East Twin River and unnamed (Trega Foods) tributary listing recommendations

WDNR received a public complaint suggesting the discharge, specifically chloride, from Trega Foods into an unnamed tributary of the East Twin River was causing water quality and biological impairments to both the unnamed tributary and the East Twin River. Additionally, a fish kill occurred on the East Twin River on July 12, 2006 between the confluence of the aforementioned unnamed tributary and the confluence with Krok Creek. Investigation of the fish kill found that an unknown contaminant in the unnamed tributary was the likely source of the fish kill (Appendix 1).

Water chemistry and biological data from the East Twin River, the unnamed tributary, and Krok Creek were examined, as was the chloride concentration in the Trega Foods effluent, to determine if water quality impairments exist in either the unnamed tributary or the East Twin River. The water quality datasets for these streams are limited and do not meet the data requirements to make either a chemical or biological impairment decision without the use of best professional judgment. To assist in that decision making process the chloride data from the Trega foods effluent, the unnamed tributary, and the East Twin River above and below the confluence with the unnamed tributary, as well as, macroinvertebrate and fish data are included with this report.

Chloride concentrations in Trega Foods effluent often exceeds the 395mg/l chronic toxicity water quality standard and occasionally exceeds the 757 mg/l acute toxicity standard (Appendix 2). However, the discharger appears to be meeting the terms of their WPDES permit and the chloride concentrations in the effluent have decreased substantially over the past ten years.

Eight chloride samples were collected from the unnamed tributary between the Trega Foods outfall and its confluence with East Twin River between Nov. 2005 and April 2009. One sample was found to exceed the 395 mg/l chronic toxicity standard and no sample exceeded the acute toxicity standard (Table 1). On the date of the water quality exceedance an additional sample collected approximately one mile downstream was found to meet the chloride water quality standards (Table 1).

Six chloride samples were also collected from the East Twin River near the confluence with the unnamed tributary from July 2006 to July 2009 and none of these samples were found to be in violation of the chronic or acute chloride water quality standard (Table 1). Paired data was collected above and below the confluence on three occasions. In all three cases the chloride concentration in East Twin River above the confluence was less than it was below the confluence but the chloride concentration in the East Twin River never exceed 90 mg/l below the confluence with the unnamed tributary (Table 1).

Macroinvertebrate and fish data were also considered when making this assessment recommendation. Macroinvertebrate Index of Biotic Integrity (MIBI) data from the unnamed tributary, East Twin River above and below the confluence with the unnamed tributary, and Krok Creek were examined. All MIBI scores in the East Twin River below the confluence with the unnamed tributary scored as “good” (Table 2). The MIBI scores

from the East Twin River above the confluence with the unnamed tributary ranged from "fair" to "good" with the most recent score being "good". Two macroinvertebrate collections occurred in the unnamed tributary, the sample collected closest to the outfall scored as "poor" while the sample collected approximately one mile downstream scored "fair". MIBI data from the proximate tributary, Krok Creek, has also been included as an additional reference, the MIBI scores in Krok Creek ranged from "fair" to "good" (Table 2).

Fish Index of Biotic Integrity (FIBI) scores were available for East Twin above and below the unnamed tributary and for Krok Creek. The East Twin River FIBI scores above the confluence with the unnamed tributary were "good" while the scores downstream of the confluence were mostly "poor" (Table 2). It is worth pointing out that the FIBI scores in nearby Krok Creek, which does not receive any effluent discharge, were found to range from10 (poor) to 40 (fair) within one year (Table 2).

Based on existing data there does not appear to be sufficient information to list either the unnamed tributary or East Twin River on the impaired waters list. In order to list a water as impaired due to chloride toxicity, 8 samples need to be collected from the assessment unit in question. In reviewing the data for this recommendation no assessment unit had the required number of chloride samples to make an assessment. Additionally, the chloride exceedance detected in the unnamed tributary exceeded the chronic toxicity water quality criteria. For a waterbody to violate the chronic toxicity threshold, the mean value from four continuous days of sampling must exceed the chronic criteria, in this case only one grab sample exists which is insufficient data to make a chronic toxicity assessment. While a "poor" MIBI score existed in the unnamed tributary and "poor" FIBI scores occurred downstream of the unnamed tributary confluence in the East Twin River, there is either insufficient data or conflicting data that prevents an impaired waters listing. WisCALM states that the minimum biological data requirements for an impairment assessment of the FAL use include:

- two fish sampling events (1 per year for two years) conducted at the same monitoring site
- three macroinvertebrate sampling events conducted at the same monitoring site during a single sampling season

Based on this information we recommend that both the unnamed tributary and the East Twin River be targeted for more intense monitoring to determine if a water quality impairment truly exists for either of these streams. This monitoring should be designed so that adequate chloride, biological, and total phosphorus data are collected to make water quality assessments as defined in the 2012 WisCALM document.

