

VARIANCE REQUEST

Iowa Department of Natural Resources

13.12.4

1. Date : 3/18/93
2. Review Engineer : Fred Evans
3. Date Received : 3/18/93
4. Facility Name : Iowa Great Lakes S.D.
5. County Number : 30
6. Program Area : CP
7. Facility Type : COL
8. Subject Area : 313
9. Rule Reference : 64.2(9)
10. Design Std. Ref. : 13.12.4
11. Consulting Engr. : Howard R. Green Co.
12. Variance Rule : 64.2(9)c
13. Decision: ~~Approved~~
Date: 3-23-93
14. Appeal:
Date:

15. Description of Variance Request

The IGLSD proposes to provide relief to the existing trunk sanitary sewer system along the east shore of Big Spirit Lake by pumping thru a new 8" diameter force main and discharging into a new 14" diameter gravity sewer which will convey flows to existing sewers which have adequate capacity to handle the relief flows. Since the force main is almost 15,000 feet long, the detention time during winter operation will result in a discharge of

septic and corrosive wastewater to the receiving manhole on the new gravity sewer. Inasmuch as the Sanitary District has had previous problems with deterioration of concrete manholes, the use of a P.E. manhole is requested.

16. Consulting Engineer's Justification

1. The IGLSD has experienced corrosion problems with concrete manholes and is interested in a pilot study with an HDPE (high density polyethylene) type manhole.
2. Epoxy coated concrete manholes have been used.

6. Consulting Engineer's Justification (cont.)

successfully; however in this case only one HDPE manhole is being proposed and the stocking of proper coatings for repair and maintenance for one manhole does not appear to be the best solution.

17. Department's Justification

We concur with the engineer's request for a variance based upon the engineer's justification and the following additional considerations:

1. HDPE manholes have been approved for use in Missouri, Kansas and Minnesota on sanitary sewer projects.
2. Since only one manhole is involved, future replacement in the event of a failure or operational problem would not be too great a cost.
3. The HDPE manhole will not be located in a Traffic-use roadway.

18. Precedents Used

Clear Lake Sanitary District

Approved 1/23/95

19. Staff Reviewer

: *Bruce M. Evans*

Date: 3/18/93

20. Supervisor

: *Tom Dangle*

Date: 3/22/93

21. Authorized by

: *Sam W. Allen*

Date: 3/23/93



IGLSD

TERRY E. BRANSTAD, GOVERNOR

March 22, 1993

DEPARTMENT OF NATURAL RESOURCES

LARRY J. WILSON, DIRECTOR

Howard R. Green Company
1801 Hill Avenue
P.O. Box 292
Spirit Lake, IA 51360-0292

ATTENTION: John L. Franklin II, P.E.

SUBJECT: East Shore of Big Spirit Lake Relief Sewer
Spirit Lake, Iowa

Gentlemen:

We have reviewed your reply of March 5, 1993, to our review comments on the plans and specifications for the above-referenced project, and we have the following additional comments to items No. 4 and No. 5 of your letter.

4. It is our understanding that the existing Jones Pasture Lift Station 4-4 does not have any provisions for emergency operation. Inasmuch as this lift station will be upgraded as a part of this project, we will require such upgrading to comply with our current design standards for wastewater pumping stations. In this regard, Section 13.11 of the design standards requires that pumping stations be provided with an emergency means of operation, such as a second, independent power source connected to the station, an engine driven generator, engine-driven standby pumps or portable pumps or portable generator.
5. The requested variance to use a polyethylene manhole in lieu of a concrete manhole at the discharge end of the proposed force main has been forwarded on to Wayne Farrand and Darrell McAllister of this office for further review. A decision on the variance request should be forthcoming in the near future.

