pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**New**	Application No.	**PA0256099**
Facility Type	**Industrial**	APS ID	**1053446**
Major / Minor	**Minor**	Authorization ID	**1379348**

NPDES PERMIT FACT SHEET INDIVIDUAL INDUSTRIAL WASTE (IW) AND IW STORMWATER

Applicant and Facility Information

Applicant Name	**Laurel Mountain Midstream Operations LLC**	Facility Name	**Herriott Well Connect**
Applicant Address	111 Enterprise Lane	Facility Address	3013 SR
	Connellsville, PA 15425-6617		McClellandtown, PA 15458
Applicant Contact	Stephanie Ranker	Facility Contact	Stephanie Ranker
Applicant Phone	(724) 626-4338	Facility Phone	(724) 626-4338
Client ID	274129	Site ID	852533
SIC Code	4619	Municipality	German Township
SIC Description	Trans. & Utilities - Pipelines, NEC	County	Fayette
Date Application Received	December 16, 2021	EPA Waived?	Yes
Date Application Accepted	February 4, 2022	If No, Reason	

Purpose of Application .Discharge of Hydrostatic Test Water from new pipelines

Summary of Review

The Department received an application on December 16, 2021 from Laurel Mountain Midstream Operations LLC through their consultant Arm Group, LLC for discharge of hydrostatic test water after the installation of interconnecting piping between three gas well pads in German Township, Fayette County.

In this time frame the Department was not approved to accept any new notices of intent for new coverage under the Commonwealth's PAG-10, Authorization to Discharge under the National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges from Hydrostatic Testing of Tanks and Pipelines. The applicants' consultant did not want to wait for the reauthorization of this General Permit and thus this individual IW permit was created based on the parameters and basis of the PAG-10.

Upon initial review, the planned discharge for the three well pads were found to be near the headwaters of the proposed receiving surface waters. Since it is the practice of the Department to restrict discharges to surface waters to no more than 25% of the native stream flow, based on mean harmonic flow modeling for the receiving streams, the consultant was alerted to this limitation. On February 4, 2022 a revised submittal was received by the Department with a change in the discharge plan designed to maximize infiltration of the planned discharges and thus reduce or eliminate the amount that will directly enter the receiving streams.

On February 8, 2022, the consultant was requested to make confirmatory measurements to support their soil infiltration rates and, in turn, the assumptions that undergird the supposition that the discharges will not reach their respective small streams downgradient from the three well pads. An example is shown in Figure 1 for the Edenborn well pad, designated as Outfall 001.

Approve	Deny	Signatures	Date
X		John L Duryea, Jr., P.E. / Environmental Engineer	March 11, 2022
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	March 16, 2022

Summary of Review

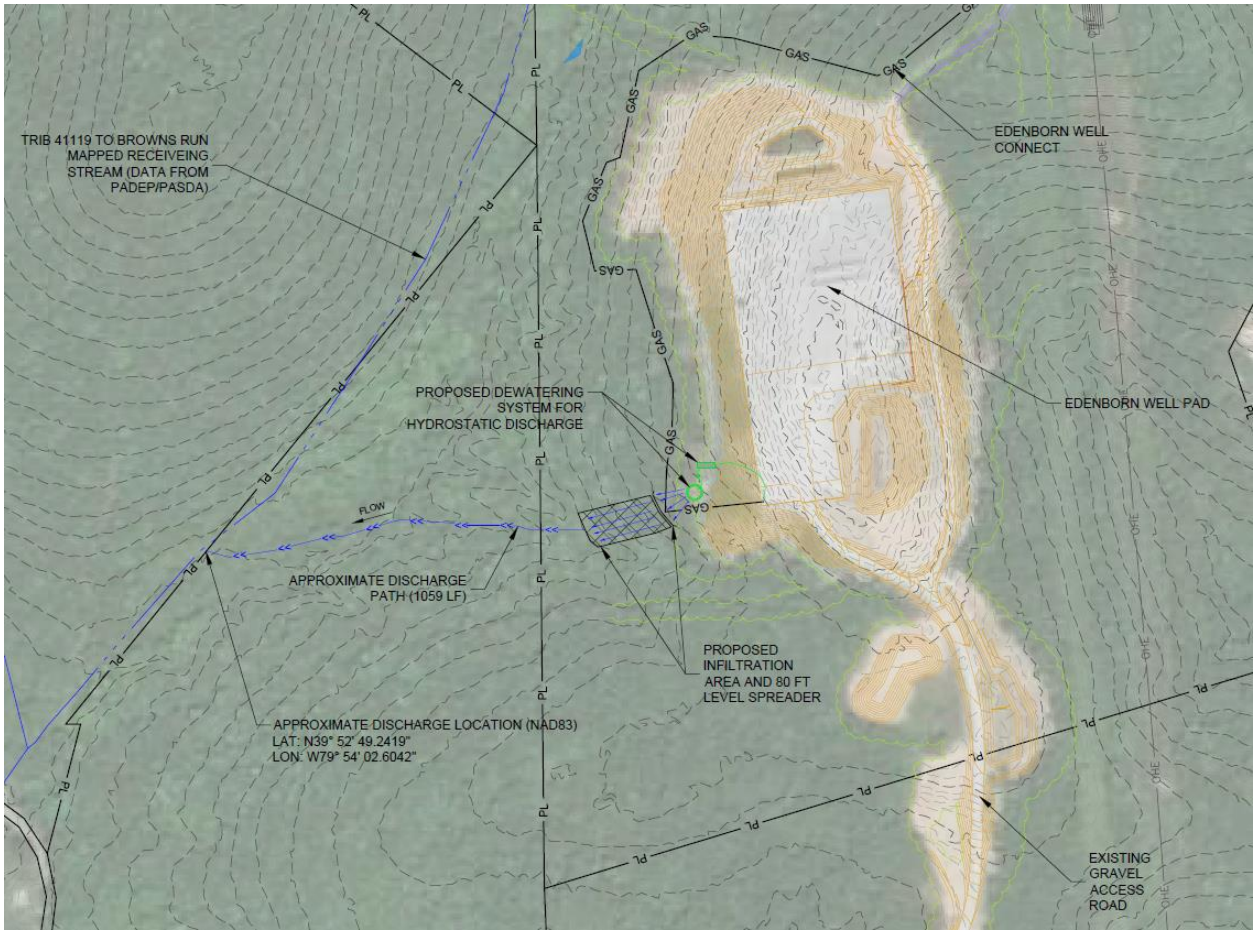


Figure 1: Details of the Planned Hydrostatic Test Water Discharge at Outfall 001

As can be seen from the figure, the proposed interconnecting gas pipeline runs in close proximity to the existing well pad. After completion of pressure testing, the pipeline test water will be discharged through a constructed “level spreader” with some additional Best Management Practices (BMPs) to blunt the discharge velocity. The consultant’s plan is that this discharged water will infiltrate before actually reaching the small receiving stream more than 1000 feet down gradient. Although the exact details vary at the three well pads, the plans at each are analogous. The consultant did submit soil map information generated from the Natural Resource Conservation Service’s web soil survey and that information was used in the infiltration area calculations which were included in the updated February 4, 2022 submittal.

Although the plan is that no discharge water will actually enter the receiving stream, it may be important to add that the Effluent Limitations developed herein for these discharges will be based on the supposition that the fraction of the discharge that enters the stream will be limited to only a remnant of the discharge made near the well head. Therefore the 25% portion of the modeled mean harmonic flow of the receiving stream will be treated as another Effluent Limitation. If, in fact, the permittee succeeds in their design to have none of their discharge reach the receiving streams, then the DMRs should be marked “No Discharge” and no sampling will actually be required.

The three possible receiving streams are all designated in 25 PA Code, Chapter 93 as warn water fisheries (WWF).

Although an industrial discharge permit in German Township of Fayette County may normally qualify for notification under the Environmental Justice provisions as an industrial waste facility, after a collaborative discussion with the Commonwealth office of Environmental Justice, that office decided that this permit is not a “trigger permit”. This discussion was documented in an email on February 9, 2022.

Summary of Review

In a telecom on February 22, 2022, the Department inquired into the source of the hydrostatic test water. In electronic mail messages received later from the consultant, the source was identified as raw stream water from both Brown's Run adjacent to Ferry Road and from Middle Run adjacent to SR 3013. The consultant confirmed that LMM "does not intend to use a municipal source for hydrostatic test water." However, the consultant could not explain why one of the previously submitted samples contained trace amounts of residual chlorine. They did note that the location of the samples was near roadway bridges and several residences and may have been impacted by maintenance activities in this area in December. An excerpt of the March 3, 2022 email is below with the extraction point locations and some details:

> Brown's Run Adjacent to Ferry Road (39°52'20.45"N, -79°54'57.09"W), and
> Middle Run adjacent to SR3013 (39°54'1.69"N, -79°53'40.33"W)
>
> Water will be withdrawn directly from the stream using fish-safe screens. The total withdrawal from the point of withdrawal within the watershed will not exceed an average rate of 10,000 gallons per day in any 30-day period. These sources will provide sufficient water for performing the required testing.

Given the source water locations, considering a 10,000 gallon per day withdrawal averaged over a 30-day period, scoping calculations yield:

1) **Browns Run** (impaired*) Harmonic Mean Streamflow (HMS) = 4.89 cfs. 25% of this is 1.2225 cfs or 549 gpm (10,000 gallons in 18 minutes)
2) **Middle Run** is unimpaired (but smaller) HMS = 0.62 cfs. 25% of this is 0.155 cfs or 69.6 gpm (10,000 gallons in 143 minutes)

> *Assessment Unit ID: 4364
> GNIS Name: Browns Run
> GNIS ID: 01170401
> Assessed Use: Aquatic Life
> Attain Use: Impaired
> Source Cause: RURAL (RESIDENTIAL AREAS) - ORGANIC ENRICHMENT ; ACID MINE DRAINAGE - METALS ; AGRICULTURE - ORGANIC ENRICHMENT
> Attained: N
> (excerpt for eMapPA)

A Part C condition will be added to the permit to restrict water withdrawal rates as noted above. This will also be mentioned in the transmittal letter.

The applicant complied with Act 14.

A compliance check revealed a number of LMM open violations in the Department's Southwest District Oil and Gas Program. This program was contacted, and they replied, "Williams (Laurel Mountain Midstream) is working with us to gain compliance on these violations. We have no objections to permit issuance."

It is recommended that this permit be published as a draft for public comment.

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.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .00667
Latitude 39º 52' 49" **Longitude** -79º 54' 02"
Wastewater Description: IW Process Effluent (Hydrostatic Test Water) without ELG

Technology-Based Limitations

There are no Federal Effluent Limit Guidelines (ELGs) for the discharge of hydrostatic testing water. In the absence of regulations, the Department is required to develop effluent limitations based on Best Professional Judgement (BPJ). As noted, the basis for the development of Technology Based Effluent Limitations (TBELs) will be the prior PAG-10 General Permit effluent limitations for new pipelines and tanks. The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable. The permittee shall comply with the following effluent limitations and monitoring requirements for discharges of hydrostatic test water from new tanks and pipelines.

Table 1: TBELs and Monitoring Requirements for Discharges of Hydrostatic Test Water for New Pipelines at Outfall 001

Parameter	Effluent Limitations				Monitoring Requirements	
	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Minimum Measurement Frequency (2),(3)	Sample Type
Flow (GPM) (4)	XXX	Report	[4.632](1)	XXX	1/discharge	Measured
Duration of Discharge (Hours) (4)	XXX	Report	XXX	XXX	1/discharge	Measured
Total Volume Discharged (Gallons) (4)	XXX	Report Total Monthly	XXX	XXX	1/month	Calculated
Dissolved Oxygen (mg/L)	5.0	XXX	XXX	XXX	2/discharge	Grab
pH (S.U.)	6.0	XXX	XXX	9.0	2/discharge	Grab
Total Residual Chlorine (TRC) (mg/L) (5)	XXX	Report	XXX	0.05	2/discharge	Grab
Total Suspended Solids (TSS) (mg/L)	XXX	30.0	XXX	60.0	1/discharge	Grab
Oil and Grease (mg/L)	XXX	15.0	XXX	30.0	1/discharge	Grab
Dissolved Iron (mg/L)	XXX	XXX	XXX	7.0	1/discharge	Grab

Footnotes

(1) This value will be different for each outfall. The Outfall 001 value is shown. For details on the calculation, see comments below.

(2) This is the minimum number of sampling events required. Permittees are encouraged, and it may be advantageous in demonstrating compliance, to perform more than the minimum number of sampling events.

(3) The permittee shall collect samples at the point of discharge (outfall) prior to the discharge entering the receiving waters. For measurement frequencies of 1/discharge, the permittee shall collect samples within the first 30 minutes of commencing a discharge. For measurement frequencies of 2/discharge, the permittee shall collect one sample at the start of a discharge and one sample at the end of a discharge.

(4) The permittee shall report the average monthly flow at each outfall, in gallons per minute (GPM), for all discharges occurring during the month. The permittee shall measure the flow and the duration of the discharge (in hours) for each discharge and shall report this information to DEP in the Annual Report as specified in Part A III of this permit. The permittee shall report the total volume discharged each month, in gallons.

(5) The permittee shall comply with the effluent limitations and monitoring requirements for Total Residual Chlorine

(TRC) only when a public water supply or other source of chlorinated water is used in hydrostatic testing.

Comments: The outfall specific limitation on the discharge that actually enters the stream, in this case the unnamed (UNT) 41119 to Browns Run, was calculated using the nearest downstream segment which is within the statistical limitations of the United States Geological Survey (USGS) StreamStats model. In this case, the point selected was downstream on Browns Run. The model information is included in Attachment A. At this point on Browns Run the Harmonic Mean Streamflow (HMS) Yield is 4.82 cfs/ 17.5 Sq. miles = 0.2754 cfs/sq. mile. Using this to calculate the HMS at the discharge entry point into UNT 41119 to Browns Run can be calculated using the following equation:

0.18 sq. mile (drainage area) * 0.2754 cfs/sq. mile (HMS Yield) = 0.04958 cfs.

The Department limits discharges to streams to 25% of the HMS which is 0.0124 cfs. This rate will be used both to model the discharge into the stream and as a limit to what is permitted to reach the stream. This is equivalent to 0.00667 MGD or **4.632 gpm**. This will be imposed as a Daily Maximum limit as shown in Table 1 above. This value is outfall specific and will be calculated for each of the three well pad outfalls for this permit.

Water Quality-Based Limitations

Total Maximum Daily Load (TMDL)

As noted, the discharge of hydrostatic test water from the Edenborn well pad and its subsequent discharge at Outfall 001 to the UNT to Browns Run is within the segment of a Monongahela River that is covered by a TMDL for polychlorinated biphenyls (PCBs), chlordane and organics. However, there is no known history or documentation that indicates that hydrostatic test water discharges any of these toxins or pathogenic pollutants. Note that the use of PCBs and chlordane has been banned from production and use since 1979. In addition, the TMDL acknowledges that there are no longer any known point sources of either of these pollutants in the watershed and the TMDL is expected to achieve implementation through “natural attenuation”. Neither chlordane nor PCB’s are used, generated, or stored at the LMM infrastructure; nor is there any evidence to suggest that PCBs, chlordane or organics were ever used, generated, or stored onsite in the past. Based upon these considerations, the Monongahela River TMDL is not applicable to LMM’s hydrostatic test water discharges.

