



STATE OF IOWA

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

DEPARTMENT OF NATURAL RESOURCES
CHUCK GIPP, DIRECTOR

July 1, 2014

City of Ames
Attn: John Dunn
300 E. 5th St., Bldg. 1
Ames, IA 50010

RE: Ames WPCF Biosolids Storage and Handling Improvements
City of Ames
DNR Project No. S2013-0326

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

Dear Mr. Dunn:

After careful and thorough consideration, the Department has approved your June 19, 2014 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.

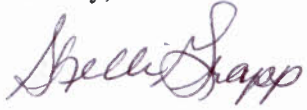
Based on the documentation presented by your Engineer, it is the determination of this Department that satisfactory justification has been presented to warrant the granting of a variance for use of mixing equipment providing 0.35 horsepower per 1,000 ft³. The requested variance is deemed to be reasonable 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,



Shelli Grapp
Water Quality Bureau Chief

cc: Forrest Aldrich/Veenstra & Kimm, West Des Moines
DNR FO # 5
DNR Sewage File 6-85-03-0-01

VARIANCE REQUEST
Iowa Department of Natural Resources

1. Date: 7/1/14 2. Reviewer/Engr.: Larry Bryant 3. Date Received: 6/24/14 4. Facility Name: Ames WPCF 5. Facility Number: 8503001 6. County Number: 85 (Story) 7. Program Area: CP (Wastewater Construction) 8. Facility Type: C09 (Sludge Handling) 9. Subject Area: 366 (Sludge Holding Tank - 10. Rule Reference: Aeration & Mixing) 11. Design Std. Ref.: 567-64.2(9)a 12. Consulting Engr.: 17.3.4.3.b (Mechanical Aeration 13. Variance Rule: Systems) 12. Consulting Engr.: Veenstra & Kimm/Forrest Aldrich 13. Variance Rule: 567-64.2(9)c	14a. Decision: <i>Approved</i> Date: <i>7-7-14</i> Expiration Date 14b. (if any): Permanent 15. Appealed: Date:
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16. Description of Variance Request:

The City of Ames is requesting a variance to construct a new uncovered sludge holding tank utilizing mechanical mixing equipment with 0.35 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 both primary and secondary anaerobic digesters 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 City of Ames currently uses a sludge storage lagoon which is not covered and not routinely mixed or aerated (a variance was issued in 1987 for omission of mixing/aeration equipment in the lagoon). The quality of digested sludge sent to the proposed storage tank will be the same as that which has historically been received by the existing storage lagoon.

(b) Unique circumstances. The treatment site is isolated, with the nearest non-city owned structures located approximately 1/2 mile away.

(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 both prevent nuisance odors and ensure a uniform sludge mixture for withdrawal. In this case the facility is remote and odors from the existing sludge storage lagoon (not routinely mixed) have not proven to be an issue. The design standards do not have specific mixing energy requirements for anaerobic digesters. Draft tube mixers currently proposed to replace existing mixing equipment in the City's primary digesters will provide approximately 0.26 hp/1,000 cu. ft. 10-States Standards (2004 Edition) states that "The design shall provide for odor control in sludge storage tanks and sludge lagoons including aeration, covering, or other appropriate means" but does not specify minimum aeration or mixing intensity requirements, nor does it preclude omission of mixing/aeration for storage of a well stabilized sludge. 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 standard 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	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

Note: The Grinnell, Carroll, Iowa Falls, Marshalltown, Ames (storage lagoon), LeMars and Maquoketa precedents bear the most similarity to the proposed Ames variance in that they are uncovered systems for storage of anaerobically digested sludge using mixing intensities less than that required by the design standards.

20. Staff Reviewer:

Date: 7/1/14

21. Supervisor:

Date: 7/2/14

22. Authorized by:

Date: 7-7-14

**VEENSTRA & KIMM, INC.**

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

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

June 19, 2014

Larry Bryant
Iowa DNR Headquarters
Wallace State Office Building
502 East 9th Street, 4th Floor
Des Moines, IA 50319

AMES, IOWA
WPCF BIOSOLIDS STORAGE AND HANDLING IMPROVEMENTS
PETITION FOR VARIANCE

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

The City of Ames requests use of 0.35 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 Ames and success in similar cases in other projects throughout Iowa.

If you have any questions or comments, please contact us at 515-225-8000.

VEENSTRA & KIMM, INC.

Forrest Aldrich

FSA:hta
11140
Enclosure
cc: Matt Hawes, City of Ames w/ enclosure

RECEIVED JUN 24 2014

PETITION FOR VARIANCE

Iowa Administrative Code 561-10.9

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

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

Address: City of Ames WPCD
300 E. 5th St., Bldg. 1
Ames, Iowa 50010

Phone Number: 515-239-5150

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 0.35 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 both primary and secondary anaerobic digesters and will be very stable.

10.9(5) – History of Prior Contacts: Construction Permit application submitted May 27, 2014.

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

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 Ames WPCD
Contact Person: John Dunn, P.E.

Address: 300 E. 5th St., Bldg. 1
Ames, Iowa 50010


Telephone Number: 515-239-5150

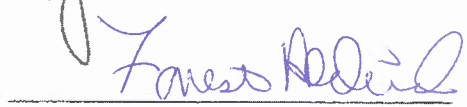
10.9(10) – Signed Releases Authorizing Persons with Factual Knowledge of Relevant Facts Concerning the Variance:

IOWA ADMINISTRATIVE CODE 561 – 10.11

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

This Petition is duly submitted this 19 day of June, 2014 by the City of Ames 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 Ames


Project Engineer
Veenstra & Kimm, Inc.