Sincerely,

FRED M. EVANS, P.E.
WASTEWATER SECTION

cc: Iowa Great Lakes Sanitary District, Milford, IA
Field Office 3

STATE OF IOWA
DEPARTMENT OF NATURAL RESOURCES
HENRY A. WALLACE BUILDING
DES MOINES, IOWA 50319

CONSTRUCTION PERMIT

Iowa Great Lakes Sanitary District
Rural Route 1, Box 176
Milford, IA 51351

PERMIT NO.: 93-132-S

FILE: Iowa Great Lakes San. District

RE: East Shore Big Spirit Lake

PROJECT NO: S93-40

In accordance with the provisions of Section 455B.173.3 and 455B.174.4, Code of Iowa, and Rule 567--64.2(455B) or Rule 567--65.6(455B), or Rule 567--43.3(455B) of the Iowa Administrative Code, the Director of the Department of Natural Resources does hereby issue a permit for the construction of:

5,875 feet of 14-inch DIP sanitary sewer and manholes; 14,922 feet of 8-inch DIP force main, two air release valves and a pig launching manhole; upgrade of lift station LS 4-4 to include two new 350 GPM centrifugal pumps, new seal water filter, pole mounted generator plug-in and transfer switch, valves, piping, electrical changes, and appurtenances to complete project in accordance with the approved plans and specifications.

By issuance of this construction permit No. 93-132-S we are hereby granting a variance for use of a polyethylene manhole at Station 72 + 00 for manhole No. 3-251-12 in lieu of a pre-cast or poured in place concrete manhole as required by our design standards.

The construction of the project shall be initiated within one year of issuance of this permit or this permit is no longer valid. Within thirty days after completion of construction, the permit holder shall submit a certification by a registered professional engineer that the project was completed in accordance with the approved project documents.

Pursuant to Section 455B.174.4, Code of Iowa, you have the right to appeal any condition of this permit by filing with the Director of the Department of Natural Resources a notice of appeal and request for administrative hearing within thirty days of receipt of this permit.

Contact Fred M. Evans at 515/281-8995 with any questions or comments.

For the Department of Natural Resources

Larry J. Wilson, Director

By: 
ENVIRONMENTAL PROTECTION DIVISION

Date: April 9, 1993

cc: Howard R. Green Company, Spirit Lake, IA
Field Office 3

(FHE098.BP)

Plan Distribution

1 Engineer; 1 DNR File



Howard R. Green Company
CONSULTING ENGINEERS

March 5, 1993

Iowa Department of Natural Resources
Wallace State Office Building
900 East Grand
Des Moines, Iowa 50319

Attn: Fred Evans
Wastewater Permits/Construction Grants

Re: East Shore of Big Spirit Lake Relief Sewer
Spirit Lake, Iowa

Dear Fred:

Pursuant to our phone conversation of Thursday March 3, 1993
the following items of concern will be addressed:

- OK.
1. Air release valve shown on sheet 20 of 20 of the plans refers to item 6.24 of the specification. Item 6.23 should be referenced. Two prints of the corrected drawing are enclosed for your approval.
 - OK. 2. The lift station pump seal water system utilizes product (sewage) water.
 - OK. 3. Alarm provisions in the existing lift station consist of low and high wetwell levels and loss of power alarms. The alarms are transmitted by radio to the Wastewater Treatment Facility Control Room. The alarms are existing and will be maintained.
 4. No emergency operation of the lift station is existing.
 5. The IDNR design standards suggest the use of inert materials for the receiving manhole at the termination of force mains. The IGLSD has experienced corrosion problems with concrete manholes and is interested in a pilot study with an HDPE type manhole. Epoxy coated concrete manholes have been used successfully, however in this case only one HDPE manhole is being proposed and the

Iowa Department of Natural Resources
Mr. Fred Evans
Wastewater Permits/Construction Grants

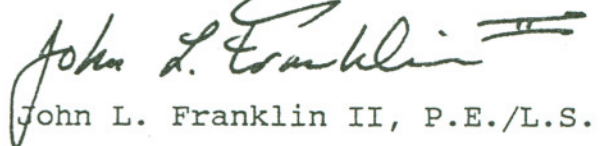
March 5, 1993
Page 2

stocking of proper coatings for repair and manitenance for one manhole does not appear to be the best solution. On behalf of the IGLSD we are requesting a variance for the approval and use of one (1) HDPE manhole for the above referenced project.

If there are any questions please do not hesitate to call. Thank you for your attention to this matter.

Respectfully submitted,

HOWARD R. GREEN COMPANY


John L. Franklin II, P.E./L.S.

