

Application Type Amendment, Major
Facility Type Non-Municipal
Major / Minor Minor

**NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE**

Application No. PA0217514 A-1
APS ID 1072906
Authorization ID 1412972

Applicant and Facility Information

Applicant Name	<u>Honeywell Electronic Materials Inc.</u>	Facility Name	<u>Honeywell Electric Materials</u>
Applicant Address	<u>195 Hartzell School Road</u> <u>Fombell, PA 16123-1207</u>	Facility Address	<u>195 Hartzell School Road</u> <u>Fombell, PA 16123-1207</u>
Applicant Contact	<u>Amanda Brown</u>	Facility Contact	<u>Same as applicant</u>
Applicant Phone	<u>(724) 452-2976</u>	Facility Phone	<u>Same as applicant</u>
Client ID	<u>238716</u>	Site ID	<u>241780</u>
Ch 94 Load Status		Municipality	<u>Marion Township</u>
Connection Status		County	<u>Beaver</u>
Date Application Received	<u>September 12, 2022</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u>October 11, 2022</u>	If No, Reason	
Purpose of Application	<u>NPDES Amendment application to change design flow from 15,000 gpd to 2,050 gpd.</u>		

Summary of Review

The applicant has applied to amend NPDES Permit No. PA0217514, which was issued on November 15, 2021 and will expire on November 30, 2026. The proposed amendment is a reduction in flow from 0.015 MGD (15,000 gpd) to 0.00205 MGD (2,050 gpd). A re-rate analysis is included with the amendment application for WQM Permit No. 0497401, which will be issued simultaneously with the NPDES Permit Amendment.

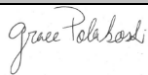
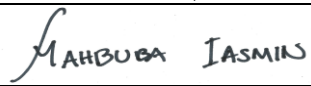
Sewage from this plant is treated with: equalization tanks, extended aeration, clarifiers, chlorine tablet disinfection, dechlorination (proposed), and phosphorus reduction.

Stormwater Outfalls 011, 012, and 013 will again be permitted for the discharge of uncontaminated stormwater runoff from the areas in and around the treatment plant. Part C. III, Requirements Applicable to Stormwater Outfalls, has been added to the permit. See the table below for a description of each stormwater outfall.

Outfall No.	Latitude	Longitude	Description
011	40° 48' 08"	-80° 11' 52.5"	Parking Lot Area
012	40° 48' 00"	-80° 11' 57"	Manufacturing Building Roof Drains
013	40° 48' 0.5"	-80° 11' 53"	Retention Basin Emergency Overflow

The applicant is currently enrolled in and will continue to use eDMR.

The Act 14-PL 834 Municipal Notification was provided by the September 8, 2022 letters and no comments were received.

Approve	Deny	Signatures	Date
X		 Grace Polakoski, E.I.T. / Environmental Engineering Specialist	January 17, 2023
x		 Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineer Manager	
			May 8, 2023

Summary of Review

Below is a summary of changes made to this permit:

- Design flow has been changed to 0.00205 MGD
- Ammonia-nitrogen monitoring has been imposed

Sludge use and disposal description and location(s): Beaver Falls Wastewater Plant (100 6th Ave Ext Beaver Falls, PA)

Anti-Backsliding

Section 402(o) of the Clean Water Act (CWA), enacted in the Water Quality Act of 1987, establishes anti-backsliding rules governing two situations. The first situation occurs when a permittee seeks to revise a Technology-Based effluent limitation based on BPJ to reflect a subsequently promulgated effluent guideline which is less stringent. The second situation addressed by Section 402(o) arises when a permittee seeks relaxation of an effluent limitation which is based upon a State treatment standard of water quality standard.

Previous limits can be used pursuant to EPA's anti-backsliding regulation 40 CFR 122.44 (I) **Reissued permits. (1) Except as provided in paragraph (I)(2) of this section when a permit is renewed or reissued. Interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under §122.62). (2) In the case of effluent limitations established on the basis of Section 402(a)(1)(B) of the CWA, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.**

The facility is not seeking to revise the previously permitted effluent limits.

