YOVAISH
ENGINEERING SERVICES, LLC

Consulting Engineers in the Earth Sciences, Geotechnology, Hydrogeology and Construction Materials Testing

October 29, 2024

Reader Communities
5850 T.G. Lee Blvd
Suite 200
Orlando, FL 32822

Attention: Mr. Dean A. Barberree

Subject: Seepage Analyses, Proposed Dry Ponds 1 and 5, Lake Hills, County Road 48 & State Road 19, Town of Howey-in-the-Hills, Florida (PN 24-E2180.02A)

Dear Mr. Barberree:

As requested by Ms. Katlyn Crowell, P.E. of Madden, Moorhead & Stokes, LLC., Yovaish Engineering Services, LLC., has completed additional geotechnical engineering evaluations for the stormwater management system referenced above. The following report presents the results our seepage analyses required as input to permitting the proposed stormwater management system. In addition, recommendations for the clearing, filling, and grading of the proposed pond areas and slope stability analyses are provided herein.

1.0 BACKGROUND

As you are aware, the subsoil and groundwater level conditions were preliminary investigated by Yovaish Engineering Services, LLC. with the results presented in our report entitled, *"Progress Report No. 1, Subsoil, Groundwater and Limited Hydrogeologic Investigation, Proposed Lake Hills, County Road 48 & State Road 19, Town of Howey-in-the-Hills, Florida (PN 24-E2180.02),"* dated August 26, 2024.

Since completing our August 2024 investigation, a revised site layout was made available to us. The revised pond geometry and boring locations from our previous study are included on the Location Plan on Figure 1. The results of pertinent boring locations (required as input to our seepage analyses presented herein) are presented in the form of Soil Profiles on Figure 2.

The results of our field and laboratory investigations (to date) and the stormwater runoff information prepared by Madden, Moorhead and Stokes, Inc. (MMS), form the basis for our evaluations presented herein.

2.0 EVALUATIONS AND SEEPAGE ANALYSES

2.1 Pond Description

The proposed stormwater management system will include two (2) dry bottom ponds (P1 and P5). The approximate pond locations and configurations are depicted on the Location Plan on Figure 1. Based upon information prepared by MMS, a summary of the design elevation and retention requirements are presented in Table 1, below.

Table 1. Proposed Dry Pond Design Elevations and Water Quality Retention Volumes

Pond ID	Bottom Elevation (ft)	Top Elevation (ft)	*Water Quality Volume (ac-ft)	**100yr-24hr Design Storm Volume (ac-ft)
1	+78.0	+90.0	3.162	21.95
5	+79.0	+84.0	3.201	-

*Notes: *required recovery time 36 hours*
***required recovery time 14 days*

2.2 Seepage Analyses

2.2.1 Effective Aquifer: As input to our seepage analysis, we have assumed that a portion of the Pond 5 bottom will be over-excavated and backfilled with clean permeable sand. The recommended limits of undercut are depicted by the shaded area on the Location Plan on Figure 1. We recommend that Yovaish Engineering Services, LLC., be retained to inspect the over-excavation procedures in order to provide proper documentation of the earthwork activities.

Recommended earthwork operations within the proposed ponds are as follows:

- The existing, trees, vegetation and topsoil layer (Stratum 1A) should be removed in their entirety from within the limits of the pond. The unsuitable material generated during the earthwork activities shall be disposed of as directed by the owner. A representative of Yovaish Engineering Services, LLC. should be retained to inspect the stripped grade prior to placement of any fill.

- The depth of over-excavation limits of Pond 5 shall extend to elevation +75.0 feet (approximately 4.0 feet below the design pond bottom elevation) and 5.0 feet beyond the pond bottom toe of slope (see shaded area on Figure 1). The backfill soils should comprise permeable fine sands, as specified below.

- Upon approval by the Geotechnical Engineer, the excavated area shall be scarified and then backfilled with clean fine sands with the following engineering properties:

A. Minimum permeability equal to 20 feet per day, when compacted to minimum density equivalent to 92 percent of the soil's modified proctor density value (ASTM D-1557)

B. Maximum fines content (percent passing the U.S. no. 200 sieve) of 3 percent. As presented in Item 2 (above) and provided that the material is not inadvertently mixed with the on-site low permeable layers, the on-site fine sands comprising Strata 1A, 1C, 2 and 3 should be suitable for use as backfill.

