



ANTIDEGRADATION ALTERNATIVES ANALYSIS

ALLISON, IOWA
NPDES FINAL PERMIT
#1203001

For Public Comment: May 2020

Antidegradation Alternatives Analysis

City of Allison, IA

May, 2020


<p>SEAL</p> 	<p>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</p> <p><i>Donald Moore</i> <i>5/15/20</i></p> <p>Donald Moore Date</p> <p>License Number : P21299</p> <p>My license renewal date is December 31, <u>2021</u>.</p> <p>All pages: Antidegradation Alternatives Analysis</p>
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The Current Iowa Department of Natural Resources NPDES Permit is attached to back of this report for informational purposes.

City of Allison, IA Antidegradation Alternatives Analysis

May, 2020

Executive Summary

The City of Allison is in the process of planning improvements to its wastewater treatment system. Changes to the State of Iowa’s water quality standards enacted in 2006 have resulted in anticipated NPDES effluent limits that the existing facility is not capable of meeting. This Alternatives Analysis identifies and evaluates different potential treatment improvements that are (a) capable of meeting the proposed effluent limits and (b) offer a range of treatment and disposal capabilities to evaluate non-degrading and less-degrading alternatives as mandated by Iowa’s antidegradation policy and implementation procedure.

A total of 6 alternatives were evaluated including the base pollution control alternative. The alternatives were evaluated based on their practicability, economic efficiency, affordability and degradation on a pollutant-by-pollutant basis. One of the non-degrading alternatives (recycle/reuse) was determined to be non-practicable. The two remaining non-degrading alternatives (land application and regional treatment) were found to be economically inefficient. Of the three less-degrading alternatives, Alternative No. 4 was found to be the least degrading reasonable alternative (i.e. the preferred alternative).

The preferred alternative is considered less degrading and expected to improve overall water quality in the receiving stream network for a number of pollutants. Therefore, a description of the project social and economic importance is included at the end of the analysis.

Existing Conditions and Design Parameters

Tables 1 and 2 summarize existing and design wastewater influent flows and loadings for the City of Allison.

Table 1: Existing Flows and Loadings¹

Flows (mgd)		Maximum Month Influent Loads (lbs/d)	
ADW	0.161	BOD ₅	255
AWW ₁₈₀		TSS	300
AWW ₃₀	0.384	TKN	N/A
MWW	0.826		
PHWW	1.65		

1. Estimated existing (2020) population = 1029

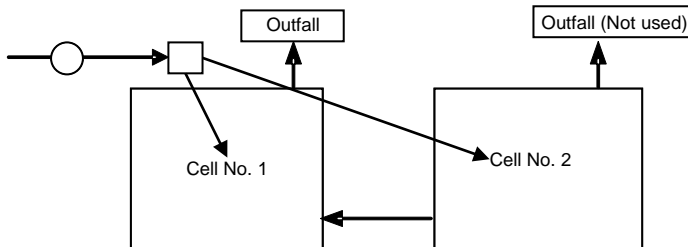
Table 2: Table 2: Design Flows and Loadings¹

Flows (mgd)		Maximum Month Influent Loads (lbs/d)	
ADW	0.167	BOD ₅	255
AWW ₁₈₀		TSS	300
AWW ₃₀	0.390	TKN	60
MWW	0.832		
PHWW	1.72		

1. Projected design year (2040) population = 1070

Allison is currently in compliance with its NPDES permit. There is a new compliance schedule for improvements at this time. See Table 5 (copy of NPDES Permit with Exhibit A). The existing treatment facility consists of a 2-cell aerated lagoon system. The non-aerated cells (Cells 1 and 2) have a volume of 9 million gallons each. The original ADW and AWW₃₀ design flows for the lagoon system are 0.075 mgd and 0.200 mgd, respectively. The design organic loading is 255 lbs/day BOD₅. No significant industrial contributors are present or anticipated.

Figure 1: Existing Lagoon System Schematic



Receiving Stream Network

The existing discharge receiving stream network consists of discharge to an unnamed creek tributary to the Freddeke Creek.

The current receiving stream network designations, Use Attainability Analysis (UAA) and impairment status are summarized in Tables 3, 4 and 5:

Table 3: Current Stream Designations

Stream	Current Designation	Source
Unnamed Cr.		567 IAC 61.3(1)b

Table 4: UAA Status

Stream	UAA Type(s)	Fieldwork Complete?	Recommended Designation(s)	Status
Unnamed Cr.	Aquatic	Yes	B(WW-2)	Pending rulemaking and EPA approval

Table 5: NPDES Permit Levels

Parameter	Season	Limit Type	Limits
CBODS			
	Yearly	7 Day Average	40 MG/L 67 LBS/DAY
	Yearly	30 Day Average	25 MG/L 42 LBS/DAY
TOTAL SUSPENDED SOLIDS			
	Yearly	7 Day Average	120 MG/L 200 LBS/DAY
	Yearly	30 Day Average	80 MG/L 133 LBS/DAY
NITROGEN, TOTAL (AS N)			
	Yearly	30 Day Average	57.8 LBS/DAY
	Yearly	Daily Maximum	94.5 LBS/DAY

SILVER, TOTAL (AS AG)				
	Yearly	30 Day Average	0.003800 MG/L	0.006338 LBS/DAY
	Yearly	Daily Maximum	0.003800 MG/L	0.006338 LBS/DAY
LEAD, TOTAL (AS PB)				
	Yearly	30 Day Average	0.007693 MG/L	0.01283 LBS/DAY
	Yearly	Daily Maximum	0.1974 MG/L	0.3293 LBS/DAY
DISSOLVED OXYGEN				
	Yearly	Daily Minimum	5.0 MG/L	
PH				
	Yearly	Daily Maximum	9.0 STD UNITS	
	Yearly	Minimum	6.5 STD UNITS	
AMMONIA NITROGEN (N) <i>(Outfall: 001 Effective Dates: 02/01/2020 to 10/31/2022)</i>				
	JAN	30 Day Average	5.2 MG/L	8.6 LBS/DAY
	JAN	Daily Maximum	19.9 MG/L	33.2 LBS/DAY
	FEB	30 Day Average	5.8 MG/L	9.7 LBS/DAY
	FEB	Daily Maximum	8.4 MG/L	14.0 LBS/DAY
	MAR	30 Day Average	3.9 MG/L	6.5 LBS/DAY
	MAR	Daily Maximum	3.9 MG/L	6.5 LBS/DAY
	APR	30 Day Average	2.1 MG/L	3.5 LBS/DAY
	APR	Daily Maximum	4.7 MG/L	7.9 LBS/DAY
	MAY	30 Day Average	1.8 MG/L	3.1 LBS/DAY
	MAY	Daily Maximum	3.2 MG/L	5.3 LBS/DAY
	JUN	30 Day Average	1.3 MG/L	2.2 LBS/DAY
	JUN	Daily Maximum	3.2 MG/L	5.3 LBS/DAY
	JUL	30 Day Average	1.1 MG/L	1.8 LBS/DAY
	JUL	Daily Maximum	3.2 MG/L	5.3 LBS/DAY
	AUG	30 Day Average	1.0 MG/L	1.6 LBS/DAY
	AUG	Daily Maximum	2.7 MG/L	4.4 LBS/DAY
	SEP	30 Day Average	1.5 MG/L	2.5 LBS/DAY
	SEP	Daily Maximum	2.7 MG/L	4.4 LBS/DAY
	OCT	30 Day Average	2.7 MG/L	4.4 LBS/DAY
	OCT	Daily Maximum	2.7 MG/L	4.4 LBS/DAY
	NOV	30 Day Average	2.7 MG/L	4.4 LBS/DAY
	NOV	Daily Maximum	2.7 MG/L	4.4 LBS/DAY
	DEC	30 Day Average	3.9 MG/L	6.5 LBS/DAY
	DEC	Daily Maximum	3.9 MG/L	6.5 LBS/DAY
AMMONIA NITROGEN (N) <i>(Outfall: 001 Effective Dates: 11/01/2022 to 1/31/2025)</i>				
	JAN	30 Day Average	3.4 MG/L	5.7 LBS/DAY
	JAN	Daily Maximum	19.9 MG/L	33.2 LBS/DAY
	FEB	30 Day Average	4.0 MG/L	6.6 LBS/DAY
	FEB	Daily Maximum	8.4 MG/L	14.0 LBS/DAY
	MAR	30 Day Average	3.4 MG/L	5.7 LBS/DAY
	MAR	Daily Maximum	3.9 MG/L	6.5 LBS/DAY
	APR	30 Day Average	1.5 MG/L	2.5 LBS/DAY
	APR	Daily Maximum	4.7 MG/L	7.9 LBS/DAY
	MAY	30 Day Average	1.7 MG/L	2.9 LBS/DAY
	MAY	Daily Maximum	3.2 MG/L	5.3 LBS/DAY
	JUN	30 Day Average	1.3 MG/L	2.2 LBS/DAY
	JUN	Daily Maximum	3.2 MG/L	5.3 LBS/DAY
	JUL	30 Day Average	1.0 MG/L	1.7 LBS/DAY
	JUL	Daily Maximum	3.2 MG/L	5.3 LBS/DAY
	AUG	30 Day Average	1.0 MG/L	1.6 LBS/DAY
	AUG	Daily Maximum	2.7 MG/L	4.4 LBS/DAY
	SEP	30 Day Average	1.1 MG/L	1.8 LBS/DAY
	SEP	Daily Maximum	2.7 MG/L	4.4 LBS/DAY
	OCT	30 Day Average	1.6 MG/L	2.6 LBS/DAY

	OCT	Daily Maximum	2.7 MG/L	4.4 LBS/DAY
	NOV	30 Day Average	2.3 MG/L	3.9 LBS/DAY
	NOV	Daily Maximum	2.7 MG/L	4.4 LBS/DAY
	DEC	30 Day Average	2.5 MG/L	4.1 LBS/DAY
	DEC	Daily Maximum	3.9 MG/L	6.5 LBS/DAY
E.COLI*				
	MAR	Geometric Mean	126 #/100 ML	
	APR	Geometric Mean	126 #/100 ML	
	MAY	Geometric Mean	126 #/100 ML	
	JUN	Geometric Mean	126 #/100 ML	
	JUL	Geometric Mean	126 #/100 ML	
	AUG	Geometric Mean	126 #/100 ML	
	SEP	Geometric Mean	126 #/100 ML	
	OCT	Geometric Mean	126 #/100 ML	
	NOV	Geometric Mean	126 #/100 ML	

Identification & Discussion of Alternatives

The existing lagoon system meets current NPDES permit limits. However, changes to the State's water quality standards enacted in 2006 which eliminated the protected flow concept and designated all perennial streams for aquatic life and recreational contact (unless determined otherwise by Use Attainability Analysis) have resulted in projected permit limits that the existing facility cannot meet at existing loadings. Historical effluent ammonia monitoring data for this and other facilities throughout the State indicate that the proposed ammonia limits would not be met with a conventional aerated lagoon. The existing facility meets proposed bacteria limits with dedicated disinfection facilities. There is currently no effluent sampling data available for chloride, sulfate or priority pollutants enumerated in Table I of 567 IAC 61.

Alt. No. 1: Recycle/Reuse

To be considered a Non Degrading Alternative (NDA), this option must include recycle or reuse of the entire proposed increase in treated wastewater volume. This alternative was determined to be not practicable due to the following factors:

- Seasonal constraints and lack of consumptive demand for agricultural irrigation, landscape irrigation, recreational area irrigation or industrial water use applications.
- Aquifer augmentation through well disposal is prohibited by 567 IAC 62.9.

Alt. No. 2: Land Application

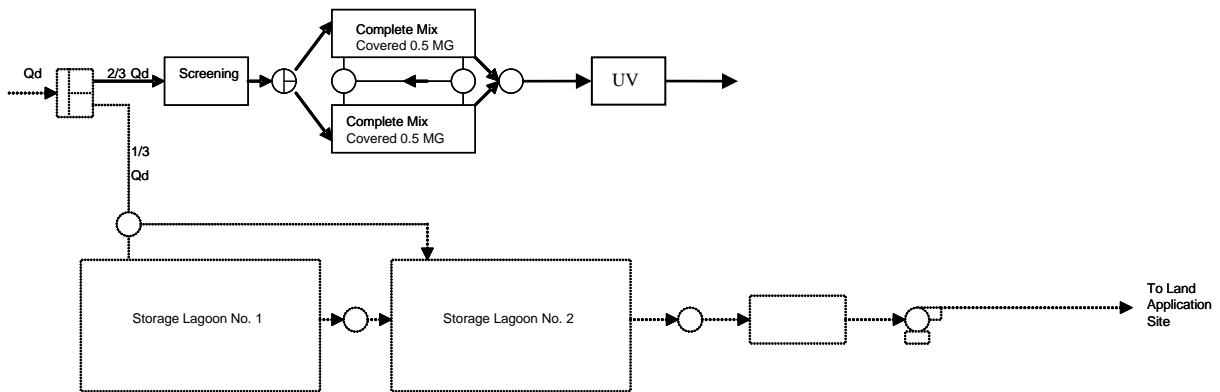
Land application of the proposed increase in design loading in addition to any treatment modifications necessary to meet the new WQBELs was evaluated and determined to be economically inefficient. For estimating purposes, the costs associated with land application were added to Alternative No. 4, the Base Pollution Control Alternative (BPCA).

