pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southeast Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0050733**
Facility Type	**Non-Municipal**	APS ID	**1032920**
Major / Minor	**Minor**	Authorization ID	**1344248**

Applicant and Facility Information

Applicant Name	**Lincoln University**	Facility Name	**Lincoln University STP**
Applicant Address	1570 Baltimore Pike	Facility Address	1570 Baltimore Pike
	Lincoln University, PA 19352-0999		Lincoln University, PA 19352-9141
Applicant Contact	Charles Gradowski	Facility Contact	John Dean
Applicant Phone	(484) 365-8049	Facility Phone	(484) 824-2569
Client ID	63687	Site ID	454178
Ch 94 Load Status	Not Overloaded	Municipality	Lower Oxford Township
Connection Status	No Limitations	County	Chester
Date Application Received	March 1, 2021	EPA Waived?	Yes
Date Application Accepted	Not Applicable	If No, Reason	

Purpose of Application: Permit Renewal.

Summary of Review

The permittee submitted a renewal NPDES permit application for their treated effluent sewage discharge to McDonald Creek through Outfall 001. The facility is a sewage treatment plant serving Lincoln University campus and residential development named The Village.

The facility has consists of a grinder, auger, Orbacel Oxidation ditch with anoxic treatment, two aeration tanks, two clarifiers, and UV disinfection system.

The limitations from the current permit are retained in this permit, as are the monitoring frequencies and sample type. Monitoring of Total Copper and Total Zinc are added to this renewal based on data submitted with the application. The two parameters will be monitored quarterly and will be 24-hour composites which are already instituted at the facility.

Sludge use and disposal description and location(s): Hauled off-site.

Act 14 Notifications:
Lower Oxford Township Delivered February 6, 2021
Chester County Delivered February 10, 2021

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request

Approve	Deny	Signatures	Date
X		Harmonie Hawley, PhD, PE / Environmental Engineering Specialist /s/	March 17, 2021
X		Pravin C. Patel, P.E. / Environmental Engineer Manager /s/	03/17/2021

Summary of Review
or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	.18
Latitude	39º 48' 16.25"	Longitude	-75º 55' 47.06"
Quad Name	Oxford	Quad Code	2038
Wastewater Description:	Sewage Effluent		
Receiving Waters	McDonald Run (HQ-TSF, MF)	Stream Code	06729
NHD Com ID	112188780	RMI	1.6
Drainage Area	0.05 square miles	Yield (cfs/mi^2)	0.0768
Q_{7-10} Flow (cfs)	0.00384	Q_{7-10} Basis	PA StreamStats
Elevation (ft)	501	Slope (ft/ft)	0.01796
Watershed No.	7-K	Chapter 93 Class.	HQ-TSF, MF
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	Siltation, Other Than Hydromodification, Unknown		
Source(s) of Impairment	Agriculture, Habitat Modification, Urban Runoff/Storm Sewers		
TMDL Status	None	Name	None

Background/Ambient Data		Data Source
pH (SU)	7	TRG WQM (391-2000-007 default data)
Temperature (°F)	68 (20 °C)	TRG WQM (391-2000-007 default data)

Nearest Downstream Public Water Supply Intake — None on McDonald Run

Changes Since Last Permit Issuance: None.

Other Comments: McDonald Run discharges into West Branch Big Elk Creek.

Treatment Facility Summary

Treatment Facility Name: Lincoln University STP

WQM Permit No.	Issuance Date
1502413	09/18/2002

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Ammonia And Phosphorus	Oxidation Ditch	Ultraviolet	0.18

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.3	Not Applicable	Not Overloaded	Gravity Thickening	Landfill

Changes Since Last Permit Issuance: None

Other Comments: None

Compliance History

DMR Data for Outfall 001 (from February 1, 2020 to January 31, 2021)

