



STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR
KIM REYNOLDS, LT. GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
CHUCK GIPP, DIRECTOR

December 1, 2016

City of Postville
Attn: Chris Hackman
P.O. Box 242
Postville, IA 52162-0242

RE: Wastewater Treatment Facility Improvements
City of Postville
DNR Project No. S2004-0442A

Subject: Variance Request from 567 IAC 64.2(9)a and Design Standards Section 17.3.4.3.b

Dear Mr. Hackman:

After careful and thorough consideration, the Department has approved your October 17, 2016 request for a variance from Iowa Administrative Code Subrule 567 IAC 64.2(9)a and Section 17.3.4.3.b of the Iowa Wastewater Facilities Design Standards, which requires a minimum of 1.0 horsepower per 1,000 ft³ of tank volume for mechanical mixing in sludge holding tanks.

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 use of mixing equipment providing 0.33 horsepower per 1,000 ft³. 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 decision is based on our review of justification presented to support the request. Our concurrence with the request is based on the Department's finding that the resulting project will provide substantially equivalent effectiveness as would be provided by technical compliance with the design standard on this issue.

Please contact Larry Bryant at 515-281-6759 or larry.bryant@dnr.iowa.gov if you have any questions.

Sincerely,



Jon Tack
Water Quality Bureau Chief

cc: Forrest Aldrich/Veenstra & Kimm, West Des Moines
DNR Sewage File 6-37-50-0-01

VARIANCE REQUEST
Iowa Department of Natural Resources

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. Date: 12/1/16</p> <p>2. Reviewer/Engr.: Larry Bryant</p> <p>3. Date Received: 10/19/16</p> <p>4. Facility Name: City of Postville WWTP</p> <p>5. Facility Number: 375001</p> <p>6. County Number: 03 (Allamakee)</p> <p>7. Program Area: CP (Wastewater Construction)</p> <p>8. Facility Type: C09 (Sludge Handling)
366 (Sludge Holding Tank -</p> <p>9. Subject Area: Aeration & Mixing)</p> <p>10. Rule Reference: 567-64.2(9)a
17.3.4.3.b (Mechanical Aeration</p> <p>11. Design Std. Ref.: Systems)</p> <p>12. Consulting Engr.: Veenstra & Kimm/Forrest Aldrich</p> <p>13. Variance Rule: 567-64.2(9)c</p> | <p>14a. Decision: <i>Approved</i>
Date: <i>12/2/16</i> <i>JCF</i>
Expiration Date</p> <p>14b. (if any): Permanent</p> <p>15. Appealed:
Date:</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|

16. Description of Variance Request:

The City of Postville is requesting a variance to convert an existing equalization tank to uncovered sludge storage utilizing mechanical mixing equipment with 0.33 horsepower per 1,000 cubic feet of tank volume. Design Standard 17.3.4.3.b requires a minimum of 1.0 horsepower per 1,000 cubic feet of tank volume.

17. Applicant's/Consulting Engineer's Justification:

- The proposed mixing system has been designed on a rational basis to maintain a mixing velocity in the basin so a uniform solids concentration can be maintained prior to and during withdrawal and application.
- A number of communities in Iowa have received similar variances from this rule and are operating very well.
- The treatment facility is in an isolated location and odors should not be an issue.
- The stored biosolids will have been previously treated in an aerobic digester and will be very stable.

18. Department's Justification:

Recommended approval:

(a) Substantially equivalent effectiveness. As stated in the variance request, a number of variances have previously been granted for less mixing energy than that required by the standard with no reported ill effects. The sludge storage tank conversion is part of an overall treatment plant improvements project which also includes rehabilitation of two existing aerobic digesters that provide a combined 190,000 gallons of digestion capacity (approximately 100 days batch or 50 days MCRT of digestion). Therefore, the sludge fed to the storage tank will be well stabilized. The sludge storage tank will add approximately 260 days of storage (130 days MCRT) to that already provided by the digesters.

(b) Unique circumstances. The existing equalization tank that is being repurposed for sludge storage presents a unique opportunity for the City to incorporate a relatively large amount of sludge storage at minimal expense. The existing tank will provide nearly 300 days of storage capacity for digested sludge. Greater expenditure for mixing equipment larger than necessary would partially offset the savings opportunity presented by repurposing the existing equalization tank. A new earthen basin is also being constructed that will increase the plant equalization capacity.