The Iowa Wastewater Facilities Design Standards Chapter 21 governs design requirements for land application of wastewater. The minimum storage required for land application is 200 days based on climatic restraints per Figure 3 of Chapter 21. The additional volume of storage required to allow land application of the proposed increase in design loading was calculated by proportioning the future design load such that any increases in wastewater loading above the existing design loading would be land applied. Since loadings are projected to increase by 3% over a 20-year design period, 1/3 of the design wastewater flows would be diverted for dedicated land application. The storage requirement associated with storage of 1/3 of the design flows for 200 days was calculated as 14.5

million gallons using the design AWW180 as a conservative estimate of the maximum 200-day wet weather flow. The associated land area required for two 14.5 million gallon storage lagoons would be approximately 16 acres. The land application area required for slow rate application assuming a maximum percolation of 10 inches per month would be approximately 34 acres neglecting any buffer area. Another aspect of this alternative is that a significant portion of available land area is inside a flood plain. Flood plains cannot be used as treatment areas. The distance to usable ground causes this alternative to be cost prohibitive.

Assuming that the land application site could be located adjacent to the treatment and storage site (no transmission costs) the addition of a slow rate land application system to land apply this proportion of the flow would add approximately \$6.0 million dollars (present worth) to the BPCA project cost, including storage lagoons, a pumping station, chlorine disinfection prior to land application, land purchase, sprinkling system and associated operation and maintenance costs. This cost differential includes design of the BPCA for existing flows and loadings rather than projected flows and loadings for the 20-year design life.

Figure 2: Land Application Schematic



Alt. No. 3: Regional Treatment

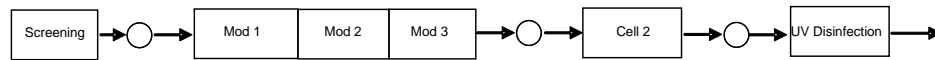
Regional treatment is only considered an NDA in this analysis if the City of Waverly would consider receiving the wastewater. Waverly currently does not have surplus treatment capacity available to receive the additional wastewater while remaining within its current permitted design capacities for both flow and loading.

The City of Waverly treatment plant is the nearest facility that may be capable of accepting Allison’s wastewater. This alternative was evaluated and determined to be economically inefficient. Capital and operation costs for pumping stations, equalization basin and force main to pump the community’s entire wastewater flow were determined in addition to the present worth value for charges for treatment by Waverly for a 20-year design period. To implement this alternative, the wastewater from Allison would have to be pumped approximately 16 miles. The higher cost of this alternative is primarily due to the lengthy force main and associated pumping costs that would be required. Along with modifications necessary to not allow septic conditions along the way.

Alt. No. 4: Gross-Wen Technologies Modifications

The Gross-Wen Technologies alternative consists of modification to the treatment system by providing screening for oil/water and volatiles before entering the Revolving Algal Biofilm (RAB) units. As required by NFPA 820. The units will be housed in greenhouse type buildings. The RAB will remove BOD, ammonia, and other nutrients in the algae removal process. The algae is removed from the waste stream and dried to create a viable natural fertilizer for resale. The flow from the RAB proceeds to a further BOD removal area, part of cell 1, a re-aeration zone, to assure, in very cold time periods, that near complete ammonia removal required by permit will occur.

Figure 3: Gross-Wen Technologies Lagoon Modifications Schematic



The outfall has a proposed UV treatment trough to remove E-Coli to meet NPDES requirements.

Just downstream of the UV-treatment a flow meter is proposed to measure total wastewater flow. The outfall location is to be the same location.

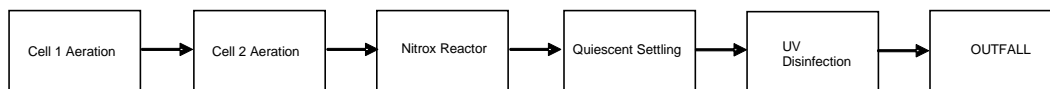
Lining is not proposed with Cell #1 work.

The operational and maintenance costs are the least of all alternates reviewed. The power demands are very low, only a few motors with low power demands.

Alt. No. 5: Nitrox Process

The Nitrox Process would consist of preliminary aeration process which removes the BOD from the waste stream. The level of mixing is considered partial mix.

Figure 4: Basin Flow Process of the Nitrox Lagoon Ammonia Removal Process



The treatment levels of BOD removal are very good. The operation and maintenance of the system is however costly in comparison to other alternatives. The operational costs during cold weather would entail the aeration and the Nitrox reactor the energy costs be-they electric or propane during the cold weather months would be quite expensive. The funding

of this treatment system would have to be very mindful to have a revenue stream capable to pay for winter operation costs.

The capitol costs are very close to ALT 4. However, operation and maintenance would be a significant portion of any rate ordinance. UV costs would be very similar in all alternates due to location and flows.

Alt. No. 6: Nexom OPTAER Wastewater Treatment System (SAGR)

The OPTAER Wastewater Treatment System would include retaining the existing lagoon cells, install an OPTAER fine bubble partial mix aeration in cells 1 and 2. The quiescent cell would stay in line after the four aerated horizontal flows SAGR (Submerged attached growth reactors) for nitrification ammonia removal. There would need to be by-pass valving installed for cell #2 to allow for ammonia feed to the SAGR in the summer months. The UV after the quiescent cell, as in all viable alternatives would be located along the existing outfall.

Figure 5: OPTAER System Aeration Layout with SAGR

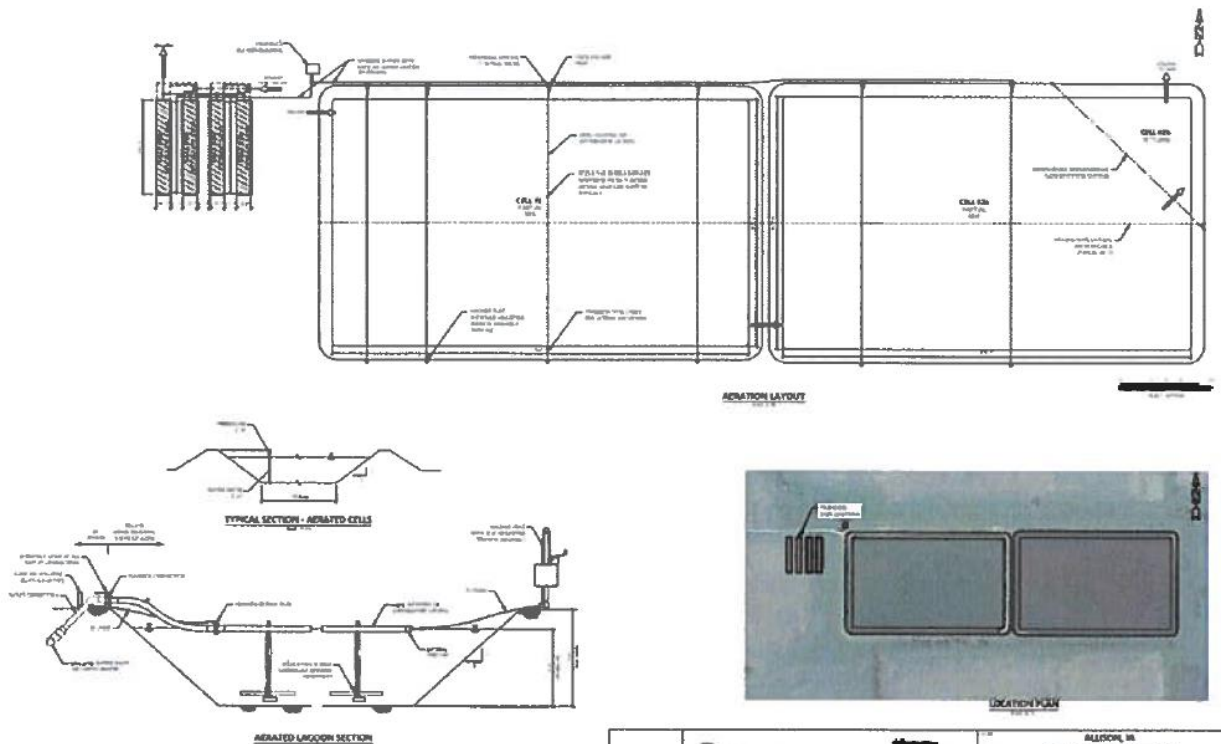


Table 6: Alternatives and Present Worth Costs

Alt. No.	Description	Present Worth Cost ¹
1.	Recycle/reuse	N/A
2.	Land Application	\$6,000,000
3.	Regional Treatment	\$8,000,000
4.	Gross-Wen Technologies	\$2,100,000
5.	Nitrox Process Lagoon System	\$2,200,000
6.	Nexom OPTAER Treatment System (SAGR)	\$3,000,000

1. The costs presented in this mock analysis are for illustrative purposes only. Actual costs for alternatives may vary. Present worth values are calculated using a 20-year design period. See estimated Present worth costing at end of this report.

*All estimates DO NOT include new lining installation or sludge removal.

Table 7: Alternative Classification and Evaluation

Alt. No.	BPCA, NDA or LDA	Is the Alternative Reasonable?					
		Practicable	Economically Efficient	% of BPCA	Affordable ²	% of MHI	Reasonable
1.	NDA	No	N/A	N/A	N/A	N/A	No
2.	NDA	Yes	No	184	N/A	2.27	No
3.	NDA	Yes	No	139	N/A	1.82	No
4.	BPCA	Yes	Yes	100	Yes	1.41	Yes
5.	LDA	Yes	Yes	107	Yes	1.47	Yes
6.	LDA	Yes	Yes	112	Yes	1.54	Yes

1. Overall expected effluent quality is similar for the lagoon modifications.

2. Based on financial capability indicators described in EPA's 1995 Interim Economic Guidance for Water Quality Standards Workbook and 1997 CSO Guidance for Financial Capability Assessment and Schedule Development document, all of the alternatives deemed reasonable are characterized as "medium burden" based on primary and secondary tests. For purposes of this Alternatives Analysis, no attempt has been made to thoroughly evaluate far-reaching and serious socioeconomic impacts and all of the practicable and economically efficient alternatives have been deemed affordable based on the primary and secondary tests alone. According to the scheduling boundaries established in the EPA CSO financial capability document, an implementation period of up to 10 years for the proposed improvements may be appropriate.

Preferred Alternative

Alternative No. 4, Gross-Wen Technologies, is the preferred reasonable treatment alternative based on anticipated treatment performance. Based on treatment levels expected, lowest cost to operate, and lowest incremental maintenance costs.

Table 8: Reasonable Alternatives Degradation Comparison

Pollutant of Concern	Potential Degradation?			Comments
	Alt. No.			
	4	5	6	
CBOD ₅	No	No	No	Anticipated removal efficiencies are expected to increase significantly for Alternatives 4 and 6 compared to existing, however, because of the 3% increase in influent design loading it is not certain that mass loading to the stream at the future design loading will be less than the existing mass loading.
TSS	No	No	No	TSS loading to the stream is expected to decrease.
Ammonia-Nitrogen	No	No	No	Anticipated effluent ammonia concentrations and mass are less than the existing NPDES permit for each alternative.
E. coli	No	No	No	The existing facility does disinfect. The addition of UV disinfection for all proposed alternatives will decrease bacteria discharged to the receiving stream.
Chloride	Yes	Yes	Yes	Neither the existing treatment system nor treatment systems are designed to remove chloride or sulfate. * The mass of these pollutants discharged to the stream will increase in the absence of other mechanisms of control.
Sulfate	Yes	Yes	Yes	See above.
Total Nitrogen	Yes	Yes	No	The proposed activated sludge alternative incorporates biological nutrient removal capability.
Phosphorus	Yes	No	No	See above.
Priority Pollutants ³	Yes	Yes	Yes	See note below.

