pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

**Northwest Regional Office**
**CLEAN WATER PROGRAM**

| | | | |
|---|---|---|---|
| Application Type | **Renewal** | Application No. | **PA0034061** |
| Facility Type | **Non-Municipal** | APS ID | **1080126** |
| Major / Minor | **Minor** | Authorization ID | **1425538** |

# NPDES PERMIT FACT SHEET
# INDIVIDUAL SEWAGE

## Applicant and Facility Information

| | | | |
|---|---|---|---|
| Applicant Name | **Vacationland Properties Owner LLC** | Facility Name | **Goddard Park Vacationland Campground** |
| Applicant Address | 760 Osterman Drive Suite 201 Unit 2 | Facility Address | 867 Georgetown Road |
| | Bozeman, MT 59715-7948 | | Sandy Lake, PA 16145-2525 |
| Applicant Contact | Josh Weissenstein | Facility Contact | Mark and Lavern Bonds |
| Applicant Phone | (406) 404-6812 | Facility Phone | (724) 253-4645 |
| Applicant Email | josh@landleaseamerica.com | Facility Email | vacationland@teamoutsider.com |
| Client ID | 368831 | Site ID | 637351 |
| Ch 94 Load Status | Not Overloaded | Municipality | Deer Creek Township |
| Connection Status | No Limitations | County | Mercer |
| Date Application Received | January 23, 2023 | EPA Waived? | Yes |
| Date Application Accepted | September 29, 2023 | If No, Reason | |

Purpose of Application: Renewal of a NPDES Permit for an Existing Discharge of 0.06

## Summary of Review

This is a renewal Sewage Individual NPDES Permit for an Existing Discharge of 0.06 MGD from a non-municipal minor sewage facility.

Treatment permitted under WQM Permit 4371415 consists of: An existing 1,620,000-gallon primary lagoon with two (2) aerators, followed by an existing 626,000-gallon secondary lagoon with a curtain wall and four (4) Bio-Shells. An existing 72 square foot (SF) coarse sand filter and an existing chlorine tablet feeder disinfection system and contact time in an existing chlorine contact tank. A new dechlorination system that will consist of a Norweco Bio-Dynamic LF 4600 tablet feeder and a 2' x 4' precast concrete dechlorination tank.

This permit is also being transferred as part of this renewal. WQM Permit No. 4371415 will be amended and transferred as part of the amendment. *The WQM permit amendment and transfer will be completed independently and prior to the renewal and transfer of the NPDES Permit.*

This facility is currently submitting eDMR reports.

Act 14 – Proof of Notification was submitted and received.

SPECTIAL CONDITIONS: NONE

The EPA waiver is in effect.

There are no open violations in WMS for the subject Client ID (368831) as of November 7, 2023 *11/13/2023 CWY*

| Approve | Deny | Signatures | Date |
|---|---|---|---|
| X | | Aeshah Shameseldin<br>Aeshah Shameseldin / Civil Engineer Trainee | November 14, 2023 |
| X | | Chad W. Yurisic<br>Chad W. Yurisic, P.E. / Environmental Engineer Manager | 11/14/2023 |

**Summary of Review**

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

**Discharge, Receiving Waters and Water Supply Information**

| | | | |
|---|---|---|---|
| Outfall No. | 001 | Design Flow (MGD) | .06 |
| Latitude | 41º 26' 7.18" | Longitude | -80º 8' 41.59" |
| Quad Name | Hadley | Quad Code | 41080D2 |
| Wastewater Description: | Sewage Effluent | | |
| Receiving Waters | Unnamed Tributary to Schofield Run (WWF) | Stream Code | 58643 |
| NHD Com ID | 100476913 | RMI | 0.32 |
| Drainage Area | 0.25 (dry), 2.51 (perennial) | Yield (cfs/mi$^2$) | 0.073 |
| $Q_{7-10}$ Flow (cfs) | 0.183 (perennial) | $Q_{7-10}$ Basis | E. Sandy Creek @ Van (partial recording site) |
| Elevation (ft) | 1297 | Slope (ft/ft) | --- |
| Watershed No. | 16-G | Chapter 93 Class. | WWF |
| Existing Use | --- | Existing Use Qualifier | --- |
| Exceptions to Use | --- | Exceptions to Criteria | --- |
| Assessment Status | Attaining Use(s) | | |
| Cause(s) of Impairment | --- | | |
| Source(s) of Impairment | --- | | |
| TMDL Status | --- | Name | --- |

| Background/Ambient Data | | Data Source |
|---|---|---|
| pH (SU) | 7.72 | 3/30/10 sample on Schofield Run near mouth |
| Temperature (°F) | 25 | Default |
| Hardness (mg/L) | 100 | Default |
| Other: | | |

| | | | |
|---|---|---|---|
| Nearest Downstream Public Water Supply Intake | Aqua Pennsylvania, Inc. – Emlenton | | |
| PWS Waters | Allegheny River | Flow at Intake (cfs) | 1376 |
| PWS RMI | 90.0 | Distance from Outfall (mi) | 50 |

Changes Since Last Permit Issuance: N/A

Other Comments: A WQM amendment application has been submitted to the department on May 10, 2023 proposing the addition of a dechlorination system after the chlorine contact tank.