/dm
encls.

Howard R. Green Company
CONSULTING ENGINEERS



Lake

Big Stony Point East Bay

END PROJECT
STA. 221 + 21.50

15

LS 4-4

S P I R I T L A K E

Red Nose Point

SPIRIT

Orleans Beach

Orleans

28

Fish Hatchery

FORCEMAIN

STA. 72 + 00

GRAVITY LINE

BEGIN PROJECT
STA. 13 + 24.96

REGULATED GAME
AREA

EAST

OKOBI

File Name Clear Lake Sanitary District -STATE OF IOWA Senders Initials WAW

DEPARTMENT OF WATER, AIR, AND WASTE MANAGEMENT

HENRY A. WALLACE BUILDING

DES MOINES, IOWA 50319

CONSTRUCTION PERMIT

The Chairman, Board of Trustees
Clear Lake Sanitary District
Clear Lake, Iowa 50428

Permit No.: 85-66-S

File: Clear Lake Sanitary District - Sewage
Cerro Gordo County

Re: Sanitary Sewer Replacement

WAWM Project No.: S85-47

In accordance with the provisions of Sections 455B.173.9 and 455B.174.4, Code of Iowa, and Rule 900--64.2 or Rule 900--65.5(455B), or Rule 900--41.12(455B) of the Iowa Administrative Code, the Executive Director the Department of Water, Air and Waste Management does hereby issue a permit for the construction of:

264 feet of 15-inch sanitary sewer (V.C.P.) and appurtenances Sanitary Sewer Replacement, Clear Lake Sanitary District, Clear Lake, Iowa.

By issuance of this construction permit No. 85-66-S we are hereby granting a variance for use of Fiberglass Reinforced Plastic (FRP) manholes with reinforced concrete eccentric cone section, adjusting rings and cast iron manhole frame and cover, instead of reinforced concrete manhole, for this project. The manhole base shall be integral with walls or manhole walls shall be embedded a minimum of six (6) inches into concrete poured-in-place and adequately water proofed.

The construction of the project shall be initiated within one year of issuance of this permit or this permit is no longer valid. Within thirty days after completion of construction, the permit holder shall submit certification by a registered professional engineer that the project was completed in accordance with the approved project documents.

Pursuant to Section 455B.174.4, Code of Iowa, you have the right to appeal any condition of this permit by filing with the Executive Director of the Department of Water, Air and Waste Management a notice of appeal request for administrative hearing within thirty days of receipt of this permit.

Contact Akanad M. Koshy at 515/281-8960 with any questions or comments.

For the Department of Water, Air and Waste Management:

Stephen W. Ballou, Executive Director

By: Larry Hagg

PROGRAM OPERATIONS DIVISION

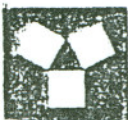
Date: February 14, 1986

cc: Yaggy Associates, Inc., Mason City, IA
WAWM Region 2

AMK:pla/WWPW043M12.01

Plan Distribution

2 Engineer; 1 WAWM File

**YAGGY ASSOCIATES, INC.**

CONSULTING ENGINEERS ■ PLANNERS ■ SURVEYORS

215 NORTH ADAMS, MASON CITY, IOWA 50401 ■ PHONE (515) 424-6344

January 2, 1985

State of Iowa Department of
Water, Air & Waste Management
Wallace Building 900 E. Grand
Des Moines, Iowa 50319

Attention: Koshy

Re: Clear Lake Sanitary District

Dear Sir:

We hereby request a variance on the manhole construction material to be used on the South Lake View Drive project. Fiberglass reinforced plastic manholes would be substituted for concrete.

The segment of sewer involved is at the end of a long force main. The wastewater in the force main often becomes septic and produces hydrogen sulfide gas. Concrete manholes have proven to be attacked by the gases in the sewer. Prevention of the gas production does not appear economically feasible at this time. To provide for long term serviceability of these manholes, a material not affected by the gases in question is desired. Therefore, FRP Manholes are requested as a variance to state standards.

If there are any questions, please contact us.

Sincerely,

YAGGY ASSOCIATES, INC.