Toxics Screening Analysis – Procedures for Evaluating Reasonable Potential and Developing WQBELs

Pursuant to consideration of the Water Quality Based Effluent Limitations (WQBELs) at Outfall 001, water quality modeling was created following DEP’s procedures for evaluating reasonable potential which are as follows:

1. For IW discharges, the design flow used in the modeling is typically the average flow during production or operation and may be taken from the permit application. However, the heuristic of limiting the allowable discharge to 25% of the receiving surface water flow has been substituted as limiting for this analysis. As noted above, this will be modeled as 0.00667 MGD.

2. All toxic pollutants with discharge concentrations reported in the permit application are modeled and compared to the most stringent applicable water quality criterion as potential pollutants of concern. [This includes pollutants reported as "Not Detectable" or as "<MDL" where the method detection limit (MDL) for the analytical method used by the applicant is greater than the most stringent water quality criterion]. The highest reported concentration is entered into the most recent version of the Department’s Toxics Management Spreadsheet (TMS) analysis (refer to Attachment B).

3. For any outfall with an applicable design flow, perform TMS modeling for all pollutants reported in the discharge. Use the maximum reported value from the application form or from DMRs as the input concentration for the TMS model.

4. Compare the actual WQBEL from TMS with the maximum concentration reported on DMRs or the permit application. Use WQN data or another source to establish the existing or background concentration for naturally occurring pollutants, but generally assume zero background concentration for non-naturally occurring pollutants

    - Establish limits in the draft permit where the maximum reported concentration equals or exceeds 50% of the WQBEL. Use the average monthly and maximum daily limits for the permit as recommended by TMS. In some cases, establish an IMAX limit at 2.5 times the average monthly limit.

    - For non-conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL.

- For conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 10% - 50% of the WQBEL.

The information described above including the maximum reported discharge concentrations, the most stringent water quality criteria, the pollutant-of-concern (reasonable potential) determinations, the calculated WQBELs, and the WQBEL/monitoring recommendations are displayed in the results presentation from TMS spreadsheet (refer to Attachment B).

Water Quality Modeling Programs

Toxics Management Spreadsheet Version 1.3 is a single discharge, mass-balance water quality modeling program that includes consideration for mixing, first-order decay and other factors to determine recommended WQBELs for toxic substances and several non-toxic substances. Required input data including stream code, river mile index, elevation, drainage area, discharge name, NPDES permit number and discharge flow rate are entered into TMS to establish site-specific discharge conditions. Other data such as low flow yield, reach dimensions and partial mix factors may also be entered to further characterize the conditions of the discharge and receiving water. The modeling approach outlined above is used to determine if any pollutants are present or likely to be present in a discharge at levels that may cause, have the reasonable potential to cause, or contribute to excursions above state water quality standards (WQSs) (i.e., a reasonable potential analysis). Discharge concentrations for the selected pollutants are chosen to represent the "worst case" quality of the discharge (i.e., maximum reported discharge concentrations). TMS evaluates each pollutant by computing a Waste Load Allocation (WLA) for each applicable criterion and associated WQ objective, determining a recommended maximum WQBEL and comparing that recommended WQBEL with the input discharge concentration to determine which is more stringent. Based on this evaluation, TMS recommends average monthly and maximum daily WQBELs.

Reasonable Potential Analysis and WQBEL Development for Hydrostatic Test Water discharging at Outfall 001

Discharges at Outfall 001 were evaluated based on concentrations reported on the application. The TMS model was run for Outfall 001 using the modeled discharge and receiving stream characteristics shown in Table 2

Table 2: TMS Inputs for Outfall 001

Parameter	**Value**
River Mile Index	0.0124
Discharge Flow* (MGD)	0.00667
Basin/Stream Characteristics	
Parameter	**Value**
Area (mi^2)	0.18
Q_{7-10} (cfs)	0.0028
Low-flow yield (cfs/mi^2)	0.01554
Elevation (ft.)	1005
Slope	2.887

WQBELs are calculated by TMS by allocating the established Water Quality (WQ) criteria for the receiving surface water from 25 PA Code § 93. The criteria are then converted to a WQ objective. For metals with criteria established for its dissolved form, a translator is used to determine the criteria for the total metal which is then used as the WQ objective.

From this calculated objective for each pollutant concentration the discharge allocation is then reduced by available data of existing pollutant loads in the receiving waters using actual concentration data from instream monitoring. In this case, the unimpaired receiving stream was modelled as being without appreciable background concentrations of pollutants that are naturally occurring. In addition, the assumption of zero background concentration is used for non-naturally occurring pollutants or where background data is insufficient to determine the background concentration.

The TMS model calculates and applies partial mixing factors for Chronic Fish Criteria (CFC), Threshold Human Health (THH) and Cancer Risk Level (CRL). The most limiting criteria is selected and finally WLAs are calculated for the IW discharger and compared to its reported discharge concentrations.

The TMS' recommended effluent limits and/or reporting requirements for the parameters are shown in Table 3. For some parameters, only monitoring is required as the results did not exceed the most stringent WQBEL value, but the reported results were too high to rule out the possibility that discharges will result in excursions above Pennsylvania's WQSs.

Also included in Table 3 for reference are the target Quantitation Limits (QLs) specified in DEP's most recent *Application for Permit to Discharge Industrial Wastewater*. The target QLs are the means by which DEP is implementing EPA's September 18, 2014 revisions to 40 CFR Parts 122 and 136 requiring applicants and permittees to use "sufficiently sensitive" EPA-approved analytical methods that are capable of detecting and measuring the pollutants at, or below, the applicable WQ criteria or permit limits.

Table 3. Outfall 001 WQBELs and Monitoring Requirements (with Most Stringent Criteria and Target QLs)

Parameter	Concentration (µg/L)		Governing WQBEL (µg/L)	Target QL (µg/L)
	Monthly Avg	Maximum Daily		
Aluminum, Total	Report	Report	750	10.0
Cadmium, Total	*0.69*	*1.07*	*0.69*	*0.2*
Copper, Total	Report	Report	*26.4*	*4.0*
Dissolved Iron	Report	Report	381	20.0
Selenium, Total	*6.34*	*9.89*	*6.34*	*5.0*
Silver Total	*Report*	*Report*	*18.9*	*0.4*

In Table 3 above, the modeling recommended WQBELs or monitoring are displayed; however, the application reported that some of these pollutants were not detected. In these cases, inclusion in Table 3 above is because their lab MDL did not meet the Department's target QL, therefore these pollutants were selected by TMS modeling to implement an effluent limit or monitoring. To indicate this, this information is shown in *italics* in Table 3. The permittee will be given the option to resample with analysis provided that meets the Department's target QLs and submit this information for reconsideration of inclusion of these pollutants.

The latest updated model run of TMS is included as Attachment B.

WQM 7.0 Model

The computer model WQM 7.0 is run to determine wasteload allocations and effluent limitations for $CBOD_5$, NH_3-N and Dissolved Oxygen for single and multiple point source discharge scenarios. In general, WQM 7.0 is run if the maximum BOD_5/$CBOD_5$ concentrations exceeds 30/25 mg/L respectively in the permit application or the DMRs. The permit application reports a peak BOD_5 concentration that was undetected at an MDL of 3.0 mg/L, and a peak COD concentration of 4.49 mg/L. Therefore, this industrial discharger does not approach the criteria requiring the use of the WQM 7.0 Model.

Total Residual Chlorine (TRC)

The statute addressing TRC is from 25 Pa. Code § 92a.48(b)(2). However, the submitted application documented TRC at a maximum concentration of 0.07 mg/L. Given this low level, coupled with the overland application of the hydrostatic test water discharge before entering the receiving surface stream, this leaves little reason to do more than monitor. Although the Department has a spreadsheet to evaluate TRC discharge limits, further modeling was deemed unnecessary.

Thermal WQBELs for Heated Discharges (Non-Contact Cooling Water)

As with TRC above, the Department has a spreadsheet to evaluate thermal discharge limits; however, also as with TRC, since the hydrostatic test water is not expected to be heated and discharges will travel overland before discharge, modeling was deemed unnecessary The temperature criteria from 25 Pa. Code Chapter 93.7(a) are bounded by an upper limit of 110°F for the safety of sampling personnel (non-scalding) and anyone who may come into contact with a heated discharge before it enters the receiving water. If no WLAs below 110°F are calculated, an instantaneous maximum limit of 110°F is recommended. However, since any discharge at Outfall 001 will be held up in the discharge Best Management Practice (BMP), referenced in the application submittal as the "Hydrostatic Test Dewatering Structure" before traveling overland to the receiving stream, this discharge will be held for a significant amount of time in the open-air. Therefore, even this limitation was considered unnecessary and will not be applied.

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 or water quality standard. However, given that this is a new permit, no previous limits exist, and anti-backsliding provisions do not apply.

Effluent Limitations and Monitoring Requirements for Outfall 001

The overarching strategy for implementation of effluent limits is to impose TBELs based on the PAG-10 limitations. Additional monitoring was also required for pollutants of concern identified as having a reasonable potential to exceed state WQSs, even if the analytical basis is only that the application sample information analyses MDL did not meet the Department's Target QLs. LMM has the opportunity to resample and supply updated, limited sampling which meets the Department's target QLs and supports an updated analysis which may result in the elimination of some of the WQBELs.

In summary, the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements as summarized in Table 4 below. The applicable limits and monitoring requirements provided below are based on those listed in Tables 1 and 3 of this Fact Sheet.

Table 4: Effluent Limits and Monitoring Requirements for Discharges of Hydrostatic Test Water for Outfall 001

Parameter		Effluent Limitations			Monitoring Requirements (1)	
	Instant Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Minimum Measurement Frequency (2),(3)	Sample Type
Flow (GPM) (4)	XXX	Report	4.632(1)	XXX	1/discharge	Measured
Duration of Discharge (Hours) (4)	XXX	Report	XXX	XXX	1/discharge	Measured
Total Volume Discharged (Gallons) (4)	XXX	Report Total Monthly	XXX	XXX	1/month	Calculated
Dissolved Oxygen (mg/L)	5.0	XXX	XXX	XXX	2/discharge	Grab
pH (S.U.)	6.0	XXX	XXX	9.0	2/discharge	Grab
Total Residual Chlorine (TRC) (mg/L) (5)	XXX	Report	XXX	0.05	2/discharge	Grab
Total Suspended Solids (TSS) (mg/L)	XXX	30.0	XXX	60.0	1/discharge	Grab
Oil and Grease (mg/L)	XXX	15.0	XXX	30.0	1/discharge	Grab
Dissolved Iron (mg/L)	XXX	Report	Report	7.0	1/discharge	Grab
Aluminum, Total (µg/L)	XXX	Report	Report	XXX	2/discharge	Grab
Cadmium, Total (µg/L)	XXX	0.69	1.07	XXX	2/discharge	Grab
Copper, Total (µg/L)	XXX	Report	Report	XXX	2/discharge	Grab
Selenium, Total (µg/L)	XXX	6.34	9.89	XXX	2/discharge	Grab
Silver, Total (µg/L)	XXX	Report	Report	XXX	2/discharge	Grab

Footnotes (1-5 - see section for Outfall 001, Table 1)

Effluent Limitation Compliance Schedule

Since the Department proposes the imposition of WQBELs, in cases of such an imposition on existing sources, the NPDES permit may include a schedule of compliance to achieve the WQBELs. Any compliance schedule contained in an NPDES permit must be an "enforceable sequence of actions or operations leading to compliance with the water quality-based effluent limitations ("WQBELs"). In accordance with 40 CFR § 122.47(a)(3) and PA Code, Chapter 92a.51, compliance schedules that are longer than one year in duration must set forth interim requirements and dates for their achievement. In order to grant a compliance schedule in an NPDES permit, the permitting authority has to make a reasonable finding, adequately supported by the administrative record and described in the fact sheet, that a compliance schedule is "appropriate" and that compliance with the final WQBEL is required "as soon as possible".

However, hydrostatic testing discharges are not eligible for compliance schedules. Such discharges may only be approved in accordance with applicable TBELs and WQ standards given that these are new discharges. As such, these

discharges must meet all standards prior to initiating the discharge. Therefore, the effluent limitations and monitoring will become final on the permit's effective date. Final limits and monitoring will be in line with those shown in Table 4.

However, this determination may be altered or confirmed via the return of a Pre-Draft Permit Survey for Toxic Pollutants based on the permittee's survey responses. This survey, included as Attachment G, will be sent out concurrently with the draft permit for comment. During this period, LMM may decide to perform a limited resample and analyze this sample to determine if permit sampling of those pollutants that did not meet the Department's target QLs, specifically for Cadmium, Copper, Selenium and Silver are actually required.

Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** .0237
Latitude 39º 54' 15" **Longitude** -79º 52' 55"
Wastewater Description: IW Process Effluent (Hydrostatic Test Water) without ELG

Technology-Based Limitations

There are no Federal ELGs for the discharge of hydrostatic testing water. In the absence of regulations, the Department is required to develop effluent limitations based on BPJ. As noted, the basis for the development of TBELs will be the prior PAG-10 General Permit effluent limitations for new pipelines and tanks. The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable. The permittee shall comply with the following effluent limitations and monitoring requirements for discharges of hydrostatic test water from new tanks and pipelines.

Table 5: TBELs and Monitoring Requirements for Discharges of Hydrostatic Test Water for New Pipelines at Outfall 002

Parameter	Effluent Limitations				Monitoring Requirements (1)	
	Instant Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Minimum Measurement Frequency (2),(3)	Sample Type
Flow (GPM) (4)	XXX	Report	[16.43](1)	XXX	1/discharge	Measured
Duration of Discharge (Hours) (4)	XXX	Report	XXX	XXX	1/discharge	Measured
Total Volume Discharged (Gallons) (4)	XXX	Report Total Monthly	XXX	XXX	1/month	Calculated
Dissolved Oxygen (mg/L)	5.0	XXX	XXX	XXX	2/discharge	Grab
pH (S.U.)	6.0	XXX	XXX	9.0	2/discharge	Grab
Total Residual Chlorine (TRC) (mg/L) (5)	XXX	Report	XXX	0.05	2/discharge	Grab
Total Suspended Solids (TSS) (mg/L)	XXX	30.0	XXX	60.0	1/discharge	Grab
Oil and Grease (mg/L)	XXX	15.0	XXX	30.0	1/discharge	Grab
Dissolved Iron (mg/L)	XXX	XXX	XXX	7.0	1/discharge	Grab

Footnotes (1-5 - see section for Outfall 001, Table 1)

For calculations to determine the flow limitation for Outfall 002, see comments below.

Comments: The limitation is on the portion of the discharge that actually enters the stream, in this case the unnamed (UNT) 41110 to Middle Run, was calculated using the nearest downstream segment which is within the statistical limitations of the USGS StreamStats model. In this case, the point selected was on Middle Run. The model information is included in Attachment C. At this point on Middle Run the HMS Yield is 0.801 cfs/ 2.79 Sq. miles = 0.2871 cfs/sq. mile. Using this to calculate the HMS at the discharge entry point into UNT 41110 to Middle Run can be calculated as follows:

0.51 sq. mile (drainage area) * 0.2871 cfs/sq. mile (HMS yield) = 0.1464 cfs.

The Department limits discharges to streams at 25% of the stream flow which is 0.0366 cfs. This rate will be used both to model the discharge into the stream and as a limit to what is permitted to reach the stream. This is equivalent to 0.0237 MGD or **16.427 gpm**. This will be imposed as a Daily Maximum limit and is shown in Table 5 above.