**Treatment Facility Summary**

**Treatment Facility Name:** Goddard Park Vacationland Campground

| WQM Permit No. | Issuance Date |
|---|---|
| 4371415 A-2 T-3 | In Progress |
| 4371415 A-1 T-2 | January 24, 2018 |

| Waste Type | Degree of Treatment | Process Type | Disinfection | Avg Annual Flow (MGD) |
|---|---|---|---|---|
| Sewage | Secondary | Stabilization Lagoon | Hypochlorite | 0.06 |

| Hydraulic Capacity (MGD) | Organic Capacity (lbs/day) | Load Status | Biosolids Treatment | Biosolids Use/Disposal |
|---|---|---|---|---|
| 0.06 | 300 | Not Overloaded | N/A | Other WWTP |

Changes Since Last Permit Issuance: None.

Other Comments: None.

## Compliance History

**DMR Data for Outfall 001 (from October 1, 2022 to September 30, 2023)**

| Parameter | SEP-23 | AUG-23 | JUL-23 | JUN-23 | MAY-23 | APR-23 | MAR-23 | FEB-23 | JAN-23 | DEC-22 | NOV-22 | OCT-22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow (MGD) Average Monthly | | | | | | 0.021 | | | | 0.038 | | 0.037 |
| pH (S.U.) Daily Minimum | | | | | | 7.4 | | | | 6.8 | | 6.7 |
| pH (S.U.) Daily Maximum | | | | | | 8.2 | | | | 8.0 | | 7.1 |
| DO (mg/L) Daily Minimum | | | | | | 6.41 | | | | 4.87 | | 4.97 |
| TRC (mg/L) Average Monthly | | | | | | 0.39 | | | | 0.37 | | 0.34 |
| TRC (mg/L) Instantaneous Maximum | | | | | | 0.61 | | | | 0.61 | | 0.59 |
| CBOD5 (mg/L) Average Monthly | | | | | | 7.98 | | | | 2.4 | | 2.4 |
| TSS (mg/L) Average Monthly | | | | | | 19.5 | | | | 4.5 | | 2.5 |
| Fecal Coliform (No./100 ml) Geometric Mean | | | | | | 1 | | | | 1 | | 2.5 |
| Fecal Coliform (No./100 ml) Instantaneous Maximum | | | | | | 1 | | | | 1 | | 6.3 |
| Total Nitrogen (mg/L) Average Quarterly | | | | E | | | | | | 1.105 | | |
| Ammonia (mg/L) Average Monthly | | | | | | 0.52 | | | | 4.78 | | 1.65 |
| Total Phosphorus (mg/L) Average Quarterly | | | | E | | | | | | 0.143 | | |

## Development of Effluent Limitations

**Outfall No.** 001 **Design Flow (MGD)** .06
**Latitude** 41º 26' 7.18" **Longitude** -80º 8' 41.59"
**Wastewater Description:** Sewage Effluent

### Technology-Based Limitations

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

| Pollutant | Limit (mg/l) | SBC | Federal Regulation | State Regulation |
|---|---|---|---|---|
| $CBOD_5$ | 25 | Average Monthly | 133.102(a)(4)(i) | 92a.47(a)(1) |
| | 40 | Average Weekly | 133.102(a)(4)(ii) | 92a.47(a)(2) |
| Total Suspended Solids | 30 | Average Monthly | 133.102(b)(1) | 92a.47(a)(1) |
| | 45 | Average Weekly | 133.102(b)(2) | 92a.47(a)(2) |
| pH | 6.0 – 9.0 S.U. | Min – Max | 133.102(c) | 95.2(1) |
| Fecal Coliform (5/1 – 9/30) | 200 / 100 ml | Geo Mean | - | 92a.47(a)(4) |
| Fecal Coliform (5/1 – 9/30) | 1,000 / 100 ml | IMAX | - | 92a.47(a)(4) |
| Fecal Coliform (10/1 – 4/30) | 2,000 / 100 ml | Geo Mean | - | 92a.47(a)(5) |
| Fecal Coliform (10/1 – 4/30) | 10,000 / 100 ml | IMAX | - | 92a.47(a)(5) |
| Total Residual Chlorine | 0.5 | Average Monthly | - | 92a.48(b)(2) |
| E. Coli | Report (No./100 ml) | IMAX | - | § 92a.61 |

Comments: Monitoring for E. Coli is placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

### Water Quality-Based Limitations

A "Reasonable Potential Analysis" determined the following parameters were candidates for limitations: N/A

CBOD5, Ammonia, and DO are evaluated using WQM 7.0 (See Attachment 1 Attachment 2). Nitrogen, phosphorus and E Coli are monitor and report.

