

DATE: 4/10/2025 FILE REF: NA

TO: Nicole Krueger, Limit Calculator; Trevor Moen, Compliance Engineer

FROM: Dave Bolha, Stream Biologist; Kristi Minahan, Water Quality Standards; Diane Figiel, Limit Calculator Coordinator

SUBJECT: Grande Cheese Co - Chilton, Unnamed Tributaries to the South Branch of the Manitowoc River (WBIC 3000134 and 3000057), Calumet County

Overview of issue

In preparation for reissuance of the Grande Cheese Company - Chilton permit, staff were requested to do a site visit to determine the appropriate stream classifications for the receiving waters. Grande Cheese – Chilton was formerly Foremost Farms – Chilton and prior to that it was Tillamook. Grande Cheese – Chilton is a continuous discharger, with an expected maximum annual average flow of 0.352 MGD (0.545 cfs) (from the 11/16/2023 planning memo).

The immediate receiving water is an Unnamed Tributary (WBIC 3000134) to the north of their wastewater treatment facility (Segment 1). The Unnamed Tributary flows approximately 1 mile, first northeast and then turning south, before joining Unnamed Tributary (WBIC 3000057, Segment 2) to the South Branch of the Manitowoc River. Tributary 3000057 flows approximately 2 miles south toward the South Branch of the Manitowoc River upstream of the City of Chilton (Segment 3). No segments are listed in ch. NR 104 as Limited Aquatic Life or Limited Forage Fish (LAL, LFF). However, the facility's previous permit limits (2017 limits memo) were based on LAL for Segment 1, based on an evaluation of the receiving water in 1984, and the permit contains downstream protection limits for phosphorus for South Branch Manitowoc River. The facility's 2023 planning memo provided planning limits for Warmwater Sport Fish (WWSF) with the expectation that a full fish and aquatic life community would be supported once a continuous discharge is established.

The main objective of this site visit was to determine the appropriate stream classifications for the flow path to the South Branch Manitowoc River.

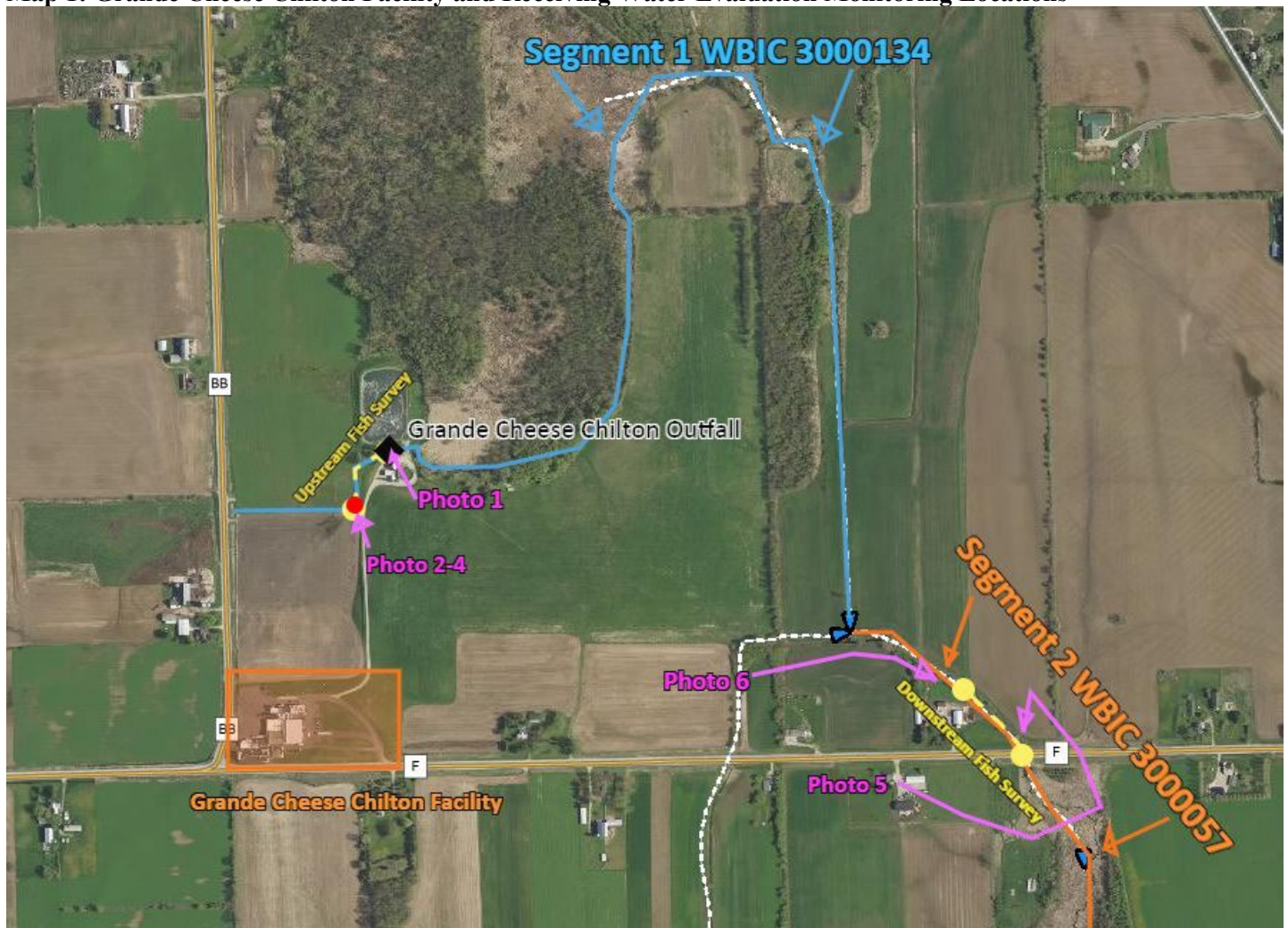
Summary of previous and proposed stream class recommendations