- No burying of on-site unsuitable soils, strippings or debris is permitted within the retention pond bottom, berms and/or side slopes

- In order to maintain the necessary infiltration capacity, the soils below the retention area shall not be over compacted/densified by the construction equipment. As such and upon completion of the pond grading operation, the vertical permeability of the fine sands below the pond bottom should be checked (minimum 2 locations per pond). If the measured permeability is less than 20 feet per day, the affected pond bottom area should be scarified using a root rake and/or similar equipment (to loosen the soils to a minimum depth of 2 feet). Thereafter, the pond area may be re-graded using light weight rubber tire and/or low contact pressure trac-mounted equipment and the permeability of the loosened soils retested.

Provided that the pond areas are constructed and graded as presented above, the effective aquifer may be modeled as a single layered system. The boring locations, utilized for our evaluations for the shallow water table aquifer parameters below the retention area, are included on the Soil Profiles presented herein. A discussion of our seepage analysis methodology is provided below.

2.2.2 Weighted Average Horizontal Permeability: As input to our seepage analyses presented herein, we calculated the weighted average horizontal permeability for Pond 5. The weighted average vertical permeability values presented on Table 2, are based upon the measured permeability results (where applicable) and the encountered soil stratigraphy. A conservative value of 0.1 feet per day was assumed for the low-permeable silty to clayey fine sands (comprising Strata 9 through 13). As presented on Table 2, the weighted average horizontal permeability for Pond 5 is approximately 11.1 feet per day.

2.2.3 Seepage Analysis Methodology and Results: The pond configurations, idealized shallow water table aquifer parameters, and respective retention volumes presented in Table 1, were input to the computer program "PONDS" in order to evaluate the time required to dissipate the design volumes. The computer program "PONDS" was written by Mr. Devo Seereeram, Ph.D., and is on the St. Johns River Water Management District's list of accepted methodologies for analysis.

The required input, computer output results, and recovery time for the design retention volumes are presented on Computer Outputs A and B. Based upon the seepage analyses results, the ponds will recover their required water quality volumes in less than 36 hours. In addition, Pond 1 will recover the runoff from the 100yr-24hr storm in less than 14 days.

It is instructive to note that the seepage analyses presented above are based on the volumes indicated. During periods of above normal rainfall and/or repetitive storm events, ponded water or moist conditions may be present for longer than those indicated by the analysis results presented herein.

2.3 Pond Berm Evaluations

2.3.1 Proposed Berm Geometry: Based upon review of the preliminary site grading plans, the proposed wet bottom detention ponds will require the construction of earthen berms above the existing prevailing grades. As input to the design of pond grades we recommend the following:

- a minimum top of berm crest width equal to 10 feet
- outside slopes be graded at 4 horizontal to 1 vertical, or flatter

2.3.2 Earthen Berm Construction Recommendations: As input to our stability evaluations, we prepared the following recommendations for the construction of the pond berms.

1. The entire construction areas, including a minimum margin of 3 feet beyond the perimeter of the berm should be cleared and stripped; removing all existing vegetation and other deleterious material.

2. The stripped area should be proof-rolled using proper construction equipment.

3. Upon approval by the Geotechnical Engineer, the proof-rolled surface may be filled with relatively clean granular sands (less than 5 percent fines passing the U.S. No. 200 Sieve). The fill shall be placed in level lifts not to exceed 12 inches loose and compacted as outlined below.

4. A sufficient number of overlapping passes should be made by the compaction equipment across the filled area in order to compact the fill soil to a minimum density equivalent to 95 percent of the soil's Maximum Modified Proctor Density value (ASTM D-1557).

5. Once the berm has been filled and compacted to its design elevation/grades, appropriate erosion control shall be provided.

6. A Geotechnical Engineer from Yovaish Engineering Services, LLC., or his designated representative should be retained to inspect and test all compacted surfaces to determine that the in-place natural and fill soils are properly densified and proper documentation of the required minimum compaction criteria can be provided.

2.3.3 Berm Stability Analysis: The methodology of our stability analyses is based on infinite slope theory; conservatively assuming 100 percent earthen berm saturation; and (steady state) seepage forces parallel to the outside slope within the saturated portion of the earthen berm. The input parameters and analyses results are presented on Attachment A. Based upon the stability analyses results (minimum Factor of Safety equal to 1.25) and provided that the earthen berms are constructed as recommended herein and presented on the construction plans, it is our opinion that the earthen berms will be adequately stable. Furthermore, it is our opinion that seepage control (i.e. a clay core or similar impervious barrier) will not be required.

