Re: RCID Planning & Engineering
Dewatering Permit for Project U Utilities

Please accept this response letter to the comments for the subject project.

Comments are listed below followed by our responses in **bold.**

1. Name of Contractor.
**Response: JCB.**

2. Site location plan showing task specific dewatering locations
**Response: Please see attached drawing and location map.**

3. Records that indicate the presence or absence of known areas of contamination within the project, and in adjacent areas that could be impacted if dewatering operations are performed. Also, if applicable, reasonable assurance that dewatering activities will not alter the contamination plumes movement or directions.
**Response: There are no active cleanup sites within a half mile radius of this location. Please reference the attached Contamination Locator Map.**

4. Proposed methods of construction.
**Response: The project work involves dewatering in order to construct Pool, and Splash pad. Water table will be maintained up to 12' from ground elevation for all wellpoints. Keeping the water level below the proposed infrastructure will prevent the infrastructure from being buoyant and allow for safe installation. The installation of the wellpoints and risers (12' long with 3' screens) is to be accomplished by jetting a steel jet casing or jet punch to the appropriate depth around the construction area. After removal of the jetting device, the wellpoints and risers will be centrally located in the opening and a filter pack of medium-coarse sand installed around the wellpoints for the entire length of the wellpoints. The dewatering will be done in one phase. Up to 500 lf of 6" wellpoint header will be installed around the excavation and pumped with 8" wellpoint pumps at locations shown in the attached drawing. Sump pumps may be utilized to deal with surface runoff.**

5. Estimated pumping rates and duration of pumping
**Response: The pumping will run for the duration of the project, which is approximately 210 days per phase**

| Phase 1 | | | | |
|---|---|---|---|---|
| Pump No. | Header Length (lf) | Number of Wellpoints (ea) | Estimate Pumping Rates (gpm) | Duration of Pumping (days) |
| 1 | 320 | 104 | 275 | 210 |
| 2 | 220 | 74 | 250 | 210 |
| 3 | 160 | 54 | 250 | 60 |
| 4 | 220 | 74 | 250 | 30 |
| 5 | 100 | 34 | 250 | 10 |

6. Known Volume to be discharge from vessels installed in the wet.
**Response: No vessels will be installed in the wet.**

7. Estimated depth of drawdown.
**Response: Estimated drawdown is up to 12 ft below existing ground.**

8. Anticipated cone of influence.
**Response: The anticipated cone of influence is up to 340 ft from the center of each pumped system.**

9. Proposed points of discharge
**Response: The turbid discharge will be conveyed to a temporary holding pond until the groundwater discharge is confirmed clean. Clean discharge for All of pumps will be directed to the Seven Seas Lagoon as shown in the plans.**

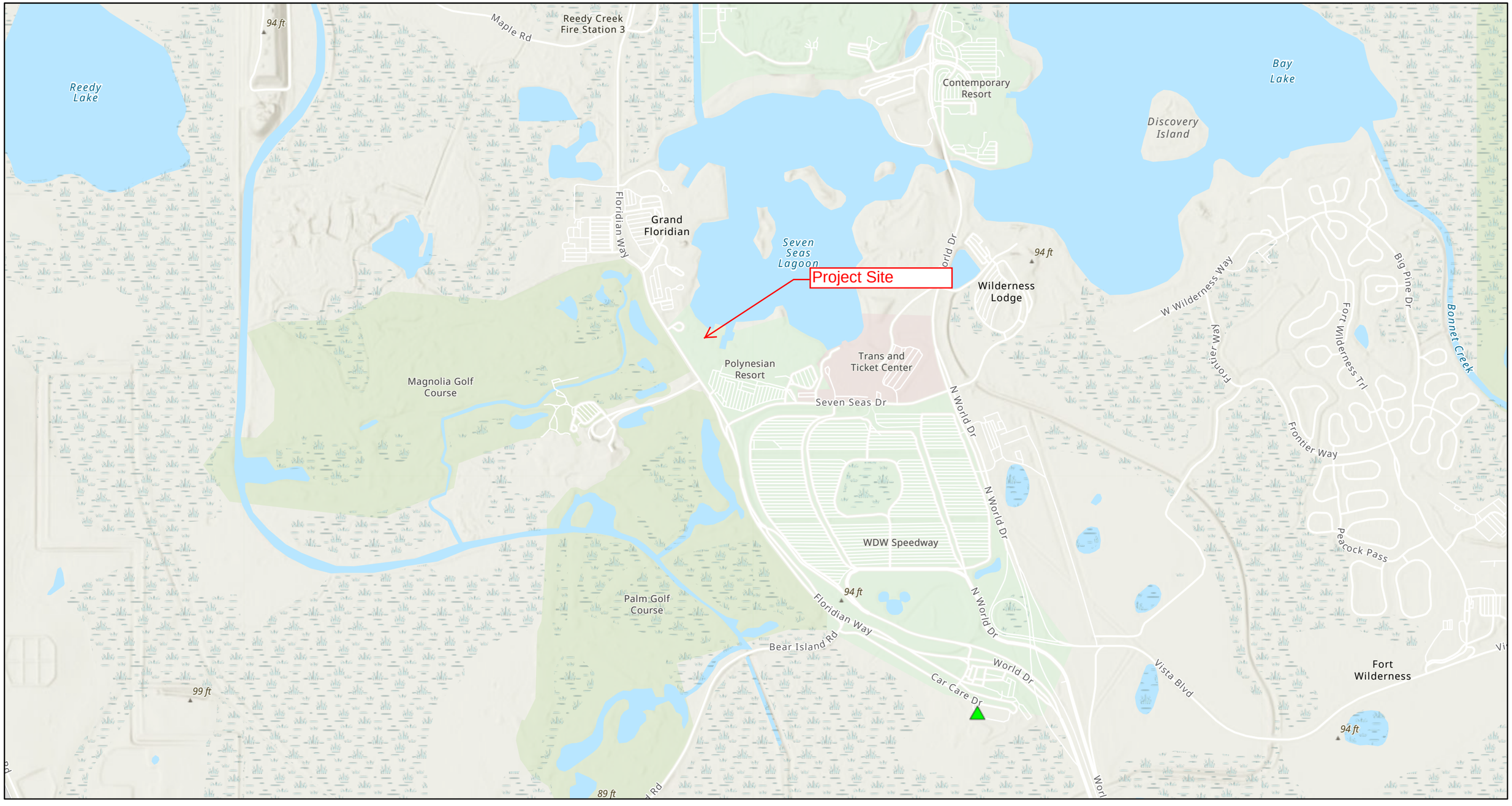
10. Site water routing from excavation to stormwater retention area.
**Response: The turbid discharge will be conveyed to a temporary holding pond until the groundwater discharge is confirmed clean. Clean discharge for All of pumps will be directed to the Seven Seas Lagoon as shown in the plans.**

