

2012

Powder Mountain Resort Sanitary Sewer Feasibility Study



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1.0 INTRODUCTION

The Powder Mountain Resort sanitary sewer system is served by Powder Mountain/ Sheep Creek Sewage Lagoon supplied by one 10” sewer trunk line. This pipeline extends down the canyon from Powder Mountain Resort in State Road 158 for approximately 4.5 miles. At the intersection of State Road 158 and Snowflake Drive this 10” sewer line heads approximately 1.25 miles west to the sewer outfall and lagoon system. See appendix sanitary sewer exhibits.

The purpose of this feasibility study is to serve as a preliminary informational tool for Powder Mountain to outline wastewater alternatives. This guiding document provides the information necessary in choosing a wastewater option. Master planning based off the chosen wastewater option is the next step.

Every effort was made in the development of this feasibility study is to estimate flows that would approximate sewer district final flows based on land use and development data as outlined in the following Feasibility Study. However, it should be noted that final sewer loading as well as any system upgrades will be determined by Powder Mountain through their approval process. Upgrades required by may or may not coincide with those outlined in the feasibility study due to more accurate information regarding development types and densities as they are proposed.

It should be noted also that this feasibility study is a guiding document that was compiled with the best information available at the time to assist Powder Mountain in wastewater alternatives for master planning the build out resort. As more current information is available and alternatives are chosen, it is strongly recommended that a master plan document be put together.

2.0 MODEL LOADING ESTIMATION AND CALCULATION

Loading was modeled according to Utah Administrative Code R317-3 based on landuse converted to Residential Equivalents (RE). If unit numbers were not available, square footage data was used to estimate the number of RE’s per development. Utah Administrative Code R317-3 state that an average peak daily loading of 400 gpd per RE should be used for sizing sewer collection lines. A peaking factor of 2.5 for was used for sewer mains based on the “*Civil Engineering Reference Manual (CERM) 11th Edition*” by Michael Lindeburg.

Loading is based upon the 100 gallons per person per day requirement that John Mackey with the State of Utah’s DEQ stated in the *Powder Mountain Water and Sewer Master Plan Review Meeting* with the DEQ dated October 25, 2012. The *United States Census Bureau* states that Utah has an average of 3.04 persons per household in an average residential unit during the 2010 census. Therefore, the Residential Equivalent (RE) has been identified to be 300 gallons per RE. Living spaces apply directly to residential, multifamily and hotels alike, and can be easily modified to a particular development if

the district feels that development will load differently than the average for that development's building type. See Table below for Sewer RE's.

TABLE 1

Landuse	RE/Unit	GPD/Unit	Avg Room Size (SF)
residential	1	300	N/A
Residential/Multi Family/Hotel Lodging	.33	100	1000.00
Amenity	.33	100	5000.00
Hotel	.33	100	1000.00
Condo Hotel	.33	100	1000.00
Condo	.33	100	1000.00
Townhouse	.33	100	1000.00
Nest	.33	100	N/A
Bungalow/Cabin	.33	100	N/A
1/3-1 Ac	1	300	N/A
1-2 Ac	1	300	N/A
3-6 Ac	1	300	N/A
7-10 Ac	1	300	N/A
10+ Ac	3	300	N/A

TABLE 2

Area	RE
Existing	266.17
Phase 1	160.16
Cobabe	62.67
DMI & Sundown	65.08
Hidden Lake	78.00
Lefty's Program	80.00
Mary's	35.00
Mid-Mountain	56.51
Paradise Ridge	17.00
Paradise Ridge & the Sliver	61.23
Ranch Land Program	20.00
Rock Outcropping	13.67
Stonehouse (Valhalla)	63.33
the Meadow	30.00
The Saddle	158.85

3.0 ANALYSIS

3.1 EXISTING CONDITIONS

The existing demands on the sanitary sewer system were calculated by using the Utah Automated Geographic Reference Center (AGRC) parcel data to get an understanding of how many existing properties are located in the Powder Mountain Resort as well as contributing to the lagoon system. As shown in Table 2, there are approximately 266 connections. Paul Southwick and Angie Illum with Powder Mountain have indicated based off billing information that there are 179 sewer connections. The difference between the actual connections and parcel connections could be attributed to lots that have not been built on as well as onsite septic systems on older homes.

The existing sewer system at Powder Mountain is a gravity system with no pump stations containing over 40,685 linear feet of pipe and 92 manholes. Main trunk lines and selected peripheral manholes location and elevation data from which to model the existing system was provided by Reeve & Associates, Inc. As there is no manhole invert data available, manholes were assumed to be 9' less than rim elevations or have a minimum slope of 0.5%.

The sewer distribution system extends down State Road 158 and into an existing Slicer House near the top of the existing canyon road just below Powder Mountain's Mid-Mountain area. The intent of the slicer house is to break up the solids into a uniform fluid.

3.2 PHASE 1 SEWER SYSTEM

Phase 1 sanitary loads have been calculated based on the Site Plan provided by Langvardt Design Group. Powder Mountain will connect to the existing system through lateral connections or branching of a line near a manhole. These proposed connections are shown in the Appendix exhibits.

In addition to manholes and pipelines, Phase 1 will require 4 pumps as follows. These Small diameter pressurized discharge pipes are necessary in order to keep velocity of sewerage above 2 ft/s as this is the minimum "cleaning" velocity.

