DMA ✓ 9-8-06

| DATA ENTERED | 1 | 2 |
|---|---|---|
| | | |

| DATE RECEIVED | FACILITY NAME | County No. | PROGRAM AREA CODE | FACILITY TYPE CODE | SUBJECT AREA CODE 16.3.1 |
|---|---|---|---|---|---|
| 3 12/2/87 | 4 Lohrville Wastewater Treatment Facility | 5 13 | 6 ZP | 7 C04 | 8 325 |

| RULE REFERENCE | DESIGN STANDARD REFERENCE | DECISION / DATE | APPEAL ACTION / DATE |
|---|---|---|---|
| 9 567-64.2(9) | 10 16.3.1 | 11 Approved 12/23/87 | 12 |

| ENGINEER | VARIANCE RULE |
|---|---|
| 13 Veenstra & Kimm | 14 64.2(9) "c" |

15. DESCRIPTION OF VARIANCE REQUESTED:

The engineer requests a variance to provide an 8 feet sidewater depth for the final clarifier following a trickling filter instead of the 10 foot depth required by the standards.

16. ENGINEERS JUSTIFICATION: A new final clarifier is proposed in lieu of an equalization basin to construct the project within the available funds. However, space for the tank is limited, the site is steeply sloped and there is a high groundwater table. Excavation will be 20 feet deep, and it would be difficult to go any deeper without encroaching on adjacent property. The engineer feels that use of an 8 foot depth for the final clarifier will provide satisfactory treatment even at PHWW flows which are more than 10 times greater than AWW flows. The proposed final clarifier would be circular.

17. DEPARTMENTS JUSTIFICATION: West Union requested variance for 8 foot depth for a rectangular tank to match existing tanks, claiming it worked in Independence. The request was denied.

Atalissa requested a variance for rectangular tank using IT A proprietary Aero-Mod process designed for 8 foot depth. The request was approved.

Two others approved were small private projects.

It appears that this variance would provide substantially equivalent effectiveness while significantly reducing costs and we recommend that it be approved.

18. PRECEDENTS USED: Heartland Lystine - Approved
West Union - Denied
Atalissa - Approved
Risen Sun Christ. Vill. - Approved

19. STAFF REVIEWER: Wayne A. Reed
20. SUPERVISOR: Larry Haag approved 12/11/87
21. AUTHORIZED BY: Daniel W. Olds approved 12/23/87

B. Varner 10/21/87

From Larry

Re. Lobville Variance request.

Since the peak hour flow is ten times the Average wet weather flow and the clarifier diameter is determin in this case, by the peak hour flow, 94-95% of the time the surface overflow rates will be much lower than the design standard require. The lower surface overflow rate will compensate for the lesse depth. At the Average wet weather flow the surface overflow rate will be 133 gpd/day/ft. Compared to a design standard of 600 g/d/ft. With mechanical sludge removal, I would not project any problems with the sludge causing problems in the effluent.

Wayne Barnard told me that when they did it at West Union, they could not find any literature to justify 10 ft. over 8 ft. The design standard for intermediate clarifiers following trickling filters, only require 7 ft of depth.

The reasons for the variance request at West Union are (1) the potential problem of letting rock and (2) the existing clarifiers were 8 ft. deep and they were using common wall construction, these clarifiers were rectangular.

My reasons to grant the variance is because of the said variation in peak hour and average wet weather flows and because the construction is quite deep plus the fact they would run into ground water.

12/3/87

Wayne: Off the top, I don't have a problem with their request but if we grant the variance, we should include a stipulation that if it doesn't work properly, baffling or other remedies will be done to solve problem.

Would you prepare the variance form according to your judgement.

S.H.

RECORD COPY

File Name Lohrville Sewage

Senders Initials MR

STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LARRY J. WILSON, DIRECTOR

December 30, 1987

City of Lohrville
City Hall
Lohrville, IA 51453

PROJECT NO.: S87-210
FILE: Lohrville - Sewage
SUBJECT: Wastewater Treatment Facility

Gentlemen:

The Iowa Department of Natural Resources in accordance with Subrule 567--64.2(9)c of the Iowa Administrative Code has approved your request for a variance from Iowa Wastewater Facilities Design Standard 16.3.1 which requires that final settling tanks following fixed film reactors shall have a minimum sidewater depth of ten feet.

The engineering justification submitted substantially demonstrates that this variance will result in at least equivalent effectiveness while significantly reducing costs.

