

DATE RECEIVED		FACILITY NAME		COUNTY NO.	PROGRAM AREA CODE	FACILITY TYPE CODE	SUBJECT AREA CODE
3 - 1/4/89		4 City of Albia		5 68	6 CP	7 C02	8 345
RULE REFERENCE		DESIGN STANDARD REFERENCE		DECISION		APPEAL ACTION	
9 64.2(9)		10 13.11		11 Approved 6/8/89		12	
ENGINEER				VARIANCE RULE			
13 Garden & Associates				14 64.2(9)c			

COPY

15. DESCRIPTION OF VARIANCE REQUESTED: As a part of the upgrading of the wastewater collection system and treatment facilities for the City of Albia, the designing engineer is proposing to construct an equalization basin for the upgrade of the South Lift Station for the temporary storage of excessive stormwater flows which cannot be handled by the upgraded pumping facilities. These improvements were proposed in the facility plan for the City of Albia, dated 1/6/86. Since preparation of the facility plan, the proposed equalization basin has been relocated so that all flow to the lift station is by gravity. Therefore, the engineer is requesting a variance from our design standards to eliminate standby power for the lift station and provide additional capacity in the equalization basin to store an additional MWW day of flow in the event of an outage of power.

16. ENGINEERS JUSTIFICATION: The engineer feels the resulting system will have at least equivalent or improved effectiveness as a pumping station with standby power while reducing costs and operation and maintenance requirements based on the following considerations:

1. All flows will be stored in the basin during power failure or other failure of the lift station. An additional 24 hrs of mww storage will be provided.
2. The system will eliminate sophisticated controls and electric flow control valves. These items are both expensive to purchase and difficult to maintain.
3. The system will eliminate several hundred feet of sewerline to route flows in and out of the equalization basin as proposed in the facility plan. Therefore, savings will be realized in construction costs for piping and structures.
4. The reliability of the system to prevent raw wastewater bypassing will be at least equivalent to a system utilizing standby power. The equalization basin will provide the following retention times:

(See attached sheet for continuation of engineer's justification)

17. DEPARTMENTS JUSTIFICATION:

Approval of the variance request is recommended based upon the engineers' justification and the following additional considerations:

1. The equalization basin serves as an extension of the lift station wet well with flows to and from the basin by gravity thru the same sewer connection with pump controls and operating levels set so pumping will be continuous until the basin is dewatered.
2. The nearest residences to the proposed basin are located southwest of the site; therefore, in order to carry any possible odors from the basin to these residences would require a wind from the northeast quadrant. This wind direction is the least prevalent in Iowa.
3. A generator could only be used in the event of a power outage. If the pump failure was due to damaged (storm-lightning) or failure of electrical equipment or controls, the generator would not be adequate.

18. PRECEDENTS USED: South Panorama S.D. - approved 11/13/87

19. STAFF REVIEWER:

20. SUPERVISOR:

21. AUTHORIZED BY:

Fred M. Evans 6/6/89

G. Dan Jensen 6/6/89

David H. Ellis 6/8/89



GARDEN & ASSOC.

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May 3, 1989

Department of Natural Resources
Henry A. Wallace Building
900 East Grand Avenue
Des Moines, IA 50319

Attention: Fred Evans

Re: South Area Development
Albia, Iowa

Dear Mr. Evans:

Per our discussion of May 2, 1989, the equalization basin for the upgrade of the South Lift Station has been relocated so that all flow to the South Lift Station is by gravity. Therefore, we are requesting a change in the improvements recommended in the "Facility Plan for Sanitary Sewer System, Albia, Iowa" dated January 6, 1986. The change includes the elimination of standby power and increasing the volume from 1.2 MG to 2.0 MG which provides an additional MWW day storage capacity in the lagoon (see Table 8 in the Facility Plan).

This is a variance from Chapter 13, Section 11.3 of the IDNR Wastewater Facilities Design Standards for Wastewater Pumping Stations. In our opinion the resulting system will have at least equivalent or improved effectiveness as a pumping station with standby power while reducing costs and operation and maintenance requirements. The basis for this opinion is as follows:

1. All flows will be stored in the lagoon during power failure or other failure of the lift station. As stated above, an additional 24 hours of MWW storage is provided over the recommended storage requirement.
2. The system will eliminate sophisticated controls and electric flow control valves. These items are both expensive to purchase and difficult to maintain.
3. The system will eliminate several hundred feet of sewer line to route flows in and out of the equalization basin as proposed in the Facility Plan. Therefore, savings will be realized in construction costs for piping and structures.

CONSULTING ENGINEERS

4. The reliability of the system to prevent raw wastewater bypassing will be at least equivalent to a system utilizing standby power. The equalization basin will provide the following retention times:

<u>Flow Condition</u>	<u>Design Flow, MGD</u>	<u>Retention Time, HRS</u>
ADW	0.134	358
AWW-30	0.409	117
MWW	0.796	60

The least amount of retention provided would be 24 hours should the lagoon be at the 1.2 MG level and a MWW day occur with the Lift Station out-of-service.

A system utilizing standby power is only as reliable as the standby power unit which depends upon proper maintenance and care. The proposed gravity system would only fail when and if the lagoon capacity is exceeded.

The trade-off may be potential odors produced from the basin if flow is bypassed to the basin during low flow periods. However, this potential problem will be mitigated due to the fact that 2 feet of liquid will be maintained in the lagoon at all times thereby diluting the incoming waste and the fact that lagoon contents will be removed as soon as the Lift Station is activated.

It should also be noted that standby power can easily be added in the orifice should excessive bypassing odors occur.

Therefore, on behalf of the City of Albia, we respectfully request that a variance be granted for the above described improvements.

Yours very truly,

GARDEN & ASSOCIATES, LTD.



David C. Nelson, P.E.

ds
CC: City of Albia