

DATE: August 5, 2003

Project No. S-2002-0883A

TO: Bob Masnado – WT/2

FROM: Steve Smith – WT/2



SUBJECT: Addendum To Facilities Planning Effluent Limit Request-- Town of Knight (Iron Belt, WI)

I have attached a copy of the recently submitted Addendum To The Facilities Planning Effluent Limit Request for the proposed wastewater treatment system upgrade at the **Town of Knight**.

The attached addendum provides further documentation and clarification regarding the Town's recent proposal to modify the proposed new effluent discharge outfall arrangement to Alder Creek. As noted during our recent discussions, the original effluent limit request (dated March 12, 2001) called for installation of a new outfall sewer with the discharge outlet directly into the main flow channel of Alder Creek (just downstream from the confluence with Cemetery Creek). The modified proposal now calls for terminating the new outfall discharge outlet on somewhat higher ground approximately 60 feet adjacent to (south of) the main flow channel along with construction of a shallow/exposed rip-rap effluent ditch leading/flowing into Alder Creek. The proposed rip-rap effluent ditch would also apparently cross through an existing narrow section of wetland area (designation S3K; broad-leaved deciduous, wet soil, palustrine) immediately adjacent to (south of) the flow channel of Alder Creek. This proposed outfall modification is apparently necessary due to lack of an adequate stream channel bank for sewer pipe stability, limited available slope/soil cover depth and potential for structural ice-induced damage associated with a new outfall sewer directly into the flow channel of Alder Creek at this location. In addition, based on a preliminary site inspection conducted this spring by the consulting engineer and Chuck Olson, the overall proposed outfall sewer route will likely minimize the potential for impacts to the wetlands and other possible sensitive habitat areas within this general location.

The attached addendum includes further documentation/information on the following points regarding the proposed modified outfall arrangement:

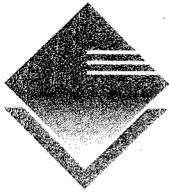
- Further description and explanation of the basis/reasons for the proposed modified outfall arrangement
- Photographs of Alder Creek at the proposed effluent discharge site
- Copies of wetland inventory maps of the proposed effluent discharge site
- Preliminary construction plan drawings of the proposed outfall sewer route and effluent ditch

Per this request and our recent discussions, please provide a written confirmation/determination as to whether the previously established planning effluent limitations (memo dated January 30, 2002) for a proposed new seasonal discharge to Alder Creek at this location (discharge option A.3) will continue to apply for the proposed modified outfall arrangement. If the planning effluent limits for this option must be revised for the proposed modified outfall arrangement, please amend the limits recommendation to address this modified discharge option. Also, please feel free to provide any other comments/recommendations regarding further minimization of general water quality impacts, need for issuance of NR 103 Wetland Water Quality Certification and/or Chapter 30 permits, etc.

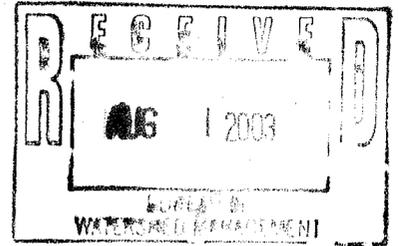
Thanks again for your extra time and efforts to address this facilities planning effluent limit request.

Cc: Chuck Olson – Ashland Service Center
Lonn Franson – Hayward Ranger Station
Susan Watson – NO/Rhineland
→ Laura Bub / Jim Schmidt – WT/2





Foth & Van Dyke
consultants · engineers · scientists



July 28, 2003

Mr. Steve Smith
Point Source Technical Evaluation Section
Wisconsin Department of Natural Resources
101 South Webster
P.O. Box 7921
Madison, Wisconsin 53707-7921

Dear Mr. Smith

Re: Town of Knight - Effluent Limit Request Addendum

On behalf of the Town of Knight, we are submitting an addendum to the effluent limit request originally submitted to the WDNR on March 12, 2001.

In response to our original request for effluent limits, the WDNR provided recommended effluent limits for discharge to Alder Creek and Cemetery Creek under various flow scenarios. Based on the recommendations provided in the Town of Knight Wastewater Collection and Treatment Facilities Plan (Foth & Van Dyke, August 2002), the selected treatment alternative included seasonal discharge to Alder Creek. It was originally assumed that direct discharge to Alder Creek, using an outfall structure at, or in, the creek, would be used. Based on subsequent site work and consideration of construction issues, it was determined that a direct discharge to the creek would be impractical. Due to the shallow depth of the creek at the proposed discharge location, it would not be feasible to locate a discharge structure within the creek due to the likelihood of the structure being damaged by ice movement in the winter. Additionally, because the creek does not have a significant bank at this point, it would not be feasible to construct a gravity discharge pipeline all the way to the creek. Based on these concerns, it was determined that the most practical approach would be to daylight the outfall pipeline back from the creek a distance of 60 ft and construct a shallow rip rap effluent ditch to channel flow to the creek. Chuck Olson of the WDNR, along with Phil Korth of our office, made a site visit in early spring of this year to evaluate wetland areas, potential areas for the presence of endangered plant species, and discharge alternatives. Based on the site visit, Chuck Olson preliminarily concurred that the proposed discharge outfall arrangement would be the most practical approach given the site constraints.

The following are provided as attachments to this letter for the purpose of clarifying the existing conditions at the proposed outfall location and clarifying the proposed outfall facilities:

- ◆ A drawing showing a proposed outfall pipeline route
- ◆ A drawing showing the proposed outfall structure and effluent ditch
- ◆ A drawing showing the mapped wetlands in this area based on the Wisconsin Wetlands Inventory map
- ◆ Photographs showing the area near the creek at the proposed outfall location

Based on our review of the site near the creek, the proposed outfall structure would, in effect, create a direct discharge to the creek and not a discharge to the “wetlands” in this area. Note that in the area of the proposed outfall structure and effluent ditch, the wetlands map shows a narrow band of wetlands approximately 50 ft wide. The wetland inventory map indicates these are type S3K wetlands (Broad-Leaved, Deciduous, Wet Soil, Palustrine). The attached photos show the area where the proposed effluent ditch would be constructed.

We are requesting that the WDNR evaluate the proposed effluent discharge facilities and confirm that the previously provided effluent limits are still applicable. Note that we are planning on submitting a Chapter 30 permit for the construction in the “wetlands area”. However, we will wait until we receive your response before proceeding with submittal of the permit application. We would sincerely appreciate your assistance in helping to expedite the review process. If you have any questions or require additional information, please call Foth & Van Dyke.

Sincerely,

Foth & Van Dyke and Associates Inc.



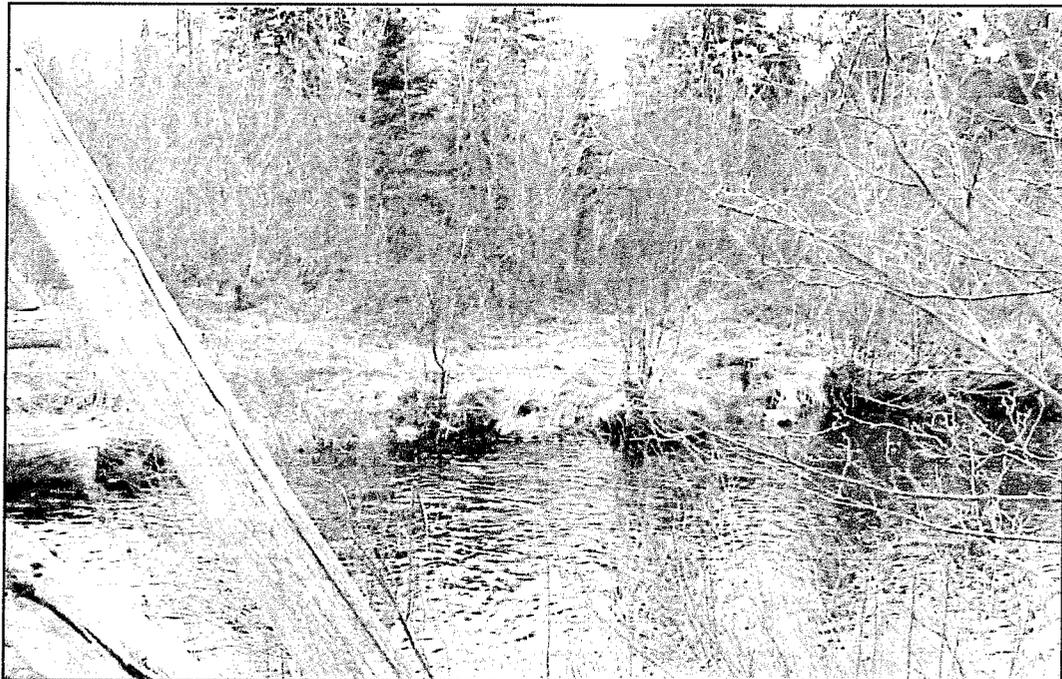
Howard Angell
Project Engineer

Attachments

cc: Mr. Dan Soine, Town of Knight
Mr. Chuck Olson, WDNR (Brule Office)
Mr. Thad Majkowski, Foth & Van Dyke