11. Proposed groundwater and surface water monitoring plans and turbidity monitoring plan
**Response: Flow meters shall be installed on the discharge piping and flow readings shall be read and recorded daily. Turbidity readings shall be taken twice daily, a minimum of 4 hours apart. All monitoring information will be submitted to RCID weekly on the RCID Weekly Dewatering Report. If monitoring identifies turbidity in the discharge, the dewatering system shall be shut off and RCID contacted for assistance.**

12. Any other site and task specific characteristics worthy of consideration
**Response: None.**

13. Hydraulic information (i.e. normal pool and seasonal high water elevations) of any wetlands and surface waters within or adjacent to the proposed dewatering activities.
**Response: Water level in the Seven Seas Lagoon is estimated to be at 94' elevation.**

# Contamination Locator Map




March 28, 2023

DEP Cleanup Sites

▲ PETROLEUM

1:18,056

0 0.2 0.4 0.8 mi

0 0.3 0.6 1.2 km

FDEP,DWM, Esri, NASA, NGA, USGS, FEMA, Esri Community Maps Contributors, County of Orange, FL, FDEP, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS,

Map created by Map Direct, powered by ESRI.

## Dewatering Estimate Utilizing Sichardt Equation

Phase 1

| | | | | | |
|---|---|---|---|---|---|
| Aquifer thickness: | 66 | feet | (a) | 20.116 | meters |
| Aquifer Kh | 25 | feet/day | (a) | 8.819E-05 | met/sec |
| Excavation Trench: | | | | | |
| Length | 775 | feet | (b) | 236.208 | meters |
| Width | 10 | feet | (b) | 3.048 | meters |
| Dewater depth | 12 | feet | (c) | 3.657 | meters |

**$R_o$ = 3000(H-h)sqrt(K)**

| | | | |
|---|---|---|---|
| aquifer thickness | H | 20.116 | meters |
| dewater thickness | h | 16.458 | meters |

| | | | | | |
|---|---|---|---|---|---|
| $R_o$ | 103.04 | meters | 338.1 | feet | Radius of Influence |

$r_e$ = sqrt((L x W)/ pi)

| | | | | |
|---|---|---|---|---|
| $r_e$ | 15.138 | meters | 49.67 | feet |

**Dewatering Flow Rate** A direct calculation of flow rate may be derived from the following equation:

$$H^2 - h^2 = \frac{n \cdot q}{\pi \cdot k}(\ln R_o - \ln r_e)$$

**Q** n * q = p*Kh * [(H2 - h2)/(ln Ro - ln re)]

| | | | **n*Q** | | |
|---|---|---|---|---|---|
| $H^2 - h^2$ | 133.767 | for n = | m3/sec | GPM | MGD: |
| ln $R_o$ - ln $r_e$ | 1.91793 | 1 | 1.932E-02 | 306.299 | 0.441 |
| p * Kh | 2.771E-04 | 256 | | 1.20 | |

## Dewatering Estimate Utilizing Sichardt Equation

Phase 2

| | | | | | |
|---|---|---|---|---|---|
| Aquifer thickness: | 66 | feet | (a) | 20.116 | meters |
| Aquifer Kh | 25 | feet/day | (a) | 8.819E-05 | met/sec |
| Excavation Trench: | | | | | |
| Length | 1120 | feet | (b) | 341.359 | meters |
| Width | 80 | feet | (b) | 24.383 | meters |
| Dewater depth | 12 | feet | (c) | 3.657 | meters |

**$R_o$ = 3000(H-h)sqrt(K)**

| | | | |
|---|---|---|---|
| aquifer thickness | H | 20.116 | meters |
| dewater thickness | h | 16.458 | meters |

| | | | | |
|---|---|---|---|---|
| $R_o$ | 103.04 meters | 338.1 feet | Radius of Influence |

$r_e$ = sqrt((L x W)/ pi)

| | | |
|---|---|---|
| $r_e$ | 51.472 meters | 168.88 feet |

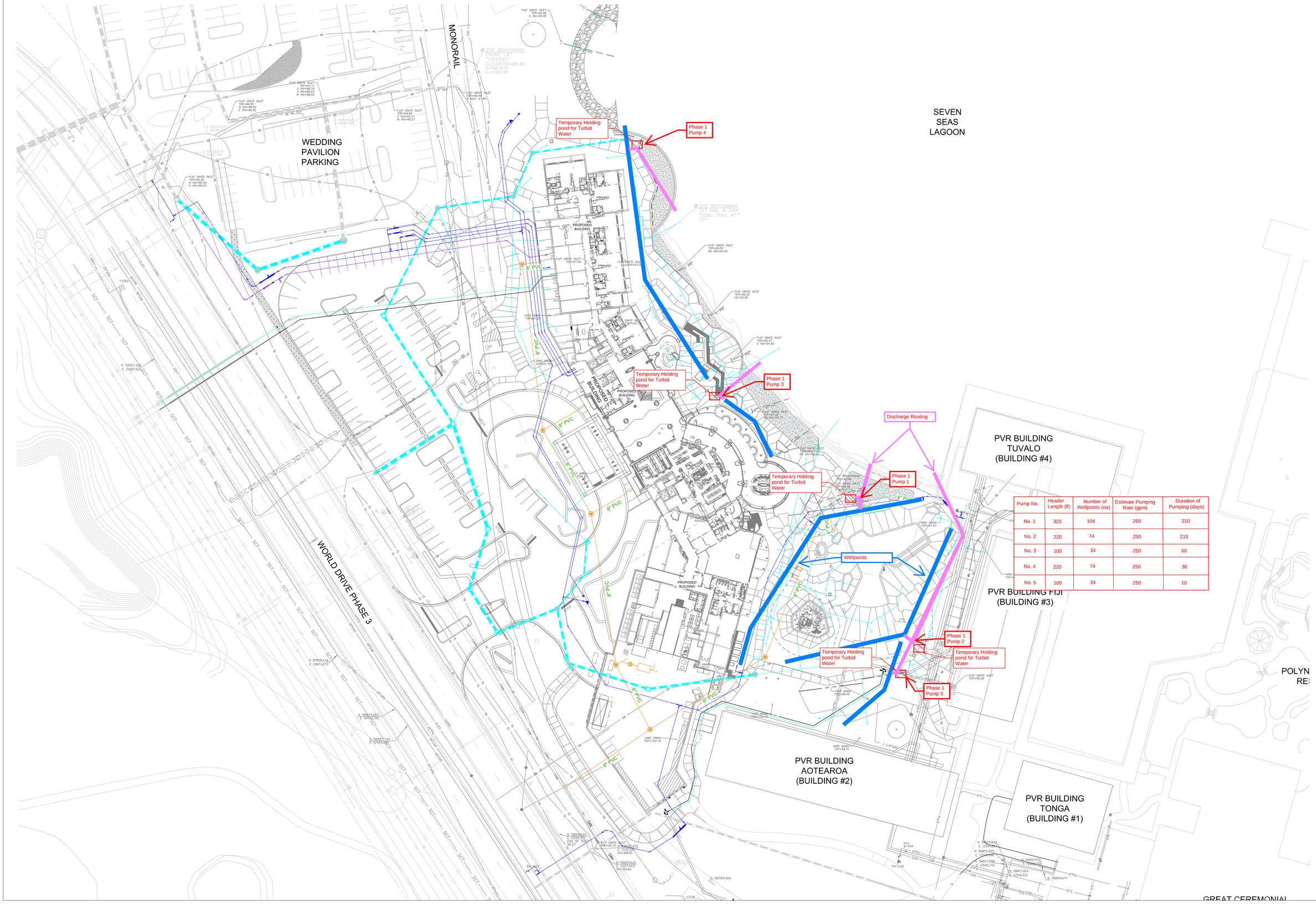
**Dewatering Flow Rate** A direct calculation of flow rate may be derived from the following equation:

$$H^2 - h^2 = \frac{n \cdot q}{\pi \cdot k}(\ln R_o - \ln r_e)$$

**Q** n * q = p*Kh * [(H2 - h2)/(ln Ro - ln re)]

| | | | **n*Q** | | |
|---|---|---|---|---|---|
| $H^2 - h^2$ | 133.767 | for n = | m3/sec | GPM | MGD: |
| ln $R_o$ - ln $r_e$ | 0.69410 | 1 | 5.340E-02 | 846.364 | 1.219 |
| p * Kh | 2.771E-04 | 374 | | 2.26 | |


PROJECT LOCATION
Disney's Grand Floridian Convention Center
Grand Floridian Cafe
Disney's Grand Floridian Resort & Spa
Disney's Grand Floridian Resort & Spa
Floridian Way
The Villas at Disney's Grand Floridian Resort...
The Grand Floridian Spa
Disney's Wedding Pavilion
Floridian Way
Disney's Polynesian Village Resort
Trader Sam's Tiki Terrace
Kona Cafe
Disney's Polynesian Resort Monorail
Moorea Longhouse at Disney's Polynesian...
Walt Disney World Monorail Transportation
Guest Drop-Off
Disney's Transportation & Ticket Center
Disney's Magic Kingdom's Ch
Seven Seas Drive
Seven Seas Drive
Walt Disney World Resort Golf
Aladdin
Image Landsat / Copernicus
1234 ft
Shades of Green
1985
Google Earth
28°24'23.49" N 81°35'08.81" W elev 95 ft eye alt 5572 ft



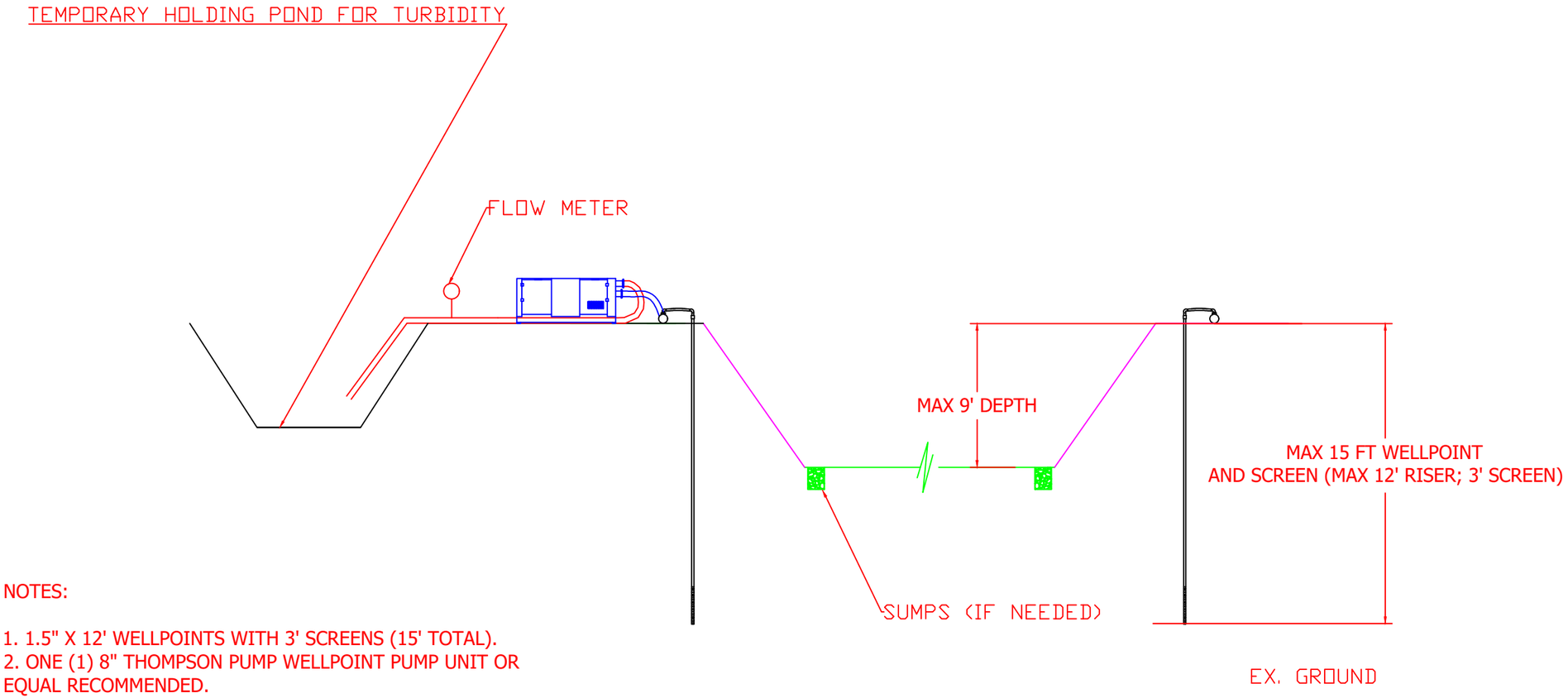

| Pump No. | Header Length (lf) | Number of Wellpoints (ea) | Estimate Pumping Rate (gpm) | Duration of Pumping (days) |
|---|---|---|---|---|
| No. 1 | 320 | 104 | 250 | 210 |
| No. 2 | 220 | 74 | 250 | 210 |
| No. 3 | 100 | 34 | 250 | 60 |
| No. 4 | 220 | 74 | 250 | 30 |
| No. 5 | 100 | 34 | 250 | 10 |