1. WLA-based maximum day concentrations and mass loadings for a number of months exceed existing permit limit values. However, each of the treatment technologies evaluated are capable of meeting the existing permit mass limits.
2. Monitoring data sufficient to adequately characterize the existing treatment system's and proposed alternatives' nutrient removal capabilities within Iowa is not available. However, for the purposes of this analysis only the activated sludge alternative is specifically designed to incorporate nutrient removal capabilities. Therefore, degradation from both of the lagoon alternatives for both nitrogen and phosphorus is assumed.
3. 567 IAC 61 lists a total of 88 priority pollutants, some of which may reasonably be expected to be present in a treated municipal effluent absent significant industrial contributors. For example, lead and copper may be present in the treated effluent (and the drinking water supply) due to plumbing corrosion. To date the existing treatment facility has not been required to test for any priority pollutants due to lack of significant contributing industries that discharge any of the constituents to the sanitary sewer system and associated lack of reasonable potential to violate water quality standards criteria for these constituents. The concentrations of priority pollutants are not expected to increase as the result of additional wastewater flows and loadings.

Justification of Degradation

The preferred treatment alternative will result attainment of all secondary and WQBELs, and will also result in improved water quality with respect to a number of pollutants. Despite a projected no net increase in the contributing population, the proposed treatment facility will

reduce stream pollutant loadings for TSS, ammonia, E. coli and nutrients. BOD treatment removal efficiency will increase and effluent BOD concentrations will decrease. However, the total effluent mass of BOD to the receiving stream may increase at full design capacity.

In addition, the mass of micro constituents (i.e. priority pollutants) as well as chloride and sulfate may increase in proportion to City growth. It should be noted that at this time the levels of these pollutants in the existing plant influent and effluent are unknown, or based on limited monitoring of industrial contributors, have been deemed to meet applicable water quality standards. It should also be noted that treatment to remove these pollutants is, as a general rule, not expected where they are part of a combined municipal wastewater stream. Such pollutants are best addressed through source reduction efforts. For example, reduction in chloride concentrations may be achieved by minimizing the volume of ion exchange water softener regeneration waste discharged to the municipal sewer system. However, selective treatment for removal of chloride at the sewage treatment plant would require the use of an advanced membrane filtration process which in turn would generate a highly concentrated waste stream that is difficult to dispose. The capital and operating costs of such a system would be prohibitively expensive.

As described above, it has been determined that degradation for some POCs will result from the projected growth of the community and implementation of the preferred treatment alternative. Since Iowa's Antidegradation Implementation Procedures apply to net mass pollutant increases irrespective of effluent or receiving stream pollutant concentrations, and because they do not exempt POCs that are not feasible to remove absent source reduction efforts, the Social and Economic Importance (SEI) of the project must be demonstrated.

* However the pelletized algae tested to date have shown to remove some sulfates and by the levels of chloride ions detected some bonding with some of the other nutrients appear to reduce, but as yet not to a tested confirmable amount.

Project Social and Economic Importance

1. Identify the affected community:

The affected community is the City of Allison, Iowa. The project is a municipally owned public treatment works. The entire population of the community will benefit from (and bear the costs of) the project.

2. Identify relevant factors that characterize the social and economic conditions of the affected community:

Table 8 lists relevant economic statistics for the City.

Community services currently include electricity provided by Mid America, water and sewer provided by the City, natural gas provided by Mid America. and telecommunications services through Universal Communications of Allison, Inc.. The City has one elementary and one high school with a total enrollment of 450. Cultural and recreational facilities include a historical society, a number of public parks, public schools, public pool, tennis courts and other recreational facilities such as the within or surrounding the community.

There are no known potential public health, safety or environmental problems.

Table 9: Allison, IA SEI Factors

Factor	Status	Notes	Source	State Average
Rate of Employment	60% (Approximate)	Population 16 years and over in civilian labor force		64.7% (Approximate)
Rate of Unemployment	3.4%	Population 16 years and over in civilian labor force	2019	2.8%
Median Household Income	\$46,726	2017 Income	2017 Census Datausa.io	\$53,350
Poverty Level	12%	Families below poverty level in 2017	2017 Census Datausa.io	12.0%*
Population Trends	+1% (Approximate)	Increase		
Housing Starts	1% (Approximate)	Increase		
Sewer Revenue	\$602,187.48	Current annual sewer revenue based on average monthly bill	City	Unknown

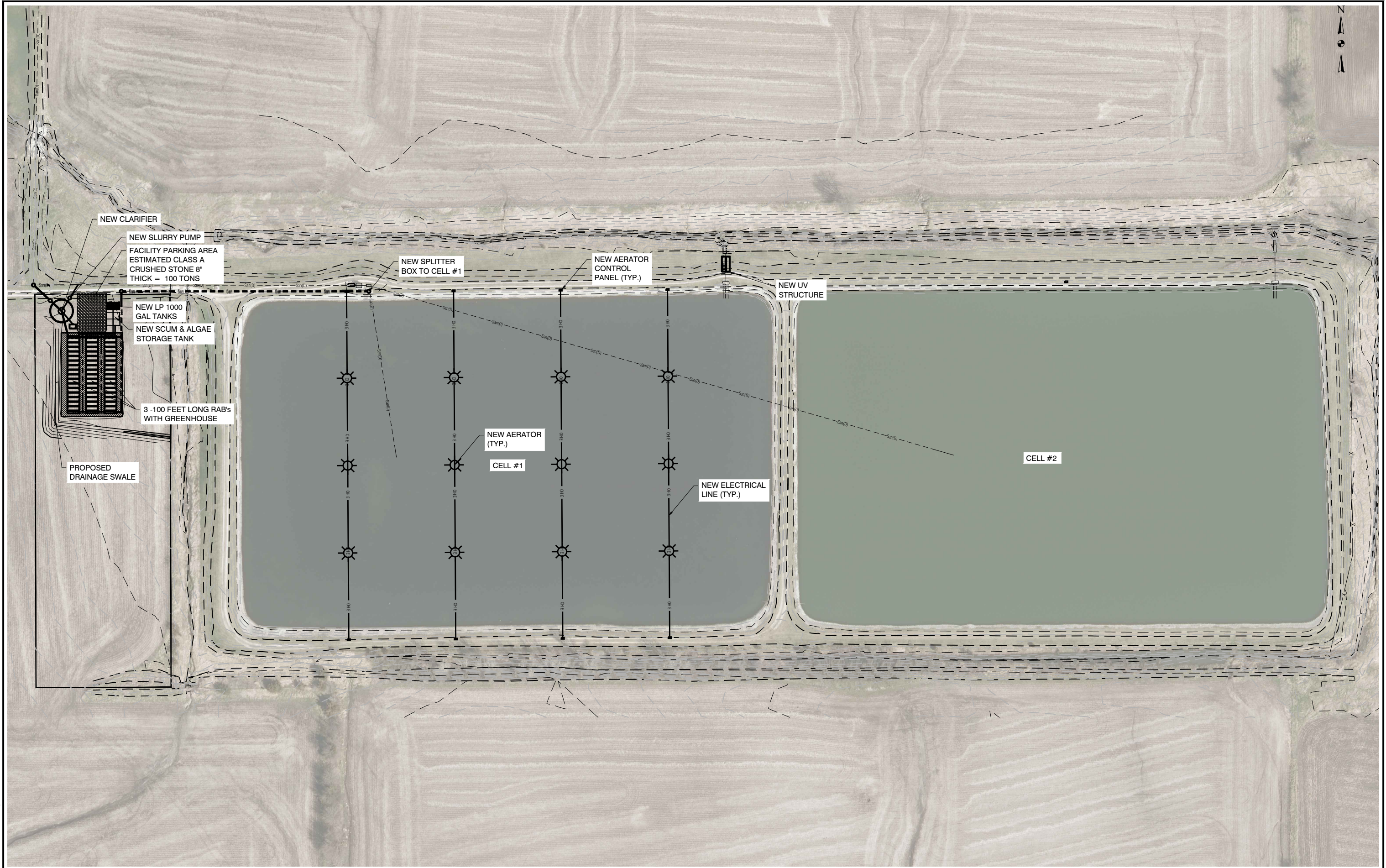
*There is no confirmable way to define the affect the Coronavirus will have on lower income families in the City. Which could affect the poverty level.

3. Describe the important social and economic development associated with the project:

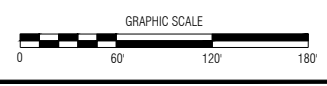
The proposed project is necessary to meet anticipated effluent permit limits and maintain adequate sewage treatment for the City. Due to rapid historical and projected residential growth as well as more stringent effluent limits, the community requires both expansion of treatment capacity and improvement of treatment efficiency.

The project is not expected to directly affect community employment rates, income levels, population trends or housing starts. However, it will have indirect impacts on some of these factors. The existing and proposed infrastructure is funded through municipal sewer revenues and will have a number of economic and non-economic impacts including:

- (a) The City, in anticipation of the treatment work required to meet NPDES Permit requirements, passed a rate ordinance increasing sewer fees.
- (b) By selection of an economically efficient treatment alternative, the project will minimize the financial impact to affected residents.
- (c) By increasing the treatment capacity and degree of treatment provided, the project will benefit the receiving stream as well as the aquatic and recreational beneficial uses associated with it.
- (d) By increasing the treatment capacity, the project will allow for continued growth of the community.



J:\6125-2-AC\Drawings\Sheets\6125 - PR - WWTP.dwg - 6.03 PROPOSED WWTP IMPROVEMENTS - 05-12-20 - 8:35am - KMN.352



NO.	REVISION	BY	DATE	NO.	REVISION	BY	DATE

CGA Clapsaddle-Garber Associates, Inc.
 739 Park Avenue
 Ackley, Iowa 50001
 Ph 641-847-3273
 www.cgaconsultants.com

DESIGNED: DSM DATE: _____
 DRAWN: KMN DATE: _____
 CHECKED: _____ DATE: _____
 APPROVED: _____ DATE: _____

TREATMENT IMPROVEMENTS AT WASTEWATER LAGOONS
ALLISON, IOWA

ALT. #4 PROPOSED WWTP IMPROVEMENTS

PROJECT NO. 6125
 SHEET NO. B.03

Allison, IA – WWTF Antidegradation Report

Present Worth Cost of Alternates

PW = Capital Cost + O&M Cost for Design Period

$$PW (O\&M) = \frac{\text{Annual Cost} \times [(1+i)^N - 1]}{i(1+i)^N} \quad \begin{array}{l} N = 20 \text{ years} \\ i = 2.75\% \end{array}$$

$$PW (O\&M) = \frac{(\text{Annual Cost}) \times [(1+0.0275)^{20} - 1]}{0.0275(1+0.0275)^{20}} = (\text{Annual Cost O\&M}) \times 15.2275$$

Current City O&M costs for wastewater	\$102,361	Use \$105,000 *
Number of households	440	
Median household income	\$50,596 (2017)	

*This O&M cost reflects the audited cost used by the City to account for the personnel and equipment costs to support the water and sewer departments.

Aeration for Existing Cell 1. Lagoon

Aeration for the existing lagoon will be provided with floating aerators as manufactured by WTR Solutions for Alternate 4. Lagoon aeration will utilize 12 WTR Solutions 2 hp floating aerators. For power consumption, assume an average of 50% operational time of all aerators.

Aerators	12 @ \$9,500 =	\$ 114,000
Electrical		21,500
Anchors and cables		<u>5,000</u>
Capital Cost - Lagoon aeration		\$ 140,500

Electric consumption - aerators:

$$2\text{hp} \times 0.746 \text{ kw/hp} \times 12 \text{ aerators} \times 24 \text{ hrs/day} \times (365 \text{ days}/2) = 78,420 \text{ kwh}$$

$$\text{@ } \$0.08/\text{kwh} = \$6,275 \quad \text{say } \$6,500 \text{ annually}$$

Disinfection – Alternatives 4, 5 and 6

Ultraviolet (UV) disinfection will be provided for Alternatives 4, 5 and 6 prior to discharge to the outfall.

Capital Cost for UV disinfection (Structure and Equipment)	\$350,000
---	-----------

Electrical consumption for UV disinfection

Assume 9 months per year disinfection requirement. Electric power demand for UV reactor – approximately 5 kw

$$5 \text{ kw} \times 24 \text{ hrs/day} \times 9 \text{ mo} \times 30 \text{ days/mo} \times \$0.08 / \text{kwh} = \$ 2592$$

say \$ 2,600 / annually

Alternate 4 – Gross-Wen Technologies (GWT)

From pages 4 & 5 of the GWT proposal, dated January 2019, a cost estimate of \$975,000 for the installation of modules and to meet NFPA 820 requirements a clarifier is included in the estimate, An estimated annual cost of O&M for the installation to be \$6,000 including equipment maintenance, electric power and an allowance for sale of the algae as an offsetting income.