“Wetlands Area” - Looking south from Alder Creek



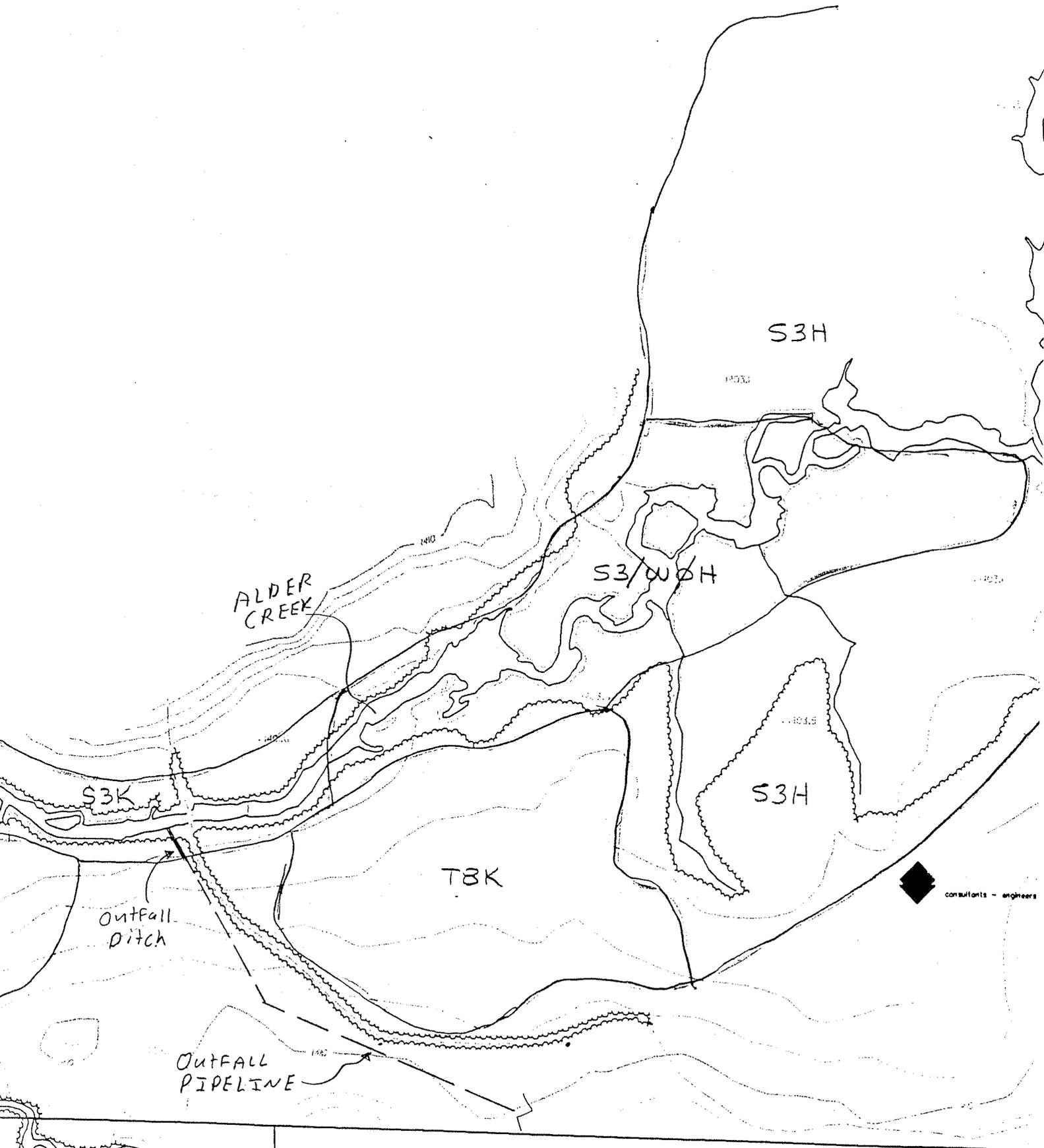
Alder Creek and South Bank - Looking south from north bank



Alder Creek - At Proposed Discharge Location



Alder Creek - Bank at proposed effluent ditch discharge location

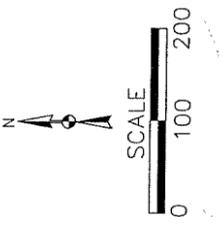


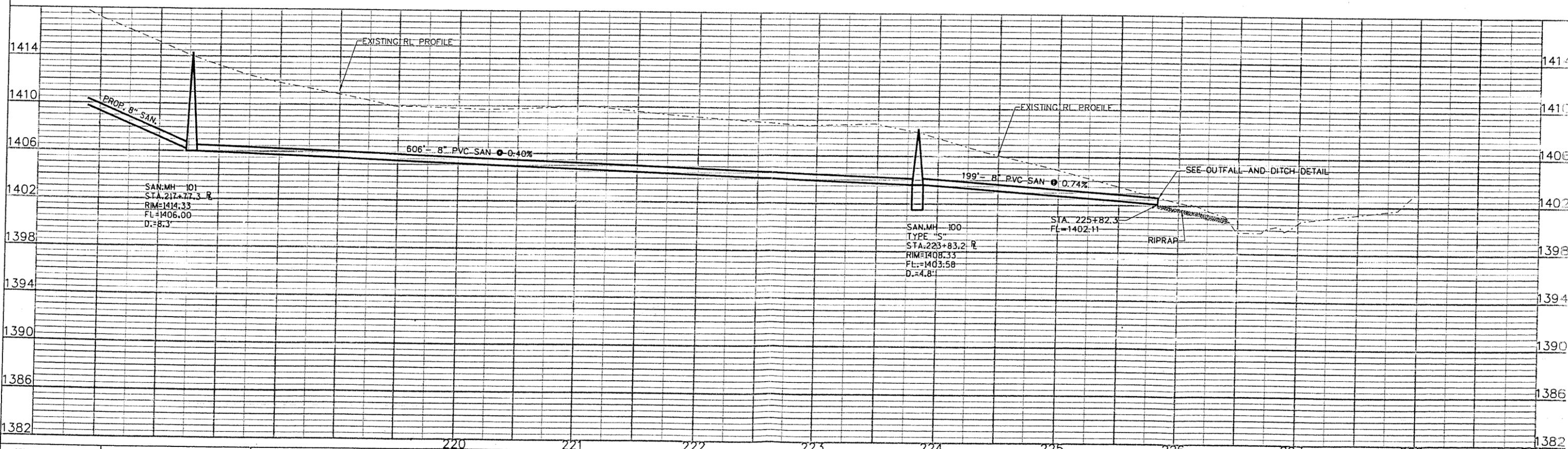
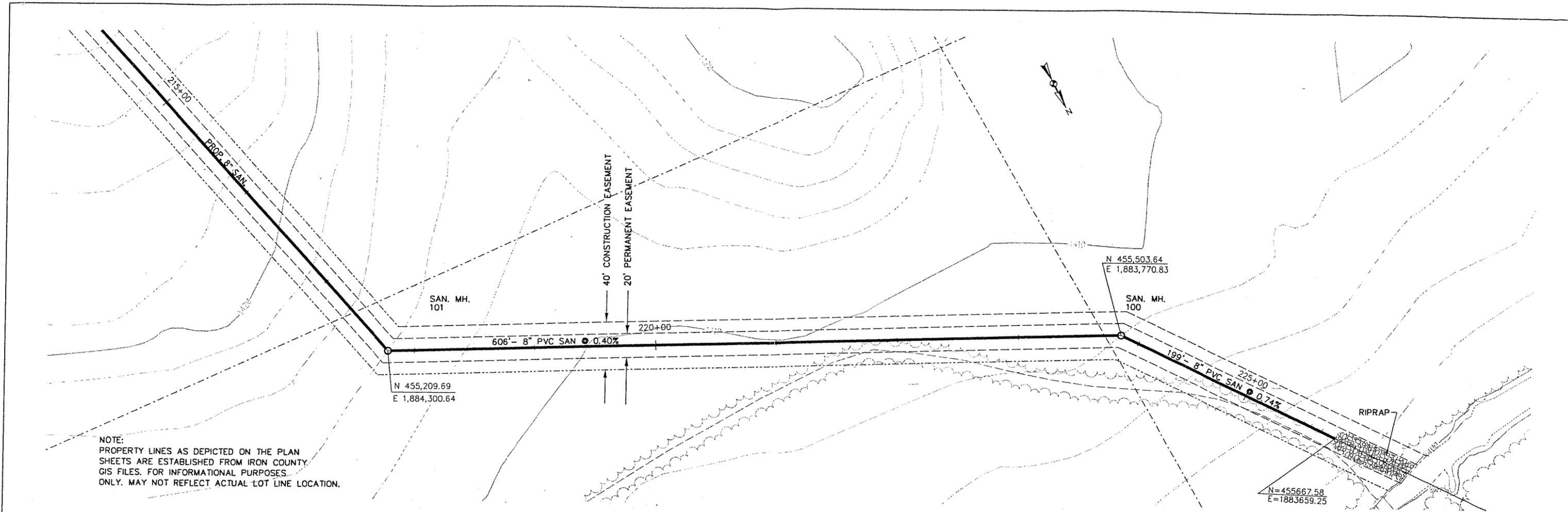
1" = 200'