The following limitations were determined through water quality modeling (output files attached):

| Parameter | Limit (mg/l) | SBC | Model |
|---|---|---|---|
| Dissolved Oxygen | 4.0 | Daily Min. | WQM 7.0 |
| CBOD5 | 25 | Avg. Monthly | WQM 7.0 |
| | 50 | IMAX | |
| Ammonia Nitrogen (Nov 1 - Apr 30) | 15.9 | Average Monthly | WQM 7.0 |
| | 31.8 | IMAX | |
| Ammonia Nitrogen (May 1 – Oct 31) | 5.3 | Average Monthly | WQM 7.0 |
| | 10.6 | IMAX | |

Comments: The TRC spreadsheet calculated a more stringent WQBEL for TRC at perennial conditions using the plant design flow, but the limit was not deemed necessary because (1) The discharge is approximately a third of a mile away from perennial conditions traveling through a vegetated swale, (2) the actual monthly average discharge volume (< 0.006 MGD) does not produce a more stringent WQBEL when placed in the TRC spreadsheet, and (3) the discharge is intermittent, likely primarily occurring in wet weather because wastewater tends to partially evaporate in lagoon-type systems.

A review of the past 3 years of eDMR data indicates that the permittee was able to meet the 5.3 mg/L limit for Ammonia Nitrogen 86% of the time, therefore, a compliance schedule will not be necessary.

**Best Professional Judgment (BPJ) Limitations**

Comments: Monitoring for total nitrogen, total phosphorus and raw sewage influent monitoring for $BOD_5$ and TSS are placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

**Anti-Backsliding**

No backsliding of limits is being proposed.

## Proposed Effluent Limitations and Monitoring Requirements

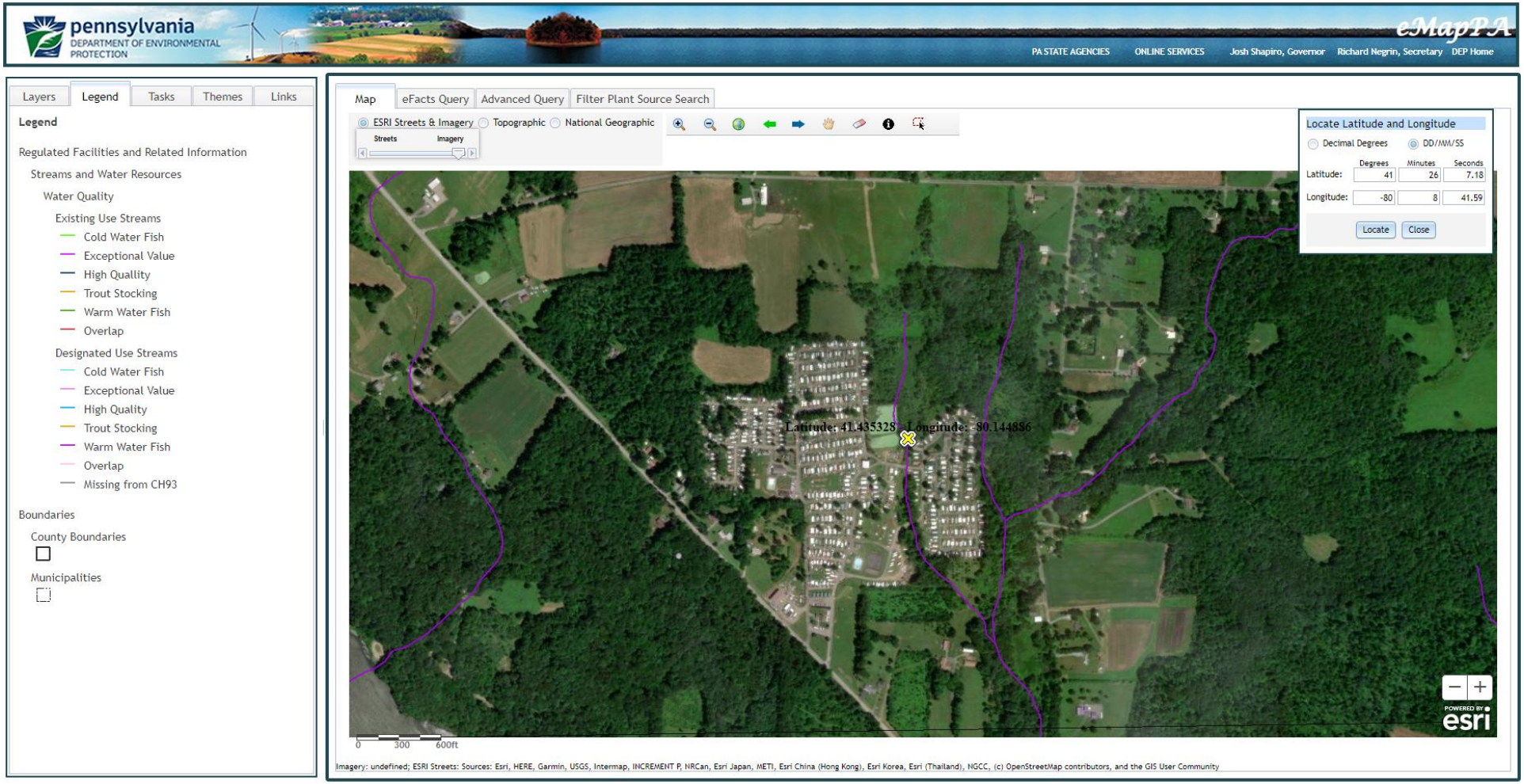
The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