Capital cost GWT System	\$975,000
Exist Lagoon Aeration	140,500
UV Disinfection	<u>350,000</u>
Subtotal	\$1,465,000
20% Contingency	<u>293,000</u>
Total Capital Cost	\$1,758,000

Lagoon aeration electricity	6,500
UV disinfection electricity	2,600
GWT Equip O&M and power	<u>6,000</u>
Total Annual O&M	\$15,100

PW (O&M) x15.2275 = **\$229,935**

Total Project Present Worth \$1,987,935

Annual Payment for \$1,758,000 20 years at 2.75%	\$ 115,500
Annual O&M Cost	\$ 15,100
Total Annual Cost Alternate 4	\$ 130,600

Cost per month \$10,883
440 Households \$24.73

Alternate 5 – Nitrox Process

This alternate includes installation of one NitrOx process reactor with aeration and heating equipment, addition of a clarification cell, and aeration for the existing lagoon cells. (Cell one and Cell 2)

NitrOx Reactor equipment including 40hp blowers and propane heating unit (Triplepoint)	\$493,000
Concrete reactor tanks	80,000
Polishing cell created by placing a lagoon wall	60,000
Controls, D.O. and temperature probes	20,000
Installation, piping,	30,000
Blower building	<u>35,000</u>
NitrOx Process Construction	\$718,000
Lagoon Aeration	325,000
UV Disinfection	<u>350,000</u>
	\$1,393,000
Contingency 20%	<u>278,600</u>
Total Capital Cost	\$1,671,600

Heating Costs for Reactor

Winter flow 0.167 MGD

Heat from 32 F to 42 F

Heat 24/7 for 3 months

$$167,000 \text{ gal/day} \times 8.33 \text{ lb/gal} \times 10 \text{ F} = 13,911,100 \text{ BTU/day}$$

$$\times 1/24 = 579,630 \text{ BTU/hr}$$

Electric heating

$$579,630 \times 1/3414 \text{ BTU/kwh} = 169.8 \text{ kw Demand}$$

$$169.8 \text{ kw} \times 24 \text{ hrs/day} \times 3 \text{ months} \times 30 \text{ days/mo} = 366,768 \text{ kwh}$$

$$\times \$0.08 / \text{kwh} = \$29,341 \text{ annually}$$

Propane heating (Propane 91,333 BTU/gal, boiler efficiency 80%)

$$13,911,100 \text{ BTU/day} \times 3 \text{ mo} \times 30 \text{ days} \times 1/91,333 = 13,708 \text{ gal}$$

$$\text{@ } 80\% \text{ boiler efficiency } \quad 13,708 / 0.80 = 17,135 \text{ gal / year}$$

$$\text{@ } \$2.80/\text{gal} \quad \text{Cost} = \$47,978 / \text{year}$$

Lagoon aeration – Electric	15,000
UV Disinfection – Electric	2,600
Reactor heating - Propane	<u>47,978</u>
Total Annual O&M	\$65,578

PW (O&M) $\times 15.2275 =$ **\$998,589**

Total Project Present Worth **\$2,670,189**

Annual Payment for \$1,216,320, 20 years at 2.75%	\$ 109,824
Annual O&M Cost	<u>65,578</u>
Total Annual Cost Alternate 5	\$ 175,402

Cost per month **\$14,616**
440 Households **\$33.22**

Alternate 6 – Nexom SAGR

This alternate includes addition of a SAGR treatment facility, and aeration of the existing lagoon cells.

Aeration of existing lagoon cells will be provided with floating aerators as manufactured by WTR Solutions. Retain floating baffle and the SAGR components including 2 – 25 hp blowers and distribution system components.

Nexom (SAGR) equipment Proposal cost	\$488,000.
Assume remaining items	\$275,000
Construct SAGR basins	500,000
Blower building	<u>70,000</u>
SAGR Facility total	\$1,293,000
Lagoon Aeration	325,000
UV Disinfection	<u>350,000</u>
	1,968,000
Contingency 20%	<u>363,600</u>
Total Capital Cost	\$2,361,600

SAGR Blower – Electric consumption

15.1 hp x 0.746 kw/hp x 1/0.9 efficiency x 24 hrs/day x 365 days
x \$0.08/kwh = \$8,770 annually

Lagoon aeration – Electric	15,000
SAGR Blower – Electric	8,770
UV Disinfection – Electric	<u>2,600</u>
Total Annual O&M	\$ 26,370

PW (O&M) x15.2275 = **\$401,549**

Total Project Present Worth **\$2,763,149**

Annual Payment for \$1,569,600, 20 years at 2.75%	\$151,674
Annual O&M Cost	<u>26,370</u>
Total Annual Cost Alternate 6	\$ 177,044

Average Monthly Cost \$14,754
440 Households \$33.53



CERTIFIED MAIL

January 14, 2020

GLEND A MILLER – CITY CLERK
CITY OF ALLISON
410 N MAIN
ALLISON, IA 50602-0647

RECEIVED
JAN 30 2020
CITY OF ALLISON

RE: NPDES Final Permit #1203001

Dear Ms. Miller:

Enclosed is the final NPDES permit that authorizes the discharge of wastewater from the City of Allison's wastewater treatment facility. This final permit is the same as the draft permit sent October 15, 2019. The issuance date of this permit is February 1, 2020; please become familiar with all limits and requirements in the enclosed final permit.

The facility will be required to use new discharge monitoring report (DMR) forms once a final permit is issued. Paper and electronic DMR forms are available from your regional Field Office. The facility is strongly encouraged to use the electronic reporting form. Please contact Jeremy Klatt at 641-424-4073 (Field Office 2) or jeremy.klatt@dnr.iowa.gov for more information or to request forms.

If you have any questions, please contact me at 515-725-1235 or at ryan.olive@dnr.iowa.gov.

Sincerely,

Ryan Olive
NPDES Section

Enclosures

Gave copy to
Don Moore
1/30/2020
Gave Kim a
copy of all
these papers
1/30/2020

IOWA DEPARTMENT OF NATURAL RESOURCES
National Pollutant Discharge Elimination System (NPDES) Permit

OWNER NAME & ADDRESS

CITY OF ALLISON
P.O. BOX 647
ALLISON, IA 50602-0647

FACILITY NAME & ADDRESS

ALLISON CITY OF STP
1/2 MI S. OF HWY 3 ON HWY 14
THEN EAST 1/4 MI ON CEMETERY
RD
ALLISON, IA 50602

Section 31, T92N, R16W
Butler County

IOWA NPDES PERMIT NUMBER: 1203001

DATE OF ISSUANCE: 02/01/2020

DATE OF EXPIRATION: 01/31/2025

**YOU ARE REQUIRED TO FILE FOR RENEWAL
OF THIS PERMIT BY: 08/04/2024
EPA NUMBER: IA0042731**

This permit is issued pursuant to the authority of section 402(b) of the Clean Water Act (33 U.S.C 1342(b)), Iowa Code section 455B.174, and rule 567-64.3, Iowa Administrative Code. You are authorized to operate the disposal system and to discharge the pollutants specified in this permit in accordance with the effluent limitations, monitoring requirements and other terms set forth in this permit.

You may appeal any condition of this permit by filing a written notice of appeal and request for administrative hearing with the director of this department within 30 days of your receipt of this permit.

Any existing, unexpired Iowa operation permit or Iowa NPDES permit previously issued by the department for the facility identified above is revoked by the issuance of this permit. This provision does not apply to any authorization to discharge under the terms and conditions of a general permit issued by the department or to any permit issued exclusively for the discharge of stormwater.

FOR THE DEPARTMENT OF NATURAL RESOURCES

By 

Ryan Olive
NPDES Section
Environmental Services Division

Facility Name: ALLISON CITY OF STP
Permit Number: 1203001

Outfall No.: 001 CONTINUOUS DISCHARGE FROM A TWO-CELL WASTE STABILIZATION LAGOON.

Receiving Stream: UNNAMED CREEK

Route of Flow: UNNAMED CREEK TO FEDDEKE CREEK

Class A2 waters are secondary contact recreational use waters in which recreational or other uses may result in contact with the water that is either incidental or accidental. During the recreational use, the probability of ingesting appreciable quantities of water is minimal. Class A2 uses include fishing, commercial and recreational boating, any limited contact incidental to shoreline activities and activities in which users do not swim or float in the water body while on a boating activity.

Waters designated Class B(WW2) are those in which flow or other physical characteristics are capable of supporting a resident aquatic community that includes a variety of native nongame fish and invertebrate species. The flow and other physical characteristics limit the maintenance of warm water game fish populations. These waters generally consist of small perennially flowing streams.

Bypasses from any portion of a treatment facility or from a sanitary sewer collection system designed to carry only sewage are prohibited.

Facility Name: ALLISON CITY OF STP
 Permit Number: 1203001

Effluent Limitations:

You are prohibited from discharging pollutants except in compliance with the following effluent limitations:
001 CONTINUOUS DISCHARGE FROM A TWO-CELL WASTE STABILIZATION LAGOON.

Outfall: 001 Effective Dates: 02/01/2020 to 01/31/2025

Parameter	Season	Limit Type	Limits
CBOD5			
	Yearly	7 Day Average	40 MG/L 67 LBS/DAY
	Yearly	30 Day Average	25 MG/L 42 LBS/DAY
TOTAL SUSPENDED SOLIDS			
	Yearly	7 Day Average	120 MG/L 200 LBS/DAY
	Yearly	30 Day Average	80 MG/L 133 LBS/DAY
NITROGEN, TOTAL (AS N)			
	Yearly	30 Day Average	57.8 LBS/DAY
	Yearly	Daily Maximum	94.5 LBS/DAY
SILVER, TOTAL (AS AG)			
	Yearly	30 Day Average	0.003800 MG/L 0.006338 LBS/DAY
	Yearly	Daily Maximum	0.003800 MG/L 0.006338 LBS/DAY
LEAD, TOTAL (AS PB)			
	Yearly	30 Day Average	0.007693 MG/L 0.01283 LBS/DAY
	Yearly	Daily Maximum	0.1974 MG/L 0.3293 LBS/DAY
DISSOLVED OXYGEN			
	Yearly	Daily Minimum	5.0 MG/L
PH			
	Yearly	Daily Maximum	9.0 STD UNITS
	Yearly	Daily Minimum	6.5 STD UNITS

Facility Name: ALLISON CITY OF STP

Permit Number: 1203001

Outfall: 001 Effective Dates: 02/01/2020 to 10/31/2022

Parameter	Season	Limit Type	Limits
AMMONIA NITROGEN (N)			
	JAN	30 Day Average	5.2 MG/L 8.6 LBS/DAY
	JAN	Daily Maximum	19.9 MG/L 33.2 LBS/DAY
	FEB	30 Day Average	5.8 MG/L 9.7 LBS/DAY
	FEB	Daily Maximum	8.4 MG/L 14.0 LBS/DAY
	MAR	30 Day Average	3.9 MG/L 6.5 LBS/DAY
	MAR	Daily Maximum	3.9 MG/L 6.5 LBS/DAY
	APR	30 Day Average	2.1 MG/L 3.5 LBS/DAY
	APR	Daily Maximum	4.7 MG/L 7.9 LBS/DAY
	MAY	30 Day Average	1.8 MG/L 3.1 LBS/DAY
	MAY	Daily Maximum	3.2 MG/L 5.3 LBS/DAY
	JUN	30 Day Average	1.3 MG/L 2.2 LBS/DAY
	JUN	Daily Maximum	3.2 MG/L 5.3 LBS/DAY
	JUL	30 Day Average	1.1 MG/L 1.8 LBS/DAY
	JUL	Daily Maximum	3.2 MG/L 5.3 LBS/DAY
	AUG	30 Day Average	1.0 MG/L 1.6 LBS/DAY
	AUG	Daily Maximum	2.7 MG/L 4.4 LBS/DAY
	SEP	30 Day Average	1.5 MG/L 2.5 LBS/DAY
	SEP	Daily Maximum	2.7 MG/L 4.4 LBS/DAY
	OCT	30 Day Average	2.7 MG/L 4.4 LBS/DAY
	OCT	Daily Maximum	2.7 MG/L 4.4 LBS/DAY
	NOV	30 Day Average	2.7 MG/L 4.4 LBS/DAY
	NOV	Daily Maximum	2.7 MG/L 4.4 LBS/DAY
	DEC	30 Day Average	3.9 MG/L 6.5 LBS/DAY
	DEC	Daily Maximum	3.9 MG/L 6.5 LBS/DAY

