

Application Type Renewal  
 Facility Type Non-Municipal  
 Major / Minor Minor

**NPDES PERMIT FACT SHEET  
INDIVIDUAL SEWAGE**

Application No. PA0053082  
 APS ID 1006543  
 Authorization ID 1296807

**Applicant and Facility Information**

Applicant Name	<u>Mendenhall Inn</u>	Facility Name	<u>Mendenhall Inn STP</u>
Applicant Address	<u>PO Box 607</u> <u>Concordville, PA 19331</u>	Facility Address	<u>PO Box 607</u> <u>Concordville, PA 19331</u>
Applicant Contact	<u>Alexander Hionis</u>	Facility Contact	<u>Alexander Hionis</u>
Applicant Phone	<u>(610) 506-8979</u>	Facility Phone	<u>(610) 506-8979</u>
Client ID	<u>2468</u>	Site ID	<u>452232</u>
Ch 94 Load Status	<u>Not Overloaded</u>	Municipality	<u>Kennett Township</u>
Connection Status	<u>Not Applicable</u>	County	<u>Chester</u>
Date Application Received	<u>October 1, 2019</u>	EPA Waived?	<u>No</u>
Date Application Accepted	<u></u>	If No, Reason	<u>Christina River Basin TMDL WLA</u>
Purpose of Application	<u>Permit Renewal</u>		

**Summary of Review**

This permittee requests the renewal of NPDES permit PA0053082 to discharge 20,600 gallons per day (gpd) of treated sewage effluent to the Craigs Mill Run (WWF, MF), a tributary to the Brandywine Creek. The treated effluent is from a sewage treatment plant (STP) that serves the Mendenhall Inn. This facility is part of the Christina River Basin Total Maximum Daily Loads (TMDL) for both low-flow and high-flow Waste Load Allocations (WLA). The facility is currently meeting its effluent limitations. The last exceedances were in February 2018 for Total Phosphorus (TP) and March 2018 for fecal coliform.

Effluent limitations, sampling type and monitoring frequencies remain the same as the previous permit issued in 2015. The only change was the addition of a monitoring requirement and mass loading limitation for Total Nitrogen (TN). The mass loading is the Christina River Basin TMDL WLA of 3.436 lb/d.

The treatment facility consists of Grease Traps, Aerated Flow Equalization, Extended Aeration, Clarifier, Backwash Style Filter, Chlorine Contact Chamber, and Flow Meter. The wastewater is from an Inn and Restaurant.

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.

Approve	Deny	Signatures	Date
X		Harmonie Hawley, PhD, PE / Environmental Engineering Specialist /s/	November 27, 2019
X		Pravin C. Patel, P.E. / Environmental Engineer Manager /s/	November 27, 2019

**Summary of Review**

The reported annual average flowrates for 2016, 2017 and 2018 are 6,860 gallons per day (gpd), 8,335 gpd and 7,586 gpd, respectively. The reported annual average flowrate from January 2019 through July 2019 was 7,328 gpd. These values are below the permitted 20,600 gpd.

Special Conditions:

- A. No Stormwater
- B. Necessary Property Rights
- C. Collected Screenings, Slurries, Sludges and other Solids
- D. Connect to Municipal Sewers
- E. Chlorine Minimization
- F. Responsible Operator
- G. O & M Plan
- H. Responsible Solids Management

Act 14 Notifications:

Chester County Commissioners September 3, 2019  
Kennett Township Supervisors September 3, 2019

