✓ 9-19-06

SITE SEPARATION

VARIANCE REQUEST

Iowa Department of Natural Resources

1. Date:	April 16, 2003	13. **Decision:**	Approved
2. Review Engineer:	Larry Bryant	Date:	4/17/03
3. Date Received:	April 7, 2003		
4. Facility Name:	City of Jefferson	14. **Appeal:**	
5. County Number:	37 (Greene)	Date:	
6. Program Area:	CP (Wastewater Construction)		
7. Facility Type :	C04 (Physical Treatment)		
8. Subject Area :	308 (Site Separation)		
9. Rule Reference:	567-64.2(3)f; 567-64.2(9)a		
10. Design Stds Ref:	11.2.9.4; 14.2.3.f (Separation Requirements)		
11. Consulting Engr:	FOX Engineering Associates, Inc.		
12. Variance Rule:	567-64.2(9)c		

15. Description of Variance Request:

IAC 567 64.2(3)"f" and the Iowa Wastewater Facilities Design Standards Section 14.2.3.f require a minimum separation distance from treatment water surfaces of 25 feet for property lines and right-of-way, or that a new separation distance is no less than 90% of existing.

The City of Jefferson is in the process of designing plant improvements including a new final clarifier. The existing wastewater treatment plant is located on the southwest edge of the City (although well within the corporate limits) in close proximity to several residential neighborhoods to the northeast, east and southeast. A City street (Russell Street) is located immediately north of the plant site. The receiving stream (a tributary to the North Raccoon River) bounds the plant site to the south. In addition, the mapped flood hazard area for the receiving stream bounds the plant site to both the south and west. The mapped flood hazard area extends onto the southern portion of the existing plant site, although reportedly the site did not flood during the prolonged wet weather period of 1993. The proposed new treatment units (final clarifier and aerobic digesters) are located on the northern portion of the site outside of the mapped flood hazard area and the IDNR Flood Plains Management Section has determined that a Floodplain Development Permit is not required for the proposed project.

The City has obtained all required waivers (nine total) to meet IAC 567 64.2(3)"a" for residential separation distances that are not greater than 90% of existing. However, the City is requesting a variance from the 25-foot separation requirement from property lines and right-of-way. The proposed perimeter of the new final clarifier is approximately 5 feet from the Russell Street right-of-way line and approximately 23 feet from the edge of the street itself.

16. Consulting Engineer's Justifications

4/7/03 Variance Request Letter - "The reason for this request is that there is no other feasible location for this clarifier. The City Park located across sites atop a 20-30' embankment, reducing the impact of the reduced site distance. Given this fact and the general location the plant is located in, we feel that the impact of approving this request will be negligible."

11/4/02 email correspondence:

- This is a city street and right-of-way
- The City would waive municipal setback requirements for the project
- Any utilities located in the right-of-way will be protected or replaced
- Provisions for traffic safety will be included in the specifications
- The area will be fenced (6' high chain link with 3 strands of barbed wire along the top)
- The clarifier will be covered (aluminum dome)

9/6/02 Preliminary Design Memo – "Due to site limitations, it will be necessary to locate the new clarifier approximately 5 – 10 feet from the Russell Street right-of-way line. It is anticipated that the IDNR will grant a variance for the reduced site separation distance, given that this is the only practical location of the new clarifier. In addition, the existing north clarifier infringes upon the 25' site distance, as it is located only about 15' from the right-of-way line."

17. Department's Justifications

Recommend variance approval:
Approval of the variance is recommended for the following reasons:

1. I agree with the assessment that there is no other practical location available for the new clarifier. Space is available at the northeast and southeast corners of the existing site. However, the two existing final clarifiers are located on the west side of the site and flow to the plant is by gravity. Locating the new clarifier a significant distance from the existing units would increase the operational complexity of the plant and may not be hydraulically feasible. Also, the southeast corner is in the mapped flood hazard area and placement of the new clarifier on the east side of the site will require many more site separation waivers from residences. Space is also available to the west, but it is at a significantly lower elevation and within the mapped flood hazard area.