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

| Parameter | Effluent Limitations | | | | | | Monitoring Requirements | |
|---|---|---|---|---|---|---|---|---|
| | Mass Units (lbs/day) (1) | | Concentrations (mg/L) | | | | Minimum (2) Measurement Frequency | Required Sample Type |
| | Average Monthly | Average Weekly | Minimum | Average Monthly | Maximum | Instant. Maximum | | |
| Flow (MGD) | Report | XXX | XXX | XXX | XXX | XXX | 1/week | Measured |
| pH (S.U.) | XXX | XXX | 6.0 Daily Min | XXX | 9.0 Daily Max | XXX | 1/day | Grab |
| DO | XXX | XXX | 4.0 Daily Min | XXX | XXX | XXX | 1/day | Grab |
| TRC | XXX | XXX | XXX | 0.5 | XXX | 1.6 | 1/day | Grab |
| CBOD5 | XXX | XXX | XXX | 25.0 | XXX | 50 | 2/month | Grab |
| TSS | XXX | XXX | XXX | 30.0 | XXX | 60 | 2/month | Grab |
| Fecal Coliform (No./100 ml) Oct 1 - Apr 30 | XXX | XXX | XXX | 2000 Geo Mean | XXX | 10000 | 2/month | Grab |
| Fecal Coliform (No./100 ml) May 1 - Sep 30 | XXX | XXX | XXX | 200 Geo Mean | XXX | 1000 | 2/month | Grab |
| E. Coli (No./100 ml) | XXX | XXX | XXX | XXX | XXX | Report | 1/quarter | Grab |
| Total Nitrogen | XXX | XXX | XXX | Report Avg Qrtly | XXX | XXX | 1/quarter | Grab |
| Ammonia Nov 1 - Apr 30 | XXX | XXX | XXX | 15.9 | XXX | 31.8 | 2/month | Grab |
| Ammonia May 1 - Oct 31 | XXX | XXX | XXX | 5.3 | XXX | 10.6 | 2/month | Grab |
| Total Phosphorus | XXX | XXX | XXX | Report Avg Qrtly | XXX | XXX | 1/quarter | Grab |

Compliance Sampling Location: Outfall 001, after disinfection.

