

DATE: 9/5/2024 FILE REF: NA

TO: Nicole Krueger, Limit Calculator; Mark Stanek, Compliance Engineer

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

SUBJECT: Darling Ingredients (formerly Beucher & Sons), ditch (no WBIC) to Harrington Cr (WBIC 143700) , Green Lake County

### Overview of issue

In preparation for reissuance of the Darling Ingredients permit, staff were requested to determine the appropriate stream classifications for the receiving waters. Darling Ingredients is a continuous discharger, with an actual annual average flow of 0.49 MGD (0.76 cfs).

From the factory, effluent goes through an open channel into a pipe and then into the cooling water pond. There are two discharge points from the cooling water pond, one at the west end and one at the east end which flows through a small ditch (Segment 1, no WBIC) along the north edge of the pond; the two join together just northwest of the pond and then flow north to Harrington Creek (Segment 2, WBIC 143700). Harrington Cr flows west to meet the Fox River.

For this facility, questions have arisen on both the point of compliance that was applied in previous permits, and the stream classification.

- *Point of compliance:* The facility's previous permit limits (2019) were not applied at the outfall location for the immediate receiving water, called an "effluent ditch", but instead the point of compliance was where the "effluent ditch" met Harrington Creek. The limits were based on Harrington Creek.
- *Receiving water classifications:*
  - In the 2019 memo, the ditch was called an "effluent ditch" but was not covered by corresponding LAL-based limits.
  - Harrington Creek was considered Warmwater Sport Fish in the previous memo (2019). In earlier memos it was treated as LFF. However, in ch. NR 104, it appears that it was classified as LAL. Further, the modeled natural community is Cool-Cold Headwater, which is under the Coldwater Designated Use.

### *Facility name change and listing in ch. NR 104*

Part of the difficulty has arisen because there is a very outdated listing in ch. NR 104, Table 5, as follows:

4.	Tributary – Fox River (Beucher & Sons of WI, Inc.)	From the discharge location downstream to the Fox River	Noncontinuous	II
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This is a listing of Limited Aquatic Life (indicated by "II" in the fourth column). However, because the facility name of "Beucher & Sons of WI, Inc." is so old, and the waterbody description does not provide the tributary name of Harrington Creek or any coordinates, staff did not recognize this as being the same facility as Darling Ingredients until a 1975 memo written by Dennis Weisensel was found containing a map of the Beucher & Sons location that matched the current Darling Ingredients location. Therefore, staff previously thought that there was no LAL or LFF listing in code for this facility and applied Warmwater Sport Fish limits based on a default classification to protect full fish and aquatic life. An additional inconsistency is that the Weisensel memo reported that it should be considered "intermediate aquatic life", which correlates to Limited Forage Fish in the code (see ch. NR 104.02(3)(a)), but it was actually codified as LAL.

The main objectives of this memo are to explore the issues noted above and provide recommendations for the permit reissuance. No new fish or habitat surveys were done at this time, but we recommend that new surveys and a review of existing data be completed before the next permit reissuance.

**Site overview maps**

**Maps 1 & 2.** 2018-2020 aerial photo from DNR’s Surface Water Data Viewer (closer view below shows ditches more clearly). White dashed line shows effluent flow path from cooling pond to Harrington Cr. The address used to input Darling Ingredients’ location on these maps is W694 White Ridge Rd., Berlin, WI.





### Summary of segments

- **Segment 1 (most upstream): Ditch from outfall to Harrington Cr.**
  - *Codified designated use:* LAL
  - *Classification used for previous permit issuance:* The ditch was not considered in the previous memo, but was called an “effluent ditch”
  - *Previous stream class recommendations:* No 2003 recommendation
  - *Modeled Natural Community:* NA
  - *New recommended Natural Community and Designated Use:* Not reassessed at this time. LAL can continue to be applied for the permit, consistent with code.
- **Segment 2: Harrington Cr. from the ditch to Fox River**
  - *Codified designated use:* LAL
  - *Classification used for previous permit issuance:* Warmwater sport fish
  - *Previous stream class recommendations:* No 2003 recommendation
  - *Modeled Natural Community:* Cool-Cold Headwater
  - *New recommended NC & DU:* Not reassessed at this time. Warmwater sport fish is likely to be protective of the existing designated use.

### Discussion and Designated Use Recommendations

- The point of compliance should be moved to the outfalls from the cooling pond. The ditch is a surface water of the state and should be protected as such. The ditch is also codified as LAL in ch. NR 104. Because it is already codified as LAL, it is clear that the facility should be receiving permit limits based on LAL for the immediate receiving water (the ditch).
- Since 2019, limits were based on a classification of Harrington Creek as Warmwater Sport Fish. This differs from its ch. NR 104 listing as LAL. However, based on the condition of the stream, we would expect that it supports a fish community—it has a defined bed and bank, good habitat, sufficient flow (the effluent quantity itself, 0.76 cfs, is enough to qualify as a headwater that should support fish even without considering additional flows), and connectivity to the Fox River. Therefore, continuing the application of Warmwater Sport Fish is likely a more accurate representation of the appropriate stream class. If the facility would like less restrictive temperature limits, an antidegradation/antibacksliding review would need to be done.