Figure 1. Map of the Upper East Twin River Basin

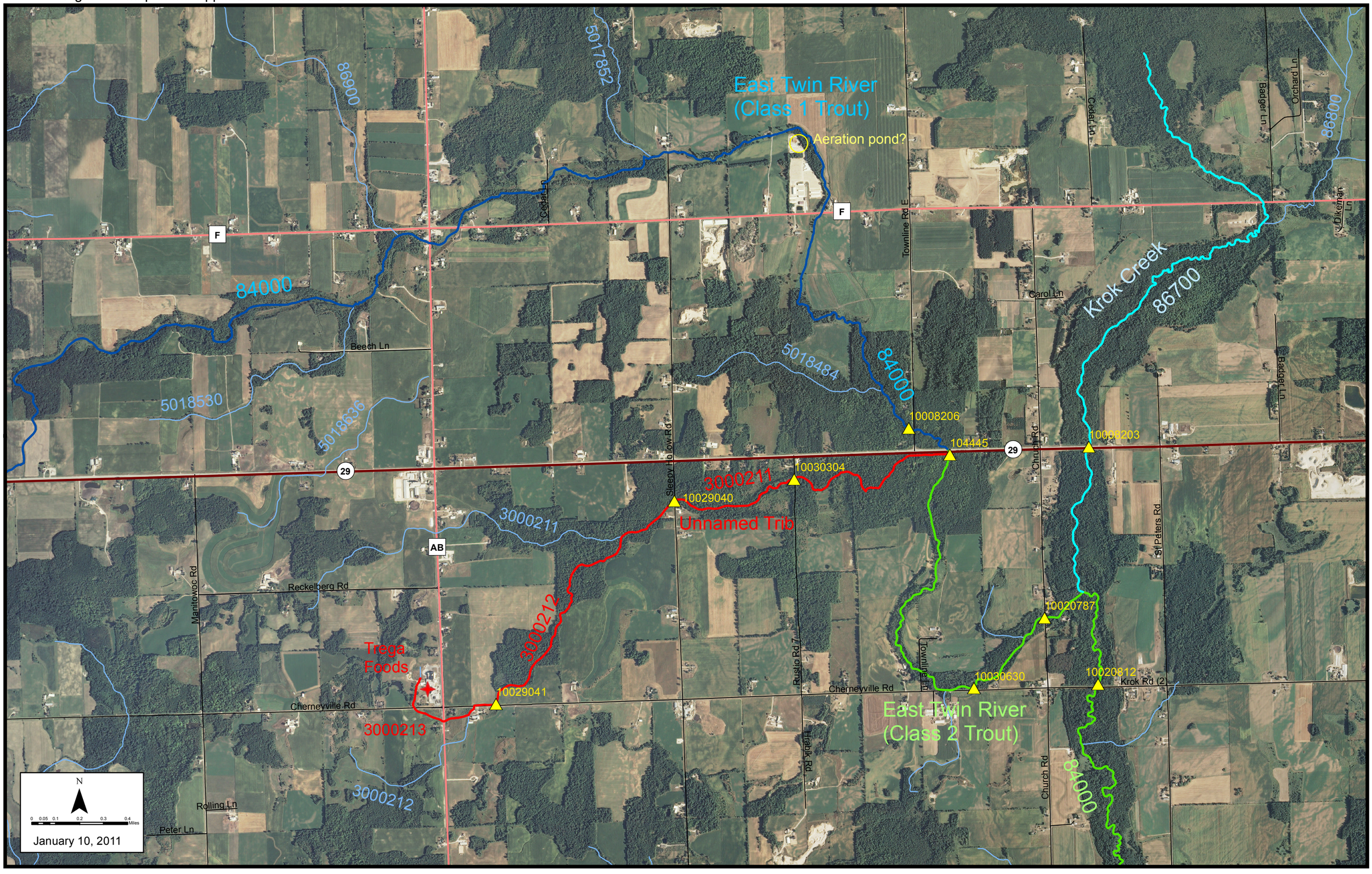

Table 1. Chloride concentration in unnamed tributary and East Twin River

Unnamed (Trega) tributary

WBIC	station	results	units	parameter	date	sample location
3000213	No station	146	MG/L	Chloride	04/26/09	Culvert on Cherneyville Rd. south of Trega foods
3000213	No station	276	MG/L	Chloride	11/15/05	Culvert on CTH AB south of Trega foods
3000213	No station	141	MG/L	Chloride	04/26/09	Culvert on CTH AB south of Trega foods
3000212	10029041	97.7	MG/L	Chloride	04/26/09	Culvert on Cherneyville Rd. east of CTH AB
3000212	10029041	446	MG/L	Chloride	07/06/09	Culvert on Cherneyville Rd. east of CTH AB
3000211	10030304	84.8	MG/L	Chloride	04/26/09	Unnamed Tributary to East Twin River at Hrabik Road
3000211	10030304	246	MG/L	Chloride	07/06/09	Unnamed Tributary to East Twin River at Hrabik Road
3000211	10030304	337	MG/L	Chloride	07/12/06	Unnamed Tributary to East Twin River at Hrabik Road

East Twin River

WBIC	station	results	units	parameter	date	sample location
84000	10008206	51.6	MG/L	Chloride	04/26/09	Bridge North of STH 29 on Townline Rd (Upstream of confluence)
84000	10008206	45	MG/L	Chloride	07/06/09	Bridge North of STH 29 on Townline Rd (Upstream of confluence)
84000	10008206	41.6	MG/L	Chloride	07/12/06	Bridge North of STH 29 on Townline Rd (Upstream of confluence)
84000	104445	88	MG/L	Chloride	04/26/09	Confluence of East Twin and Unnamed Trib
84000	10020787	79.9	MG/L	Chloride	07/06/09	East Twin River at Church Road upstream of Krok Creek
84000	10020787	59.1	MG/L	Chloride	07/12/06	East Twin River at Church Road upstream of Krok Creek

Table 2. East Twin River and Tributaries IBIs

Trega Trib.		mIBI	date	fIBI (cold ibi)	date
wbic	station				
3000212	10029041	-1.48 (Poor)	09/15/2008	no data	
3000211	10029040	3.96 (Fair)	09/15/2008	no data	

East Twin River

wbic	station				