John H. Wellner

JHW/pc

DEPARTMENT OF
WATER, AIR AND WASTE
MANAGEMENT

Check detention in force main during off-season usage. From flow measurements for the area served by the lift station for April 1992 it is noted that the ADW flow approximates 50 gpm

Force main - 14,922' of 8" D.I.P.

$$\text{Area 8" sewer} = 0.3491 \text{ ft}^2$$

Capacity of sewer line

$$Q = 0.3491 \times 14,922 = \underline{5,209.3 \text{ ft}^3} = \underline{38,965}$$

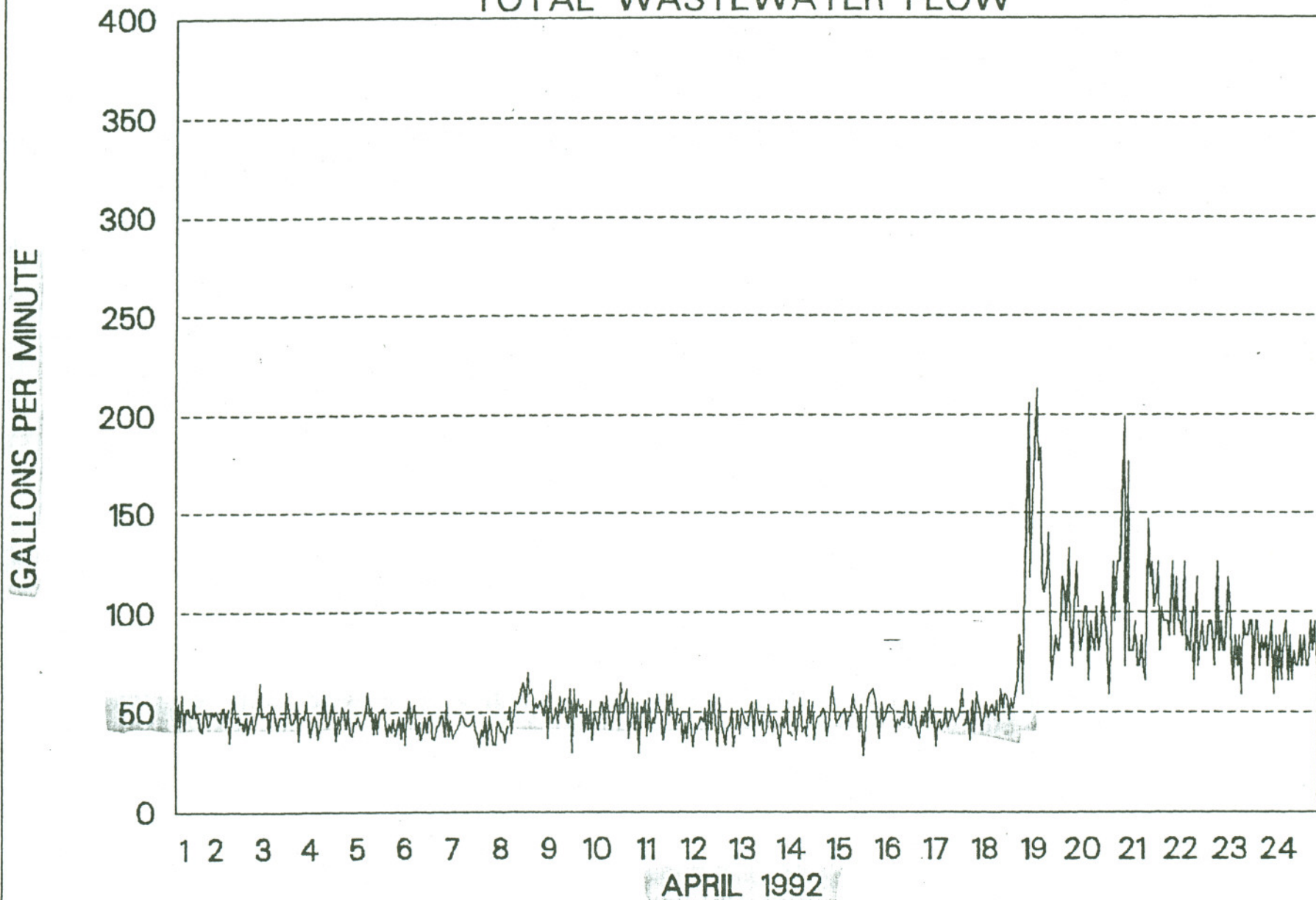
$$\text{ADW flow} = 50 \text{ gpm} = \underline{72,000 \text{ GPD}}$$

