

# VARIANCE REQUEST

Iowa Department of Natural Resources

1. Date: May 15, 2001  
 2. Review Engineer: Larry Bryant  
 3. Date Received: April 26, 2001  
 4. Facility Name: Dyersville WWTP  
 5. County Number: 31 (Dubuque)  
 6. Program Area: CP (Wastewater Construction)  
 7. Facility Type: C04 (Physical Treatment)  
 8. Subject Area: 329 (bar racks and screens)  
 9. Rule Reference: 567-64.2(9)a  
 10. Design Stds Ref: 15.2.4.2.1 (bar spacing)  
 11. Consulting Engr: IIW Engineers/Dubuque, IA  
 12. Variance Rule: 567-64.2(9)c

13. Decision: *Approved*  
 Date: 5/22

14. Appeal:  
 Date:

## 15. Description of Variance Request:

Install a mechanical screen with 1/4" openings as opposed to the minimum size of 5/8" allowed by IA standards.

## 16. Consulting Engineer's Justifications

- The facility (currently pending construction) will not include primary clarification. A smaller screen size will result in improved effectiveness by increasing the solids capture; will result in improved treatment in aeration and final clarification; will reduce sludge handling and disposal problems; and will lower operation and maintenance costs.
- The latest edition of 10-States does not give a minimum size for mechanical screens.

## 17. Department's Justifications

### Recommend variance approval:

The proposed sizing (0.25") / configuration (drum-type screen) has been used successfully at several other locations in Iowa. A manually cleaned removable bar screen that precedes the mechanical screen will be provided. A trash basket in the influent pump station wet well is also being provided that precedes both the manual and mechanical screens.

## 18. Precedents Used

Clear Lake S.D. - Approved 7/10/96  
 Osage - Approved 12/18/98  
 Cherokee - Approved 1/12/99

19. Staff Reviewer:

Date: 5/15/01

20. Supervisor:

Date: 5/15/01

21. Authorized by:

Date: 5/22/01

April 24, 2001

Larry Bryant, Project Manager  
Wastewater Section, Dept. of Natural Resources  
502 East Ninth Street  
Des Moines, Iowa 50319-0034

Re: City of Dyersville, Iowa  
Wastewater Treatment Facilities  
Request for Variances  
IIW Project No: 98023-02A

Dear Larry:

On behalf of the City of Dyersville, we are requesting variances for the proposed wastewater screening facilities. One variance is needed for the screen size. A second variance is needed for elimination of a screen bypass channel. Hopefully you will find the justifications in this letter acceptable.

#### SCREEN SIZE

Item 15.2.4.2.1 of the Iowa Wastewater Facilities Design Standards indicates that the clear openings for mechanically cleaned screens may be as small as 5/8 of an inch. We are requesting a variance to allow a screen with 1/4 inch openings.

The proposed Dyersville Wastewater Treatment Facilities do not include primary clarification. Therefore, screening is a critical process. The 1/4 inch screen provides improved effectiveness by increasing the solids capture. The removal of nuisance solids will provide for improved treatment in aeration and final clarification and lower operation and maintenance costs. The increased removal efficiency of nuisance solids will be especially beneficial in reducing sludge handling and disposal problems.

The proposed screen is to be by Lakeside or Hycor and has been specially designed to handle 1/4 inch solids. The unit includes brushes to clean the 1/4 inch strainer openings. The collected solids are conveyed out of the channel and fecal matter is macerated. The screenings are washed to remove and return organics to the wastewater stream. After washing, the screenings are pressed to remove water and compact the material. Finally the solids are discharged into a plastic bag for easier handling by the operator. This single piece of equipment has a lower cost than separate equipment that might be needed for screenings, transport and washing/compaction.

We reviewed the 1997 version of "Recommended Standards for Wastewater Facilities". We noted that the Ten States Standards indicate that clear openings for mechanically cleaned screens may be smaller than one inch. As you are aware, the Iowa Design Standards are based on the Ten States Standards. The 1978 version had the 5/8 inch restriction.

The DNR has granted variances for smaller screen openings for past IIW projects and for projects by other engineers. As the engineer for Monona and Fayette we requested variances for the use of 6 millimeter screens. The DNR approved these screens. We are advised that the DNR granted variances for 1/4 inch screens in Altoona, Clear Lake, Durant, North Liberty, West Liberty, Mt. Vernon and Nora Springs.



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