84000	10008206	6.76 (Good)	10/18/2001	50 (Fair)	07/01/2009
	10008206	4.86 (Fair)	10/12/1994	50 (Fair)	07/18/2001
	10008206	3.41 (Fair)	04/07/1994		
	10020812			20 (Poor)	07/02/2009
	10008204	5.21 (Good)	10/02/2001	20 (Poor)	07/19/2001
	10008204			20 (Poor)	07/06/2009
	10008215	5.15 (Good)	10/02/2001	10 (Poor)	08/02/2001
	10015746	5.34 (Good)	10/02/2001		
	10029262			30 (Fair)	07/31/2001

Krok creek

wbic	station				
86700	10008203	4.23 (Fair)	04/11/1995	40 (Fair)	07/01/2009
	10008203	5.32 (Good)	04/11/1995	10 (Poor)	07/31/2008
	10008203	4.82 (Fair)	04/11/1995	30 (Fair)	08/17/2001
	10008203	3.54 (Fair)	04/07/1994		

wbic	station	
Unnamed (Trega) trib		
300213		
	Undefined	2 stations downstream of Trega near highway AB
3000212		
	10029041	0.5 miles downstream of Trega discharge
3000211		
	10029040	1.5 miles downstream of Trega discharge
	10030304	2 miles downstream of Trega discharge
East Twin River		
84000		
	10008206	upstream of unnamed trib
	104445	confluence with unnamed trib
	10030630	between unnamed trib and krok creek
	10020787	between unnamed trib and krok creek
	10020812	500yards downstream of krok creek
	10008204	2.0 miles downstream of krok creek
	10008215	3.0 miles downstream of krok creek
	10029262	4.5 miles downstream of krok creek
Krok Creek		
86700		
	10008203	Krok Creek upstream of East Twin

Appendix 1

DATE: July 14, 2006

TO: East Twin River File

FROM: Steve Hogler
Steve Surendonk

SUBJECT: East Twin River Fish Kill

Mishicot Fisheries received three calls, one on (July 12 PM and two on July 13 AM from Kewaunee County Warden Darren Kuhn regarding a fish kill on the East Twin River. Warden Kuhn stated that he had received a complaint of dead fish on the East Twin River at Church Road (Figure 1). Upon investigating the compliant on July 12, he found and collected 20 dead brook trout ranging in size from 4 to 14". He also stated that he had seen other dead fish at that location.