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	<u>001</u>	Design Flow (MGD)	<u>.0206</u>
Latitude	<u>39° 51' 17.36"</u>	Longitude	<u>-75° 38' 20.94"</u>
Quad Name	<u>Kennett Square</u>	Quad Code	<u>2040</u>
Wastewater Description: <u>Sewage Effluent</u>			
Receiving Waters	<u>Craigs Mill Run (WWF, MF)</u>	Stream Code	<u>00023</u>
NHD Com ID	<u>26092224</u>	RMI	<u>2.5</u>
Drainage Area	<u>0.11 miles<sup>2</sup></u>	Yield (cfs/mi <sup>2</sup> )	<u>0.21</u>
Q <sub>7-10</sub> Flow (cfs)	<u>0.0226</u>	Q <sub>7-10</sub> Basis	<u>PA Stream Stats</u>
Elevation (ft)	<u>320</u>	Slope (ft/ft)	<u>0.04</u>
Watershed No.	<u>3-H</u>	Chapter 93 Class.	<u>WWF, MF</u>
Existing Use	<u>As designated</u>	Existing Use Qualifier	<u>As designated</u>
Exceptions to Use	<u>None</u>	Exceptions to Criteria	<u>None</u>
Assessment Status	<u>Impaired</u>		
Cause(s) of Impairment	<u>Siltation, Siltation</u>		
Source(s) of Impairment	<u>Agriculture, Habitat Modification - Other Than Hydromodification</u>		
TMDL Status	<u>Final</u>	Name	<u>Christina River Basin</u>
Background/Ambient Data		Data Source	
pH (SU)	<u>7</u>	TRG WQM (391-2000-007 default data)	
Temperature (°F)	<u>68 (20 °C)</u>	TRG WQM (391-2000-007 default data)	
Nearest Downstream Public Water Supply Intake	<u>No intake on Craigs Mill Run</u>		

Changes Since Last Permit Issuance: No major changes

Other Comments: Permit transferred ownership from Alexander Hionis & Partners to Mendenhall Inn on November 8, 2019.

Treatment Facility Summary				
<b>Treatment Facility Name:</b> Mendenhall Inn STP				
Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Extended Aeration	Hypochlorite	0.0206
Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.0206	Not Reported	Not Overloaded		

Changes Since Last Permit Issuance: None

Other Comments: The treatment facility consists of Grease Traps, Aerated Flow Equalization, Extended Aeration, Clarifier, Backwash Style Filter, Chlorine Contact Chamber, and Flow Meter.

Compliance History

DMR Data for Outfall 001 (from October 1, 2018 to September 30, 2019)

Parameter	SEP-19	AUG-19	JUL-19	JUN-19	MAY-19	APR-19	MAR-19	FEB-19	JAN-19	DEC-18	NOV-18	OCT-18
Flow (MGD) Average Monthly	0.01098 0	0.00821 0	0.00860	0.00786 0	0.00839 0	0.00662 0	0.00648	0.00588	0.00747 0	0.00837 0	0.00965 0	0.00827 0
Flow (MGD) Daily Maximum	0.01820	0.01430	0.01670	0.0130	0.01520	0.01870	0.01100	0.0093	0.01480	0.01280	0.01560	0.01570
pH (S.U.) Instantaneous Minimum	6.79	6.80	6.88	6.75	7.09	7.08	7.09	7.03	7.08	7.08	7.09	7.09
pH (S.U.) Instantaneous Maximum	7.14	7.85	7.28	7.36	7.38	7.36	7.97	7.69	7.31	7.29	7.39	7.35
DO (mg/L) Instantaneous Minimum	5.0	5.0	6.0	5.3	6.0	6.2	6.1	6.3	6.0	6.0	6.1	6.0
TRC (mg/L) Average Monthly	0.033	0.023	0.029	0.025	0.024	0.025	0.024	0.024	0.023	0.021	0.020	0.023
TRC (mg/L) Instantaneous Maximum	0.20	0.05	0.06	0.04	0.05	0.06	0.06	0.07	0.04	0.05	0.04	0.05
CBOD5 (lbs/day) Average Monthly	< 0.12	< 0.12	< 0.091	< 0.086	< 0.074	< 0.049	< 0.063	< 0.025	< 0.157	< 0.123	< 0.10	< 0.082
CBOD5 (mg/L) Average Monthly	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
TSS (lbs/day) Average Monthly	0.06	< 0.303	0.127	< 0.156	< 0.037	0.118	< 0.032	< 0.017	0.112	< 0.271	< 0.071	0.077
TSS (mg/L) Average Monthly	1	< 4	2.5	< 3.5	< 1	4.5	< 1	< 1.5	2	< 4.5	< 1.5	2.5
Fecal Coliform (CFU/100 ml) Average Monthly	< 3.2	< 9.2	49.5	< 5.7	< 2	< 31.9	10	44.2	< 2.7	< 2	5.7	< 13.6
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	5	< 42	350	16	< 2	510	20	650	5	2	16	92
Ammonia (lbs/day) Average Monthly	0.011	< 0.006	0.014	0.015	0.021	0.01	< 0.003	< 0.002	0.008	< 0.02	0.04	0.012