# PROJECT U ▪ OVERALL UNDERGROUND EXHIBIT

PN8121002 |

1"=30'

LandDesign




NOTES:

1. 1.5" X 12' WELLPOINTS WITH 3' SCREENS (15' TOTAL).
2. ONE (1) 8" THOMPSON PUMP WELLPOINT PUMP UNIT OR EQUAL RECOMMENDED.
3. DISCHARGE SITE WATER TO TEMPORARY HOLDING POND OR BACK INTO EXCAVATION UNTIL CLEAN. CLEAN DISCHARGE WILL BE DIRECTED TO SEVEN SEAS LAGOON.

# TYPICAL TRENCH EXCAVATION FOR UTILITIES

## SECTION VIEW

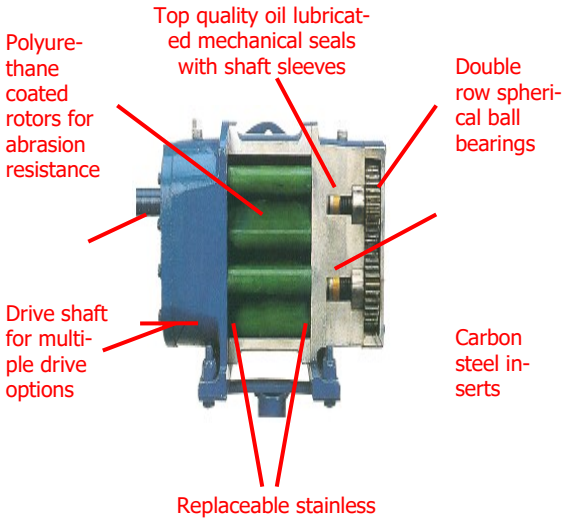
| | | | |
|---|---|---|---|
| TITLE: DISNEY PROJECT U DEWATERING SECTIONS | | | SCALE: N T S; DO NOT SCALE DRAWING |
| DRAWN: J. SUNHACHAWI | DATE: 1/30/23 | TOLERANCES (DIMENSIONS ARE IN FEET UNLESS OTHERWISE SPECIFIED) | SIZE; SHEET: 2 OF 2 |
| CHECKED | DATE | .XX = +/-.010<br>.XXX = +/-.005<br>FRACTIONS = +/- 1/32<br>MACH'D SURFACE $\sqrt{\frac{125}{OA}}$<br>ANGULAR: +/- 1 CASTINGS, +/- 1 WELDMENT, +/- 30' MACHINED | DRAWING NUMBER: JCB-DIS-1; REV |
| APPROVED | DATE | | |

THOMPSON PUMP
EXPERIENCE INNOVATION

# 8” Rotary Wellpoint Pump
## Model: 8RW-DJDS-45C-MC

ENVIROPRIME system

The Thompson Rotary Wellpoint Pump is the “original” rotary wellpoint pump trusted by contractors worldwide for more than 30 years. The state-of-the-art 8RW-DJDS-45C-MC is specifically designed and engineered for wellpoint and sock dewatering with high air handling, large water volume and high vacuum capability.




Consult factory for other versions & options including site trailers, sound attenuation, etc.

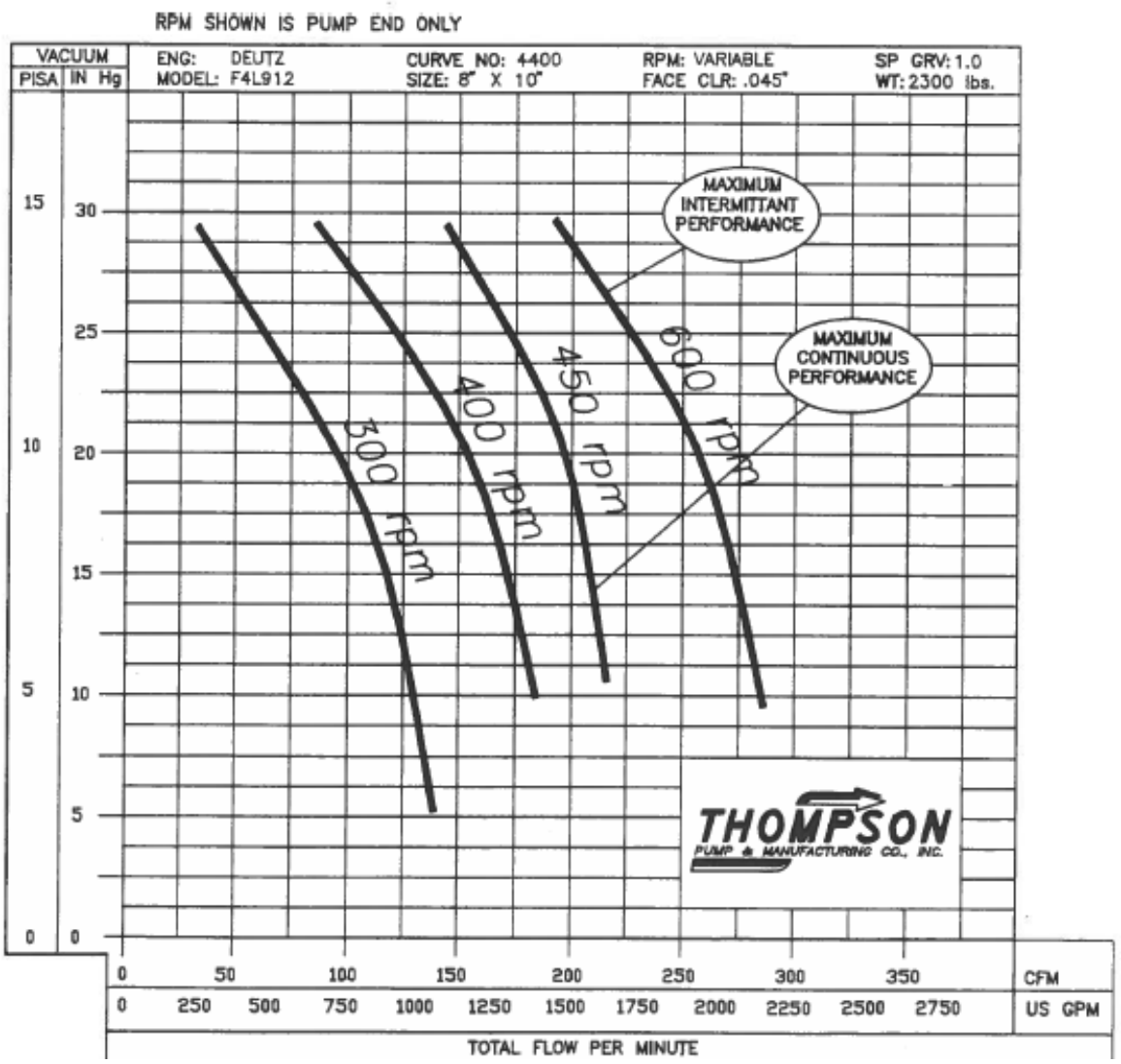
| Materials | |
|---|---|
| **Type** | Positive displacement, low-pulsation, self-priming, rotary lobe |
| **Rotor** | Four-lobe, single piece design with carbon steel shaft and welded carbon steel fins with polyurethane coating |
| **Rotor Housing** | Rugged, heavy-duty cast aluminum |
| **Mechanical Seal** | Oil or grease lubricated with bronze rotating and steel stationary faces |
| **Suction Tank** | A36 steel with permanent solids screen, 1-1/2” drain port, adjustable vacuum breaker valve and vacuum gauge for system diagnostics |
| **Discharge Tank** | A36 steel with canvas reinforced neoprene weighted flapper style check valve; built-in reservoir with pressure relief and 1-1/2” drain port |
| **Wear Plate** | Replaceable, 304 stainless steel |
| **Bearings** | Heavy-duty, oil bath-pressure lubricated, cylindrical roller type |
| **Canopy** | Removable drop-on sound enclosure, constructed of 18 gauge solid galvaneel shell and 1.5” thick, 8lb density mineral wool, with 5 lockable doors. |