Facility Name: ALLISON CITY OF STP

Permit Number: 1203001

Outfall: 001 Effective Dates: 11/01/2022 to 01/31/2025

Parameter	Season	Limit Type	Limits
AMMONIA NITROGEN (N)			
	JAN	30 Day Average	3.4 MG/L 5.7 LBS/DAY
	JAN	Daily Maximum	19.9 MG/L 33.2 LBS/DAY
	FEB	30 Day Average	4.0 MG/L 6.6 LBS/DAY
	FEB	Daily Maximum	8.4 MG/L 14.0 LBS/DAY
	MAR	30 Day Average	3.4 MG/L 5.7 LBS/DAY
	MAR	Daily Maximum	3.9 MG/L 6.5 LBS/DAY
	APR	30 Day Average	1.5 MG/L 2.5 LBS/DAY
	APR	Daily Maximum	4.7 MG/L 7.9 LBS/DAY
	MAY	30 Day Average	1.7 MG/L 2.9 LBS/DAY
	MAY	Daily Maximum	3.2 MG/L 5.3 LBS/DAY
	JUN	30 Day Average	1.3 MG/L 2.2 LBS/DAY
	JUN	Daily Maximum	3.2 MG/L 5.3 LBS/DAY
	JUL	30 Day Average	1.0 MG/L 1.7 LBS/DAY
	JUL	Daily Maximum	3.2 MG/L 5.3 LBS/DAY
	AUG	30 Day Average	1.0 MG/L 1.6 LBS/DAY
	AUG	Daily Maximum	2.7 MG/L 4.4 LBS/DAY
	SEP	30 Day Average	1.1 MG/L 1.8 LBS/DAY
	SEP	Daily Maximum	2.7 MG/L 4.4 LBS/DAY
	OCT	30 Day Average	1.6 MG/L 2.6 LBS/DAY
	OCT	Daily Maximum	2.7 MG/L 4.4 LBS/DAY
	NOV	30 Day Average	2.3 MG/L 3.9 LBS/DAY
	NOV	Daily Maximum	2.7 MG/L 4.4 LBS/DAY
	DEC	30 Day Average	2.5 MG/L 4.1 LBS/DAY
	DEC	Daily Maximum	3.9 MG/L 6.5 LBS/DAY

Facility Name: ALLISON CITY OF STP

Permit Number: 1203001

Outfall: 001 Effective Dates: 11/01/2022 to 01/31/2025

<u>Parameter</u>	<u>Season</u>	<u>Limit Type</u>	<u>Limits</u>
E. COLI			
	MAR	Geometric Mean	126 #/100 ML
	APR	Geometric Mean	126 #/100 ML
	MAY	Geometric Mean	126 #/100 ML
	JUN	Geometric Mean	126 #/100 ML
	JUL	Geometric Mean	126 #/100 ML
	AUG	Geometric Mean	126 #/100 ML
	SEP	Geometric Mean	126 #/100 ML
	OCT	Geometric Mean	126 #/100 ML
	NOV	Geometric Mean	126 #/100 ML

Facility Name: ALLISON CITY OF STP
Permit Number: 1203001

Monitoring and Reporting Requirements

- (a) Samples and measurements taken shall be representative of the volume and nature of the monitored wastewater.
- (b) Analytical and sampling methods specified in 40 CFR Part 136 or other methods approved in writing by the department shall be utilized. All effluent samples for which a limit applies must be analyzed using sufficiently sensitive methods (i.e. testing procedures) approved under 567 IAC Chapter 63 and 40 CFR Part 136 for the analysis of pollutants or pollutant parameters or as required under 40 CFR chapter I, subchapter N or O.
- For the purposes of this paragraph, an approved method is "sufficiently sensitive" when:
- (1) the method minimum level (ML) is at or below the level of the effluent limit established in the permit for the measured pollutant or pollutant parameter, or
 - (2) the method has the lowest ML of the approved analytical methods for the measured pollutant or pollutant parameter.
- Samples collected for operational testing need not be analyzed by approved analytical methods; however, commonly accepted test methods should be used.
- (c) Chapter 63 of the rules provides you with further explanation of your monitoring requirements.
- (d) You are required to report all data including calculated results needed to determine compliance with the limitations contained in this permit. This includes daily maximums and minimums, 30-day averages and 7-day averages for all parameters that have concentration (mg/l) and mass (lbs/day) limits. Also, flow data shall be reported in million gallons per day (MGD).
- (e) Results of all monitoring shall be recorded on forms provided by, or approved by, the department, and submitted to the department by the fifteenth day following the close of the reporting period.
- (f) Results of all monitoring shall be recorded on forms provided by, or approved by, the department, and shall be submitted to the appropriate regional field office of the department by the fifteenth day following the close of the reporting period. Your reporting period is on a MONTHLY basis, ending on the last day of each reporting period.

Facility Name: ALLISON CITY OF STP
 Permit Number: 1203001

Outfall	Wastewater Parameter	Sample Frequency	Sample Type	Monitoring Location
The following monitoring requirements shall be in effect from 02/01/2020 to 01/31/2025				
001	BIOCHEMICAL OXYGEN DEMAND (BOD5)	1 TIME PER WEEK	24 HOUR COMPOSITE	RAW WASTE
001	FLOW	7/WEEK OR DAILY	24 HOUR TOTAL	RAW WASTE
001	PH	1 TIME PER WEEK	GRAB	RAW WASTE
001	TEMPERATURE	1 TIME PER WEEK	GRAB	RAW WASTE
001	TOTAL SUSPENDED SOLIDS	1 EVERY 2 WEEKS	24 HOUR COMPOSITE	RAW WASTE
001	FLOW	7/WEEK OR DAILY	INSTANTANEOUS	FINAL EFFLUENT
001	CBOD5	1 TIME PER WEEK	GRAB	EFFLUENT PRIOR TO DISINFECTION
001	TOTAL SUSPENDED SOLIDS	1 EVERY 2 WEEKS	GRAB	EFFLUENT PRIOR TO DISINFECTION
001	AMMONIA NITROGEN (N)	1 TIME PER WEEK	GRAB	EFFLUENT AFTER DISINFECTION
001	DISSOLVED OXYGEN	1 TIME PER WEEK	GRAB	EFFLUENT AFTER DISINFECTION
001	LEAD, TOTAL (AS PB)	1 EVERY MONTH	GRAB	EFFLUENT AFTER DISINFECTION
001	NITROGEN, TOTAL (AS N)	1 TIME PER WEEK	GRAB	EFFLUENT AFTER DISINFECTION
001	PH	1 TIME PER WEEK	GRAB	EFFLUENT AFTER DISINFECTION
001	SILVER, TOTAL (AS AG)	1 TIME PER WEEK	GRAB	EFFLUENT AFTER DISINFECTION
001	TEMPERATURE	1 TIME PER WEEK	GRAB	EFFLUENT AFTER DISINFECTION
001	CELL DEPTH	2 TIMES PER WEEK	MEASUREMENT	CELL 2 CONTENTS
001	CELL DEPTH	2 TIMES PER WEEK	MEASUREMENT	CELL 1 CONTENTS
The following monitoring requirements shall be in effect from 11/01/2022 to 1/31/2025				
001	E. COLI	GEO. MEAN 1/3 MONTHS	GRAB	EFFLUENT AFTER DISINFECTION

Facility Name: ALLISON CITY OF STP
Permit Number: 1203001

Special Monitoring Requirements

Outfall # Description
001 E. COLI

The limit for E. coli of 126 org/100 ml specified on page 6 of this permit for outfall(s) 001 is a geometric mean. The disinfection season is established in the Iowa Administrative Code, Subparagraph 567 IAC 61.3(3)"a"(1), and is in effect from March 15 to November 15. Any disinfection system (chlorine, UV light, etc.) shall be operated to comply with the limit during the entire disinfection season whenever wastewater is being discharged from outfall(s) 001.

The facility must collect and analyze a minimum of five samples in one calendar month during each 3-month period from March 15 to November 15. The 3-month periods are March - May, June - August, and September - November. The collection of five samples in each 3-month period will result in a minimum of 15 samples being collected during a calendar year. For example, for the first 3-month period, the operator may choose April as the calendar month to collect the 5 individual E. coli samples to determine compliance with the limits. The operator may also choose the months of March or May as well, as long as each of the 5 samples is collected during a single calendar month. The same principle applies to the other two 3-month periods during the disinfection season. The following requirements apply to the individual samples collected in one calendar month:
Samples must be spaced over one calendar month.
No more than one sample can be collected on any one day.
There must be a minimum of two days between each sample.
No more than two samples may be collected in a period of seven consecutive days.

If the effluent has been disinfected using chlorine, ultraviolet light (UV), or any other process intended to disrupt the biological integrity of the E. coli, the samples shall be analyzed using the Most Probable Number method found in Standard Method 9223B (Colilert® or Colilert-18® made by IDEXX Laboratories, Inc.). If the effluent has not been disinfected the samples may be analyzed using either the MPN method above or EPA Method 1603: Escherichia coli (E. coli) in water by membrane filtration using modified membrane-thermotolerant E. coli agar (modified mTEC) or mColiBlue-24® made by the Hach Company.

The geometric mean must be calculated using all valid sample results collected during a month. The geometric mean formula is as follows:
Geometric Mean = $(\text{Sample one} * \text{Sample two} * \text{Sample three} * \text{Sample four} * \text{Sample five} \dots * \text{Sample N})^{1/N}$, which is the Nth root of the result of the multiplication of all of the sample results where N = the number of samples. If a sample result is a less than value, the value reported by the lab without the less than sign should be used in the geometric mean calculation.

The geometric mean can be calculated in one of the following ways:
Use a scientific calculator that can calculate the powers of numbers.
Enter the samples in Microsoft Excel and use the function "GEOMEAN" to perform the calculation.
If you have exactly five samples, use the geometric mean calculator on the Iowa DNR webpage at: <http://www.iowadnr.gov/Environmental-Protection/Water-Quality/NPDES-Waste-Water-Permitting/NPDES-Operator-Information/Bacteria-Sampling>

METALS

EPA approved test methods shall be used to test at or below the limits on pages 8 & 9 of this permit. If a sample result is not at a detection level which is low enough to demonstrate compliance with the limit in the permit, the facility will be considered non-compliant with that limit.

Facility Name: ALLISON CITY OF STP

Permit Number: 1203001

NITROGEN, TOTAL (AS N)

Total nitrogen shall be determined by testing for Total Kjeldahl Nitrogen (TKN) and nitrate + nitrite nitrogen and reporting the sum of the TKN and nitrate + nitrite results (reported as N). Nitrate + nitrite can be analyzed together or separately.

Facility Name: ALLISON CITY OF STP
 Permit Number: 1203001

Significant Industrial User Discharges:

Significant Industrial User: ALLAN INDUSTRIAL COATINGS, INC

Outfall # 001
 Outfall Description PROCESS WASTEWATER DISCHARGE PRIOR TO MIXING WITH OTHER WASTESTREAMS.

