pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

NORTHEAST REGIONAL OFFICE
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0061077**
Facility Type	**Sewage**	APS ID	**544856**
Major / Minor	**Minor**	Authorization ID	**1132606**

NPDES PERMIT FACT SHEET ADDENDUM

Applicant and Facility Information

Applicant Name	**Lake Winola Municipal Authority Wyoming County**	Facility Name	**Lake Winola WWTP**
Applicant Address	PO Box 59 Lake Winola, PA 18625-0059	Facility Address	135 Hug Lane (off SR 2010) Lake Winola, PA 18625
Applicant Contact	Ronald Manglaviti	Facility Contact	Shaun Fortney
Applicant Phone	(570) 378-3744	Facility Phone	(570) 570-0115
Client ID	43745	Site ID	271040
SIC Code	4952	Municipality	Overfield Township (Treatment Plant) Tunkhannock Township (Outfall #001)
SIC Description	Trans. & Utilities - Sewerage Systems	County	Wyoming
Date Published in PA Bulletin	November 10, 2018; Redraft TBD	EPA Waived?	Yes
Comment Period End Date	December 10, 2018: Redraft TBD	If No, Reason	-
Purpose of Application	Application for a renewal of an NPDES permit for discharge of treated Sewage		

Internal Review and Recommendations

This is a **Redraft** NPDES Permit Renewal for a 0.0875 MGD POTW (located within Overfield Township) with discharge pipeline to Outfall No. 001 on Mill Run (CWF; Stream Code# 28703, in Tunkhannock Township), near the confluence with the North Branch Susquehanna River. Mill Run is also known as “Osterhout Creek”.

This municipal STP (POTW) has a long-term pattern of ammonia-N exceedances year-round (see 10/25/2018 Fact Sheet and 4/13/2023 CO&A for related information) that is being addressed by the April 13, 2023 Consent Order & Agreement and concurrent WQM Permit Application No. 6620401 (Modified/Rehabilitated Treatment Lagoons, proposed Ammonia-N treatment units (SAGR), proposed Copper Treatment System, proposed UV disinfection, etc.).

Reasons for Redrafting: Final permit action was previously delayed due to compliance issues/negotiations (see 4/13/2023 Consent Order & Agreement (CO&A) in NPDES Permit Part C.II condition) and previous preliminary/conceptual/incomplete state of the concurrent WQM permit application design.

- CO&A: The April 13, 2023 Consent Order & Agreement (CO&A)) addressed the PA Chapter 91.26 Compliance Bar.
- July 29, 2024 WQM permit No. 6620401: The WQM Permit No. 6620401 (WWTP upgrades) includes assorted site changes that impact NPDES requirements (new LDZ discharges, new onsite PCSM outfall, conversion to UV disinfection, etc.). The WWTP Upgrade is a requirement of the CO&A (addressing Ammonia-N issues and also LWMA-chosen method of coming into compliance with Final Copper WQBELs).

Approve	Return	Deny	Signatures	Date
X			James D. Berger (signed) James D. Berger, P.E. / Environmental Engineer	April 17, 2025
X			Edward Dudick, P.E. / Environmental Engineer Manager	April 18, 2025
X			NA for Redraft NPDES Permit Amy M. Bellanca, P.E. / Environmental Program Manager	

Internal Review and Recommendations

- November 15, 2024 LWMA Hydrogeological Work Plan Approval Letter: Submitted in accordance with the July 29, 2024 Lake Winola Municipal Authority WQM Permit No. 6620401 Special Condition C.6. Included DMR Supplemental Reporting forms (Surface water monitoring; Groundwater monitoring).
- Updated Reasonable Potential Analysis: Changes in permit limits due to updated Lead and Copper Reasonable Potential Analysis due to permittee-supplied sampling data.

Changes to 2018 Draft NPDES Permit:

- **Parts A, B, and C Template**: **Updated** NPDES Permit Template conditions incorporated per SOP (when Draft NPDES Permit is >6 months old). Several Part C special conditions were also updated to reflect current template standard language.
- **Part A.I.A (Updated Outfall No. 001 Effective to Start of Final Period) for Total Residual Chlorine and Total Copper**:
  - Final Period: "Startup of New WWTP facilities under WQM Permit No. 6620401 in accordance with April 13, 2023 Consent Order & Agreement".
  - Lead monitoring shifted to Part A.I.C due to no final WQBELs per updated Reasonable Potential Analysis.
  - Existing TRC WQBELs and Total Copper Monitoring retained: Facility is upgrading to UV disinfection and copper treatment in the WWTP upgrade.
  - Going to interim monthly monitoring for Copper only. Daily Max loading reporting requirement added (no additional sampling required).
- **Part A.I.B (Updated Outfall No. 001 Start of Final Period to Expiration) for TRC, Total Copper, and UV intensity**:
  - Final Total Residual Chlorine (TRC) WQBELs (referencing Part C.I.D Chlorine Minimization condition)
  - UV Intensity monitoring & reporting (instantaneous minimum) added due to upgrade.
  - Total Copper: Daily Max loading reporting requirement added (no additional sampling required). Updated Reasonable Potential Analysis (incorporating Authority-provided sampling data with TOXCONC statistical analysis to determine LTAMEC and daily COV) resulted in modified copper limits in the Redraft. See also DEP Toxic Management Spreadsheet output below.

-	Average Monthly	Daily Max	IMAX
Redraft Permit (mg/l)	0.029	0.052	0.073

LWMATMS3.pdf

☑ ***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 Copper	0.021	0.038	0.029	0.052	0.073	mg/L	0.029	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Lead	Report	Report	Report	Report	Report	mg/L	0.008	CFC	Discharge Conc > 10% WQBEL (no RP)

- **Part A.I.C (Updated Outfall No. 001 Effective to Expiration)**:
  - 85% minimum monthly average TSS removal (reporting of existing POTW narrative Technology-Based Effluent Limit and Chapter 92a.47 requirements) added.
  - E Coli monitoring (quarterly) added. New Chapter 93 WQS since 2018.
  - Raw Sewage influent sampling relocated to Part A.I.D.
- **Part A.I.D (New Internal Monitoring Point No. 101 for influent Raw Sewage at Influent Manhole prior to Lagoons)**:
  - This IMP has been created to separate Raw Sewage Influent reporting from effluent reporting. The BOD5 and TSS monitoring frequency is the same as the previous Draft NPDES Permit requirements.

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- **Influent Flow reporting added.** Influent flow monitoring was an original 1985 WQM permit requirement and reporting is being added to gather information. Facility reports some stormwater I&I issues in the LPS System. Accurate influent flow monitoring is also required to allow for accurate and representative influent flow-proportional 24-hour composite sampling and analysis, especially given that the Low Pressure System (LPS) flows are being directed through an influent pump station with oversized pumps (i.e. flow surges expected).

- **Part A.I.E (New Internal Monitoring Point No. 102 for Upper Lagoon a.k.a. Lagoon No. 1 LDZ/Underdrain Discharge Point at new monitoring manhole)**: New Internal Monitoring Point for Individual Lagoon LDZ/Underdrain monitoring and reporting (flow volume and sampling). The facility has been collecting and treating existing combined lagoon LDZ/Underdrain discharges due to contamination (fecal coliform and other parameters). This new monitoring point (post-WWTP upgrade) will allow EDMR reporting of flows and sampling of parameters of interest upon DEP request (based on groundwater sampling parameters). If contamination remains after WWTP project, facility will have to continue capture/treatment in treatment process or submit a Major NPDES Permit Amendment Application for new IW Outfall. IMP numbering reflects that the contamination might be lagoon-specific or redirected to (new) PCSM Stormwater Outfall No. 002 discharge point. Existing/future discharge point for uncontaminated LDZ/Underdrain discharge flow is sheet flow/infiltration downhill of lagoons. NHD locator indicates discharge might flow toward Lake Winola.
- **Part A.I.F (New Internal Monitoring Point No. 103 for Lower Lagoon a.k.a. Lagoon No. 2 LDZ/Underdrain Discharge Point at new monitoring manhole)**: New Internal Monitoring Point for Individual Lagoon LDZ/Underdrain monitoring and reporting (flow volume and sampling). NHD locator indicates discharge might flow toward Lake Winola.
- **Part A.I.G (New Internal Monitoring Point No. 104 for SAGR Unit No. 1 LDZ/Underdrain Discharge Point at new monitoring manhole**): New Internal Monitoring Point for SAGR Unit No. 1 LDZ/Underdrain monitoring and reporting (flow volume and sampling). This new monitoring point (post-WWTP upgrade) will allow EDMR reporting of flows and sampling of parameters of interest upon DEP request (based on groundwater sampling parameters). Will discharge to downslope area if uncontaminated. NHD locator indicates discharge might flow toward Lake Winola.
- **Part A.I.H (New Internal Monitoring Point No. 105 for SAGR Unit No. 2 LDZ/Underdrain Discharge Point at new monitoring manhole**): New Internal Monitoring Point for SAGR Unit No. 1 LDZ/Underdrain monitoring and reporting (flow volume and sampling). NHD locator indicates discharge would go to Mill Run or Trib to Mill Run. See above.
- **Part A.I.I (New Internal Monitoring Point No. 106 for existing combined Lagoon LDZ/Underdrain Monitoring Point)**: This is the existing monitoring point manhole that will have its elevation raised during the project (to stop any inflow contribution to contamination), with new individual lagoon LDZ/underdrain monitoring wells upslope. It will be receiving 102 and 103 discharges prior to discharge to sheet flow/infiltration area downhill of lagoon. Monitoring at this existing manhole will cease after new monitoring manholes are monitored for IMP 102 and 103. NHD locator indicates discharge might eventually flow toward Lake Winola.
- **Part C.I.D**: **Updated** Chlorine Minimization condition to address post-WWTP upgrade UV disinfection and post-upgrade reporting requirements.
- **Part C.I.E**: **Updated** Responsible Operator condition (including new standard language for this type of condition)
- **Part C.I.F**: **New Operation & Maintenance (O&M) Plan** due to need for site-specific post-upgrade O&M Plan to address site changes, especially SAGR System (which is new to Pennsylvania). Need for a site-specific O&M Plan discussed as part of Part II WQM permit application due to new SAGR System and changes in overall treatment process.
- **Part C.I.H**: **Updated** Groundwater Monitoring condition due to changes in Groundwater monitoring per WQM permit application.
- **Part C.II**: **Updated** Schedule of Compliance for Existing Ammonia-N Limits and New TRC WQBEL to incorporate April 13, 2023 CO&A by reference with compliance milestones (tied to WQM Permit No. 6620401 issuance). Condition retained since WWTP upgrade is the facility-chosen method of addressing Final TRC WQBELs in addition to resolving Ammonia-N noncompliance with existing limits.
- **Part C.III**: **Updated** Solids Management conditions with reference that the 18-inch depth is tied to liner elevation due to EPA Technical Seminar indicating need to do this, because most sludge judges/probes tend to underestimate sludge volumes by order of 30%. Due to potential copper treatment pressure filter issues, included non-lagoon language: Holding excess sludge within the disinfection process is not permissible.
- **Part C.IV**: **Revised** Copper Toxics WQBEL Condition replacing previous obsolete standard Part C TRE Condition. Lead dropped out as no Final WQBEL now proposed (only monitoring). Schedule tied to 4/13/2023 CO&A schedule because LWMA chose to include the Copper Treatment System with CO&A-required upgrades to address

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compliance issues (Ammonia-N and Fecal Coliform Exceedances, etc.). Condition retained to allow the permittee to pursue amendment of final Copper WQBELs if LWMA so desires. In that event, site-specific sampling and additional site-specific TRE actions would be required.