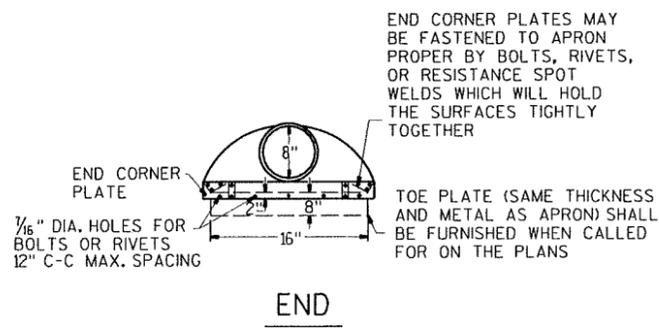
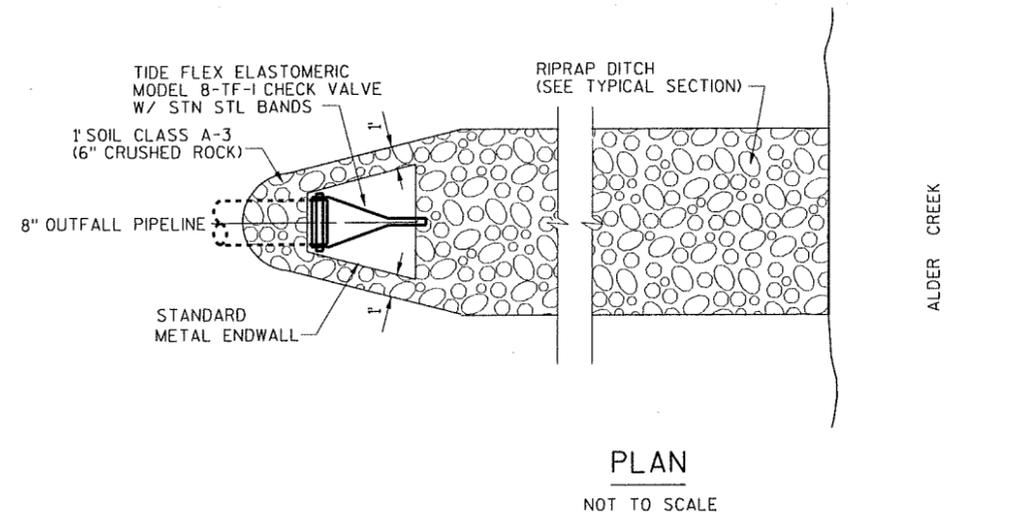
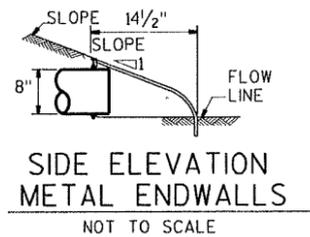


TOWN OF KNIGHT
 WAST WATER TREATMENT
 PLANT DISCHARGE

DATE: 07-03
 DIAGRAM NO. 1



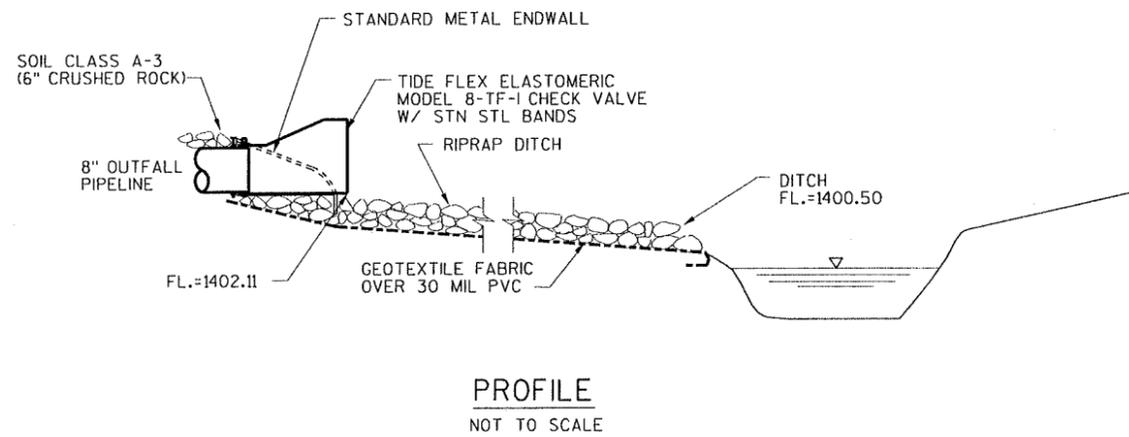




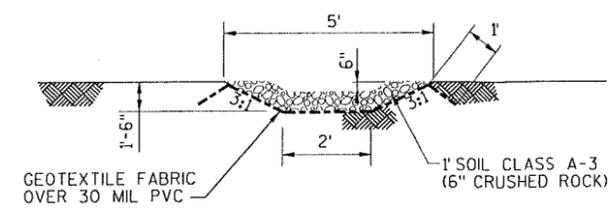
NOTES:
 1. BAND FITS OVER OUTSIDE OF ENDWALL, SANDWICHING ENDWALL BETWEEN PVC PIPE AND BAND.

CONNECTION DETAILS
 NOT TO SCALE

METAL ENDWALL DETAIL



PROFILE
 NOT TO SCALE



TYPICAL SECTION THROUGH DITCH
 NOT TO SCALE

OUTFALL AND DITCH DETAIL

Bub, Laura A

From: Masnado, Robert G
Sent: Monday, July 07, 2003 10:31 AM
To: Kreitlow, James D; Watson, Susan S; Franson, Lonn J; Olson, Charles L; Smith, Steve P.; Bub, Laura A; Schmidt, James W
Cc: Masnado, Robert G
Subject: Recommendations for Knight S.D.

As discussed during our phone call this morning, here is the "To Do" list for completing the Knight Sanitary District review.

- Steve Smith will contact the consultant and request a formal proposal for the "truncated" outfall as an alternative to a direct discharge to Alder Creek. This document should specify the design expected and the actual location of the conveyance and rip-rap structure.
- NOR will prepare a written document describing the environmental advantages (i.e., minimizing adverse impacts to flora & fauna) of a "truncated" outfall with a discharge to a wetland vs. a direct discharge to Alder Creek. Factors to consider may include:
 - Variable channel width of Alder Creek due to beaver dam activity.
 - Disruption of wetland habitat caused by excavation and pipeline placement.
 - Need for substantial armoring to minimize ice damage to outfall structure.
 - Other
- Chapter 30 - NOR will ensure that appropriate Regional staff are informed of the possible need for a Chapter 30 permit.
- WQBELs - Lonn Franson will prepare an amendment for the January 20, 2002 WQBEL memo indicating that appropriate secondary limits may be imposed in lieu of 20/30 limits associated with LAL aquatic life community.

If I've captured our thoughts incorrectly, please let me know. Thanks.

Bob

Susan -

Colson

- Whitecap Mtn - T. of Anderson SD
 - ↳ discharges to upland area
- Grandview

-
- consultant needs to be contacted re: truncated outfall (S. Smith) (impact)
 - address C. Hammer question re: environmental damage of pipe to river vs. riprap channel (NR 103 issue) (B. Jaeder/P. Shubert) (D. Houston) review
 - amendment to QBEL document (L. Franzen)
 - amend Jan 2002 memo - go w/ 20 limits

Lonn: what eff. limits are appropriate @ this outfall?

Chuck: extreme hardship for this community

Steve: BER indicated potential of sensitive species in wetland area...

Chuck - point was to avoid wetlands from the beginning

J. Krethow: can we give environmental groups a briefing / heads up, or would that be detrimental?

Bob: could be more harm than good - will run it past C. Hammer...

Lonn: timeline?

Steve + Chuck: this fall (2003) hopefully...

Town of Knight Sanitary District

1. Currently discharges to tributary to Cemetery Creek.
2. Tributary is currently default FAL and is proposed for LAL.
3. Cemetery Creek currently classified as Coldwater (Class II Trout).
4. Midwest Environmental Advocates challenged classification of effluent ditch tributary to Cemetery Creek in May 2002.
5. Cemetery Creek is currently classified as Coldwater (Class II Trout).
6. Alder Creek is currently classified as Coldwater (Class I Trout).
7. December 2001 Facility Plan requested limitations for four (4) sites:
 - a) Existing discharge location
 - b) Direct discharge to Cemetery Creek
 - c) Direct discharge to Alder Creek above confluence w/ Cemetery Creek
 - d) Direct discharge to Alder Creek above confluence w/ Cemetery Creek

NOTE: No request for discharge to wetland adjacent to Alder Creek.

8. January 2002 – Lon Franson recommends limitations for facility plan consideration. Limits for a continuous discharge to sites identified in 7a, 7b, 7c, and 7d established at:

Site	BOD Weekly	BOD Monthly	NH3
Existing	30 mg/L	20 mg/L	None
Cemetery Creek	Variable	Variable	Variable
Alder Creek (Above Cemetery Creek)	45 mg/L	30 mg/L	Variable
Alder Creek (Below Cemetery Creek)	45 mg/L	30 mg/L	Variable

9. January 2002 – Lon Franson recommends limitations for facility plan consideration. Limits for a Fill & Draw discharge to sites identified in 7a, 7b, 7c, and 7d established at:

Site	BOD Weekly	BOD Monthly	NH3
Existing	30 mg/L	20 mg/L	Variable
Cemetery Creek	Dependent Upon Months of Discharge	Dependent Upon Months of Discharge	
Alder Creek (Above Cemetery Creek)	Dependent Upon Months of Discharge	Dependent Upon Months of Discharge	Variable
Alder Creek (Below Cemetery Creek)	Dependent Upon Months of Discharge	Dependent Upon Months of Discharge	Variable

10. June 2003 – E-mails sent suggesting by WDNR staff suggesting outfall may be modified with actual discharge occurring in wetland adjacent to Alder Creek. NOR staff indicate that “the new outfall sewer outlet will actually likely terminate approximately 100 feet from Alder Creek and a new riprapped "channel" will be installed from this point to the creek.”
11. June 2003 - NOR staff request clarification on need for classification of new, short, rip-rapped, man-made 100 ft. long channel.
12. July 2003 – WT (Central Office Staff) suggest classification of new outfall is pre-determined by virtue of “wastewater effluent channel” definition in s. NR 104.02(1)(d) and associated linkage to s. NR 104.02(3)(b)1. (Wis. Adm. Code)
13. July 2003 - WT requests documentation of aquatic life habitat at proposed outfall location and description of hydraulic connection to Alder Creek at proposed outfall location.
14. July 2003 – WT requests an amendment to January 30, 2002 WQBEL memo documenting new discharge location and associated effluent limitations with description of reasons why LAL designation wetland immediately downstream of new outfall location.