As stated previously herein and once finalized,, we recommend that the construction plans be submitted to our office for review with respect to the evaluations and recommendations presented herein.

3.0 CLOSURE

We trust that the information and recommendations provided herein satisfies your immediate needs. If you have any questions regarding the contents of this report, or if we can be of any further assistance, please do not hesitate to contact the undersigned.

Sincerely,

YOVAISH ENGINEERING SERVICES, LLC
Certificate of Authorization No. 30214

11-1-2024

Douglas J. Yovaish, P.E.
Principal
Florida Registration No. 52247

DOUGLAS JOHN YOVAISH
LICENSE
No 52247
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

Attachments: Table 2 - Weighted Permeability
Attachment A - Slope Stability Analysis
Figure 1 - Location Plan
Figure 2 - Soil Profiles
Computer Outputs A and B - Seepage Analyses

TABLE 2
ESTIMATED WEIGHTED AVERAGE HORIZONTAL PERMEABILITY - POND 5
LAKE HILLS - COUNTY RD 48 STATE RD 19
TOWN OF HOWEY-IN-THE-HILLS, FLORIDA
(PN 24-E2180.02A)

Pond Boring PB-11						
Bottom Elevation (ft)	Top Elevation (ft)	Stratum	Permeability (ft/day)	Incremental Transmissivity (ft**2/day)	Total Transmissivity (ft**2/day)	Weighted Average Permeability (ft/day)
75	77	3	36	72	72	36.0

Pond Boring PB-12						
Bottom Elevation (ft)	Top Elevation (ft)	Stratum	Permeability (ft/day)	Incremental Transmissivity (ft**2/day)	Total Transmissivity (ft**2/day)	Weighted Average Permeability (ft/day)
77.0	78.5	1A	10	15	47	13.4
75.0	77.0	8	16	32	32	16.0

Pond Boring PB-13						
Bottom Elevation (ft)	Top Elevation (ft)	Stratum	Permeability (ft/day)	Incremental Transmissivity (ft**2/day)	Total Transmissivity (ft**2/day)	Weighted Average Permeability (ft/day)
78.3	80.3	1A	10	20	45.68	22.8
76.8	78.3	4	17	25.5	25.68	17.1
75.0	76.8	12	0.1	0.18	0.18	0.1

Weighted Average Horizontal Permeability (ft/day) =	22.2
APPLY FS=2.0	11.1

ATTACHMENT A
STEADY STATE SEEPAGE FOR SLOPE STABILITY ANALYSES
OUTSIDE SLOPE OF POND BERM (4H TO 1V OR FLATTER AND 100% SATURATION)
LAKE HILL SUBDIVISON
TOWN OF HOWEY IN THE HILLS
(PN 23-E2161.05A)

Input Data

Saturated unit weight	125.0	pcf
Moist unit weight	115.0	pcf
Unit weight of water	62.4	pcf
Slope (Horiz/Vert)	**4.0**	
Inter-particle friction angle	32.0	deg.
% Saturated thickness	100%	

Intermediate Calcs

Effective/Buoyant Unit Weight	62.6	pcf
Slope Angle	14.0	deg.
Hydraulic Gradient	0.25	

Answer

Computed factor of safety (includes seepage forces)	**1.25**	
Required minimum factor of safety	1.2	

LOCATION PLAN

0 75 150 300

Scale in Feet

LAKE HARRIS

POND 5

POND 1

CONCRETE FLUME

GUARDRAIL

MASONRY WALL

LEGEND

AUGER BORING LOCATION

SHADED AREA DEPICTED PRELIMINARY ESTIMATED HORIZONTAL LIMITS OF POND OVER-EXCAVATION (SEE ATTACHED REPORT)