Responses to Public Comments:

Internal Comments:

- **TRC and UV Intensity Limits:** The conversion to UV disinfection required revised Chlorine Minimization condition and post-upgrade UV intensity reporting.
- **New influent flow M&R requirement (information gathering):** Additional influent loading questions were raised during the WQM permit application review. (An original 1985 WQM permit requirement was inlet flow monitoring.) Influent flow monitoring was added to gather information to address those questions, and eliminate potential biasing of influent BOD5 and TSS monthly average loadings (influent flow-proportional 24-hour composite sampling).
- **Required LDZ/Underdrain Monitoring & Reporting**: Monitoring & reporting now required. The combined Lagoon LDZ/Underdrain discharge is being presently recycled into the treatment process due to known contamination (liner leakage with Authority also blaming wildlife contribution by inflow). The Lagoon LDZ/Underdrain was previously being discharged downslope of the lagoons for sheet flow/infiltration. The Authority estimated a 1.2 GPM (~1728 GPD) discharge rate from the existing lagoon underdrains, which is substantially greater than the 1 gallon per acre per day molecular diffusion rate through a modern liner, with the DEP Geologist noting apparent impact on vegetation at the LDZ discharge point infiltration (indicating over-watering due to no trees at the location where water infiltrates, unlike surrounding areas). Lagoon liners were to have a 20-year design life, but are now ~38-years old, with known tears in the above-water level liner area being patched per Chapter 94 Annual Reports. The WQM permit application proposes to retain part the existing underdrain system (unknown condition) with inadequate plan to identify, sample, and remove contaminated subgrade materials. It is simply unknown if the WWTP project will remove all sources of contamination.
    - LDZ/Underdrain Monitoring and reporting via EDMR will now be required (see breakdown below).
    - LDZ/Underdrain Outfall and new Stormwater Outfall No. 002 can be requested, but not included in Part A monitoring & reporting.
    - New Groundwater Monitoring Points breakdown:
        - Post-construction Upper Lagoon LDZ/Underdrain: IMP No. 102 (a.k.a. MM-2)
        - Post-construction Lower Lagoon LDZ/Underdrain: IMP No. 103 (a.k.a. MM-3)
        - Post-construction SAGR Unit T-1B a.k.a. S-1 LDZ/Underdrain: IMP No. 104 (a.k.a. MM-4)
        - Post-construction SAGR Unit T1-A a.k.a. S-2 LDZ/Underdrain: IMP No. 105 (a.k.a. MM-5)
        - Pre-construction Combined Lagoon LDZ/Underdrain: IMP No. 104 (a.k.a. MH-A a.k.a. MM-1)
        - Outfall No. 002 (upon request only): Post-construction Stormwater-only Outfall
        - Outfall No. 003 (upon request only): Pre- and Post-construction Combined Lagoon LDZ/Underdrain Outfall.
        - Outfall No. 004 (upon request only): Post-construction SAGR Unit T-1B a.k.a. S1 Outfall.
        - Outfall No. 005 (upon request only): Post-construction SAGR Unit T-1A a.k.a. S2 Outfall
- **2023 Chapter 94 Report Information**: The most recent Chapter 94 Report information is summarized below for informational purposes
    - Items 1, 2, 3, and 9: No existing or projected overloading claimed, but they were above the 243 lb BOD5/day design capacity for two months in 2020. Spreadsheet also incorrectly claimed 507 lb BOD5/day organic design capacity (243 lb BOD5/day per NPDES/WQM permitting).
        - They estimated a 0.035075 MGD annual average flow and 0.046236 MGD max 3-month flow.
        - The Chapter 94 Report indicated 442 simplex grinder pumps and 15 duplex grinder units but estimated ~457 grinder pump (basically treating each duplex grinder unit as a single pump). They are estimating 19 – 21 grinder units might be operating at any one time (but basis for estimate not stated).
        - 583 existing EDUs claimed. Down from previous 590, but no explanation for decrease given.
        - The 5-year predicted growth was up to 467 pumps which was exceeded by the identified current numbers (counting two grinders per duplex grinder unit).
        - WQM permit application indicated I&I program for this LPS System. The Chapter 94 Report indicate excess flow during wet weather events with the Authority “recently initiated a storm water infiltration/inflow (I/I) program”.

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- Item 4: No sewer extensions planned.
- Item 5: They indicate that they were patching the lagoon liner system. They have reporting need for patching since the 2019 Chapter 94 Report. They are operating an improvised chlorine tablet system for disinfection.
- Item 7: No pump station flow amount was identified. (Replacement pump station WQM permit on-hold for compliance reasons). They could use the influent flow meter at the WWTP or otherwise could have estimated pump station flows.
- Item 8: The NPDES permit renewal application indicated "commercial sources" include a dental office (40 CFR 441 industrial category with pretreatment standard effective July 14, 2020) and Tyler Memorial Hospital (40 CFR 460 industrial category).
- Item 10: No Sewage Sludge Management Inventory included, but not current NPDES permit requirement. Requirement in Redraft NPDES Permit.
- Item 12: The Attachment E calibration was for the ultrasonic effluent meter in the 45 degree V-notch, which was reported "in specification" (not further defined, so statement is effectively meaningless without specification). However, no calibration was provided for other flow meters:
  - The May 6, 1985 WQM Permit No. 6685401 IRR indicated that the facility was designed for an "inlet flow metering system" (sonic type meter; 500,000 GPD max flow, indicating totalizing and recording), therefore the influent flow meter also required calibration, with the application noting the influent flow measurement was to be continuous (indicating and recording)
  - Additional flow measurement was to be done at the V-notch weir in the Chlorine Contact Tank and Outfall Sewer with a Palmer Bowlus Flume (to allow periodic checking per the 4/8/1985 BWQM Memo which noted that a flow measuring device was to be provided at or near the end of the outfall line so that the integrity of the line can be periodically checked).

- **Planning Background and facility loading**: This NPDES Permit does not authorize any organic design capacity rerating. The permittee raised the potential for a rerating request, but has not pursued Act 537 Planning for any rerating request. Due to discrepancies between original WQM permitted grinder unit connections (449 single grinders and 10 duplex grinders) and 2019 Chapter 94 Report-identified connections (520 connections with a projected increase of 3 per year), Planning was contacted to ascertain if Planning authorized the additional connections (after asking LWMA to provide any additional correspondence/documentation regarding the additional units). Planning provided copies of the Act 537 Planning Letters (listed below). Adding up subsequently supplied DEP Planning Approval letters (listed below) and assuming they are all new connections, the number of new connections would be on the order of 32 (uncertain due to unidentified Lake Winola Plaza connections) and 10,695 GPD sewage. This would bring the total number of Planning-okayed connections/loads to ~452 connections and ~98,000 GPD max loadings. This is below the 2019 Chapter 94 Report identified 520 connections (with more to be added per projection) and original 1985 WQM permit's 449 simplex grinders and 10 duplex grinders loadings. Planning provided documents included:
  - 9/2/1981: Facility Plan for LWMA (prepared by Milnes Engineering). Table 17 (Summary of Design for LWMA) indicated the following loadings:
    - Summer: 1250 population equivalents; 87,500 GPD; 212.5 lbs BOD5/day; 212.5 lbs TSS/day
    - Winter: 625 population equivalents; 43,750 GPD; 106 lbs BOD5/day, 106 lbs TSS/day
    - 420 EDUs (414 single family/single commercial; 6 EDUs for bars/restaurants)
  - 3/22/1982: DEP Letter (Act 537 Planning Approval Letter) to (Overfield Township, Lake Winola Municipal Authority). The letter did not identify number of original EDUs or connections. The Letter stated that the Department would hold Overfield Township responsible for implementing the sewage disposal plan as described in said plan.
  - 7/19/1989: DEP Letter to Overfield Township noting land developments without Planning approval.
  - 7/24/1990: DEP Planning Approval (Northwood Apartments; DEP No. 2N-66919-012-4): 2.3 acre residential development with 13 apartments. Flows at 3,220 GPD. The letter noted the sewer extension must be designed, constructed, and operated in accordance with the technical standards and practices contained in the Department's Sewerage Manual. All portions of new or modified sewerage facilities included in this planning approval which do not qualify for this permit exemption such as trunk lines, pump stations, force mains, and treatment plants, must obtain a Clean Streams Law permit from the Department prior to construction or modification. The permit exemption under Act 40 applies only to permits under the Clean Streams Law. Other Department permits may be required for construction of the collector system if encroachments to streams of wetlands will result.
  - 12/3/1991: DEP Planning Approval (Kern Subdivision; DEP No. 2N-66919-05-3): 1 lot connection, 500 GPD. Except for those projects qualifying for a permit exemption under Act 40, the developer may need to receive a permit for the extension and construction of the necessary sewer work.

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- 2/5/1992: DEP Planning Approval (Lake Winola Plaza; DEP No. 2N-66919-016-3): 1875 GPD (no number of lots or connections identified). Commercial development including offices, a restaurant, and retail stores. Except for those projects qualifying for a permit exemption under Act 40, the developer may need to receive a permit for the extension and construction of the necessary sewer work.
- 6/5/1992: DEP Planning Approval (Northwood Apartments expansion; DEP No. 2N-66919-014-3): 6 additional units (19 total), 1470 GPD. Except for those projects qualifying for a permit exemption under Act 40, the developer may need to receive a permit for the extension and construction of the necessary sewer work.
- 12/21/1992: DEP Planning Approval (James DeWitt Parcel: DEP No. 2N-66919-021-3): 1 lot, 400 GPD. All portions of new or modified sewerage facilities included in this planning approval which do not qualify for this permit exemption such as trunk lines, pump stations, force mains, and treatment plants, must obtain a Clean Streams Law permit from the Department prior to construction or modification. The permit exemption under Act 40 applies only to permits under the Clean Streams Law. Other Department permits may be required for construction of the collector system if encroachments to streams of wetlands will result.
- 11/23/1993: DEP Planning Approval (Edward Timinskas Development; DEP No. 2N-66919-022-32): 1 lot/400 GPD. All portions of new or modified sewerage facilities included in this planning approval which do not qualify for this permit exemption such as trunk lines, pump stations, force mains, and treatment plants, must obtain a Clean Streams Law permit from the Department prior to construction or modification. The permit exemption under Act 40 applies only to permits under the Clean Streams Law. Other Department permits may be required for construction of the collector system if encroachments to streams of wetlands will result.
- 11/23/1994: DEP Planning Approval (Scott D. Kresge Lands Subdivision; DEP No. 2N-66919-027-32): 1 lot/400 GPD
- 2/27/1996: DEP Letter stating the Walter Reese project did not require Planning module (l lot; 400 GPD).
- 5/17/1996: DEP Letter stating the Williams Kresge did not require Planning module (2 lots/ 1800 GPD)
- 1/7/1997: DEP Letter stating the McLaren Subdivision did not require Planning module (1 lot/400 GPD)
- 3/25/1998: DEP Letter stating the Ron Avery Project (DEP No. 2N-66919-036-3E) did not require Planning Module (1 lot/1200 GPD)
- 7/28/1998: DEP letter stating the Mazzone Township Project (DEP No. 2N-66919-039-3E) did not require Planning Module (2 lots/2,520 GPD)
- 11/2/2002: DEP Letter stating the Edward and Margaret Nauroth Subdivision (DEP No. 2N-66919-053-3E) did not require revising the Act 537 Planning (2 lots/400 GPD)

- **Pump Station WQM Permit**: There is a separate concurrent Part II WQM Permit Application No. 6618401 for an as-built Pumping Station (with larger 300 GPM pumps with VFDs). Permit action was delayed due to compliance issues. State of PS Force Main (built circa 1986 from Pump Station to Lagoon influent manhole) is uncertain.
- **Ammonia-N Limit**: The Authority has indicated that it has not determined the cause(s) of the (year-round) Ammonia-N exceedances (other than vague reference to cold weather impacts not applicable to May through September exceedances). No process analysis or engineering analysis has been provided to the Department to document any Authority investigation. They have chosen to treat the Ammonia-N to come into compliance. The water quality modeling was updated due to the revised Chapter 93 Ammonia-N water quality criteria (after 2018 Draft NPDES permit issuance). The existing site-specific Ammonia-N limits remain adequately protective (if met), at the expected higher discharge pH (7.75 SU) from the copper treatment:

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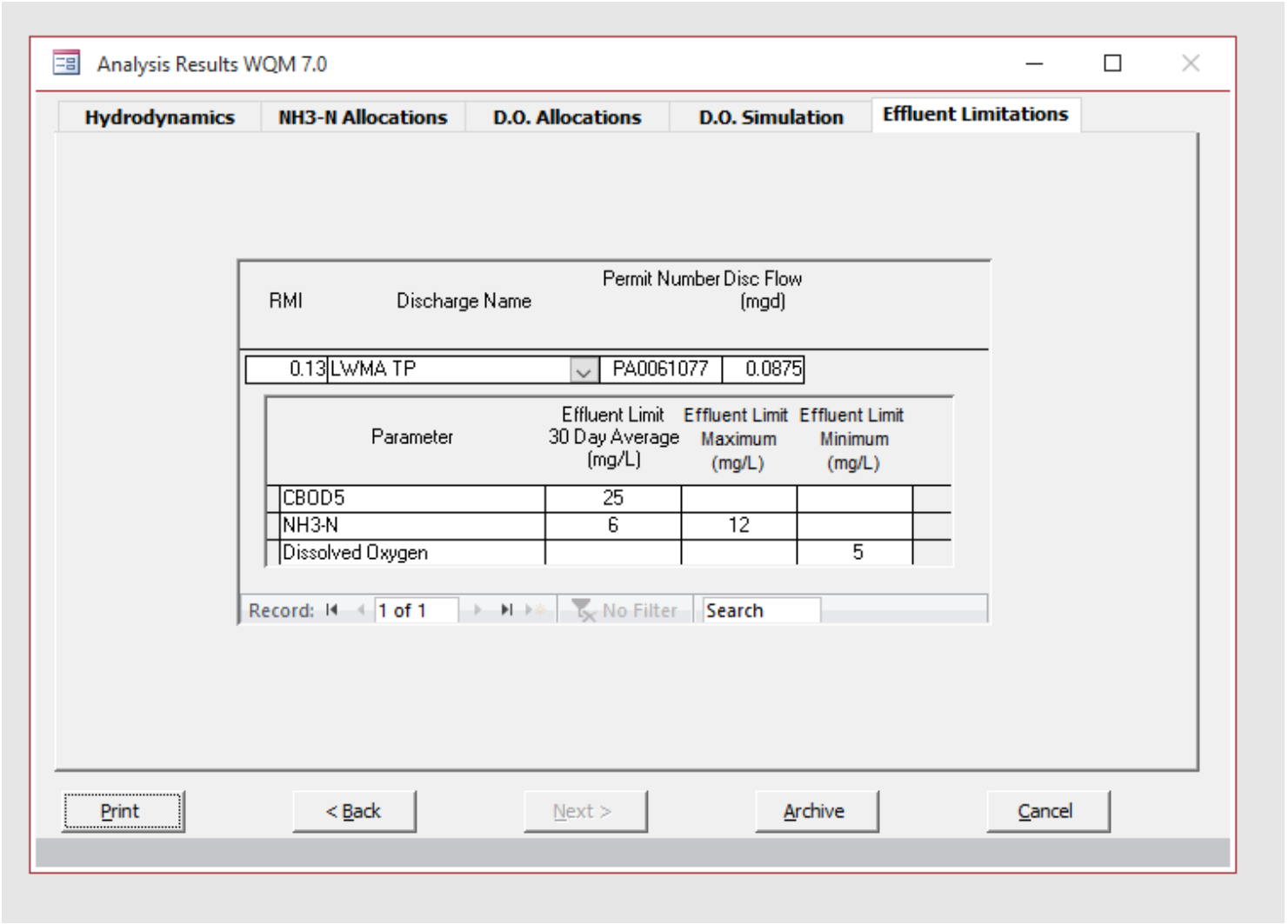

LWMAWQMModel7.pdf

Authority Comments: Only the Authority provided public comments. Due to multiple meetings/letters on overlapping NPDES permitting, WQM permitting, and Noncompliance issues, it is difficult to summarize all NPDES permitting public comments and DEP responses. The more relevant public comments are summarized below. Responses in bold. See the Communications Log for related discussions. Responses bolded.

