

STATE OF IOWA
GOVERNOR KIM REYNOLDS ★ LT. GOVERNOR ADAM GREGG
DIRECTOR OF DEPARTMENT OF NATURAL RESOURCES CHUCK GIPP

June 2, 2017

Brad Mueller
City of Greenfield
202 S. 1st. Street
Greenfield, IA 50849

Re: Wastewater Treatment Improvements
City of Greenfield
DNR Project No. S2013-0215A
CWSRF No. CS1920822 01

Subject: Variance Request from 567 IAC 64.2(9a) and Design Standards Section 13.4.2 (Protection against Clogging)

Dear Brad:

After careful and thorough consideration, the Department has approved your May 15, 2017 request for a variance from Iowa Administrative Code Sub Rule 567 IAC 64.2(9a) and Chapter 13.4.2 of the Iowa Wastewater Facilities Design Standards. The project will omit the use of a required trash basket in the Southeast Pump Station.

Based on the documentation presented by your Engineer, it is the determination of this Department that satisfactory justification has been presented to warrant the granting of a variance for omitting installation of a trash basket in the Southeast Pump Station. The requested variance is deemed to be reasonable and necessary pursuant to the Iowa Code section 455B.181.

The facts presented for the project present unique circumstances and the variance is therefore justified to provide the narrowest exception possible to the provisions of the rule in accordance with Rule 561 IAC 10.5. Since the project planning and construction may last more than one year, the variance is considered to be of a permanent nature. The validity of this variance approval shall last for a period of one year from the date of the construction permit in accordance with Rule 561 IAC 10.5.

This variance is approved for the Southeast Pump Station only. We agree that retrofit of the existing pump station presents unique circumstances that make installation of a conventional trash basket difficult. Other factors included in our determination supporting approval of this variance were 10-States Standards does not require it and the existing pump station has operated for a significant time period (30 years) without any screening protection or incidences of pump clogging. However, since the prior successful operation of the existing pump station without screening protection does not necessarily guarantee that future pump clogging without a trash basket will not occur, the following condition will be included in the construction permit issued for the project:

If in the future any bypassing should occur at the Southeast Pump Station that is attributable to clogging of the pumps, the City shall take any necessary steps required to install screening protection for this pump station.

City of Greenfield
June 2, 2017
Page 2 of 2

Please feel free to call James Oppelt at 515-725-8428 or email me at james.oppelt@dnr.iowa.gov if you have any further questions.

Sincerely,



Jon Tack
Water Quality Bureau Chief

C: Steve Van Dyke, P.E. / Fox Engineering
DNR Field Office 1
DNR Sewage File 6-01-40-0-01
SRF File CS1920822 01
DNR Legal Services