1.7.03
 - ch 30 permit to get permission to put outfall in wetland
 - S. Smith - community consultant needs to submit a revised request for effluent limits

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Bub, Laura A

From: Watson, Susan S
Sent: Thursday, June 26, 2003 3:52 PM
To: Olson, Charles L; Smith, Stephen J; Bub, Laura A; Masnado, Robert G; Franson, Lon J; Schmidt, James W
Subject: Clarification for Knight's Proposed New Outfall

Greetings!

Chuck, we were unable to contact you this afternoon, so we will need to set a conference call. This call will be to discuss the receiving stream and limits issues associated with a proposed change in the outfall to Alder Creek. Unfortunately, we are looking at the week of July 7th. Times currently available are Monday in the morning, Tuesday, Wednesday, and Thursday in the afternoon after 1:00, and Friday either morning or afternoon. **Please get back to me and let me know which of these times you could be available.** I will set up a conference line to call.

Tentative items/questions for discussion:

- Reasons for the proposed change from a direct discharge to Alder Creek to a discharge 100 feet back from the creek bank.
- What would be the classification of a newly created conveyance of wastewater?
- How does the proposed change affect proposed limits?
- Is the 100 feet through a wetland adjacent to Alder Creek?
- Will/should the 100 feet be channelized or will/should the effluent be dispersed at the end of pipe?
- Is a Wetland Evaluation (as per NR 103) needed to determine discharge impacts to the wetland?

Thanks,

Susan

 Susan Scobell Watson
NOR WPDES Permit Coordinator &
Employee Assistance Coordinator

Wisconsin Department of Natural Resources
107 Sutliff Avenue
Rhinelander, WI 54501
715/365-8945
susan.watson@dnr.state.wi.us

Susan W -
715-365-8945

Bub, Laura A

From: Watson, Susan S
Sent: Wednesday, June 18, 2003 11:38 AM
To: Bub, Laura A
Cc: Olson, Charles L; Smith, Stephen J; Stubbe, Pamela J
Subject: FW: Design Flows And Effl. Limits For Proposed WWTF Upgrade at Town of Knight

Hi Laura,

A question has come up regarding creating an effluent ditch during an upgrade of a wastewater treatment facility. I would appreciate feedback on Chuck's assumption that because the discharge is seasonal (fill & draw), we are not creating a new water body (here only 100 ft stretch) that would need classification. Can you verify that? You can talk to Chuck or Steve for more description of the new outfall if needed.

Also can you address what the situation might be if the discharge in a case like this were continuous.

Thanks,

Susan

-----Original Message-----

From: Olson, Charles L
Sent: Wednesday, June 18, 2003 11:02 AM
To: Smith, Stephen J; Watson, Susan S
Subject: RE: Design Flows And Effl. Limits For Proposed WWTF Upgrade at Town of Knight

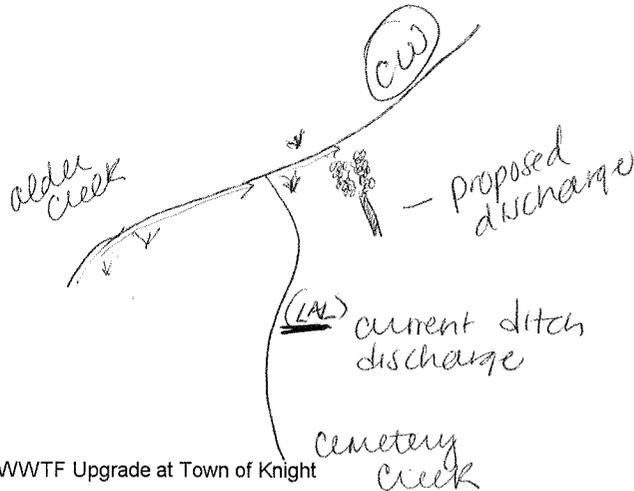
I believe that the project as proposed is a better option than tearing up wetlands and Alder Cr to place an outfall pipe into the stream channel. Placing the pipe to withstand the flooding and ice flows would require a substantial construction project in Alder Cr and the adjacent wetland.

This section of Alder Cr has a good deal of beaver activity. The resulting dams expand the water area substantially along the adjacent wetland. Also, ice damage in this shallow stream is a substantial design issue.

~~To deal with both the highly variable water levels and the heavy ice flows, we suggest ending the outfall pipe on the upland prior to the stream channel and adjacent wetland. This prevents any construction damage in this sensitive area. Also, the discharge will be seasonal, so we are not creating a "new" water body needing water quality classification. By dispersing the seasonal discharge with rip rap, erosion and channelization can be minimized--which also minimized the wetland/stream impacts.~~

Charles L Olson, P.E.
Lake Superior Basin Environmental Engineer
Wisconsin Dept. of Natural Resources
2501 Golf Course Road
Ashland, WI 54806

e: olsonc@dnr.state.wi.us
w: <http://www.dnr.state.wi.us>
p: 715-685-2925
f: 715-685-2909



-----Original Message-----

From: Smith, Stephen J
Sent: Wednesday, June 18, 2003 10:34 AM
To: Olson, Charles L; Watson, Susan S
Subject: FW: Design Flows And Effl. Limits For Proposed WWTF Upgrade at Town of Knight

Chuck / Susan : FYI & comment

In the interest of avoiding a potential "snag" in the P&S review and eventual permit reissuance process, just wanted

to forward a note from Lonn Franson regarding the proposed new effluent sewer and "outfall" and associated applicable receiving water class for Town of Knight. While I would like to avoid the need to revisit the receiving stream class and effluent limit issues for this proposal, I believe Lonn brings up a point that may potentially need further consideration. Any thoughts/comments on his message below. Feel free to let me know. Thanks.

Steve Smith - WT/2
608/266-7580

-----Original Message-----

From: Smith, Stephen J
Sent: Monday, June 16, 2003 2:33 PM
To: Franson, Lonn J
Subject: RE: Design Flows And Effl. Limits For Proposed WWTF Upgrade at Town of Knight

Lonn -- Good point regarding the possible effluent ditch designation. Not sure how to respond on that one just yet. Will talk further with Chuck Olson and get back to you if need be (I will try my best not to drag you back in on this!). Thanks.

Steve Smith - WT/2
608/266-7580

-----Original Message-----

From: Franson, Lonn J
Sent: Monday, June 16, 2003 2:24 PM
To: Smith, Stephen J
Cc: Olson, Charles L
Subject: RE: Design Flows And Effl. Limits For Proposed WWTF Upgrade at Town of Knight

Sounds good Steve. However, ~~the new channel caught my eye. Sounds like an effluent ditch to me. Will the 100 foot stretch then become a variance water?~~ Maybe something to think about or look into to make sure the bases are covered, but I consider my job on this project complete and will not comment further.
Lonn

-----Original Message-----

From: Smith, Stephen J
Sent: Thursday, June 12, 2003 8:08 AM
To: Watson, Susan S
Cc: Franson, Lonn J; Olson, Charles L
Subject: Design Flows And Effl. Limits For Proposed WWTF Upgrade at Town of Knight

Hi Susan: Just a brief follow-up on our telephone conversation yesterday regarding the WWTF upgrade for Town of Knight for your reference....

I issued the approval for the Town of Knight facilities plan (actually referenced as an amendment to the 1998 FP) on 3/17/03. In general, the proposal includes the following:

- replacement of the entire (including private house laterals) sanitary sewer system within the S.D.
- conversion of the existing sanitary sewer system into a stormwater drainage system
- extension of sanitary sewer service to the small existing residential development immediately to the SE of the S.D.
- construction of a new primary treatment pond at the existing WWTF (note: installation of separate effluent disinfection unit will not be required since overall hydraulic detention time for the upgraded pond system will be greater than 180 days, actually about 230 days)
- ~~installation of a new outfall sewer from the upgraded WWTF to Alder Creek just downstream of confluence with Cemetery Crk (note: based on recent proposed route inspection by Chuck Olson and the consultant, the new outfall sewer outlet will actually likely terminate approximately 100 feet from Alder Creek and a new riprapped "channel" will be installed from this point to the creek (this approach should further minimize any impacts to potentially sensitive wetlands/habitats in this area).~~

Per brief look at the facilities plan report again yesterday, the proposal actually calls for spring/fall fill-and-draw effluent discharge during the periods from April - June and September - November. This would appear to correspond to the discharge scenario identified as "A.3" as outlined in the planning limits determination memo (dated January 30, 2002).