Water Quality-Based Limitations

Total Maximum Daily Load (TMDL)

As noted, the discharge of hydrostatic test water from the Herriott well pad and its subsequent discharge at Outfall 002 to the UNT to Middle Run is within the segment of a Monongahela River that is covered by a TMDL for polychlorinated biphenyls (PCBs), chlordane and organics. However, there is no known history or documentation that indicates that hydrostatic test water discharges any of these toxins or pathogenic pollutants. Note that the use of PCBs and chlordane has been banned from production and use since 1979. In addition, the TMDL acknowledges that there are no longer any known point sources of either of these pollutants in the watershed and the TMDL is expected to achieve implementation through “natural attenuation”. Neither chlordane nor PCB’s are used, generated, or stored at the LMM infrastructure; nor is there any evidence to suggest that PCBs, chlordane or organics were ever used, generated, or stored onsite in the past. Based upon these considerations, the Monongahela River TMDL is not applicable to LMM’s hydrostatic test water discharges.

Toxics Screening Analysis – Procedures for Evaluating Reasonable Potential and Developing WQBELs

Pursuant to consideration of the WQBELs at Outfall 002, water quality modeling was created following DEP’s procedures for evaluating reasonable potential which are as follows:

5. For IW discharges, the design flow used in the modeling is typically the average flow during production or operation and may be taken from the permit application. However, the heuristic of limiting the allowable discharge to 25% of the receiving surface water flow has been substituted as limiting for this analysis. As noted above, this will be modeled as 0.0237 MGD.

6. All toxic pollutants with discharge concentrations reported in the permit application are modeled and compared to the most stringent applicable water quality criterion as potential pollutants of concern. [This includes pollutants reported as "Not Detectable" or as "<MDL" where the MDL for the analytical method used by the applicant is greater than the most stringent WQ criterion]. The highest reported concentration is entered into the most recent version of the Department’s TMS analysis (refer to Attachment D).

7. For any outfall with an applicable design flow, perform TMS modeling for all pollutants reported in the discharge. Use the maximum reported value from the application form or from DMRs as the input concentration for the TMS model.

8. Compare the actual WQBEL from TMS with the maximum concentration reported on DMRs or the permit application. Use WQN data or another source to establish the existing or background concentration for naturally occurring pollutants, but generally assume zero background concentration for non-naturally occurring pollutants

    - Establish limits in the draft permit where the maximum reported concentration equals or exceeds 50% of the WQBEL. Use the average monthly and maximum daily limits for the permit as recommended by TMS. In some cases, establish an IMAX limit at 2.5 times the average monthly limit.

    - For non-conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL.

    - For conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 10% - 50% of the WQBEL.

The information described above including the maximum reported discharge concentrations, the most stringent WQ criteria, the pollutant-of-concern (reasonable potential) determinations, the calculated WQBELs, and the WQBEL/monitoring recommendations are displayed in the results presentation from TMS spreadsheet (refer to Attachment D).

Water Quality Modeling Programs

TMS Version 1.3 is a single discharge, mass-balance WQ modeling program that includes consideration for mixing, first-order decay and other factors to determine recommended WQBELs for toxic substances and several non-toxic substances. Required input data including stream code, river mile index, elevation, drainage area, discharge name, NPDES permit number and discharge flow rate are entered into TMS to establish site-specific discharge conditions. Other data such as low flow yield, reach dimensions and partial mix factors may also be entered to further characterize the conditions of the discharge and receiving water. The modeling approach outlined above is used to determine if any pollutants are present or likely to be present in a discharge at levels that may cause, have the reasonable potential to cause, or contribute to excursions above state’s WQSs (i.e., a reasonable potential analysis). Discharge concentrations for the selected pollutants are chosen to represent the "worst case" quality of the discharge (i.e., maximum reported discharge concentrations). TMS

evaluates each pollutant by computing a WLA for each applicable criterion and associated WQ objective, determining a recommended maximum WQBEL and comparing that recommended WQBEL with the input discharge concentration to determine which is more stringent. Based on this evaluation, TMS recommends average monthly and maximum daily WQBELs.

Reasonable Potential Analysis and WQBEL Development for Hydrostatic Test Water discharging at Outfall 002

Discharges at Outfall 002 were evaluated based on concentrations reported on the application. The TMS model was run for Outfall 002 using the modeled discharge and receiving stream characteristics shown in Table 6.

Table 6: TMS Inputs for Outfall 002

Parameter	Value
River Mile Index	0.024
Discharge Flow* (MGD)	0.0237
Basin/Stream Characteristics	
Parameter	**Value**
Area (mi^2)	0.51
Q_{7-10} (cfs)	0.005173
Low-flow yield (cfs/mi^2)	0.010143
Elevation (ft.)	1010
Slope	0.04

WQBELs are calculated by TMS by allocating the established WQ criteria for the receiving surface water from 25 PA Code § 93. The criteria are then converted to a WQ objective. For metals with criteria established for its dissolved form, a translator is used to determine the criteria for the total metal which is then used as the WQ objective.

From this calculated objective for each pollutant concentration the discharge allocation is then reduced by available data of existing pollutant loads in the receiving waters using actual concentration data from instream monitoring. In this case, the unimpaired receiving stream was modelled as being without appreciable background concentrations of pollutants that are naturally occurring. In addition, the assumption of zero background concentration is used for non-naturally occurring pollutants or where background data is insufficient to determine the background concentration.

The TMS model calculates and applies partial mixing factors for CFC, THH and CRL. The most limiting criteria is selected and finally WLAs are calculated for the IW discharger and compared to its reported discharge concentrations.

The TMS' recommended effluent limits and/or reporting requirements for the parameters are shown in Table 7. For some parameters, only monitoring is required as the results did not exceed the most stringent WQBEL value, but the reported results were too high to rule out the possibility that discharges will result in excursions above Pennsylvania's WQSs.

Also included in Table 7 for reference are the target Quantitation Limits (QLs) specified in DEP's most recent *Application for Permit to Discharge Industrial Wastewater*. The target QLs are the means by which DEP is implementing EPA's September 18, 2014 revisions to 40 CFR Parts 122 and 136 requiring applicants and permittees to use "sufficiently sensitive" EPA-approved analytical methods that are capable of detecting and measuring the pollutants at, or below, the applicable WQ criteria or permit limits.

Table 7. Outfall 002 WQBELs and Monitoring Requirements (with Most Stringent Criteria and Target QLs)

Parameter	Concentration (µg/L)		Governing WQBEL (µg/L)	Target QL (µg/L)
	Monthly Avg	Maximum Daily		
Aluminum, Total	Report	Report	750	10.0
Cadmium, Total	*0.65*	*1.01*	*0.65*	*0.2*
Copper, Total	Report	Report	*25.1*	*4.0*
Dissolved Iron	Report	Report	342	20.0
Selenium, Total	*5.69*	*8.88*	*5.69*	*5.0*
Silver Total	*Report*	*Report*	*21.2*	*0.4*

In Table 7 above, the modeling recommended WQBELs or monitoring are displayed; however, the application reported that some of these pollutants were not detected. In these cases, inclusion in Table 7 above is because their lab MDL did not meet the Department's target QL, therefore these pollutants were selected by TMS modeling to implement an effluent limit or monitoring. To indicate this, this information is shown in *italics* in Table 7. The permittee will be given the option to resample with analysis provided that meets the Department's target QLs and submit this information for reconsideration of inclusion of these pollutants.

The latest updated model run of TMS is included as Attachment D.

WQM 7.0 Model

The computer model WQM 7.0 is run to determine wasteload allocations and effluent limitations for $CBOD_5$, NH_3-N and Dissolved Oxygen for single and multiple point source discharge scenarios. In general, WQM 7.0 is run if the maximum BOD_5/$CBOD_5$ concentrations exceeds 30/25 mg/L respectively in the permit application or the DMRs. The permit application reports a peak BOD_5 concentration that was undetected at an MDL of 3.0 mg/L, but a peak COD concentration of 4.49 mg/L. Therefore, this industrial discharger does not approach the criteria requiring the use of the WQM 7.0 Model.

Total Residual Chlorine (TRC)

The statute addressing TRC is from 25 Pa. Code § 92a.48(b)(2). However, the submitted application documented TRC at a maximum concentration of 0.07 mg/L. Given this low level, coupled with the overland application of the hydrostatic test water discharge leaves little reason to do more than monitor. Although the Department has a spreadsheet to evaluate TRC discharge limits, further modeling was deemed unnecessary.

Thermal WQBELs for Heated Discharges (Non-Contact Cooling Water)

As with TRC above, the Department has a spreadsheet to evaluate thermal discharge limits; however, also as with TRC, and analogous with the treatment of Outfall 001, this limitation was considered unnecessary and will not be applied at Outfall 002.

Anti-Backsliding

Section 402(o) of the Clean Water Act (CWA), enacted in the Water Quality Act of 1987, establishes anti-backsliding rules. However, given that this is a new permit, no previous limits exist, and anti-backsliding provisions do not apply.

Effluent Limitations and Monitoring Requirements for Outfall 002

The overarching strategy for implementation of effluent limits is to impose TBELs based on the PAG-10 limitations. Additional monitoring was also required for pollutants of concern identified as having a reasonable potential to exceed WQSs, even if the analytical basis is only that the application sample information analyses MDL did not meet the Department's Target QLs. LMM has the opportunity to resample and supply updated, limited sampling which meets the Department's target QLs and supports an updated analysis which may result in the elimination of some of the WQBELs.

In summary, the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements as summarized in Table 8 below. The applicable limits and monitoring requirements provided below are based on those listed in Tables 5 and 7 of this Fact Sheet.

Table 8: Effluent Limits and Monitoring Requirements for Discharges of Hydrostatic Test Water for Outfall 002

Parameter		Effluent Limitations			Monitoring Requirements [1]	
	Instant Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Minimum Measurement Frequency [2],[3]	Sample Type
Flow (GPM) [4]	XXX	Report	16.43 [1]	XXX	1/discharge	Measured
Duration of Discharge (Hours) [4]	XXX	Report	XXX	XXX	1/discharge	Measured
Total Volume Discharged (Gallons) [4]	XXX	Report Total Monthly	XXX	XXX	1/month	Calculated
Dissolved Oxygen (mg/L)	5.0	XXX	XXX	XXX	2/discharge	Grab
pH (S.U.)	6.0	XXX	XXX	9.0	2/discharge	Grab
Total Residual Chlorine (TRC) (mg/L) [5]	XXX	Report	XXX	0.05	2/discharge	Grab
Total Suspended Solids (TSS) (mg/L)	XXX	30.0	XXX	60.0	1/discharge	Grab

Parameter		Effluent Limitations			Monitoring Requirements [1]	
	Instant Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Minimum Measurement Frequency [2],[3]	Sample Type
Oil and Grease (mg/L)	XXX	15.0	XXX	30.0	1/discharge	Grab
Dissolved Iron (mg/L)	XXX	Report	Report	7.0	1/discharge	Grab
Aluminum, Total (µg/L)	XXX	Report	Report	XXX	2/discharge	Grab
Cadmium, Total (µg/L)	XXX	0.65	1.01	XXX	2/discharge	Grab
Copper, Total (µg/L)	XXX	Report	Report	XXX	2/discharge	Grab
Selenium, Total (µg/L)	XXX	5.69	8.88	XXX	2/discharge	Grab
Silver, Total (µg/L)	XXX	Report	Report	XXX	2/discharge	Grab

Footnotes (1-5 - see section for Outfall 001, Table 1)

Effluent Limitation Compliance Schedule

Since the Department proposes the imposition of WQBELs, in cases of such an imposition on existing sources, the NPDES permit may include a schedule of compliance to achieve the WQBELs. Any compliance schedule contained in an NPDES permit must be an "enforceable sequence of actions or operations leading to compliance with the water quality-based effluent limitations ("WQBELs"). In accordance with 40 CFR § 122.47(a)(3) and PA Code, Chapter 92a.51, compliance schedules that are longer than one year in duration must set forth interim requirements and dates for their achievement. In order to grant a compliance schedule in an NPDES permit, the permitting authority has to make a reasonable finding, adequately supported by the administrative record and described in the fact sheet, that a compliance schedule is "appropriate" and that compliance with the final WQBEL is required "as soon as possible".

However, hydrostatic testing discharges are not eligible for compliance schedules. Such discharges may only be approved in accordance with applicable TBELs and WQ standards given that these are new discharges. As such, these discharges must meet all standards prior to initiating the discharge. Therefore, the effluent limitations and monitoring will become final on the permit's effective date. Final limits and monitoring will be in line with those shown in Table 8.

However, this determination may be altered or confirmed via the return of a Pre-Draft Permit Survey for Toxic Pollutants based on the permittee's survey responses. This survey, included as Attachment G, will be sent out concurrently with the draft permit for comment. During this period, LMM may decide to perform a limited resample and analyze this sample to determine if permit sampling of those pollutants that did not meet the Department's target QLs, specifically for Cadmium, Copper, Selenium and Silver are actually required.

Development of Effluent Limitations

Outfall No. 003 **Design Flow (MGD)** .0081
Latitude 39º 54' 08" **Longitude** -79º 51' 20"
Wastewater Description: IW Process Effluent (Hydrostatic Test Water) without ELG

Technology-Based Limitations

There are no Federal ELGs for the discharge of hydrostatic testing water. In the absence of regulations, the Department is required to develop effluent limitations based on BPJ. As noted, the basis for the development of TBELs will be the prior PAG-10 General Permit effluent limitations for new pipelines and tanks. The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable. The permittee shall comply with the following effluent limitations and monitoring requirements for discharges of hydrostatic test water from new tanks and pipelines.

Table 9: TBELs and Monitoring Requirements for Discharges of Hydrostatic Test Water for New Pipelines at Outfall 003

Parameter	Effluent Limitations				Monitoring Requirements (1)	
	Instant Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Minimum Measurement Frequency (2),(3)	Sample Type
Flow (GPM) (4)	XXX	Report	[5.633](1)	XXX	1/discharge	Measured
Duration of Discharge (Hours) (4)	XXX	Report	XXX	XXX	1/discharge	Measured
Total Volume Discharged (Gallons) (4)	XXX	Report Total Monthly	XXX	XXX	1/month	Calculated
Dissolved Oxygen (mg/L)	5.0	XXX	XXX	XXX	2/discharge	Grab
pH (S.U.)	6.0	XXX	XXX	9.0	2/discharge	Grab
Total Residual Chlorine (TRC) (mg/L) (5)	XXX	Report	XXX	0.05	2/discharge	Grab
Total Suspended Solids (TSS) (mg/L)	XXX	30.0	XXX	60.0	1/discharge	Grab
Oil and Grease (mg/L)	XXX	15.0	XXX	30.0	1/discharge	Grab
Dissolved Iron (mg/L)	XXX	XXX	XXX	7.0	1/discharge	Grab

Footnotes (1-5 - see section for Outfall 001, Table 1)

For calculations to determine the flow limitation for Outfall 003, see comments below.

Comments: The limitation is on the portion of the discharge that actually enters the stream, in this case UNT 40226 of Dunlap Creek, was calculated using the nearest downstream segment which is within the statistical limitations of the USGS StreamStats model. In this case, the point selected was on UNT 40221 of Dunlap Creek. The model information is included in Attachment E. At this point on UNT 40221 of Dunlap Creek the HMS Yield is 1.03 cfs/ 4.31 Sq. miles = 0.23898 cfs/sq. mile. Using this to calculate the HMS at the discharge entry point into UNT 40226 of Dunlap Creek can be calculated as follows:

0.21 sq. mile (drainage area) * 0.23898 cfs/sq. mile (HMS yield) = 0.0502 cfs.