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 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.	<u>001</u>	Design Flow (MGD)	<u>0.00205</u>
Latitude	<u>40° 48' 8"</u>	Longitude	<u>-80° 11' 52"</u>
Quad Name	<u>Canonsburg</u>	Quad Code	<u>1204</u>
Wastewater Description: <u>Sewage Effluent</u>			
Receiving Waters	<u>Connoquenessing Creek (WWF)</u>	Stream Code	<u>34025</u>
NHD Com ID	<u>126223585</u>	RMI	<u>15.3</u>
Drainage Area	<u>333 sq. mi.</u>	Yield (cfs/mi ²)	<u>0.0318</u>
Q ₇₋₁₀ Flow (cfs)	<u>10.6</u>	Q ₇₋₁₀ Basis	<u>USGS StreamStats (Attachment A)</u>
Elevation (ft)	<u>870</u>	Slope (ft/ft)	<u></u>
Watershed No.	<u>20-C</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use	<u></u>	Existing Use Qualifier	<u></u>
Exceptions to Use	<u></u>	Exceptions to Criteria	<u></u>
Assessment Status	<u>Impaired</u>		
Cause(s) of Impairment	<u>ORGANIC ENRICHMENT</u>		
Source(s) of Impairment	<u>AGRICULTURE</u>		
TMDL Status	<u></u>	Name	<u></u>
Background/Ambient Data		Data Source	
pH (SU)	<u>6.0/8.9</u>	NPDES Amendment Application	<u></u>
Temperature (°F)	<u></u>		<u></u>
Hardness (mg/L)	<u></u>		<u></u>
Other:	<u></u>		<u></u>
Nearest Downstream Public Water Supply Intake	<u>Beaver Falls Municipal Authority</u>		
PWS Waters	<u>Beaver River</u>	Flow at Intake (cfs)	<u></u>
PWS RMI	<u></u>	Distance from Outfall (mi)	<u>22.11</u>

Changes Since Last Permit Issuance: Design flow has been adjusted to 2,050 gpd per the NPDES Amendment Application.

Other Comments: N/A

Treatment Facility Summary				
Treatment Facility Name: Honeywell Sewer Treatment Plant				
WQM Permit No.	Issuance Date	Purpose		
0497104 A-1	Under DEP Review	Modifications to the existing STP consisting of: installing a manually-operated influent screening system, re-sizing the influent pumps, convert the existing wet well to a flow equalization system, modifying the existing aeration tanks to better match the reduced flow, installation a dechlorination tank, installing a post-aeration sampling tank		
0497401 T-1	05/02/2003	Transfer STP from Alta Group to Honeywell Electronic Materials		
0497401	05/06/1997	Construction of original STP		
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Extended aeration + phosphorus reduction	Chlorine tablets	0.00205
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.00205	3.76			Other WWTP

Changes Since Last Permit Issuance: Annual Average flow and Hydraulic Capacity are now 0.00205 MGD. Organic Capacity is now 3.76 lbs/day.

Other Comments: N/A

Compliance History

Facility: Honeywell STP
NPDES Permit No.: PA0217514
Compliance Review Period: 11/1/2017-11/29/2022

Inspection Summary:

INSPECTED DATE	INSP TYPE	AGENCY	INSPECTION RESULT DESC
08/09/2021	Compliance Evaluation	PA Dept of Environmental Protection	Violation(s) Noted
11/01/2018	Administrative/File Review	PA Dept of Environmental Protection	Violation(s) Noted

Violation Summary:

VIOL ID	VIOLATION DATE	VIOLATION TYPE	VIOLATION TYPE DESC	RESOLVED DATE
925773	08/09/2021	92A.44	NPDES - Violation of effluent limits in Part A of permit	08/16/2021
832261	11/01/2018	302.202	Operator Certification - Failure to submit annual system fee	11/26/2018

Open Violations by Client ID:

No open violations for Client ID 238716

Enforcement Summary:

ENF TYPE	ENF TYPE DESC	EXECUTED DATE	VIOLATIONS	ENF FINALSTATUS	ENF CLOSED DATE
NOV	Notice of Violation	08/16/2021	92A.44	Comply/Closed	8/16/2021
NOV	Notice of Violation	11/01/2018	302.202	Comply/Closed	11/26/2018

DMR Violation Summary:

Mon Pd End	PARAMETER	SAMPLE	PERMIT	UNIT	STAT BASE CODE	FACILITY COMMENTS
9/30/20	Total Residual Chlorine (TRC)	2.2	1.6	mg/L	Instantaneous Maximum	
5/31/20	Fecal Coliform	241	200	No./100 ml	Geometric Mean	Cause of Violation: Lack of sufficient chlorine residual. Corrective action: Adjust the addition of chlorine.
5/31/20	Fecal Coliform	2420	1000	No./100 ml	Instantaneous Maximum	Cause of Violation: Lack of sufficient chlorine residual. Corrective action: Adjust the addition of chlorine.
6/30/18	Fecal Coliform	388	200	No./100 ml	Geometric Mean	Licensed WWTP operator increased chlorine input due to insufficient residual chlorine.

Compliance Status: Facility is currently in compliance with no open violations or pending enforcements.

Completed by: Amanda Schmidt

Completed date: 11/30/22

Development of Effluent Limitations

Outfall No. 001
Latitude 40° 48' 8.00"
Wastewater Description: Sewage Effluent

Design Flow (MGD) 0.00205
Longitude -80° 11' 52.00"

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
Flow (MGD)	Report	Average Monthly	-	92a.27, 92a.61
	Report Max Daily	Average Weekly	-	92a.27, 92a.61
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 (TSS)	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
Total Residual Chlorine (TRC)	0.5	Average Monthly	-	92a.48(b)(2)
Ammonia-Nitrogen (NH ₃ -N)	25	Average Monthly	-	92a.61
	50	IMAX	-	92a.61
Dissolved Oxygen (DO)	4.0	Instantaneous Minimum	-	93.6, 92a.61
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Total N	Report	Average Monthly	-	92a.61
Total P	Report	Average Monthly	-	92a.61
Fecal Coliform (No./100mL) (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (No./100mL) (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (No./100mL) (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (No./100mL) (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
E. Coli (No./100mL)	Report	IMAX	-	92a.61

Water Quality-Based Limitations

WQM7.0

WQM7.0 is a water quality modeling program for Windows that determines Waste Load Allocations ("WLAs") and effluent limitations for carbonaceous biochemical oxygen demand ("CBOD₅"), ammonia-nitrogen, and dissolved oxygen for single and multiple point-source discharge scenarios. To accomplish this, the model simulates two basic processes. In the ammonia-nitrogen module, the model simulates the mixing and degradation of ammonia-nitrogen in the stream and compares calculated instream ammonia-nitrogen concentrations to ammonia-nitrogen water quality criteria. In the dissolved oxygen module, the model simulates the mixing and consumption of dissolved oxygen in the stream due to the degradation of CBOD₅ and ammonia-nitrogen and compares calculated instream dissolved oxygen concentrations to dissolved oxygen water quality criteria. WQM 7.0 then determines the highest pollutant loadings that the stream can assimilate while still meeting water quality criteria under design conditions.

DEP's modeling for sewage discharges is a two-step process. First, a discharge is modeled for the summer period (May through October) using warm temperatures for the discharge and the receiving stream. Modeling for the summer period is done first because allowable ammonia-nitrogen concentrations in a discharge are lower at higher temperatures (i.e., warm temperatures are more likely to result in critical loading conditions). Reduced dissolved oxygen levels also appear to increase ammonia toxicity and the maximum concentration of dissolved oxygen in water is lower at higher temperatures.

The second step is to evaluate WQBELs for the winter period, but only if modeling shows that WQBELs are needed for the summer period.

The model inputs used to model the discharge from Honeywell Electric Materials are shown below:

Stream Parameters			
Reach 1		Reach 2	
Stream Code	34025	Stream Code	34025
RMI	15.3	RMI	15.2
Elevation (ft)	870	Elevation (ft)	869
Drainage Area (mi ²)	333	Drainage Area (mi ²)	334
Q ₇₋₁₀ Flow (cfs)	10.6	Q ₇₋₁₀ Flow (cfs)	10.6

Facility/Design Parameters	
Discharge Flow (MGD)	0.00205
LFY (cfs/mi ²) [for use in summer modeling]	0.0318
2*LFY (cfs/mi ²) [for use in winter modeling]	0.0637