- **Segment 1 (most upstream): Unnamed Tributary (WBIC 3000134) to the South Branch Manitowoc River from County Hwy BB downstream to its Confluence with Unnamed Tributary (WBIC 3000057) near County Hwy F.**
 - *Currently codified designated use:* Not listed individually as LAL/LFF in ch. NR 104 and is not classified as a Trout water, so defaults to warmwater
 - *Classification used for previous permit issuance:* LAL
 - *Previous stream class recommendations:* Coldwater per 1997 stream classification report by Mary Gansberg; however this was not included in proposed 2003 updates to ch. NR 104
 - *Modeled Natural Community:* Cold Transition Headwater
 - *New recommended Natural Community and Designated Use:* The modeled Cold Transition Headwater Natural Community is retained for now as it could not be verified through the fish survey and the water temperatures are cold. However, it is unlikely that the corresponding Coldwater Designated Use or even a full fish and aquatic life Warmwater Sport or Forage Fish Use is attainable in Seg. 1, so LFF Designated Use for Seg. 1 may be appropriate. A Use Attainability Analysis would be needed to pursue this option.
- **Segment 2: Unnamed Tributary (WBIC 3000057) to the South Branch Manitowoc River from WBIC 3000134 to South Branch Manitowoc River**
 - *Currently codified designated use:* Not listed individually as LAL/LFF in ch. NR 104 and is not classified as a Trout water, so defaults to warmwater
 - *Classification used for previous permit issuance:* LAL
 - *Previous stream class recommendations:* Warmwater Sport Fish per 1997 stream classification report by Mary Gansberg; however this was not included in proposed 2003 updates to NR 104

- *Modeled Natural Community*: Cold Transition Headwater
- *New recommended NC & DU*: Cold Transition Headwater Natural Community (unverified) is retained for now; but it is unlikely that the corresponding Coldwater Designated Use is attainable. A full Warmwater Forage Fish Designated Use should be attainable and is recommended for this segment.
- **Segment 3: South Branch Manitowoc River from WBIC 3000057 Confluence to City of Chilton**
 - *Currently codified designated use*: Not listed as LAL/LFF in ch. NR 104, and is not classified as a Trout water, so defaults to warmwater
 - *Classification used for previous permit issuance*: Warmwater
 - *Previous stream class recommendations*: NA
 - *Modeled Natural Community*: Warm Transition Mainstem
 - *New recommended NC & DU*: Warm Transition Mainstem Natural Community and Warmwater Sport Fish Designated Use.

Site overview map

Map 1: Grande Cheese Chilton Facility and Receiving Water Evaluation Monitoring Locations



Map 2: Grande Cheese Chilton Facility and Receiving Water Segments



Site observations and habitat survey results

- **Segment 1 (most upstream): Unnamed Tributary (WBIC 3000134) to the South Branch Manitowoc River from County Hwy BB downstream to its Confluence with Unnamed Tributary (WBIC 3000057) near County Hwy F.**
 - Mack Chier (DNR intern) and I (Dave Bolha) arrived at the Grande Cheese-Chilton facility at 3pm on 9/12/2024 to meet Mike Gnadt, a Grande representative. Mike led us past the plant under construction northeast to the treatment system and outfall (Map 1). At the spot where the outfall pipe daylights by WBIC 3000134 (Photo 1), instantaneous water chemistry was collected (Table 1). I observed no flow discharging from the Grande Outfall pipe. A small amount of flow was coming down the stream channel from the west (measured at 0.004 m³/s). Mack and I measured a fish survey station upstream of the Grande Outfall (Map 1) of 110 meters (Photo 2). The stream channel was ditched and highly incised, and overgrown with Reed Canary Grass and other vegetation. It had no pool or riffle areas, was monotonous in its habitat features, had heavy sedimentation within the stream channel, limited cover for fish, and no buffer.

- At the end of the backpack fish survey, we had captured 48 Brook Stickleback (Attachment 1) (Photo 3). The upstream end of the fish survey station was just upstream of a drain tile daylighting into WBIC 3000134 (Photo 4). Some flow was coming out of the drain tile. Minimal flow was coming from the west and under County Hwy BB.
- A qualitative habitat survey was conducted at the completion of the fish survey (Attachment 2). The habitat scored Fair (30) and limits the potential fish community such that a full aquatic life community is not expected to be attainable.
- Inorganic surface water samples were also collected during our receiving water evaluation. The sample results are listed in Table 2.

Table 1: Water Chemistry Upstream of Grande Chilton Outfall in Segment 1 (WBIC 3000134).

Parameter	Result
Temperature-Celsius	15.16
pH	6.53
Dissolved Oxygen (mg/L)	7.72
Dissolved Oxygen % Saturation	79.6
Specific Conductivity (uS/cm)	946
Transparency (cm)	120

Table 2: Inorganic Chemistry Results from Upstream of Grande Chilton Outfall in Segment 1 (WBIC 3000134).

Parameter	Result
Total Recoverable Arsenic	No Detect
Total Recoverable Cadmium	No Detect
Total Recoverable Calcium	88.3 mg/L
Chloride	78.4 mg/L
Total Recoverable Chromium	1.89 µg/L
Total Recoverable Copper	No Detect
Total Recoverable Hardness	415 mg/L
Total Recoverable Lead	No Detect
Total Recoverable Magnesium	47.3 mg/L
Total Mercury	0.034 µg/L
Total Recoverable Nickel	No Detect
Ammonia Dissolved	No Detect
Total Nitrogen	18.3 mg/L
Total Phosphorus	0.0857 mg/L
Total Suspended Solids	26.6 mg/L
Total Recoverable Zinc	No Detect

- **Segment 2: Unnamed Tributary (WBIC 3000057) to the South Branch Manitowoc River from WBIC 3000134 to South Branch Manitowoc River (Map 1-2)**
 - Mack Chier and I arrived at the County Hwy F crossing of the Unnamed Tributary to the South Branch Manitowoc River WBIC 3000057 at 10am on 9/12/2024. I spoke with the landowner (last name Coffeen) on the northwest side of County Hwy F and WBIC 3000057. He granted access for me to survey the stream. He also gave me contact information for the landowner (Jay Juckem) on the northeast side of the intersection. Juckem granted me access as well. Mack and I measured the instantaneous water chemistry of WBIC 3000057 upon arrival (Table 3). We also measured flow at 0.013 m³/s. I observed the presence of watercress, an aquatic plant, at the County Hwy F culvert, which indicates the presence of groundwater influx. Beginning 5 meters upstream of County Hwy F, we measured a second fish survey station of 110 meters (Photo 5).