## TECHNICAL SPECIFICATIONS

| | | | | | |
|---|---|---|---|---|---|
| Suction Size | 8 | in (20.32 cm) | Approximate Dry Weight | 4,940 | lbs (2240.74 kg) |
| Discharge Size | 8 | in (20.32 cm) | Fuel Tank | 127 | gal (480.75 L) |
| Maximum Flow Capacity | 1750 | gpm (397 m³/h) | Fuel Consumption @ 500 rpm | 2.21 | gph (8.37 L/h) |
| Maximum Head | 150 | ft (45.72 m) | Maximum Lift | 29 | inHg (736.6 mmHg) |
| Maximum Solids Handling | No Solids | | Fuel Economy | | |
| Maximum Operating Speed | 500 | rpm | 0.413 lb/hp-hr @ 2,000 rpm | | |
| Maximum Operating Temp. | 200 | °F (93.33 °C) | 0.394 lb/hp-hr @ 1,800 rpm | | |
| Displacement Volume ? | 275 | CFM (7.79 m3/h) | 0.390 lb/hp-hr @ 1,600 rpm | | |

**Thompson Pump and Manufacturing Co., Inc.**
4620 City Center Drive, Port Orange, FL 32129 USA
www.thompsonpump.com

Nationwide 800-767-7310 • International +1-386-767-7310
Fax 386-761-0362
sales@thompsonpump.com