Summer Modeling Inputs			
Tributary		Discharge	
Temperature (°C)	25	Temperature (°C)	20
pH (S.U.)	7	pH (S.U.)	7
DO (mg/L)	8.24	DO (mg/L)	4
CBOD ₅ (mg/L)	2	CBOD ₅ (mg/L)	25
NH ₃ -N (mg/L)	0	NH ₃ -N (mg/L)	25
DO Goal (mg/L)	5	DO Goal (mg/L)	5
Winter Modeling Inputs			
Tributary		Discharge	
Temperature (°C)	5	Temperature (°C)	15
pH (S.U.)	7	pH (S.U.)	7
DO (mg/L)	12.51	DO (mg/L)	4
CBOD ₅ (mg/L)	2	CBOD ₅ (mg/L)	25
NH ₃ -N (mg/L)	0	NH ₃ -N (mg/L)	25
DO Goal (mg/L)	5	DO Goal (mg/L)	5

The modeling results shown that technology-based effluent limitations are appropriate for CBOD₅. Per DEP SOP “Establishing Effluent Limitations for Individual Sewage Permits” (Rev. March 34, 2021, BCW-PMT-033), when WQM7.0 indicates that a summer limit of 25 mg/L for ammonia nitrogen is acceptable, a year-round monitoring requirement for ammonia-nitrogen will be established, at a minimum. Despite modeling results recommending a DO limit of 4.0 mg/L, 25 PA Code 93.7, waters designated as WWF are subject to a DO limit of 5.0 mg/L. Since 5.0 mg/L was established in the current permit and is the more stringent of the two values, the DO limit will remain at 5.0 mg/L during this permit cycle. The modeling results can be found in Attachment B.

Parameter	Limit (mg/l)	SBC	Model
Dissolved Oxygen	4	Minimum	WQM7.0
Ammonia Nitrogen	25	Average Monthly	WQM7.0

Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC_CALC created with Microsoft Excel for Windows. TRC_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and chlorine demands for the receiving stream and the discharge, the number of samples taken per month, coefficients of TRC variability, partial mix factors, and an optional factor of safety. The mass balance model calculates WLAs for acute and chronic criteria that are then converted to long term averages using calculated multipliers. The multipliers are functions of the number of

samples taken per month and the TRC variability coefficients (normally kept at default values unless site-specific information is available). The most stringent limitation between the acute and chronic long-term averages is converted to an average monthly limit for comparison to the BAT average monthly limit of 0.5 mg/L from 25 Pa. Code § 92a.48(b)(2). The more stringent of these average monthly TRC limitations is imposed in the permit. TRC_CALC recommends the BAT limits of 0.5 mg/L average monthly and 1.6 mg/L IMAX (Attachment C).

Total Phosphorus

Phosphorus limits (2.0 mg/L average monthly, 4.0 mg/L IMAX) have previously been imposed for Honeywell Electric Materials. Phosphorus limitations for Connoquenessing Creek were addressed in an internal memo from 1985 (Attachment D). According to this memo, all permits in the watershed would be subject to a phosphorus limit of 2.0 mg/L. As such, the phosphorus limit will remain in this permit.

Best Professional Judgment (BPJ) Limitations

According to the standard in 25 PA Code Chapter 93 and best professional judgment, a dissolved oxygen minimum limitation of 4.0 mg/L should be implemented. However, where water quality demands more protective dissolved oxygen limits, the more stringent of the two values will be imposed. See the above section "WQM7.0" for a discussion of dissolved oxygen limitations.

Additional Considerations

Sewage discharges will include monitoring, at a minimum, for E. coli, in new and reissued permits, with a monitoring frequency of 1/year for design flows 0.002-0.05 MGD.

Annual monitoring for Total Nitrogen will remain in the permit.

Monitoring frequency for the proposed effluent limits are based upon Table 6-3 "Self-Monitoring Requirements for Sewage Dischargers" and Table 6-4 "Self-Monitoring Requirements for Industrial Dischargers", from the Department's Technical Guidance for the Development and Specification of Effluent Limitations.