Parameter	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20
Flow (MGD) Average Monthly	0.024	0.048	0.055	0.077	0.067	0.058	0.042	0.028	0.029	0.037	0.061	0.088
Flow (MGD) Daily Maximum	0.069	0.177	0.121	0.127	0.100	0.177	0.074	0.058	0.052	0.11	0.11	0.158
pH (S.U.) Instantaneous Minimum	7.2	7.4	7.5	7.5	7.6	7.1	7.4	7.4	7.3	6.5	6.5	6.3
pH (S.U.) Instantaneous Maximum	8.1	8.4	8.4	8.1	8.1	8.0	8.1	8.0	7.7	8.3	7.9	7.6
DO (mg/L) Instantaneous Minimum	9.5	6.8	8.5	8.3	8.2	7.8	7.4	7.4	8.7	9.0	9.2	7.2
CBOD5 (lbs/day) Average Monthly	< 0.3	< 0.8	< 0.9	< 1.1	< 0.9	< 2	< 0.8	< 0.5	< 0.5	< 0.5	< 1.1	< 1.4
CBOD5 (mg/L) Average Monthly	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
TSS (lbs/day) Average Monthly	< 0.5	< 2	< 2	< 3.1	< 2	< 4	< 2	< 1	< 0.9	< 1.1	< 2.2	< 3
TSS (mg/L) Average Monthly	< 4	< 4	< 4	< 5.6	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 5
Fecal Coliform (CFU/100 ml) Geometric Mean	< 1	< 1	< 2	16	< 1	1	< 1	16	12	97	< 1	3
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	1	1	3	41	< 1	2	< 1	53	72	144	< 1	7
UV Intensity (µw/cm²) Minimum	0.1	0.1	0.1	0.1	0.1	0.1	00	0.1	0.01	0.01	0.01	0.01
Nitrate-Nitrite (mg/L) Average		10.3			22			30			30	
Nitrate-Nitrite (lbs) Total Quarterly		2101			3358			2656			837	
Total Nitrogen (mg/L) Average		10.9			< 22.5			31			31	

Total Nitrogen (lbs) Total Quarterly		2225			< 3434			2744			867	
Total Nitrogen (lbs) Total Annual					< 3717							
Ammonia (lbs/day) Average Monthly	< 0.1	< 0.04	< 0.1	< 0.1	< 0.04	< 0.1	< 0.04	< 0.1	< 0.02	< 0.03	< 0.1	< 0.4
Ammonia (mg/L) Average Monthly	< 0.6	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.5
Ammonia (lbs) Total Quarterly		< 16			< 21			< 9			6	
Ammonia (lbs) Total Annual					< 80							
TKN (mg/L) Average		0.61			< 0.5			1			0.95	
TKN (lbs) Total Quarterly		124			< 76			89			27	
Total Phosphorus (mg/L) Average		4.2			5.7			5			4	
Total Phosphorus (lbs) Total Quarterly		857			870			443			123	
Total Phosphorus (lbs) Total Annual					984							

Compliance History

No open violations listed on March 1, 2021.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .18
Latitude 39º 48' 19.33" **Longitude** -75º 55' 43.60"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Comments: TSS, pH, and fecal coliform are retained from the current permit and are consistent with the above references. Seasonal limits for ammonia-nitrogen are continued in the renewal. Chlorine is not used for disinfection so there are limitations for TRC; however, monitoring of the UV system is retained in this renewal. In addition to the above listed parameters, monitoring for Total Nitrogen and Total Phosphorus are standard practice and are retained in this permit (SOP No. BCW-PMT-033 based on Chapter 92a.61). The facility has no industrial users.

Water Quality-Based Limitations

A “Reasonable Potential Analysis” was not conducted as this is a minor facility. As discussed in the 2016 Fact Sheet, this discharge was considered to be part of the existing quality of the waterbody and as such is “grandfathered” into the waterbody with regards to requirements in the Antidegradation Implementation Guidance Document

The WQM model was run and the results are shown in Attachment A. The limitations for CBOD5, NH3-N, and DO were the same as the current permit and will be retained in this permit. The Total Dissolved Solids are under 1,000 mg/l so monitoring is not added to this permit.

Comments: The Chesapeake Bay Watershed Phase III Watershed Implementation Plan (WIP) Supplement Revised December 17, 2019 was reviewed. This facility is a Phase 5 facility (>0.002 MDG to <0.2 MGD) which needs to monitor TN and TP for 2 years, but does not have a listed waste load allocation. It was stated in the 2016 fact Sheet that 2 years of monitoring TN and TP was completed (in the 2006 permit renewal) and it was determined that it could be discontinued. As stated in the 2016 Fact Sheet, monitoring of TN and TP is consistent with standard practices and will be retained in this permit (see above comment).

Best Professional Judgment (BPJ) Limitations

Comments: Based on an analysis of the sample results reported in application, quarterly monitoring of Total Zinc and Total Copper are added to this permit to gather information on the parameters.