Sincerely,

Darrell McAllister

DARRELL McALLISTER
BUREAU CHIEF
SURFACE AND GROUNDWATER PROTECTION BUREAU

DM/mjt/M364MJT.4

cc: Veenstra & Kimm, Inc.
Field Office 3

Distribution

1 Engineer; 1 Field Office; 1 DNR File

VEENSTRA & KIMM, INC.
CONSULTANT GROUP

November 30, 1987

Lavoy Haage
Iowa Department of Natural Resources
Henry A. Wallace Building
900 East Grand Avenue
Des Moines, Iowa 50319

LOHRVILLE, IOWA
WASTEWATER TREATMENT FACILITY IMPROVEMENTS

In accordance with discussions between Harvey Gullicks of Veenstra & Kimm, Inc., and Lavoy Haage and Wayne Reed of IDNR, we are requesting a variance for construction proposed for the above project. The requested variance is for construction of a 30-foot diameter final clarifier with 8-foot side water depth in lieu of the construction of a flow equalization pond/tank.

Flows up to 175,000 to 200,000 gallons per day are to be directed through the Imhoff tank, trickling filter and into the final clarifier. Greater flows are to be routed to bypass the Imhoff tank and trickling filter, but will be routed through final clarification. We propose to keep the existing rectangular final clarifier in service to reduce the affects of wet weather flows. The new and existing final clarifiers will have a capacity capable of handling the peak hour wet weather flow at surface overflow rates of 1,500 gallons per square foot per day.

Construction of the larger final clarifier represents the best economical alternative available to the City of Lohrville for compliance with the IDNR mandated completion of improvements for the wastewater treatment facility. The 8-foot side water depth is requested because of the high groundwater table, ground surface topography, and construction-related areal constraints.

Your timely response to our request for discussions of construction alternatives on November 23, 1987 was greatly appreciated.

VEENSTRA & KIMM, INC.

Harvey A. Gullicks

Harvey A. Gullicks, P.E., Ph.D.

HAG:jgt
2474
cc: Doneta Nelsen, City Clerk

300 West Bank • 1601 Twenty-Second Street • West Des Moines, Iowa 50265-1488 • 515-225-8000 • 800-241-8000 (Iowa Wats)

IOWA DEPARTMENT OF WATER, AIR AND WASTE MANAGEMENT

WATER QUALITY PROGRAM

CONSTRUCTION PERMIT APPLICATION

SCHEDULE F, TREATMENT PROJECT SITE SELECTION

WAWM USE

DATE PREPARED: February 5, 1988

DATE REVISED:

PROJECT IDENTITY: City of Long Grove Treatment System Improvements

PROJECT NO.:

PERMIT NO.:

1. Project Location: County Scott Section 34 Township 80N Range 3E

Is this a new site? ____ Existing site? X or Expansion of existing site? ____

2. Provide the following as attachments (minimum of three each needed):

(a) General Plat Layout of area within a 5 mile radius of the project, noting all important features. (U.S.G.S. map may be used.)
(b) Site Layout of area within a 1,500 foot radius of the project.

3. Does the project lie in a flood plain? Yes ____ No X
Elevation of 100 year flood (MSL) 715.18 Elevation of 25 year flood (MSL) 713.18
Will the treatment works structures, including the electrical and mechanical equipment, be protected from physical damage by the 100 year flood? Yes X No ____
Will the plant remain operational during the 25-year flood? Yes X No ____
Method of flood protection Top of dykes at 736.5

4. Minimum distance to high water table 10.32 feet

5. Describe geology of area Glacial till - gently rolling

6. Describe soil conditions Stiff to medium stiff silty clay with 1 - 2 ft. of topsoil

7. State the minimum distances and direction to:
(a) Municipal wells 2300 ft.
(b) Private wells 600 ft.
(c) Residences or Businesses 300 ft.
(d) Recreation areas 1,000 ft.
(e) Other