Water level appeared normal for summer baseflow. At the end of the backpack fish survey, we had captured 289 total fish, including 7 species (Attachment 3) (Photo 6).

- A qualitative habitat survey was conducted at the completion of the fish survey (Attachment 4). The habitat scored Fair (50) and the habitat and carrying capacity are better suited to Warmwater Forage Fish than Warmwater Sport Fish. The habitat in Segment 2 is better than in Segment 1 but the stream is still very narrow; in dry years it would be difficult to support gamefish. Even if management practices were improved, we would not expect it to support a gamefish community.
- Inorganic surface water samples were also collected during our receiving water evaluation. The sample results are listed in Table 4.

Table 3: Water chemistry in Segment 2 (WBIC 3000057) upstream of County Hwy F.

Parameter	Result
Temperature-Celcius	16.17
pH	6.91
Dissolved Oxygen (mg/L)	6.47
Dissolved Oxygen % Saturation	67.3
Specific Conductivity (uS/cm)	914
Transparency (cm)	70

Table 4: Inorganic Chemistry Results from Seg. 2 (WBIC 3000057) upstream of County Hwy F.

Parameter	Result
Total Recoverable Arsenic	No Detect
Total Recoverable Cadmium	No Detect
Total Recoverable Calcium	93.7 mg/L
Chloride	62.9 mg/L
Total Recoverable Chromium	1.23 µg/L
Total Recoverable Copper	No Detect
Total Recoverable Hardness	435 mg/L
Total Recoverable Lead	No Detect
Total Recoverable Magnesium	48.8 mg/L
Total Mercury	No Detect
Total Recoverable Nickel	No Detect
Ammonia Dissolved	0.0444 mg/L
Total Nitrogen	5.28 mg/L
Total Phosphorus	0.390 mg/L
Total Suspended Solids	10.6 mg/L
Total Recoverable Zinc	No Detect

- **Segment 3:** South Branch Manitowoc River from WBIC 3000057 Confluence to City of Chilton
 - I did not visit the South Branch Manitowoc River on 9/12/2024.

Fish survey results

- **Segment 1:** A total count of 48 fish were captured during the survey of Segment 1 in the Unnamed Tributary (WBIC 3000134) upstream of Grande Cheese-Chilton Outfall on 9/12/2024 (Fish survey station # 129430090, SWIMS station # 10044967). The modeled Natural Community is Cold Transition Headwater, but this could not be verified using the fish survey results. Although enough fish were captured, the only species captured was Brook Stickleback. Brook Stickleback are tolerant of poor water quality and are considered a pioneer species that will be amongst the first to repopulate a creek. Since 100% of the fish captured during the survey were tolerant, the Natural Community verification cannot be conducted. Given the cold water temperatures, it may be likely that under unimpacted

conditions it would have had an NC of Cold Transition Headwater (as modeled). However, that is not likely an attainable NC/Designated Use given the habitat limitations from ditching and incised nature of the stream.

- The fish survey data sheet from 9/12/2024 has been attached below (Attachment 1). To calculate the Index of Biotic Integrity Score and Condition Category of the Unnamed Tributary, the Updated Fish IBI Calculator Draft v3.0 Fish IBI Score for a Small Stream was used. The IBI score based on the 9/12/2024 survey was 27 with a Condition Category of Poor.
- On 6/1/2016, DNR staff conducted fish surveys in WBIC 3000134 at Fish survey station # 129429871 and just upstream of its confluence with WBIC 3000057. The fish surveys were conducted during an above average flow event and outside the recommended summer-time survey period. During this fish survey, only two fish were caught (one brook stickleback and one fathead minnow, both tolerant pioneer species). This provides some indication that even during high flows, a quality fish community is not being supported. Overall, however, it is not appropriate to use the 2016 results as a comparison for 2024 or to verify the Natural Community.
- **Segment 2:** Seven species and 289 total fish were captured in the fish survey in Segment 2, the Unnamed Tributary (WBIC 3000057) upstream of County Hwy F, on 9/12/2024 (Fish survey station # 30823953, SWIMS Station # 10030631). The modeled Natural Community was again Cold Transition Headwater, but this could not be verified using the fish survey results. Although enough fish were captured, the only species captured are tolerant of poor water quality. Since 100% of the fish captured during the survey were tolerant, no Natural Community verification can be conducted (Attachment 5). It may be likely that under unimpacted conditions it would have had a Natural Community of Cold Transition Headwater (as modeled). However, that is not likely an attainable NC/Designated Use given the habitat, which is more suitable to a Warmwater Forage Fish community.
 - The fish survey data sheet has been attached below (Attachment 3). To calculate the Index of Biotic Integrity Score and Condition Category of the Unnamed Tributary, the Updated Fish IBI Calculator Draft Fish IBI Score for a Small Stream was used. The IBI score based on the 9/12/2024 survey was 0 with a Condition Category of Very Poor.
 - The 1997 site visit memo reports the presence of several central mudminnows and two brook stickleback.
- **Segment 3:** No survey was conducted in the South Branch Manitowoc River on 9/12/2024. From previous stream classification work this has been designated as WWSF. The modeled Natural Community is Warm Transition Mainstem.