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)	0.00205	XXX	XXX	XXX	XXX	XXX	2/month	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	25.0	XXX	50.0	2/month	Grab
Total Suspended Solids	XXX	XXX	XXX	30.0	XXX	60.0	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	Report	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4.0	2/month	Grab

Compliance Sampling Location: Outfall 001

Other Comments: N/A

ATTACHMENT A:
USGS STREAMSTATS

StreamStats Report

Region ID: PA

Workspace ID: PA20221121155355613000

Clicked Point (Latitude, Longitude): 40.80236, -80.19756

Time: 2022-11-21 10:54:17 -0500



 Collapse All

 Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	333	square miles
ELEV	Mean Basin Elevation	1192	feet

➤ Low-Flow Statistics

Low-Flow Statistics Parameters [100.0 Percent (333 square miles) Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	333	square miles	2.26	1400
ELEV	Mean Basin Elevation	1192	feet	1050	2580

Low-Flow Statistics Flow Report [100.0 Percent (333 square miles) Low Flow Region 4]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	20.9	ft ³ /s	43	43
30 Day 2 Year Low Flow	30.7	ft ³ /s	38	38
7 Day 10 Year Low Flow	10.6	ft ³ /s	66	66
30 Day 10 Year Low Flow	14.6	ft ³ /s	54	54
90 Day 10 Year Low Flow	22.5	ft ³ /s	41	41

Low-Flow Statistics Citations

Stuckey, M.H., 2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (<http://pubs.usgs.gov/sir/2006/5130/>)

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Application Version: 4.11.1

StreamStats Services Version: 1.2.22

NSS Services Version: 2.2.1

ATTACHMENT B:
WQM7.0 MODELING RESULTS

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
20C	34025	CONNOQUENESSING CREEK	15.300	870.00	333.00	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.032	10.60	0.00	0.000	0.000	0.0	0.00	0.00	25.00	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
Honeywell	PA0217514	0.0000	0.0000	0.0021	0.000	20.00	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	4.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

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
20C	34025	CONNOQUENESSING CREEK	15.200	869.00	334.00	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.032	10.60	0.00	0.000	0.000	0.0	0.00	0.00	25.00	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

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	<input checked="" type="checkbox"/>
WLA Method	EMPR	Use Inputted W/D Ratio	<input type="checkbox"/>
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	<input type="checkbox"/>
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	<input checked="" type="checkbox"/>
D.O. Saturation	90.00%	Use Balanced Technology	<input checked="" type="checkbox"/>
D.O. Goal	5		

WQM 7.0 Hydrodynamic Outputs

<u>SWP Basin</u>		<u>Stream Code</u>		<u>Stream Name</u>									
20C		34025		CONNOQUENESSING CREEK									
RMI	Stream Flow	PWS With	Net Stream Flow	Disc Analysis Flow	Reach Slope	Depth	Width	W/D Ratio	Velocity	Reach Trav Time	Analysis Temp	Analysis pH	
	(cfs)	(cfs)	(cfs)	(cfs)	(ft/ft)	(ft)	(ft)		(fps)	(days)	(°C)		
Q7-10 Flow													
15.300	10.60	0.00	10.60	.0032	0.00189	.854	61.27	71.74	0.20	0.030	25.00	7.00	
Q1-10 Flow													
15.300	6.78	0.00	6.78	.0032	0.00189	NA	NA	NA	0.16	0.039	25.00	7.00	
Q30-10 Flow													
15.300	14.42	0.00	14.42	.0032	0.00189	NA	NA	NA	0.24	0.025	25.00	7.00	

WQM 7.0 D.O.Simulation

<u>SWP Basin</u>		<u>Stream Code</u>		<u>Stream Name</u>			
20C		34025		CONNOQUENESSING CREEK			
<u>RMI</u>	15.300	<u>Total Discharge Flow (mgd)</u>	0.002	<u>Analysis Temperature (°C)</u>	24.999	<u>Analysis pH</u>	7.000
<u>Reach Width (ft)</u>	61.269	<u>Reach Depth (ft)</u>	0.854	<u>Reach WDRatio</u>	71.743	<u>Reach Velocity (fps)</u>	0.203
<u>Reach CBOD5 (mg/L)</u>	2.01	<u>Reach Kc (1/days)</u>	0.005	<u>Reach NH3-N (mg/L)</u>	0.01	<u>Reach Kn (1/days)</u>	1.028
<u>Reach DO (mg/L)</u>	8.242	<u>Reach Kr (1/days)</u>	2.949	<u>Kr Equation</u>	Tsilvoglou	<u>Reach DO Goal (mg/L)</u>	5
<u>Reach Travel Time (days)</u>	0.030	Subreach Results					
		<u>TravTime (days)</u>	<u>CBOD5 (mg/L)</u>	<u>NH3-N (mg/L)</u>	<u>D.O. (mg/L)</u>		
		0.003	2.01	0.01	7.54		
		0.006	2.01	0.01	7.54		
		0.009	2.01	0.01	7.54		
		0.012	2.01	0.01	7.54		
		0.015	2.01	0.01	7.54		
		0.018	2.01	0.01	7.54		
		0.021	2.01	0.01	7.54		
		0.024	2.01	0.01	7.54		
		0.027	2.01	0.01	7.54		
		0.030	2.01	0.01	7.54		

WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>		<u>Stream Code</u>		<u>Stream Name</u>					
20C		34025		CONNOQUENESSING CREEK					
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		
15.300	Honeywell	11.08	50	11.08	50	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		
15.300	Honeywell	1.37	25	1.37	25	0	0		
Dissolved Oxygen Allocations									
RMI	Discharge Name	<u>CBOD5</u>		<u>NH3-N</u>		<u>Dissolved Oxygen</u>		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
15.30	Honeywell	25	25	25	25	4	4	0	0

WQM 7.0 Effluent Limits

<u>SWP Basin</u>		<u>Stream Code</u>		<u>Stream Name</u>					
20C		34025		CONNOQUENESSING CREEK					
RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)		
15.300	Honeywell	PA0217514	0.000	CBOD5	25				
				NH3-N	25	50			
				Dissolved Oxygen			4		

ATTACHMENT C:
TRC_CALC RESULTS

TRC EVALUATION				
Input appropriate values in A3:A9 and D3:D9				
10.6 = Qstream (cfs)	0.5 = CV Daily			
0.00205 = Qdischarge (MGD)	0.5 = CV Hourly			
30 = no. samples	1 = AFC_Partial Mix Factor			
0.3 = Chlorine Demand of Stream	1 = CFC_Partial Mix Factor			
0 = Chlorine Demand of Discharge	15 = AFC_Criteria Compliance Time (min)			
0.5 = BAT/BPJ Value	720 = CFC_Criteria Compliance Time (min)			
0 = % Factor of Safety (FOS)	= Decay Coefficient (K)			
Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA_afc = 1066.253	1.3.2.iii	WLA_cfc = 1039.505
PENTOXSD TRG	5.1a	LTAMULT_afc = 0.373	5.1c	LTAMULT_cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc = 397.311	5.1d	LTA_cfc = 604.320
Source	Effluent Limit Calculations			
PENTOXSD TRG	5.1f	AML_MULT = 1.231		
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500		BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.635		
WLA_afc	$(.019/e^{-k \cdot AFC_tc}) + [(AFC_Yc \cdot Qs \cdot 0.19/Qd) \cdot e^{-k \cdot AFC_tc}] \dots + Xd + (AFC_Yc \cdot Qs \cdot Xs/Qd)^{(1-FOS/100)}$			
LTAMULT_afc	$EXP((0.5 \cdot LN(cvh^2+1)) - 2.326 \cdot LN(cvh^2+1)^{0.5})$			
LTA_afc	$wla_afc \cdot LTAMULT_afc$			
WLA_cfc	$(.011/e^{-k \cdot CFC_tc}) + [(CFC_Yc \cdot Qs \cdot 0.11/Qd) \cdot e^{-k \cdot CFC_tc}] \dots + Xd + (CFC_Yc \cdot Qs \cdot Xs/Qd)^{(1-FOS/100)}$			
LTAMULT_cfc	$EXP((0.5 \cdot LN(cvd^2/no_samples+1)) - 2.326 \cdot LN(cvd^2/no_samples+1)^{0.5})$			
LTA_cfc	$wla_cfc \cdot LTAMULT_cfc$			
AML_MULT	$EXP(2.326 \cdot LN((cvd^2/no_samples+1)^{0.5}) - 0.5 \cdot LN(cvd^2/no_samples+1))$			
AVG MON LIMIT	$MIN(BAT_BPJ, MIN(LTA_afc, LTA_cfc) \cdot AML_MULT)$			
INST MAX LIMIT	$1.5 \cdot ((av_mon_limi/AML_MULT) \cdot LTAMULT_afc)$			