- If the facility requests less restrictive limits, it should recognize for planning purposes that in the future, if the code is updated, it is likely that a Warmwater Sport Fish classification may be designated. The classification of the ditched channel would also likely be revisited at that time.

*Review of whether the ditch fits the definition of “Wastewater effluent channel”*

At this point in time, for purposes of permit reissuance, it is unnecessary to determine whether the ditch fits the definition of “wastewater effluent channel” (WWEC) in ch. NR 104, because it is already listed individually in the code as LAL. However, if a stream survey is done in the future to determine whether that is an appropriate classification, that may be a factor to consider. A current-day LiDAR image and a few historic aerial images are provided at the end of this memo. It appears likely that there was an existing agricultural ditch network prior to construction of the facility’s cooling pond. If that is the case, it would not fit the definition of WWEC, and a determination would be needed as to whether it fit the LAL classification for other reasons.

The codified definition of WWEC in Wis. Adm. Code states:

“ch. NR 104.02(1)(d) Wastewater effluent channels. This classification includes discharge conveyances constructed primarily for the purpose of transporting wastes from a facility to a point of discharge. Drainage ditches (including those established under ch. 88, Stats.) constructed primarily for the purposes of relieving excess waters on agricultural lands shall not be construed as effluent channels. Modifications made to natural watercourses receiving wastewater effluents for the purpose of increasing or enhancing the natural flow characteristics of the stream shall not be classified as effluent channels.”

Under ch. NR 104.02(3)(b), the Limited Aquatic Life classification “shall be applied to all surface waters classified as effluent channel, wetland or diffuse surface water” (and may be applied to other waters). Therefore, if it is a WWEC, it is automatically an LAL, but if it is not a WWEC, then its designated use should be based on the fish community that it is capable of supporting. Limited Aquatic Life is applied to waters that do not support a fish community.

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

A code change is likely needed to remove Harrington Creek as LAL from ch. NR 104, but further monitoring and/or analysis of existing data are needed to support this change and to assess the appropriate classification for the ditch. A Use Attainability Analysis is not required for removing an LAL classification and replacing it with a higher designated use.

**Attachments**

- Lidar images and historic aerial photos
- 1975 Weisensal Stream Class Memo

**Map 3.** Current-day LiDAR image shows the ditch network. (The large landform just to the east of Darling Ingredients is a landfill.)

(<https://www.arcgis.com/apps/mapviewer/index.html?webmap=f2e49a42f5e14dd5845536408279da9d>)



**Map 4.** 1938 aerial photo, prior to facility existence. There appear to be agricultural ditches at the field edges at this time. (Wisconsin Historic Aerial Imagery Finder (<https://maps.sco.wisc.edu/WHAIFinder/>))



**Map 5.** 1957 aerial photo, before the cooling pond existed. Agricultural ditches are again evident. (Historic Aerials, [historicaerials.com/viewer](http://historicaerials.com/viewer))



**Map 6.** 1975 aerial photo, after the cooling pond was constructed (zoomed in closer to the pond area than the 1957 photo). (Historic Aerials, [historicaerials.com/viewer](http://historicaerials.com/viewer))



Nick Beucher & Sons of Wisconsin, Inc. - Green Lake County

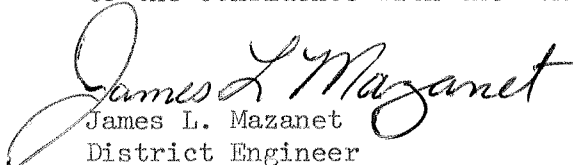
Wastewater Receiving Stream Classification

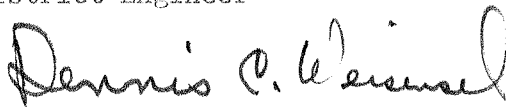
Survey Date: 8-11-75

Nick Beucher & Sons discharge treated process wastewater to a non-continuous stream which flows for about 1.8 miles before joining the Fox River. Biological examination of the stream indicates that it would be suitable for intermediate aquatic life. The bottom consists of silty humus, but is fairly solid. Examination of benthic organisms revealed a large number of scuds with a few mayflies and caddisflies. The banks of the stream are covered with canary grass. The stream flows through cornfields, and looks like it had been dredged. There are several dredged ditches that flow into the stream.

Recommendations

The stream shall be classified as a noncontinuous, agricultural use stream to the confluence with the Fox River.

  
James L. Mazanet  
District Engineer

  
Dennis C. Weisensel  
District Biologist

JLM:DCW:sh



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Stream at first town road above Nick  
Beucher & Sons.



• 19 • 75

Stream at County "F:", below Nick Beucher  
& Sons.

BERLIN

STH '116'

STH '49'

CTH 'W'

CTH 'E'

NICK BEUCHER  
+ SONS

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