Discussion and Designated Use Recommendations

Note: Recommendations from this site visit are shown at the top of this memo.

Determining the Designated Use (DU): Under the Clean Water Act framework, a waterbody's Designated Use should be based on the use that is attainable within the waterbody under good land management practices, and the Designated Use can be set no lower than its existing use (the highest use that has been attained at any time since 1975).

- **Existing use:** The existing fish community present for Segments 1 and 2 is a Limited Forage Fish community. Therefore, the Designated Use for each segment can be no less stringent than LFF (i.e., it cannot be assigned Limited Aquatic Life because there is an existing fish community present).
- **Attainable use:** The second step in determining the appropriate DU is to determine what would be attainable in this system under good land management practices (while maintaining similar land uses, such as percent agriculture/urban). Although the Wisconsin Stream Model predicted that these segments may have fish in the Cold-Transitional thermal guild (which would fall under a Coldwater DU), none of the segments have the potential to be classified as Cold Transitional or Cold given the existing stream habitat and surrounding land use, which is predominantly agriculture (>80%). Even if best management practices were in place, the stream segments likely wouldn't be able to support a Cold Transitional or Coldwater fish community.
 - **Segment 1:** The Unnamed Tributary (WBIC 3000134) that flows east under County Hwy BB past the Grande Cheese-Chilton Outfall had measured flow of 0.14 cfs, tolerant pioneer fish species present, and fair but quite limited qualitative fish habitat. Therefore, we would not expect the attainable use for Seg. 1 to be higher than the existing Limited Forage Fish community.

- **Segment 2:** The Unnamed Tributary (WBIC 3000057) to the South Branch Manitowoc River that connects with WBIC 3000134 north of County Hwy F had measured flow of 0.46 cfs, a tolerant yet diverse forage fish community present, better habitat than Seg. 1, and flows into the South Branch Manitowoc River. While the existing community is reflective of LFF, improving the water quality and habitat within the stream could improve the quality of the fish community to support a more diverse, less tolerant species assemblage. Therefore, the attainable and Designated Use is recommended as Warmwater Forage Fish.
- **Segment 3:** South Branch Manitowoc River: No fish survey was conducted on the South Branch Manitowoc River at this time; however, previous surveys indicate a diverse, Warm Transition Mainstem Natural Community with a Warmwater Sport Fish Designated Use.

Tolerant species and Natural Community/Designated Use determination: Segments 1 and 2 had only tolerant species, leading to “failed tolerance tests”. This means that the quality of the fish community is impacted by limited in-stream habitat and/or surrounding land use such that more sensitive species (those intolerant of disturbance) are not present. In a more natural system, we would expect to see at least some intolerant or intermediately tolerant species. In some cases with failed tolerance tests, if the modeled NC is thought to be attainable under good land management, we would determine the modeled NC to be attainable and base the DU on the modeled NC. However, here, the modeled NC of Cold Transition Headwater has been determined not to be attainable given the lack of appropriate habitat for coldwater species.

Are code changes and/or a Use Attainability Analysis needed?

Segment 1 and 2 are not currently listed in ch. NR 104, Wis. Adm. Code as LAL or LFF.

- **Segment 1:** If there is desire to further consider whether an LFF classification could be appropriate for Seg. 1, it would require a use attainability analysis (UAA) and a code revision to add it to ch. NR 104, Wis. Adm. Code, as LFF. This may be a low priority because the difference in limits (temperature, etc) between warmwater and LFF is relatively small and is not expected to provide significant relief to the facility.
- **Segment 2:** No code change is needed for Seg. 2 because a Limited Use is not recommended.

Attachments

- Photos
- Attachment 1: Seg. 1 Fish survey
- Attachment 2: Seg. 1 Habitat survey
- Attachment 3: Seg. 2 Fish survey
- Attachment 4: Seg. 2 Habitat survey
- Attachment 5: Seg. 2 NC Verification Report

Photo 1: Grande Cheese-Chilton Outfall into Seg. 1.



Photo 2: Seg. 1, unnamed tributary WBIC 3000134 at upstream end of fish survey station upstream Grande Cheese-Chilton Outfall. Photo taken by D. Bolha on 9/12/2024.



Photo 3: Seg. 1, fish survey capture upstream Grande Cheese-Chilton Outfall. Photo taken by D. Bolha on 9/12/2024.



Photo 4: Drain tile outlet into Seg. 1, unnamed tributary WBIC 3000134 at upstream end of fish survey station upstream Grande Cheese-Chilton Outfall. Photo taken by D. Bolha on 9/12/2024.



Photo 5: Fish survey station in Seg. 2, Unnamed Tributary to the South Branch Manitowoc River WBIC 3000057.
Photo taken by D. Bolha on 9/12/2024.



Photo 6: Fish survey capture in Seg. 2, Unnamed Tributary to the South Branch Manitowoc River WBIC 3000057.
Photo taken by D. Bolha on 9/12/2024.



State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921
dnr.wi.gov

Entered @ FMIS

#129430090

SWIMS 10044967

Entry Complete & Proofed 1/15/25 by D. Bolha

Wadable Stream Fish Assessment

Form 3600-230 (R 7/15)

Page 1 of 3

Instructions: Bold fields must be completed.