VARIANCE REQUEST
Iowa Department of Natural Resources

<p>1. Date: 6/2/17</p> <p>2. Reviewer/Engr.: Jim Oppelt</p> <p>3. Date Received: 5/17/17</p> <p>4. Facility Name: Greenfield WWTF</p> <p>5. Facility Number: 6-01-40-0-01</p> <p>6. County Number: 1</p> <p>7. Program Area: CP (Wastewater Construction)</p> <p>8. Facility Type: C02 (Pumping)</p> <p>9. Subject Area: 344 (Pump Clogging Protection)</p> <p>10. Rule Reference: 567-64.2(9)a</p> <p>11. Design Std. Ref.: 13.4.2</p> <p>12. Consulting Engr.: FOX</p> <p>13. Variance Rule: 567-64.2(9)c</p>	<p>14a. Decision: Approved Date: <i>6/6/17</i> <i>JO</i></p> <p>14b. Expiration Date (if any): Permanent</p> <p>15. Appealed: _____ Date: _____</p>
<p>16. <u>Description of Variance Request:</u> The scope includes replacement of the pumping systems within the existing Southeast Pump Station wet well structure so that flow will be directed from this pump station to the new treatment plant. In designing these improvements, it was found that it is not feasible to add trash baskets to the existing structure. IA Standard 13.4.2 states that "All pumping stations handling raw wastewater shall have provisions for screening to protect the pumps from clogging or damage."</p>	
<p>17. <u>Applicant's/Consulting Engineer's Justification:</u> Not feasible due to lack of physical space in the structure. 10 state standards does not require screening for small pumping stations. New pumps will be designed for handling solids, especially rags and stringy materials.</p>	
<p>18. <u>Department's Justification:</u> Recommend variance approval (conditional):</p> <p>Pump passage of a 3-inch sphere is required for all pumping stations except grinder pumps and does not justify a variance for omission of a trash basket. Successful operation of the existing pump station without clogging for a long time period (30-years) without a trash basket is significant (removal of an existing functional trash basket that had been in use would pose a concern) but does not in and of itself guarantee that future clogging without a trash basket will not occur.</p> <p>Retrofit of the existing structure does appear to pose a unique situation that makes installation of a screening method difficult although not impossible if a new separate upstream screening manhole were installed. 10-States Standards and currently proposed revisions to the Iowa Design Standards (not final yet) recommend consideration of screening for all pump stations but only require screening for pump stations handling wastewater from 30-inch or larger diameter sewers. The influent sewer to this pumping station is two 12-inch diameter pipes. Greenfield's two other remote pump stations do not have trash baskets and have not experienced plugging problems.</p> <p>Approval is recommended with the following condition:</p> <p>If in the future any bypassing should occur at the Southeast Pump Station that is attributable to clogging of the pumps, the City shall take any necessary steps required to install screening protection for this pump station.</p>	
<p>19. <u>Precedents Used:</u> The following variance precedents requesting omission of a trash basket were found. These exclude prior variances granted for specialized chopper or grinder pumps:</p> <ul style="list-style-type: none"> -City of Asbury (approved 1/18/08) -Diamondhead Sanitary District (approved 2/26/08) -City of Fort Dodge (approved 12/9/02) -City of Halbur (denied 3/8/99) 	

-City of Nashua (approved 10/1/07)

20. Staff Reviewer:

Date:

6/2/17

21. Supervisor:

Date:

6/5/17

22. Authorized by:

Date:

6/6/17



May 15, 2017

Jim Oppelt
Iowa Department of Natural Resources - Wastewater Engineering Section
Wallace Building
502 East 9th Street
Des Moines, Iowa 50319-0034

RE: Trash Basket Variance Request
Wastewater Treatment Improvements
Greenfield, Iowa
FOX PN 2390-13A

Dear Jim:

On behalf of the City of Greenfield, Iowa, FOX Engineering hereby requests a variance from the Iowa Department of Natural Resources (IDNR) *Wastewater Facilities Design Standards* (Design Standards) for the Greenfield Wastewater Treatment Improvements Project. This variance request specifically pertains to IDNR Design Standard 13.4.2.

Background:

The Greenfield collection system currently includes three submersible pump stations, as summarized below:

- 4th Street Lift Station - a duplex submersible pump station constructed in 1987.
- North Lift Station - a duplex submersible pump station constructed in 1999.
- Southeast Lift Station - a duplex submersible pump station constructed in 1987.

None of the existing pump stations were constructed with trash baskets or any other means of screening the wastewater prior to pumping.

We are currently working on design of a new wastewater treatment plant that will be constructed near the Southeast Lift Station. The scope for this project includes replacement of the pumping systems within the existing Southeast Lift Station wet well structure so that flow will be directed from this pump station to the new treatment plant. In designing these improvements, we have found that it is not feasible to add trash baskets to the existing structure. The existing wet well is only 6 feet in diameter, so there is little room available. There are two 12" sewers that discharge into the existing wet well, so two trash baskets would be needed. One of the two sewers enters the structure only about 3.5 feet from the bottom of the wet well, and it is anticipated that a trash basket on this sewer would conflict with one of the pumps.

Design Standard:

The current version of IDNR Design Standard 13.4.2 requires trash baskets for all collection system pump stations.