- **Requests for Meeting before further Department Action**: **See Communications Log (below) for multiple meetings and communications.**
- **Withdrawn Proposed Outfall Relocation**: The Authority withdrew its (multiple) proposals to relocate the Outfall No. 001 (downstream on Mill run; two separately proposed Susquehanna River locations). No further NPDES permit modification or response required. **Due to withdrawal, analysis of the Outfall No. 001 relocation proposals' information has not been included in this fact sheet.**
- **Additional Authority Sampling and Analysis**: The Authority provided additional lead and copper sampling data. See above for changes to the Draft NPDES Permit (copper and lead) due to additional Authority-provided copper and lead sampling data. See the attached Water Quality Modeling and TOXCONC Spreadsheet for the updated Reasonable Potential Analysis using Authority-provided Copper and Lead sampling data. **Additional Authority-**

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provided lead and copper data was incorporated into the Reasonable Potential Analysis, resulting in revisions in the Redraft NPDES Permit. The Authority did not provide additional sampling data (other than copper and lead) from its 10-week sampling plan (then expanded due to initial grab sampling/insensitive ND level issues) which was to include: BOD, Ammonia-Nitrogen, Alkalinity, Hardness, Temperature, Dissolved Oxygen, and pH.

- **Mill Run Q7-10 Low Flow:** The Authority noted the NPDES Permit was based upon the USGS PAStreamstats, with an estimated a low flow yield (LFY) of 0.0093 CFS/square mile. The Authority believes the LFY is low compared to LFY at USGS Gage Locations (0.024 CFS/square mile LFY at the South Branch of Tunkhannock Creek near Montdale; 0.045 CFS/square mile LFY at the Tunkhannock Creek near Tunkhannock gage). The Authority noted the USGS literature states that there are limitations for the use of Streamstats for ungaged streams. The Authority asked for information on how Streamstats was used to determine the LFY.
    - **Department Methodology: USGS PA Streamstats was used to calculate the Q7-10 Flow and Low Flow Yield (LFY) at the provided Outfall Coordinates. PA Streamstats represents the best scientifically-supported available data source for stream low flow conditions for ungaged streams. PAStreamstats uses available site-specific information and regression calculations to calculate flows at the designated coordinates (i.e. it accounts for site-specific differences from the Authority-cited gaged locations). The Authority and its consultants can reproduce the USGS PA Streamstats analysis on the USGS PA Streamstats website. The Authority is also free to provide additional site-specific information to update the DEP water quality modeling or to show the USGS PA Streamstats used incorrect information (as part of Part C.IV water quality modeling refinements).**
    - **Q7-10:**
        - Chapter 96 defines Q7-10 as "The actual or estimated lowest 7 consecutive-day average flow that occurs once in 10 years for a stream with unregulated flow, or the estimated minimum flow for a stream with regulated flow".
        - **The applicable Water Quality Standards are applied at Q7-10 low flow conditions to ensure that the water quality standards are met per Chapter 96 (Water Quality Implementation Standards) requirements. The basic logic is that if the stream water quality standards are adequately protected at Q7-10 low flow conditions, then the stream is being protected at normally higher stream flows.**
    - **LFY: The LFY was calculated by dividing the Streamstats-estimated Q7-10 low flow by the Streamstats-estimated drainage area. The LFY is an input value in DEP Water Quality Modeling (WQM Model 7.1.1 for CBOD5, Ammonia-N, DO; Toxic Management Spreadsheet (TMS) for toxics); TRC Spreadsheet that ensure that applicable water quality standards are not violated in the receiving stream.**
- **Total Copper and Lead Sampling**: The Authority indicated it thought that additional sampling (10 weekly 24-hour composite samples) was warranted before the Department concludes that lead and copper are constituents of concern.
    - Lead: The Authority noted that besides the initial application's 0.094 mg/l lead concentration, it had conducted ten samples at an insensitive non-detect level of 0.005 mg/l (DEP Target Quantitation being 0.001 mg/l). It believes the original sample result to be an outlier that might have resulted from sample contamination or lab error.
    - Copper: The Authority noted that it could also analyze for copper at the DEP Target QL of 0.004 mg/l.

  The Authority subsequently provided additional copper and lead sampling data that was incorporated into the Reasonable Potential Analysis. See above for the new limits. See below for TOXCONC Spreadsheet output. TOXCONC used EPA-approved statistical methods to calculate the Long Term Average Monthly Effluent Concentrations (LTAMEC) and daily Coefficients of Variability (COVs) using the Authority-provided data. Lead no longer requires new WQBELs, only continued monitoring.

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			Reviewer/Permit Engineer:	James Berger
2	**Facility:**	Lake Winola Municipal Authority		
3	**NPDES #:**	PA0061077		
4	**Outfall No:**	001		
5	**n (Samples/Month):**	4		
6				
7				
8	**Parameter**	**Distribution Applied**	**Coefficient of Variation (daily)**	**Avg. Monthly**
9				
10	Copper (mg/L)	Lognormal	1.7940248	0.1049155
11	Lead (mg/L)	Lognormal	0.5183566	0.0031875
12				

- **Proposed Copper and Lead Limitations:** The Authority indicates it belief that the proposed copper and lead limits "are not justified for inclusion in the permit at this time" because: this is a minor sewage treatment plant with no industrial customers (with plumbing being a potential source); there is no existing DEP technology treatment standards for metals removal at minor sewage treatment facilities; and that it is not practical to install and operate advanced treatment technologies at minor sewage treatment plants. **The Department could not concur. The Chapter 93 Water Quality Standards must be complied with. The updated Reasonable Potential Analysis resulted in modification of requirements (updated copper limits; monitoring only for lead). In addition:**
  - **The facility has submitted a Part II WQM permit application that includes copper treatment (adjusting pH to 7.75 SU to precipitate out insoluble copper).**
  - **The Authority did not identify any statutory or regulatory rationale supporting its request for deletion of Water Quality-Based Effluent Limits (WQBELs).**
  - **The Authority is correct that the Department has not developed DEP technology treatment standards for metals for small STPs (i.e. Technology-Based Effluent Limits). However, the absence of a DEP TBEL does not invalidate a WQBEL. In practical terms, even if a DEP TBEL existed, the regulations would require application of the more stringent limit (i.e. no relief could be granted).**
  - **The NPDES Permit Part C.IV (WQBELs for Toxic Pollutants) contains the process where the Authority can explore source reduction and other options to maximize removal of copper and lead from the facility effluent.**
- **Antibacksliding Option**: The Authority noted its belief that if the Outfall was relocated to the Susquehanna River, then it would qualify under an Antibacksliding Exception (40 CFR 122.44(l)2(i)(A) – Material and substantial alteration or additions to the permitted facility occurred after permit issuance which justify the application of less stringent limitation). The Authority subsequently withdrew its proposals to relocate the Outfall. **The comment is moot, given withdrawal of any request to relocate the outfall.**
- **Proposed Part C.II.A Schedule of Compliance for Ammonia-N and Total Residual Chlorine (TRC)**: The Authority proposed the three-year Schedule of Compliance be modified to "provide ample time to complete the necessary engineering studies and design, obtain required permits, obtain financing, advertise for bids, award construction contracts, complete construction and achieve compliance" as follows: Start construction: 36 months of Permit Effective Date (PED); End construction: 54 months of PED; and Compliance with Effluent Limits: 60 months of PED. The Authority subsequently requested a Consent Order & Agreement to allow for resolution of noncompliance issues. A Part II WQM Permit Application No. 6620401 was submitted to address WWTP upgrades (Ammonia-N treatment; Copper Treatment; UV disinfection) that will allow the facility to come into compliance with the existing Ammonia-N Limits and future Copper/TRC limits. A Consent Order & Agreement, with compliance time-frames, is being negotiated. **The 4/13/2023 Consent Order & Agreement is now in effect (with WWTP project required to resolve long-term pattern of noncompliance with existing Ammonia-N and Fecal Coliform limits), but with the project also including copper treatment system by LWMA decision. The Part C.II and Part C.IV Schedules for Compliance (Ammonia-N; Total Residual Chlorine, and Copper) have been adjusted for consistency with the 4/13/2023 CO&A compliance milestones. In practical terms, the WWTP upgrade project includes Ammonia-N treatment units, UV disinfection replacing chlorine disinfection, and a copper treatment system.**

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Compliance History: The April 13, 2023 Consent Order & Agreement, requiring WWTP Upgrading (per this WQM Permit) to resolve a long-term pattern of exceedances, allows for permit action. No open violations per 4/2/2024 WMS Query (Open Violation by Client Number). See below for recent exceedances.

Effluent Violations for Outfall 001, from: April 1, 2023 To: February 29, 2024

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TSS	07/31/23	Avg Mo	34.0	mg/L	30	mg/L
TSS	07/31/23	Wkly Avg	47.0	mg/L	45	mg/L
Fecal Coliform	05/31/23	Geo Mean	1491.0	CFU/100 ml	200	CFU/100 ml
Fecal Coliform	09/30/23	IMAX	1299.7	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform	05/31/23	IMAX	1986.3	CFU/100 ml	1000	CFU/100 ml
Ammonia	10/31/23	Avg Mo	5.0	lbs/day	4.5	lbs/day
Ammonia	09/30/23	Avg Mo	6.0	lbs/day	4.5	lbs/day
Ammonia	07/31/23	Avg Mo	6.00	lbs/day	4.5	lbs/day
Ammonia	05/31/23	Avg Mo	5.0	lbs/day	4.5	lbs/day
Ammonia	10/31/23	Avg Mo	27.7	mg/L	6.0	mg/L
Ammonia	09/30/23	Avg Mo	11.5	mg/L	6.0	mg/L
Ammonia	08/31/23	Avg Mo	12.8	mg/L	6.0	mg/L
Ammonia	07/31/23	Avg Mo	21.4	mg/L	6.0	mg/L
Ammonia	06/30/23	Avg Mo	6.9	mg/L	6.0	mg/L
Ammonia	05/31/23	Avg Mo	12.5	mg/L	6.0	mg/L
Ammonia	10/31/23	Wkly Avg	31.7	mg/L	9.0	mg/L
Ammonia	09/30/23	Wkly Avg	12.3	mg/L	9.0	mg/L
Ammonia	08/31/23	Wkly Avg	16.1	mg/L	9.0	mg/L
Ammonia	07/31/23	Wkly Avg	31.5	mg/L	9.0	mg/L
Ammonia	06/30/23	Wkly Avg	9.44	mg/L	9.0	mg/L
Ammonia	05/31/23	Wkly Avg	14.5	mg/L	9.0	mg/L

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Expanded Communications Log: See original October 25, 2018 Draft NPDES Permit Fact Sheet for previous NPDES permitting-related Communications Log (up to 10/2018 Draft NPDES Permit Renewal issuance). See DEP M&C regarding any separate monitoring & compliance-related communications. Due to overlapping issues, WQM permitting-related communications also listed below:

- **10/25/2018**: Draft NPDES Permit issued for public comment.
- **11/29/2018 (received 12/3/2019)**: Authority (BCM/ATC) E-mail (with attached letter) notifying Department that the Authority recently retained BCM Engineers for engineering services, and request for an additional time for public comments for the NPDES Permit Renewal Application.
- **11/29/2018**: DEP (Berger) E-mail granted the Authority-requested comment period extension to 12/26/2018.
- **12/18/2018 (received 12/19/2018)**: Authority (BCM/ATC Engineers) Letter contained Authority's initial public comments on the Draft NPDES Permit (Mill Creek Q7-10 Low Flow; Possible Outfall Relocation; Total Lead and Total Copper Sampling; Proposed Copper and Lead Effluent Limitations; Antibacksliding; Proposed Compliance Schedule).
- **1/7/2019**: DEP (Berger) E-mail rescheduling Authority-requested meeting, with Authority-requested information regarding: Low Flow Yield (LFY) Calculation Method; Groundwater Monitoring Well Information; response to Request for field survey information.
- **2/13/2019**: Authority (BCM) E-mail with meeting agenda items.
- **2/14/2019**: DEP (Berger) E-mail with additional meeting agenda items
- **2/25/2019**: Meeting Highlights: **NOTE**: Meeting also related to replacement pump station WQM permit application No. 6618401 for which a Predenial Letter had been issued and other issues).
    - **General**:
        - See attendance list for attendees.
        - Review of public comments on Draft NPDES Permit and Response to Pre-Denial Letter (WQM Permit Application) halted until Authority-requested meeting. This is on top of the regulatory minimum 30-day NPDES public comment period that begins upon publication in the PA Bulletin, plus additional 15-days granted upon request.
        - Much of agenda was noted to be the same as previous 2018 meeting with the Authority and its prior engineer (Milnes).
        - Authority noted it had a new engineering team (BCM/ATC).
        - Department noted Predenial Letters are written to get applicant/permittee attention. The Department would not be denying the WQM permit application at this time.
        - The Department noted that the Authority and its new Engineer can include any discoveries (like the installed mixer at pump station) into the WQM permit as a "clean-up".
        - Authority Chairman e-mail address: Buzzmango2@gmail
    - **Missing Upgradient Groundwater Monitoring Well**:
        - They think that an existing water supply well might be the original proposed missing upgradient monitoring well. They will sample it. They think it might be too deep or wrongly placed for groundwater monitoring purposes. The Department indicated that it could not agree that the water supply well was the missing well before the DEP Geologist looks at available information (it might be another well was going to be drilled at a different location than the water supply well).
        - They need to have their own PA PG look at the well and sampling data, and whether the data indicates groundwater contamination, whether the well is giving upgradient data or needs to be replaced.
        - A replacement groundwater well would need a PA PG seal/signature for groundwater aspects and include all applicable information from original application, etc. Their PA PG should talk to the DEP Geologist.
        - As underdrain/groundwater data appears to indicate contamination, there is potential groundwater remediation considerations.
        - If they change from the lagoon to a different treatment technology, that might impact future groundwater monitoring requirements.
    - **Underdrain Sampling and related issues**: Data indicates contamination (fecal coliforms and other coliforms "to numerous to count". The Department is still unsure where the underdrains discharge (whether back to STP or discharge to environment) based on provided drawings (Part II WQM submittal was missing referenced drawings).
        - They plan to remove sludge and inspect the lagoon liners (one basin at a time) and repair/replace the liner all at the same time.

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- A replacement liner would require a Part II WQM Permit application. The Department noted that the ~1985 liner system will not be "replacement-in-kind" due to changes in industry/EPA guidance state of technology since 1985, including 1997 DWFM guidance requirements and major change in liner technology in the RSW Impoundment/Lagoon liner requirements in the late 1980s. The Department is also working on updated DWFM which might have additional requirements (not yet available) that might be out this year. Site-specific considerations (long-term design life, potential need to address groundwater impacts, etc. The Department would ask that any Part II WQM Permit Application state whether the proposed liner/liner system is conforming to DWFM requirements and where it is equivalent to or better.

- **Additional Process Sampling**: The Authority is planning to do additional process monitoring/sampling.
- **Preliminary Pump Station Assessment**: The new engineer (ATC) has been to pump station. They provided some additional information in their submitted response to the Predenial Letter (new mixer in Pump Station; pump drawdown test result). They noted the pump station flow goes to manhole and then gravity discharges to lagoon. They plan to verify force main sizing and potential clogging problems.
  - Submittal-referenced missing drawings and other information. Needed.
  - Need new PA PE Engineer to take responsibility for the entire project/application.
  - Need three copies of WQM Permit Application will all information.
  - Need some commitment (to be incorporated into Part C conditions) about how they will verify that the oversized pump station pumps (oversized to begin with, increased in size) is not negatively impacting the lagoon hydraulics and biology with schedule.
- **Preliminary Treatment Plant Assessment**:
  - The new Engineer has been to the Treatment Plant, and have concluded the aging plant needs work. They will inspect lagoon aeration system when they remove sludge and inspect/repair/replace the lagoon liner system.
  - The Department noted that EDMR and earlier site-visit found the Authority operator was not doing 24-hour composite sampling as previously agreed to. Site visit indicated composite sampler in place but not used. The sampler has a log, so that it can be shown to have been used on past sampling dates, then EDMR can be updated to show what sampling was composite versus grab sampling. Department recommended EDMR note be added when 24-hour composite sampling starts.
  - The Authority noted it might change its operator. If they change operators, they should let the Department know by letter and copy of Operators license. Department will e-mail list of circuit riders to Authority for informational purposes. The Department cannot recommend an operator.
  - DEP Technical Assistance is down to one person for entire state, but can see if he can come out to facility. EPA has also indicated it can supply someone to do compliance assistance (but said to have limited knowledge of lagoon systems).
- **Ammonia-N Alternatives**: They looked at some options with some preliminary cost estimates. Gave copy of Authority document to DEP Permit Chief (did not have copies to distribute for discussion):
  - Lagoon Rehab plus SAGR System:
    - Liner rehab might include liner replacement after inspection, looking at aeration system, etc.
    - They thought there was not yet any SAGR system permitted in PA, but it is in use elsewhere. Department noted that they were aware of the system and could permit it. Any WQM Permit will have O&M conditions for sake of Authority (new technology can be a problem to operators unfamiliar with it), and Plan B in case it does not work out in practice. It does not have to be an experimental WQM permit.
  - Abandon Lagoons for SBRs: This is also an option. There are Draft DWFM SBR requirements that can be provided if the Authority goes for this option.
  - Lagoon Rehab with Outfall Extension to Susquehanna River:
    - They can propose a new outfall location anywhere they want. As discussed in earlier meetings, they can choose anywhere and should provide any site-specific information on the new outfall location.
    - They only provided proposed coordinates. The Department used best available information and determined the location was still on Mill Run during the Q7-10 low flow period.
    - Unless outfall is shown to be on the River, there can be no relief on existing ammonia-N limits due to antibacksliding.
    - Best information is that the proposed new location is still on Mill Run during Q7-10 flow periods, with Lagrange Island between proposed outfall and main River Channel. They can

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provide site-specific information if they think the outfall location receives river flow. Department would need a PA PE-sealed evaluation to show river presence during Q7-10 flow conditions and to quantify Q7-10 river flow at that location.
    - Authority Options: Includes different outfall location that is not impacted by island stream splitting or extending outfall past island to main river channel.
  - Outfall Extension to River (no Lagoon Rehab): Not an option. The Authority will have to repair liner system and otherwise try to get the lagoons to functioning correctly. The February through July Ammonia-N violations means something is not working right with the existing lagoons that must be corrected.
  - Funding Options: Program Manager offered to set up meeting with PENNVEST to discuss funding options. He noted that a CO&A helps facilities obtain PENNVEST funding.
- **Draft NPDES Permit**:
  - Schedule of Compliance:
    - They can propose an alternate schedule of compliance with task milestones to come into compliance with permitting and compliance requirements within the 5-year permit term.
    - Going beyond the 5-year permit term requires a Consent Decree from a Court of Competent Jurisdiction (not a CO&A). Milestones cannot be more than 1 year apart per regulation.
    - The CO&A Schedule is a more enforceable document that the NPDES Permit Schedule.
    - Q7-10 flows and Existing Ammonia versus Proposed Metals (copper & lead) Limits:
  - Ammonia-N: If they go to River location for outfall, then dilution would allow for the Department to see if proposed metal limits can drop out or be reduced to monitoring. If they do not go to River, then antibacksliding rule would not allow for less stringent ammonia-N limits whatever the Q7-10 flow on Mill Run.
  - Metals: The Authority indicated it was concerned that meeting metal limits would be more difficult than meeting ammonia-N limits.
  - Q7-10 Flows: The USGS PAStreamstats was used to estimate Q7-10 low flows at the existing Outfall location. It is the best method of identifying Q7-10 flows in the absence of a stream gage.
    - Authority asked why the Department used PAStreamstats: The regulations require the Department to review NPDES Permit Renewals all over again. USGS PAStreamstats is best available information unless there is a stream gage or stream regulation (dams, etc.). The Authority did not know if the previously used Q7-10 flow would eliminate metals limits or not (had problems running DEP modeling program).
    - Authority asked if Department can consider alternatives: The Department would consider any technical justification for an alternative Q7-10 flow.
    - Authority indicated it might talk to DEP Central Office about reasons why PAStreamstats should not be used: They cited CSL Section 5 for technical judgment. Complained of burden on small facilities to provide better site-specific stream flow data. Asked where previous facility NPDES Permit got their Q7-10 flows from.
  - Lead and Copper Sampling: Yes, the Authority can do additional lead and copper sampling (24-hour composite sampling meeting DEP Target QLs) to see if that would impact the need for limits. They had done so already, but lead analysis did not meet Target QL.
  - Proposed Copper and Lead Limits: Not effective for three years. If they can show that they are not needed, then they can submit an application for NPDES permit amendment to remove the limits from the permit.
  - Antibacksliding: It would take an application for major NPDES Permit Amendment that addressed all antibacksliding exception requirements to get relief from existing ammonia-N limits.
- **Civil Penalty**:
  - The Department had gone over the civil penalties in a prior compliance meeting ($79,000 back then with additional penalties for not doing composite sampling or anything else since then). DEP had thought sludge would be removed from lagoons, 24-hour composite sampling would be done, and that a compliance schedule would be submitted by April 2018.
  - Authority denied remembering penalties would be coming (amount to be negotiated). The Department noted that it makes that clear in its standard penalty discussions with everyone.
  - Authority denied committing to sludge removal. They have measured sludge depth. They are planning to remove sludge, inspect liner, and do repair/replacement if needed.
  - Authority did not remember an April submittal requirement.

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        - There will be a penalty for previous violations documented in multiple past NOVs and whatever has occurred since then. A CO&A will also have stipulated penalties in event compliance milestones are not met. Authority members did not recall previous discussion about mandatory penalty. Department noted third parties are following civil penalties and suing to get that money from permittees.
        - Authority members complained that they were not told about previous violations by their prior Chairman or prior Engineer or current licensed operator.
    - **Conclusion**:
        - Need compliance schedule for CO&A and permitting with milestones for coming into compliance; missing well data
        - DEP has not finished its review of public comments and predenial letter response (see above feedback).
- **~March 2019**: 2018 Chapter 94 Report received. Mentioned lagoon liner patching as did the 2019 Chapter 94 Report. **NOTE**: 2019 Chapter 94 Report Copy came in with the revised August 2020 WQM Permit Application No. 6620401.
- **4/8/2019**: DEP (Berger) E-mail asking for status of Authority-proposed submittals (as discussed in 2/20/2019 Meeting) and noting what was needed for the NPDES Permit Renewal Application, WQM Permit Application (replacement pump station) and replacement groundwater monitoring well.
- **4/10/2019**: Authority (BCM/ATC) Response to 4/8/2019 DEP (Berger) E-mail. It stated the Authority "was making progress since we last met, and have a draft compliance schedule prepared. I wanted to discuss it with the Authority Board at their meeting tonight before finalization. I intend to provide a more formal reply to your inquiry following the meeting".
- **4/23/2019 (received 4/29/2019)**: Authority (BCM/ATC) Letter on both NPDES Permit Renewal and WQM Permit Application (Pump Station) including:
    - Two compliance schedules for Department Consideration
    - 10-week sampling schedule for metals (copper and lead) as well as BOD, Ammonia-Nitrogen, Alkalinity, Hardness, Temperature, Dissolved Oxygen, and pH.
    - Two construction Drawings (Yard piping; Sections and Details Aerated Lagoons)
    - Lagoon liner replacement to be included in the plant compliance schedule/program
    - No additional information or public comments were anticipated to be submitted for the Draft NPDES Permit.
    - The Authority confirmed that there are no other wells except for the three identified in the WQM Permit (two shall and 1 deep well).
    - BCM geologist visited the WWTP on 4/9/2019 to assess the apparent water supply and groundwater wells, and to sample them for fecal coliform. BCM indicated it would provide "a report on his findings, including the potential need for installation of an up gradient monitoring well, upon his completion".
    - The Authority "will coordinate with PADEP's Geologists, and submit a WQM Permit for any replacement groundwater wells recommended by BCM's professional geologist".
- **5/14/2019**: DEP (Berger) E-mail approving 10-week sampling schedule (report due 8/1/2019); discussed antibacksliding exception requirements (Ammonia-N); discussed conflicting/incomplete schedules of compliance; requesting time-frame for lagoon sludge removal and liner replacement; requested status for Part II WQM Permit Application resubmittal; requested status for replacement groundwater monitoring well replacement; request for follow-up technical meeting to discuss Authority letter issues; need for detailed agenda to allow for productive meetings, etc.
- **5/20/2019 (received 5/23/2019)**: Authority (BCM/ATC Engineers) Letter (responding to 4/8/2019 DEP (Berger) E-mail. asking for update of NPDES Permit Renewal Application (and concurrent WQM Permit Application) in accordance with February 15, 2019 Meeting discussions (on both permits and on Replacement Groundwater Monitoring Well WQM Permit Application). Letter indicated Authority recognized that there would be only one compliance schedule; stated Authority belief that contamination is not from STP lagoons; indicate revised Part II WQM Permit Application (Pump Station) would be submitted separately; stated Authority belief that all WQM permitted groundwater wells were installed; etc.
- **5/21/2019**: Authority (BCM/ATC) Letter with attached May 21, 2019 Groundwater Sampling and Site Inspection Summary Letter
- **5/29/2019**: Telephone call between Authority Engineer (Kresge) and DEP Geologist (John Hannigan) documented in internal 5/29/2019 DEP (Hannigan) E-mail: The DEP Geologist E-mail discussion highlights included:
    - Authority engineer agreed lagoon liner system needs replacement.
    - Current groundwater monitoring system should be completed by installing third (or more) groundwater monitoring wells.