10044967 7

Station Summary

Stream Name	Waterbody ID Code	SWIMS Station ID	FH Database ID
Unnamed Trib of Manitowoc River	3000134	10059382	129430090

Date (MMDDYY)	Station Name
09122024	upstream Grande effluent

Latitude - Longitude Determination Method Used	Datum Used
GPS	WGS 84

Start Latitude	Start Longitude	End Latitude	End Longitude	County
44.04108	-88.20031	44.04036	-88.20089	Calumet

Water Characteristics

Time (24-hr clock)	Air Temperature (C)	Water Temperature (C)	Conductivity (µs/cm)	Transparency (cm)
1530		15.16	946	120

Dissolved Oxygen (mg/l)	Dissolved Oxygen % Saturation	pH
7.72	79.6	6.53

Flow (m³/sec)	Water Level (check one - measure distance if Above or Below Normal):	Water Clarity:
0.004	<input checked="" type="radio"/> Normal <input type="radio"/> Below: _____ (m) <input type="radio"/> Above: _____ (m)	<input checked="" type="radio"/> Clear <input type="radio"/> Turbid <input type="radio"/> Stained

Channel and Basin Characteristics

Channel Condition: (check one)	<input type="radio"/> Natural	<input checked="" type="radio"/> > 20-year-old Channelization	<input type="radio"/> 10- to 20-year-old Channelization	<input type="radio"/> < 10-year-old Channelization	<input type="radio"/> Concrete Channel
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Mean Stream Width (m)	Percent Channelization	Sinuosity	Gradient (m/km)	Stream Order	Basin Area (km²)
1	100				

Sampling Description

Sampling Type (check one):	<input checked="" type="radio"/> CPE	<input type="radio"/> Depletion	<input type="radio"/> Mark-Recapture	<input type="radio"/> Other - Specify: _____
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Station Length (m)	Start Time (24-hr clock)	Finish Time (24-hr clock)
110	1547	1625

Type of Pass (check one):	<input checked="" type="radio"/> Upstream Only	<input type="radio"/> Upstream, then Downstream	<input type="radio"/> Other - Specify: _____
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Gear Description

Gear (indicate number of each type used):	Number of Anodes per Unit
1 Backpack Shockers _____ Stream Shockers _____ Mini-Boom Shockers	1

Current Type:	Volts	Amps	Rate	Duty
<input type="radio"/> AC <input type="radio"/> DC <input checked="" type="radio"/> DCP	108	1.8	60	12

# of Dippers	Dip Net Mesh Size (inches) and Type (bar, Ace, Delta, etc.)
1	1.250

Person(s) Who Collected Data (Full Names)
Mack Chier, David Bolha

Comments / Notes (continue on the back of this sheet if necessary)

Also called "foremost Creek" end of station 44.04036, -88.20089

HUC 10 0403010104
modeled as CCHW
High tolerants

SBR WBIC
77900

Pipe 44.04105
-88.20031

Andy 2016 station 10044966 2 fish captured
in survey from confluence w/ 3000057 upstream north

Form 3600-230 (R 7/15)

Page 2 of 3

Stream Name

Name Unnamed Trib of Maritowoc River

Waterbody ID Code

SWIMS Station ID	
------------------	--

Date (YYYY MM DD)

2024 09 12

Pass Number

Time (24-hr clock)

Time (24-hr clock)

Total Time (min.)	
-------------------	--

Start: 1542

End: 1625

Start:

End:

~~42~~ 38

Pass Direction: Up

☐ Down

Species

Number Caught

Weight (g)

Tare

Gross

Total

Number w/
DELTNumber of
MortalitiesNumber of
VouchersNumber
Marked

Number Recaptured

Lab Check
ID

Brook stickleback

49

Comments / Notes

ended 3 meters upstream drain tile outlet coming from east field

end 10 meters upstream bend to the right heading towards county rd BB

ATTACHMENT 2.

State of Wisconsin
Department of Natural Resources
dnr.wi.gov

Entry Complete & Proofed
1/15/25 by D. Bolha

**Wadable Stream Qualitative Fish Habitat Rating
for Streams < 10 m wide**

Form 3600-532A (R 6/07)

Page 1 of 2

Instructions: **Bold** fields must be completed. Record all measurements in metric units.

10044967

Station Summary

Stream Name	Waterbody ID Code	SWIMS Station ID	FH Database ID
Unnamed Trib of Manitowoc River	3000134	10059382	129430090
Date (MMDDYYYY)	Station Name		
09122024	upstream Grande effluent		
Latitude - Longitude Determination Method Used			Datum Used
GPS			NAD83

Start Latitude	Start Longitude	End Latitude	End Longitude	County
44.04108	-88.20031	44.04036	-88.20089	Calumet

Water Characteristics

Time (24-hr clock)	Air Temperature (C)	Water Temperature (C)	Conductivity (µs/cm)	Transparency (cm)
1530		15.16	946	120
Dissolved Oxygen (mg/l)		Dissolved Oxygen % Saturation	pH	
7.72		79.6	6.53	

Flow (m³/sec)	Water Level (check one - measure distance if Above or Below Normal):	Water Clarity:
0.004	<input checked="" type="checkbox"/> Normal <input type="checkbox"/> Below: _____ (m) <input type="checkbox"/> Above: _____ (m)	<input checked="" type="checkbox"/> Clear <input type="checkbox"/> Turbid <input type="checkbox"/> Stained

Channel and Basin Characteristics

Mean Stream Width (m)	Station Length (m)			
1	110			
Channel Condition: (check one)				
<input type="checkbox"/> Natural <input checked="" type="checkbox"/> > 20-year-old Channelization <input type="checkbox"/> 10- to 20-year-old Channelization <input type="checkbox"/> < 10-year-old Channelization <input type="checkbox"/> Concrete Channel				
Percent Channelization	Sinuosity	Gradient (m/km)	Stream Order	Basin Area (km²)
100				

Comments / Notes

Wadable Stream Qualitative Fish Habitat Rating for Streams < 10 m wide

Form 3600-532A (R 6/07)