Variance Justification:

On behalf of the City of Greenfield, we hereby request a variance from this Standard for this project based on the following:

1. None of the existing pump stations in Greenfield are equipped with trash baskets, and all three have performed adequately.
2. It is not feasible to add trash baskets to the existing Southeast Lift Station due to lack of physical space in the structure. Adding a new structure would be extremely cost prohibitive and undesirable.
3. 10 States Standards for Wastewater Facilities does not require screening for small pump stations, such as this. Section 42.32 only requires screening for combined sewers and for separated sewers that are 30" diameter or larger.
4. IDNR is planning to remove the trash basket requirement for small lift stations in an upcoming update of IDNR Design Standard Chapter 13.
5. Trash baskets require frequent maintenance and can result in sewer backups if not cleaned routinely. In our experience, a large proportion of trash baskets are not utilized at similar pump stations in Iowa. If installed at initial construction of the pump station, they are frequently removed by collection system staff after construction due to the maintenance issues, and cities have not experienced significant increases in pump plugging when the trash baskets are not used.
6. Greenfield staff members do not want trash baskets and will likely not use them if required.
7. The new pumps will be designed for handling solids, especially rags and stringy materials which are the cause of a majority of pump plugging issues.

We request that this variance apply for the life of the Southeast Lift Station.

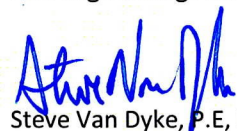
City Variance Request History:

We are not aware of any other variance requests made by or on the behalf of the City of Greenfield in the past 10 years.


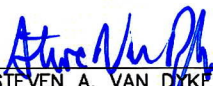
Summary:

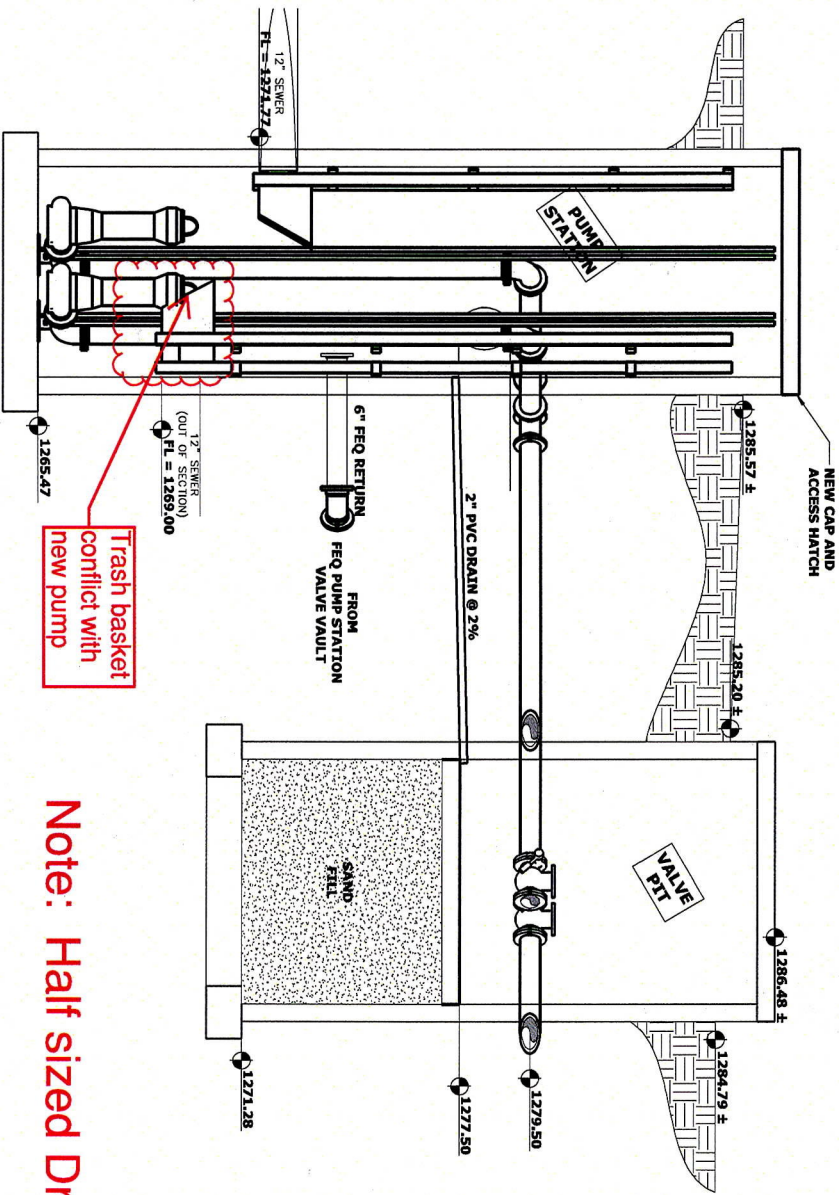
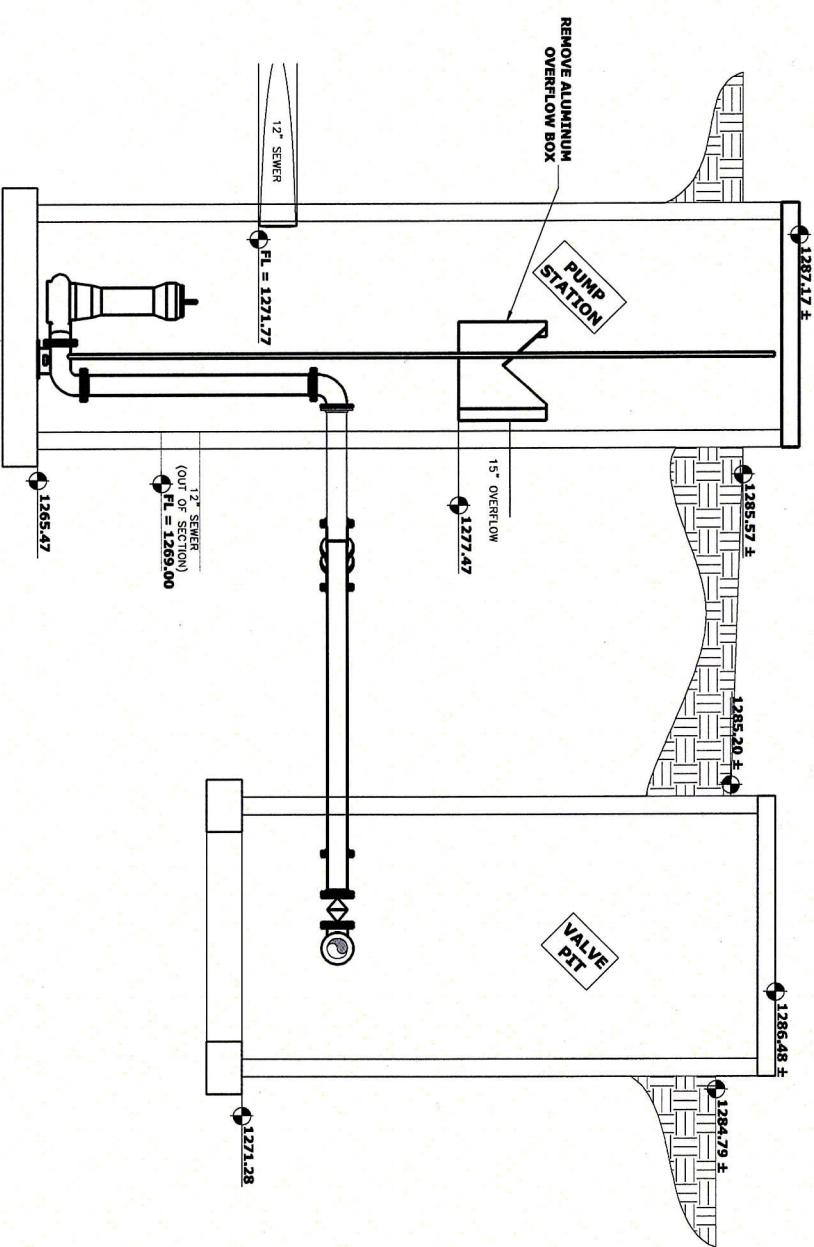
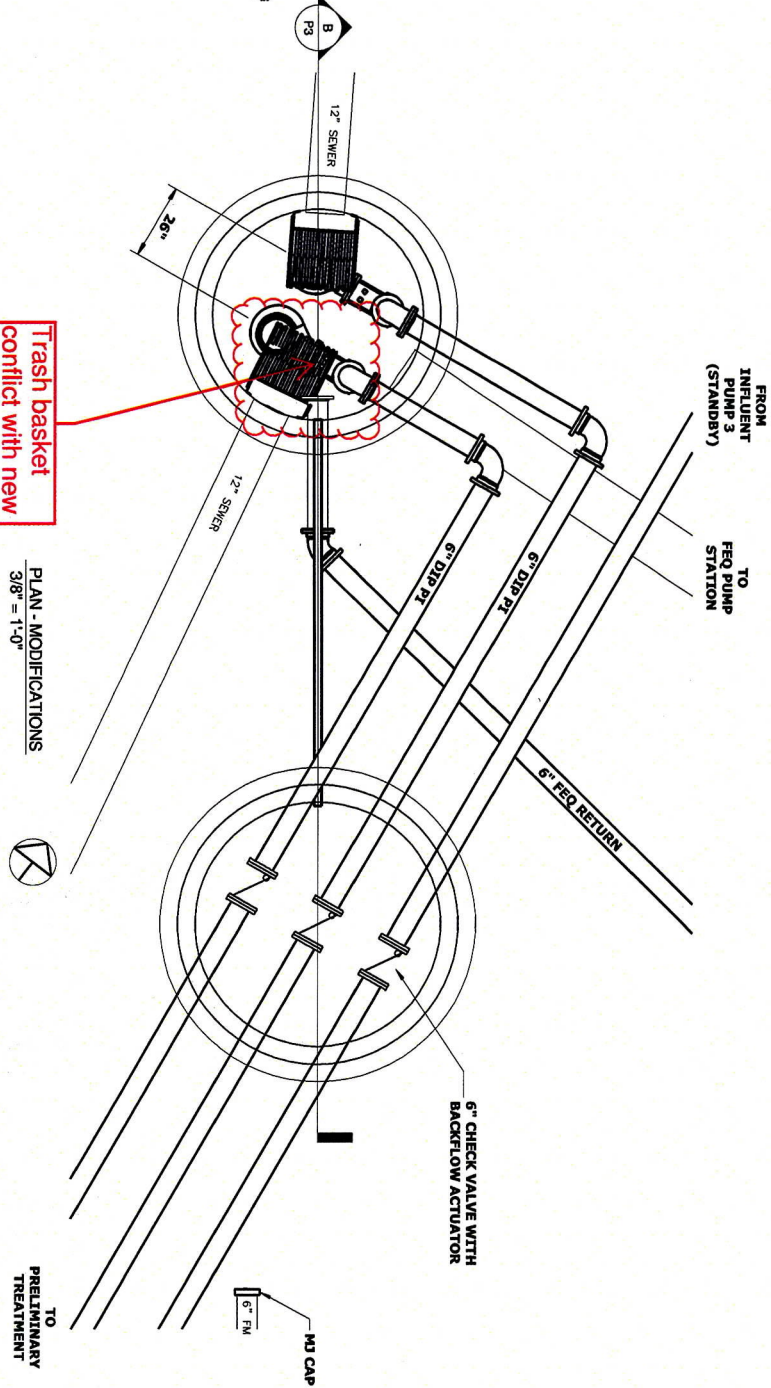
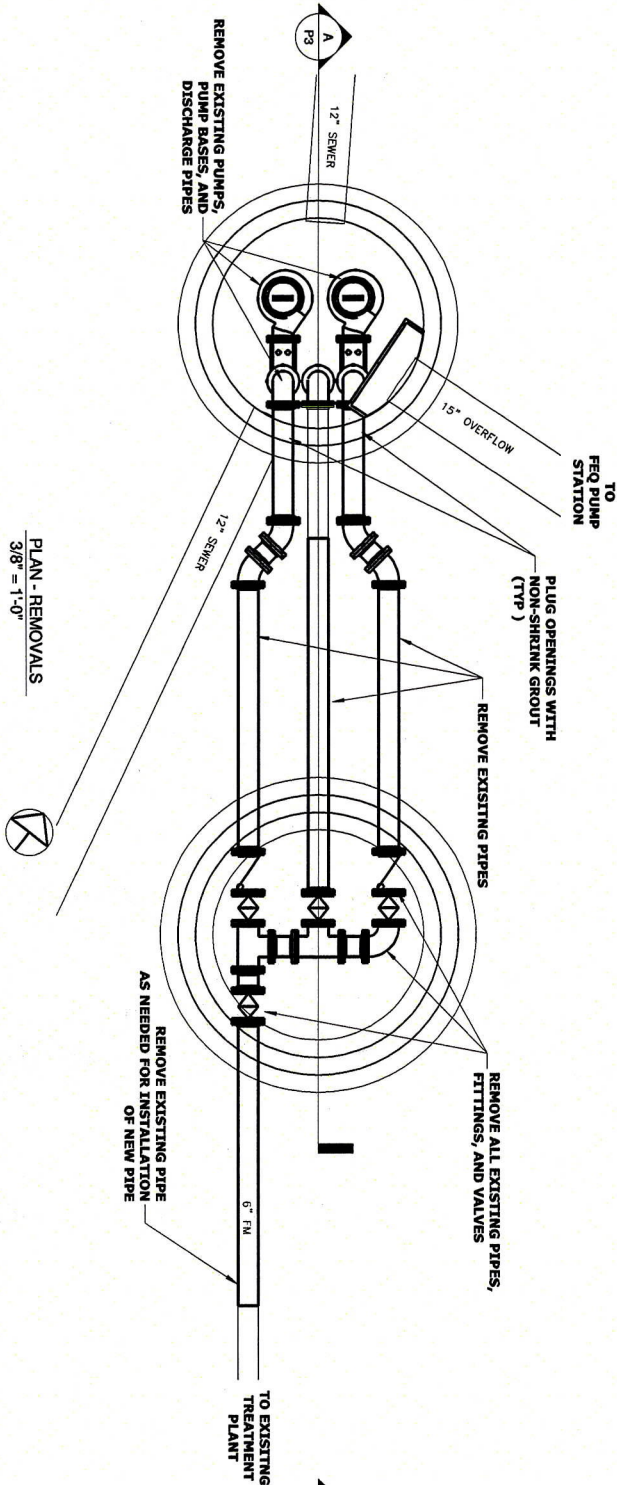
FOX Engineering believes that this requested variance is justified in that, per Design Standard 15.1.2, the variation will provide "...equivalent effectiveness while significantly reducing costs...". If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,
FOX Engineering Associates, Inc.