8. Direction of the prevailing winds West-Southwest

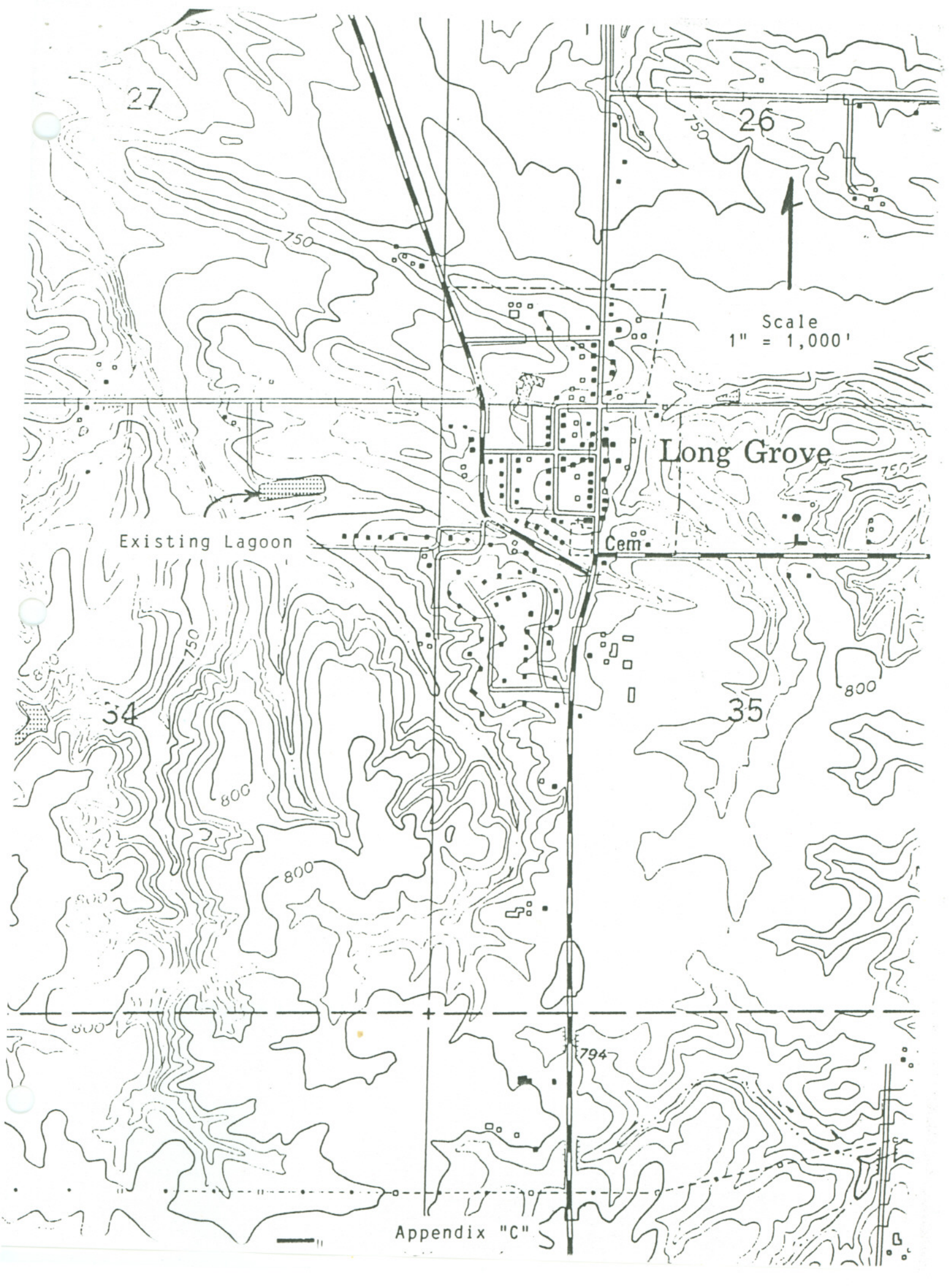
9. Sulfate content of the raw water supply source 84 mg/l. Identify source City Records

10. Is this area available for expansion? Yes ___ No X. If yes, how much? ____ Location of area ____
Identify owner of property

11. Will site be accessible via an all weather access road? Yes X No ____
Type Gravel

12. Source of STP water supply:
Maintenance/Cleanup None Potable? Yes ____ No ____
Laboratory/Sanitary None Potable? Yes ____ No ____
Potable? Yes ____ No ____

13. Receiving Stream Mason Creek tributary to Wapsipinicon River
7-day 10-year Low Flow NA cfs. Source of stream flow data
Drainage area above site 0.18 square miles
Is stream a dry run Yes intermittent ____ continuous flow ____
Describe downstream usage of the receiving stream None


27
26
750
Scale
1" = 1,000'
Long Grove
Existing Lagoon
Cem
34
35
800
794

Appendix "C"

IOWA DEPARTMENT OF WATER, AIR AND WASTE MANAGEMENT

WATER QUALITY PROGRAM

CONSTRUCTION PERMIT APPLICATION

SCHEDULE G, TREATMENT PROJECT DESIGN DATA

WAWM USE

DATE PREPARED: February 5, 1988

DATE REVISED:

PROJECT IDENTITY: City of Long Grove Treatment System Improvements

PROJECT NO.:

PERMIT NO.:

1. Project Description: Modification of an existing 180 day single cell lagoon system to create an aerated lagoon.

2. Design Basis:

| Plant Design Loading | | Present ADW | Present AWW | Present MWW | Design Year ( ) ADW | Design Year ( ) AWW | Design Year ( ) MWW |
|---|---|---|---|---|---|---|---|
| Residential Waste | Population | | ////////// | ////////// | 500 | ////////// | ////////// |
| | Flow, MGD | | | | | | |
| | $BOD_5$, #/day | | | | | | |
| | TKN, #/day | | | | | | |
| Out of Town Students | Number | | //////// | //////// | | //////// | //////// |
| | Flow, MGD | | | | | | |
| | $BOD_5$, #/day | | | | | | |
| | TKN, #/day | | | | | | |
| Industrial | Flow, MGD | | | | | | |
| | Rated Flow, MGD | | | | | | |
| | $BOD_5$, #/day | | | | | | |
| | TKN, #/day | | | | | | |
| Other (Specify) | Flow, MGD | | | | | | |
| | Rated Flow, MGD | | | | | | |
| | $BOD_5$, #/day | | | | | | |
| | TKN, #/day | | | | | | |
| Infiltration | MGD | | | | | | |
| Inflow | MGD | | | | | | |
| Total | Flow, MGD | | | | .040 | .060 | .090 |
| | Rated Flow, MGD | | | | | | |
| | $BOD_5$, mg/l | | | | 255 | 170 | 113 |
| | $BOD_5$, #/day | | | | 85 | 85 | 85 |
| | TKN, mg/l | | | | 39 | 26 | 17 |
| | TKN, #/day | | | | 13 | 13 | 13 |

3. Peak Hourly Dry Weather Flow .06 MGD + Peak Hourly Infiltration .024 MGD + Peak Hourly Inflow .006 MGD=Total Peak Hourly Wet Weather Flow .090 MGD (In Design Year)

4. Identify effluent limitations

| | | $BOD_5$ day Avg | $BOD_5$ day Max | Suspended Solids Avg | Suspended Solids Max | $NH_3$-N Avg | $NH_3$-N Max | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Operation Permit | mg/l | 25 | 40 | 80 | 120 | | | | | | |
| Effluent Limits | #/day | | | | | | | | | | |
| Design Effluent Quality | mg/l | 25 | 40 | 38 | 120 | | | | | | |
| | #/day | | | | | | | | | | |