Page 2 of 2

Rating Item	Excellent	Good	Fair	Poor	Score
Riparian Buffer Width (m) Width of contiguous undisturbed land uses; meadow, shrubs, woodland, wetland, exposed rock	Riparian zone well protected; buffer wide (> 10.0 m) 15	Riparian zone protected, but buffer width moderate (5.0 - 10.0 m) 10	Riparian zone moderately disturbed, buffer narrow (1.0 - 4.9 m) 5	Most of the riparian zone disturbed, buffer very narrow or absent (< 1.0 m) 0	0
Bank Erosion Width of bare soil on bank, along transects	No significant bank erosion; < 0.20 m of bank is bare soil 15	Limited erosion; 0.20 - 0.50 m of bank is bare soil 10	Moderate erosion; 0.51 - 1.0 m of bank is bare soil 5	Extensive erosion; > 1.0 m of bank is bare soil 0	10
Pool Area % of stream length in pools	Pools common; wide, deep, slow velocity habitat, balanced by other habitats; 40 to 60% of station 10	Pools present; not frequent or over-abundant; 30 to 39% or 61 to 70% of station 7	Pools present, but either rare or overly dominant, few other habitats present; 10 to 29% or 71 to 90% of station 3	Pools either absent or dominant, not balanced by other habitats; < 10% or > 90% of station 0	0
Width:Depth Ratio Average stream width divided by average thalweg depth in runs and pools	Streams very deep and narrow; width/depth ≤ 7 15	Stream relatively deep and narrow; width/depth 8-15 10	Stream moderately deep and narrow; width/depth 16-25 5	Stream relatively wide and shallow; width/depth > 25 0	15
Riffle:Riffle or Bend:Bend Ratio Average distance between riffles or bends divided by average stream width	Diverse habitats; meandering stream with deep bends and riffles common; ratio < 10 15	Diverse habitats; bends and riffles present, but not abundant; ratio 10 to 14 10	Habitat diversity low; occasional riffles or bends, ratio 15 to 25 5	Habitat monotonous; riffles or bends rare; generally continuous run habitat; ratio > 25 0	0
Fine Sediments % of the substrate that is < 2 mm (sand, silt, or clay)	Fines rare or absent, < 10% of the stream bed 15	Fines present but limited, generally in stream margins or pools; 10 to 20% of stream bed 10	Fines common in mid-channel areas, present in riffles and extensive in pools; 21 to 60% 5	Fines extensive in all habitats; > 60% of stream bed covered 0	0
Cover for Fish % of the stream area with cover	Cover/shelter for fish abundant; > 15% of stream 15	Cover common, but not extensive; 10 - 15% of stream 10	Occasional cover, limited to one or two areas; 5 - 9% of stream 5	Cover rare or absent; limited to < 5% of stream 0	5
Total Score					30

ATTACHMENT 3.

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921
dnr.wi.gov

Entered by DB

9/26/24 Entry Complete

Modeled CC HW Old IBS Small 60
Updated FIBS Small stream 0 very Poor
Survey 515102776

Wadable Stream Fish Assessment

Form 3600-230 (R 7/15)

Page 1 of 3

Instructions: Bold fields must be completed.

Station Summary					
Stream Name unnamed tributary south branch		Waterbody ID Code 3000057	SWIMS Station ID 10030631	FH Database ID 30823953	
Date (MMDDYYYY) 09122024	Station Name upstream downstream county rd F crossing				
Latitude - Longitude Determination Method Used GPS					Datum Used WGS 84
Start Latitude 44.03704	Start Longitude -88.18895	End Latitude	End Longitude	County Calumet	
Water Characteristics					
Time (24-hr clock) 1004	Air Temperature (C)	Water Temperature (C) 16.17	Conductivity (µs/cm) 914	Transparency (cm) 70	
Dissolved Oxygen (mg/l) 6.47		Dissolved Oxygen % Saturation 67.3		pH 6.91	
Flow (m³/sec) 0.013	Water Level (check one - measure distance if Above or Below Normal): <input checked="" type="radio"/> Normal <input type="radio"/> Below: _____ (m) <input type="radio"/> Above: _____ (m)			Water Clarity: <input checked="" type="radio"/> Clear <input type="radio"/> Turbid <input type="radio"/> Stained	
Channel and Basin Characteristics					
Channel Condition: (check one) <input type="radio"/> Natural <input checked="" type="radio"/> > 20-year-old Channelization <input type="radio"/> 10- to 20-year-old Channelization <input type="radio"/> < 10-year-old Channelization <input type="radio"/> Concrete Channel					
Mean Stream Width (m) 1.5	Percent Channelization 100	Sinuosity	Gradient (m/km)	Stream Order	Basin Area (km²)
Sampling Description					
Sampling Type (check one): <input checked="" type="radio"/> CPE <input type="radio"/> Depletion <input type="radio"/> Mark-Recapture <input type="radio"/> Other - Specify: _____					
Station Length (m) 1100	Start Time (24-hr clock) 1032		Finish Time (24-hr clock) 1139		
Type of Pass (check one): <input checked="" type="radio"/> Upstream Only <input type="radio"/> Upstream, then Downstream <input type="radio"/> Other - Specify: _____					
Gear Description					
Gear (indicate number of each type used): 1 Backpack Shockers _____ Stream Shockers _____ Mini-Boom Shockers _____				Number of Anodes per Unit 1	
Current Type: <input type="radio"/> AC <input type="radio"/> DC <input checked="" type="radio"/> DCP		Volts 110	Amps 1.7	Rate 60	Duty 12
# of Dippers 1	Dip Net Mesh Size (inches) and Type (bar, Ace, Delta, etc.) .1250				
Person(s) Who Collected Data (Full Names) Mack Chier, David Bolha					

Comments / Notes (continue on the back of this sheet if necessary)

also called "Foremost Creek"

start 5 meters upstream culvert

presence of water cress suggests groundwater seep

Form 3600-230 (R 7/15)

Page 2 of 3

Stream Name

Stream Name

Waterbody ID Code

SWIMS Station ID

Date (YYYY MM DD)

Unnamed tributary south branch Manitowoc river

2024 09 12

Pass Number

Time (24-hr clock)

Time (24-hr clock)

Total Time (min.)	
-------------------	--


Start: 1032

End: 1052

Start: 1113

End: 1139

46.

Pass Direction:  Up

☐ Down

[illegible]

Comments / Notes

Rusty crayfish

ATTACHMENT 4.