The Department limits discharges to streams at 25% of the stream flow which is 0.01255 cfs. This rate will be used both to model the discharge into the stream and as a limit to what is permitted to reach the stream. This is equivalent to 0.0081113 MGD or **5.633 gpm**. This will be imposed as a Daily Maximum limit and is shown in Table 9 above.

Water Quality-Based Limitations

Total Maximum Daily Load (TMDL)

As noted, the discharge of hydrostatic test water from the Zalac well pad and its subsequent discharge at Outfall 003 to UNT 40226 of Dunlap Creek is within the segment of a Monongahela River that is covered by a TMDL for polychlorinated biphenyls (PCBs), chlordane and organics. However, there is no known history or documentation that indicates that hydrostatic test water discharges any of these toxins or pathogenic pollutants. Note that the use of PCBs and chlordane has been banned from production and use since 1979. In addition, the TMDL acknowledges that there are no longer any known point sources of either of these pollutants in the watershed and the TMDL is expected to achieve implementation through “natural attenuation”. Neither chlordane nor PCB’s are used, generated, or stored at the LMM infrastructure; nor is there any evidence to suggest that PCBs, chlordane or organics were ever used, generated, or stored onsite in the past. Based upon these considerations, the Monongahela River TMDL is not applicable to LMM’s hydrostatic test water discharges.

Toxics Screening Analysis – Procedures for Evaluating Reasonable Potential and Developing WQBELs

Pursuant to consideration of the WQBELs at Outfall 003, water quality modeling was created following DEP’s procedures for evaluating reasonable potential which are as follows:

9. For IW discharges, the design flow used in the modeling is typically the average flow during production or operation and may be taken from the permit application. However, the heuristic of limiting the allowable discharge to 25% of the receiving surface water flow has been substituted as limiting for this analysis. As noted above, this will be modeled as 0.00811 MGD.

10. All toxic pollutants with discharge concentrations reported in the permit application are modeled and compared to the most stringent applicable water quality criterion as potential pollutants of concern. [This includes pollutants reported as "Not Detectable" or as "<MDL" where the MDL for the analytical method used by the applicant is greater than the most stringent WQ criterion]. The highest reported concentration is entered into the most recent version of the Department’s TMS analysis (refer to Attachment F).

11. For any outfall with an applicable design flow, perform TMS modeling for all pollutants reported in the discharge. Use the maximum reported value from the application form or from DMRs as the input concentration for the TMS model.

12. Compare the actual WQBEL from TMS with the maximum concentration reported on DMRs or the permit application. Use WQN data or another source to establish the existing or background concentration for naturally occurring pollutants, but generally assume zero background concentration for non-naturally occurring pollutants

    - Establish limits in the draft permit where the maximum reported concentration equals or exceeds 50% of the WQBEL. Use the average monthly and maximum daily limits for the permit as recommended by TMS. In some cases, establish an IMAX limit at 2.5 times the average monthly limit.

    - For non-conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL.

    - For conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 10% - 50% of the WQBEL.

The information described above including the maximum reported discharge concentrations, the most stringent WQ criteria, the pollutant-of-concern (reasonable potential) determinations, the calculated WQBELs, and the WQBEL/monitoring recommendations are displayed in the results presentation from TMS spreadsheet (refer to Attachment F).

Water Quality Modeling Programs

TMS Version 1.3 is a single discharge, mass-balance WQ modeling program that includes consideration for mixing, first-order decay and other factors to determine recommended WQBELs for toxic substances and several non-toxic substances. Required input data including stream code, river mile index, elevation, drainage area, discharge name, NPDES permit number and discharge flow rate are entered into TMS to establish site-specific discharge conditions. Other data such as low flow yield, reach dimensions and partial mix factors may also be entered to further characterize the conditions of the discharge and receiving water. The modeling approach outlined above is used to determine if any pollutants are present or likely to be present in a discharge at levels that may cause, have the reasonable potential to cause, or contribute to excursions above state’s WQSs (i.e., a reasonable potential analysis). Discharge concentrations for the selected pollutants are chosen to represent the "worst case" quality of the discharge (i.e., maximum reported discharge concentrations). TMS

evaluates each pollutant by computing a WLA for each applicable criterion and associated WQ objective, determining a recommended maximum WQBEL and comparing that recommended WQBEL with the input discharge concentration to determine which is more stringent. Based on this evaluation, TMS recommends average monthly and maximum daily WQBELs.

Reasonable Potential Analysis and WQBEL Development for Hydrostatic Test Water discharging at Outfall 003

Discharges at Outfall 003 were evaluated based on concentrations reported on the application. The TMS model was run for Outfall 003 using the modeled discharge and receiving stream characteristics shown in Table 10.

Table 10: TMS Inputs for Outfall 003

Parameter	Value
River Mile Index	0.7
Discharge Flow* (MGD)	0.00811
Basin/Stream Characteristics	
Parameter	**Value**
Area (mi^2)	0.21
Q_{7-10} (cfs)	0.002344
Low-flow yield (cfs/mi^2)	0.01116
Elevation (ft.)	1080
Slope	0.017

WQBELs are calculated by TMS by allocating the established WQ criteria for the receiving surface water from 25 PA Code § 93. The criteria are then converted to a WQ objective. For metals with criteria established for its dissolved form, a translator is used to determine the criteria for the total metal which is then used as the WQ objective.

From this calculated objective for each pollutant concentration the discharge allocation is then reduced by available data of existing pollutant loads in the receiving waters using actual concentration data from instream monitoring. In this case, the unimpaired receiving stream was modelled as being without appreciable background concentrations of pollutants that are naturally occurring. In addition, the assumption of zero background concentration is used for non-naturally occurring pollutants or where background data is insufficient to determine the background concentration.

The TMS model calculates and applies partial mixing factors for CFC, THH and CRL. The most limiting criteria is selected and finally WLAs are calculated for the IW discharger and compared to its reported discharge concentrations.

The TMS' recommended effluent limits and/or reporting requirements for the parameters are shown in Table 11. For some parameters, only monitoring is required as the results did not exceed the most stringent WQBEL value, but the reported results were too high to rule out the possibility that discharges will result in excursions above Pennsylvania's WQSs.

Also included in Table 11 for reference are the target Quantitation Limits (QLs) specified in DEP's most recent *Application for Permit to Discharge Industrial Wastewater*. The target QLs are the means by which DEP is implementing EPA's September 18, 2014 revisions to 40 CFR Parts 122 and 136 requiring applicants and permittees to use "sufficiently sensitive" EPA-approved analytical methods that are capable of detecting and measuring the pollutants at, or below, the applicable WQ criteria or permit limits.

Table 11. Outfall 003 WQBELs and Monitoring Requirements (with Most Stringent Criteria and Target QLs)

Parameter	Concentration (µg/L)		Governing WQBEL (µg/L)	Target QL (µg/L)
	Monthly Avg	Maximum Daily		
Aluminum, Total	Report	Report	750	10.0
Cadmium, Total	*0.66*	*1.03*	*0.66*	*0.2*
Copper, Total	Report	Report	*25.5*	*4.0*
Dissolved Iron	Report	Report	356	20.0
Selenium, Total	*5.92*	*9.24*	*5.92*	*5.0*
Silver Total	*Report*	*Report*	*20.4*	*0.4*

In Table 11 above, the modeling recommended WQBELs or monitoring are displayed; however, the application reported that some of these pollutants were not detected. In these cases, inclusion in Table 11 above is because their lab MDL did not meet the Department's target QL, therefore these pollutants were selected by TMS modeling to implement an effluent limit or monitoring. To indicate this, this information is shown in *italics* in Table 11. The permittee will be given the option to resample with analysis provided that meets the Department's target QLs and submit this information for reconsideration of inclusion of these pollutants.

The latest updated model run of TMS is included as Attachment F.

WQM 7.0 Model

The computer model WQM 7.0 is run to determine wasteload allocations and effluent limitations for $CBOD_5$, NH_3-N and Dissolved Oxygen for single and multiple point source discharge scenarios. In general, WQM 7.0 is run if the maximum BOD_5/$CBOD_5$ concentrations exceeds 30/25 mg/L respectively in the permit application or the DMRs. The permit application reports a peak BOD_5 concentration that was undetected at an MDL of 3.0 mg/L, but a peak COD concentration of 4.49 mg/L. Therefore, this industrial discharger does not approach the criteria requiring the use of the WQM 7.0 Model.

Total Residual Chlorine (TRC)

The statute addressing TRC is from 25 Pa. Code § 92a.48(b)(2). However, the submitted application documented TRC at a maximum concentration of 0.07 mg/L. Given this low level, coupled with the overland application of the hydrostatic test water discharge leaves little reason to do more than monitor. Although the Department has a spreadsheet to evaluate TRC discharge limits, further modeling was deemed unnecessary.

Thermal WQBELs for Heated Discharges (Non-Contact Cooling Water)

As with TRC above, the Department has a spreadsheet to evaluate thermal discharge limits; however, also as with TRC, and analogous with the treatment of Outfall 001, this limitation was considered unnecessary and will not be applied at Outfall 003.

Anti-Backsliding

Section 402(o) of the Clean Water Act (CWA), enacted in the Water Quality Act of 1987, establishes anti-backsliding rules. However, given that this is a new permit, no previous limits exist, and anti-backsliding provisions do not apply.

Effluent Limitations and Monitoring Requirements for Outfall 003

The overarching strategy for implementation of effluent limits is to impose TBELs based on the PAG-10 limitations. Additional monitoring was also required for pollutants of concern identified as having a reasonable potential to exceed WQSs, even if the analytical basis is only that the application sample information analyses MDL did not meet the Department's Target QLs. LMM has the opportunity to resample and supply updated, limited sampling which meets the Department's target QLs and supports an updated analysis which may result in the elimination of some of the WQBELs.

In summary, the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements as summarized in Table 8 below. The applicable limits and monitoring requirements provided below are based on those listed in Tables 9 and 11 of this Fact Sheet.

Table 12: Effluent Limits and Monitoring Requirements for Discharges of Hydrostatic Test Water for Outfall 003

Parameter		Effluent Limitations			Monitoring Requirements [1]	
	Instant Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Minimum Measurement Frequency [2],[3]	Sample Type
Flow (GPM) [4]	XXX	Report	5.633	XXX	1/discharge	Measured
Duration of Discharge (Hours) [4]	XXX	Report	XXX	XXX	1/discharge	Measured
Total Volume Discharged (Gallons) [4]	XXX	Report Total Monthly	XXX	XXX	1/month	Calculated
Dissolved Oxygen (mg/L)	5.0	XXX	XXX	XXX	2/discharge	Grab
pH (S.U.)	6.0	XXX	XXX	9.0	2/discharge	Grab
Total Residual Chlorine (TRC) (mg/L) [5]	XXX	Report	XXX	0.05	2/discharge	Grab
Total Suspended Solids (TSS) (mg/L)	XXX	30.0	XXX	60.0	1/discharge	Grab

Parameter		Effluent Limitations			Monitoring Requirements [1]	
	Instant Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Minimum Measurement Frequency [2],[3]	Sample Type
Oil and Grease (mg/L)	XXX	15.0	XXX	30.0	1/discharge	Grab
Dissolved Iron (mg/L)	XXX	Report	Report	7.0	1/discharge	Grab
Aluminum, Total (µg/L)	XXX	Report	Report	XXX	2/discharge	Grab
Cadmium, Total (µg/L)	XXX	0.66	1.03	XXX	2/discharge	Grab
Copper, Total (µg/L)	XXX	Report	Report	XXX	2/discharge	Grab
Selenium, Total (µg/L)	XXX	5.92	9.24	XXX	2/discharge	Grab
Silver, Total (µg/L)	XXX	Report	Report	XXX	2/discharge	Grab

Footnotes (1-6 - see section for Outfall 001, Table 1)

Effluent Limitation Compliance Schedule

Since the Department proposes the imposition of WQBELs, in cases of such an imposition on existing sources, the NPDES permit may include a schedule of compliance to achieve the WQBELs. Any compliance schedule contained in an NPDES permit must be an "enforceable sequence of actions or operations leading to compliance with the water quality-based effluent limitations ("WQBELs"). In accordance with 40 CFR § 122.47(a)(3) and PA Code, Chapter 92a.51, compliance schedules that are longer than one year in duration must set forth interim requirements and dates for their achievement. In order to grant a compliance schedule in an NPDES permit, the permitting authority has to make a reasonable finding, adequately supported by the administrative record and described in the fact sheet, that a compliance schedule is "appropriate" and that compliance with the final WQBEL is required "as soon as possible".

However, hydrostatic testing discharges are not eligible for compliance schedules. Such discharges may only be approved in accordance with applicable TBELs and WQ standards given that these are new discharges. As such, these discharges must meet all standards prior to initiating the discharge. Therefore, the effluent limitations and monitoring will become final on the permit's effective date. Final limits and monitoring will be in line with those shown in Table 12.

However, this determination may be altered or confirmed via the return of a Pre-Draft Permit Survey for Toxic Pollutants based on the permittee's survey responses. This survey, included as Attachment G, will be sent out concurrently with the draft permit for comment. During this period, LMM may decide to perform a limited resample and analyze this sample to determine if permit sampling of those pollutants that did not meet the Department's target QLs, specifically for Cadmium, Copper, Selenium and Silver are actually required.

Tools and References Used to Develop Permit	
☐	WQM for Windows Model
☒	Toxics Management Spreadsheet (see Attachments B, D and F)
☐	TRC Model Spreadsheet
☐	Temperature Model Spreadsheet
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☐	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.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	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.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	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.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	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.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: Standard Operating Procedure (SOP) for Clean Water Program New and Reissuance IW and Industrial Stormwater Individual NPDES Permit Applications (BPNPSM-PMT-001).
☒	Other: PAG-10, Authorization to Discharge under the NPDES, General Permit for Discharges from Hydrostatic Testing of Tanks and Pipelines.