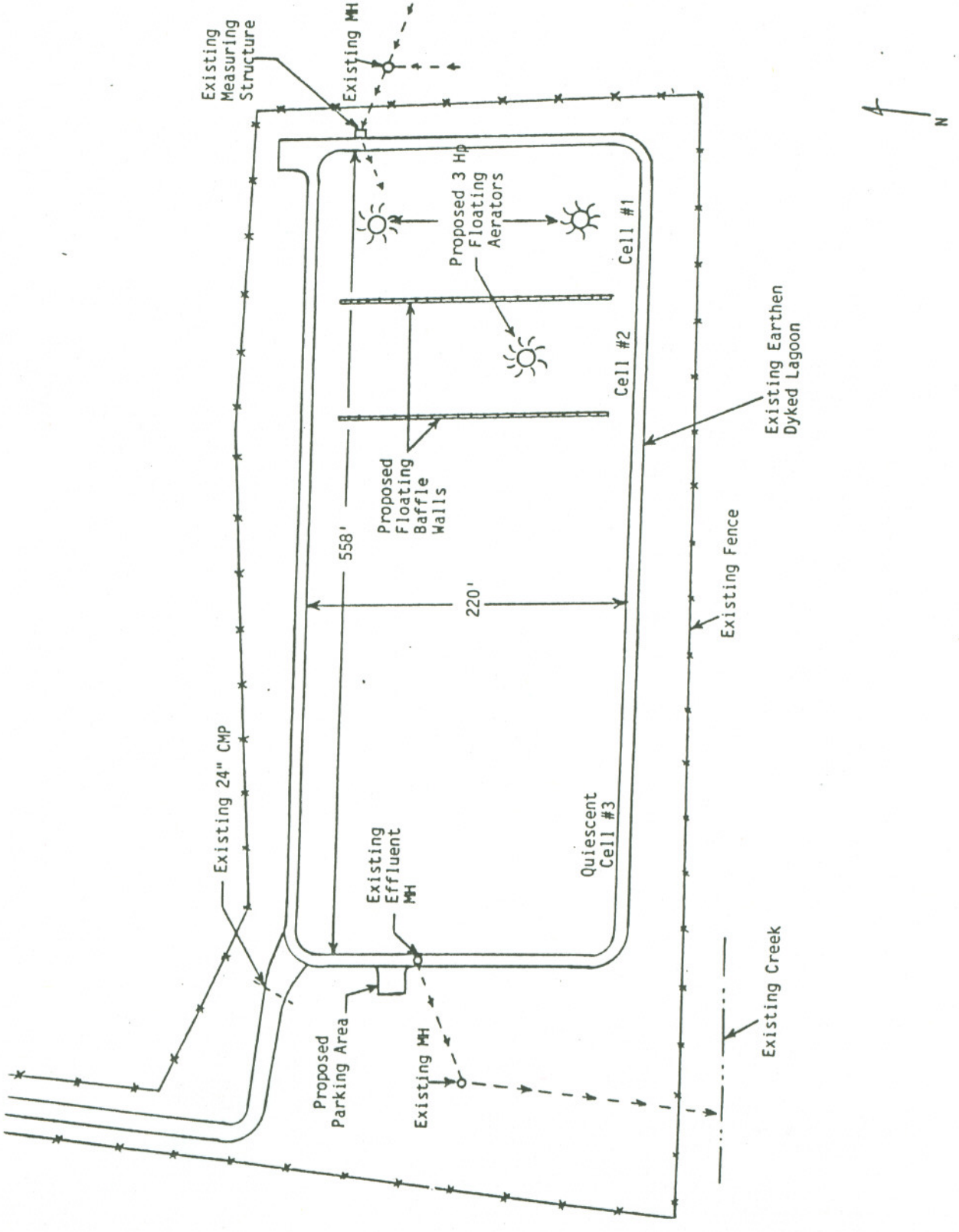
5. Identify significant industrial/commercial contributors:

| Waste Contributors | Pre-treat | Operation Hrs/Day | Operation Days/Week | Design Loadings Flow MGD Total | Flow MGD Rated | $BOD_5$ #/day | Susp. Solids #/day | TKN #/day | Oil & Grease #/day | #/day |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

WAWM form 28-G (Jul 1, 83) (Replaces DEQ Form WQ 133-G, which may be used)

IOWA DEPARTMENT OF WATER, AIR AND WASTE MANAGEMENT

| WATER QUALITY PROGRAM | CONSTRUCTION PERMIT APPLICATION<br>SCHEDULE H1, SCHEMATIC FLOW DIAGRAM | WAWM USE |
|---|---|---|
| DATE PREPARED<br>2/4/88 | PROJECT IDENTITY<br>City of Long Grove<br>Treatment System Improvements | PROJECT NO. |
| DATE REVISED | | PERMIT NO. |



IOWA DEPARTMENT OF WATER, AIR AND WASTE MANAGEMENT

WATER QUALITY PROGRAM

CONSTRUCTION PERMIT APPLICATION

SCHEDULE H2, TREATMENT PROCESS REMOVAL EFFICIENCY

WAWM USE

DATE PREPARED: February 5, 1988

DATE REVISED:

PROJECT IDENTITY: City of Long Grove Treatment System Improvements

PROJECT NO.:

PERMIT NO.:

1. Project:

A. Design Basis:

ADW - .040 MGD
AWW - .060 MGD
MWW - .090 MGD
PHWW - .090 MGD
Design Temperature - 1° C Winter

B. Iowa Operation Permit Effluent Limits:

| | Monthly Average* | | Daily Maximum | |
|---|---|---|---|---|
| | mg/l | #/day | mg/l | #/day |
| $CBOD_5$ | 25 | | 40 | |
| TSS | 80 | | 120 | |
| $NH_3$-N | | | | |