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- The completion of the hydrogeologic plan should allow the Department and Authority to conclude the magnitude of any operational releases from the facility.
- The plan should allow for some time for planning, designing, and procuring funding for a long term physical plant (with lagoon technology or more advanced tertiary treatment)
- DEP Geologist provided his contact information for the Authority's PG.

- **7/17/2019**: Authority (Kresge) E-mail asking for a meeting.
- **7/18/2019**: DEP (Berger) E-mail reminder to Authority Engineer about submitting the 10-week sampling results and any other information the Authority wanted the Department to consider in NPDES Permitting. The meeting would be scheduled after receipt of the required information are receipt of a detailed meeting agenda.
- **7/31/2019 E-mail (received)**: Authority (BCM/ATC) Letter contained the results of their 10-week sampling program and investigation into extending the LWMA Outfall to Susquehanna River (proposed coordinates; "bathymetric survey"; Plant Discharge Relocation Drawings); meeting request agenda on the two items (excluding Part II WQM Permit Application).
- **10/30/2019 Meeting Highlights**: Different Authority letters requested meetings to discuss different topics. This meeting was then scheduled. **NOTE**: The Authority Engineer provided its own meeting notes as an attachment to the 2/21/2020 Authority (BCM) E-mail.
  - **Attendees**:
    - Authority was represented by its consultant: Richard Kresge (ATC/BCM), Mike Brunamonti (ATC/BCM), and Joshua Owens (ATC).
    - DEP was represented by: Bharat Patel, Amy Bellanca, Pat Musinski, Sandra Insalaco, Kelsey Glanz, and this reviewer.
  - **Opening**:
    - **The Authority has to decide on what it wants to do**: The Department will address whatever the Authority decides to do in the permitting and any CO&A. The Authority might need a Plan B if their Plan A does not work (unable to get landowner permission for new outfall, etc.).
    - **New Certified Operator at WWTP**: The Authority or Operator (company) will send in letter identify new operator, his license number, new operator start-date, and contact information to the Department. The Authority thought he was already making a difference.
  - **Ten Week Sampling results**: No relief for existing Mill Creek Outfall's proposed discharge limits for copper and lead using the submitted data. The data was used in the TOXCONC spreadsheet (that uses EPA-approved statistical methods to calculate the Long Term Average Monthly Effluent Concentration (LTAMEC) and coefficient of variability that are then entered into Toxic Screening Spreadsheet and DEP PENTOXSD Water Quality Modeling to determine if limits or monitoring is needed. The basic logic for determining limits is spelled out in DEP SOPs on the DEP website (>50% WQBELs trigger permit limits). The LTAMEC did not become lower. There was a Copper spike to 111 ug/l (above WQBEL) and Lead LTAMEC was still at 5 ug/l in the 10 Weeks data.
    - They said first Ten week sampling data was grab sampling only (not good). This would not matter due to copper spiking above the WQBEL during 2nd Ten Week sampling. Only 2nd sampling run data used for lead.
    - They asked for copy of TOXCONC spreadsheet. **NOTE**: Provided by 10/30/2019 E-mail.
    - They said that they could not run PENTOXSD (available via DEP website). The Department said that their IT guys might have to get involved as the DEP PENTOXSD program still has DOS computer language which has been a problem to other users.
    - They said they had some insensitive ND values for some weeks' sampling (lab issues). They will supply lab sheets and MDL, and Department will see if the data helps in a more accurate LTAMEC for use in Reasonable Potential Analysis (Toxic Screening Spreadsheet and PENTOXSD modeling). The results and updated PENTOXSD modeling run will be provided.
    - The more sampling data points the better for a more accurate LTAMEC (unless spiking occurs). The TOXCONC Spreadsheet can take 100 sampling events (2 years of weekly sampling provides 104 samples) into account. If they have reason to discount previous data (previous corrective work in reducing copper levels for example), the TOXCONC could be run with new data.
    - They were provided the most recent WQBEL SOP. The Authority would be able to decide what they want to do in the TRE part. There would be a greater burden of proof on the Authority if its final conclusion was nothing can be done in terms of meeting new WQBELs (i.e. they would have to make that case). At that point, they could look at site-specific water quality criteria, but that requires both EPA/Central Office approval of the plan upfront as well as the conclusions, with EPA no longer

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accepting copper Water Effects Ratio (WER) options. BLMs are accepted. The DEP is developing a new Copper SOP that would become effective before the effective date of any new copper permit limits.

- They had a general question that if all effluent data is below the WQBEL, should that not allow for deletion of limit also? The Department said that it would discuss the question with Central Office.
- They noted that they might ask for a meeting with DEP Central Office regarding Copper issues, any flexibility in determining Q7-10 flows, etc. The Department noted that they could request such a meeting. Sean Furjanic can be contacted directly.
- The Department noted that application requirements have changed regarding metals sampling data, but once metals data was provided per previous application requirements and modeling done, then the Department cannot arbitrarily forget about them.

NOTE: Requested TOXCONC Spreadsheet and EPA BASINS software link e-mailed to Mr. Brunamonti on 10/30/2019.

- **Outfall Relocation Options**:
  - **Previous Conceptual Outfall Relocation (still on Mill Creek per USGS PAStreamstats) Discharge**: Their review indicated no River contribution at that location during Q7-10 flow to their surprise.
  - **Conceptual Susquehanna River Outfall Previously Identified**: The Authority indicated this Outfall was not workable.
    - New location would allow for less stringent Ammonia-N limits (25 mg/l monthly average; 50 mg/l IMAX Summer; Winter monitoring), and no metals limits per preliminary water quality modeling. The Department would need a commitment for the new Outfall location within the 5-year NPDES Permit term to incorporate new Outfall/limits into Redraft NPDES permit. An antibacksliding exception request and probably new public notice (for new Outfall location) would be needed.
    - They are skeptical landowner will allow for 1700 LF pipeline/outfall to that part of his property. They have not talked to Norfolk Southern Railroad about the crossing, and think that would be a matter of meeting their design requirements only.
  - **Meeting-Proposed Outfall Option**: They had another Outfall proposal. Looking at the Bathymetric Drawing C102 (Q7-10 low flow condition), they think that they can move the Outfall to the River location (kept segregated from Mill Run itself that extends southward along Lagrange Island during Q7-10 conditions) where the flow would discharge to a depression/ponding area, that would then fill up and discharge northward around Lagrange Island to the River. They think the landowner would be willing for this extension per discussion about original relocation concept. They think it would only be a matter of meeting Norfolk Southern Railroad design requirements to go under railroad.
    - They can propose their new outfall location if they provide details. They need to show the proposed drainage route to River on the drawings.
    - The Department indicated it would discuss the concept with Central Office.
    - The Department noted that they should use DFLOW (using stream gage data) because the drainage area is outside of USGS PAStreamstats regression range. The Department got a lower Q7-10 flow using BASINS DFLOW gage calculations.
    - The Department noted that stream changes would occur over time, especially after flooding events.
    - The Department would check to see if BASINS is a publicly available program. **NOTE**: Link to the EPA BASINS program downloading webpage e-mailed on 10/30/2019.
    - USGS PAStreamstats is now being used for non-gaged streams unless better site-specific information is available (dam discharges, stream regulation, etc.) in all DEP Regions. River locations can also be outside PAStreamstats regression equation ranges.

    NOTE: JR indicated there had been a sampling location upstream on Mill Creek (above railroad crossing) but they did not know how much River flow on that side of Lagrange Island during low flow conditions per 10/30/2019 conversation.
- **Ammonia-N Issues/Authority Process Evaluation)**: They did April-June process monitoring (BOD, Ammonia-N, Alkalinity, Hardness, Temperature, DO, and pH at influent, Lagoon No. 1 discharge to other lagoons, and effluent along with the metals sampling). Only effluent sampling was composite (verified by the consultant). The data is available, but not yet in spreadsheet format. **They have not done the analysis of**

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the data to determine the causes for Ammonia-N exceedances or for determining potential process improvements to bring lagoon design into compliance.

- The Department noted that the process analysis is important for Authority decision-making in terms of whether lagoons have to be replaced by some other treatment technology option.
- Operator has recommended WWTP changes (soda ash for pH control) separately. If the Authority wants to modify WWTP process by soda ash for pH control or other improvement, then they can send in a NPDES Permit Part A.III.C.1 (Planned Changes to Physical Plant) notification, copying DEP M&C. The Department noted pH and alkalinity control is often done at lagoon treatment units. The Department noted results of process improvements might take time to show (lagoon sizing, violations appear to generally run from January to September per 2018/2019 data if DMR sampling data is representative though some trends might be detectable).
- The Department recommended bringing the new operator into the process analysis and engineering reviews also.

- **Lagoons and Groundwater Related Issues**: They think that they can get the groundwater information, etc. to the DEP Geologist within 15 – 30 days.
  - They have been in contact with the DEP Geologist John Hannigan and have already provided some requested information on new well location, etc.
  - They blame initial underdrain contamination evidence on wildlife, and have raised the underdrain manhole lid elevation to keep wildlife fecals out. They think subsequent sampling supports this.
  - They might do analysis to determine if fecals are of human origin, but need to talk to DEP Geologist about the test method (or DEP Biologist for what is accepted for stream sampling) to verify method acceptability. DEP Stream sampling uses a method that counts human DNA markers as opposed to DNA markers from different classes of wildlife.
  - They have installed the new groundwater monitoring well and have been sampling (including underdrain sampling). Sampling will be finished in a week or two. The DEP supplied a copy of the Groundwater Monitoring Data Report Form for their use at the meeting.
  - They are developing and getting ready to submit the requested Hydrogeologic Report, including Module 19 (Supplemental Geology and Groundwater Information) that will define any current contamination issue, etc.
  - The Department noted the above information is also important for replacement lagoon liner system design requirements:
    - Depth to high water elevation: Other 1980s lagoon liner system have had only a foot or two of separation of their liner system from high water levels, bringing up design issues and rendering underdrains unusable for leak detection.
    - If there is existing groundwater contamination, then an engineered leak detection zone might be required if new versus old contamination cannot be distinguished by groundwater monitoring. The DEP Geologist would have to agree that this is possible.
    - Underdrain conditions are unknown (composition of pipes is also uncertain per Authority engineer). If contaminated, then underdrain discharges might become permitted outfall monitoring points unless drainage is rerouted back to the lagoons.
- **Lagoons**:
  - **Liner Replacement**:
    - They had been thinking about straight replacement of old Hypalon liner (20 year design life and >30 years old). They may also now inspect condition of underdrains.
    - Department noted site-specific issues (see above) might require an engineered leak detection zone, regardless of future DWFM revisions (not yet issued for public comment and generally wastewater ponds standard being applied at new sites without any pre-existing groundwater contamination). Authority Engineer indicated at some point, the cost-benefits ratio might lead to need to replace lagoons with new treatment unit.
    - The Department might supply Draft DWFM sections (with above caveats).
  - **Supplemental Treatment**: They have been looking at the SAGR system (back-end supplemental treatment unit). They understood the technology vendors had given a presentation to DEP NERO. DEP was unsure whether there is another active SAGR application or permit in Pennsylvania, but that it would entertain the technology. Additional O&M planning might be needed due to newness of technology. Another SAGR project was dropped, but that project was subject to additional anti-degradation requirements not applicable to this site.

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- **WQM Permit Application (Pump Station Replacement)**: They will provide a PA PE judgment that the Pump Station pump oversizing is not a contributing factor to ammonia-N issues in the lagoon system. The submittal is stand-alone (other than no fee) not incorporating earlier Milnes work by reference. The Department noted they did not address all Checklist requirements.
- **Future**:
  - **Authority**:
    - The Authority has to decide on what it wants to do.
    - The Authority will get the additional information into the Department. The Department will then get back to them about whether the meeting-proposed Outfall location is possible and if any change in metals limits due to revised TOXCONC analysis.
  - **Redraft NPDES Permit**: If they commit to a new Outfall location in the next 5-year permit term, a Redraft NPDES Permit (with the new Outfall) would be issued for public comment. A Redraft might contain other changes. If they cannot commit to a definite solution at this time, then a generic schedule of compliance can be used.
  - **Final NPDES Permit**: If no substantial changes are needed in the Draft or Redraft NPDES permit, then the Department could issue a Final NPDES Permit as long as DEP M&C concurred that compliance issues are being addressed.