Attachments

Attachment A: USGS StreamStats Models Related to TMS Inputs for Outfall 001 (Edenborn Well)

Attachment B: TMS Results and Inputs for Outfall 001 (Edenborn Well)

Attachment C: USGS StreamStats Models Related to TMS Inputs for Outfall 002 (Herriott Well)

Attachment D: TMS Results and Inputs for Outfall 002 (Herriott Well)

Attachment E: USGS StreamStats Models Related to TMS Inputs for Outfall 003 (Zalac Well)

Attachment F: TMS Results and Inputs for Outfall 003 (Zalac Well)

Attachment G: NPDES Pre-Draft Permit Survey for Toxic Pollutants and Letter

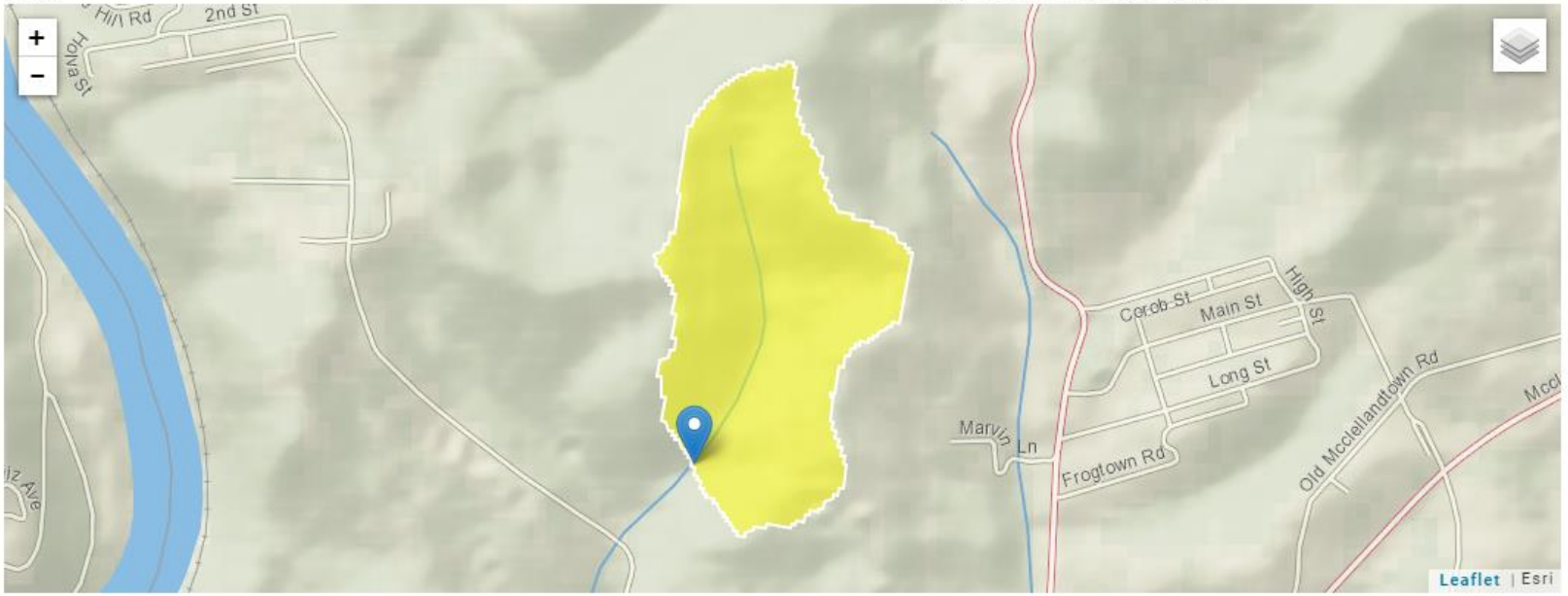
ATTACHMENT A:

USGS StreamStats Models Related to TMS Inputs for Outfall 001 (Edenborn Well)

USGS StreamStats Model @ Point of Discharge (Outfall 001) to UNT 41119 to Browns Run:

StreamStats Report: Edenborn Well Pad Discharge Pt. (PA0256099)

Region ID:	PA
Workspace ID:	PA20211223153756437000
Clicked Point (Latitude, Longitude):	39.88054, -79.90010
Time:	2021-12-23 10:38:16 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.18	square miles
ELEV	Mean Basin Elevation	1163	feet
PRECIP	Mean Annual Precipitation	41	inches
CARBON	Percentage of area of carbonate rock	0	percent
FOREST	Percentage of area covered by forest	99.5671	percent
URBAN	Percentage of basin with urban development	0	percent
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	0	percent

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.18	square miles	2.26	1400
ELEV	Mean Basin Elevation	1163	feet	1050	2580

Low-Flow Statistics Disclaimers [Low Flow Region 4]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report [Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.00388	ft^3/s
30 Day 2 Year Low Flow	0.00809	ft^3/s
7 Day 10 Year Low Flow	0.000974	ft^3/s
30 Day 10 Year Low Flow	0.00237	ft^3/s
90 Day 10 Year Low Flow	0.00522	ft^3/s

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.

General Flow Statistics Parameters [Statewide Mean and Base Flow]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.18	square miles	2.26	1720
PRECIP	Mean Annual Precipitation	41	inches	33.1	50.4
CARBON	Percent Carbonate	0	percent	0	99
FOREST	Percent Forest	99.5671	percent	5.1	100
URBAN	Percent Urban	0	percent	0	89

General Flow Statistics Disclaimers [Statewide Mean and Base Flow]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

General Flow Statistics Flow Report [Statewide Mean and Base Flow]

Statistic	Value	Unit
Harmonic Mean Streamflow	0.0438	ft^3/s

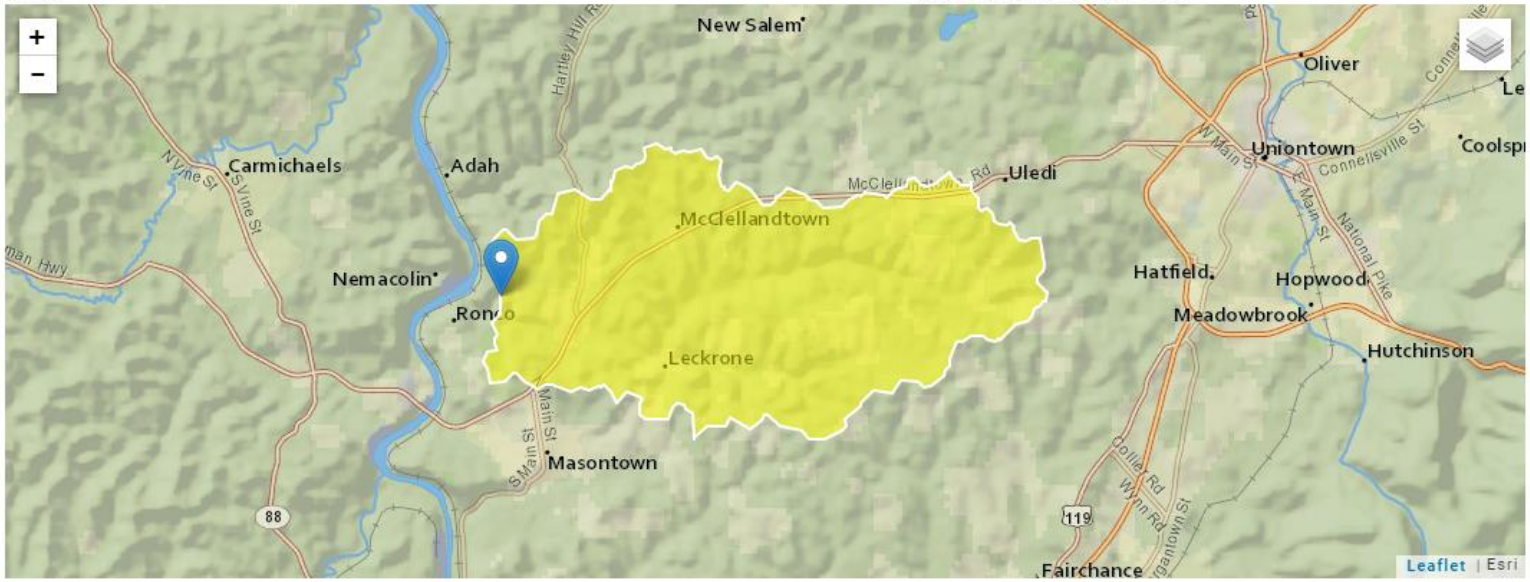
General Flow Statistics Citations

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.

Qualifying Basin under the USGS StreamStats Modeling Constraints for Outfall 001 @ Confluence with Browns Run:

StreamStats Report: Downstream Qual. Basin for Browns Run

Region ID:	PA
Workspace ID:	PA20211230144633737000
Clicked Point (Latitude, Longitude):	39.87422, -79.90932
Time:	2021-12-30 09:46:53 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	17.5	square miles
ELEV	Mean Basin Elevation	1135	feet
PRECIP	Mean Annual Precipitation	41	inches
CARBON	Percentage of area of carbonate rock	0	percent
FOREST	Percentage of area covered by forest	52.4768	percent
URBAN	Percentage of basin with urban development	3.7012	percent
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	0.19	percent

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	17.5	square miles	2.26	1400
ELEV	Mean Basin Elevation	1135	feet	1050	2580

Low-Flow Statistics Flow Report [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	0.699	ft^3/s	43	43
30 Day 2 Year Low Flow	1.18	ft^3/s	38	38
7 Day 10 Year Low Flow	0.272	ft^3/s	66	66
30 Day 10 Year Low Flow	0.467	ft^3/s	54	54
90 Day 10 Year Low Flow	0.82	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.

General Flow Statistics Parameters [Statewide Mean and Base Flow]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	17.5	square miles	2.26	1720
PRECIP	Mean Annual Precipitation	41	inches	33.1	50.4
CARBON	Percent Carbonate	0	percent	0	99
FOREST	Percent Forest	52.4768	percent	5.1	100
URBAN	Percent Urban	3.7012	percent	0	89

General Flow Statistics Flow Report [Statewide Mean and Base Flow]

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
Harmonic Mean Streamflow	4.82	ft^3/s	38	38

General 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.

ATTACHMENT B:
Toxics Management Spreadsheet (TMS) Results and Inputs for Outfall 001
(Edenborn Well Pad)

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

LMM Edenborn Well Pad, NPDES Permit No. PA0256099, Outfall 001

Instructions | *Results* | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All | ○ Inputs | ○ Results | ○ Limits

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Aluminum	Report	Report	Report	Report	Report	µg/L	750	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Cadmium	0.00004	0.00006	0.69	1.07	1.72	µg/L	0.69	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Copper	Report	Report	Report	Report	Report	µg/L	26.4	CFC	Discharge Conc > 10% WQBEL (no RP)
Dissolved Iron	Report	Report	Report	Report	Report	µg/L	381	THH	Discharge Conc > 10% WQBEL (no RP)
Total Selenium	0.0004	0.0006	6.34	9.89	15.9	µg/L	6.34	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Silver	Report	Report	Report	Report	Report	µg/L	18.9	AFC	Discharge Conc > 10% WQBEL (no RP)

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Model Results

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Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☑ ***Other Pollutants without Limits or Monitoring***

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., <= Target QL).

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	3,051	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	2,034	µg/L	Discharge Conc < TQL
Total Chromium (III)	236	µg/L	Discharge Conc < TQL
Hexavalent Chromium	13.2	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	24.2	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Total Iron	1,907	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	13.3	µg/L	Discharge Conc < TQL
Total Manganese	1,271	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.064	µg/L	Discharge Conc < TQL
Total Nickel	146	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Thallium	0.31	µg/L	Discharge Conc < TQL
Total Zinc	265	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

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☑ ***Hydrodynamics***

$Q_{7\text{-}10}$

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
0.0124	0.00		0.00	0.01	2.887	0.9	2.	2.222	0.007	0.104	0.00017
0	0.27		0.272								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
0.0124	0.05		0.05	0.01	2.887	1.756	2.	1.139	0.017	0.044	0.00095
0	4.82		4.82								

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Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 0.000 PMF: 1 Analysis Hardness (mg/l): 254.98 Analysis pH: 7.58

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	953	
Total Antimony	0	0		0	1,100	1,100	1,398	
Total Arsenic	0	0		0	340	340	432	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	26,694	
Total Boron	0	0		0	8,100	8,100	10,296	
Total Cadmium	0	0		0	4.999	5.52	7.02	Chem Translator of 0.905 applied
Total Chromium (III)	0	0		0	1226.359	3,881	4,933	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	20.7	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	121	
Total Copper	0	0		0	32.462	33.8	43.0	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	175.950	269	342	Chem Translator of 0.655 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	2.09	Chem Translator of 0.85 applied
Total Nickel	0	0		0	1033.625	1,036	1,317	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	16.092	18.9	24.1	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	82.6	
Total Zinc	0	0		0	258.990	265	337	Chem Translator of 0.978 applied

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Model Results

LMM Edenborn Well Pad, NPDES Permit No. PA0256099, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☑ ***CFC*** CCT (min): 0.000 PMF: 1 Analysis Hardness (mg/l): 254.98 Analysis pH: 7.58

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	280	
Total Arsenic	0	0		0	150	150	191	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	5,212	
Total Boron	0	0		0	1,600	1,600	2,034	
Total Cadmium	0	0		0	0.471	0.54	0.69	Chem Translator of 0.87 applied
Total Chromium (III)	0	0		0	159.524	185	236	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	13.2	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	24.2	
Total Copper	0	0		0	19.928	20.8	26.4	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	1,907	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	6.857	10.5	13.3	Chem Translator of 0.655 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	1.15	Chem Translator of 0.85 applied
Total Nickel	0	0		0	114.804	115	146	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	6.34	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	16.5	
Total Zinc	0	0		0	261.108	265	337	Chem Translator of 0.986 applied

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Model Results

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Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☑ ***THH*** CCT (min): 0.000 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	7.12	
Total Arsenic	0	0		0	10	10.0	12.7	
Total Barium	0	0		0	2,400	2,400	3,051	
Total Boron	0	0		0	3,100	3,100	3,941	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	300	300	381	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	1,271	
Total Mercury	0	0		0	0.050	0.05	0.064	
Total Nickel	0	0		0	610	610	775	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	0.31	
Total Zinc	0	0		0	N/A	N/A	N/A	

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

LMM Edenborn Well Pad, NPDES Permit No. PA0256099, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☑ CRL CCT (min): 0.001 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

Edenborn Well Pad (Outfall 001) Model Inputs:

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

LMM Edenborn Well Pad, NPDES Permit No. PA0256099, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: UNT 41119 to Browns Run

No. Reaches to Model: 1

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	041119	0.0124	1005	0.18			Yes
End of Reach 1	041119	0	816	17.5			Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	0.0124	0.1	0.002798			2	0.9					100	7		
End of Reach 1	0	0.1	0.272			10	2								

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	0.0124		0.0496			2.17	1								
End of Reach 1	0		4.82			13.53	3								

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Toxics Management Spreadsheet
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Discharge Information

Instructions | Discharge | Stream

Facility: **LMM Edenborn Well Pad** NPDES Permit No.: **PA0256099** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Hydro Test Water Discharge**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.00667	297	8.2						

					0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		378									
	Chloride (PWS)	mg/L		22.5									
	Bromide	mg/L	<	0.4									
	Sulfate (PWS)	mg/L		141									
	Fluoride (PWS)	mg/L	<	2									
Group 2	Total Aluminum	µg/L		139									
	Total Antimony	µg/L	<	1									
	Total Arsenic	µg/L	<	1									
	Total Barium	µg/L		81.6									
	Total Beryllium	µg/L	<	2.5									
	Total Boron	µg/L	<	0.1									
	Total Cadmium	µg/L	<	2.5									
	Total Chromium (III)	µg/L	<	0.005									
	Hexavalent Chromium	µg/L		0.00007									
	Total Cobalt	µg/L	<	2									
	Total Copper	µg/L	<	12.5									
	Free Cyanide	µg/L	<										
	Total Cyanide	µg/L	<	0.01									
	Dissolved Iron	µg/L		165									
	Total Iron	µg/L		72.8									
	Total Lead	µg/L	<	0.5									
	Total Manganese	µg/L		76.4									
	Total Mercury	µg/L	<	0.0002									
	Total Nickel	µg/L		3.06									
	Total Phenols (Phenolics) (PWS)	µg/L	<	5									
	Total Selenium	µg/L	<	12.5									
	Total Silver	µg/L	<	2.5									
	Total Thallium	µg/L	<	0.5									
	Total Zinc	µg/L	<	12.5									
	Total Molybdenum	µg/L		0.529									