*with a minimum monthly average removal rate of ____ %

2. Processes - at Design Flow of 0.048 MGD

| | ~~AWW~~ | | | MWW | | | |
|---|---|---|---|---|---|---|---|
| | mg/l | #/day | % removal | mg/l | #/day | % removal | |
| A. Primary treatment - description: | | | | | | | |
| $CBOD_5$ | 212 | 85 | 60 | | | | |
| TSS | 249 | 100 | 80 | | | | Cell No. 1 |
| $NH_3$-N | | | | | | | |
| B. Secondary treatment - description: | | | | | | | |
| $CBOD_5$ | 85 | 34 | 70 | | | | |
| TSS | 50 | 20 | 25 | | | | Cell No. 2 |
| $NH_3$-N | | | | | | | |
| description: | | | | | | | |
| $BOD_5$ | | | | | | | |
| TSS | | | | | | | |
| $NH_3$-N | | | | | | | |
| C. Tertiary treatment - description: | | | | | | | |
| $BOD_5$ | | | | | | | |
| TSS | | | | | | | |
| $NH_3$-N | | | | | | | |
| 3. Plant Effluent - | | | | | | | |
| $CBOD_5$ | 25 | 10 | | | | | |
| TSS | 38 | 15 | | | | | |
| $NH_3$-N | | | | | | | |

IOWA DEPARTMENT OF WATER, AIR AND WASTE MANAGEMENT

WATER QUALITY PROGRAM

CONSTRUCTION PERMIT APPLICATION

SCHEDULE K2, AERATED POND

WAWM USE

DATE PREPARED: February 5, 1988

DATE REVISED:

PROJECT IDENTITY: City of Long Grove Treatment System Improvements

PROJECT NO.:

PERMIT NO.:

1. Design Basis:

| | AWW | MWW | PHWW |
|---|---|---|---|
| Flow, MGD | .060 | .090 | .090 |
| $BOD_5$, #/day | 85 | 85 | 85 |

2. No. of soil borings taken NA. Data included in the _____.
High groundwater elevation (MSL) 713.18.

3. Top of dike elevation (MSL) 736.5 ft. 100 year flood elevation (MSL) NA ft.

4. Pond Data

| | Cell 1 | Cell 2 | Cell 3 | Cell 4 | Total |
|---|---|---|---|---|---|
| Surface area @ maximum depth (A) | .28 | .31 | 1.32 | | |
| Maximum operation depth (ft) | 6.00 | 6.00 | 6.00 | | |
| Minimum operation depth (ft) | 6.00 | 6.00 | 6.00 | | |
| Effective storage volume (MG) | .87 | .87 | 2.73 | | |
| Effective detention time (days) | 14.5 | 14.5 | 43 | | |
| Air Requirements: | | | | | |
| Provided ($ft^3$/#BOD) | | | | | |
| Provided (#$O_2$/#BOD) | 3.4 | 4.2 | | | |
| Required (#$O_2$/#BOD) | 2 | 2 | | | |
| Minimum D.O. level (mg/l) | 2 | 2 | | | |
| Freeboard @ maximum depth (ft) | 2.75 | 2.75 | | | |
| Top width of dike (ft) | 10 | 10 | | | |
| Inner embankment slope H/V | 3/1 | 3/1 | | | |
| Outer embankment slope H/V | 3/1 | 3/1 | | | |
| Type of inlet | Submerged--- | | | | |
| Top drawoff level (ft) | NA | NA | NA | | |
| Middle drawoff level (ft) | NA | NA | 3' | | |
| Bottom drawoff level (ft) | NA | NA | 4' | | |

5. Aeration Equipment: Design Air Temperature NA °F to _____ °F.
Type Floating. Manufacturer & Model Environmental Equipment Eng.
No. of Units 3. HP or CFM/unit 3 Hp Total HP or CFM 9 Hp
K value .06 /day at design temperature 1 °C.
Is a layout of the aeration system given on Schedule H1? Yes X No ____

6. Is cold weather protection provided? Yes How? Submerged motors and props

7. Method of raw flow diversion to cells NA

8. Method of interconnection of cells Floating Baffle Wall Windows

9. Provision to prevent drawoff of floating solids Submerged outlets

10. Method of sampling Manual

11. Type of flow measurement sonic Location @ 90° V notch weir @ influent

12. Fence Height 6' No. strands of barbed wire: Top _____ Bottom _____

13. Number of warning signs 5. Location Along boundary fence

14. Will pond be pre-filled to 2 ft. level? Yes ____ No ____ NA

15. Maximum allowable leakage rate NA in/day.
Method of testing leakage rate NA

16. Are specifications included for:

| | | | |
|---|---|---|---|
| a. | Seeding | Yes ____ | No X |
| b. | Soil sterilization | Yes ____ | No X |
| c. | Pond bottom uniformity | Yes ____ | No X |
| d. | Pond sealing | Yes ____ | No X |
| e. | Erosion protection | Yes ____ | No X |

NA

17. Is service bypass provided? No Discharge to _____

WAWM form 28-K2 (Jul 1, 83) (Replaces DEQ Form WQ 133-K2, which may be used)