2. The street is on the edge of town and becomes a gravel road just west of the plant site. The street is not subject to large traffic volumes. The street right-of-way widens at the proposed clarifier location due to the curve in the road. As stated by the engineer, traffic safety provisions during construction are included in the project specifications and any disturbed utilities will be relocated or replaced.

3. The area will be fenced and the new clarifier will be covered. No increase in nuisance odors will result from the reduced separation distance and access to the unit will be restricted.

18. Precedents Used

None. A few variances have been requested for residential and well separation over the years, but no variance requests for right-of-way/property line separation were found.

19. Staff Reviewer: Kay Bryant Date: 4/14/03

20. Supervisor: Date: 4/16/03

21. Authorized by: J Riessen Date: 4/17/03

FOX engineering

April 7, 2003

Larry Bryant, Project Manager
IDNR Wastewater Section
Wallace State Office Building
Des Moines, Iowa 50319

Re: Jefferson, Iowa
Wastewater Treatment Improvements
Request for Variances
FOX P.N. 2486-01A.400

Dear Mr. Bryant:

We hereby request the following variances for the subject project:

1. Site separation distance: Section 14.2.3.f. of the IDNR Design Standards requires a separation distance of 25 feet of for wastewater facilities from property lines and right-of-way. We request being allowed to locate the new clarifier, Final Clarifier 3, approximately 5 feet from the Russell Street right-of-way line. The reason for this request is that there is no other feasible location for this clarifier. The City Park located across sites atop a 20-30' embankment, reducing the impact of the reduced site distance. Given this fact and the general location that the plant is located in, we feel that the impact of approving this request will be negligible.
2. Bar screen opening size: Section 15.2.4.2.1 of the IDNR Design Standards limits clear openings to 5/8 inch minimum. We request being allowed to utilize 1/4 inch openings, as currently specified. The reason for this request is that this facility does not include primary settling, so we feel it is beneficial to utilize the smaller opening size to screen out a larger proportion of the incoming solids. The collected screenings will be washed, compacted and bagged automatically by the screenings washings press, which will help reduce problems with odors and flies normally associated with screens with finer opening sizes. In addition, the 1/4 inch opening size has been utilized at numerous other wastewater treatment plants in Iowa with no significant problems.
3. Sludge storage tank aeration/mixing: Section 17.3.4.3 of the IDNR Design Standards require that sludge holding tanks be mixed with satisfactory aeration equipment. We request being allowed to provide mechanical mixing for the sludge storage tank only, with no additional aeration. The reason for this request is that in our experience, most sludge storage tanks in Iowa do not include additional aeration after adequate digestion and generally do not have any problems. We do not feel that the aeration is necessary, given the aerobic treatment that will precede it.

Please do not hesitate to contact me if you have any questions or concerns.

Sincerely,

Steve Van Dyke, P.E.

cc: Jo Ann Strack, City of Jefferson

Water | Wastewater | Solid Waste | Air | Land

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Send To Printer Back To TerraServer Change to 11x17 Print Size Show Grid Lines Change to Landscape