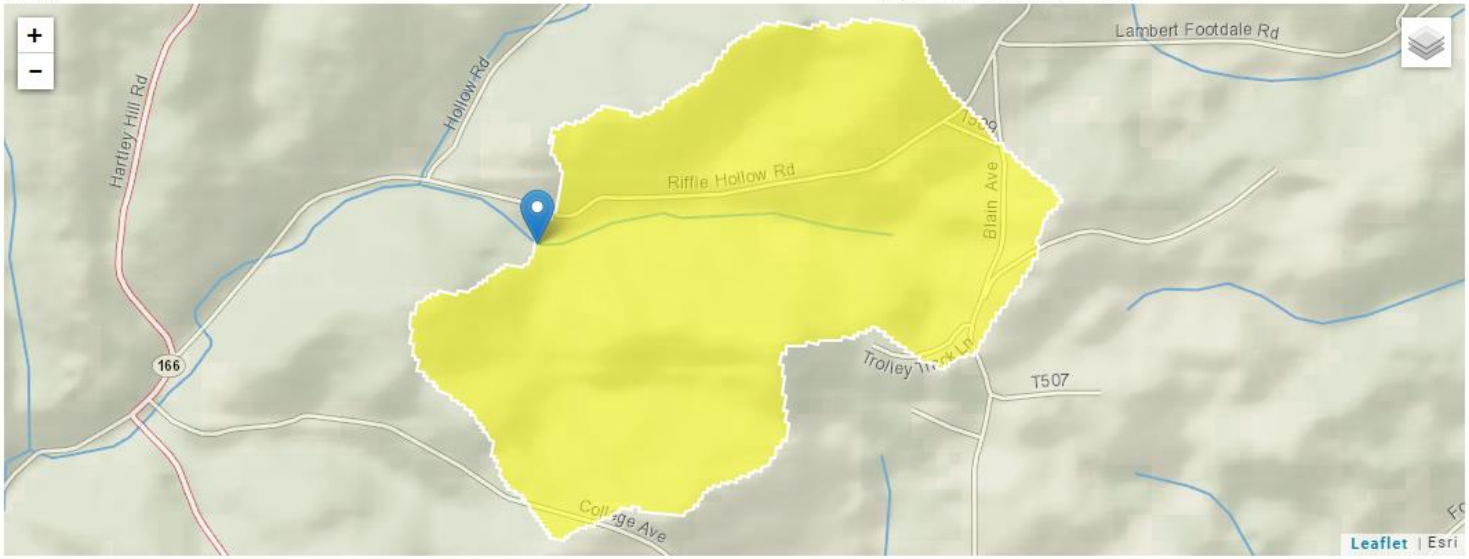
ATTACHMENT C:

USGS StreamStats Models Related to TMS Inputs for Outfall 002 (Herriott Well)

USGS StreamStats Model at the Point of Discharge (Outfall 002) to UNT 41110 to Middle Run:

StreamStats Report: Herriott Well Pad to UNT 41110 to Middle Run

Region ID:	PA
Workspace ID:	PA20220214141921284000
Clicked Point (Latitude, Longitude):	39.90426, -79.88254
Time:	2022-02-14 09:19:41 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.51	square miles
ELEV	Mean Basin Elevation	1163	feet
PRECIP	Mean Annual Precipitation	41	inches
CARBON	Percentage of area of carbonate rock	0	percent
FOREST	Percentage of area covered by forest	94.026	percent
URBAN	Percentage of basin with urban development	0	percent
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	0	percent

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.51	square miles	2.26	1400
ELEV	Mean Basin Elevation	1163	feet	1050	2580

Low-Flow Statistics Disclaimers [Low Flow Region 4]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report [Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0127	ft^3/s
30 Day 2 Year Low Flow	0.0252	ft^3/s
7 Day 10 Year Low Flow	0.00352	ft^3/s
30 Day 10 Year Low Flow	0.0079	ft^3/s
90 Day 10 Year Low Flow	0.0166	ft^3/s

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.

General Flow Statistics Parameters [Statewide Mean and Base Flow]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.51	square miles	2.26	1720
PRECIP	Mean Annual Precipitation	41	inches	33.1	50.4
CARBON	Percent Carbonate	0	percent	0	99
FOREST	Percent Forest	94.026	percent	5.1	100
URBAN	Percent Urban	0	percent	0	89

General Flow Statistics Disclaimers [Statewide Mean and Base Flow]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

General Flow Statistics Flow Report [Statewide Mean and Base Flow]

Statistic	Value	Unit
Harmonic Mean Streamflow	0.13	ft^3/s

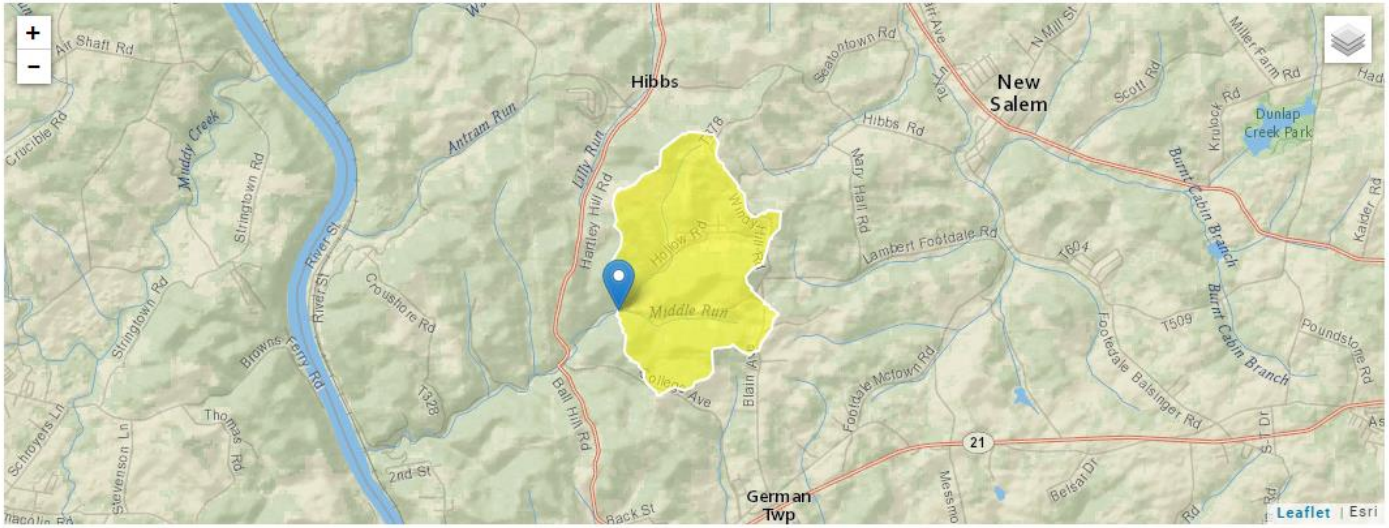
General Flow Statistics Citations

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.

Downstream Node for Outfall 002 @ Confluence with Middle Run:

StreamStats Report: Downstream Node @ Confluence with Middle Run

Region ID:	PA
Workspace ID:	PA20220214181615653000
Clicked Point (Latitude, Longitude):	39.90560, -79.88722
Time:	2022-02-14 13:16:35 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.46	square miles
ELEV	Mean Basin Elevation	1151	feet
PRECIP	Mean Annual Precipitation	41	inches
CARBON	Percentage of area of carbonate rock	0	percent
FOREST	Percentage of area covered by forest	83.7826	percent
URBAN	Percentage of basin with urban development	3.3029	percent
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	0.02	percent

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.46	square miles	2.26	1400
ELEV	Mean Basin Elevation	1151	feet	1050	2580

Low-Flow Statistics Disclaimers [Low Flow Region 4]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report [Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0417	ft^3/s
30 Day 2 Year Low Flow	0.0789	ft^3/s
7 Day 10 Year Low Flow	0.0128	ft^3/s
30 Day 10 Year Low Flow	0.0265	ft^3/s
90 Day 10 Year Low Flow	0.0528	ft^3/s

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.

General Flow Statistics Parameters [Statewide Mean and Base Flow]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.46	square miles	2.26	1720
PRECIP	Mean Annual Precipitation	41	inches	33.1	50.4
CARBON	Percent Carbonate	0	percent	0	99
FOREST	Percent Forest	83.7826	percent	5.1	100
URBAN	Percent Urban	3.3029	percent	0	89

General Flow Statistics Disclaimers [Statewide Mean and Base Flow]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

General Flow Statistics Flow Report [Statewide Mean and Base Flow]

Statistic	Value	Unit
Harmonic Mean Streamflow	0.397	ft^3/s

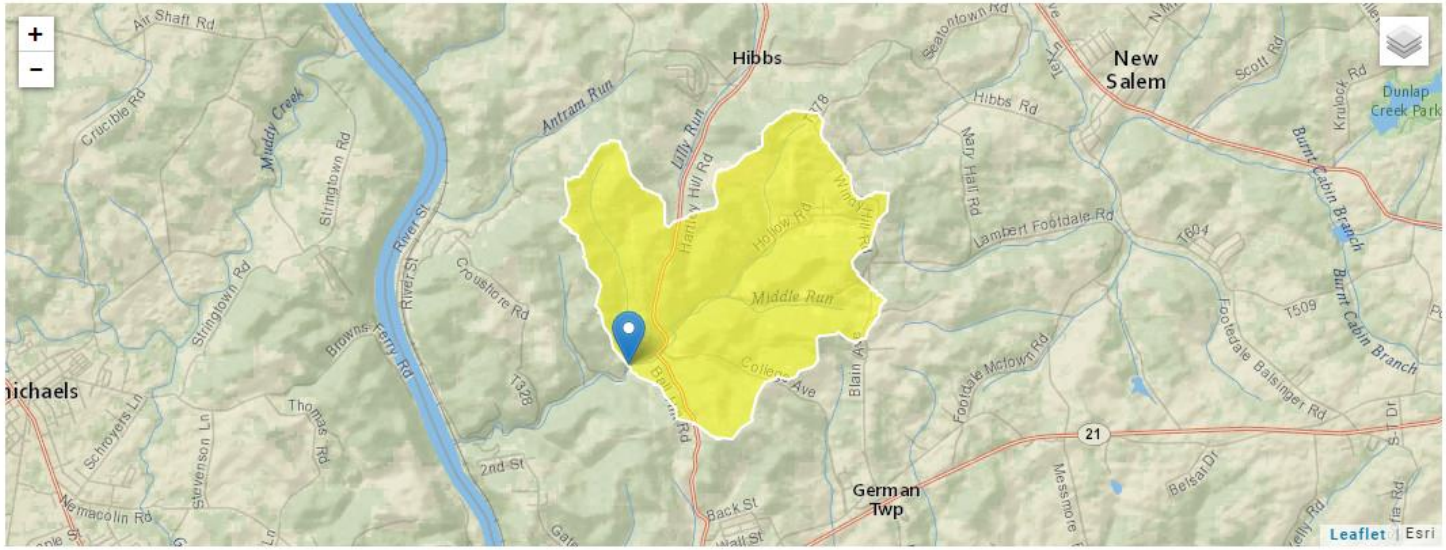
General Flow Statistics Citations

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.

Qualifying Basin under the USGS StreamStats Modeling Constraints for Outfall 002 @ Confluence with Middle Run:

StreamStats Report Herriott Pad, Qual. Basin, Middle Run

Region ID:	PA
Workspace ID:	PA20220214144519273000
Clicked Point (Latitude, Longitude):	39.89903, -79.89868
Time:	2022-02-14 09:45:39 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	2.79	square miles
ELEV	Mean Basin Elevation	1142	feet
PRECIP	Mean Annual Precipitation	41	inches
CARBON	Percentage of area of carbonate rock	0	percent
FOREST	Percentage of area covered by forest	89.7436	percent
URBAN	Percentage of basin with urban development	1.7549	percent
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	0.01	percent

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	2.79	square miles	2.26	1400
ELEV	Mean Basin Elevation	1142	feet	1050	2580

Low-Flow Statistics Flow Report [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	0.0867	ft^3/s	43	43
30 Day 2 Year Low Flow	0.159	ft^3/s	38	38
7 Day 10 Year Low Flow	0.0283	ft^3/s	66	66
30 Day 10 Year Low Flow	0.0559	ft^3/s	54	54
90 Day 10 Year Low Flow	0.108	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.

General Flow Statistics Parameters [Statewide Mean and Base Flow]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	2.79	square miles	2.26	1720
PRECIP	Mean Annual Precipitation	41	inches	33.1	50.4
CARBON	Percent Carbonate	0	percent	0	99
FOREST	Percent Forest	89.7436	percent	5.1	100
URBAN	Percent Urban	1.7549	percent	0	89

General Flow Statistics Flow Report [Statewide Mean and Base Flow]

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

Statistic	Value	Unit	SE	ASEp
Harmonic Mean Streamflow	0.801	ft^3/s	38	38

General 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.

ATTACHMENT D:
Toxics Management Spreadsheet (TMS) Results and Inputs for Outfall 002
(Herriott Well Pad)

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

LMM Herriott Well Pad, NPDES Permit No. PA0256099, Outfall 002

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | All | Inputs | Results | Limits

Recommended WQBELs & Monitoring Requirements

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Aluminum	Report	Report	Report	Report	Report	µg/L	750	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Cadmium	0.0001	0.0002	0.65	1.01	1.62	µg/L	0.65	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Copper	Report	Report	Report	Report	Report	µg/L	25.1	CFC	Discharge Conc > 10% WQBEL (no RP)
Dissolved Iron	Report	Report	Report	Report	Report	µg/L	342	THH	Discharge Conc > 10% WQBEL (no RP)
Total Selenium	0.001	0.002	5.69	8.88	14.2	µg/L	5.69	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Silver	Report	Report	Report	Report	Report	µg/L	21.2	AFC	Discharge Conc > 10% WQBEL (no RP)

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

LMM Herriott Well Pad, NPDES Permit No. PA0256099, Outfall 002

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☑ ***Other Pollutants without Limits or Monitoring***

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., <= Target QL).