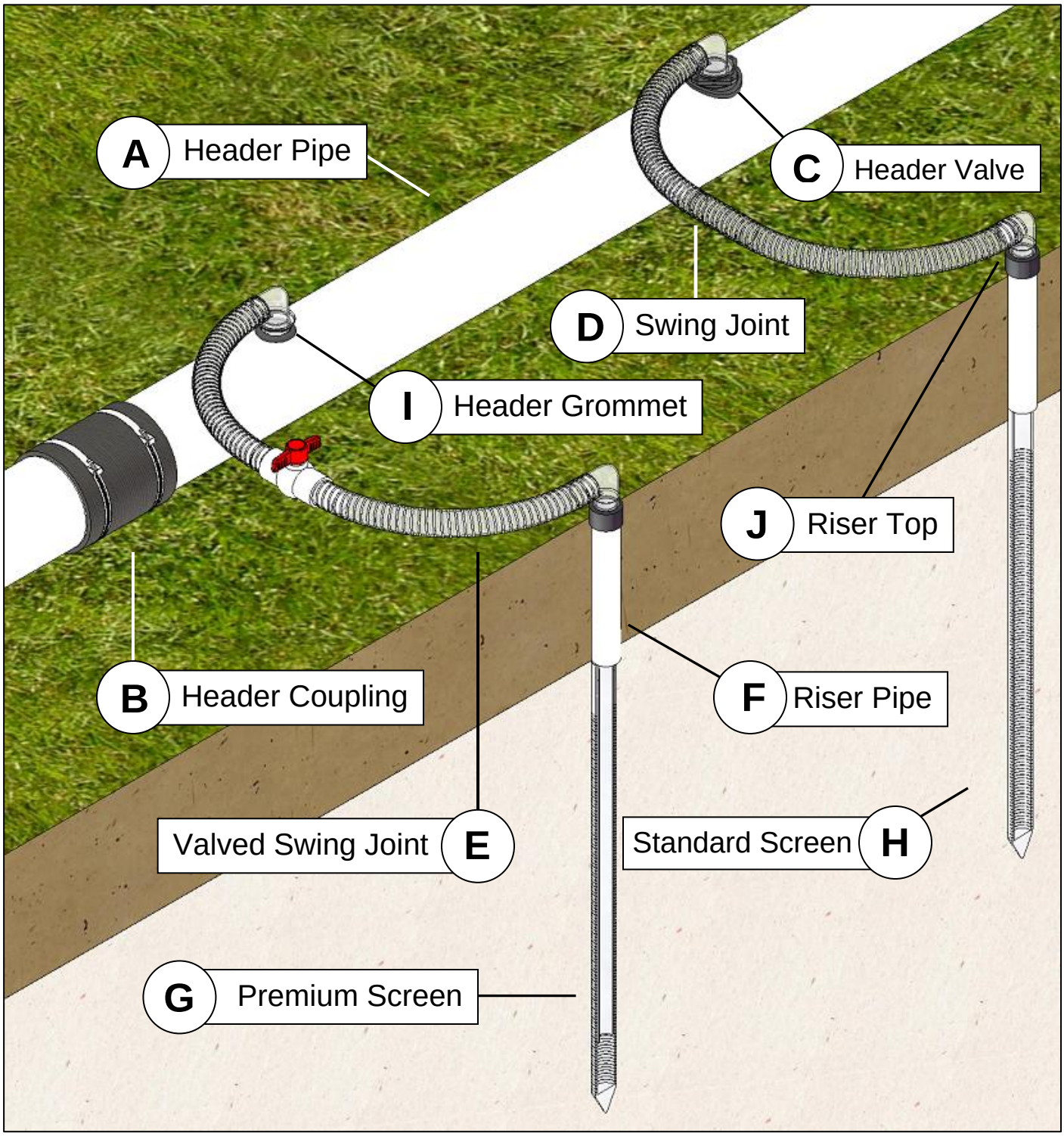



## *Engine Specification*

| | | | |
|---|---|---|---|
| **Engine Model** | John Deere 4045TFC03, 74 hp @ 2,000 rpm | **Standard Equipment** | Diesel oxidation catalyst, diesel particulate filter, alternator , radiator |
| **Type** | EPA Final Tier 4, In-Line, 4-Cycle, Turbocharged, high-pressure common-rail diesel | **Automatic Shutdowns** | Low lube oil pressure; high water temperature |

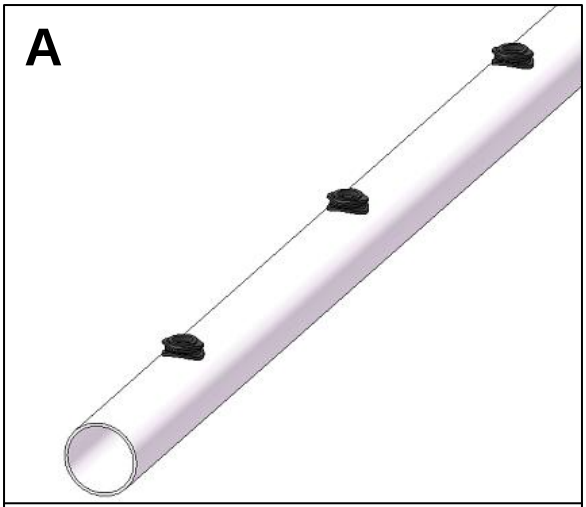
# Wellpoint Systems and Accessories

THOMPSON PUMP
EXPERIENCE INNOVATION



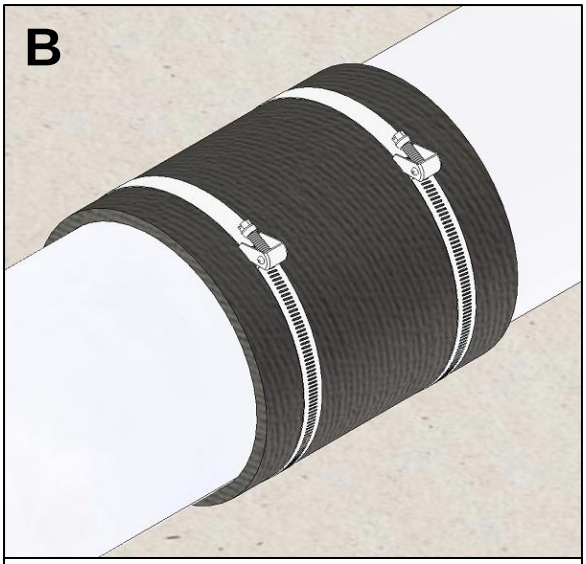

Typical Wellpoint Installation and Components

A



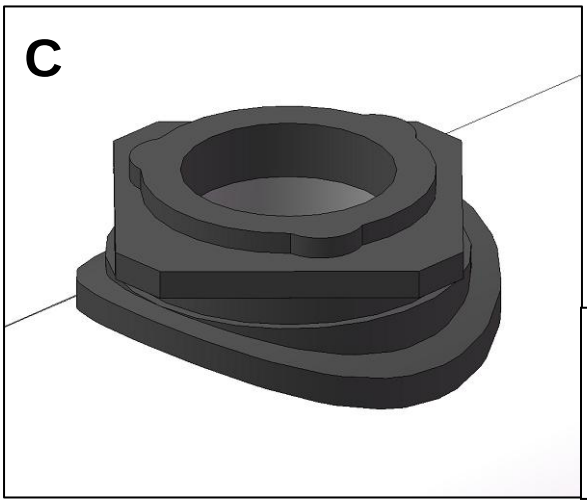
**Header Pipe** – Choice of standard 6” or 8” diamaters. Used to direct ground water to the pump.

B



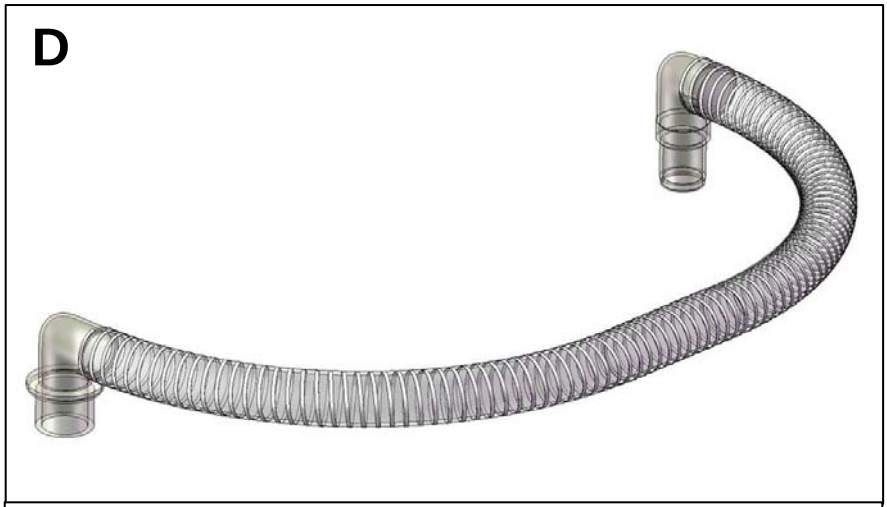
**Header Coupling** – Flexible rubber sleeve with stainless steel clamps to temporarily connect header pipes.

