

Scene 21 · MS4 Assessment

Black Branch 2

City of Lebanon TN

36.17007, -86.26971 · Generated October 22, 2026

OVERALL SCORE

5.6

Marginal



Front: Looking downstream, a very narrow channel (2-4 ft wide) winds through a thin riparian corridor toward a small red-roofed structure/building. The stream bed is dominated by flat, angular limestone/rock slabs with very shallow water flowing over them. Agricultural fields are visible to the left beyond the thin tree line. A green garden hose or similar tubing is visible crossing the stream bed.

Right: Looking toward the right bank (left bank when facing downstream), dense dormant vegetation including shrubs and tangled vines rises on a moderate slope. A large decaying log is visible at the base of the bank. Several scattered rocks and a few evergreen trees (cedar/pine) are visible through the bare deciduous canopy. The bank rises moderately with thick understory vegetation.

Back: Looking upstream, the channel is visible with very shallow water flowing over flat limestone slabs. A large root mass from a mature tree is prominently exposed on the left side of the channel, with angular rock fragments embedded among the roots. Agricultural fields and a thin riparian corridor are visible beyond. The substrate is dominated by flat, thin limestone fragments consistent with natural bedrock weathering.

Left: Looking toward the left bank (right bank when facing downstream), open agricultural fields (pasture/hay) extend to the horizon with a red barn/agricultural building visible in the distance. A thin row of scattered trees (deciduous and a few cedar/pine) forms a very narrow riparian buffer between the stream and the fields. The bank transitions quickly from the channel to open agricultural land with minimal buffer width.

Assessment Scores

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

Urgency: MEDIUM TERM 6 12 MONTHS

Detailed Observations · Scene 21

Black Branch at this location is a small headwater stream with bedrock-controlled substrate flowing through a rural agricultural landscape in the Central Basin of Tennessee. The stream is at low flow with very shallow depth over limestone bedrock. The primary concern is the inadequate riparian buffer on the right bank where agricultural fields encroach to within approximately 10-25 feet of the channel, failing to meet TDEC's minimum 30-foot buffer standard. Instream habitat is limited by the shallow depth, narrow channel, and bedrock dominance, with few pool or deep-water habitats available. No stormwater infrastructure or illicit discharges were observed, consistent with the rural setting, but overland agricultural runoff enters the stream without treatment.

Primary Stressors

riparian loss, sedimentation, bank erosion

Channel Assessment

Metric	Score	Notes
Channel Condition	7	Channel appears largely natural with no visible engineering modifications. The bedrock substrate controls the grade and limits downcutting. Some bank erosion and root exposure suggests active lateral adjustment but not severe. The channel appears to maintain floodplain access. Score of 7 reflects minor erosion issues but overall natural condition.
Hydrologic Alteration	6	The channel shows slight incision with banks approximately 3-6 feet high on one side but the stream still appears to access its floodplain. Agricultural land use upstream likely increases flashiness. The garden hose crossing the stream suggests possible minor withdrawal for agricultural/residential use. Score of 6 reflects minor hydrologic alteration from agricultural land use.
Sediment Deposition	7	The bedrock-dominated substrate limits sediment deposition. Fine sediment is visible between rock fragments but not dominating the channel. No significant bar development visible. The bedrock nature of this channel means sediment transport is relatively efficient. Score of 7 reflects minor fine sediment accumulation between bedrock fragments.

Bank Assessment

Side	Stability	Veg. Protection	Erosion	Notes
Left	5	7	1_25_percent	Left bank is the higher bank with dense dormant vegetation. Some invasive shrub species suspected based on growth form. Natural rock outcrops at base provide some stability.
Right	4	4	1_25_percent	Right bank has a very narrow riparian buffer before agricultural fields begin. Severe root exposure on at least one large tree. The agricultural fields appear to be pasture/hay. A red barn is visible in the distance. The narrow buffer is a significant concern for water quality protection.

Riparian Assessment

Metric	Score/Value	Notes
Canopy Cover	5	During growing season, the canopy would provide moderate shade from the left bank trees but the right bank's sparse cover means significant light reaches the channel from that side. In winter dormancy (current conditions), shade is minimal. During leaf-out, estimated 25-50% shade coverage. Score of 5 reflects adequate but not ideal shading for a warmwater stream.
Left Buffer Width	25 50ft	Score: 7/10
Right Buffer Width	10 25ft	Score: 3/10
TDEC 30ft Buffer Met?	L: Yes / R: No	The right bank buffer is inadequate and does not meet TDEC minimum 30ft buffer requirements. Agricultural use extends close to the stream channel. Buffer restoration on the right bank is highly recommended and has high potential for success given the adjacent agricultural land. USDA CRP or EQIP programs could support buffer establishment.

Water Quality & Infrastructure · Scene 21

Water Quality Indicators

Metric	Score	Notes
Water Appearance	7	Water appears relatively clear with the stream bed fully visible. The stream is so shallow that clarity assessment is limited, but no turbidity, discoloration, sheen, or film is observed. No algal growth visible. Score of 7 reflects generally good water appearance with slight turbidity likely from agricultural runoff influence.
Nutrient Enrichment	7	Algae: none
Manure/Waste	7	No manure or waste directly visible in the stream or on banks. However, the adjacent agricultural fields (visible in LEFT and FRONT faces) appear to be pasture/hay fields, and a red barn with possible livestock use is visible. No livestock access to the stream is currently evident, but the narrow buffer on the right bank raises concern. Score of 7 reflects no direct evidence but proximity to potential livestock operations.
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	intermittent
Gradient	moderate

Management Recommendations

Action	Priority	Timeline
Document inadequate riparian buffer on right bank for TDEC buffer compliance review	medium	90_days
Investigate the red-roofed structure downstream for potential outfall or discharge points	medium	90_days
Continue dry weather screening at this location to monitor baseflow water quality	low	annual

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