Also, after reviewing the planning limits request info again, the consultant did not really provide design flows

for the max. monthly, max. weekly, and max. daily effluent flow conditions for the fill-and-draw discharge options (influent values for these flow conditions were provided). I believe his feeling was that it would be difficult to accurately define the design effluent flow values for these conditions for the fill and draw discharge options. My recollection is that I tended to agree with this approach to only define an "average" effluent flow rate for the discharge periods in view of the following factors:

- the expanded pond system should provide a significant dampening effect for any shorter term elevated or peak influent flows to the WWTF that might occur
- the likelihood that an elevated or peak flow condition would occur concurrent with the discharge periods is reduced by about 1/2 with the fill-and-draw operation
- they should be able to control the effluent discharge rate to at least some degree via discharge valve/overflow height adjustments in the case of greater than expected pond elevations/influent flows
- it is difficult to know with any real accuracy what the actual max condition effluent flows would be since the entire sanitary sewer system will be replaced (assumed to be much less than existing peak flows due to expected significant I/I reduction).

In short, I believe the proposed design average discharge flow condition should adequately cover 99% of the effluent flow conditions that they are likely to encounter during the design life of the upgraded WWTF. However, if need be, we can request that the consultant also provide his best guesstimate of the design max month, max weekly, and max daily effluent flow rates. Or alternatively, we could simply require that the effluent flow rate not exceed the design average value (i.e., 0.055 mgd) at any time during actual discharge periods for this proposed fill-and-draw discharge scheme.

Hope this helps at least somewhat. Please let me know if you would like to discuss further and possibly contact the consultant.

Steve Smith - WT/2
608/266-7580

6-26-03

State Statute

Town of Knight -

BOD - 30/30
NH4 - N/A

} fill + draw

DD limits

} categorical → LAC
- this would be more stringent

- downstream limits are secondary limits. facility is designed to meet 2^o limit. don't want to deal w/ variance limits
- wrote limits (orig.) for a direct discharge to Alder Creek
- site restriction -- not enough grade for a pipe.

- Bob - what off-ramps does facility have?
- non issue if pipe ended at bank of creek

- would channel design invite CW species into channel?

[pipe in wetlands vs. riprap in wetlands?]

↳ what is the cause of this?

how much better of an idea, ecologically is it to use riprap vs pipe

- does anyone care what limits are?? (- consider it a pipe.)

→ if riprap wins, riprap is more of a pipe vs an effluent channel

Bob - discharge into wetland or A creek

Ice damage possibility to pipe

*NK 103 wetlands / impacts alternatives

discuss w/ Lonni, Chuck, Steve S., Susan Bob, Jim S., Laura

Setup a conference call

overview survey of stream classes in NK region
Send any obs'n to Bill re. what's done + what needs to be done

Bob: 6-25-03 wed.

- Swan Creek Classification

old sgg - Bob will talk to Duane about what protocol was in the past re: issues such as this.

- Peer review of Stream Classifications: Greg

wait for Draft to come from greg. go from there.

- Should we be taking action on issues from the stream classification meeting?

look @ what we can reasonably do

2-3 wks - look @ minutes

try to decide what we can + can't advance (esp. considering structural changes in Bureau / Dept that may be upcoming...)

- Town of Knight effluent channel - call Susan w + talk Fisher

natural depression in landscape?

fill + draw doesn't determine class'n. LAZ by default, if effluent channel - don't need to go out and conduct a specific classification (fieldwork)

- Stoddard Classification??

can classify wetland appropriately - where data indicates this is the right class'n.

- Coolwater Issues Trout stream class'n

- Wetlands Subgroup Issues

- list of tasks related to wetland s.g.

- Bob - will decide if we should put effort into...

- if autonomous, move forward...

- WQSDB - Don Mattson contact

memo =
effluent channel
by virtue of
human construction
water of the state??
artificial water
course

MACROINVERTEBRATE FIELD AND BENCH SHEET

Department of Natural Resources

Form 3200-81 9-86

Sample ID # 092591 - 102 Waterbody Name Cemetery Creek - Iron Bolt
 Y Y M M D D Cnty Field #

Water Temp (Celsius) 7.8 Dissolved Oxygen (mg/l) 10.0

Sample Location: 1/16 1/4 Sec. Tn., Rng. Master Waterbody # _____

Project Name _____ Storet Station # _____

Ave. Stream Width (Ft.) at Site 10' Ave. Stream Depth (Ft.) at Site 1'

Collector Prenn (Last Name, First Initial) Field # 102 Rep 1 Rep 2 Rep 3
 Measured Velocity (fps) _____

Sorter 1 Est. Velocity (fps) V. Slow (<0.2) Slow (0.2-0.5) Moderate (0.5-1.5) Fast (1.5- >)

Est. % of sample sorted 50

Taxonomist 1 Location Description Just upstream of confluence w/ Alder Cr Sampled Habitat: 1. Riffle 2. Run 3. Pool 4. Lake

Sampling Device: 1. D Frame 2. Artificial Substrate, 3. Surber, 4. Other _____ Est. Time Spent Sampling (Min.) 10

Substrate at Site Location (%)
 Bedrock _____ Rubble (2.5 - 10.0" dia.) 65 Sand _____ Clay _____ Muck _____
 Boulders (10.0" dia.) 5 Gravel (0.1 - 2.5" dia.) 10 Silt _____ Detritus _____ Debris/Veg _____

Substrate Sampled (%) (Same as above _____)
 Bedrock _____ Rubble (2.5 - 10.0" dia.) _____ Sand _____ Clay _____ Muck _____
 Boulders (10.0 dia.) _____ Gravel (0.1 - 2.5" dia.) _____ Silt _____ Detritus _____ Debris/Veg _____

Aquatic Vegetation 0 % of Total Stream Channel at Sample Site

Observed Instream Water Quality Indicators (Perceived WQ: Excellent, Good, Fair, Poor)

	Not Present	Insignificant	Significant	Comments
Turbidity	1	2	3	
Chlorine or Toxic Scour	1	2	3	
Macrophytes	1	2	3	
Filamentous Algae	1	2	3	
Planktonic Algae	1	2	3	
Slimes	1	2	3	
Iron Bacteria	1	2	3	

Factors Which May Be Affecting Habitat Quality

	Not Present	Insignificant	Significant	Comments
Sludge Deposits	1	2	3	
Silt and Sediment	1	2	3	
Channel Ditching	1	2	3	
Down/Up Stream Impoundment	1	2	3	
Low Flows	1	2	3	
Wetlands	1	2	3	

Pollutant Sources

	Not Present	Insignificant	Significant	Comments
Livestock Pasturing	1	2	3	
Barnyard Runoff	1	2	3	
Cropland Runoff	1	2	3	
Tile Drains	1	2	3	
Septic Systems	1	2	3	
Streambank Erosion	1	2	3	
Urban Runoff	1	2	3	
Construction Runoff	1	2	3	
Source (Specify Type)	1	2	3	
(Specify)	1	2	3	

Sample ID # 110925 - LA Waterbody Name Cometary Creek - Iron Belt
Y Y M M D D Cnty Field #

Water Temp (Celsius) 8.2 Dissolved Oxygen (mg/l) 10.1

Sample Location: 1/16 1/4 Sec. Tn., Rng. Master Waterbody # _____

Project Name _____ Storet Station # _____

Ave. Stream Width (Ft.) at Site 10' Ave. Stream Depth (Ft.) at Site _____

Collector Prere (Last Name, First Initial) Field # EA Rep 1 Rep 2 Rep 3
Measured Velocity (fps) _____

Sorter _____ Est. Velocity (fps) V. Slow (<0.2) Slow (0.2-0.5) Moderate (0.5-1.5) Fast (1.5->)
Est. % of sample sorted 50

Taxonomist 1 Location Description Just upstream of Effluent Ditch Sampled Habitat: 1. Riffle 2. Run 3. Pool 4. Lake

Sampling Device: 1. D Frame, 2. Artificial Substrate, 3. Surber, 4. Other _____ Est. Time Spent Sampling (Min.) 10

Substrate at Site Location (%)
35 Bedrock 35 Rubble (2.5 - 10.0" dia.) 10 Sand _____ Clay _____ Muck _____
35 Boulders (10.0" dia.) 15 Gravel (0.1 - 2.5" dia.) 5 Silt _____ Detritus _____ Debris/Veg _____

Substrate Sampled (%) (Same as above _____)
Bedrock Rubble (2.5 - 10.0" dia.) Sand Clay Muck
Boulders (10.0 dia.) Gravel (0.1 - 2.5" dia.) Silt Detritus Debris/Veg

Aquatic Vegetation 0 % of Total Stream Channel at Sample Site

Observed Instream Water Quality Indicators (Perceived WQ: Excellent, Good, Fair, Poor)

	Not Present	Insignificant	Significant	Comments
Turbidity	1	2	3	
Chlorine or Toxic Scour	1	2	3	
Macrophytes	1	2	3	
Filamentous Algae	1	2	3	
Planktonic Algae	1	2	3	
Slimes	1	2	3	
Iron Bacteria	1	2	3	

Factors Which May Be Affecting Habitat Quality

	Not Present	Insignificant	Significant	Comments
Sludge Deposits	1	2	3	
Silt and Sediment	1	2	3	
Channel Ditching	1	2	3	
Down/Up Stream Impoundment	1	2	3	
Low Flows	1	2	3	
Wetlands	1	2	3	