C



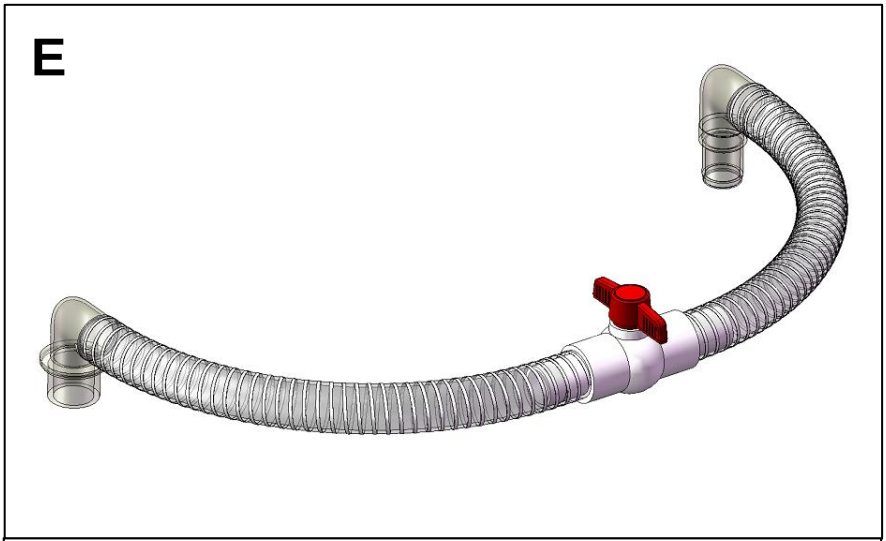
**Header Valve** – Adjustable plastic valves which control water and air flowing into the Header Pipe from the Wellpoints.

D



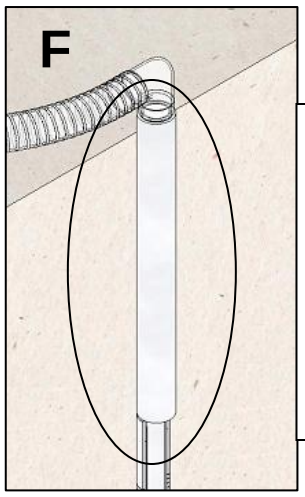
**Swing Joint** – Clear flexible hose that connects the riser pipe to the header valve assembly.

E



**Valved Swing Joint** – Swing joint with an integral ball valve fitted in the center.

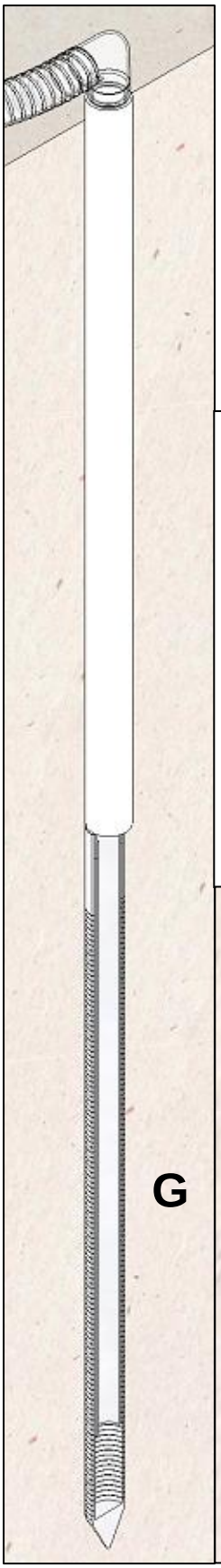
F



**Riser Pipe** – Used to lengthen the wellpoint to achieve a desired depth. Riser pipes are available in PVC and galvanized steel, and are typically between 8’ and 20’ in length, depending on the application (shown smaller for illustrative purposes).

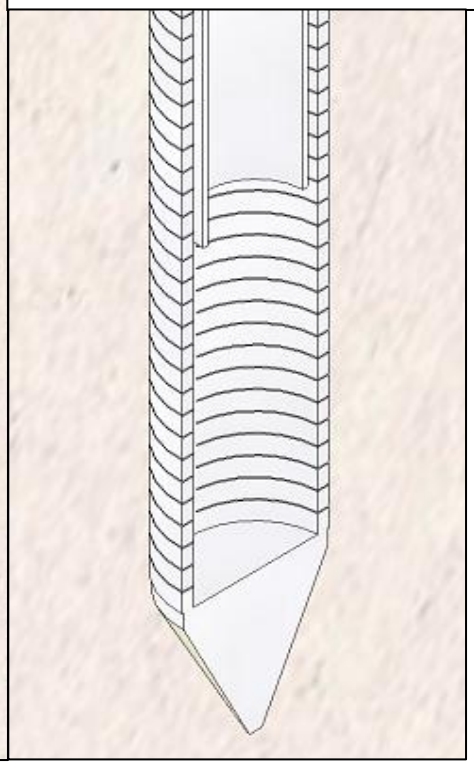
## The Wellpoint

The screen within the wellpoint is the quintessential component of the system. There are several different types of wellpoints, including self-jetting, stainless steel with PVC screens, and all PVC.