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	2,739	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	1,826	µg/L	Discharge Conc < TQL
Total Chromium (III)	224	µg/L	Discharge Conc < TQL
Hexavalent Chromium	11.9	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	21.7	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Total Iron	1,712	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	13.0	µg/L	Discharge Conc < TQL
Total Manganese	1,141	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.057	µg/L	Discharge Conc < TQL
Total Nickel	139	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Thallium	0.27	µg/L	Discharge Conc < TQL
Total Zinc	280	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

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Model Results

LMM Herriott Well Pad, NPDES Permit No. PA0256099, Outfall 002

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☑ ***Hydrodynamics***

$Q_{7\text{-}10}$

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
0.24	0.01		0.01	0.037	0.04	1.	6.	6.	0.007	2.103	0.004
0	0.01		0.015								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
0.24	0.15		0.15	0.037	0.04	1.915	6.	3.134	0.016	0.92	0.059
0	0.419		0.42								

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Model Results

LMM Herriott Well Pad, NPDES Permit No. PA0256099, Outfall 002

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 0.004 PMF: 1 Analysis Hardness (mg/l): 272.64 Analysis pH: 7.75

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	856	
Total Antimony	0	0		0	1,100	1,100	1,255	
Total Arsenic	0	0		0	340	340	388	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	23,963	
Total Boron	0	0		0	8,100	8,100	9,243	
Total Cadmium	0	0		0	5.334	5.91	6.75	Chem Translator of 0.902 applied
Total Chromium (III)	0	0		0	1295.521	4,100	4,678	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	18.6	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	108	
Total Copper	0	0		0	34.577	36.0	41.1	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	188.756	293	334	Chem Translator of 0.645 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	1.88	Chem Translator of 0.85 applied
Total Nickel	0	0		0	1093.895	1,096	1,251	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	18.057	21.2	24.2	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	74.2	
Total Zinc	0	0		0	274.115	280	320	Chem Translator of 0.978 applied

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

LMM Herriott Well Pad, NPDES Permit No. PA0256099, Outfall 002

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☑ ***CFC*** CCT (min): 0.004 PMF: 1 Analysis Hardness (mg/l): 272.64 Analysis pH: 7.75

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	251	
Total Arsenic	0	0		0	150	150	171	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	4,678	
Total Boron	0	0		0	1,600	1,600	1,826	
Total Cadmium	0	0		0	0.493	0.57	0.65	Chem Translator of 0.867 applied
Total Chromium (III)	0	0		0	168.521	196	224	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	11.9	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	21.7	
Total Copper	0	0		0	21.102	22.0	25.1	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	1,712	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	7.356	11.4	13.0	Chem Translator of 0.645 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	1.03	Chem Translator of 0.85 applied
Total Nickel	0	0		0	121.498	122	139	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	5.69	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	14.8	
Total Zinc	0	0		0	276.357	280	320	Chem Translator of 0.986 applied

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

LMM Herriott Well Pad, NPDES Permit No. PA0256099, Outfall 002

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☑ ***THH*** CCT (min): 0.004 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	6.39	
Total Arsenic	0	0		0	10	10.0	11.4	
Total Barium	0	0		0	2,400	2,400	2,739	
Total Boron	0	0		0	3,100	3,100	3,537	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	300	300	342	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	1,141	
Total Mercury	0	0		0	0.050	0.05	0.057	
Total Nickel	0	0		0	610	610	696	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	0.27	
Total Zinc	0	0		0	N/A	N/A	N/A	

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

LMM Herriott Well Pad, NPDES Permit No. PA0256099, Outfall 002

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☑ ***CRL*** CCT (min): 0.059 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

Herriott Well Pad (Outfall 002) Model Inputs:

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

LMM Herriott Well Pad, NPDES Permit No. PA0256099, Outfall 002

Instructions | Discharge | *Stream*

CLEAR FORM | CALCULATE

Receiving Surface Water Name: **UNT 41110 to Middle Run**

No. Reaches to Model: **1**

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	041110	0.24	1010	0.51			Yes
End of Reach 1	041110	0	959	1.46			Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	0.24	0.1	0.005173			6	1					100	7		
End of Reach 1	0	0.1	0.01481			15	2.5								

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	0.24		0.1464			6.82	1.5								
End of Reach 1	0		0.4192			17.42	3								

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Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

CLEAR PROJECT | CLEAR FORM | CALCULATE

Facility: **LMM Herriott Well Pad** NPDES Permit No.: **PA0256099** Outfall No.: **002**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Hydro Test Water Discharge**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.0237	297	8.2						

					0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L	<	378									
	Chloride (PWS)	mg/L		22.5									
	Bromide	mg/L	<	0.4									
	Sulfate (PWS)	mg/L		141									
	Fluoride (PWS)	mg/L	<	2									
Group 2	Total Aluminum	µg/L		139									
	Total Antimony	µg/L	<	1									
	Total Arsenic	µg/L	<	1									
	Total Barium	µg/L		81.6									
	Total Beryllium	µg/L	<	2.5									
	Total Boron	µg/L	<	0.1									
	Total Cadmium	µg/L	<	2.5									
	Total Chromium (III)	µg/L	<	0.005									
	Hexavalent Chromium	µg/L		0.00007									
	Total Cobalt	µg/L	<	2									
	Total Copper	µg/L	<	12.5									
	Free Cyanide	µg/L	<										
	Total Cyanide	µg/L	<	0.01									
	Dissolved Iron	µg/L		165									
	Total Iron	µg/L		72.8									
	Total Lead	µg/L	<	0.5									
	Total Manganese	µg/L		76.4									
	Total Mercury	µg/L	<	0.0002									
	Total Nickel	µg/L		3.06									
	Total Phenols (Phenolics) (PWS)	µg/L	<	5									
	Total Selenium	µg/L	<	12.5									
	Total Silver	µg/L	<	2.5									
	Total Thallium	µg/L	<	0.5									
	Total Zinc	µg/L	<	12.5									
	Total Molybdenum	µg/L		0.529									

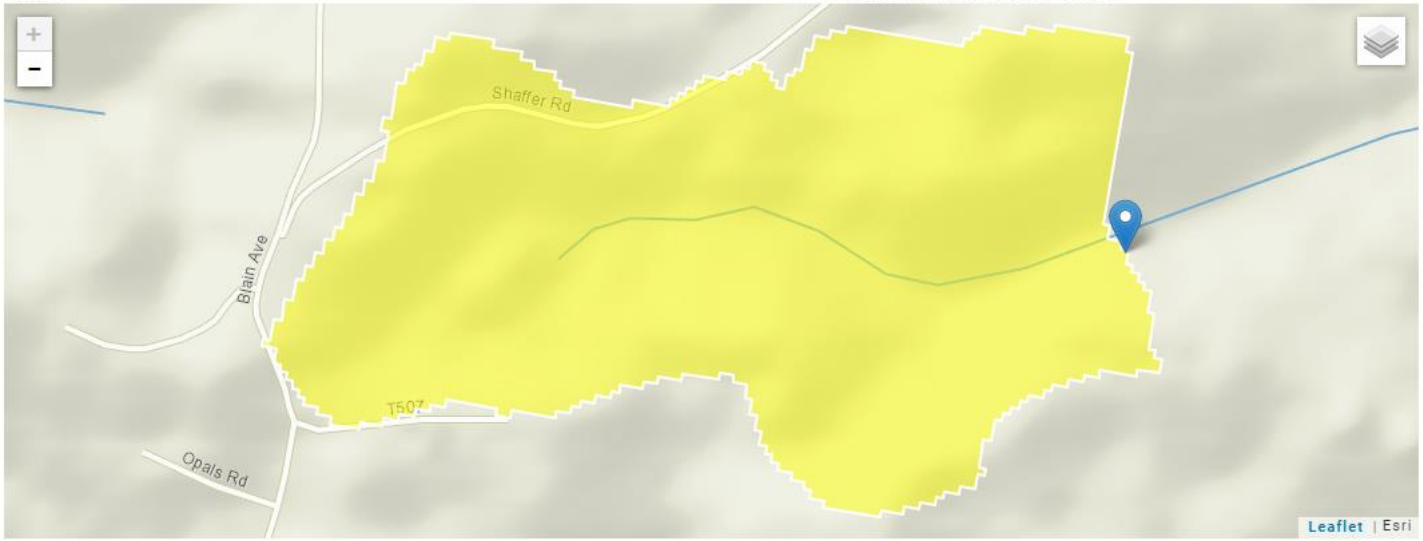
ATTACHMENT E:

USGS StreamStats Models Related to TMS Inputs for Outfall 003 (Zalac Well)

USGS StreamStats Model at the Point of Discharge (Outfall 003) to UNT 40226 of Dunlap Creek:

StreamStats Report: Zalac Well Pad to UNT 40226 of Dunlap Creek

Region ID:	PA
Workspace ID:	PA20220215194007711000
Clicked Point (Latitude, Longitude):	39.90279, -79.85509
Time:	2022-02-15 14:40:28 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.21	square miles
ELEV	Mean Basin Elevation	1178	feet
PRECIP	Mean Annual Precipitation	41	inches
CARBON	Percentage of area of carbonate rock	0	percent
FOREST	Percentage of area covered by forest	33.5024	percent
URBAN	Percentage of basin with urban development	0	percent

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.21	square miles	2.26	1400
ELEV	Mean Basin Elevation	1178	feet	1050	2580

Low-Flow Statistics Disclaimers [Low Flow Region 4]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report [Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.00467	ft^3/s
30 Day 2 Year Low Flow	0.00968	ft^3/s
7 Day 10 Year Low Flow	0.00119	ft^3/s
30 Day 10 Year Low Flow	0.00285	ft^3/s
90 Day 10 Year Low Flow	0.00627	ft^3/s

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.

General Flow Statistics Parameters [Statewide Mean and Base Flow]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.21	square miles	2.26	1720
PRECIP	Mean Annual Precipitation	41	inches	33.1	50.4
CARBON	Percent Carbonate	0	percent	0	99
FOREST	Percent Forest	33.5024	percent	5.1	100
URBAN	Percent Urban	0	percent	0	89

General Flow Statistics Disclaimers [Statewide Mean and Base Flow]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

General Flow Statistics Flow Report [Statewide Mean and Base Flow]

Statistic	Value	Unit
Harmonic Mean Streamflow	0.0364	ft^3/s

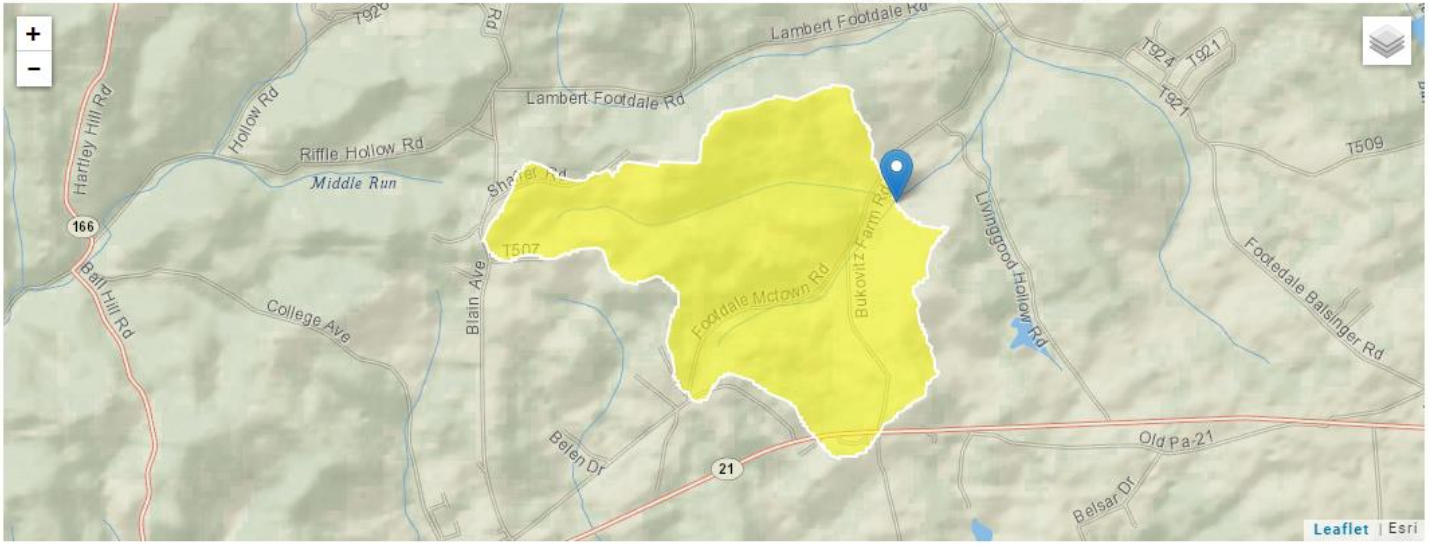
General Flow Statistics Citations

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.

Downstream Node for Outfall 003 @ Confluence of UNT 40226 with UNT 40224 of Dunlap Creek:

StreamStats Report Downstream Node UNT 40226 of Dunlap Creek

Region ID:	PA
Workspace ID:	PA20220216130320060000
Clicked Point (Latitude, Longitude):	39.90350, -79.84246
Time:	2022-02-16 08:03:40 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.01	square miles
ELEV	Mean Basin Elevation	1139	feet
PRECIP	Mean Annual Precipitation	41	inches
CARBON	Percentage of area of carbonate rock	0	percent
FOREST	Percentage of area covered by forest	44.5613	percent
URBAN	Percentage of basin with urban development	0.1721	percent
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	0.06	percent

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.01	square miles	2.26	1400
ELEV	Mean Basin Elevation	1139	feet	1050	2580

Low-Flow Statistics Disclaimers [Low Flow Region 4]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report [Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0272	ft^3/s
30 Day 2 Year Low Flow	0.0523	ft^3/s
7 Day 10 Year Low Flow	0.00808	ft^3/s
30 Day 10 Year Low Flow	0.0172	ft^3/s
90 Day 10 Year Low Flow	0.0348	ft^3/s

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.

General Flow Statistics Parameters [Statewide Mean and Base Flow]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.01	square miles	2.26	1720
PRECIP	Mean Annual Precipitation	41	inches	33.1	50.4
CARBON	Percent Carbonate	0	percent	0	99
FOREST	Percent Forest	44.5613	percent	5.1	100
URBAN	Percent Urban	0.1721	percent	0	89

General Flow Statistics Disclaimers [Statewide Mean and Base Flow]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

General Flow Statistics Flow Report [Statewide Mean and Base Flow]

Statistic	Value	Unit
Harmonic Mean Streamflow	0.209	ft^3/s

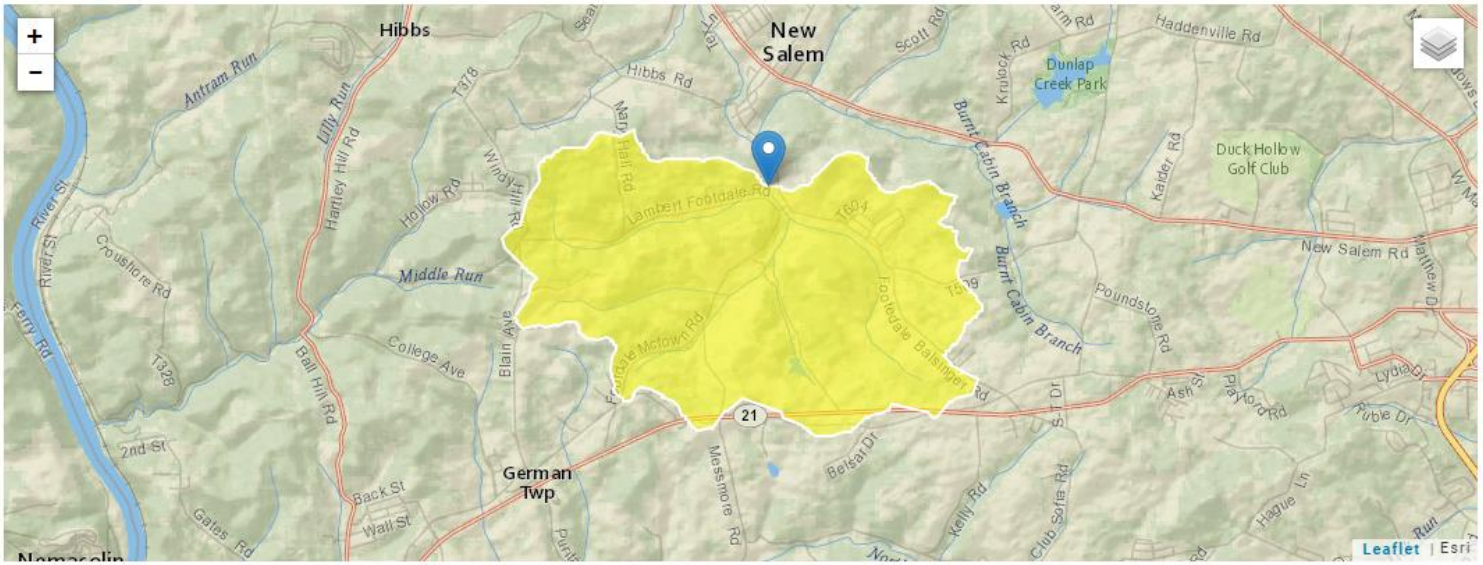
General Flow Statistics Citations

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.