USGS **Jefferson, Iowa, United States** 01 Oct 1995

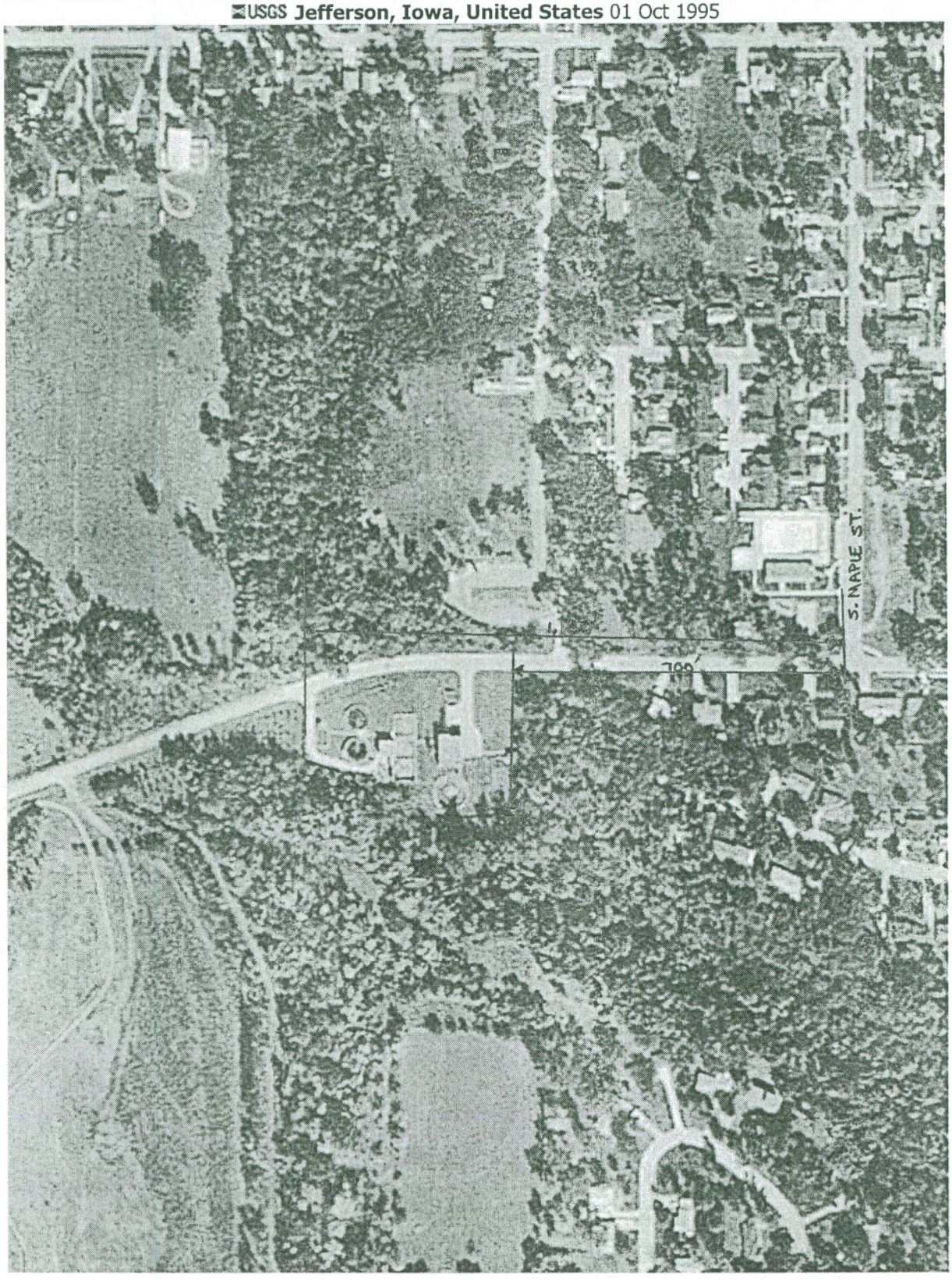
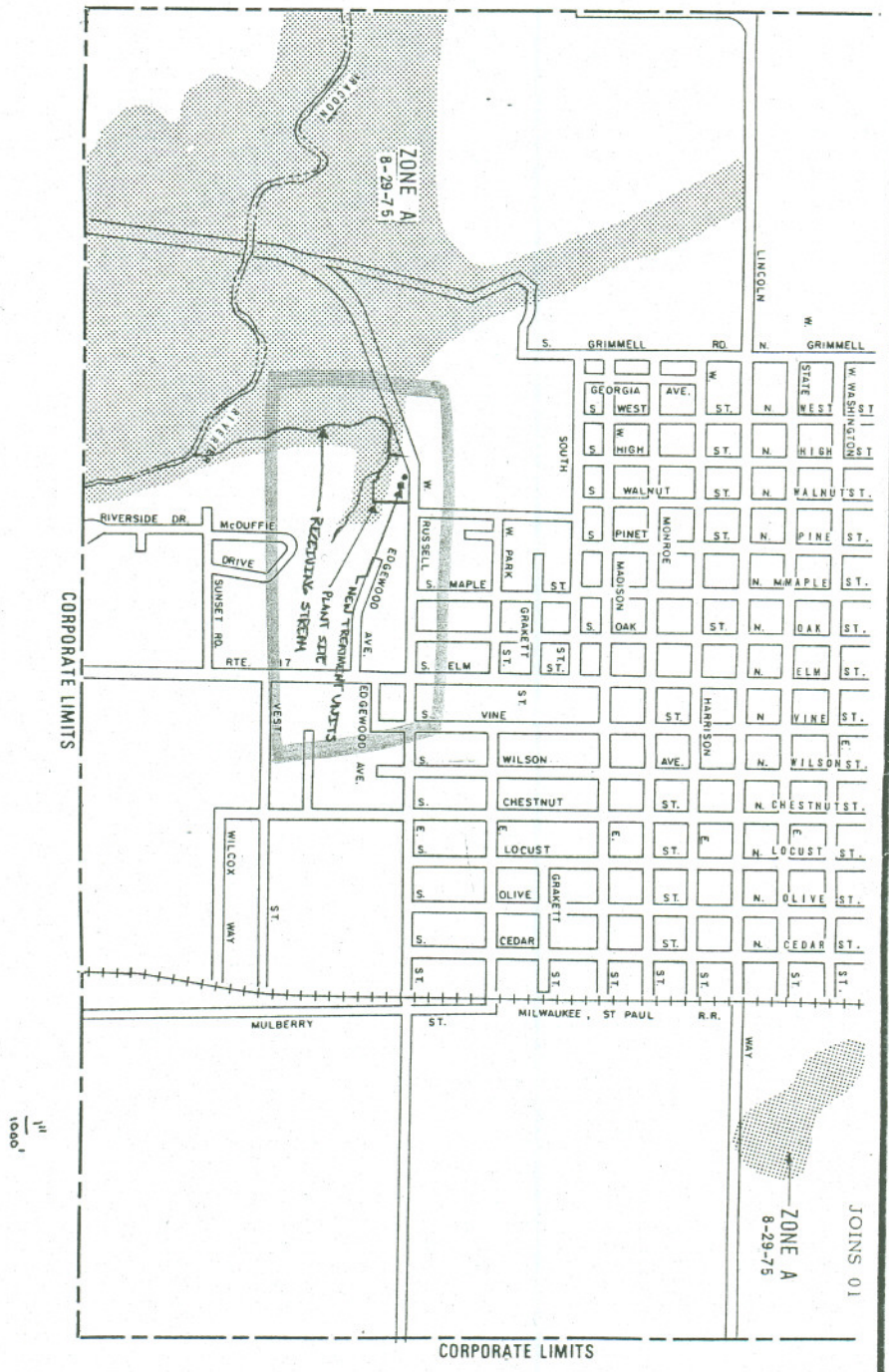