Anti-Backsliding

None

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	6.0 Inst Min	XXX	XXX	XXX	1/day	Grab
CBOD5 Nov 1 - Apr 30	37.5	XXX	XXX	25	XXX	50	2/month	24-Hr Composite
CBOD5 May 1 - Oct 31	30	XXX	XXX	20	XXX	40	2/month	24-Hr Composite
TSS	45	XXX	XXX	30	XXX	60	2/month	24-Hr Composite
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
UV Intensity (µw/cm²)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
Nitrate-Nitrite	XXX	XXX	XXX	Report Avg	XXX	XXX	1/quarter	24-Hr Composite
Nitrate-Nitrite (lbs)	Report Total Qrtly	XXX	XXX	XXX	XXX	XXX	1/quarter	Calculation
Total Nitrogen	XXX	XXX	XXX	Report Avg	XXX	XXX	1/quarter	Calculation
Total Nitrogen (lbs)	Report Total Qrtly	XXX	XXX	XXX	XXX	XXX	1/quarter	Calculation

Outfall 001 , Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Ammonia Nov 1 - Apr 30	6.0	XXX	XXX	3.9	XXX	7.8	2/month	24-Hr Composite
Ammonia May 1 - Oct 31	2.0	XXX	XXX	1.3	XXX	2.6	2/month	24-Hr Composite
Ammonia (lbs)	Report Total Qrtly	XXX	XXX	XXX	XXX	XXX	1/quarter	Calculation
TKN	XXX	XXX	XXX	Report Avg	XXX	XXX	1/quarter	24-Hr Composite
TKN (lbs)	Report Total Qrtly	XXX	XXX	XXX	XXX	XXX	1/quarter	Calculation
Total Phosphorus	XXX	XXX	XXX	Report Avg	XXX	XXX	1/quarter	24-Hr Composite
Total Phosphorus (lbs)	Report Total Qrtly	XXX	XXX	XXX	XXX	XXX	1/quarter	Calculation
Total Copper	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Zinc	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite

Compliance Sampling Location: Outfall 001

Other Comments: None

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Total Nitrogen (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/quarter	Calculation
Ammonia (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	2/month	Calculation
Total Phosphorus (lbs)	XXX	Report Total Annual	XXX	XXX	XXX	XXX	1/quarter	Calculation

Compliance Sampling Location: Outfall 001

Other Comments: The monitoring requirements specified above are proposed for the draft permit to comply with Pennsylvania's Chesapeake Bay Tributary Strategy

Attachment A: WQM Model

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07K	6729	McDONALD RUN

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Eff. Limit 30-day Ave. (mg/L)	Eff. Limit Maximum (mg/L)	Eff. Limit Minimum (mg/L)
1.600	Lincoln Univers	PA0050733	0.180	CBOD5	25		
				NH3-N	1.3	2.6	
				Dissolved Oxygen			6

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07K	6729	McDONALD RUN	1.600	501.00	0.05	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Lincoln Univers	PA0050733	0.1800	0.1800	0.1800	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	6.00	8.24	0.00	0.00
NH3-N	1.30	0.00	0.00	0.70

Permit No. PA0050733

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07K	6729	McDONALD RUN	0.050	354.00	8.74	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.100	0.59	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0050733

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07K	6729	McDONALD RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.600	0.180	24.932	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
2.506	0.504	4.970	0.223
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
24.69	1.497	1.28	1.023
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.031	31.738	Owens	6
Reach Travel Time (days)			
0.424			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.042	22.80	1.23	6.09
0.085	21.05	1.18	6.23
0.127	19.44	1.13	6.38
0.170	17.96	1.08	6.53
0.212	16.58	1.03	6.66
0.254	15.31	0.99	6.79
0.297	14.14	0.95	6.91
0.339	13.06	0.91	7.02
0.381	12.06	0.87	7.12
0.424	11.14	0.83	7.21

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07K	6729	McDONALD RUN

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
1.600	0.00	0.00	0.00	.2785	0.01796	.504	2.51	4.97	0.22	0.424	24.93	7.00
Q1-10 Flow												
1.600	0.00	0.00	0.00	.2785	0.01796	NA	NA	NA	0.22	0.425	24.96	7.00
Q30-10 Flow												
1.600	0.01	0.00	0.01	.2785	0.01796	NA	NA	NA	0.22	0.423	24.91	7.00

Permit No. PA0050733

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07K	6729	McDONALD RUN

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
1.600	Lincoln Univers	6.78	2.6	6.78	2.6	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
1.600	Lincoln Univers	1.35	1.3	1.35	1.3	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
1.60	Lincoln Univers	25	25	1.3	1.3	6	6	0	0