Steve Van Dyke, P.E., BCEE
Principal

CC: Brad Mueller,
Greenfield Superintendent

	<p>I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.</p>
	<p> <u>5/15/17</u> STEVEN A. VAN DYKE, P.E. DATE License number 16044</p> <p>My license renewal date is December 31, 2017.</p> <p>Pages or sheets covered by this seal: <u>ALL</u></p>



Note: Half sized Drawing

DATE	REVISION	BY	DATE
		DESIGNED: JSR	
		DRAWN: JTP	
		CHECKED:	
		LAST UPDATE: 2/16/17	

FOX Engineering Associates, Inc.
414 South 17th Street, Suite 107
Ames, Iowa 50010
Phone: (515)233-0000
Fax: (515)233-0103



INFLUENT PUMP STATION
REMOVALS AND MODIFICATIONS
WATERSHED TREATMENT IMPROVEMENTS
CITY OF GREENFIELD
GREENFIELD, IOWA

PROJECT NO.
2390-13A
SHEET
P3

VARIANCE REQUEST NOTIFICATION
Iowa Department of Natural Resources

All Fields are Required

1. Reviewer/Engr.: <u>Jim Oppelt</u>	7. Decision: <u>Approval</u>
2. Date Received: <u>5/17/17</u>	Date: <u>6/6/2017</u>
3. Facility Name: <u>Greenfield WWTF</u>	
4. Program Area: <u>CP (Wastewater Construction)</u>	
5. Subject Area: <u>344 (Pump Clogging Protection)</u>	
6. Rule Reference: <u>567-64.2(9)a Design Std Ref 13.4.2</u>	

8. Description of Variance Request: Summarize (250 characters)

Not feasible to add trash baskets due to space in wet well.

9. Department's Justification: Summarize (250 characters)

Conditional approval. If bypassing occurs steps shall be taken to install screening protection.

10. Type name:

Jon Tack

Supervisor/Bureau Chief/DA

6/6/2017

Date

*The original, approvals, letters, code and other supporting documentation is to be maintained by the program in accordance with the [Records Retention Schedule](#).

To Submit: Attach this form to an email and send it to Webmaster@dnr.iowa.gov with the subject line: Variance Submittal (542-0541)