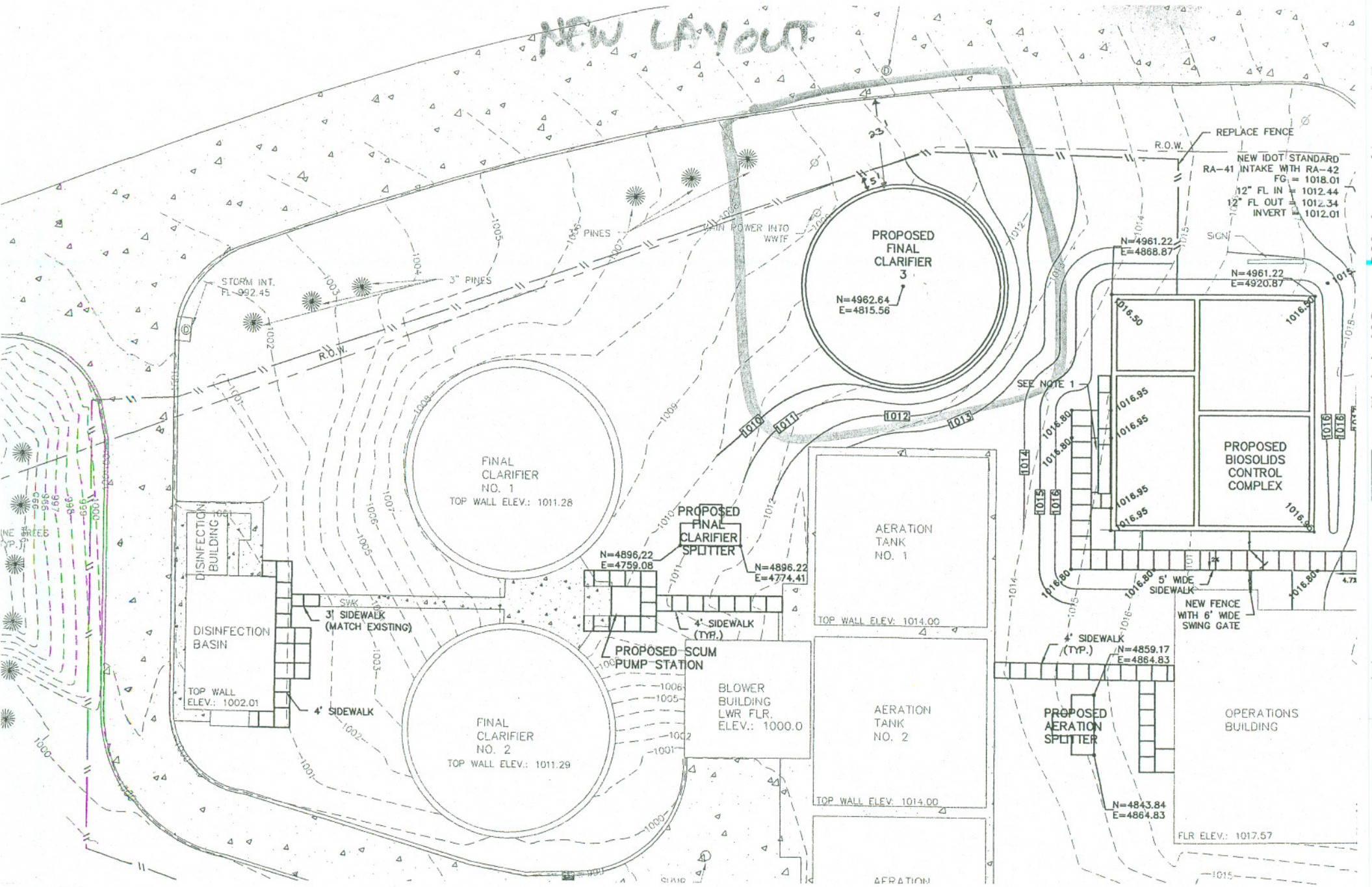