- **11/6/2019**: Authority (Owens) E-mail with details of their bathymetric survey.
- **11/6/2019**: DEP (Berger) E-mail noting NPDES Permitting requirements for three hard copies of any NPDES permit revisions.
- **11/11/2019**: Lake Winola (BCM Engineer) E-mailed submittal of lab sheets for updating TOXCONC spreadsheet to eliminate potential biasing by insensitive ND concentrations when more sensitive MDL (5/14/2019 and 5/23/2019). Plant Effluent had 12.1 ug/l copper and 1.6J ug/l lead in 5/14/2019 Sample (24-hour composite sample) and 8.1J ug/l copper and 0.96J ug/l lead in 5/23/2019 Sample (24-hour composite sample).
- **2/21/2020**: Berger E-mail providing feedback on conceptual outfall relocation per Authority request. The Authority submittal did not contain adequate information to determine feasibility or Preliminary Effluent Limits at this time. The Authority can pursue this concept during the Final NPDES Permit Schedule of Compliance time-frames if desired, if it can address the issues noted in the E-mail. E-mail requested any NPDES Permit Renewal Updates, updates on status of WQM permit applications (replacement groundwater monitoring well; replacement liner system; anything else needed), any updated groundwater monitoring/underdrain data/evaluation, and any further feedback on the Draft CO&A **by March 13, 2020**.
- **2/21/2020:** Authority (Kresge) E-mail that contained their 10/30/2019 Meeting notes; Metal data; replacement pump station-related information, and assorted e-mail copies.
  - **E-mail Item 3:** You have mentioned on multiple occasions that pending updates for new Lagoon technology are in "draft" form. We have attempted unsuccessfully to secure any such information from PADEP's website, or from you directly. Please forward this information, or direct us to its location so that we can evaluate the requirements. Significantly more stringent standards for lagoon treatment systems than what presently exists would obviously have a significant impact on the Authority's finances, and may cause them to consider alternative forms of treatment. LWMA is willing to commit to a compliance schedule, but they would conversely appreciate commitment from the Department that the path they follow will not be abruptly altered mid-design or permitting.
  - **BCM Meeting Notes: See above for 10/30/2020 DEP Engineer Meeting highlights.**
- **3/6/2020**: Internal DEP Geologist E-mail indicating that he had received a hydro report regarding the wastewater treatment impoundments at Lake Winola and spoken to their LPG.
- **7/2/2020: Separate WQM Permit Application No. 6620401 received (with impacts on NPDES permitting requirements). Changes include UV disinfection, Ammonia-N treatment units (SAGR), Copper Treatment Units (soda ash pH adjustment followed by pressure filtration), lagoon modification. Addressed here due to impact on NPDES Permitting. Related:**
  - **7/2/2020:** Authority (Kresge) e-mail indicating that he had tried to send PDF versions of WQM permit application to Department but that it was undeliverable. NOTE: On-Base will now allow for electronic WQM permit submittals.
  - **7/20/2020**: DEP WQM Permit Application Incompleteness letter issued via E-mail.
  - **8/20/2020**: Response to Incompleteness letter received
  - **8/21/2020**: Authority (Kresge) E-mail indicating incorrect GIF submitted with revised application and would be mailed in. Revised GIF Hard copy received subsequently (not date stamped).

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- **8/24/2020**: DEP (Berger) E-mail requiring hard copy
- **8/24/2020**: Authority (Kresge) E-mail indicating a hard copy of the GIF would be submitted. GIF later received (no stamp in date for exact date of receipt).

- **10/13/2020:** Conference Call Highlights on August 20, 2020 Revised WQM Permit Application No. 6620401 (WWTP Upgrade including: SAGR ammonia-N treatment unit; copper treatment unit (pH adjustment); UV disinfection; new liners/potential modification of existing lagoons); new/relocated groundwater monitoring points; new effluent flow meter; new electrical generator, etc.) completeness review issues. **Addressed here due to WWTP upgrade impact on NPDES Permitting.** Highlights:
  - **Participants:**
    - **DEP:** Bharat Patel (CW Program Manager), Amy Bellanca (CW Permits Chief), James Berger (CW Engineer)
    - **LWMA:** Ron Manglaviti (Authority Chairman)
    - **ATC Group/BCM Engineers**: Richard Kresge, John Divine, Joshua Owens (WQM Design Engineer), Phil Gray (LPG)
    - **Others:** State Senator Lisa Baker and Chris Ramsay
  - **Introduction**: Conference call scheduled instead of letters to speed permitting process. Authority is interested in PENNVEST funding and the pathway forward for permitting and PENNVEST funding. The Department regards this project as a beneficial WWTP upgrade to resolve ammonia-N issues, etc.
  - **Overlapping PENNVEST/WQM Permitting Issues (7/20/2020 Letter Item 1.a)**: DEP SOP (Sewage Treatment Plant WQM permitting SOP) requires DEP permitting section also look at PENNVEST issues when PENNVEST funding is sought. There is also coordination between WQM permit and PENNVEST applications.
    - **New Planning & Design Loads**: Planning approval documents required for both PENNVEST and Part II WQM permitting. Application differs from 1985 WQM No. 6685401 permitting (design flows/loading plus 449 grinder pumps and 10 duplex pumps total versus 520 pumps cited in 2019 Chapter 94 Report).
      - The Authority will go back to original 1985 WQM permitted design flows/loadings. The Authority is not pursuing rerating now.
      - The Authority will let DEP know the number of existing pump connections (simplex, duplex, other) to LPS System. Authority indicated ~500 connections at present. Current flows are less than ~55,000 GPD.
      - The Authority will check to see if there is any post-1985 Planning changes and/or correspondence to allow additional connections (>449/10 pump/connections) to the LPS. Any info will be submitted to DEP.
      - Scott Novatnak (DEP Planning) can be contacted for future Planning updating if needed. There is a Module process for updating Act 537 Planning.
      - Future Redraft NPDES Permit will include influent flow monitoring/reporting. Authority needs to calibrate 1985 WQM-permitted influent flow meter and makes sure influent flow-paced 24-hour composite sampling is tied to influent flow meter for unbiased influent data. (Lagoon influent/effluent flows can substantially differ for extended times, biasing loading calculations.) Authority was uncertain if the influent flow-proportional composite sampler was tied to the influent flow meter or the effluent flow meter.
      - BR noted that PENNVEST no longer has the one-year post-construction certification process to meet design goals.
    - **Authority will discuss PENNVEST questions with PENNVEST**:
      - Impact on PENNVEST rating if lagoons will not meet current DWFM standards. Anything that meets DWFM standards is on par with other technologies/projects.
      - What can and cannot be covered under PENNVEST change-order process. Some lagoon-related contingency plans might result in substantial costs to the Authority if not covered by PENNVEST. Authority indicated PENNVEST application budgeted for some expenses.
  - **Groundwater-related**: Replacement (upgradient) groundwater well installed. Project includes new replacement downgradient groundwater well and modification of second downgradient well. All information needs to be in the WQM Permit Application to allow permitting of changes. Future WQM permit will clarify monitoring requirements.
    - **Undefined Liner, Subbase, Underdrain/subgrade Condition**: The Authority and Department agreed that the condition of the non-visible liner areas (patching in visible areas), subbase, and

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underdrains/subgrade are unknown. Concern of possible releases to subgrade. **NOTE**: Also general concern if underdrains require replacement and/or if subbase materials not meeting replacement liner CQA requirements or if high groundwater elevations impact liner system (including underdrains).

- **Potential Impact on Lagoon Design**: Groundwater issues (conditions; potential groundwater impacts on Lagoon/SAGR Unit liner systems; effectiveness of existing groundwater monitoring system (including existing underdrains) in the absence of a liner's engineered leak detection zone) are potential drivers for lagoon liner system design changes.
  - Upfront groundwater-related clarifications are needed for permitting.
  - DEP Geologist Comment relayed: The underdrain that showed biological contamination detail is not understood. A new engineered/constructed witness system is warranted by the data presented. This system is the most important work that should be confirmed. It would act as the first indicator of operational failure for the new permit. With a detailed and appropriate witness system below the reconstructed impoundments some existing hydrogeological monitoring physical appurtenances (like existing wells) can be incorporated into a new monitoring system permit.
- Authority will supply:
  - Missing 2020 replacement well hydrogeological report and sampling data (7/20/2020 DEP Letter Item 1.b.iii.2). Will be e-mailed by Authority. The Authority LPG indicated static groundwater levels in the monitoring wells were not accurate in terms of groundwater levels under the lagoons. He also indicated groundwater elevations changed under the lagoons.
  - Missing requested sampling data table with trend analysis (7/20/2020 DEP Letter Item 1.b.iii.3).
  - Missing detailed inspection/contingency plans for liner inspection (to identify potential releases to subgrade), subbase inspection, underdrain/subgrade inspection, etc. (7/20/2020 DEP Letter Item 1.b.iii.4).
    - Authority indicated contractors will have specified obligations and that PENNVEST line items cover potential costs.
    - DEP stated certifying engineer (WQM Permit Postconstruction Certification) will have to be involved.
- Completeness Review comments on August 2020 Application information:
  - Construction details of the most critical downgradient wells (MW-1, and MW-2) was not detailed.
  - Some inconsistencies in describing the static groundwater levels.
  - A single groundwater cross section through the site plan with appropriate scaling needed. Engineer drawing or Design Engineer Report needs to also identify minimum distance between Lagoon and SAGR system liners and/or underdrains from high groundwater level.
  - Another round of groundwater monitoring well/underdrain sampling wanted.
  - Not all wanted constituents were sampled for, including chlorides.
    - See 7/20/2020 Letter Item 1.b.iii.3 for constituents. List might be expanded in future monitoring requirements.
    - See Module 19 Hydrology Section Item 7 (Background Water Quality) background sampling constituents for upgradient well.
  - Other Module 19 (Supplementary Geology and Groundwater Information):
    - Any 1985 WQM Permitting Module 5A information not superseded will be regarded as still valid (underdrain or other). Incorporate information or attach copy to Application.
    - Missing Module 19-required Topographic Map with all required information.
    - Needs to address all groundwater monitoring points (3 wells and underdrains)

- **Lagoon Impoundments (7/20/2020 Letter Items 1 and 4.b)**:
  - **Module 20 (Impoundments)**:
    - Will be submitted to document lagoon design/construction/operations. Lagoons will not have to meet current DWFM standards unless groundwater issues require (see above) and/or lagoons/lagoon operation must be substantially modified to ensure adequate influent quality to SAGR System year-round. (Examples would include short-circuiting lagoon/lagoons treatment to maintain adequate food for the SAGR system.)

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- Authority Engineer (ATC Group/BCM) indicated the Authority might have someone else do the WQM Postconstruction Certification.
- **Maintenance versus Modification**: The Authority Engineer claimed that this was not a lagoon modification, only maintenance not requiring a Module 20. The Authority indicated the fear was that the project might become subject to new (post-1985) requirements and regulations. The Department noted the reasons that might require substantial lagoon modification included groundwater issues (see above) and potential need to modify lagoons/lagoon operations to sustain the SAGR System biological treatment process (see above). The Authority agreed to submit the Module 20.

▪ **Lagoon/SAGR System Loadings:**
- Original 1985 Lagoon operating plan obsolete.
- Complete NEXOM lagoon/SAGR system worksheets with site-specific lagoon and wastewater information. Calibrate worksheets with existing wastewater quality data. Determine the minimum influent requirements for SAGR System biological treatment effectiveness to achieve/sustain required treatment (year-round with seasonal loadings).
- Address lagoon aeration system in Module 5 (Aeration) and verify adequacy.

▪ **SAGR System (7/20/2020 Letter Item 9.c)**:
- Preliminary DEP look-over indicates revised Ammonia-N Water Quality Standards (awaiting EPA approval) would not impact future Redraft NPDES Permit Ammonia-N limits at this time.
- The Design Engineer is responsible for all aspects of design, but a technology provider process guarantee (for site-specific conditions) would much alleviate Department concerns.
- Obtain and incorporate technology provider recommendations based on site-specific wastewater and flows/loadings into the design and O&M Plan (year-round, entire range of flows/loadings, etc.).
- Potential need for supplemental food source and/or other wastewater treatment chemical if site-specific wastewater loadings not adequate to sustain SAGR treatment biology year-round.
- Detailed SAGR System O&M Plan needed. Determine lagoon/SAGR System O&M requirements from current minimum flows/loading through seasonal variations/lagoon operational changes to original 1985 design flows/loadings.
- Verify that existing DO limits will be met in WWTP upgrade effluent.

○ **Miscellaneous**:

▪ **Module 1 Waste Characteristics**: Incorporate Authority sampling program data (including alkalinity, total hardness, etc.) and any additional sampling data. Estimated effluent quality based on permit limits, inconsistent with current effluent quality.

▪ **Copper Treatment System and any other potentially needed wastewater additive (food for SAGR system, alkalinity, etc.)**: Verify all design assumptions with site-specific data (wastewater alkalinity, pH, etc.). Address minimum expected flows/loadings (potential issues include settling; excessive detention times; etc.) plus 1985 WQM design flows/loading. Current DWFM chlorination and phosphorus treatment sections might have relevant design guidance. **NOTE**: Other Modules 6 would be needed if additional wastewater treatment chemicals (alkalinity, other) and/or SAGR unit food source needed.