LOC PLAN

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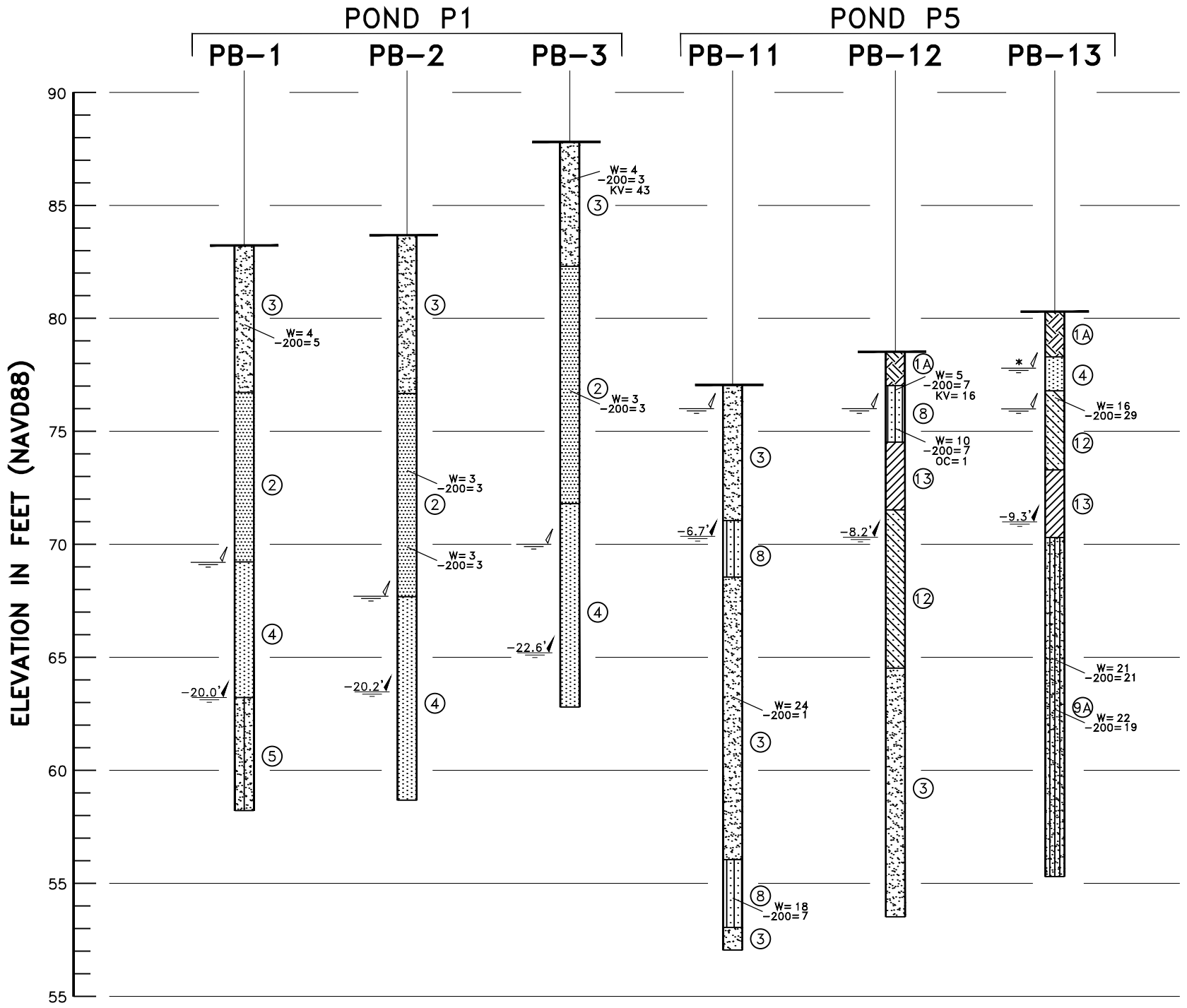
SEEPAGE ANALYSES