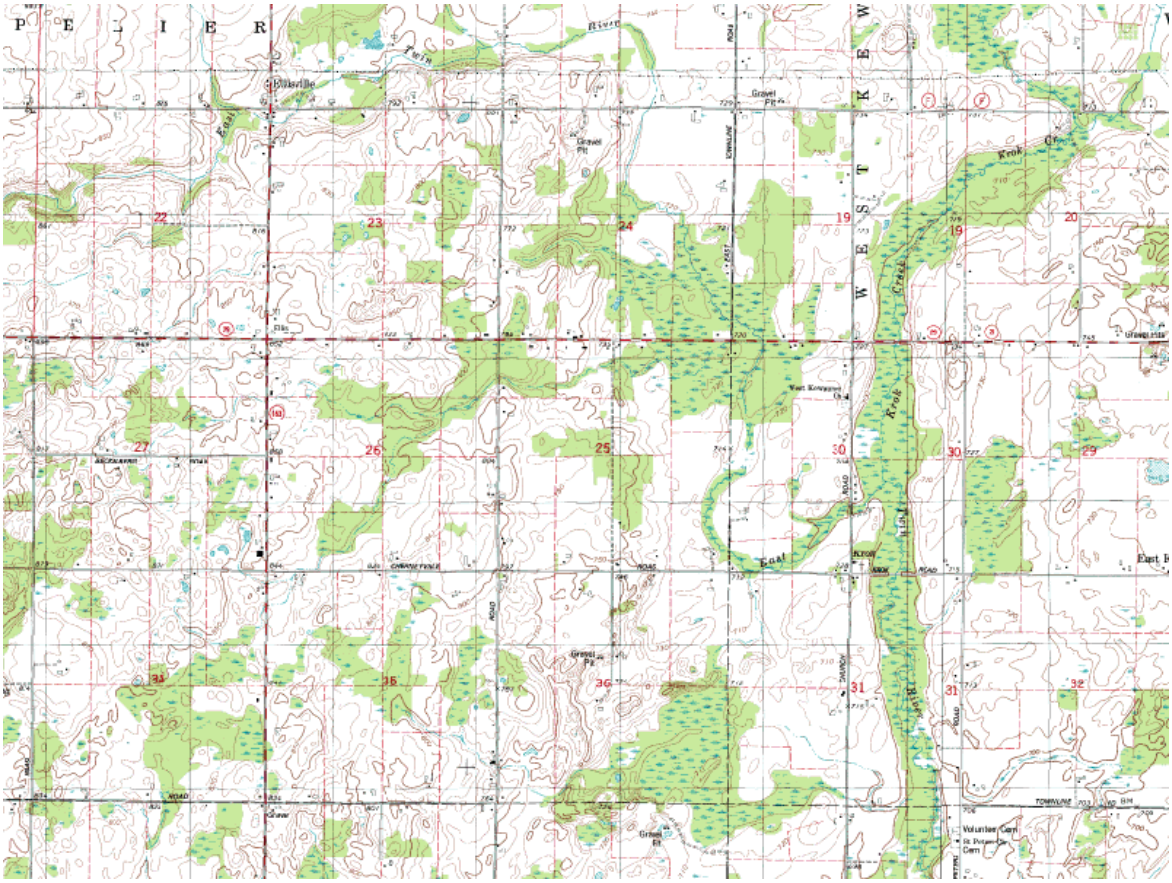

Figure 1. Topographic map of the fish kill area. Dead fish were collected upstream of the confluence of the East Twin River and Krok Creek in section 30. Map obtained from Topozone website.

When Fisheries staff talked to Warden Kuhn on July 13, we agreed to meet him at Church Road later that

morning. We also agreed to check East Twin River road crossings between Mishicot and Church Road to determine how far downstream fish mortality was occurring.

As we proceeded north, we visually checked the crossings at County Highway AB and Sandy Bay Road in Manitowoc County and Highway G and Highway B in Kewaunee County for any sign of dead fish or discolored water. At each location the water appeared normal, there were not any dead fish and many live fish were observed swimming near the bridges.

At County J, Krok Road and Church Road in addition to the visual check of the river, we took temperature and Dissolved oxygen (DO) readings (Table 1). Temperature and DO readings appeared normal. Live fish were seen swimming at all locations except at Church Road. At Church Road, many dead fish were observed floating or on the bottom upstream and downstream of the road crossing.

Table 1. Dissolved oxygen and temperature readings on the East Twin River taken on July 13.

Site	Time	Air Temp. (C)	Water Temp (C)	Dissolved Oxygen (mg/l)	% DO Saturation	Comments
Highway J	1010	27.1	18.0	8.64	91.5	Live Fish
Krok Creek Road	1015	27.1	15.9	7.91	79.7	Live fish, sheen on water
Church Road	1025	27.1	15.9	7.47	75.5	Dead fish, Water turbid
Above Hwy 29 Bridge	1435	28.8	19.8	9.57	105.3	Live fish, clear water

Fisheries staff and Warden Kuhn decided to walk downstream from Church Road to Krok Creek to collect dead fish and to determine the downstream extent of the kill. During our walk, we collected a number of dead brook trout, white sucker, sculpin, southern redbelly dace, creek chub and longnose dace. An attempt was made to collect all dead brook trout for evidence while other species were collected for identification purposes only. Dead fish were observed down to Krok Creek. Downstream of the confluence of the two rivers, dead fish were not seen although the water did have an oily surface sheen.