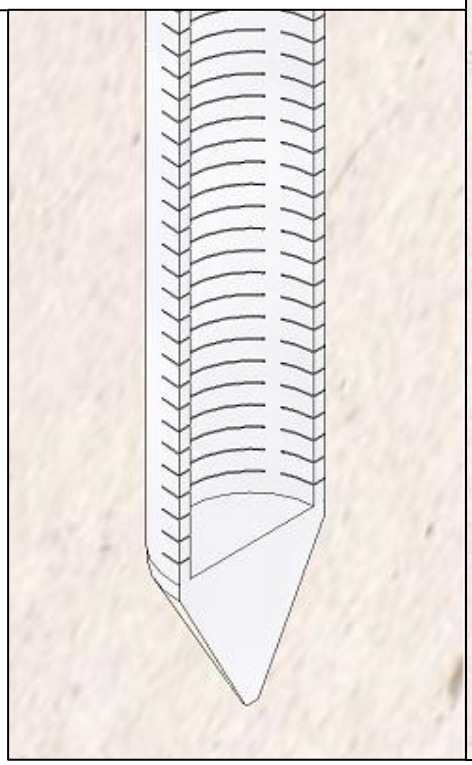

### Premium Wellpoint Screen

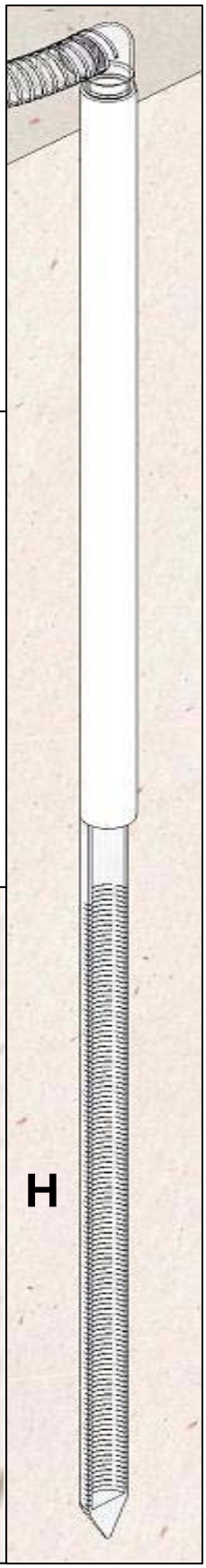
The Premium Wellpoint is the top of the line in PVC wellpoint screens for construction dewatering. The main feature of the premium wellpoint is a 1” drop tube which is inserted inside the screen, and which enables the wellpoint to draw water from the bottom end of the screen, achieving the maximum draw-down in any given situation.

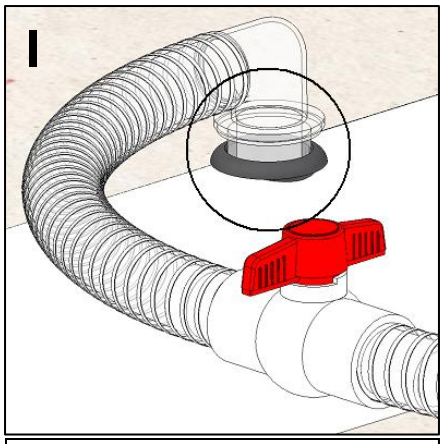


### Economy Wellpoint Screen

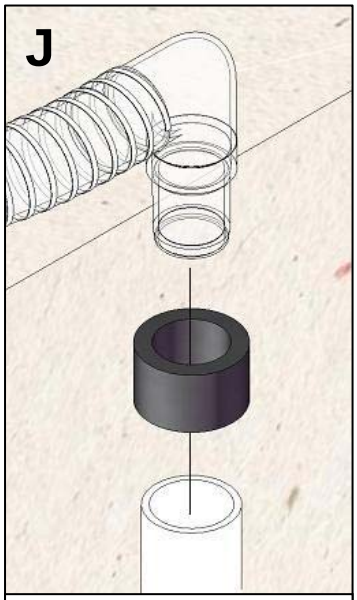
The screen of the economy wellpoint maintains structural integrity while reducing dewatering costs. Designed to be installed with a stinger, the labor productivity is high. Flexibility is the key to dewatering productivity with the economy wellpoint from Thompson Pump.



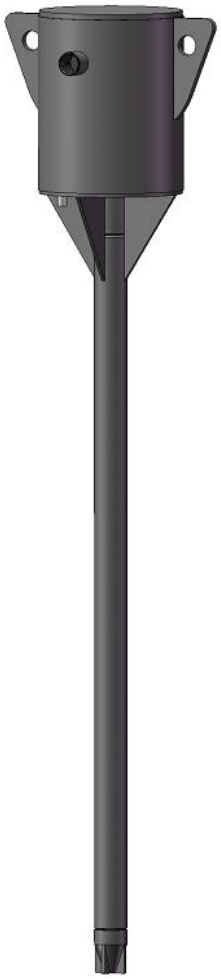





**Header Grommet** – Rubber fitting for creating a seal between the header pipe and the swing. The lack of a valve is supplemented by integral valves in the swings.



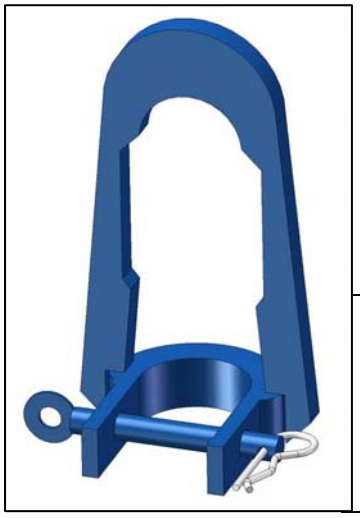

**Riser Top** – Rubber cap for the PVC riser pipe that helps create an air tight seal when

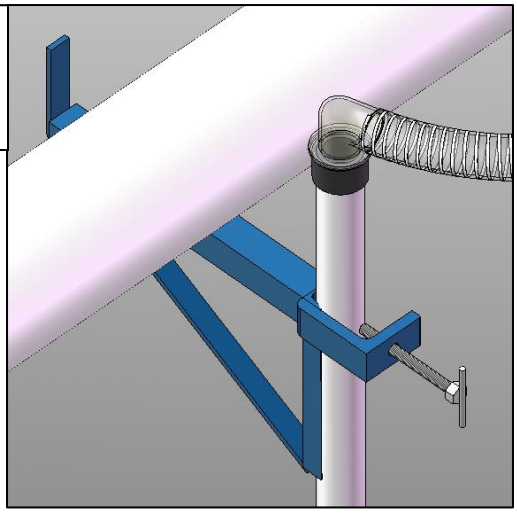



## Jetting Equipment

All wellpoint installations are conducted utilizing jetting systems, where water is forced at high pressures through long steel tubes (or self-jetting wellpoints) to cut holes into the earth for which to insert the wellpoints The **I. Casing** is generally used for installing wellpoints in cohesive soil conditions, such as hard pan, hard clay and course rock, which allows sanding around the wellpoint to provide maximum flow to the pump. The **II. Punch** is used for installing wellpoints into soft clay and sand to allow water to drain to the level of the wellpoint from the upper layers. The **III. Stinger** is considerably smaller and lighter, and is generally used for softer sandy soil conditions. It also helps provide an economic solution, with not only a lower rental cost, but the ability to operate them by hand without the need for a backhoe. The **IV. Jet Fitting Assembly** attaches to the water source via the elbow, and then to a self-jetting wellpoint, where the water is pressurized through the tip of the wellpoint itself.



**Header Support** – Bracket that supports the header pipe, with a vice that tightens over the riser pipe to stabilize the installation.



**Wellpoint Puller** – The wellpoint puller is fitted over the riser pipe and tightened against the pin, then lifted by the bail (either by hand or by machine depending on the depth) to pull the wellpoint from the ground.