PROPOSED DRY PONDS 1 & 5

LAKE HILLS

TOWN OF HOWEY IN THE HILLS, FLORIDA

DRAWN :	SCALE :	JOB NO. :
RNR	NOTED	24-E2180.02A
APPROVED :	DATE :	FIGURE:
DJY	10/31/2024	1



SOIL PROFILES

LEGEND

- ⑴A GRAY BROWN FINE SAND WITH OCCASIONAL SMALL ROOTS, TILLED TOPSOIL (SP)
- ⑴B MEDIUM GRAY TO DARK GRAY SLIGHTLY SILTY FINE SAND WITH OCCASIONAL SMALL ROOTS (SP-SM)
- ⑴C DARK REDDISH BROWN PEAT (PT)
- ⑴D DARK GRAY SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- ② ORANGISH BROWN FINE SAND (SP)
- ③ BROWN TO STRONG BROWN FINE SAND (SP)
- ④ LIGHT GRAY TO LIGHT GRAYISH BROWN FINE SAND (SP)
- ⑤ GRAY TO GRAYISH BROWN SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP-SM)
- ⑥ DARK GRAY TO DARK GRAY BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP-SM)
- ⑦ GRAYISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- ⑦A ORANGISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- ⑧ REDDISH BROWN TO DARK REDDISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- ⑨ LIGHT GRAYISH BROWN SILTY TO SLIGHTLY CLAYEY FINE SAND WITH OCCASIONAL PINK MOTTLING (SM)(SM-SC)
- ⑨A VERY LIGHT GRAY SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- ⑩ ORANGISH BROWN SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- ⑪ ORANGE BROWN CLAYEY FINE SAND (SC)
- ⑫ GRAY TO GRAYISH BROWN SLIGHTLY CLAYEY TO CLAYEY FINE SAND WITH OCCASIONAL ORANGE AND/OR YELLOW MOTTLING (SC)
- ⑬ GRAY TO VERY LIGHT BLUE GRAY CLAYEY FINE SAND TO SANDY CLAY (SC)(CL)

(SP) UNIFIED SOIL CLASSIFICATION GROUP SYMBOL

-4.2' DEPTH TO GROUNDWATER LEVEL (MEASURED 7/2024)

N.E.' DEPTH TO GROUNDWATER LEVEL NOT ENCOUNTERED

PRELIMINARY ESTIMATED SEASONAL HIGH GROUNDWATER LEVEL

* ESTIMATED TEMPORARY PERCHED GROUNDWATER LEVEL

W	NATURAL MOISTURE CONTENT IN PERCENT
-200	PERCENT FINES PASSING U.S. NO. 200 SIEVE
OC	ORGANIC CONTENT IN PERCENT DRY WEIGHT
KV	COEFFICIENT OF VERTICAL PERMEABILITY (FEET PER DAY)

SOIL PROFILES

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SEEPAGE ANALYSES

PROPOSED DRY PONDS 1 & 5
LAKE HILLS

TOWN OF HOWEY IN THE HILLS, FLORIDA

DRAWN : RNR	SCALE : NOTED	JOB NO. : 24-E2180.02A
APPROVED : DJY	DATE : 10/31/2024	FIGURE: 2

COMPUTER OUTPUT B
PONDS Version 3.3.0278
Retention Pond Recovery - Refined Method

Devo Seereeram, Ph.D., P.E.

Project Data

Project Name:	Lake Hills
Simulation Description:	Pond-5
Project Number:	24-E2180.02A
Engineer :	RNR
Supervising Engineer:	DJY
Date:	10-13-2024

Aquifer Data

Base Of Aquifer Elevation, [B] (ft datum):	75.00
Water Table Elevation, [WT] (ft datum):	76.00
Horizontal Saturated Hydraulic Conductivity, [Kh] (ft/day):	10.00
Fillable Porosity, [n] (%):	30.00
Unsaturated Vertical Infiltration Rate, [Iv] (ft/day):	5.0
Maximum Area For Unsaturated Infiltration, [Av] (ft^2):	158443.0

Geometry Data

Equivalent Pond Length, [L] (ft):	725.0
Equivalent Pond Width, [W] (ft):	250.0

Ground water mound is expected to intersect the pond bottom

Stage vs Area Data

Stage (ft datum)	Area (ft^2)
79.00	166654.0
80.00	174995.0
81.00	183455.0
82.00	192017.0
83.00	200680.0
84.00	209433.0

Discharge Structures

Discharge Structure #1 is inactive

Discharge Structure #2 is inactive

Discharge Structure #3 is inactive

Scenario Input Data

Scenario 1 :: SJRWMD Water Quality 3.201 ac-ft

Hydrograph Type: Slug Load
Modflow Routing: Routed with infiltration

Treatment Volume (ft^3) 139452

Initial ground water level (ft datum) 76.00 (default)

Time After Storm Event (days)	Time After Storm Event (days)
0.100	2.000
0.250	2.500
0.500	3.000
1.000	3.500
1.500	4.000