(c) Conditions and circumstances which were considered in the adoption of the rule or standard are not applicable for the project in question. Including those for mixing/aeration in sludge storage lagoons, over twenty variances have been previously approved for reduced or omitted aeration and/or mixing in liquid sludge storage facilities. The design standards' requirements for mixing/aeration of sludge holding facilities mirror those required for aerobic digestion and are intended to prevent nuisance odors and ensure a uniform sludge mixture for withdrawal. However, at the time the design standard was developed it does not appear that the nature of the sludge itself was considered extensively. For example, Ontario's 2008 design guidance recommends a minimum of only 0.1 hp per 1,000 cubic feet for mechanical aeration of aerobically digested sludge in storage lagoons. In any event, it appears that lesser aeration/mixing intensities than those required by the Iowa design standards have been successfully applied at numerous facilities within the State, which calls into question the universal applicability of the design standards on this issue.

19. Precedents Used:

Facility	Preceding Digestion	Holding Tank/Lagoon	Mixng/Aeration Provided	Approval Date
Belmond	Anaerobic	Tank - covered	None	9/1/95
Charles City	Aerobic	Tank - uncovered	0.48 hp/1,000 cu. ft.	1/2/02
Cherokee	Aerobic	Tank - uncovered	0.7 hp/1,000 cu. ft.	7/19/99
CLSD	Aerobic	Tank - covered	None	6/3/96
Grinnell	Anaerobic	Tank - uncovered	1/3 hp/1,000 cu. ft.	~1994
Carroll	Anaerobic	Lagoon - uncovered	None	5/2/84
Jefferson	Aerobic	Tank - uncovered	1/2 hp/1,000 cu. ft.	4/16/03
Mt. Pleasant	Aerobic	Tank - uncovered	0.27 hp/1,000 cu. ft.	8/9/99
Nora Springs	Aerobic	Tank - uncovered	0.23 hp/1,000 cu. ft. + 10 cfm/1,000 cu. ft.	4/2/99
Rockwell City	Anaerobic	Tank - covered	none	10/3/98
Iowa Falls	Anaerobic	Tank - uncovered	0.66 hp/1,000 cu. ft.	11/1/95
Marshalltown	Anaerobic	Tank - uncovered	none	10/95
Ames	Anaerobic	Tank - uncovered	0.35 hp/1,000 cu. ft.	7/7/14
Ames	Anaerobic	Lagoon - uncovered	none	3/9/87
Evansdale	Aerobic	Lagoon - uncovered	none	4/12/02
Garner	Aerobic	Lagoon - uncovered	none	10/28/13
LeMars	Anaerobic	Lagoon - uncovered	none	11/3/03
Maquoketa	Anaerobic	Lagoon - uncovered	none	10/27/95
Riverside	Aerobic	Lagoon - uncovered	none	1/25/06
Sully	Aerobic	Lagoon - uncovered	? existing mixers unspec'd.	4/10/96
Walford	Aerobic	Lagoon - uncovered	1.24 cfm/1,000 cu. ft.	6/25/03

Notes: The Ames sludge storage tank was not constructed. Charles City, Cherokee, CLSD, Jefferson, and Mt. Pleasant are the operational facilities that bear the most similarity to this proposed variance in that they are uncovered tanks for storage of aerobically digested sludge using mechanical aeration/mixing only with intensities less than 1 hp/1,000 cu. ft.

20. Staff Reviewer:

[Signature]

Date: 12/1/16

21. Supervisor:

[Signature]

Date: 12/2/16

22. Authorized by:

[Signature]

Date: 12/2/16

2004-0442A



VEENSTRA & KIMM, INC.

3000 Westown Parkway • West Des Moines, Iowa 50266-1320

515-225-8000 • 515-225-7848 (FAX) • 800-241-8000 (WATS)

October 12, 2016

Larry Bryant
Wastewater Engineering Section
Iowa Department of Natural Resources
502 East 9th Street
Des Moines, Iowa 50319-0034

POSTVILLE, IOWA
WASTEWATER TREATMENT FACILITY IMPROVEMENTS
PETITION FOR VARIANCE

Enclosed is a copy of the Petition for Variance for the biosolids storage tank for the City of Postville.

The City of Postville requests use of 0.33 horsepower per 1,000 ft³ in its biosolids storage tank, rather than the recommended 1.0 horsepower per 1,000 ft³ due to an analysis of the conditions in the tank proposed for in the City of Postville and success in similar cases in other projects throughout Iowa.

If you have any questions or comments, please contact us at 225-8000.

VEENSTRA & KIMM, INC.

A handwritten signature in blue ink that reads "Forrest S. Aldrich".

Forrest S. Aldrich

FSA:dml
32437

Enclosure

cc: Chris Hackman, City of Postville w/enclosure
Darcy Radloff, City of Postville w/enclosure

A rectangular stamp with the word "RECEIVED" in bold, uppercase letters. To the right of "RECEIVED" is the date "OCT 19 2016". There is a handwritten mark to the left of the stamp.



VEENSTRA & KIMM, INC.