Significant Industrial User Effluent Limitations

You are prohibited from discharging pollutants except in compliance with the following effluent limitations:

ALLAN INDUSTRIAL COATINGS, INC			
Outfall: 001 Effective Dates: 02/01/2020 to 01/31/2025			
Parameter	Season	Limit Type	Limit Values
FLOW			
	Yearly	30 Day Average	0.008 MGD
	Yearly	DAILY MAXIMUM	0.01 MGD
ZINC, TOTAL (AS ZN)			
	Yearly	30 Day Average	1.480 MG/L
	Yearly	DAILY MAXIMUM	2.610 MG/L
CADMIUM, TOTAL (AS CD)			
	Yearly	30 Day Average	0.070 MG/L
	Yearly	DAILY MAXIMUM	0.110 MG/L
CHROMIUM, TOTAL (AS CR)			
	Yearly	30 Day Average	0.650 MG/L
	Yearly	DAILY MAXIMUM	2.770 MG/L
CYANIDE, TOTAL (AS CN)			
	Yearly	30 Day Average	0.200 MG/L
	Yearly	DAILY MAXIMUM	1.200 MG/L
NICKEL, TOTAL (AS NI)			
	Yearly	30 Day Average	2.380 MG/L
	Yearly	DAILY MAXIMUM	3.980 MG/L

Facility Name: ALLISON CITY OF STP
 Permit Number: 1203001

OIL AND GREASE			
Yearly	30 Day Average		26 MG/L
Yearly	DAILY MAXIMUM		52 MG/L
SILVER, TOTAL (AS AG)			
Yearly	30 Day Average		0.170 MG/L
Yearly	DAILY MAXIMUM		0.430 MG/L
TOTAL TOXIC ORGANICS			
Yearly	DAILY MAXIMUM		2.130 MG/L
COPPER, TOTAL (AS CU)			
Yearly	30 Day Average		0.610 MG/L
Yearly	DAILY MAXIMUM		2.380 MG/L
LEAD, TOTAL (AS PB)			
Yearly	30 Day Average		0.430 MG/L
Yearly	DAILY MAXIMUM		0.690 MG/L
PH			
Yearly	DAILY MAXIMUM		9.0 STD UNITS
Yearly	DAILY MINIMUM		6.0 STD UNITS

Facility Name: ALLISON CITY OF STP
Permit Number: 1203001

Monitoring and Reporting Requirements

- (a) Samples and measurements taken shall be representative of the volume and nature of the monitored wastewater.
- (b) Analytical and sampling methods specified in 40 CFR Part 136 or other methods approved in writing by the department shall be utilized. All effluent samples for which a limit applies must be analyzed using sufficiently sensitive methods (i.e. testing procedures) approved under 567 IAC Chapter 63 and 40 CFR Part 136 for the analysis of pollutants or pollutant parameters or as required under 40 CFR chapter 1, subchapter N or O.
- For the purposes of this paragraph, an approved method is "sufficiently sensitive" when:
- (1) the method minimum level (ML) is at or below the level of the effluent limit established in the permit for the measured pollutant or pollutant parameter, or
 - (2) the method has the lowest ML of the approved analytical methods for the measured pollutant or pollutant parameter.
- Samples collected for operational testing need not be analyzed by approved analytical methods; however, commonly accepted test methods should be used.
- (c) Chapter 63 of the rules provides you with further explanation of your monitoring requirements.
- (d) You are required to report all data including calculated results needed to determine compliance with the limitations contained in this permit. This includes daily maximums and minimums, 30-day averages and 7-day averages for all parameters that have concentration (mg/l) and mass (lbs/day) limits. Also, flow data shall be reported in million gallons per day (MGD).
- (e) Results of all monitoring shall be recorded on forms provided by, or approved by, the department, and submitted to the department by the fifteenth day following the close of the reporting period.
- (f) Results of all monitoring shall be recorded on forms provided by, or approved by, the department, and shall be submitted to the appropriate regional field office of the department by the fifteenth day following the close of the reporting period. Your reporting period is on a MONTHLY basis, ending on the last day of each reporting period.

Facility Name: ALLISON CITY OF STP
 Permit Number: 1203001

ALLAN INDUSTRIAL COATINGS, INC

Outfall	Wastewater Parameter	Sample Frequency	Sample Type	Monitoring Location
001	CADMIUM, TOTAL (AS CD)	1 EVERY 2 WEEKS	24 HOUR COMPOSITE	PRIOR TO DISCHARGE TO CITY SEWER
001	CHROMIUM, TOTAL (AS CR)	1 EVERY 2 WEEKS	24 HOUR COMPOSITE	PRIOR TO DISCHARGE TO CITY SEWER
001	COPPER, TOTAL (AS CU)	1 EVERY 2 WEEKS	24 HOUR COMPOSITE	PRIOR TO DISCHARGE TO CITY SEWER
001	CYANIDE, TOTAL (AS CN)	1 EVERY 2 WEEKS	GRAB	PRIOR TO DISCHARGE TO CITY SEWER
001	FLOW	7/WEEK OR DAILY	24 HOUR TOTAL	PRIOR TO DISCHARGE TO CITY SEWER
001	LEAD, TOTAL (AS PB)	1 EVERY 2 WEEKS	24 HOUR COMPOSITE	PRIOR TO DISCHARGE TO CITY SEWER
001	NICKEL, TOTAL (AS NI)	1 EVERY 2 WEEKS	24 HOUR COMPOSITE	PRIOR TO DISCHARGE TO CITY SEWER
001	OIL AND GREASE	1 EVERY MONTH	GRAB	PRIOR TO DISCHARGE TO CITY SEWER
001	PH	1 TIME PER WEEK	GRAB	PRIOR TO DISCHARGE TO CITY SEWER
001	SILVER, TOTAL (AS AG)	1 EVERY 2 WEEKS	24 HOUR COMPOSITE	PRIOR TO DISCHARGE TO CITY SEWER
001	TOTAL TOXIC ORGANICS	1 EVERY 2 WEEKS	GRAB	PRIOR TO DISCHARGE TO CITY SEWER
001	ZINC, TOTAL (AS ZN)	1 EVERY 2 WEEKS	24 HOUR COMPOSITE	PRIOR TO DISCHARGE TO CITY SEWER

Facility Name: ALLISON CITY OF STP
 Permit Number: 1203001

Significant Industrial User Discharges:

Significant Industrial User: BUTLER COUNTY SOLID WASTE COMMISSION

Outfall # Outfall Description

001 LANDFILL LEACHATE PRIOR TO DISCHARGE TO THE WASTEWATER TREATMENT PLANT.

Significant Industrial User Effluent Limitations

You are prohibited from discharging pollutants except in compliance with the following effluent limitations:

BUTLER COUNTY SOLID WASTE COMMISSION		
Outfall: 001 Effective Dates: 02/01/2020 to 01/31/2025		
<u>Parameter</u>	<u>Season</u>	<u>Limit Type</u> <u>Limit Values</u>
FLOW		
	Yearly	30 Day Average 0.004 MGD
	Yearly	DAILY MAXIMUM 0.008 MGD
BIOCHEMICAL OXYGEN DEMAND (BOD5)		
	Yearly	30 Day Average 5 LBS/DAY
	Yearly	DAILY MAXIMUM 10 LBS/DAY
TOTAL SUSPENDED SOLIDS		
	Yearly	30 Day Average 5 LBS/DAY
	Yearly	DAILY MAXIMUM 10 LBS/DAY
AMMONIA NITROGEN (N)		
	Yearly	30 Day Average 5 LBS/DAY
	Yearly	DAILY MAXIMUM 10 LBS/DAY
PH		
	Yearly	DAILY MAXIMUM 9.0 STD UNITS
	Yearly	DAILY MINIMUM 6.0 STD UNITS

Facility Name: ALLISON CITY OF STP
Permit Number: 1203001

Monitoring and Reporting Requirements

- (a) Samples and measurements taken shall be representative of the volume and nature of the monitored wastewater.
- (b) Analytical and sampling methods specified in 40 CFR Part 136 or other methods approved in writing by the department shall be utilized. All effluent samples for which a limit applies must be analyzed using sufficiently sensitive methods (i.e. testing procedures) approved under 567 IAC Chapter 63 and 40 CFR Part 136 for the analysis of pollutants or pollutant parameters or as required under 40 CFR chapter I, subchapter N or O.

For the purposes of this paragraph, an approved method is "sufficiently sensitive" when:

- (1) the method minimum level (ML) is at or below the level of the effluent limit established in the permit for the measured pollutant or pollutant parameter; or
- (2) the method has the lowest ML of the approved analytical methods for the measured pollutant or pollutant parameter.

Samples collected for operational testing need not be analyzed by approved analytical methods; however, commonly accepted test methods should be used.

- (c) Chapter 63 of the rules provides you with further explanation of your monitoring requirements.
- (d) You are required to report all data including calculated results needed to determine compliance with the limitations contained in this permit. This includes daily maximums and minimums, 30-day averages and 7-day averages for all parameters that have concentration (mg/l) and mass (lbs/day) limits. Also, flow data shall be reported in million gallons per day (MGD).
- (e) Results of all monitoring shall be recorded on forms provided by, or approved by, the department, and submitted to the department by the fifteenth day following the close of the reporting period.
- (f) Results of all monitoring shall be recorded on forms provided by, or approved by, the department, and shall be submitted to the appropriate regional field office of the department by the fifteenth day following the close of the reporting period. Your reporting period is on a MONTHLY basis, ending on the last day of each reporting period.

Facility Name: ALLISON CITY OF STP
 Permit Number: 1203001

BUTLER COUNTY SOLID WASTE COMMISSION

Outfall	Wastewater Parameter	Sample Frequency	Sample Type	Monitoring Location
001	AMMONIA NITROGEN (N)	1 EVERY MONTH	GRAB	PRIOR TO DISCHARGE TO CITY SEWER
001	BIOCHEMICAL OXYGEN DEMAND (BOD5)	1 EVERY MONTH	GRAB	PRIOR TO DISCHARGE TO CITY SEWER
001	FLOW	7/WEEK OR DAILY	24 HOUR TOTAL	PRIOR TO DISCHARGE TO CITY SEWER
001	PH	1 EVERY MONTH	GRAB	PRIOR TO DISCHARGE TO CITY SEWER
001	TOTAL SUSPENDED SOLIDS	1 EVERY MONTH	GRAB	PRIOR TO DISCHARGE TO CITY SEWER

Facility Name: ALLISON CITY OF STP
 Permit Number: 1203001

ADDITIONAL MONITORING REQUIREMENTS – BUTLER COUNTY SOLID WASTE COMMISSION

The permittee shall analyze a representative sample of the leachate discharge from the Butler County Solid Waste Commission at least annually for each of the pollutants listed below. Also, the permittee shall monitor the volume of waste discharged and BOD₅, TSS, pH and Ammonia Nitrogen at the frequencies specified on page 17 of this permit.

Conventional Pollutants and Metals	Volatile Compounds	Acid Extractable Compounds
Biochemical Oxygen Demand (BOD ₅)	Method of Analysis: EPA Methods 624 or 1624	Method of Analysis: EPA Methods 625 or 1625
Total Organic Carbon	Chloromethane (methyl chloride)	2-Chlorophenol
Total Dissolved Solids	Bromomethane (methyl bromide)	2-Nitrophenol
Total Suspended Solids	Vinyl chloride	2,4-Dimethylphenol
Ammonia Nitrogen	Chloroethane (ethyl chloride)	Benzoic acid
pH	Methylene chloride (dichloromethane)	2,4-Dichlorophenol
Arsenic, Total (as As)	1,1-Dichloroethene (1,1-dichloroethylene)	4-Chloro-3-methylphenol
Barium, Total (as Ba)	1,1-Dichloroethane	2,4,6-Trichlorophenol
Cadmium, Total (as Cd)	1,2-Dichloroethene (1,2-dichloroethylene)	2,4,5-Trichlorophenol
Chromium, Total (as Cr)	Chloroform	2,4-Dinitrophenol
Copper, Total (as Cu)	1,2-Dichloroethane	4-Nitrophenol
Iron, Total (as Fe)	1,1,1-Trichloroethane (methyl chloroform)	4,6-Dinitro-2-methylphenol
Lead, Total (as Pb)	Carbon tetrachloride	Pentachlorophenol
Mercury, Total (as Hg)	Bromodichloromethane	
Nickel, Total (as Ni)	1,1,2,2-Tetrachloroethane	
Selenium, Total (as Se)	1,2-Dichloropropane	
Silver, Total (as Ag)	1,3-Dichloropropene	
Zinc, Total (as Zn)	Trichloroethene	
	Dibromochloromethane	
	1,1,2-Trichloroethane	
	Benzene	
	2-Chloroethyl vinyl ether	
	Bromoform	
	Tetrachloroethene	
	Toluene	
	Chlorobenzene	
	Ethylbenzene	

Facility Name: ALLISON CITY OF STP
 Permit Number: 1203001

Chlorinated Hydrocarbon Insecticides	Base/Neutral Compounds	Base/Neutral Compounds - continued
<p>Methods of Analysis: EPA Methods 608 or 625</p> <p>Beta BHC Delta BHC Gamma BHC Heptachlor Aldrin Heptachlor epoxide Endosulfan Dieldrin 4,4'-DDE Endrin Endosulfan II 4,4'-DDD Endosulfan sulfate 4,4'-DDT Endrin aldehyde Chlordane Toxaphene</p>	<p>Methods of Analysis: EPA Methods 625 or 1625</p> <p>bis (2-chloroethyl) ether 1,3-Dichlorobenzene 1,4-Dichlorobenzene Benzyl alcohol 1,2-Dichlorobenzene bis (2-chloroisopropyl) ether N-Nitroso-dipropylamine Hexachloroethane Nitrobenzene Isophorone bis (2-chloroethoxy) methane 1,2,4-Trichlorobenzene Naphthalene Hexachlorobutadiene Hexachlorocyclopentadiene 2-Chloronaphthalene Dimethyl phthalate Acenaphthylene Acenaphthene Dibenzofuran 2,4-Dinitrotoluene 2,6-Dinitrotoluene Diethyl phthalate 4-Chlorophenyl phenyl ether Fluorene N-Nitrosodiphenylamine 4-Bromophenyl phenyl ether Hexachlorobenzene Phenanthrene Anthracene</p>	<p>Di-n-butyl phthalate Fluoranthene Pyrene Butyl benzyl phthalate 3,3'-Dichlorobenzidine Benzo (a) anthracene bis (2-ethylhexyl) phthalate Chrysene Di-n-octyl phthalate Benzo (b) fluoranthene Benzo (k) fluoranthene Benzo (a) pyrene Indeno (1,2,3-cd) pyrene Dibenz (a,h) anthracene Benzo (g,h,i) perylene</p>
<p>Polychlorinated Biphenyls</p> <p>Methods of Analysis: EPA Methods 608 or 625</p> <p>Arochlor-1016 Arochlor-1221 Arochlor-1232 Arochlor-1242 Arochlor-1248 Arochlor-1254 Arochlor-1260</p>		