After returning to Church Road it was decided that LE staff would walk upstream from Church Road to near Krok Road. Fish staff was assigned to investigate an unnamed tributary to the East Twin River that enters the East Twin River just below (south) Highway 29.

Fisheries staff walked several hundred feet downstream of Highway 29 and then walked back upstream to assess the East Twin River at this location. We noted 1 dead sculpin and a substantial amount of surface scum caught on woody debris and vegetation. The water was slightly turbid.

We entered the unnamed tributary at the East Twin River and walked upstream approximately 300 feet. We noted that the tributary was very turbid and had low flow. On the surface of the water, in pools, a thick scum was observed. This scum was similar in appearance to that noted on the East Twin River. One brook stickleback was seen at the water surface. We took DO and temperature readings at this location as

well as from Hrabik Road and Sleepy Hollow Road (Table 2). DO at this location was measured to be very low at 0.99 mg/l.

Table 2. Dissolved oxygen and temperature readings on an unnamed tributary to the East Twin River taken on July 13.

Site	Time	Air Temp. (C)	Water Temp (c)	Dissolved Oxygen (mg/l)	% DO Saturation	Comments
50 above confluence with East Twin River	1400	20.6	19.9	0.99	9.7	Water very turbid with surface scum
Hrabik Road	1410	22.6	22.4	3.99	46.0	Low flow, scum on water
Sleepy Hollow Road	1415	25.6	20.9	2.9	32.1	Lots of Filamentous Algae

Fish staff walked approximately 200 feet upstream of Sleepy Hollow Road. We did not note any dead or living fish in this stream stretch, despite the availability of good habitat. Lots of filamentous algae was noted throughout this section.

Before meeting with LE staff we stopped at the Highway 29 Bridge over the east Twin River. We took DO and temperature data (Table 1) as well as several digital photographs. DO and temperature was very good above Highway 29 as well as water clarity, although some filamentous algae was noted (Figure 2). We noted several fish swimming in the area.

Figure 2. The East Twin River above the Highway 29 bridge that shows clear water and filamentous algae growth.

Below the Highway 29 bridge, clear water could be seen moving under the bridge, but when it mixed with water from the unnamed tributary the river turned very turbid (Figures 3 and 4)

Figure 3. A view of the East Twin River from the Highway 29 bridge showing clear upstream water meeting with the turbid water from the unnamed tributary entering from the top of the photo.

Figure 4. A close-up view of the mixing area below the Highway 29 bridge.

It appears that in the East Twin River below Highway 29 a substantial fish kill occurred that affected many species of fish. From the data that was collected, it appears that the source of the kill originated in the unnamed tributary to the East Twin River that enters the river just below Highway 29. Although many fish species were killed and all species play a role in the stream environment, the loss of native brook trout is a serious set back to the river. From the size distribution of collected fish, at least 3 year classes were once present in the population.

During baseline monitoring in 2001, several sites in the area were monitored and brook trout and stocked brown trout were captured. Other coldwater community fish species were also captured during the survey. Water temperature, dissolved oxygen and habitat were excellent and showed that the stream could support trout although the East Twin River is not classified as trout water at this location.

It is recommended that:

- To prevent further impacts to the East Twin River that the unnamed tributary be plugged and the water pumped out until it runs clear again.
- Any WPDES permits to the unnamed tributary be reevaluated to protect the aquatic community of the unnamed tributary as well as the East Twin River
- The status of the brook trout community in the East Twin River be monitored
- Consider the reclassification of this section of the East Twin River to Class 1 trout waters
- WPDES permits should require the notification of all non-permitted discharges to the spills hotline and the basin engineer. It is likely in this case notification to a “live” person instead to an answering machine may have prevented the fish kill.