ATTACHMENT D:
1985 PHOSPHORUS MEMO

COMMONWEALTH OF PENNSYLVANIA
1012 Water Street
Meadville, PA 16335
NETWORK: 673-6950
January 9, 1985

Phosphorus Loading to Connoquenessing Creek
SUBJECT: Butler County

STREAM FILE 9,20.1
Connoquenessing Creek

TO: Edward R. Brezina, Chief
Division of Water Quality
Bureau of Water Quality Management

FROM: Peter A. Yeager
Regional Water Quality Manager
Bureau of Water Quality Management

See Paragraph 7
re: 2.0mg/l effluent
limit for all dischargers

Pursuant to our telephone conversation (including J.T. Ulanoski, K.A. Bartal, and R. B. Patel) on November 28, 1984, the following comments were prepared concerning phosphorus loading to the Connoquenessing Creek Watershed, Butler County:

1. Tables 1 and 2 (attached) summarize phosphorus loads from point sources in the watershed (excluding Slippery Rock Creek).
2. The Table 1 data were compiled using actual reported "P" concentrations and flows from 1983 - 84 (April-October) monthly discharge monitoring reports (DMRs).
3. The Table 2 data are considered "best guesstimates". Many of these treatment facilities do not as yet have NPDES permits, consequently, discharge monitoring information was inadequate or not available. Inspection reports and samples taken by our field staff (since 1980) did provide limited data for making the phosphorus loading calculations.
4. Based on our calculations, the six publicly owned treatment works (Table 1) account for approximately 91% (149 lbs/day) of the total point source phosphorus load (164 lbs) to Connoquenessing Creek. Of these six, the Butler Area Sanitary Authority is the largest contributor with an average phosphorus load of 132 lbs/day.
5. Five of the six municipal plants have tertiary treatment. Three of these are able to meet the .5 mg/l "P" limit established under the implementation plan. Saxonburg Borough comes close with .83 mg/l "P". The Butler Area Sewer Authority and Borough of Mars treatment plants have monthly average "P" concentrations of 2.14 mg/l and 2.72 mg/l, respectively.

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6. The 26 non-municipal dischargers (Table 2) account for 9% of the total point source phosphorus load (15 lbs/day). Only two of these facilities have average "P" concentrations less than .5 mg/l. Eighteen facilities exceed the maximum technology based "P" limit of 2.0 mg/l (monthly average).
7. In a telephone conversation with Jim Ulanoski on December 7, 1984, it was agreed that the maximum technology limit of 2.0 mg/l phosphorus should be incorporated into all NPDES permits for this watershed. All existing tertiary treatment facilities, however, would be required to remain operational so that there would be no net increase in phosphorus from current levels. Those facilities which cannot meet the 2.0 mg/l limit will be required to do so.
8. Very little information was available for estimating phosphorus loading from non-point sources. However, land use information supplied by the Butler County Conservation District (Table 3) suggests that agricultural activities are a major contributing factor and will need to be addressed in the future. By estimating yearly soil loss from agricultural areas in the watershed and by estimating the average phosphorus content of those soils, the daily average of phosphorus discharged to Connoquenessing Creek can be guesstimated at 380 lbs/day. However inaccurate this figure may be, we believe it does represent a substantial impact on the watershed - at least as significant as the point discharges. It should also be noted that all non-point sources (e.g. malfunctioning septic tanks, urban runoff, silvicultural activities, etc.) were not included in the estimate and actual "P" loading from non-point sources may be greater than 380 lbs/day.

RLH/llk

cc: Mr. Yeager
Mr. Hasse
Mr. Zimmerman ✓
Ms. Pesek
Mr. Ulanoski - Thru: Mr. Clista
Mr. Patel - Thru: Mr. Bartal
Central Files
Regional Files

TABLE 1 Phosphorus loading from publicly owned treatment works located in the Connoquenessing Creek Watershed.