Detailed Results *:: Scenario 1 :: SJRWMD Water Quality 3.201 ac-ft*

Elapsed Time (hours)	Instantaneous Inflow Rate (ft^3/s)	Outside Recharge (ft/day)	Stage Elevation (ft datum)	Infiltration Rate (ft^3/s)	Combined Instantaneous Discharge Rate (ft^3/s)	Cumulative Inflow Volume (ft^3)	Cumulative Infiltration Volume (ft^3)	Combined Cumulative Discharge (ft^3)	Flow Type
0.000	23242.0000	0.00000	76.00000	0.00000	0	0.000	0.0	0	N.A.
0.002	23242.0000	0.00000	79.81963	9.16916	0	139452.000	55.0	0	U/P
2.400	0.0000	0.00000	79.35820	5.50302	0	139452.000	79221.5	0	U/P
6.000	0.0000	0.00000	----	----	----	139452.000	139452.0	0	dry
12.000	0.0000	0.00000	----	----	----	139452.000	139452.0	0	dry
24.000	0.0000	0.00000	----	----	----	139452.000	139452.0	0	dry
36.000	0.0000	0.00000	----	----	----	139452.000	139452.0	0	dry
48.000	0.0000	0.00000	----	----	----	139452.000	139452.0	0	dry
60.000	0.0000	0.00000	----	----	----	139452.000	139452.0	0	dry
72.000	0.0000	0.00000	----	----	----	139452.000	139452.0	0	dry
84.000	0.0000	0.00000	----	----	----	139452.000	139452.0	0	dry
96.000	0.0000	0.00000	----	----	----	139452.000	139452.0	0	dry

COMPUTER OUTPUT A
PONDS Version 3.3.0278
Retention Pond Recovery - Refined Method

Devo Seereeram, Ph.D., P.E.

Project Data

Project Name:	Lake Hills
Simulation Description:	Pond-1
Project Number:	24-E2180.02A
Engineer :	RNR
Supervising Engineer:	DJY
Date:	10-22-2024

Aquifer Data

Base Of Aquifer Elevation, [B] (ft datum):	63.00
Water Table Elevation, [WT] (ft datum):	69.00
Horizontal Saturated Hydraulic Conductivity, [Kh] (ft/day):	30.00
Fillable Porosity, [n] (%):	30.00
Unsaturated Vertical Infiltration Rate, [Iv] (ft/day):	15.0
Maximum Area For Unsaturated Infiltration, [Av] (ft²):	84704.0

Geometry Data

Equivalent Pond Length, [L] (ft):	400.0
Equivalent Pond Width, [W] (ft):	300.0

Ground water mound is expected to intersect the pond bottom

Stage vs Area Data

Stage (ft datum)	Area (ft²)
78.00	84704.0
79.00	90586.0
80.00	96637.0
81.00	102858.0
82.00	109252.0
83.00	115819.0
84.00	122560.0
85.00	129478.0
86.00	136551.0
87.00	143751.0
88.00	151052.0
89.00	158453.0
90.00	165955.0

Discharge Structures

Discharge Structure #1 is inactive

Scenario Input Data

Scenario 1 :: SJRWMD Water Quality Volume 3.162 ac-ft

Hydrograph Type: Slug Load
Modflow Routing: Routed with infiltration

Treatment Volume (ft^3) 137742

Initial ground water level (ft datum) 69.00 (default)

Time After Storm Event (days)	Time After Storm Event (days)
0.100	2.000
0.250	2.500
0.500	3.000
1.000	3.500
1.500	4.000

Scenario 2 :: 100YR-24HR Design Volume 21.95 ac-ft

Hydrograph Type: Slug Load
Modflow Routing: Routed with infiltration

Treatment Volume (ft^3) 956142

Initial ground water level (ft datum) 69.00 (default)

Time After Storm Event (days)	Time After Storm Event (days)	Time After Storm Event (days)	Time After Storm Event (days)	Time After Storm Event (days)
0.100	2.000	5.000	10.000	14.010
0.250	2.500	6.000	11.000	
0.500	3.000	7.000	12.000	
1.000	3.500	8.000	13.000	
1.500	4.000	9.000	14.000	

