to be 1-3 feet based on bed visibility. No odor indicators are apparent.
Nutrient Enrichment	7	Algae: minor
Manure/Waste	8	No direct evidence of manure or waste in the stream or on banks. While adjacent agricultural fields are visible, there is no evidence of active livestock access to the stream at this location. A possible fence post on the left bank may indicate livestock management/exclusion fencing, which would be positive. No waste pipes or odor indicators are present.
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 (below 30ft TDEC minimum) and coordinate with agricultural landowner on buffer restoration opportunities	high	90_days
Continue visual stream survey to assess buffer conditions and identify any outfalls or illicit discharges throughout the remaining reach	medium	annual

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