Detention time

$$\frac{38,965}{72,000} \times 24 \text{ hrs} \approx \underline{13 \text{ hrs.}}$$

JONES PASTURE LS 4-4

TOTAL WASTEWATER FLOW





Printed on
Recycled Paper

IOWA DEPARTMENT OF NATURAL RESOURCES
WASTEWATER PERMITS SECTION
CONSTRUCTION PERMIT APPLICATION

SCHEDULE E, Wastewater Pump Station

DATE PREPARED

PROJECT IDENTIFY

DNR USE

EAST SHORE BIG SPIRIT LAKE

PROJECT NO.

DATE REVISED

RELIEF SEWER
1993

PERMIT NO.

1.

Design Basis	Initial	Design Year ()
Residential Area, Acres	250	250
Population, Persons	1440	2520
PHDW Flow, MGD	.144	.252
Industrial Area, Acres	0	0
PHDW Flow, MGD	0	0
Other _____, Acres	0	0
PHDW Flow, MGD	0	0
Peak Hourly Infiltration, MGD	0	0
Peak Hourly Inflow, MGD	.168	.168
Total PHDW Flow, MGD	.144	.252
Total PHWW Flow, MGD	.312	.420

2. Provide pump information Changing pumps and motors only

Pump No.	Type	Opening (In)	HP	Capacity GPM	TDH (ft.)		Operating Level	
					Computed	Rated	On	Off
1	Centr.	4	25	350	110	110	1391.75	1388.50
2	Centr.	4	25	350	110	110	1391.75	1388.50
3								
4								
5								
Sump								

Are pumps specified as being capable of passing three inch diameter spheres? Yes ☒ No ☐

Can remaining pumps handle PHWW flow with largest pump out of service? Yes ☒ No ☐

3. ~~Net well effective volume _____ gallons. Retention time: Initial Flow _____ minutes.~~

~~Design Flow: _____ minutes.~~

4. ~~Is forced air ventilation provided? _____~~

~~Continuous: wet well _____ dry well _____ Intermittent: wet well _____ dry well _____
wet well _____ air changes/hour dry well _____ air changes/hour~~

~~Are spark-proof materials specified? Yes ☐ No ☐~~

5. ~~Force main: Is profile of force main provided? Yes ☒ No ☐~~

~~Size 8 In. Length 14,922 ft.~~

~~Pipe Material Ductile Iron Joint push-on~~

~~Minimum cover 6 ft. Minimum velocity 2.0 fps~~

~~Number of high points 2 Are air relief valves provided? Yes ☒ No ☐~~

~~Number of thrust blocks provided? 9 At location(s) Fittings~~

~~Is pressure test specified? Yes ☒ No ☐ Does installation conform to AWWA C600? Yes ☒ No ☐~~

~~If no, explain _____~~

6. ~~Are valves provided on the suction & discharge lines? Yes ☒ No ☐~~

~~Type: Discharge _____ Suction _____~~

7. ~~Is an alarm system provided? Yes ☐ No ☐ Type _____~~

~~Indicate where audio/visual warning signals will be located _____~~

8. ~~Method of pump control _____~~

9. ~~Are the pumps protected from clogging? Yes ☐ No ☐~~

~~Method of cleaning _____~~

~~Method of pump removal _____~~

~~Are lifting hooks/arms provided? _____~~

10. ~~Are permanent emergency piping bypass connections provided? _____ Is an emergency power supply available? _____ Describe station operation in an emergency (equipment, piping, bypass, etc.) _____~~

11. ~~Is the wastewater pump station located in a floodplain? Yes ☐ No ☐~~

~~Elevation of 100 year flood (MSL) _____ Elevation of 25 year flood (MSL) _____~~