Qualifying Basin under the USGS StreamStats Modeling Constraints for Outfall 003 on Dunlap Creek:

StreamStats Report: Qual. Basin for Zalac Well Pad, Dunlap Creek

Region ID:	PA
Workspace ID:	PA20220215194751934000
Clicked Point (Latitude, Longitude):	39.91412, -79.83766
Time:	2022-02-15 14:48:11 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	4.31	square miles
ELEV	Mean Basin Elevation	1130	feet
PRECIP	Mean Annual Precipitation	41	inches
CARBON	Percentage of area of carbonate rock	0	percent
FOREST	Percentage of area covered by forest	47.7371	percent
URBAN	Percentage of basin with urban development	1.9382	percent
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	0.1	percent

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.31	square miles	2.26	1400
ELEV	Mean Basin Elevation	1130	feet	1050	2580

Low-Flow Statistics Flow Report [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	0.141	ft^3/s	43	43
30 Day 2 Year Low Flow	0.253	ft^3/s	38	38
7 Day 10 Year Low Flow	0.0481	ft^3/s	66	66
30 Day 10 Year Low Flow	0.0918	ft^3/s	54	54
90 Day 10 Year Low Flow	0.173	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.

General Flow Statistics Parameters [Statewide Mean and Base Flow]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.31	square miles	2.26	1720
PRECIP	Mean Annual Precipitation	41	inches	33.1	50.4
CARBON	Percent Carbonate	0	percent	0	99
FOREST	Percent Forest	47.7371	percent	5.1	100
URBAN	Percent Urban	1.9382	percent	0	89

General Flow Statistics Flow Report [Statewide Mean and Base Flow]

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
Harmonic Mean Streamflow	1.03	ft^3/s	38	38

General 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.

ATTACHMENT F:
Toxics Management Spreadsheet (TMS) Results and Inputs for Outfall 003 (Zalac Well Pad)

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

LMM Zalac Well Pad, NPDES Permit No. PA0256099, Outfall 003

Instructions | *Results* | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All | ○ Inputs | ○ Results | ○ Limits

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Aluminum	Report	Report	Report	Report	Report	µg/L	750	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Cadmium	0.00004	0.00007	0.66	1.03	1.66	µg/L	0.66	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Copper	Report	Report	Report	Report	Report	µg/L	25.5	CFC	Discharge Conc > 10% WQBEL (no RP)
Dissolved Iron	Report	Report	Report	Report	Report	µg/L	356	THH	Discharge Conc > 10% WQBEL (no RP)
Total Selenium	0.0004	0.0006	5.92	9.24	14.8	µg/L	5.92	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Silver	Report	Report	Report	Report	Report	µg/L	20.4	AFC	Discharge Conc > 10% WQBEL (no RP)

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

LMM Zalac Well Pad, NPDES Permit No. PA0256099, Outfall 003

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☑ ***Other Pollutants without Limits or Monitoring***

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., <= Target QL).

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	2,848	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	1,899	µg/L	Discharge Conc < TQL
Total Chromium (III)	228	µg/L	Discharge Conc < TQL
Hexavalent Chromium	12.3	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	22.5	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Total Iron	1,780	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	13.1	µg/L	Discharge Conc < TQL
Total Manganese	1,187	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	0.059	µg/L	Discharge Conc < TQL
Total Nickel	142	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Thallium	0.28	µg/L	Discharge Conc < TQL
Total Zinc	274	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

LMM Zalac Well Pad, NPDES Permit No. PA0256099, Outfall 003

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | All | Inputs | Results | Limits

Hydrodynamics

Q_{7-10}

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
0.7	0.00		0.00	0.013	0.017	1.	3.	3.	0.005	8.618	0.002
0	0.01		0.011								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
0.7	0.05		0.05	0.013	0.017	1.883	3.	1.593	0.011	3.851	0.024
0	0.241		0.24								

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

LMM Zalac Well Pad, NPDES Permit No. PA0256099, Outfall 003

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 0.002 PMF: 1 Analysis Hardness (mg/l): 266 Analysis pH: 7.68

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	890	
Total Antimony	0	0		0	1,100	1,100	1,305	
Total Arsenic	0	0		0	340	340	404	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	24,922	
Total Boron	0	0		0	8,100	8,100	9,613	
Total Cadmium	0	0		0	5.208	5.77	6.84	Chem Translator of 0.903 applied
Total Chromium (III)	0	0		0	1269.605	4,018	4,768	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	19.3	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	113	
Total Copper	0	0		0	33.782	35.2	41.8	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	183.939	284	337	Chem Translator of 0.648 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	1.95	Chem Translator of 0.85 applied
Total Nickel	0	0		0	1071.298	1,073	1,274	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	17.306	20.4	24.2	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	77.1	
Total Zinc	0	0		0	268.444	274	326	Chem Translator of 0.978 applied

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

LMM Zalac Well Pad, NPDES Permit No. PA0256099, Outfall 003

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☑ ***CFC*** CCT (min): 0.002 PMF: 1 Analysis Hardness (mg/l): 266 Analysis pH: 7.68

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	261	
Total Arsenic	0	0		0	150	150	178	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	4,866	
Total Boron	0	0		0	1,600	1,600	1,899	
Total Cadmium	0	0		0	0.485	0.56	0.66	Chem Translator of 0.868 applied
Total Chromium (III)	0	0		0	165.150	192	228	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	12.3	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	22.5	
Total Copper	0	0		0	20.661	21.5	25.5	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	1,780	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	7.168	11.1	13.1	Chem Translator of 0.648 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	1.08	Chem Translator of 0.85 applied
Total Nickel	0	0		0	118.988	119	142	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	5.92	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	15.4	
Total Zinc	0	0		0	270.640	274	326	Chem Translator of 0.986 applied

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

LMM Zalac Well Pad, NPDES Permit No. PA0256099, Outfall 003

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☑ ***THH*** CCT (min): 0.002 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	6.65	
Total Arsenic	0	0		0	10	10.0	11.9	
Total Barium	0	0		0	2,400	2,400	2,848	
Total Boron	0	0		0	3,100	3,100	3,679	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	300	300	356	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	1,187	
Total Mercury	0	0		0	0.050	0.05	0.059	
Total Nickel	0	0		0	610	610	724	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	0.28	
Total Zinc	0	0		0	N/A	N/A	N/A	

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

LMM Zalac Well Pad, NPDES Permit No. PA0256099, Outfall 003

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☑ CRL CCT (min): 0.024 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

Zalac Well Pad (Outfall 003) Model Inputs:

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

LMM Zalac Well Pad, NPDES Permit No. PA0256099, Outfall 003

Instructions | Discharge | *Stream*

CLEAR FORM | CALCULATE

Receiving Surface Water Name: **UNT 40226 of Dunlap Creek**

No. Reaches to Model: **1**

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	040226	0.7	1080	0.21			Yes
End of Reach 1	040226	0	1019	1.01			Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	0.7	0.1	0.0023436			3	1					100	7		
End of Reach 1	0	0.1	0.011272			5	1.5								

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	0.7		0.05019			3.14	1								
End of Reach 1	0		0.24137			5.51	2								

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Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

CLEAR PROJECT | CLEAR FORM | CALCULATE

Facility: **LMM Zalac Well Pad** NPDES Permit No.: **PA0256099** Outfall No.: **003**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Hydro Test Water Discharge**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.00811128	297	8.2						

					0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L	<	378									
	Chloride (PWS)	mg/L		22.5									
	Bromide	mg/L	<	0.4									
	Sulfate (PWS)	mg/L		141									
	Fluoride (PWS)	mg/L	<	2									
Group 2	Total Aluminum	µg/L		139									
	Total Antimony	µg/L	<	1									
	Total Arsenic	µg/L	<	1									
	Total Barium	µg/L		81.6									
	Total Beryllium	µg/L	<	2.5									
	Total Boron	µg/L	<	0.1									
	Total Cadmium	µg/L	<	2.5									
	Total Chromium (III)	µg/L	<	0.005									
	Hexavalent Chromium	µg/L		0.00007									
	Total Cobalt	µg/L	<	2									
	Total Copper	µg/L	<	12.5									
	Free Cyanide	µg/L	<										
	Total Cyanide	µg/L	<	0.01									
	Dissolved Iron	µg/L		165									
	Total Iron	µg/L		72.8									
	Total Lead	µg/L	<	0.5									
	Total Manganese	µg/L		76.4									
	Total Mercury	µg/L	<	0.0002									
	Total Nickel	µg/L		3.06									
	Total Phenols (Phenolics) (PWS)	µg/L	<	5									
	Total Selenium	µg/L	<	12.5									
	Total Silver	µg/L	<	2.5									
	Total Thallium	µg/L	<	0.5									
	Total Zinc	µg/L	<	12.5									
	Total Molybdenum	µg/L		0.529									

ATTACHMENT G:

NPDES Pre-Draft Permit Survey for Toxic Pollutants and Letter

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

VIA ELECTRONIC MAIL

March 10, 2022

Stephanie Ranker
Laurel Mountain Midstream LLC
111 Enterprise Lane
Connellsville, PA 15425

Re: Pre-Draft Survey NPDES Permit- Industrial Waste
Laurel Mountain Midstream LLC
Herriott Well - Hydrostatic Test Discharge
Application No. PA0256099
Authorization ID No. 1379348
German Township, Fayette County

Dear Ms. Ranker:

The Department of Environmental Protection (DEP) has reviewed your NPDES permit application and has reached a preliminary finding that water quality-based effluent limitations (WQBELs) for toxic pollutant(s) should be established in the permit. This determination is based on modeling results that new WQBELs or related monitoring is required at Outfalls 001 - 003 to support aquatic life downstream of the three well pad locations. These new WQBELs are outlined in the proposed effluent limits or monitoring as follows:

Outfall No.	Pollutant	Average (µg/L)	Maximum Daily (µg/L)	IMAX (µg/L)
001/002/003	Aluminum, Total	Report	Report	—
001/002/003	Cadmium, Total *	0.67 +/- 0.02	1.04 +/- .03	—
001/002/003	Copper, Total *	Report	Report	—
001/002/003	Dissolved Iron	Report	Report	—
001/002/003	Selenium, Total *	6.0 +/- 0.4	9.3 +/- 0.6	—
001/002/003	Silver, Total *	Report	Report	—

Please note that the pollutants marked with an Asterix (*) were included although reported as "none detected" on the basis of chemical analyses MDLs that exceeded the Department's target Quantitation Limits. This includes all WQBELs, but not all monitoring. Also note that the variability of the WQBELs is based on the different receiving surface waters' assimilative capacities.

Southwest Regional Office
400 Waterfront Drive | Pittsburgh, PA 15222-4745 | 412.442.4000 | Fax 412.442.5885
www.dep.pa.gov

Stephanie Ranker - 2 -

Attached are surveys grouping the pollutants of concern noted in the tables above into those requiring WQBELS or monitoring based on reported results and those which were identified despite being reported as "not detected" in the submitted samples. The Department requests that you complete and return these surveys to DEP within 30 days.

Completion of these surveys will help DEP progress toward the final NPDES permit and allow DEP to understand your current capabilities or plans to treat or control these pollutant(s). If you decide not to complete and return the survey, DEP will proceed with finalizing the NPDES permit based on all available information and certain assumptions. Your response to this notice does not constitute an official comment for DEP response but will be taken under consideration. When the draft NPDES permit is formally noticed in the *Pennsylvania Bulletin*, you may make official comments for DEP's further consideration and response.

Please contact me at 412.442.4183 if you have any questions about this information or the attached survey.

Sincerely,

John L. Duryea, Jr.

John L. Duryea, Jr., P.E.
Environmental Engineer
Clean Water Program

Enclosures

cc: ARM Group, LLC

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Clean Water

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
PRE-DRAFT PERMIT SURVEY FOR TOXIC POLLUTANTS

Permittee Name: **Laurel Mountain Midstream LLC (LMM), Herriott Well, Fayette County** Permit No.: **PA0256099**

Pollutant(s) identified by DEP that may require WQBELs: **Outfalls 001/002/003 – Aluminum and Dissolved Iron**

Is the permittee aware of the source(s) of the pollutant(s)? ☐ Yes ☐ No ☐ Suspected

If Yes or Suspected, describe the known or suspected source(s) of pollutant(s) in the effluent.

Has the permittee completed any studies in the past to control or treat the pollutant(s)? ☐ Yes ☐ No

If Yes, describe prior studies and results:

Does the permittee believe it can achieve the proposed WQBELs now? ☐ Yes ☐ No ☐ Uncertain

If No, describe the activities, upgrades or process changes that would be necessary to achieve the WQBELs, if known.

Estimated date by which the permittee could achieve the proposed WQBELs: _____ ☐ Uncertain

Will the permittee conduct additional sampling for the pollutant(s) to supplement the application? ☐ Yes ☐ No

Check the appropriate box(es) below to indicate site-specific data that have been collected by the permittee in the past. If any of these data have not been submitted to DEP, please attach to this survey.

☐	Discharge pollutant concentration coefficient(s) of variability	Year(s) Studied:
☐	Discharge and background Total Hardness concentrations (metals)	Year(s) Studied:
☐	Background / ambient pollutant concentrations	Year(s) Studied:
☐	Chemical translator(s) (metals)	Year(s) Studied:
☐	Slope and width of receiving waters	Year(s) Studied:
☐	Velocity of receiving waters at design conditions	Year(s) Studied:
☐	Acute and/or chronic partial mix factors (mixing at design conditions)	Year(s) Studied:
☐	Volatilization rates (highly volatile organics)	Year(s) Studied:
☐	Site-specific criteria (e.g., Water Effect Ratio or related study)	Year(s) Studied:

Please submit this survey to the DEP SWRO that is reviewing the permit application within 30 days of receipt.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
PRE-DRAFT PERMIT SURVEY FOR TOXIC POLLUTANTS

Permittee Name: **LMM, Herriott Well, Fayette County** Permit No.: **PA0256099**

Pollutant(s) identified by DEP that may require WQBELs: **Outfalls 001/002/003 – Cadmium, Copper, Selenium and Silver**

Is the permittee aware of the source(s) of the pollutant(s)? ☐ Yes ☐ No ☐ Suspected

If Yes or Suspected, describe the known or suspected source(s) of pollutant(s) in the effluent.

Has the permittee completed any studies in the past to control or treat the pollutant(s)? ☐ Yes ☐ No

If Yes, describe prior studies and results:

Does the permittee believe it can achieve the proposed WQBELs now? ☐ Yes ☐ No ☐ Uncertain

If No, describe the activities, upgrades or process changes that would be necessary to achieve the WQBELs, if known.

Estimated date by which the permittee could achieve the proposed WQBELs: _____ ☐ Uncertain

Will the permittee conduct additional sampling for the pollutant(s) to supplement the application? ☐ Yes ☐ No

Check the appropriate box(es) below to indicate site-specific data that have been collected by the permittee in the past. If any of these data have not been submitted to DEP, please attach to this survey.

☐	Discharge pollutant concentration coefficient(s) of variability	Year(s) Studied:
☐	Discharge and background Total Hardness concentrations (metals)	Year(s) Studied:
☐	Background / ambient pollutant concentrations	Year(s) Studied:
☐	Chemical translator(s) (metals)	Year(s) Studied:
☐	Slope and width of receiving waters	Year(s) Studied:
☐	Velocity of receiving waters at design conditions	Year(s) Studied:
☐	Acute and/or chronic partial mix factors (mixing at design conditions)	Year(s) Studied:
☐	Volatilization rates (highly volatile organics)	Year(s) Studied:
☐	Site-specific criteria (e.g., Water Effect Ratio or related study)	Year(s) Studied:

Please submit this survey to the DEP SWRO that is reviewing the permit application within 30 days of receipt.