Appendix 2

Chloride Concentration in Effluent from Trega Foods

sample date	Conc.	units	method	analyte
1/7/99	995	mg/L	24 HR COMP	Chloride
2/4/99	1170	mg/L	24 HR COMP	Chloride
3/4/99	818	mg/L	24 HR COMP	Chloride
4/1/99	713	mg/L	24 HR COMP	Chloride
5/13/99	860	mg/L	24 HR COMP	Chloride
6/3/99	1220	mg/L	24 HR COMP	Chloride
7/1/99	864	mg/L	24 HR COMP	Chloride
8/5/99	1250	mg/L	24 HR COMP	Chloride
9/2/99	1670	mg/L	24 HR COMP	Chloride
10/7/99	2760	mg/L	24 HR COMP	Chloride
11/16/99	1000	mg/L	24 HR COMP	Chloride
12/3/99	990	mg/L	24 HR COMP	Chloride
1/6/00	1380	mg/L	24 HR COMP	Chloride
2/3/00	1400	mg/L	24 HR COMP	Chloride
3/2/00	1430	mg/L	24 HR COMP	Chloride
4/5/00	1740	mg/L	24 HR COMP	Chloride
5/3/00	1200	mg/L	24 HR COMP	Chloride
6/7/00	943	mg/L	24 HR COMP	Chloride
7/5/00	1900	mg/L	24 HR COMP	Chloride
8/2/00	1590	mg/L	24 HR COMP	Chloride
9/20/00	1610	mg/L	24 HR COMP	Chloride
10/18/00	1510	mg/L	24 HR COMP	Chloride
11/8/00	1770	mg/L	24 HR COMP	Chloride
12/12/00	1320	mg/L	24 HR COMP	Chloride
1/3/01	1090	mg/L	24 HR COMP	Chloride
2/19/01	670	mg/L	24 HR COMP	Chloride
3/27/01	1930	mg/L	24 HR COMP	Chloride
4/25/01	330	mg/L	24 HR COMP	Chloride
5/21/01	766	mg/L	24 HR COMP	Chloride
6/20/01	706	mg/L	24 HR COMP	Chloride
7/11/01	750	mg/L	24 HR COMP	Chloride
8/29/01	798	mg/L	24 HR COMP	Chloride
9/26/01	706	mg/L	24 HR COMP	Chloride
10/3/01	530	mg/L	24 HR COMP	Chloride
11/26/01	550	mg/L	24 HR COMP	Chloride
12/19/01	870	mg/L	24 HR COMP	Chloride
1/1/02	1000	mg/L	24 HR COMP	Chloride
2/6/02	1200	mg/L	24 HR COMP	Chloride
3/13/02	1200	mg/L	24 HR COMP	Chloride
4/24/02	520	mg/L	24 HR COMP	Chloride
5/8/02	190	mg/L	24 HR COMP	Chloride
6/12/02	260	mg/L	24 HR COMP	Chloride
7/29/02	310	mg/L	24 HR COMP	Chloride
8/29/02	320	mg/L	24 HR COMP	Chloride
10/2/02	730	mg/L	24 HR COMP	Chloride
11/19/02	220	mg/L	24 HR COMP	Chloride
12/18/02	230	mg/L	24 HR COMP	Chloride

1/23/03	280	mg/L	24 HR COMP	Chloride
2/20/03	410	mg/L	24 HR COMP	Chloride
3/19/03	560	mg/L	24 HR COMP	Chloride
4/24/03	330	mg/L	24 HR COMP	Chloride
5/20/03	230	mg/L	24 HR COMP	Chloride
6/16/03	140	mg/L	24 HR COMP	Chloride
7/22/03	190	mg/L	24 HR COMP	Chloride
8/26/03	210	mg/L	24 HR COMP	Chloride
9/24/03	150	mg/L	24 HR COMP	Chloride
10/28/03	170	mg/L	24 HR COMP	Chloride
11/25/03	210	mg/L	24 HR COMP	Chloride
12/29/03	360	mg/L	24 HR COMP	Chloride
1/28/04	500	mg/L	24 HR COMP	Chloride
2/25/04	380	mg/L	24 HR COMP	Chloride
3/22/04	210	mg/L	24 HR COMP	Chloride
4/27/04	450	mg/L	24 HR COMP	Chloride
5/19/04	340	mg/L	24 HR COMP	Chloride
6/28/04	580	mg/L	24 HR COMP	Chloride
7/28/04	300	mg/L	24 HR COMP	Chloride
8/19/04	170	mg/L	24 HR COMP	Chloride
9/20/04	420	mg/L	24 HR COMP	Chloride
10/26/04	210	mg/L	24 HR COMP	Chloride
11/23/04	150	mg/L	24 HR COMP	Chloride
12/16/04	340	mg/L	24 HR COMP	Chloride
1/31/05	340	mg/L	24 HR COMP	Chloride
2/16/05	200	mg/L	24 HR COMP	Chloride
3/31/05	270	mg/L	24 HR COMP	Chloride
4/14/05	180	mg/L	24 HR COMP	Chloride
5/5/05	500	mg/L	24 HR COMP	Chloride
6/16/05	480	mg/L	24 HR COMP	Chloride
7/27/05	350	mg/L	24 HR COMP	Chloride
8/2/05	410	mg/L	24 HR COMP	Chloride
9/8/05	330	mg/L	24 HR COMP	Chloride
9/15/05	400	mg/L	24 HR COMP	Chloride
10/31/05	440	mg/L	24 HR COMP	Chloride
11/7/05	330	mg/L	24 HR COMP	Chloride
12/5/05	600	mg/L	24 HR COMP	Chloride
1/12/06	580	mg/L	24 HR COMP	Chloride
2/8/06	750	mg/L	24 HR COMP	Chloride
2/23/06	130	mg/L	24 HR COMP	Chloride
3/9/06	100	mg/L	24 HR COMP	Chloride
3/23/06	540	mg/L	24 HR COMP	Chloride
4/6/06	76	mg/L	24 HR COMP	Chloride
4/13/06	92	mg/L	24 HR COMP	Chloride
5/17/06	390	mg/L	24 HR COMP	Chloride
6/14/06	360	mg/L	24 HR COMP	Chloride
6/21/06	150	mg/L	24 HR COMP	Chloride
7/19/06	390	mg/L	24 HR COMP	Chloride
8/9/06	350	mg/L	24 HR COMP	Chloride
8/24/06	280	mg/L	24 HR COMP	Chloride
9/12/06	370	mg/L	24 HR COMP	Chloride
9/27/06	680	mg/L	24 HR COMP	Chloride