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Ammonia (mg/L) Average Monthly	< 0.165	< 0.1	0.31	0.345	0.52	0.4	< 0.1	< 0.17	< 0.1	< 0.32	0.72	0.295
Total Phosphorus (lbs/day) Average Monthly	0.012	0.007	0.015	0.02	0.018	0.008	0.011	0.004	0.033	0.06	0.034	0.041
Total Phosphorus (mg/L) Average Monthly	0.205	0.105	0.32	0.465	0.45	0.305	0.34	0.385	0.485	0.987	0.635	0.857

**Compliance History**

No exceedances noted. No open violations were found on WMS.

**Development of Effluent Limitations**

<b>Outfall No.</b> <u>001</u>	<b>Design Flow (MGD)</b> <u>.0206</u>
<b>Latitude</b> <u>39° 51' 17.45"</u>	<b>Longitude</b> <u>-75° 38' 20.81"</u>
<b>Wastewater Description:</b> <u>Sewage Effluent</u>	

**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 <sub>5</sub>	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: The above technology-based limitations were evaluated and compared against other criteria for this permit renewal. Other criteria which were more stringent, were retained or added to this permit renewal. The pH will remain 6.0 to 9.0 as shown in the above table. The fecal coliform limit is retained from the existing permit and is an effluent concentration not greater than 200/100 milliliters of fecal coliform organisms as a geometric mean value and not greater than 1,000/100 milliliters of fecal coliform organisms in more than 10 percent of the samples tested.

WQM modeling was conducted for CBOD<sub>5</sub>, NH<sub>3</sub>-N and DO and is included as Attachment A. The results were the same as the limits in the existing permit (CBOD<sub>5</sub> 10 mg/l; NH<sub>3</sub>-N 3 mg/l; DO 5 mg/l).

The Christina River Basin TMDL of Nutrients and Dissolved Oxygen Under Low-Flow Condition was issued by the Environmental Protection Agency (EPA) on January 19, 2001 and subsequently revised in October 2002 and April 2006. Subsequently, DEP prepared, and EPA acknowledged, an Alternative Reduction Scenario for the Christina River Basin for Low Flow TMDL dated June 27, 2012 which reassigned some of the allocations within the discharges but kept the total load to the basin the same. Mendenhall Inn STP is part of an Alternative Reduction Scenario TMDL (Summary Table 15) for parameters: CBOD<sub>5</sub>, NH<sub>3</sub>N, Dissolved Oxygen, Total Nitrogen (TN), and Total Phosphorus (TP). The loadings are 1.719 (10), 0.516 (3), 0.860 (5), 3.436 (10), and 0.344 (2) lb/d (mg/l), respectively. Besides TN (discussed below), the current permit meets these limitations or is more stringent than the Waste Load Allocations (WLA).

The Christina River Basin also has approved High-Flow TMDLs for Bacteria and Sediment (dated September 2006) for Fecal Coliform, enterococci, and TSS, and for Nutrients and Dissolved Oxygen (dated September 2006) loads for phosphorus, ammonia-N, and CBOD<sub>5</sub>. The limits for Total Suspended Solids (10 mg/l) and Fecal Coliform (200 No./100ml) will continue in this permit renewal and it is consistent with the High Flow TMDL for Bacteria and Sediment. Seasonal limitations are also consistent with the TMDLs. The high flow TMDL allocations were not adjusted at the time when low flow TMDL allocations were adjusted under the "Alternative Reduction Scenario". Since, the Christina River Low-Flow TMDL is the driver for the Christina River High-Flow TMDL, especially for nutrients, it is assumed that compliance with the low flow TMDL, satisfies the compliance of the high flow TMDL.