State of Wisconsin
Department of Natural Resources
dnr.wi.gov

Entered by DB
9/26/24 Entry Complete

**Wadable Stream Qualitative Fish Habitat Rating
for Streams < 10 m wide**

Form 3600-532A (R 6/07)

Page 1 of 2

Instructions: Bold fields must be completed. Record all measurements in metric units.

Station Summary

Stream Name	Waterbody ID Code	SWIMS Station ID	FH Database ID
U. Trib to S Br Manitowoc River	3000057	10030631	30823953
Date (MMDDYYYY)	Station Name		
09/22/2024	County F		
Latitude - Longitude Determination Method Used			Datum Used
GPS			WGS84

Start Latitude	Start Longitude	End Latitude	End Longitude	County
44.03704	-88.18895			Calumet

Water Characteristics

Time (24-hr clock)	Air Temperature (C)	Water Temperature (C)	Conductivity (µs/cm)	Transparency (cm)
1604		16.17	914	70
Dissolved Oxygen (mg/l)		Dissolved Oxygen % Saturation		pH
6.47		67.3		6.91
Flow (m³/sec)	Water Level (check one - measure distance if Above or Below Normal):			Water Clarity:
0.013	<input checked="" type="checkbox"/> Normal <input type="checkbox"/> Below: _____ (m) <input type="checkbox"/> Above: _____ (m)			<input checked="" type="checkbox"/> Clear <input type="checkbox"/> Turbid <input type="checkbox"/> Stained

Channel and Basin Characteristics

Mean Stream Width (m)	Station Length (m)			
1.5	110			
Channel Condition: (check one)	<input type="checkbox"/> Natural	<input checked="" type="checkbox"/> > 20-year-old Channelization	<input type="checkbox"/> 10- to 20-year-old Channelization	<input type="checkbox"/> < 10-year-old Channelization
Percent Channelization	Sinuosity	Gradient (m/km)	Stream Order	Basin Area (km²)
100				

Comments / Notes

Wadable Stream Qualitative Fish Habitat Rating for Streams < 10 m wide

Form 3600-532A (R 6/07)

Page 2 of 2

Rating Item	Excellent	Good	Fair	Poor	Score
Riparian Buffer Width (m) Width of contiguous undisturbed land uses; meadow, shrubs, woodland, wetland, exposed rock	Riparian zone well protected; buffer wide (> 10.0 m) 15	Riparian zone protected, but buffer width moderate (5.0 - 10.0 m) 10	Riparian zone moderately disturbed, buffer narrow (1.0 - 4.9 m) 5	Most of the riparian zone disturbed, buffer very narrow or absent (< 1.0 m) 0	0
Bank Erosion Width of bare soil on bank, along transects	No significant bank erosion; < 0.20 m of bank is bare soil 15	Limited erosion; 0.20 - 0.50 m of bank is bare soil 10	Moderate erosion; 0.51 - 1.0 m of bank is bare soil 5	Extensive erosion; > 1.0 m of bank is bare soil 0	5
Pool Area % of stream length in pools	Pools common; wide, deep, slow velocity habitat, balanced by other habitats; 40 to 60% of station 10	Pools present; not frequent or over-abundant; 30 to 39% or 61 to 70% of station 7	Pools present, but either rare or overly dominant, few other habitats present; 10 to 29% or 71 to 90% of station 3	Pools either absent or dominant, not balanced by other habitats; < 10% or > 90% of station 0	10
Width:Depth Ratio Average stream width divided by average thalweg depth in runs and pools	Streams very deep and narrow; width/depth ≤ 7 15	Stream relatively deep and narrow; width/depth 8-15 10	Stream moderately deep and narrow; width/depth 16-25 5	Stream relatively wide and shallow; width/depth > 25 0	15
Riffle:Riffle or Bend:Bend Ratio Average distance between riffles or bends divided by average stream width	Diverse habitats; meandering stream with deep bends and riffles common; ratio < 10 15	Diverse habitats; bends and riffles present, but not abundant; ratio 10 to 14 10	Habitat diversity low; occasional riffles or bends, ratio 15 to 25 5	Habitat monotonous; riffles or bends rare; generally continuous run habitat; ratio > 25 0	5
Fine Sediments % of the substrate that is < 2 mm (sand, silt, or clay)	Fines rare or absent, < 10% of the stream bed 15	Fines present but limited, generally in stream margins or pools; 10 to 20% of stream bed 10	Fines common in mid-channel areas, present in riffles and extensive in pools; 21 to 60% 5	Fines extensive in all habitats; > 60% of stream bed covered 0	5
Cover for Fish % of the stream area with cover	Cover/shelter for fish abundant; > 15% of stream 15	Cover common, but not extensive; 10 - 15% of stream 10	Occasional cover, limited to one or two areas; 5 - 9% of stream 5	Cover rare or absent; limited to < 5% of stream 0	10
Total Score					50

ATTACHMENT 5.

Natural Community Verification Report

Waterbody Name (WBIC): UNNAMED SINGLE-LINE STREAM T18N-R19E-S24 (3000057)

Swims Station ID: 10030631

Survey Sequence Number: 515102776

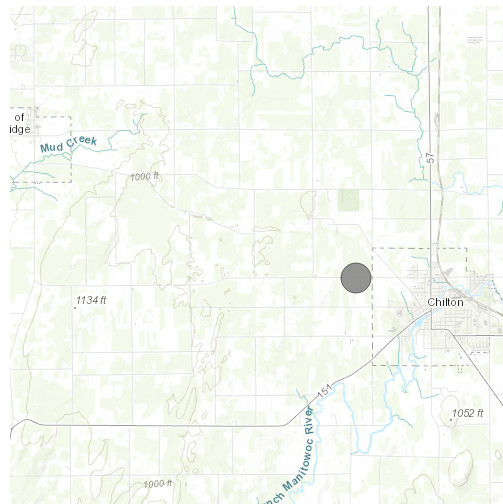
This NC Verification Report was run on Unnamed Trib. to S. Br. of the Manitowoc R. at CTH F, (10030631), located in CALUMET County with fish Survey Sequence Number 515102776 sampled on ~~December 9, 2024~~. The Natural Community for this station was verified by David Bolha on January 14, 2025. *9/12/24*

The Natural Community was modeled *Cold Transition Headwater* and is now Verified as *Cold Transition Headwater*.