10/26/06	450	mg/L	24 HR COMP	Chloride
11/1/06	520	mg/L	24 HR COMP	Chloride
11/9/06	590	mg/L	24 HR COMP	Chloride
11/16/06	310	mg/L	24 HR COMP	Chloride
11/21/06	680	mg/L	24 HR COMP	Chloride
12/7/06	480	mg/L	24 HR COMP	Chloride
1/11/07	400	mg/L	24 HR COMP	Chloride
1/18/07	720	mg/L	24 HR COMP	Chloride
1/25/07	490	mg/L	24 HR COMP	Chloride
2/21/07	570	mg/L	24 HR COMP	Chloride
3/14/07	380	mg/L	24 HR COMP	Chloride
3/26/07	260	mg/L	24 HR COMP	Chloride
4/12/07	340	mg/L	24 HR COMP	Chloride
5/10/07	450	mg/L	24 HR COMP	Chloride
5/22/07	560	mg/L	24 HR COMP	Chloride
6/14/07	340	mg/L	24 HR COMP	Chloride
6/28/07	380	mg/L	24 HR COMP	Chloride
7/12/07	280	mg/L	24 HR COMP	Chloride
8/8/07	400	mg/L	24 HR COMP	Chloride
8/16/07	410	mg/L	24 HR COMP	Chloride
9/5/07	360	mg/L	24 HR COMP	Chloride
9/27/07	280	mg/L	24 HR COMP	Chloride
10/4/07	430	mg/L	24 HR COMP	Chloride
10/25/07	220	mg/L	24 HR COMP	Chloride
11/15/07	420	mg/L	24 HR COMP	Chloride
11/28/07	490	mg/L	24 HR COMP	Chloride
12/13/07	690	mg/L	24 HR COMP	Chloride
12/19/07	540	mg/L	24 HR COMP	Chloride
1/3/08	330	mg/L	24 HR COMP	Chloride
1/16/08	1000	mg/L	24 HR COMP	Chloride
1/23/08	970	mg/L	24 HR COMP	Chloride
2/14/08	780	mg/L	24 HR COMP	Chloride
2/21/08	690	mg/L	24 HR COMP	Chloride
3/12/08	330	mg/L	24 HR COMP	Chloride
3/20/08	420	mg/L	24 HR COMP	Chloride
4/10/08	780	mg/L	24 HR COMP	Chloride
4/24/08	250	mg/L	24 HR COMP	Chloride
5/22/08	350	mg/L	24 HR COMP	Chloride
6/5/08	340	mg/L	24 HR COMP	Chloride
6/12/08	360	mg/L	24 HR COMP	Chloride
6/18/08	150	mg/L	24 HR COMP	Chloride
7/10/08	630	mg/L	24 HR COMP	Chloride
7/31/08	680	mg/L	24 HR COMP	Chloride
8/6/08	710	mg/L	24 HR COMP	Chloride
8/20/08	500	mg/L	24 HR COMP	Chloride
9/4/08	490	mg/L	24 HR COMP	Chloride
10/15/08	370	mg/L	24 HR COMP	Chloride
10/23/08	320	mg/L	24 HR COMP	Chloride
11/13/08	310	mg/L	24 HR COMP	Chloride
11/20/08	310	mg/L	24 HR COMP	Chloride
11/25/08	340	mg/L	24 HR COMP	Chloride
12/11/08	370	mg/L	24 HR COMP	Chloride