TP was set to 1 mg/l, which is lower than the standard practices and the TMDL WLA, and is retained in this permit. The limit was set several permit renewals ago due to stream impairment. The permittee is meeting the limit.

TN was not included as a monitoring parameter in the existing permit. In order to comply with the Low Flow TMDL Alternative Reduction Scenario, a loading limit of 3.436 lb/d as a monthly average is proposed for the permit renewal.

The Total Residual Chlorine spreadsheet was run and similar results were obtained to the limits in the existing permit. As such, the current limits (0.2 mg/l monthly average and 0.5 mg/l IMAX) will be retained.

Sampling frequencies are the retained from the existing permit. While the sampling frequencies are lower than those in Table 6-3 in DEP's Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001), per standard practice the frequencies can be retained if the permittee is meeting the limits (SOP New and Reissuance Sewage Individual NPDES Permit Applications).

**Water Quality-Based Limitations**

A "Reasonable Potential Analysis" was not conducted as this is a Minor Facility.  
Comments: None.

**Best Professional Judgment (BPJ) Limitations**

Comments: No comment

**Anti-Backsliding**

Comments: No comment



Attachment A



Attachment B



**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) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> 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	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.2	XXX	0.5	1/day	Grab
CBOD5 Nov 1 - Apr 30	3.42	XXX	XXX	20	XXX	40	2/month	24-Hr Composite
CBOD5 May 1 - Oct 31	1.71	XXX	XXX	10	XXX	20	2/month	24-Hr Composite
TSS	1.71	XXX	XXX	10	XXX	20	2/month	24-Hr Composite
Fecal Coliform (CFU/100 ml)	XXX	XXX	XXX	200	XXX	1000*	2/month	Grab
Total Nitrogen	3.436	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Ammonia Nov 1 - Apr 30	1.54	XXX	XXX	9.0	XXX	18	2/month	24-Hr Composite
Ammonia May 1 - Oct 31	0.51	XXX	XXX	3.0	XXX	6	2/month	24-Hr Composite
Total Phosphorus	0.17	XXX	XXX	1.0	XXX	2	2/month	24-Hr Composite

\*Not greater than 1,000/100 milliliters of fecal coliform organisms in more than 10 percent of the samples tested.

Compliance Sampling Location: Outfall 001

Other Comments: TN was added to this permit.

Tools and References Used to Develop Permit	
<input checked="" type="checkbox"/>	WQM for Windows Model (see Attachment <b>A</b> )
<input type="checkbox"/>	PENTOXSD for Windows Model (see Attachment )
<input checked="" type="checkbox"/>	TRC Model Spreadsheet (see Attachment <b>B</b> )
<input type="checkbox"/>	Temperature Model Spreadsheet (see Attachment )
<input type="checkbox"/>	Toxics Screening Analysis Spreadsheet (see Attachment )
<input type="checkbox"/>	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
<input checked="" type="checkbox"/>	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
<input checked="" type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 385-2000-011, 9/08.
<input type="checkbox"/>	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
<input type="checkbox"/>	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
<input checked="" type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
<input type="checkbox"/>	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
<input checked="" type="checkbox"/>	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
<input type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
<input type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
<input type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
<input type="checkbox"/>	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
<input type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
<input type="checkbox"/>	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
<input type="checkbox"/>	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
<input type="checkbox"/>	Design Stream Flows, 391-2000-023, 9/98.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
<input type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input checked="" type="checkbox"/>	SOP for "Establishing Effluent Limitations for Individual Sewage Permits" (Final November 9, 2012; Revised January 10, 2019; Version 1.6)
<input checked="" type="checkbox"/>	SOP for New and Reissuance Sewage Individual NPDES Permit Applications (Final November 9, 2012; Revised October 11, 2013; Version 1.8)
<input checked="" type="checkbox"/>	Other: Christina River TMDL reports as stated in the text.