Fish captured

Species	Count
BROOK STICKLEBACK	52
CENTRAL MUDMINNOW	4
CREEK CHUB	144
FATHEAD MINNOW	59
GREEN SUNFISH	8
LARGEMOUTH BASS	1
WHITE SUCKER	21

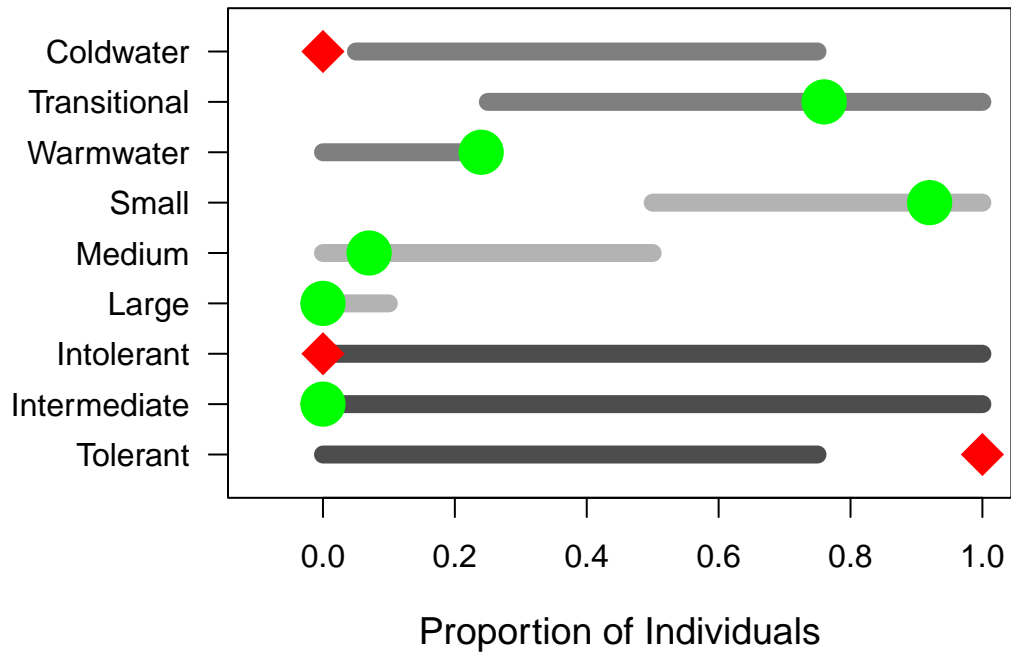
Survey location



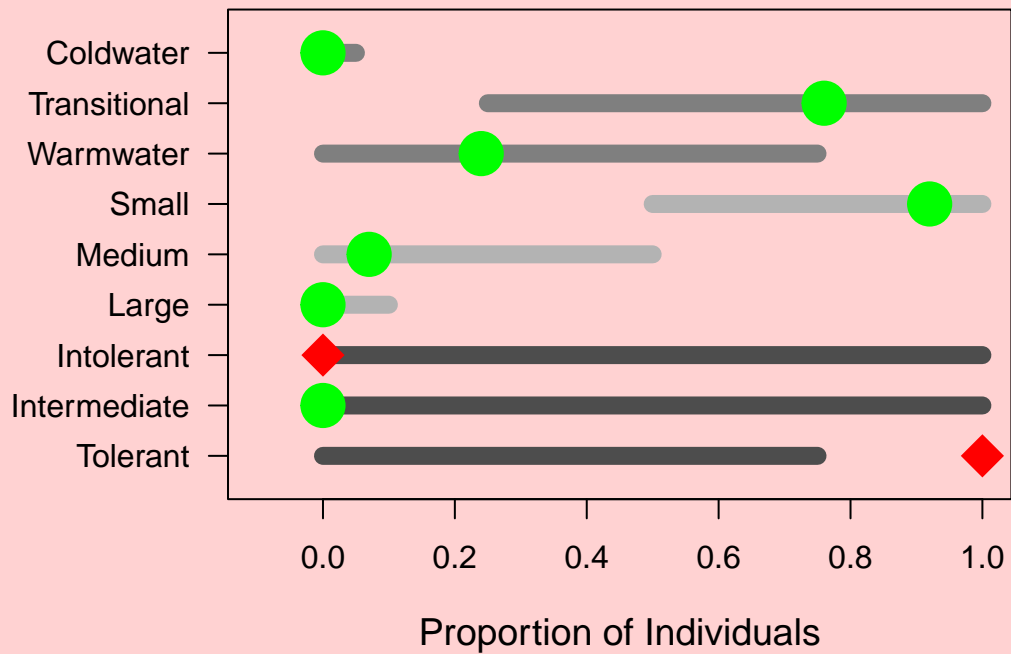
Guild percentages

Thermal	Percent.Indiv.	Size	Percent.Indiv.	Tolerance	Percent.Indiv.
Coldwater	0	Small	92	Intolerant	0
Transitional	76	Medium	7	Intermediate	0
Warmwater	24	Large	0	Tolerant	100

Cold Transition Headwater Guild Test



The NC shown below was considered but NOT selected Warm Transition Headwater



Comments from WR Biologist:

High Tolerants

The modeled NC was retained because the fish survey failed both of the tolerance tests, indicating the fish community may be degraded and should therefore not be used to verify the NC. If future monitoring along this reach provides more reliable fish data for a Verification, additional monitoring and Verification of the NC is recommended.