Pollutant Sources

	Not Present	Insignificant	Significant	Comments
Livestock Pasturing	1	2	3	
Barnyard Runoff	1	2	3	
Cropland Runoff	1	2	3	
Tile Drains	1	2	3	
Septic Systems	1	2	3	
Streambank Erosion	1	2	3	
Urban Runoff	1	2	3	
Construction Runoff	1	2	3	
Point Source (Specify Type)	1	2	3	
Other (Specify)	1	2	3	

Sample ID # 910925 - LA Waterbody Name Cometary Creek - Iron Belt
Y Y M M D D Cnty Field #

Water Temp (Celsius) 8.2 Dissolved Oxygen (mg/l) 10.1

Sample Location: 1/16 1/4 Sec. Tn., Rng. Master Waterbody # _____

Project Name _____ Storet Station # _____

Ave. Stream Width (Ft.) at Site 10' Ave. Stream Depth (Ft.) at Site _____

Collector Prano (Last Name, First Initial) Field # IA Rep 1 Rep 2 Rep 3
Measured Velocity (fps) _____

Sorter _____ Est. Velocity (fps) V. Slow (<0.2)
Slow (0.2-0.5)
Moderate (0.5-1.5)
Fast (1.5- >)

Est. % of sample sorted 50

Taxonomist 1

Sampled Habitat: 1. Riffle 2. Run
3. Pool 4. Lake

Location Description Just upstream of Effluent Ditch

Est. Time Spent Sampling (Min.) 10

Sampling Device: 1. D Frame, 2. Artificial Substrate, 3. Surber,
4. Other _____

Substrate at Site Location (%)
35 Bedrock 35 Rubble (2.5 -10.0" dia.) 10 Sand _____ Clay _____ Muck _____
35 Boulders (10.0" dia.) 15 Gravel (0.1 - 2.5" dia.) 5 Silt _____ Detritus _____ Debris/Veg _____

Substrate Sampled (%) (Same as above _____)
Bedrock _____ Rubble (2.5 - 10.0" dia.) _____ Sand _____ Clay _____ Muck _____
Boulders (10.0 dia.) _____ Gravel (0.1 - 2.5" dia.) _____ Silt _____ Detritus _____ Debris/Veg _____

Aquatic Vegetation 0 % of Total Stream Channel at Sample Site

Observed Instream Water Quality Indicators (Perceived WQ: Excellent, Good, Fair, Poor)

	Not Present	Insignificant	Significant	Comments
Turbidity	1	2	3	
Chlorine or Toxic Scour	1	2	3	
Macrophytes	1	2	3	
Filamentous Algae	1	2	3	
Planktonic Algae	1	2	3	
Slimes	1	2	3	

FBI = 2,91

Cometary Creek Sept 25, 1991 IA Iron Belt Iron Co.

PHLEBOPTERA:
Hydroptilidae Stramona vicarium ###
Trichoptera: Eurofopdella ###
Leptophlebiidae sp. ###
Baetidae Baetis ###
Trichoptera: Psephenidae Psephenus ###
Ephemeroptera: Ephemera ###

TRICHOPTERA:
Hydroptilidae Hydroptilidae ###
Hydroptilidae Symploca ###
Lepidostomatidae Lepidostoma ###
Limnephilidae sp. 1
Trichoptera: Hydropsychidae Hydropsychidae ###
Philopotamidae Philopotamidae ###
Hydroptilidae Diptera ###

LECOPTERA:
Perlidae Isoperla ###
Trichoptera: Trichoptera ###

ODONATA:
Cordulegasteridae Cordulegaster 1
Aeschnidae Coenagrion 1

Stream Courtesy Co Reach Location ISS - Above upper Alder Creek Reach Score/Rating 88
 County Iron Date 9/25/91 Evaluator Prescott & Vermillion Classification _____

Rating Item	Category			
	Excellent	Good	Fair	Poor
Watershed Erosion	No evidence of significant erosion. Stable forest or grass land. Little potential for future erosion. (8)	Some erosion evident. No significant "raw" areas. Good land mgmt. practices in area. Low potential for significant erosion. 10	Moderate erosion evident. Erosion from heavy storm events obvious. Some "raw" areas. Potential for significant erosion. 14	Heavy erosion evident. Probable erosion from any run off. 16
Watershed Nonpoint Source	No evidence of significant source. Little potential for future problem. (8)	Some potential sources (roads, urban area, farm fields). 10	Moderate sources (small wetlands, tile fields, urban area, intense agriculture). 14	Obvious sources (major wetland drainage, high use urban or industrial area, feed lots, impoundment). 16
Bank Erosion, Failure	No evidence of significant erosion or bank failure. Little potential for future problem. (4)	Infrequent, small areas, mostly healed over. Some potential in extreme floods. 8	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow. 16	Many eroded areas. "Raw" areas frequent along straight sections and bends. 20
Bank Vegetative Protection	90% plant density. Diverse trees, shrubs, grass. Plants healthy with apparently good root system. (8)	70-90% density. Fewer plant species. A few barren or thin areas. Vegetation appears generally healthy. 9	50-70% density. Dominated by grass, sparse trees and shrubs. Plant types and conditions suggest poorer soil binding. 15	<50% density. Many raw areas. Thin grass, few if any trees and shrubs. 18
Lower Bank Channel Capacity	Ample for present peak flow plus some increase. Peak flow contained. W/D ratio < 7. (8)	Adequate. Overbank flows rare. W/D ratio 8-15. 10	Barely contains present peaks. Occasional overbank flow. W/D ratio 15-25. 14	Inadequate, overbank flow common. W/D ratio > 25. 16
Lower Bank Deposition	Little or no enlargement of channel or point bars. (6)	Some new increase in bar formation, mostly from coarse gravel. 9	Moderate deposition of new gravel and coarse sand on old and some new bars. 15	Heavy deposits of fine material, increased bar development. 18
Bottom Scouring and Deposition	Less than 5% of the bottom affected by scouring and deposition. (4)	5-30% affected. Scour at constrictions and where grades steepen. Some deposition in pools. 8	30-50% affected. Deposits and scour at obstructions, constrictions and bends. Some filling of pools. 16	More than 50% of the bottom changing nearly year long. Pools almost absent due to deposition. 20
Bottom Substrate/ Available Cover	Greater than 50% rubble, gravel or other stable habitat. (2)	30-60% rubble, gravel or other stable habitat. Adequate habitat. 7	10-30% rubble, gravel or other stable habitat. Habitat availability less than desirable. 17	Less than 10% rubble gravel or other stable habitat. Lack of habitat is obvious. 22
Avg. Depth Riffles and Runs	Cold >1' 0	6" to 1' (8)	3" to 6" 18	<3" 24
	Warm >1.5' 0	10" to 1.5' (6)	6" to 10" 18	<6" 24
Avg. Depth of Pools	Cold >4' 0	3' to 4' (6)	2' to 3' 18	<2' (24)
	Warm >5' 0	4' to 5' (6)	3' to 4' 18	<3' 24
Flow, at Rep. Low Flow	Cold >2 cfs (0)	1-2 cfs (6)	.5-1 cfs 18	<.5 cfs 24
	Warm >5 cfs (0)	2-5 cfs (6)	1-2 cfs 18	<1 cfs 24
Pool/Riffle, Run/Bend Ratio (distance between riffles ÷ stream width)	5-7. Variety of habitat. Deep riffles and pools. (4)	7-15. Adequate depth in pools and riffles. Bends provide habitat. 8	15-25. Occasional riffle or bend. Bottom contours provide some habitat. 16	>25. Essentially a straight stream. Generally all flat water or shallow riffle. Poor habitat. 20
Aesthetics	Wilderness characteristics, outstanding natural beauty. Usually wooded or un-pastured corridor. (8)	High natural beauty. Trees, historic site. Some development may be visible. 10	Common setting, not offensive. Developed but uncluttered area. 14	Stream does not enhance aesthetics. Condition of stream is offensive. 16

Column Totals: 58 6 0 24

Column Scores E 58 + G 6 + F 0 + P 24 = 88 = Score

< 70 = Excellent, 71-129 = Good, 130-200 = Fair, > 200 = Poor

Stream Catch Creek Reach Location IA - Just above Effluent Ditch Reach Score/Rating 88
 County Joan Date 9/25/91 Evaluator James + VanAllen Classification _____