Image courtesy of the U.S. Geological Survey



02	DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT Federal Insurance Administration CITY OF JEFFERSON, IA (GREENE CO.)	APPROXIMATE SCALE 500 0 1000 2000 3000 FEET	
		FIA FLOOD HAZARD BOUNDARY MAP No. H 02	Effective Date: AUGUST 29, 1975


NEW LAYOUT
PROPOSED FINAL CLARIFIER 3
N=4962.64
E=4815.56
REPLACE FENCE
R.O.W.
NEW IDOT STANDARD
RA-41 INTAKE WITH RA-42
FG = 1018.01
12" FL IN = 1012.44
12" FL OUT = 1012.34
INVERT = 1012.01
N=4961.22
E=4868.87
N=4961.22
E=4920.87
SIGN
STORM INT.
FL=992.45
3" PINES
PINES
R.O.W.
MAIN POWER INTO WWTF
SEE NOTE 1
PROPOSED BIOSOLIDS CONTROL COMPLEX
FINAL CLARIFIER NO. 1
TOP WALL ELEV.: 1011.28
PROPOSED FINAL CLARIFIER SPLITTER
N=4896.22
E=4759.08
N=4896.22
E=4774.41
AERATION TANK NO. 1
TOP WALL ELEV: 1014.00
DISINFECTION BUILDING
DISINFECTION BASIN
TOP WALL ELEV.: 1002.01
3' SIDEWALK (MATCH EXISTING)
4' SIDEWALK
4' SIDEWALK (TYP.)
5' WIDE SIDEWALK
NEW FENCE WITH 6' WIDE SWING GATE
PROPOSED SCUM PUMP STATION
BLOWER BUILDING LWR FLR. ELEV.: 1000.0
FINAL CLARIFIER NO. 2
TOP WALL ELEV.: 1011.29
AERATION TANK NO. 2
TOP WALL ELEV: 1014.00
4' SIDEWALK (TYP.)
N=4859.17
E=4864.83
PROPOSED AERATION SPLITTER
N=4843.84
E=4864.83
OPERATIONS BUILDING
FLR ELEV.: 1017.57
AERATION

From: "James Merideth" <jmerideth@foxeng.com>
To: "Steve VanDyke" <svandyke@foxeng.com>
Date: 11/4/02 9:54AM
Subject: Re: Jefferson - Variance Requests

Larry,
Steve has asked me to reply and to try to resolve outstanding site issues.
In answer to your comments and questions:
- This is a City Street and Right-of-Way
- The City does have setback requirements for construction, however the City Council has the authority to waive those and would do so for a municipal project of this nature.
- It is possible that the construction activities may disturb utilities in the ROW, but this will depend upon the means and methods utilized by the Contractor. If the Contractor elects to use a construction method that does disturb them, it will be his responsibility to protect or replace them.
- We will include a traffic safety section in the specifications requiring the Contractor to use appropriate signage etc. as required.
- The reason we cannot move the sludge tanks further south away from the ROW is that could cause problems with the control building during the construction phase. The tanks will require significant excavation and we do not want to undercut the building foundation.
- The area will be re-enclosed with chain-link fencing as part of the project.
- I'm not sure what type of problems you may be referring to regarding the units' proximity to the ROW, but we are not aware of any previous problems. All of the tanks in question will be covered, so kids throwing rocks into the tanks from the street should not be an issue.
- The operator will have full perimeter access to the clarifier within the site boundaries. While a final decision has not yet been made on the sludge tanks, we believe that the perimeter fence will tie into the ends of the outer walls so that the walls create a portion of the fence and the operator will be able to access the walls from outside the fence.

← WENT TO RECTANGULAR DESIGN & COMMON WALL CONSTRUCTION. R.O.W. SEPARATION FOR DIGESTER IS NO LONGER A CONCERN.

← NO LONGER APPLICABLE. SEE OLD LAYOUT VS. NEW

We will resend the copies of the various agency clearances and you should get them this week.

Finally, we will be addressing the questions raised by the site survey on the 90% separation distance. It may very well be that, with the number of properties involved, we will not be able to acquire waivers from all of them. In that case we would have no other choice but to request a variance on the requirement based on the pre-existing conditions, i.e., the homes were constructed when the old treatment units were in place at these same distances.