3000 Westown Parkway • West Des Moines, Iowa 50266-1320

515-225-8000 • 515-225-7848 (FAX) • 800-241-8000 (WATS)

October 17, 2016

Larry Bryant
Wastewater Engineering Section
Iowa Department of Natural Resources
502 East 9th Street
Des Moines, Iowa 50319-0034

POSTVILLE, IOWA
WASTEWATER TREATMENT FACILITY IMPROVEMENTS
PETITION FOR VARIANCE

Veenstra & Kimm, Inc. submitted the Petition for Variance for the biosolids storage tank for the City of Postville on October 12, 2016 to your office. The City of Postville requests use of 0.33 horsepower per 1,000 ft³ in its biosolids storage tank, rather than the recommended 1.0 horsepower per 1,000 ft³ due to an analysis of the conditions in the tank proposed for in the City of Postville and success in similar cases in other projects throughout Iowa.

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.



Signed:

Date:

10/17/2016

Forrest S. Aldrich, P.E.
Iowa License No. 12248
My license renewal date is December 31, 2017

Pages or Sheets Covered by this Seal:

Entire Petition for Variance

13286 OCT18'16 PM 3:01

PETITION FOR VARIANCE

Iowa Administrative Code 561-10.9

10.9(1) – Name of Petitioner: City of Postville

10.9(1) – Address & Telephone Number of Petitioner:

Address: City of Postville **Phone Number:** (563) 864-7454
P.O. Box 242
147 N. Lawler Street
Postville, IA 52162-0242

10.9(1) – Case Number of Related Contested Case: Not Applicable

10.9(2) – Description/Citation of Specific Rule:

17 Sludge Handling & Disposal
 17.3 Sludge Stabilization and Holding
 17.3.4 Sludge Holding Tanks
 17.3.4.3 Mixing and Air Requirements
 17.3.4.3b Mechanical Aeration Systems

If mechanical aerators are utilized, a minimum of 1.0 horsepower per 1000 ft³ shall be provided. Use of equipment is discouraged when freezing temperatures are normally expected.

10.9(3) – Specific Variance Requested: Request variance to allow 0.33 horsepower per 1,000 ft³.

10.9(4) – Relevant Facts & Justification: The proposed mixing system has been designed on a rational basis to maintain a mixing velocity in the basin so a uniform solids concentration can be maintained prior to and during withdrawal and application. Additionally, a number of communities in Iowa have received similar variances from this rule and are operating very well. The treatment facility is in an isolated location and odors should not be an issue. The stored biosolids will have been previously treated in an aerobic digester and will be very stable.

10.9(5) – History of Prior Contacts: Construction Permit application submitted March 22, 2016.

10.9(6) – Information Known to Petitioner Regarding IDNR Treatment of Similar Cases:

City of Grinnell. Approved 9/94. 0.66 HP/1,000 ft³
City of Cherokee. Approved 7/99. 0.70 HP/1,000 ft³
City of Iowa Falls. Approved 10/95. 0.66 HP/1,000 ft³
City of Mount Pleasant. Approved 8/99. 0.27 HP/1,000 ft³
City of Charles City. Approved 1/03. 0.48 HP/1,000 ft³
City of Marshalltown. Approved 10/89. 0.33 HP/1,000 ft³
City of Ames. Approved 7/1/2014, 0.35 HP/1,000 ft³

10.9(7) – Name, Address, and Telephone Number of Public Agency, Political Subdivision of the State or Federal Government which also Regulates the Activity in Question, or Might be Affected by the Granting of a Waiver or Variance: None

10.9(8) – Name, Address, and Telephone Number of any Person or Entity that Would be Adversely Affected by the Granting of the Petition: None

10.9(9) – Name, Address, and Telephone Number of any Person with Knowledge of Relevant Facts Relating to the Proposed Waiver or Variance:

Name: Veenstra & Kimm, Inc. – Consultant
Contact Person: Forrest Aldrich, P.E.

Address: 3000 Westown Parkway
West Des Moines, Iowa 50266

Telephone Number: 515-225-8000

Name: City of Postville
Contact Person: Chris Hackman

Address: P.O. Box 242, 147 N. Lawler Street, Postville, IA 52162-0242

Telephone Number: (563) 864-7454

10.9(10) – Signed Releases Authorizing Persons with Factual Knowledge of Relevant Facts Concerning the Variance:


IOWA ADMINISTRATIVE CODE 561 – 10.11

10.11(17a, 455A) – Notice by Certified Mail:

This Petition is duly submitted this 12th day of October, 2016 by the City of Postville as Petitioner. The Petitioner attests to the accuracy of the facts provided in this Petition and the statements of reasons that the Petitioner believes justify this variance request.



City of Postville



Project Engineer
Veenstra & Kimm, Inc.