Detailed Results *:: Scenario 1 :: SJRWMD Water Quality Volume 3.162 ac-ft*

Elapsed Time (hours)	Instantaneous Inflow Rate (ft^3/s)	Outside Recharge (ft/day)	Stage Elevation (ft datum)	Infiltration Rate (ft^3/s)	Combined Instantaneous Discharge Rate (ft^3/s)	Cumulative Inflow Volume (ft^3)	Cumulative Infiltration Volume (ft^3)	Combined Cumulative Discharge (ft^3)	Flow Type
0.000	22957.0000	0.00000	69.00000	0.00000	0	0.000	0.0	0	N.A.
0.002	22957.0000	0.00000	79.54224	14.70556	0	137742.000	88.2	0	U/P
2.400	0.0000	0.00000	78.12561	8.82579	0	137742.000	127056.0	0	U/P
6.000	0.0000	0.00000	----	----	----	137742.000	137742.0	0	dry
12.000	0.0000	0.00000	----	----	----	137742.000	137742.0	0	dry
24.000	0.0000	0.00000	----	----	----	137742.000	137742.0	0	dry
36.000	0.0000	0.00000	----	----	----	137742.000	137742.0	0	dry
48.000	0.0000	0.00000	----	----	----	137742.000	137742.0	0	dry
60.000	0.0000	0.00000	----	----	----	137742.000	137742.0	0	dry
72.000	0.0000	0.00000	----	----	----	137742.000	137742.0	0	dry
84.000	0.0000	0.00000	----	----	----	137742.000	137742.0	0	dry
96.000	0.0000	0.00000	----	----	----	137742.000	137742.0	0	dry

Detailed Results *:: Scenario 2 :: 100YR-24HR Design Volume 21.95 ac-ft*

Elapsed Time (hours)	Instantaneous Inflow Rate (ft^3/s)	Outside Recharge (ft/day)	Stage Elevation (ft datum)	Infiltration Rate (ft^3/s)	Combined Instantaneous Discharge Rate (ft^3/s)	Cumulative Inflow Volume (ft^3)	Cumulative Infiltration Volume (ft^3)	Combined Cumulative Discharge (ft^3)	Flow Type
0.000	159357.0000	0.00000	69.00000	0.00000	0	0.000	0.0	0	N.A.
0.002	159357.0000	0.00000	86.56454	14.70556	0	956142.000	88.2	0	U/P
2.400	0.0000	0.00000	85.63976	15.04380	0	956142.000	127056.0	0	U/P
6.000	0.0000	0.00000	84.07128	10.89608	0	956142.000	328603.8	0	U/S
12.000	0.0000	0.00000	83.51201	2.70106	0	956142.000	396363.3	0	S
24.000	0.0000	0.00000	82.83662	1.57862	0	956142.000	475382.5	0	S
36.000	0.0000	0.00000	82.32925	1.19364	0	956142.000	532756.1	0	S
48.000	0.0000	0.00000	81.91347	0.97387	0	956142.000	578512.9	0	S
60.000	0.0000	0.00000	81.55658	0.82880	0	956142.000	616898.6	0	S
72.000	0.0000	0.00000	81.24141	0.72439	0	956142.000	650120.8	0	S
84.000	0.0000	0.00000	80.95768	0.64487	0	956142.000	679485.6	0	S
96.000	0.0000	0.00000	80.69879	0.57778	0	956142.000	705837.3	0	S
120.000	0.0000	0.00000	80.25346	0.47774	0	956142.000	750191.9	0	S
144.000	0.0000	0.00000	79.85963	0.41476	0	956142.000	788391.3	0	S
168.000	0.0000	0.00000	79.50625	0.36569	0	956142.000	821862.3	0	S
192.000	0.0000	0.00000	79.18556	0.32635	0	956142.000	851583.2	0	S
216.000	0.0000	0.00000	78.89190	0.29410	0	956142.000	878255.3	0	S
240.000	0.0000	0.00000	78.62104	0.26714	0	956142.000	902403.1	0	S
264.000	0.0000	0.00000	78.36980	0.24425	0	956142.000	924416.4	0	S
288.000	0.0000	0.00000	78.13551	0.18360	0	956142.000	944610.4	0	S
312.000	0.0000	0.00000	77.84034	0.06673	0	956142.000	956142.0	0	S
336.000	0.0000	0.00000	77.46321	0.00000	0	956142.000	956142.0	0	S
336.240	0.0000	0.00000	77.45945	----	----	956142.000	956142.0	0	N.A.