Jim Merideth

>>> "Larry Bryant" <Larry.Bryant@dnr.state.ia.us> 11/01/02 10:44AM >>>
Steve,

Regarding the variance requests for separation distance from the

right-of-way - it would help if some items could be addressed for justification of the variance:

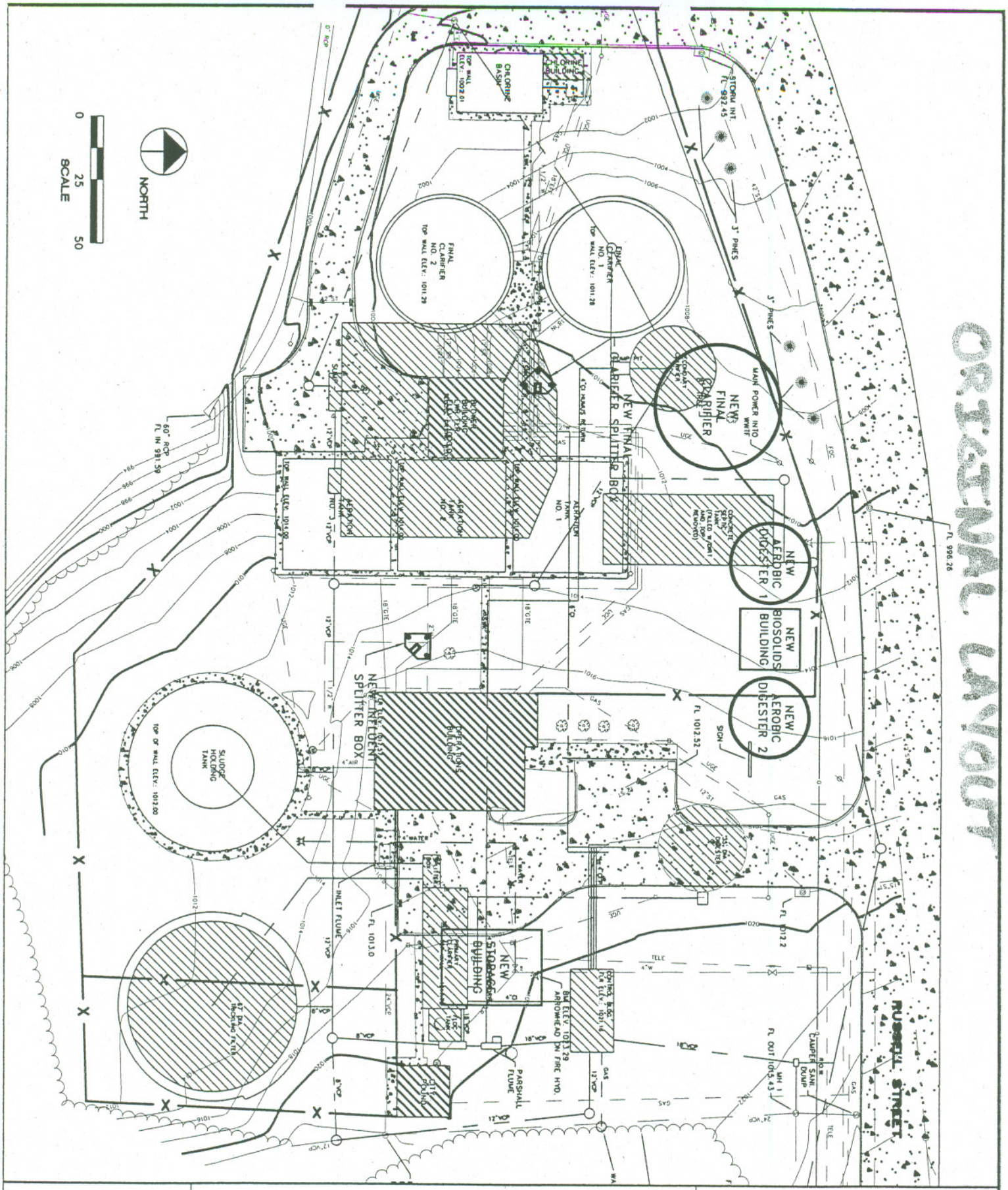
- Is this a city or county right of way?
- Does the city/county have setback requirements that will be violated and if so, has the siting arrangement been cleared with them?
- Will the storm sewer and fiber optic cable (or any other utilities) be disturbed or need to be relocated for construction?
- Are there any traffic safety concerns?
- It is apparent from the site map that the final clarifier has pretty much no where else to go and the R.O.W. here is wider. Why can't the biosolids complex be pushed back further from the R.O.W.?
- Is fencing to be provided around the new units? Type?
- Have any problems been encountered due to the existing clarifier (and possibly the previously demolished septic tank) proximity to the R.O.W.?
- Are there potential future maintenance issues - i.e. how will the operator access the sides of the units closest to the R.O.W.?