Facility Name: ALLISON CITY OF STP
 Permit Number: 1203001

Significant Industrial User Discharges:

Significant Industrial User: ALLEN INC. (A-COAT)

Outfall # Outfall Description

001 PROCESS WASTEWATER DISCHARGE PRIOR TO MIXING WITH OTHER WASTE STREAMS.

Significant Industrial User Effluent Limitations

You are prohibited from discharging pollutants except in compliance with the following effluent limitations:

ALLEN INC. (A-COAT)		
Outfall: 001 Effective Dates: 02/01/2020 to 01/31/2025		
Parameter	Season	Limit Type
FLOW		
	Yearly	30 Day Average
	Yearly	DAILY MAXIMUM
		0.0136 MGD
		0.0338 MGD
ZINC, TOTAL (AS ZN)		
	Yearly	30 Day Average
	Yearly	DAILY MAXIMUM
		1.48 MG/L
		2.61 MG/L
CADMIUM, TOTAL (AS CD)		
	Yearly	30 Day Average
	Yearly	DAILY MAXIMUM
		0.07 MG/L
		0.11 MG/L
CHROMIUM, TOTAL (AS CR)		
	Yearly	30 Day Average
	Yearly	DAILY MAXIMUM
		0.65 MG/L
		2.77 MG/L
CYANIDE, TOTAL (AS CN)		
	Yearly	30 Day Average
	Yearly	DAILY MAXIMUM
		0.20 MG/L
		1.20 MG/L
NICKEL, TOTAL (AS NI)		
	Yearly	30 Day Average
	Yearly	DAILY MAXIMUM
		2.38 MG/L
		3.98 MG/L

Facility Name: ALLISON CITY OF STP
 Permit Number: 1203001

OIL AND GREASE			
Yearly	30 Day Average		26 MG/L
Yearly	DAILY MAXIMUM		52 MG/L
SILVER, TOTAL (AS AG)			
Yearly	30 Day Average		0.17 MG/L
Yearly	DAILY MAXIMUM		0.43 MG/L
TOTAL TOXIC ORGANICS			
Yearly	DAILY MAXIMUM		2.13 MG/L
COPPER, TOTAL (AS CU)			
Yearly	30 Day Average		0.61 MG/L
Yearly	DAILY MAXIMUM		2.38 MG/L
LEAD, TOTAL (AS PB)			
Yearly	30 Day Average		0.43 MG/L
Yearly	DAILY MAXIMUM		0.69 MG/L
PH			
Yearly	DAILY MAXIMUM		9.0 STD UNITS
Yearly	DAILY MINIMUM		6.0 STD UNITS

Facility Name: ALLISON CITY OF STP
Permit Number: 1203001

Monitoring and Reporting Requirements

- (a) Samples and measurements taken shall be representative of the volume and nature of the monitored wastewater.
- (b) Analytical and sampling methods specified in 40 CFR Part 136 or other methods approved in writing by the department shall be utilized. All effluent samples for which a limit applies must be analyzed using sufficiently sensitive methods (i.e. testing procedures) approved under 567 IAC Chapter 63 and 40 CFR Part 136 for the analysis of pollutants or pollutant parameters or as required under 40 CFR chapter 1, subchapter N or O.

For the purposes of this paragraph, an approved method is "sufficiently sensitive" when:

- (1) the method minimum level (ML) is at or below the level of the effluent limit established in the permit for the measured pollutant or pollutant parameter; or
- (2) the method has the lowest ML of the approved analytical methods for the measured pollutant or pollutant parameter.

Samples collected for operational testing need not be analyzed by approved analytical methods; however, commonly accepted test methods should be used.

- (c) Chapter 63 of the rules provides you with further explanation of your monitoring requirements.
- (d) You are required to report all data including calculated results needed to determine compliance with the limitations contained in this permit. This includes daily maximums and minimums, 30-day averages and 7-day averages for all parameters that have concentration (mg/l) and mass (lbs/day) limits. Also, flow data shall be reported in million gallons per day (MGD).
- (e) Results of all monitoring shall be recorded on forms provided by, or approved by, the department, and submitted to the department by the fifteenth day following the close of the reporting period.
- (f) Results of all monitoring shall be recorded on forms provided by, or approved by, the department, and shall be submitted to the appropriate regional field office of the department by the fifteenth day following the close of the reporting period. Your reporting period is on a MONTHLY basis, ending on the last day of each reporting period.

Facility Name: ALLISON CITY OF STP
 Permit Number: 1203001

ALLEN INC. (A-COAT)

Outfall	Wastewater Parameter	Sample Frequency	Sample Type	Monitoring Location
001	CADMIUM, TOTAL (AS CD)	1 EVERY 2 WEEKS	24 HOUR COMPOSITE	PRIOR TO DISCHARGE TO CITY SEWER
001	CHROMIUM, TOTAL (AS CR)	1 EVERY 2 WEEKS	24 HOUR COMPOSITE	PRIOR TO DISCHARGE TO CITY SEWER
001	COPPER, TOTAL (AS CU)	1 EVERY 2 WEEKS	24 HOUR COMPOSITE	PRIOR TO DISCHARGE TO CITY SEWER
001	CYANIDE, TOTAL (AS CN)	1 EVERY 2 WEEKS	GRAB	PRIOR TO DISCHARGE TO CITY SEWER
001	FLOW	7/WEEK OR DAILY	24 HOUR TOTAL	PRIOR TO DISCHARGE TO CITY SEWER
001	LEAD, TOTAL (AS PB)	1 EVERY 2 WEEKS	24 HOUR COMPOSITE	PRIOR TO DISCHARGE TO CITY SEWER
001	NICKEL, TOTAL (AS NI)	1 EVERY 2 WEEKS	24 HOUR COMPOSITE	PRIOR TO DISCHARGE TO CITY SEWER
001	OIL AND GREASE	1 EVERY 2 WEEKS	GRAB	PRIOR TO DISCHARGE TO CITY SEWER
001	PH	1 TIME PER WEEK	GRAB	PRIOR TO DISCHARGE TO CITY SEWER
001	SILVER, TOTAL (AS AG)	1 EVERY 2 WEEKS	24 HOUR COMPOSITE	PRIOR TO DISCHARGE TO CITY SEWER
001	TOTAL TOXIC ORGANICS	1 EVERY 2 WEEKS	24 HOUR COMPOSITE	PRIOR TO DISCHARGE TO CITY SEWER
001	ZINC, TOTAL (AS ZN)	1 EVERY 2 WEEKS	24 HOUR COMPOSITE	PRIOR TO DISCHARGE TO CITY SEWER

Facility Name: ALLISON CITY OF STP
Permit Number: 1203001

Design Capacity

Design: 1

The design capacity for the treatment works is specified in Construction Permit Number 66-212-S, issued Thursday, July 25, 1963. The treatment plant is designed to treat:

- An average dry weather (ADW) flow of 0.0750 Million Gallons Per Day (MGD).
- An average wet weather (AWW) flow of 0.2000 Million Gallons Per Day (MGD).
- A maximum wet weather (MWW) flow of 0.5000 Million Gallons Per Day (MGD).
- A design 5-day biochemical oxygen demand (BOD5) load of 255 lbs/day.

Operator Certification Type/Grade: WL/I

Wastes in such volumes or quantities as to exceed the design capacity of the treatment works or reduce the effluent quality below that specified in the operation permit of the treatment works are considered to be a waste which interferes with the operation or performance of the treatment works and are prohibited by subrule IAC 567-62.1(7).

Facility Name: ALLISON CITY OF STP

Permit Number: 1203001

SEWAGE SLUDGE HANDLING AND DISPOSAL REQUIREMENTS

"Sewage sludge" is solid, semisolid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge does not include the grit and screenings generated during preliminary treatment.

1. The permittee shall comply with all existing Federal and State laws and regulations that apply to the use and disposal of sewage sludge and with technical standards developed pursuant to Section 405(d) of the Clean Water Act when such standards are promulgated. If an applicable numerical limit or management practice for pollutants in sewage sludge is promulgated after issuance of this permit that is more stringent than a sludge pollutant limit or management practice specified in existing Federal or State laws or regulations, this permit shall be modified, or revoked and reissued, to conform to the regulations promulgated under Section 405(d) of the Clean Water Act. The permittee shall comply with the limitation no later than the compliance deadline specified in the applicable regulations.
2. The permittee shall provide written notice to the Department of Natural Resources prior to any planned changes in sludge disposal practices.
3. Land application of sewage sludge shall be conducted in accordance with criteria established in rule IAC 567 67.1 through 67.11 (455B).

Facility Name: ALLISON CITY OF STP
Permit Number: 1203001
Controlled Discharge Lagoon Operation and Sampling Procedures

OPERATION REQUIREMENTS

Continuous discharge of wastewater from this facility is prohibited. The treatment plant must be operated using a storage/drawdown mode of operating. Wastewater must be stored for approximately 180 days after which time the water level is to be lowered to make room for the next storage period. Acceptable discharge periods are April 15th through June 15th and October 1st through December 21st. Lagoon drawdown shall occur during these periods except in emergency situations. The permittee is required to contact the local DNR Field Office and obtain prior approval if there is a need to discharge during other times of the year, when stream flows are low or if the effluent limitations specified in this permit will not be met. Lagoon drawdown at a rate greater than 10 times the 180 day AWW design flow is prohibited.

PRE-DISCHARGE SAMPLING

The permittee is responsible for complying with the limits contained in this permit. Therefore, a grab sample of the lagoon cell contents collected at a point near the outlet structure shall be analyzed at least two weeks prior to an anticipated discharge to demonstrate that the wastewater is of such quality to meet the effluent limitations in the permit. The permittee must have the sample analyzed for 5-day carbonaceous biochemical oxygen demand (CBOD5) and total suspended solids (TSS). The results must be compared with the 30-day average effluent limits. If the results are less than the 30-day average limits, the permittee may isolate the final cell and draw down the lagoon cell. If the pre-discharge sample results exceed the 30-day average effluent limits for either CBOD5 or TSS, the permittee must contact the local DNR Field Office for guidance before beginning to discharge.

Report pre-discharge sample results in the spaces provided on the monthly operation report form.

EFFLUENT SAMPLING

The permittee must collect and analyze a sample of the final effluent on the third day after discharge begins for all parameters for which monitoring of the final effluent is specified on the page titled MONITORING AND REPORTING REQUIREMENTS. Subsequent samples shall be taken at the specified frequencies. For final effluent samples that are required to be taken twice during drawdown, the first sample shall be taken the third day after the drawdown begins, and the second sample shall be taken between three (3) and five (5) days before the drawdown ends. Report the results on the discharge monitoring report (DMR) form in the columns provided for effluent monitoring. The results must be reported for the days the samples were collected, not for the days the sample results were received from the laboratory.

Revised: April 10, 2013

Facility Name: ALLISON CITY OF STP
Permit Number: 1203001

MAJOR CONTRIBUTING INDUSTRIES LIMITATIONS, MONITORING AND REPORTING REQUIREMENTS

1. You are required to notify the department, in writing, of any of the following:
 - (a) 180 days prior to the introduction of pollutants to your facility from a significant industrial user. A significant industrial user means an industrial user of a treatment works that:
 - (1) Discharges an average of 25,000 gallons per day or more of process wastewater excluding sanitary, noncontact cooling and boiler blowdown wastewater.
 - (2) Contributes a process waste stream which makes up five percent or more of the average dry weather hydraulic or organic capacity of the publicly-owned treatment works;
 - (3) Is subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N; or
 - (4) Is designated by the department as a significant industrial user on the basis that the contributing industry, either singly or in combination with other contributing industries, has a reasonable potential for adversely affecting the operation of or effluent quality from the publicly-owned treatment works or for violating any pretreatment standards or requirements.
 - (b) 60 days prior to a proposed expansion, production increase or process modification that may result in the discharge of a new pollutant or a discharge in excess of limitations stated in the existing treatment agreement.
 - (c) 10 days prior to any commitment by you to accept waste from any new significant industrial user. Your written notification must include a new or revised treatment agreement in accordance with rule 64.3(5)(455B).
2. You shall require all users of your facility to comply with Sections 204(b), 307 and 308 of the Clean Water Act.
Section 204(b) requires that all users of the treatment works constructed with funds provided under Sections 201(g) or 601 of the Act to pay their proportionate share of the costs of operation, maintenance and replacement of the treatment works.
Section 307 of the Act requires users to comply with pretreatment standards promulgated by EPA for pollutants that would cause interference with the treatment process or would pass through the treatment works.
Section 308 of the Act requires users to allow access at reasonable times to state and EPA inspectors for the purpose of sampling the discharge and reviewing and copying records.
3. You shall limit and monitor pollutants for each significant industrial user as required elsewhere in this permit, and submit sample results to the department monthly. Your report shall be submitted by the fifteenth day of the following month.