▪ **UV disinfection System**:
- Mismatch between 231 GPM copper pressure treatment flows and 61 GPM UV design assumptions. **NOTE**: Site-specific wastewater sampling proposed in Design Engineer Report.
- Need manufacturer information on proposed UV disinfection system.
- Heads up that draft DWFM would require minimum 30 mJ/cm^2 design dosage at minimum UVT of 65% per 1 cm.
- Authority is not planning on chlorine disinfection back-up. DWFM Chlorine Disinfection requirements would apply if pursued.

▪ **Offsite Replacement Influent 300 GPM Pump Station and Force Main**: Being handled separately under WQM Permit Application No. 6618401 (Pump Station Replacement, old force main retained). Separate WQM permit will include condition to measure/compare PS outflows and Lagoon inflows plus force main inspection, plus as-built PA PE signed/sealed engineering drawings. Any desired

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additional PS upgrade and/or force main work could be included in this application and PENNVEST application at this time.
- **Overall Construction Sequence**: Need overall construction sequence for all aspects of project (including groundwater monitoring well replacement/modifications; when UV disinfection installed, copper treatment unit installed, etc.).
- **Public Notice**: Act 14 Return receipt from Overfield Township missing.
- **Missing WQM Checklist and Application check fee copy (or other documentation that fee was paid)**: Will be provided.
- **Technical Specs**: General reference to compliance with DWFM in response. To clarify general being referenced:
  - DWFM Sections 25 and 26 would apply to new onsite sewer piping and manholes.
  - DWFM Section 30 – 37 would apply to a new onsite pump station (pressure treatment system)
  - DWFM Section 38 would apply to a new onsite force main.
  - DWFM Sections 40 – 48 would apply to new Wastewater Treatment Plant construction.
  - DWFM Section 82 (aeration) and 85 (Wastewater Treatment Ponds) would apply if the lagoons (see above discussions) would require major lagoon upgrading.
  - DWFM Sections 92 and 103 include some generic chemical addition/mixing guidance.

- **Next Steps/Timeline**:
  - Authority will e-mail missing hydrogeological reports/information within the next day or so.
  - DEP will e-mail authority bullet items of the meeting discussions in a day or two.
  - The Authority will get back to DEP regarding when it can fully respond. Authority can submit application documents electronically.
  - Authority is working to set up a separate meeting with PENNVEST.
  - PENNVEST Board meeting in November. **NOTE**: Next PENNVEST cut-off application date is in December for having permits in hand.

- **10/14/2020**: Received E-mail copy of March 2020 "Wastewater Lagoon Hydrogeologic Assessment". **NOTE**: Figure 4 showed groundwater elevations intersecting existing lagoons. Forwarded copy to DEP Geologist (as part of WQM Permit Application No. 6620401 (WWTP Upgrades including new/modified groundwater wells)).
- **10/14/2020**: DEP (Bellanca) E-mail regarding incompleteness bullet action items for WQM permit application submittal (including additional DEP Geologist comments). E-mail acknowledged receipt of March 2020 Hydro Report, noted groundwater levels shown to intersect existing lagoon liner, and that underdrain discharge rate information would be useful.
- **10/30/2020**: Authority (BCM) E-mail with Link to response to 10/14/2020 bullet action items for WQM Permit application submittal.
- **11/2/2020**: DEP (Berger) E-mail asking for apparently omitted LWMA-response-referenced 10/28/2020 groundwater/underdrain sampling data and any associated hydro report plus any other accidentally omitted information from 10/30/2020 WQM Permit application submittal.
- **11/2/2020**: Authority (Kresge) E-mail indicating 10/28/2020 sampling data would be submitted. Delay attributed to lab time needed to analyze samples.
- **12/7/2020**: Authority (Kresge) E-mail with promised groundwater sampling data was received.
- **12/28/2020**: Kresge E-mail regarding CO&A discussions that noted the Authority believed it had addressed WQM permitting requirements. "With the exception of the on-going dialogue between Mr. Hannigan and Mr. Gray with our office, we believe we have addressed all of the bulleted items."
- **Dates Unknown**: DEP (BR Patel) calls to LWMA which set up the 2/25/2021 Conference Call on Geological/Hydrogeological issues.
- **2/25/2021**: **Conference Call for WQM permit Application No. 6620401** (WWTP upgrades including: SAGR ammonia-N treatment unit; copper treatment unit (pH adjustment); UV disinfection; new lagoon liners/potential modification of existing lagoons); new/relocated groundwater monitoring points; new effluent flow meter; new electrical generator, etc.). Previous 10/13/2020 Conference Call and 10/14/2020 Bullet Items for action. On 12/7/2020, promised groundwater sampling data was received. Conference Call focused on Geology/Hydrogeology-related issues.
  - **Participants:** Everyone was introduced.
    - **DEP:** Bharat Patel (CW Program Manager), Amy Bellanca (CW Permits Chief), Scott Novatnak (CW Planning Chief), James Berger (CW Engineer), and John Hannigan (DEP Geologist)
    - **LWMA:** Ron Manglaviti (Authority Chairman), Carman Caputo(?)

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- **ATC Group/BCM Engineers**: Richard Kresge, John Devine, Joshua Owens (WQM Design Engineer), Phil Gray (LPG)

- **Conference Call discussions**:
  - John Hannigan started discussions on the Geological/Hydrogeological Issues:
    - Geologist review In-progress, in-work feedback, no idea of what people on conference call know about completeness or quality of application at this time. John dealt with Phil Gray (Authority LPG) and early discussions with Mr. Kresge. Objective and scope of work was easier at first.
    - Hydrogeology is a hurdle right now. Needs to be completed for all other design/application submittals to be made.
    - This facility has 30-35-year age. The mid-80s requirements are less than today. Significant points. Preliminary geo work in 1980s, no LPGs back then. 3 wells installed onsite, not directly related to monitoring program. No significant geological/hydro data collected over time. This makes geo work more complicated and difficult.
    - Some evidence of liner failure per DEP Geologist. Biological data indicated potential failure and pollution event.
      - Authority disagreed about both.
      - Berger noted that Lagoon Liner system state below water level unknown as previously agreed by the Authority and its Engineer.
    - Real data/science indicates this is not simple groundwater table or location. This data was only recently presented. At depth, there is an aquifer with a positive head. Artesian conditions under proposed lagoon structures, with piezometric surface above liner and lagoon substructures and needs to be addressed.
    - The Department and Authority can get over hurdle. Phil Gray (Authority LPG) and John had previous discussions. Question about what is holding the water at depth. John does not believe there is a uniform layer holding the aquifer below the lagoon structures. The glacial unconsolidated layer is very “tight”, not allowing significant amount of water into all wells in the facility. Need for 4-feet separation (lagoon design requirement) and need narrative, etc. to how recognize and deal with positive head under facility. Some bench hydroconductivity studies options discussed with Phil. Liner system design has a geotechnical investigation requirement (such as geoprobes to generate wells to report a report to indicate the footprint of lagoon what are groundwater levels and 4-5 feet below lagoon structures, stabilize and see if lagoons as proposed are adequate) and to allow for design of some form of pressure relief valve to gravity collect and discharge groundwater to relieve pressure. This would cost money and might impact project cost considerations.
  - Kresge & ATC indicated 35-years of lagoon history and no failure.
    - John said they had nothing but anecdotal information on pressure and underdrain and stable surface to new lagoons. Wells have a total depth of 19 feet, and new well indicates pressurized aquifer to 49-59 feet. Once intercepted anyway, positive head that would enter existing/proposed relined lagoon. John has not seen (existing) underdrain size/depth/manifold piping and is not comfortable.
    - Phil Gray: East side of site is higher than west side. 59 feet of glacial till on east side of property, and MW-1/2 are approximately 20 feet of glacial till (assumed installed like other well. (**NOTE:** Recently installed upgradient MW-3?). Does not think glacial till is permeable and there is an existing underdrain. Does not think a significant amount of water, not artesian, would flow to discharge on west side of property. Stormwater flows toward manhole. Did not think significant amount of flow into manhole when looked at.
    - John noted unfortunately only a year or year and half of observation data on monitoring system, so no statistical/scientific back-up. Not comfortable that underdrain system was adequately designed and built 35 years ago. Only 1 new well (upgradient MW-3), but need to bring two other wells to same depth to establish what piezometric surface by triangulation/survey, and then can determine positive head and cross-section. Would be scientifically valid conclusion then. Semi-confining condition only onsite. New wells can be folded into groundwater monitoring system in future. Alternatively use shallow drilled geoprobes to drill down along lagoon footprint and below, equilibrate for a few days.

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Experience at other old lagoons, any type of excavator caused problem, a bigger mess than it would be worth.

- Kresge: Kresge noted Initial concern was fecal coliforms in underdrain. So they set up a program with Phil Gray and presented program to John. Understood John signed off on program on contamination. Thought contamination was from surface contamination. Water ponding in hole. Phil gave his professional opinion. Now it seems still not good enough. What is reasonable?
  - Berger:
    - New facts (figure showing groundwater level impacting lagoon) came up in March 2020 Authority LPG Report not submitted until October 2020. Unsealed (October 2020) engineering drawing showed 25-feet minimum separation and Module 19 indicated 12.79 Feet Minimum depth (to groundwater) with 13-feet deep lagoons.
    - Need LPG and Design Engineer to both seal unsealed drawing (B101) showing groundwater level relative to lagoons' cross-section and update Module 19 (or brand new LPG-sealed Report) to determine groundwater levels relative to lagoon/structures.
  - Kresge: Kresge noted LPG did not seal the March 2020 figure only the report cover sheet.
    - Berger:
      - DEP holds the LPG seal covers all in the LPG sealed report. Design Engineer is also responsible for all aspects of design and must seal each engineering drawing and application. PA Professional Board would also hold them accountable.
      - Potential impacts of high water level on lagoons:
        - Potential catastrophic lagoon failure (having to replace lagoon, groundwater assessment/abatement, cleaning up mess) whenever groundwater impacts lagoons (now, during construction, during operating life).
        - Potential flooding of lagoon holes during construction (draining lagoon/changing loadings can sometimes trigger subsurface events), so like building in a lake with indefinite delays and costs.
        - Original lagoon design did not address the artesian (positive head) groundwater impacts on lagoons (assuming groundwater was a 100-feet deeper). Lagoon engineering issues would have to be addressed in the application.
  - John Hannigan: John has been involved with many liner replacement cases. First decision is whether pollution event occurred. Some disagreement on source. But parameters included chlorides and other sewage parameters. John has accepted no significant pollution of groundwater under lagoons (chemistry looked good). Now moving forward with application to replace liner system. In process of new well, new data was generated. Now hydrogeological/engineering issues that John is boiling down to engineering geotechnical issue shown in Authority submittals. John indicated two potential pathways. This issue does not involve previous pollutant event. No real data over 30-35 years to show that there is no fluctuating groundwater table.
  - Manglaviti: Raised practicality if they had a zillion dollars, but do not have money. No way to ask PENNVEST to ask for money or tripling costs to clients. **NOTE**: Bad phone connection with Mr. Manglavitti's voice breaking up. Not sure if got all his points.
  - Josh Owens (Design Engineer):
    - Owens: Tried to ask if John Hannigan would require permitting for lagoon liner replacement if the Authority and its engineer did not think it required permitting.
    - Berger told him that was not a question John (DEP Geologist) can answer (not part of his job). DEP (management and engineers) make permitting decisions, not the Authority or its consultants. In this case, yes if there are groundwater impacts on lagoons.
- BR Patel:
  - Is Authority proposing expansion in this modification?: No said the Authority. Only SAGR to treat ammonia-N that will build capacity.

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- Is system expanding capacity of plant and increasing capacity in footprint?: SAGR will be installed onsite.
- Any deeper digging of lagoon?: SAGR System will be 8 -10 feet down but are downslope of lagoons. Digging not near lagoons.
- What can be provided to keep piezometric pressure line below lagoons?:
  - Authority Consultant (not sure which voice): Can document underdrain during project. Would direct rising water to underdrain manhole.
  - Phil Gray. Potentiometric surface will not intersect lagoon unless glacial till is penetrated.