Rating Item	Category			
	Excellent	Good	Fair	Poor
Watershed Erosion	No evidence of significant erosion. Stable forest or grass land. Little potential for future erosion. <u>8</u>	Some erosion evident. No significant "raw" areas. Good land mgmt. practices in area. Low potential for significant erosion. 10	Moderate erosion evident. Erosion from heavy storm events obvious. Some "raw" areas. Potential for significant erosion. 14	Heavy erosion evident. Probable erosion from any run off. 16
Watershed Nonpoint Source	No evidence of significant sources. Little potential for future problem. <u>8</u>	Some potential sources (roads, urban area, farm fields). 10	Moderate sources (small wetlands, tile fields, urban area, intense agriculture). 14	Obvious sources (major wetland drainage, high use urban or industrial area, feed lots, impoundment). 16
Bank Erosion, Failure	No evidence of significant erosion or bank failure. Little potential for future problem. <u>4</u>	Infrequent, small areas, mostly healed over. Some potential in extreme floods. 8	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow. 16	Many eroded areas. "Raw" areas frequent along straight sections and bends. 20
Bank Vegetative Protection	90% plant density. Diverse trees, shrubs, grass. Plants healthy with apparently good root system. <u>6</u>	70-90% density. Fewer plant species. A few barren or thin areas. Vegetation appears generally healthy. 9	50-70% density. Dominated by grass, sparse trees and shrubs. Plant types and conditions suggest poorer soil binding. 15	<50% density. Many raw areas. Thin grass, few if any trees and shrubs. 18
Lower Bank Channel Capacity	Ample for present peak flow plus some increase. Peak flow contained. W/D ratio <7. <u>8</u>	Adequate. Overbank flows rare. W/D ratio 8-15. 10	Barely contains present peaks. Occasional overbank flow. W/D ratio 15-25. 14	Inadequate, overbank flow common. W/D ratio >25. 16
Lower Bank Deposition	Little or no enlargement of channel or point bars. <u>6</u>	Some new increase in bar formation, mostly from coarse gravel. 9	Moderate deposition of new gravel and coarse sand on old and some new bars. 15	Heavy deposits of fine material, increased bar development. 18
Bottom Scouring and Deposition	Less than 5% of the bottom affected by scouring and deposition. <u>4</u>	5-30% affected. Scour at constrictions and where grades steepen. Some deposition in pools. 8	30-50% affected. Deposits and scour at obstructions, constrictions and bends. Some filling of pools. 16	More than 50% of the bottom changing nearly year long. Pools almost absent due to deposition. 20
Bottom Substrate/ Available Cover	Greater than 50% rubble, gravel or other stable habitat. <u>2</u>	30-50% rubble, gravel or other stable habitat. Adequate habitat. 7	10-30% rubble, gravel or other stable habitat. Habitat availability less than desirable. 17	Less than 10% rubble gravel or other stable habitat. Lack of habitat is obvious. 22
Avg. Depth Riffles and Runs	Cold >1' 0 Warm >1.5' 0	6" to 1' <u>6</u> 10" to 1.5' <u>6</u>	3" to 6" 18 6" to 10" 18	<3" 24 <6" <u>24</u>
Avg. Depth of Pools	Cold >4' 0 Warm >5' 0	3' to 4' 6 4' to 5' 6	2' to 3' 18 3' to 4' 18	<2' <u>24</u> <3' 24
Flow, at Rep. Low Flow	Cold >2 cfs <u>0</u> Warm >5 cfs 0	1-2 cfs 6 2-5 cfs 6	.5-1 cfs 18 1-2 cfs 18	<.5 cfs 24 <1 cfs 24
Pool/Riffle, Run/Bend Ratio (distance between riffles ÷ stream width)	5-7. Variety of habitat. Deep riffles and pools. <u>4</u>	7-15. Adequate depth in pools and riffles. Bends provide habitat. 8	15-25. Occasional riffle or bend. Bottom contours provide some habitat. 16	>25. Essentially a straight stream. Generally all flat water or shallow riffle. Poor habitat. 20
Aesthetics	Wilderness characteristics, outstanding natural beauty. Usually wooded or un-pastured corridor. <u>8</u>	High natural beauty. Trees, historic site. Some development may be visible. 10	Common setting, not offensive. Developed but uncluttered area. 14	Stream does not enhance aesthetics. Condition of stream is offensive. 16

Column Totals: 58 6 0 24 88

Column Scores E 58 + G 6 + F 0 + P 24 = 88 = Score

<70 = Excellent, 71-129 = Good, 130-200 = Fair, >200 = Poor

Point Source Evaluation

Iron Salt, Iron Co

Sept. 25, 1991

SITE

Parameters

SITE	TIME	DEPTH	FLOW Ft ³ /Sec	DO mg/l	TEMP C°	pH (Lab)	BOD ₅ mg/l	Ca mg/l	Chloride mg/l	COND UMOS	HARD mg/l	Mg mg/l	NH ₃ mg/l	NO ₂ + NO ₃ mg/l	TKN mg/l	TOT. P HOS mg/l	DISS. P HOS mg/l	SUSS. mg/l	SOLIDS mg/l	TURBID /100ml	SILICA mg/l	HEAVY METALS	HEAVY METALS
IA Cemetery Creek 30yds above Effluent Ditch	12:30	0		10.1	8.2	7.7	1.1	23	24	244	88	7	0.005 to 0.019	0.104	0.3	0.02	ND	3	60	2.91			
IB1 Effluent at Concrete Structure in Woods	13:30	0		6.2	10.0	7.2	3.4	33	86	484	130	11	0.0752	0.441	1.9	0.29	0.21	2					
IB2 Effluent Ditch just above Cemetery Creek	12:15	0	Est. 0.6	6.7	10.0	7.3	3.1	31	73	430	120	10	0.364	0.576	1.3	0.21	0.169	4	10				
ID1 Cemetery Creek at Trail Crossing	12:00	0	2.6	10.1	8.0	7.8	1.5	25	26	251	96	8	0.003	0.150	0.4	0.02	0.012	4	80				
IDA Cemetery Creek just above Alder Creek	11:00	0		10.0	7.8	7.8	1.2	24	22	237	93	8	0.005 to 0.019	0.584	0.3	0.03	0.017	2	60	3.10			

STREAM <i>T-D-1</i>	COUNTY	LOCATION OF STREAM		
		Township	Range	Section
				Forty

ESTIMATED WATER STAGE IN FEET:	<input type="checkbox"/> Above <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Below	REFERENCE POINT FOR LEVELS
--------------------------------	--	----------------------------

CONDITIONS AFFECTING MEASUREMENTS --- Wind, bottom, ice, etc.	TEMPERATURE WATER
---	-------------------

INSTRUMENT --- Name and number	EXACT LOCATION OF MEASUREMENT ON STREAM <i>Effluent Ditch</i>
--------------------------------	--

OBSERVER	DATE <i>5/19</i>	TIME OF DAY <i>1:30</i>
----------	---------------------	----------------------------

Distance from Bank	Depth	Depth of Observation	Revolutions	Time in Seconds	Velocity			Area of Section			Discharge
					At Point	Mean in Vertical	Mean in Section	Area of Section	Mean Depth	Width	
125											
150											0
200											0
250											.0014
300											.0266
350											.0507
400											.1595
450											.1734
500											.24
550											.325
600											.290
650											.100
700											.447
750											.4817
800											.019
850											0

SUMMARY							
(over)	Mean Velocity		Area of	Mean Depth	Total Width	Discharge	<i>2.55</i>

State Laboratory of Hygiene
University of Wisconsin Center for Health Sciences
465 Henry Mall, Madison, WI 53706

R.H. Laessig, Ph.D., Director

S.L. Inhorn, M.D., Medical Director

Environmental Science Section (608) 262-1210 DNR LAB ID 113133790
Surface water microbiology (#7 of 12 on 09/30/91, unseen)

Permit# Basin# 280 Waterbody# Route:WR81 Field# ID1
Location: cemetery creek County:26 Iron
Description: rd. x-ing
Send to: d.n.r.
box 309
spooner, wis. 54801

Account # WR049 Type: Effluent
Collector: PRENN Compliance Sample: N
Date: 09/25/91 Time 12:01 Depth/Location: 0 F
Received: 09/26/91 Sample # 034590 Reported: 09/30/91

MFFCC colonies 80 /100 mL

State Laboratory of Hygiene
University of Wisconsin Center for Health Sciences
465 Henry Mall, Madison, WI 53706

R.H. Laessig, Ph.D., Director

S.L. Inhorn, M.D., Medical Director

Environmental Science Section (608) 262-1210 DNR LAB ID 113133790
Surface water microbiology (#8 of 12 on 09/30/91, unseen)

Permit# Basin# 280 Waterbody# Route:WR81 Field# ID2
Location: cemetery creek County:26 Iron
Description: just above alder creek
Send to: d.n.r.
box 309
spooner, wis. 54801

Account # WR049 Type: Effluent
Collector: PRENN Compliance Sample: N
Date: 09/25/91 Time 11:01 Depth/Location: 0 F
Received: 09/26/91 Sample # 034591 Reported: 09/30/91

MFFCC colonies 60 /100 mL

State Laboratory of Hygiene
University of Wisconsin Center for Health Sciences
465 Henry Mall, Madison, WI 53706

R.H. Laessig, Ph.D., Director S.L. Inhorn, M.D., Medical Director

Environmental Science Section (608) 262-1210 DNR LAB ID 113133790
Surface water microbiology (#5 of 12 on 09/30/91, unseen)

Permit# Basin# 280 Waterbody# 2909300 Route:WR81 Field# IA
Location: cemetery creek County:26 Iron
Description: 30yds above effluent ditch
Send to: d.n.r.
box 309
spooner, wis. 54801

Account # WR049 Type: Effluent
Collector: PRENN Compliance Sample: N
Date: 09/25/91 Time 12:31 Depth/Location: 0 F
Received: 09/26/91 Sample # 034588 Reported: 09/30/91

MFCC colonies 60 /100 mL

State Laboratory of Hygiene
University of Wisconsin Center for Health Sciences
465 Henry Mall, Madison, WI 53706

R.H. Laessig, Ph.D., Director S.L. Inhorn, M.D., Medical Director

Environmental Science Section (608) 262-1210 DNR LAB ID 113133790
Surface water microbiology (#6 of 12 on 09/30/91, unseen)