Revised: June 16, 2009 CAC

Facility Name: ALLISON CITY OF STP

Permit Number: 1203001

Ammonia Nitrogen and *E. coli* Compliance Schedule

1. The facility shall make necessary improvements to meet Ammonia Nitrogen and *E. coli* limits according to the following schedule:
 - Submit facility plan for construction of the Phase II improvements by June 1, 2020.
 - Submit the final plans and specifications for the Phase II improvements by June 1, 2021.
 - Submit Progress Report by June 1, 2022.
 - Complete construction of wastewater treatment improvements necessary to comply with the Ammonia Nitrogen and *E. coli* limits by October 1, 2022.
 - Achieve compliance with all final Ammonia Nitrogen and *E. coli* limits by November 1, 2022.

Within fourteen (14) days following all dates of compliance, the permittee shall provide written notice of compliance with the scheduled event. All written notices and progress reports shall be sent to the following address:

Iowa Department of Natural Resources
Environmental Services Division
Regional Office # 2
2300 15th Street SW
Mason City, IA 50401

STANDARD CONDITIONS

1. ADMINISTRATIVE RULES

Rules of this Department that govern the operation of your facility in connection with this permit are published in Part 567 of the Iowa Administrative Code (IAC) in Chapters 60-65, 67, and 121. Reference to the term "rule" in this permit means the designated provision of Part 567 of the IAC. Reference to the term "CFR" means the Code of Federal Regulations.

2. DEFINITIONS

- (a) 7 day average means the sum of the total daily discharges by mass, volume, or concentration during a 7 consecutive day period, divided by the total number of days during the period that measurements were made. Four 7 consecutive day periods shall be used each month to calculate the 7-day average. The first 7-day period shall begin with the first day of the month.
- (b) 30 day average means the sum of the total daily discharges by mass, volume, or concentration during a calendar month, divided by the total number of days during the month that measurements were made.
- (c) Daily maximum means the total discharge by mass, volume, or concentration during a twenty-four hour period.

3. DUTY TO PROVIDE INFORMATION

You must furnish to the Director, within a reasonable time, any information the Director may request to determine compliance with this permit or determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, in accordance with 567 IAC 64.3(1)"c". You must also furnish to the Director, upon request, copies of any records required to be kept by this permit.

4. MONITORING AND RECORDS OF OPERATION

- (a) Maintenance of records. You shall retain for a minimum of three years all paper and electronic records of monitoring activities and results including all original strip chart recordings for continuous monitoring instrumentation and calibration and maintenance records. *{See 567 IAC 63.2(3)}*
- (b) Any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 or by imprisonment for not more than two years, or both. *{See 40 CFR 122.41(f)(5)}*

5. SIGNATORY REQUIREMENTS

Applications, reports or other information submitted to the Department in connection with this permit must be signed and certified in accordance with 567 IAC 64.3(8).

6. OTHER INFORMATION

Where you become aware that you failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, you must promptly submit such facts or information. Where you become aware that you failed to submit any relevant facts in the submission of in any report to the director, including records of operation, you shall promptly submit such facts or information. *{See 567 IAC 60.4(2)"a" and 567 IAC 63.7}*

7. TRANSFER OF TITLE OR OWNER ADDRESS CHANGE

If title to your facility, or any part of it, is transferred the new owner shall be subject to this permit. You are required to notify the new owner of the requirements of this permit in writing prior to any transfer of title. The Director shall be notified in writing within 30 days of the transfer. No transfer of the authorization to discharge from the facility represented by the permit shall take place prior to notifying the department of the transfer of title. Whenever the address of the owner is changed, the department shall be notified in writing within 30 days of the address change. Electronic notification is not sufficient; all title transfers or address changes must be reported to the department by mail. *{See 567 IAC 64.14}*

8. PROPER OPERATION AND MAINTENANCE

All facilities and control systems shall be operated as efficiently as possible and maintained in good working order. A sufficient number of staff, adequately trained and knowledgeable in the operation of your facility shall be retained at all times and adequate laboratory controls and appropriate quality assurance procedures shall be provided to maintain compliance with the conditions of this permit. *{See 40 CFR 122.41(e) and 567 IAC 64.7(7)"f"}*

9. PERMIT MODIFICATION, SUSPENSION OR REVOCATION

- (a) This permit may be modified, suspended, or revoked and reissued for cause including but not limited to those specified in 567 IAC 64.3(11).
- (b) This permit may be modified due to conditions or information on which this permit is based, including any new standard the department may adopt that would change the required effluent limits. *{See 567 IAC 64.3(11)}*
- (c) If a toxic pollutant is present in your discharge and more stringent standards for toxic pollutants are established under Section 307(a) of the Clean Water Act, this permit will be modified in accordance with the new standards. *{See 40 CFR 122.62(a)(6) and 567 IAC 64.7(7)"g"}*

The filing of a request for a permit modification, revocation or suspension, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

10. DUTY TO REAPPLY AND PERMIT CONTINUATION

If you wish to continue to discharge after the expiration date of this permit, you must file a complete application for reissuance at least 180 days prior to the expiration date of this permit. If a timely and sufficient application is submitted, this permit will remain in effect until the Department makes a final determination on the permit application. *{See 567 IAC 64.8(1) and Iowa Code 174.18}*

11. DUTY TO COMPLY

You must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. Issuance of this permit does not relieve you of the responsibility to comply with all local, state and federal laws, ordinances, regulations or other legal requirements applying to the operation of your facility. *{See 40 CFR 122.41(a) and 567 IAC 64.7(4)"e"}*

STANDARD CONDITIONS

12. DUTY TO MITIGATE

You shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. *{See 40 CFR 122.41(d) and 567 IAC 64.7(7)-7}*

13. TWENTY-FOUR HOUR REPORTING

You shall report any noncompliance that may endanger human health or the environment, including, but not limited to, violations of maximum daily limits for any toxic pollutant (listed as toxic under 307(a)(1) of the Clean Water Act) or hazardous substance (as designated in 40 CFR Part 116 pursuant to 311 of the Clean Water Act). Information shall be provided orally within 24 hours from the time you become aware of the circumstances. A written submission that includes a description of noncompliance and its cause; the period of noncompliance including exact dates and times, whether the noncompliance has been corrected or the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent a recurrence of the noncompliance must be provided within 5 days of the occurrence. *{See 567 IAC 63.12}*

14. OTHER NONCOMPLIANCE

You shall report all instances of noncompliance not reported under Condition #13 at the time monitoring reports are submitted. You shall give advance notice to the appropriate regional field office of the department of any planned activity which may result in noncompliance with permit requirements. *{See 567 IAC 63.14}*

15. INSPECTION OF PREMISES, RECORDS, EQUIPMENT, METHODS AND DISCHARGES

You are required to permit authorized personnel to:

- Enter upon the premises where a regulated facility or activity is located or conducted or where records are kept under conditions of this permit;
- Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- Inspect, at reasonable times, any facilities, equipment, practices or operations regulated or required under this permit; and
- Sample or monitor, at reasonable times, to assure compliance or as otherwise authorized by the Clean Water Act.

16. FAILURE TO SUBMIT FEES

This permit may be revoked, in whole or in part, if the appropriate permit fees are not submitted within thirty (30) days of the date of notification that such fees are due. *{See 567 IAC 64.16(1)}*

17. NEED TO HALT OR REDUCE ACTIVITY

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. *{See 40 CFR 122.41(c) and 567 IAC 64.7(7)-7}*

18. NOTICE OF CHANGED CONDITIONS

You are required to notify the director of any changes in existing conditions or information on which this permit is based. This includes, but is not limited to, the following:

- If your facility is a publicly owned treatment works (POTW) or otherwise may accept waste for treatment from an indirect discharger or industrial contributor (See 567 IAC 64.3(S) for further notice requirements).
- If your facility is a POTW and there is any substantial change in the volume or character of pollutants being introduced to the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit. *{See 40 CFR 122.42(b)}*
- As soon as you know or have reason to believe that any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in this permit. *{See 40 CFR 122.42(a)}*
- If you have begun or will begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

19. PLANNED CHANGES

The permittee shall give notice to the appropriate regional field office of the department 30 days prior to any planned physical alterations or additions to the permitted facility. Notice is required only when:

- Notice has not been given to any other section of the department. (Note: Facility expansions, production increases, or process modifications which may result in new or increased discharges of pollutants must be reported to the Director in advance. If such discharges will exceed effluent limitations, your report must include an application for a new permit. If any modification of, addition to, or construction of a disposal system is to be made, you must first obtain a written permit from this Department. In addition, no construction activity that will result in disturbance of one acre or more shall be initiated without first obtaining coverage under NPDES General Permit No. 2 for "Storm water discharge associated with construction activity.") *{See 567 IAC 64.7(7)-g and 64.2}*
- The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source as defined in 567 IAC 60.2.
- The alteration or addition results in a significant change in the permittee's sludge use or disposal practices; or
- The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in the permit. *{See 567 IAC 63.13 and 63.14}*

20. USE OF CERTIFIED LABORATORIES

Analyses of wastewater, groundwater or sewage sludge that are required to be submitted to the department as a result of this permit must be performed by a laboratory certified by the State of Iowa. Routine, on-site monitoring for pH, temperature, dissolved oxygen, total residual chlorine and other pollutants that must be analyzed immediately upon sample collection, settleable solids, physical measurements, and operational monitoring tests specified in 567 IAC 63.3(4) are excluded from this requirement.

STANDARD CONDITIONS

21. BYPASSES

- (a) Definition. "Bypass" means the diversion of waste streams from any portion of a treatment facility or collection system. A bypass does not include internal operational waste stream diversions that are part of the design of the treatment facility, maintenance diversions where redundancy is provided, diversions of wastewater from one point in a collection system to another point in a collection lateral, or wastewater backups into buildings that are caused in the building lateral or private sewer line.
- (b) Prohibitions.
- Bypasses from any portion of a treatment facility or from a sanitary sewer collection system designed to carry only sewage are prohibited.
 - Bypass is prohibited and the department may not assess a civil penalty against a permittee for bypass if the permittee has complied with all of the following:
 - Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage; and
 - There were no feasible alternatives to the bypass such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
 - The permittee submitted notices as required by paragraph (d) of this section.
- (c) The Director may approve an anticipated bypass after considering its adverse effects if the Director determines that it will meet the three conditions listed above and a request for bypass has been submitted to the Department in accordance with 567 IAC 63.6(2).
- (d) Reporting bypasses. Bypasses shall be reported in accordance with 567 IAC 63.6.

22. UPSET PROVISION

- (a) Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
- (b) Effect of an upset. An upset constitutes an affirmative defense in an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph "c" of this condition are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

- (c) Conditions necessary for demonstration of an upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate through properly signed operating logs or other relevant evidence that:
- An upset occurred and that the permittee can identify the cause(s) of the upset;
 - The permitted facility was at the time being properly operated;
 - The permittee submitted notice of the upset to the Department in accordance with 567 IAC 63.6(3); and
 - The permittee complied with any remedial measures required in accordance with 567 IAC 63.6(6)"b".
- (d) Burden of Proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.
- ### 23. PROPERTY RIGHTS
- This permit does not convey any property rights of any sort or any exclusive privilege. {See 567 IAC 64.4(3)"b"}
- ### 24. EFFECT OF A PERMIT
- Compliance with a permit during its term constitutes compliance, for purposes of enforcement, with Sections 301, 302, 306, 307, 318, 403 and 405(a)-(b) of the Clean Water Act, and equivalent limitations and standards set out in 567 IAC Chapters 61 and 62. {See 567 IAC 64.4(3)"a"}
- ### 25. SEVERABILITY
- The provisions of this permit are severable and if any provision or application of any provision to any circumstance is found to be invalid by this department or a court of law, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected by such finding.