← NOTE: BIOSOLIDS COMPLEX WAS PLACED FURTHER BACK (PRIMARILY DUE TO RECT. RATHER THAN CIRCULAR DESIGN) AFTER THIS

On the clearances - I have given up trying to find where I lost them. Would appreciate it if you could resend the Army Corps, US Fish & Wildlife and IDNR Fish & Wildlife clearances.

Thanks.

Larry Bryant
IDNR Wastewater Section
larry.bryant@dnr.state.ia.us
515/281-8847



FOX engineering

SITE PLAN SHOWING EXISTING, DEMOLISHED AND PROPOSED STRUCTURES

JEFFERSON WWTF IMPROVEMENTS

FIGURE: 2

REVISION	NO.	DATE
DRAWN SAV	PROJECT NO. 2486-01A	DATE 11/06/01

PRELIM DESIGN MEMO

The clarification system will meet the IDNR design criteria of 30 lbs. of solids per day per square foot at AWW flows and 50 lbs. per day per square foot at the PHWW. In addition, the system will maintain surface overflow rates well below the IDNR criteria of 1,200 gpd per square foot. IDNR design standards require that a sufficient number of clarifiers be provided so that the system will provide at least 75% of the design capacity with the largest unit out of service. Adding the third clarifier will provide the capacity and redundancy required by IDNR design standards. The surface overflow rate will be about 610 gpd per square foot at the design AWW of 2.4 mgd with two of the three clarifiers in operation. At the PHWW design flow of 5.9 mgd, the surface overflow rate will be about 1,000 gpd per square foot with all three clarifiers in operation.

- Final clarifier splitter box: A new final clarifier splitter box will be constructed between the north aeration basin and the existing final clarifiers. This new splitter box will be nearly identical to the aeration basin splitter box, with the only major difference being its deeper depth. The new splitter box will split the flows equally between each of the clarifiers that are in operation. The splitter box will be constructed of cast-in-place concrete with 3.0 foot long rectangular weirs controlling flow to each of the three clarifiers. The weirs will be set at a predetermined elevation, but some small adjustment of the weirs will be provided with slotted holes in each weir plate. Stop gates will be used to isolate flow from any of the three clarifiers.

- New final clarifier structure: One new final clarifier will be constructed directly north of the aeration basins. Construction of the new clarifier will be nearly identical to that of the existing two clarifiers. The new 50-foot diameter clarifier will be of the "rim-flow" type, as manufactured by US Filter Envirex. The structure will be constructed of cast-in-place concrete, with concrete inboard launders/influent channels. The sidewall of the new clarifier will need to be about 3 feet taller than the existing units due to the higher ground elevation at the proposed location.

  IDNR design standards require a separation distance of 25 feet from all wastewater treatment water surfaces to right-of-way property lines. Due to the site limitations, it will be necessary to locate the new clarifier approximately 5-10 feet from the Russell Street right-of-way line. It is anticipated that the IDNR will grant a variance for the reduced separation distance, given that this is the only practical location of the new clarifier. In addition, the existing north clarifier infringes upon the 25' site distance, as it is located only about 15' from the right-of-way line.

- Clarifier equipment: All three clarifiers will be equipped with new sludge collection equipment. This equipment will include a suction type manifold sludge collection system, similar to that used with the existing clarifier mechanisms. Full trough skimming will be used for surface scum collection. The full trough scum collection will allow the operators to recover more solids if the clarifier operation is upset, and to capture any floating solids. The weirs will be of the V-notch type and will be set