Permit# Basin# 280 Waterbody# Route:WR81 Field# IB2
Location: iron belt effluent ditch County:26 Iron
Description: just above cemetery cr.
Send to: d.n.r.
box 309
spooner, wis. 54801

Account # WR049 Type: Effluent
Collector: PRENN Compliance Sample: N
Date: 09/25/91 Time 12:16 Depth/Location: 0 F
Received: 09/26/91 Sample # 034589 Reported: 09/30/91

MFCC colonies 10 /100 mL

State Laboratory of Hygiene
University of Wisconsin Center for Health Sciences
465 Henry Mall, Madison, WI 53706

R.H. Laessig, Ph.D., Director

S.L. Inhorn, M.D., Medical Director

Environmental Science Section (608) 262-3458 DNR LAB ID 113133790
Inorganic chemistry (#5 of 12 on 02/19/92, unseen)

Id: Point/Well/...: 280 Field #: ID2 Route: WR80
Collection Date: 09/25/91 Time: 11:00 County: 26 (Iron)
From: CEMETERY CREEK JUST ABOVE ALDER CREEK
To: PRENN
DNR Source: Other
SPOONER Sample depth: 0 Feet
Account number: WR049 Collected by: PRENN
Waterbody/permit/...: 2909300
Date Received: 09/26/91 Labslip #: IC034381 Reported: 02/18/92

BOD 5 DAY	1.2	MG/L
CALCIUM, ICP	24.	MG/L
CHLORIDE	22.	MG/L
CONDUCTIVITY (AT 25 DEG C)	237.	UMHOS/CM
DIGEST 730.1, LIQUIDS, EPTOX, ICP EXCEPT AS,AG,SE	DIG MET	
HARDNESS, CALCULATION METHOD	93.	MG/L
MAGNESIUM, ICP	8.	MG/L
AMMONIA-N	0.012	MG/L
detected between 0.005 (LOD) and 0.019 (LOQ) MG/L		
NITRATE PLUS NITRITE-N	0.534	MG/L
TOTAL KJELDAHL NITROGEN	0.3	MG/L
PH, LAB	7.80	SU
TOTAL PHOSPHORUS	0.03	MG/L
DISSOLVED PHOSPHORUS, LOW RANGE	0.017	MG/L
SUSPENDED SOLIDS	2.	MG/L
TEMPERATURE FIELD	7.8	C
DISSOLVED OXYGEN FIELD	10.0	MG/L

State Laboratory of Hygiene
University of Wisconsin Center for Health Sciences
465 Henry Mall, Madison, WI 53706

R.H. Laessig, Ph.D., Director

S.L. Inhorn, M.D., Medical Director

Environmental Science Section (608) 262-3458 DNR LAB ID 113133790
Inorganic chemistry (#3 of 12 on 02/19/92, unseen)

Id: Point/Well/...: 280 Field #: IA Route: WR80

Collection Date: 09/25/91 Time: 12:30 County: 26 (Iron)

From: CEMETERY CREEK 30 YDS. ABOVE EFFLUENT DITCH

To: PRENN

DNR

Source: Other

SPOONER

Sample depth: 0 Feet

Account number: WR049

Collected by: PRENN

Waterbody/permit/...: 2909300

Date Received: 09/26/91

Labslip #: IC034379

Reported: 02/18/92

BOD 5 DAY 1.1 MG/L
CALCIUM, ICP 23. MG/L
CHLORIDE 24. MG/L
CONDUCTIVITY (AT 25 DEG C) 244. UMHOS/CM
DIGEST 730.1, LIQUIDS, EPTOX, ICP EXCEPT AS,AG,SE DIG MET

HARDNESS, CALCULATION METHOD 88. MG/L
MAGNESIUM, ICP 7. MG/L
AMMONIA-N 0.005 MG/L
detected between 0.005 (LOD) and 0.019 (LOQ) MG/L
NITRATE PLUS NITRITE-N 0.104 MG/L
TOTAL KJELDAHL NITROGEN 0.3 MG/L

PH, LAB 7.70 SU
TOTAL PHOSPHORUS <0.02 MG/L
DISSOLVED PHOSPHORUS, LOW RANGE ND (LOD=0.002 MG/L)
SUSPENDED SOLIDS 3. MG/L
TEMPERATURE FIELD 8.2 C

DISSOLVED OXYGEN FIELD 10.1 MG/L

State Laboratory of Hygiene
University of Wisconsin Center for Health Sciences
465 Henry Mall, Madison, WI 53706

R.H. Laessig, Ph.D., Director

S.L. Inhorn, M.D., Medical Director

Environmental Science Section (608) 262-3458 DNR LAB ID 113133790
Inorganic chemistry (#4 of 12 on 02/19/92, unseen)

Id: Point/Well/...: 280 Field #: ID1 Route: WR80
Collection Date: 09/25/91 Time: 12:00 County: 26 (Iron)
From: CEMETERY CREEK AT ROAD XING
To: PRENN

DNR Source: Other
SPOONER Sample depth: 0 Feet
Account number: WR049 Collected by: PRENN

Waterbody/permit/...: 2909300

Date Received: 09/26/91 Labslip #: IC034380 Reported: 02/18/92

BOD 5 DAY	1.5	MG/L
CALCIUM, ICP	25.	MG/L
CHLORIDE	26.	MG/L
CONDUCTIVITY (AT 25 DEG C)	251.	UMHOS/CM
DIGEST 730.1, LIQUIDS, EPTOX, ICP EXCEPT AS,AG,SE	DIG MET	
HARDNESS, CALCULATION METHOD	96.	MG/L
MAGNESIUM, ICP	8.	MG/L
AMMONIA-N	0.023	MG/L
NITRATE PLUS NITRITE-N	0.150	MG/L
TOTAL KJELDAHL NITROGEN	0.4	MG/L
PH, LAB	7.80	SU
TOTAL PHOSPHORUS	0.02	MG/L
DISSOLVED PHOSPHORUS, LOW RANGE	0.012	MG/L
SUSPENDED SOLIDS	4.	MG/L
TEMPERATURE FIELD	8.0	C
DISSOLVED OXYGEN FIELD	10.1	MG/L

State Laboratory of Hygiene
University of Wisconsin Center for Health Sciences
465 Henry Mall, Madison, WI 53706

R.H. Laessig, Ph.D., Director

S.L. Inhorn, M.D., Medical Director

Environmental Science Section (608) 262-3458 DNR LAB ID 113133790
Inorganic chemistry (#1 of 6 on 03/09/92, unseen)

Id: Point/Well/...: 280 Field #: IB1 Route: WR80
Collection Date: 09/25/91 Time: 13:30 County: 26 (Iron)
From: IRON BELT EFFLUENT CONCRETE STRUCTURE IN WOODS
To: PRENN
DNR Source: Effluent
SPOONER Sample depth: 0 Feet
Account number: WR049 Collected by: PRENN
Date Received: 09/26/91 Labslip #: IC034377 Reported: 03/06/92

BOD 5 DAY	3.4	MG/L
CALCIUM, ICP	33.	MG/L
CHLORIDE	86.	MG/L
CONDUCTIVITY (AT 25 DEG C)	484.	UMHOS/CM
DIGEST 730.1, LIQUIDS, EPTOX, ICP EXCEPT AS,AG,SE	DIG MET	
HARDNESS, CALCULATION METHOD	130.	MG/L
MAGNESIUM, ICP	11.	MG/L
AMMONIA-N	0.752	MG/L
NITRATE PLUS NITRITE-N	0.441	MG/L
TOTAL KJELDAHL NITROGEN	1.9	MG/L
PH, LAB	7.20	SU
TOTAL PHOSPHORUS	0.29	MG/L
DISSOLVED PHOSPHORUS, HIGH RANGE	0.21	MG/L
SUSPENDED SOLIDS	2.	MG/L
TEMPERATURE FIELD	10.0	C
DISSOLVED OXYGEN FIELD	6.2	MG/L

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Environmental Science Section (608) 262-3458 DNR LAB ID 113133790
Inorganic chemistry (#2 of 6 on 03/09/92, unseen)

Id: Point/Well/...: 280 Field #: IB2 Route: WR80
Collection Date: 09/25/91 Time: 12:15 County: 26 (Iron)
From: IRON BELT EFFLUENT DITCH JUST ABOVE CEMETERY CR.
To: PRENN
DNR Source: Effluent
SPOONER Sample depth: 0 Feet
Account number: WR049 Collected by: PRENN
Date Received: 09/26/91 Labslip #: IC034378 Reported: 03/06/92

BOD 5 DAY	3.1	MG/L
CALCIUM, ICP	31.	MG/L
CHLORIDE	73.	MG/L
CONDUCTIVITY (AT 25 DEG C)	430.	UMHOS/CM
DIGEST 730.1, LIQUIDS, EPTOX, ICP EXCEPT AS,AG,SE	DIG MET	
HARDNESS, CALCULATION METHOD	120.	MG/L
MAGNESIUM, ICP	10.	MG/L
AMMONIA-N	0.364	MG/L
NITRATE PLUS NITRITE-N	0.576	MG/L
TOTAL KJELDAHL NITROGEN	1.3	MG/L
PH, LAB	7.30	SU
TOTAL PHOSPHORUS	0.21	MG/L
DISSOLVED PHOSPHORUS, LOW RANGE	0.159	MG/L
SUSPENDED SOLIDS	4.	MG/L
TEMPERATURE FIELD	10.0	C
DISSOLVED OXYGEN FIELD	6.7	MG/L