Discharger	Avg. Reported Flow or Permitted Flow (MGD)	Avg. Phos. Conc. (mg/l)	Avg. Phos. Loading (lbs/day)	Phos. Loading @ 2 mg/l (lbs/day)
1. Butler Area Sewer Authority Butler Township	7.42	2.14	132.4	123
2. Municipal Sewer & Water Auth. of Cranberry Township Cranberry Township	1.36	0.47	5.3	5.3*
3. Western Butler County Authority Zelienople Borough	0.97	0.44	3.6	3.6*
4. Saxonburg Area Authority Saxonburg Borough	0.26	0.83	1.8	1.8*
5. Borough of Mars Adams Township	0.24	2.72	5.4	4.0
6. Evansburg Borough Mun. Auth. Evans City	0.24	0.39	0.8	0.8*
TOTALS	10.49		149.3	

*No net increase as existing facilities will remain in operation (See Memo - Item 7)

TABLE 2: Phosphorus loading from privately owned treatment works located in the Connoquenessing Creek Wat.

Discharger	Avg. Reported Flow or Permitted Flow (MGD)	Avg. Phos. Conc. (mg/l)	Avg. Phos. Loading (lbs/day)	Phos. Loading @ 2 mg/l (lbs/day)
1. James Austin Company Adams Township	.0039	2.82	0.94	.067
2. Mars Area School District Adams Township	.0650	4.80	2.60	1.08
3. Roessing Bronze Co., Inc. Adams Township	.0024	2.45	.049	.040
4. Armco Steel Corporation -Butler Works, Butler Township	Outfall 001= .274 Outfall 005= 1.511 Outfall 006= .567	001= .012 005= .037 006= .015	001= .027 005= .466 (.564) 006= .071 TOTAL	.564 (TOTAL)*
5. Buttercup Woodland Campground Connoquenessing Twp.	.040	14.21	4.74	.667
6. Woodland Meadows MHP Connoquenessing Township	.020	3.60	.600	.334
7. Rolling Valley Estates Connoquenessing Township	.025	1.51	.315	.315*
8. Seven Fields Community Serv. Assoc. Cranberry Township	.038	No data	---	---
9. KOA Campgrounds Cranberry Twonship	.0035	5.27	.154	.058
10. Oak Spring Mobile Home Park	.020	3.37	.562	.334

Discharger	Avg. Reported Flow or Permitted Flow (MGD)	Avg. Phos. Conc. (mg/l)	Avg. Phos. Loading (lbs/day)	Phos. Loading (lbs/day)
11. Mine Safety Appliances Co. Evans City	.0489	.12	.049	.049*
12. Church of the Nazarene Franklin Township	.0295	1.63	.401	.401*
13. Franklin Mobile Home Park Franklin Township	.010	11.00	.917	.167
14. Pine Valley Estates Lancaster Township	.0103	7.87	.676	.172
15. Villa Vista Estates Middlesex Township	.025	2.03	.423	.417
16. Sandy Hill Estates Middlesex Township	.0220	3.55	.651	.367
17. Holy Sepulcher Parish Middlesex Township	.0026	.68	.051	.015*
18. Lakeview Racquet Club Middlesex Township	.006	3.88	.194	.100
19. Port-O-Call Recreational Club Penn Township	.027	2.62	.590	.450
20. High Meadows Sewer Service, Inc. Penn Township	.0045	.71	.027	.027*

Discharger	Avg. Reported Flow or Permitted Flow (MGD)	Avg. Phos. Conc. (mg/l)	Avg. Phos. Loading (lbs/day)	Resulting (lbs/c)
21. Williams Mobile Home Park Penn Township	.0065	6.85	.371	.108
22. Green Acres MHP Penn Township	.004	2.6	.087	.067
23. South Butler Co. School District Penn Twp. Elementary School Penn Township	.0007	3.67	.021	.012
24. The United Cause, Inc. Penn Township	.0094	1.38	.108	.108*
25. St. Fidelis Seminary Summit Township	.006	6.22	.311	.100
26. St. John's Hospital Conval. Unit Valencia Borough	.008	7.18	.479	.133
TOTALS	.4382 w/o Aramco 2.7902 w/Aramco		14.998	

*No net increase as existing facilities will remain in operation (See Memo - Item 7).

TABLE 3: LAND USE CONNOQUENESSING CREEK WATERSHED BUTLER COUNTY	
Cropland	- 30%
Pasture	- 5%
Forest	- 30%
Urban	- 30%
Other	- 5%
Source: Butler County Conservation District (1967 Appalachian Water Resources Survey)	