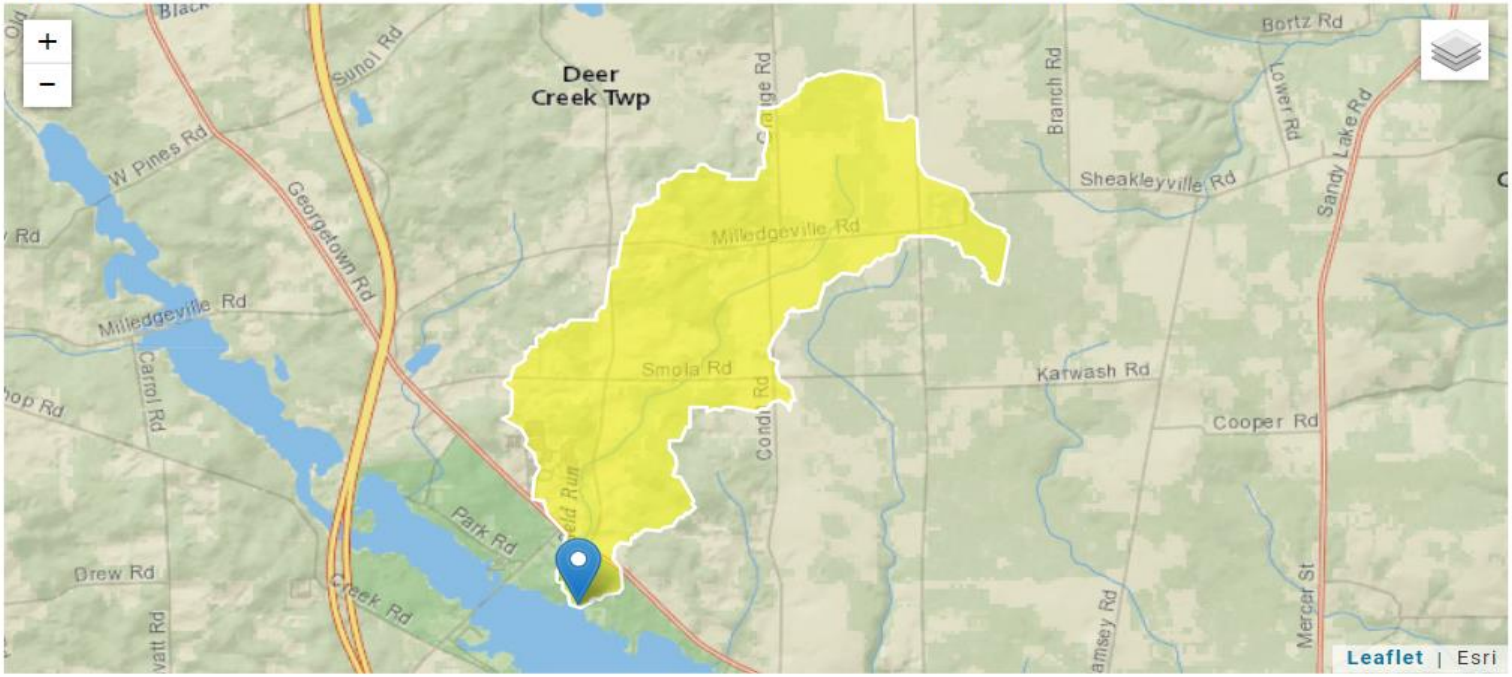
## Outfall Location - eMap with Aerial Imagery



## Drainage Area Location – StreamStats with Aerial Imagery

# StreamStats Report

| | |
|---|---|
| **Region ID:** | PA |
| **Workspace ID:** | PA20231103180848139000 |
| **Clicked Point (Latitude, Longitude):** | 41.42288, -80.14296 |
| **Time:** | 2023-11-03 14:09:12 -0400 |




Collapse All

## Basin Characteristics

| Parameter Code | Parameter Description | Value | Unit |
|---|---|---|---|
| DRNAREA | Area that drains to a point on a stream | 2.51 | square miles |

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# Attachment 1

# Dry Reach Modeling

## WQM 7.0 Effluent Limits

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 16G | 58643 | Trib 58643 to Schofield Run |

| RMI | Name | Permit Number | Disc Flow (mgd) | Parameter | Effl. Limit 30-day Ave. (mg/L) | Effl. Limit Maximum (mg/L) | Effl. Limit Minimum (mg/L) |
|---|---|---|---|---|---|---|---|
| 0.960 | Goddard Park | PA0034061 | 0.060 | CBOD5 | 25 | | |
| | | | | NH3-N | 25 | 50 | |
| | | | | Dissolved Oxygen | | | 4 |

# WQM 7.0 D.O.Simulation

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 16G | 58643 | Trib 58643 to Schofield Run |

| RMI | Total Discharge Flow (mgd) | Analysis Temperature (°C) | Analysis pH |
|---|---|---|---|
| 0.960 | 0.060 | 20.000 | 7.100 |
| **Reach Width (ft)** | **Reach Depth (ft)** | **Reach WDRatio** | **Reach Velocity (fps)** |
| 3.094 | 0.358 | 8.640 | 0.084 |
| **Reach CBOD5 (mg/L)** | **Reach Kc (1/days)** | **Reach NH3-N (mg/L)** | **Reach Kn (1/days)** |
| 24.93 | 1.500 | 24.93 | 0.700 |
| **Reach DO (mg/L)** | **Reach Kr (1/days)** | **Kr Equation** | **Reach DO Goal (mg/L)** |
| 4.011 | 27.591 | Owens | 2 |
| **Reach Travel Time (days)** | | | |
| 0.458 | | | |

**Subreach Results**

| TravTime (days) | CBOD5 (mg/L) | NH3-N (mg/L) | D.O. (mg/L) |
|---|---|---|---|
| 0.046 | 23.28 | 24.15 | 4.27 |
| 0.092 | 21.73 | 23.38 | 4.50 |
| 0.138 | 20.29 | 22.64 | 4.71 |
| 0.183 | 18.94 | 21.93 | 4.92 |
| 0.229 | 17.68 | 21.24 | 5.11 |
| 0.275 | 16.50 | 20.57 | 5.29 |
| 0.321 | 15.41 | 19.92 | 5.46 |
| 0.367 | 14.38 | 19.29 | 5.62 |
| 0.413 | 13.43 | 18.68 | 5.78 |
| 0.458 | 12.54 | 18.09 | 5.93 |