12/30/08	720	mg/L	24 HR COMP	Chloride
1/21/09	750	mg/L	24 HR COMP	Chloride
1/29/09	630	mg/L	24 HR COMP	Chloride
2/4/09	660	mg/L	24 HR COMP	Chloride
2/26/09	610	mg/L	24 HR COMP	Chloride
3/5/09	570	mg/L	24 HR COMP	Chloride
3/18/09	750	mg/L	24 HR COMP	Chloride
3/26/09	940	mg/L	24 HR COMP	Chloride
4/8/09	460	mg/L	24 HR COMP	Chloride
4/15/09	360	mg/L	24 HR COMP	Chloride
5/7/09	340	mg/L	24 HR COMP	Chloride
6/4/09	880	mg/L	24 HR COMP	Chloride
6/10/09	660	mg/L	24 HR COMP	Chloride
7/16/09	1000	mg/L	24 HR COMP	Chloride
7/28/09	400	mg/L	24 HR COMP	Chloride
8/5/09	480	mg/L	24 HR COMP	Chloride
8/27/09	350	mg/L	24 HR COMP	Chloride
9/2/09	230	mg/L	24 HR COMP	Chloride
9/10/09	610	mg/L	24 HR COMP	Chloride
9/15/09	260	mg/L	24 HR COMP	Chloride
9/24/09	370	mg/L	24 HR COMP	Chloride
10/8/09	330	mg/L	24 HR COMP	Chloride
10/14/09	230	mg/L	24 HR COMP	Chloride
10/22/09	260	mg/L	24 HR COMP	Chloride
10/28/09	670	mg/L	24 HR COMP	Chloride
11/12/09	460	mg/L	24 HR COMP	Chloride
11/19/09	350	mg/L	24 HR COMP	Chloride
11/24/09	330	mg/L	24 HR COMP	Chloride
12/2/09	280	mg/L	24 HR COMP	Chloride
12/8/09	360	mg/L	24 HR COMP	Chloride
12/16/09	840	mg/L	24 HR COMP	Chloride
12/22/09	470	mg/L	24 HR COMP	Chloride
12/30/09	460	mg/L	24 HR COMP	Chloride
1/7/10	640	mg/L	24 HR COMP	Chloride
1/14/10	340	mg/L	24 HR COMP	Chloride
1/19/10	260	mg/L	24 HR COMP	Chloride
1/27/10	270	mg/L	24 HR COMP	Chloride
2/3/10	560	mg/L	24 HR COMP	Chloride
2/11/10	750	mg/L	24 HR COMP	Chloride
2/19/10	390	mg/L	24 HR COMP	Chloride
2/24/10	390	mg/L	24 HR COMP	Chloride
3/3/10	310	mg/L	24 HR COMP	Chloride
3/11/10	290	mg/L	24 HR COMP	Chloride
3/17/10	670	mg/L	24 HR COMP	Chloride
3/24/10	410	mg/L	24 HR COMP	Chloride
3/30/10	820	mg/L	24 HR COMP	Chloride
4/8/10	810	mg/L	24 HR COMP	Chloride
4/13/10	480	mg/L	24 HR COMP	Chloride
5/5/10	360	mg/L	24 HR COMP	Chloride
5/11/10	340	mg/L	24 HR COMP	Chloride
5/19/10	440	mg/L	24 HR COMP	Chloride
5/26/10	450	mg/L	24 HR COMP	Chloride

6/9/10	460	mg/L	24 HR COMP	Chloride
6/17/10	450	mg/L	24 HR COMP	Chloride
6/24/10	610	mg/L	24 HR COMP	Chloride
7/8/10	970	mg/L	24 HR COMP	Chloride
7/13/10	420	mg/L	24 HR COMP	Chloride
7/20/10	390	mg/L	24 HR COMP	Chloride
7/28/10	410	mg/L	24 HR COMP	Chloride
8/3/10	430	mg/L	24 HR COMP	Chloride
8/11/10	380	mg/L	24 HR COMP	Chloride
8/17/10	530	mg/L	24 HR COMP	Chloride
8/25/10	430	mg/L	24 HR COMP	Chloride
9/9/10	370	mg/L	24 HR COMP	Chloride
9/15/10	360	mg/L	24 HR COMP	Chloride
9/23/10	360	mg/L	24 HR COMP	Chloride
9/28/10	420	mg/L	24 HR COMP	Chloride