- **Amy**: Going forward, John Hannigan offered some suggestions to get over hurdle. Authority consultant indicate it could discuss issues with Authority. Suggest after discussion and get together in two weeks.
  - Kresge: Authority Engineer can talk to Authority about issues and long-term sampling and evaluation, but no authority to agree to anything.
  - Manglavitti: In course of this, will spend too much money. Not realistic. (voice-breaking up, not catching all words). Does not think we have gained any ground. No practicality with idea on costs. Perhaps the Hydros should have talked to Authority before.
  - Amy: Can they (Authority consultants) come up with something we can accept?
  - Authority Consultant (not sure which person): Can John come up with a summary?
  - Phil Gray: Can talk about what is needed and costs. Maybe contact John to see what solution the Department would accept.
  - BR: Also talk about what PENNVEST is agreeable to. Maybe PENNVEST would not recommend the liner replacement for public money. Maybe need separate financing.
  - John Devine: What if water is within 4 feet of lagoon liner?
    - John Hannigan response noted Authority would still have to prove system is adequate to 2021 standards (cannot grandfather 1985 design). At end of this, unless Authority goes to some other design (SBR or other) and happy with lagoon design for next 20-30 years, would need three wells (meeting current standard and down to 59 feet deep to water level) and evaluating groundwater under lagoon at depth. 60 – 65 feet wells with screening of first 20-25 feet of the well. From 3 wells, Authority should be able to demonstrate stable piezometric level cross-sections in real 2020-2021 data and project if it will intersect lagoon liner and subgrade system. Maybe more groundwater monitoring wells needed due to past documents indicating more than one subgradient flow directions but that the Authority LPG has to look at. If groundwater level reaches 4 feet from lagoon liner, need a tracked geoprobe to run boreholes along footprint in lagoon, stick in pipes, equilibrate to see if project will be impacted by slow flow/upward flow. Real data would be incorporated into design and contract specifications. Then Authority needs to look at risks to Authority, its rate-payers and consultants. Each of those wells (meeting monitoring well specs) should not cost much more than $15,000 a piece. Rented Geoprobe equipment could put many 1-inch piped holes in few days. John does not have specs or details on what exactly needed. Additional geoprobe depth (more than 4-foot depth below liner elevations) recommended to be conservative. The geoprobe hydro geotechnical work (drilling shallow small diameter piezometers) could occur adjacent (border) the lagoons.
    - More would be needed if not minimum 4-feet separation.
  - Consultant noted funding for two wells already in PENNVEST funding application.
- Other WQM permitting Issues: John Devine asked if other permitting issues:
  - Berger: Yes, need clarification on assorted previous bullet action items. Could hang on to discuss or do a separate conference call later.
  - Amy and Authority: It was agreed to address these issues later.

- **11/1/2021**: LWMA (Kresge) letter asking about potential future lead limit (after updating water quality modeling with additional lead sampling data).
- **11/16/2021**: DEP (Berger) Response E-mail noting the Redraft NPDES Permit would require only lead monitoring, and identifying the calculated lead WQBEL for informational purposes.
- **12/4/2021**: LWMA Response to 11/5/2021 DEP Letter. Sent to legislators and NERO Regional Director.
- **12/21/2021**: **Highlights of Meeting to discuss application issues:**

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- **Participants**:
  - **DEP**: Mike Bedrin (Regional Director), Ann Conserette (OCC), BR Patel (CW Program Manager), Amy Bellanca (Permits Chief), Scott Novatnak (Planning), John Hannigan (Geologist) and James Berger (Engineer)
  - **LWMA**:
    - Authority: Ronald Manglaviti (Chairman)
    - LWMA Attorney: Paul M. Schmidt
    - ATC/BCM:
      - Richard Kresge (Engineer)
      - Phil Gray (LPG)
      - John Devine (does PENNVEST-related work)
- **LWMA Introduction/Viewpoint**:
  - LWMA Chairman: Chairman had been Authority Chairman for 3 – 4 years. Started to address problems including unpermitted replacement Pump Station, Ammonia-N violations, lagoon system facing ever more stringent DEP limits, with hydrology issues coming up. They had looked are relocating the discharge outfall point. They have gone for the SAGR System option. They are balancing considerations (environmental and economic ramifications). They blamed the previous hired operator as incompetent, but thought the new operator was doing a good job. They think the lagoon underdrains are working.
  - LWMA Attorney: Noted some gray areas needed clarification.
  - They asked about other permits:
    - NPDES Permit: Draft NPDES Permit is ~18 months old, with some new requirements coming in redraft per DEP (Amy), but not new permit limits.
    - WQM Permit for Replacement Pump Station: We cannot issue this WQM permit because of open violations. The DEP E-facts system does even not allow for permit issuance in this situation. (Ann)
- **DEP Viewpoint (Ann)**: If there is a potential liner failure, then there can be other issues such as potential effluent violations. Sometimes professional assurances (PA PE and PA LPG) can clarify issues. **All drawings need professional seals. Modules 19 and 20 are needed**.
  - Kresge: Concern that completing the Module 20 (Impoundments) might open a "pandora's box" because the Department might require other upgrades to current requirements. **NOTE**: He mixed up the two form names in the discussion – Module 19 pertains to Geology/Hydrology and Module 20 applies to Impoundments.
  - Department: The Department recognizes that this is a limited replacement proposal. There are also some unknowns. Scientific data will help clarify whether there are problems are not.
  - Manglaviti: LWMA estimated a $30K cost for a geoprobe to identify water levels around lagoon. They would prefer to spend the money solving the problem.
- **Geology/Hydrogeology Issues:**
  - **LWMA LPG (Phil):**
    - The lagoons are underlain by glacial till down to the Catskill formation bedrock. There is a difference in hydraulic conductivity between 10^{-4} to 10^{-11} between the LD Zone underdrains and the glacial till. Any groundwater impacts will be reduced by the planned lagoon liner replacement. There is no clear trigger point for when a Module 20 is required.
    - Phil passed out a figure showing groundwater elevations on 11/26/2019 and a small copy of Drawing B101 cross-sections. **NOTE:** Drawing copy lacked LPG or PA PE Seal.
    - They drilled a ~60 feet deep replacement upgradient well (MW-3) and sampled the two existing ~20 feet deep western wells (MW-1 and MW-2). None showed E Coli. He later clarified MW-3 went down to bedrock (through glacial till), 60 feet glacial till. They found that they could pump out the wells at about 1 GPM and they dried out quickly. He characterized the glacial till as "tight".
    - Hannigan: Asked for some clarifications:
      - Asked if they had a cross-section profile of potentiometric monitoring well.
      - Asked if they have details for the older monitoring wells MW-2 and MW-3.
      - Asked if the LDZ flow ever dried out. He had been to site 3 times, and it was always flowing (1 – 2 GPM per guestimate) from the 6-inch corrugated LD zone discharge pipe. Manglaviti noted that he measured the LD Zone flow at 1.2 GPM, and that the

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discharge was clear, but acknowledged some potential filtration action in the subgrade material.
    - Asked if they had the LZ zone data in tabulated form. He had only seen two sampling event data, not enough for statistical significance.
    - Asked if the deeper water supply well depth was known. Phil indicated they could probably measure it by line or by another method.
- Hannigan: The ~1985 MW-1 and MW-2 wells are about 20 feet deep, but he had seen no log or design detail for them. They had been installed in 1985, at the cusp of awareness of Groundwater issues (no LPG to tell them to drill deeper if necessary), and were not well-placed to intercept GW contamination (from lagoons) and not deep enough to monitor true groundwater level (by not reaching bedrock and below). MW-3 is the replacement well.
    - There are valleys on both sides of the (small) lagoon areas (one side flowing to Mill Run and the other toward the lake). No GW wells were found in 0.25 miles by him and local farms would otherwise contribute nitrates to the groundwater. He noted vegetation growing through the upper lagoon liner, but noted his understanding was that most liner damage occurs where the liner is exposed to UV light, not below the operating water line.
    - The LDZ discharge pipe (6-inch corrugated) is discharging to a small area where the flow is infiltrating. The discharge appears to be affecting the receiving vegetation (trees on both sides outside the wet area). The flow is in the general direction of Mill Run, with a downhill farmer having installed surface water controls and further downhill pond/wet areas.
    - The glacial till appears tight (10^{-4} – 10^{-7} conductivity). It might be acting like a bathtub, holding in lagoon leakage with hydrostatic pressure resulting in the MW-3 (new upgradient well) water level.
    - For a new site or other site over the next 30 years, you generally need three wells (to bedrock and below) to triangulate groundwater direction and flow, but that would need two more wells (drilled 10 – 15 feet below bedrock elevation ideally) in addition to the new MW-3 upgradient well that is drilled only down to bedrock per Phil. They could use drill two replacement wells (MW-1 and MW-2) below bedrock to allow this and to define the groundwater conditions in event of any other sources of GW contamination (farms or other) or environmental group raising questions about facility impacts.
        - Kresge noted that they had budgeted for two replacement wells already. He indicated a concern about hydrostatic pressures in the deeper wells.
        - Manglaviti indicated it might be a “done deal”.

- **Professional Assurance Options (Lagoon engineering; SAGR system, UV disinfection, etc.)**:
    - Amy indicated that the future Design Engineer professional assurances have to be spelled it out in detail to address the Department concern. She would send then an example IRR from another lagoon project to show them what kind of language and how it would be incorporated into the IRR. She would send them additional guidance on what is required. The information would be e-mailed to Kresge.
    - She said the SAGR System had to be designed with site-specific information.
    - LWMA indicated they were close to getting SAGR technology provider assurances. Amy asked for them.
- **PENNVEST**:
    - Scott Novatnak indicated there had been previous PENNVEST discussions.
    - The Regional Office makes recommendations to PENNVEST, but PENNVEST people make the decisions.
    - PENNVEST only funds up to most cost-effective option (with a 20-year cost affordability) cost. The determination includes life-cycle costs. Usually 5 – 10 options are evaluated (Lagoons, SBRs, Activated Sludge, Extended Aeration, variations, plus other creative options have been done). It is important for LWMA to do this evaluation upfront in its design process to avoid wasting its time and money and then having to redo the analysis later.
        - LWMA indicated the lagoon option had been priced at ~$2 million with SBRs being around $3 million. Cost might have changed since last evaluation.
        - The Department noted the batch SBR process does involve a lot more equipment/controls, so the cost difference was not unreasonable.
    - The Uniform Environmental Review process applies due to the SAGR units being outside the fence.

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- The Regional Planning Section would review and comment on any LWMA PENNVEST submittal/analysis and was available to discuss what is required.
- Scott noted that SAGR systems can be impacted by cold temperatures. LWMA noted the system worked in Canadian sites.

- **CO&A and Civil Penalties**:
  - Manglaviti: Would like to move process along. He has not signed the CO&A due to concerns about stipulated penalties. He has told the prior LWMA engineering firm that it needed to pay for half of one penalty amount for the older fines ($25 – $27K). Other problems he blamed on prior site certified operator who he called incompetent. He thought the new site certified operator was competent. He did not expect recurring problems with DMRs, but Ammonia-N exceedances would occur until the plant is upgraded. Perhaps the Department could give reduced penalties for the next 2 years?
  - Department: The CO&A language can be discussed/negotiated.
    - The permits cannot be issued until the compliance issues are resolved. **NOTE**: Clean Stream Law compliance bar and Chapter 91.26.
    - The CO&A would need to be updated to address more recent penalties such as included in a recent NOV and changes in project time-line.
    - The CO&A gives certainty and a measure of liability protection that other permittees have wanted upfront. Sometimes EPA, environmental groups and third parties raise questions about compliance issues as well.
    - Some stipulated penalty amounts were reduced in the CO&A from what they could otherwise be ($3000 to $750 was an example).
    - The Department cannot waive future penalties for violations in advance.
- **Other Department feedback**:
  - Lagoon Geocomposite Product Option: Hannigan recommended they consider a geocomposite product (with bentonite) to place over the old liner. Pulling up an old liner is very difficult, with the liner coming apart as you tug it. He had seen other projects put down this kind of product over the old liner, and it turned out to be much easier and could handle subgrade imperfections better because it is a plastic material. Product availability might be reduced due to Texas manufacturers having been hit by weather issues (hurricane, etc.). LWMA indicated it would look at this option. Kresge noted they would have to look on how this might impact underdrain inspection, etc.
  - Beneficial Use of Biosolids Option: Hannigan recommended they look into beneficial use of removed sludge as biosolids in local farm fields under the Biosolids General Permits. This can reduce costs and the sludge quality was high because the facility never accepted IW. The Department has authorized one-time beneficial use applications.
    - LWMA indicated it would look at this option.
    - The Department recommended they check how the sludge volume was estimated. Recent EPA Technical Webinars had noted that many sites underestimated sludge volumes/disposal costs by >30% because they did not calculate the sludge volume based on lagoon bottom depths. (Sludge judges cannot penetrate sludge, so volumes and costs were underestimated.) LWMA indicated it would look at its protocols and might be rechecking sludge volumes in-place.
- **Meeting Follow-ups**:
  - Geology: Phil can call John about the geology/hydrogeology issues.
  - Professional Assurances: Amy will e-mail something to Kresge
  - Application Updates: John Devine indicate that he would send in a time-table for LWMA submittals.
  - Attorneys: Ann is the contact on the CO&A.

- **5/12/2022**: **LWMA Professional Assurances letter submitted to DEP OCC and then forwarded to Permits section**. (Required DEP OCC release for use as an official submittal)
  - **LPG Professional Assurances**: The LPG letter gave his opinion that the groundwater is not artesian and will maintain the four (4) feet separation distance. LPG assurance that the LDZ underdrains are above max groundwater elevation during the propose operating life of the replacement liner system. LPG assurance that the LDZ underdrain system will allow for adequate leak detection in terms of individual lagoon liner system. Referenced updated map, but not sure that was attached. Updated groundwater piezometric levels after

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three wells are installed during project (Hannigan thought they should do one downgradient well upfront and resolve question). ○ **Design Engineer PA PE Professional Assurances**: Kresge sealed this letter, but was not previously Design Engineer and missing PA PE seal on drawings and technical specifications. • **3/22/2024**: Revised WQM Permit Application No. 6620401 documents received. Kresge sealed as new Design Engineer. • **7/29/2024**: WQM Permit No. 6620401 issued. • **11/15/2024**: DEP approval of Hydrogeological Work Plan submitted in accordance with the July 29, 2024 LakeWinola Municipal Authority WQM Permit No. 6620401 Special Condition C.6.