# WQM 7.0 Modeling Specifications

| | | | |
|---|---|---|---|
| Parameters | D.O. | Use Inputted Q1-10 and Q30-10 Flows | ☑ |
| WLA Method | EMPR | Use Inputted W/D Ratio | ☐ |
| Q1-10/Q7-10 Ratio | 0.64 | Use Inputted Reach Travel Times | ☐ |
| Q30-10/Q7-10 Ratio | 1.36 | Temperature Adjust Kr | ☑ |
| D.O. Saturation | 90.00% | Use Balanced Technology | ☑ |
| D.O. Goal | 2 | | |

## Input Data WQM 7.0

| SWP Basin | Stream Code | Stream Name | RMI | Elevation (ft) | Drainage Area (sq mi) | Slope (ft/ft) | PWS Withdrawal (mgd) | Apply FC |
|---|---|---|---|---|---|---|---|---|
| 16G | 58643 | Trib 58643 to Schofield Run | **0.960** | 1297.00 | 0.25 | 0.00000 | 0.00 | ☑ |

### Stream Data

| Design Cond. | LFY (cfsm) | Trib Flow (cfs) | Stream Flow (cfs) | Rch Trav Time (days) | Rch Velocity (fps) | WD Ratio | Rch Width (ft) | Rch Depth (ft) | Tributary Temp (°C) | Tributary pH | Stream Temp (°C) | Stream pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Q7-10** | 0.001 | 0.00 | 0.00 | 0.000 | 0.000 | 0.0 | 0.00 | 0.00 | 20.00 | 7.10 | 0.00 | 0.00 |
| **Q1-10** | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |
| **Q30-10** | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |

### Discharge Data

| Name | Permit Number | Existing Disc Flow (mgd) | Permitted Disc Flow (mgd) | Design Disc Flow (mgd) | Reserve Factor | Disc Temp (°C) | Disc pH |
|---|---|---|---|---|---|---|---|
| Goddard Park | PA0034061 | 0.0600 | 0.0000 | 0.0000 | 0.000 | 20.00 | 7.10 |

### Parameter Data

| Parameter Name | Disc Conc (mg/L) | Trib Conc (mg/L) | Stream Conc (mg/L) | Fate Coef (1/days) |
|---|---|---|---|---|
| CBOD5 | 25.00 | 0.00 | 0.00 | 1.50 |
| Dissolved Oxygen | 4.00 | 8.24 | 0.00 | 0.00 |
| NH3-N | 25.00 | 0.00 | 0.00 | 0.70 |

## Input Data WQM 7.0

| SWP Basin | Stream Code | Stream Name | RMI | Elevation (ft) | Drainage Area (sq mi) | Slope (ft/ft) | PWS Withdrawal (mgd) | Apply FC |
|---|---|---|---|---|---|---|---|---|
| 16G | 58643 | Trib 58643 to Schofield Run | **0.330** | 1236.00 | 2.41 | 0.00000 | 0.00 | ☑ |

### Stream Data

| Design Cond. | LFY (cfsm) | Trib Flow (cfs) | Stream Flow (cfs) | Rch Trav Time (days) | Rch Velocity (fps) | WD Ratio | Rch Width (ft) | Rch Depth (ft) | Tributary Temp (°C) | Tributary pH | Stream Temp (°C) | Stream pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Q7-10** | 0.001 | 0.00 | 0.00 | 0.000 | 0.000 | 0.0 | 0.00 | 0.00 | 20.00 | 7.10 | 0.00 | 0.00 |
| **Q1-10** | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |
| **Q30-10** | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |

### Discharge Data

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

### Parameter Data

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

# WQM 7.0 Wasteload Allocations

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 16G | 58643 | Trib 58643 to Schofield Run |

## Dissolved Oxygen Allocations

| RMI | Discharge Name | CBOD5 | | NH3-N | | Dissolved Oxygen | | Critical Reach | Percent Reduction |
|---|---|---|---|---|---|---|---|---|---|
| | | Baseline (mg/L) | Multiple (mg/L) | Baseline (mg/L) | Multiple (mg/L) | Baseline (mg/L) | Multiple (mg/L) | | |
| 0.96 | Goddard Park | 25 | 25 | 25 | 25 | 4 | 4 | 0 | 0 |

# WQM 7.0 Hydrodynamic Outputs

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 16G | 58643 | Trib 58643 to Schofield Run |

| RMI | Stream Flow (cfs) | PWS With (cfs) | Net Stream Flow (cfs) | Disc Analysis Flow (cfs) | Reach Slope (ft/ft) | Depth (ft) | Width (ft) | W/D Ratio | Velocity (fps) | Reach Trav Time (days) | Analysis Temp (°C) | Analysis pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Q7-10 Flow** | | | | | | | | | | | | |
| 0.960 | 0.00 | 0.00 | 0.00 | .0928 | 0.01834 | .358 | 3.09 | 8.64 | 0.08 | 0.458 | 20.00 | 7.10 |
| **Q1-10 Flow** | | | | | | | | | | | | |
| 0.960 | 0.00 | 0.00 | 0.00 | .0928 | 0.01834 | NA | NA | NA | 0.00 | 0.000 | 0.00 | 0.00 |
| **Q30-10 Flow** | | | | | | | | | | | | |
| 0.960 | 0.00 | 0.00 | 0.00 | .0928 | 0.01834 | NA | NA | NA | 0.00 | 0.000 | 0.00 | 0.00 |

# Attachment 2

## Perennial Reach Modeling

For Ammonia Nitrogen, result is less than the input indicating ammonia is still recovering. Therefore, for determining the initial protective ammonia limit:

$C_T = C_o\, e^{-kt}$

$C_o = C_T\, e^{kt}$

$C_o = 3.88\, e^{0.7 \times 0.458} = 5.3$ mg/L

### WQM 7.0 Effluent Limits

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 16G | 58643 | Trib 58643 to Schofield Run |

| RMI | Name | Permit Number | Disc Flow (mgd) | Parameter | Effl. Limit 30-day Ave. (mg/L) | Effl. Limit Maximum (mg/L) | Effl. Limit Minimum (mg/L) |
|---|---|---|---|---|---|---|---|
| 0.330 | Goddard Park | PA0034061 | 0.060 | CBOD5 | 12.54 | | |
| | | | | NH3-N | 3.88 | 7.76 | |
| | | | | Dissolved Oxygen | | | 5.93 |

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# WQM 7.0 D.O.Simulation

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 16G | 58643 | Trib 58643 to Schofield Run |

| RMI | Total Discharge Flow (mgd) | Analysis Temperature (°C) | Analysis pH |
|---|---|---|---|
| 0.330 | 0.060 | 23.273 | 7.399 |
| **Reach Width (ft)** | **Reach Depth (ft)** | **Reach WDRatio** | **Reach Velocity (fps)** |
| 6.803 | 0.418 | 16.279 | 0.095 |
| **Reach CBOD5 (mg/L)** | **Reach Kc (1/days)** | **Reach NH3-N (mg/L)** | **Reach Kn (1/days)** |
| 5.64 | 1.099 | 1.41 | 0.901 |
| **Reach DO (mg/L)** | **Reach Kr (1/days)** | **Kr Equation** | **Reach DO Goal (mg/L)** |
| 6.984 | 24.260 | Owens | 5 |
| **Reach Travel Time (days)** | | | |
| 0.213 | | | |

**Subreach Results**

| TravTime (days) | CBOD5 (mg/L) | NH3-N (mg/L) | D.O. (mg/L) |
|---|---|---|---|
| 0.021 | 5.49 | 1.38 | 7.38 |
| 0.043 | 5.34 | 1.35 | 7.54 |
| 0.064 | 5.20 | 1.33 | 7.54 |
| 0.085 | 5.06 | 1.30 | 7.54 |
| 0.106 | 4.92 | 1.28 | 7.54 |
| 0.128 | 4.79 | 1.25 | 7.54 |
| 0.149 | 4.66 | 1.23 | 7.54 |
| 0.170 | 4.54 | 1.21 | 7.54 |
| 0.191 | 4.42 | 1.18 | 7.54 |
| 0.213 | 4.30 | 1.16 | 7.54 |

## WQM 7.0 Modeling Specifications

| | | | |
|---|---|---|---|
| Parameters | Both | Use Inputted Q1-10 and Q30-10 Flows | ☑ |
| WLA Method | EMPR | Use Inputted W/D Ratio | ☐ |
| Q1-10/Q7-10 Ratio | 0.64 | Use Inputted Reach Travel Times | ☐ |
| Q30-10/Q7-10 Ratio | 1.36 | Temperature Adjust Kr | ☑ |
| D.O. Saturation | 90.00% | Use Balanced Technology | ☑ |
| D.O. Goal | 5 | | |

## Input Data WQM 7.0

| SWP Basin | Stream Code | Stream Name | RMI | Elevation (ft) | Drainage Area (sq mi) | Slope (ft/ft) | PWS Withdrawal (mgd) | Apply FC |
|---|---|---|---|---|---|---|---|---|
| 16G | 58643 | Trib 58643 to Schofield Run | **0.330** | 1236.00 | 2.41 | 0.00000 | 0.00 | ☑ |

### Stream Data

| Design Cond. | LFY (cfsm) | Trib Flow (cfs) | Stream Flow (cfs) | Rch Trav Time (days) | Rch Velocity (fps) | WD Ratio | Rch Width (ft) | Rch Depth (ft) | Tributary Temp (°C) | Tributary pH | Stream Temp (°C) | Stream pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Q7-10** | 0.073 | 0.00 | 0.00 | 0.000 | 0.000 | 0.0 | 0.00 | 0.00 | 25.00 | 7.72 | 0.00 | 0.00 |
| **Q1-10** | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |
| **Q30-10** | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |

### Discharge Data

| Name | Permit Number | Existing Disc Flow (mgd) | Permitted Disc Flow (mgd) | Design Disc Flow (mgd) | Reserve Factor | Disc Temp (°C) | Disc pH |
|---|---|---|---|---|---|---|---|
| Goddard Park | PA0034061 | 0.0600 | 0.0000 | 0.0000 | 0.000 | 20.00 | 7.10 |

### Parameter Data

| Parameter Name | Disc Conc (mg/L) | Trib Conc (mg/L) | Stream Conc (mg/L) | Fate Coef (1/days) |
|---|---|---|---|---|
| CBOD5 | 12.54 | 2.00 | 0.00 | 1.50 |
| Dissolved Oxygen | 5.93 | 7.54 | 0.00 | 0.00 |
| NH3-N | 18.09 | 0.10 | 0.00 | 0.70 |

## Input Data WQM 7.0

| SWP Basin | Stream Code | Stream Name | RMI | Elevation (ft) | Drainage Area (sq mi) | Slope (ft/ft) | PWS Withdrawal (mgd) | Apply FC |
|---|---|---|---|---|---|---|---|---|
| 16G | 58643 | Trib 58643 to Schofield Run | **0.001** | 1194.00 | 2.51 | 0.00000 | 0.00 | ☑ |

### Stream Data

| Design Cond. | LFY (cfsm) | Trib Flow (cfs) | Stream Flow (cfs) | Rch Trav Time (days) | Rch Velocity (fps) | WD Ratio | Rch Width (ft) | Rch Depth (ft) | Tributary Temp (°C) | Tributary pH | Stream Temp (°C) | Stream pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Q7-10** | 0.073 | 0.00 | 0.00 | 0.000 | 0.000 | 0.0 | 0.00 | 0.00 | 25.00 | 7.72 | 0.00 | 0.00 |
| **Q1-10** | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |
| **Q30-10** | | 0.00 | 0.00 | 0.000 | 0.000 | | | | | | | |

### Discharge Data

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

### Parameter Data

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

# WQM 7.0 Wasteload Allocations

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 16G | 58643 | Trib 58643 to Schofield Run |

## NH3-N Acute Allocations

| RMI | Discharge Name | Baseline Criterion (mg/L) | Baseline WLA (mg/L) | Multiple Criterion (mg/L) | Multiple WLA (mg/L) | Critical Reach | Percent Reduction |
|---|---|---|---|---|---|---|---|
| 0.330 | Goddard Park | 9.29 | 20.43 | 9.29 | 20.43 | 0 | 0 |

## NH3-N Chronic Allocations

| RMI | Discharge Name | Baseline Criterion (mg/L) | Baseline WLA (mg/L) | Multiple Criterion (mg/L) | Multiple WLA (mg/L) | Critical Reach | Percent Reduction |
|---|---|---|---|---|---|---|---|
| 0.330 | Goddard Park | 1.16 | 3.88 | 1.16 | 3.88 | 0 | 0 |

## Dissolved Oxygen Allocations

| RMI | Discharge Name | CBOD5 | | NH3-N | | Dissolved Oxygen | | Critical Reach | Percent Reduction |
|---|---|---|---|---|---|---|---|---|---|
| | | Baseline (mg/L) | Multiple (mg/L) | Baseline (mg/L) | Multiple (mg/L) | Baseline (mg/L) | Multiple (mg/L) | | |
| 0.33 | Goddard Park | 12.54 | 12.54 | 3.88 | 3.88 | 5.93 | 5.93 | 0 | 0 |

# WQM 7.0 Hydrodynamic Outputs

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 16G | 58643 | Trib 58643 to Schofield Run |

| RMI | Stream Flow (cfs) | PWS With (cfs) | Net Stream Flow (cfs) | Disc Analysis Flow (cfs) | Reach Slope (ft/ft) | Depth (ft) | Width (ft) | W/D Ratio | Velocity (fps) | Reach Trav Time (days) | Analysis Temp (°C) | Analysis pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Q7-10 Flow** | | | | | | | | | | | | |
| 0.330 | 0.18 | 0.00 | 0.18 | .0928 | 0.02418 | .418 | 6.8 | 16.28 | 0.09 | 0.213 | 23.27 | 7.40 |
| **Q1-10 Flow** | | | | | | | | | | | | |
| 0.330 | 0.11 | 0.00 | 0.11 | .0928 | 0.02418 | NA | NA | NA | 0.08 | 0.247 | 22.74 | 7.33 |
| **Q30-10 Flow** | | | | | | | | | | | | |
| 0.330 | 0.24 | 0.00 | 0.24 | .0928 | 0.02418 | NA | NA | NA | 0.11 | 0.189 | 23.60 | 7.44 |