Sewerage Pump Houses

The primary pump station will be located at The Saddle. This PH will accommodate most of the Phase 1 flows. The remaining PHs will accommodate locations adjacent to "The Nose". These PHs will pump sewage over Hidden Lake back into the existing gravity system.

3.3 MASTER PLAN SEWER SYSTEM

Master Plan sanitary loads have been calculated based on the High Density Alt. Program outlined in the “*Powder Mountain Planning Studies Summary Book*” conducted by Hart/Howerton in July 18, 2012. Powder Mountain will connect to the existing system through lateral connections or branching of a line by one manhole. These proposed connections are shown in the Appendix exhibits.

In addition to manholes and pipelines, the Master Plan will require 12 additional pumps as shown on exhibits and tables in Appendix.

4.0 MODEL RESULTS

4.1 Existing Condition

In the existing condition, all sewer lines are significantly below pipe capacity with an estimated 140 gpm in the existing condition. Full results can be found in the Appendix.

4.2 Phase 1 Condition

All sewer lines are below pipe capacity with an estimated 223 gpm in the Phase 1 Condition when adding all developments currently shown in the Phase 1 Site Plan. Full results for the existing plus Phase 1 condition can be found in Appendix B.

Conversations with Paul Southwick with Powder Mountain/ Sheep Creek indicated that even though the existing 10” sewer line has capacity to convey the Phase 1 flows, the Lagoon has a maximum of 250 total commitments due to the 100% Containment Program required for this lagoon system. Of these 250 commitments, 179 commitments have been sold. An estimated 71 commitments are left. This would roughly accommodate the larger Phase 1 single family residential lots. Additional coordination with the Utah Department of Water Quality will be necessary to allocate additional connections to the existing lagoon system. Existing flow and volume monitoring at the lagoons indicates that the throughout 2011 and through May 2012 the lagoons maintained between 20% and 54% full. However, Mr. Southwick has indicated that up to 10% of that volume can be attributed to infiltration into the conveyance system. PDWSD has indicated that they are in the third year of their plan to mitigate infiltration. This will help reduce the volume of water that unnecessarily enters the existing lagoons. When the existing system maintains 75% full the addition of the previously design lagoon #5 will be initiated. Analysis of the existing flows and number of connections shows that approximately 61-90 additional connections can be added without exceeding that 75% full requirement. Detailed monitoring and analysis of the existing lagoon system should be completed on an on-going basis to maintain compliance with DEQ requirements.

4.3 Master Plan Condition

The existing sewer pipe is above capacity from MH-58 to the Outfall at the Sewer Lagoon with an estimated 609 gpm in the Master Plan Condition when adding all developments currently shown in the “*Powder Mountain Planning Studies Summary Book*”. Full results for the existing plus Phase 1 condition can be found in Appendix B. The existing 10” pipe from MH-58 could handle all Master Plan sanitary loads with the exception of the following Master Plan communities: Stonehouse (Valhalla), Ranch Land Program, DMI & Sundown, Mid-Mountain, Paradise Ridge, Cobabe, Mary's, Rock Outcropping, and the Meadow.

Phase 1 will consume the remaining commitments to the Sewage Lagoons. Options to address Master Plan Communities that need to be discussed are alternative pack bed media systems such as Orenco, septic systems, and a diversion manhole that would direct the remaining portion of the Master Plan sanitary loads to Wolf Creek Water and Sewer Improvement District (WCWSID).

5.0 CONCLUSION AND RECOMMENDATIONS

The Powder Mountain sewer system is adequate to serve the current development, with 4 pump stations; the larger single family residential homes could purchase commitments with the existing lagoon system. Beyond that, even though the 10” system has capacity to the lagoon, the lagoon has exhausted the maximum 250 commitments. The existing sewer system accommodated by an alternative pack bed media system, septic tanks, or a diversion manhole to Wolf Creek Water and Sewer Improvement District (WCWSID) would be the other option to develop the Powder Mountain Resort.

The following recommendations are made to ensure that The Powder Mountain sewer system functions properly and to encourage efficient and timely development of the Powder Mountain Resort.

- As future developments are proposed, the model should be updated and run with proposed densities to determine which, if any, sewer lines will require upgrades to meet capacity requirements. Powder Mountain will have final say as to whether or not lines will need to be upgraded for future development.
 - PMWSD should continue monitoring and analysis of lagoon volumes, inflow and outflow rates in an effort to identify actual average flow rates per RE.
 - Future development of gravity sewer lines need to maintain 8” or greater and be located in public right-of-ways.
 - Close and constant contact with Powder Mountain/ Sheep Creek is strongly recommended throughout the development of Powder Mountain to maintain efficiency.
1. A formal process of information exchange during pre-design review and design review should be established between the Powder Mountain/ Sheep Creek and the Powder Mountain design review committee.

APPENDIX A

AutoCAD Exhibits

Development Layout

Existing

Phase 1

Master Plan (High Density)

Elevation Exhibit

SewerCAD Tables

Existing

Junction Report

Pipe Report

Fire Flow Report

Phase 1

Junction Report

Pipe Report

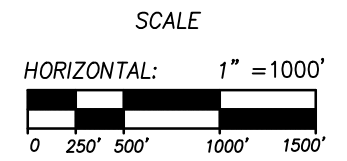
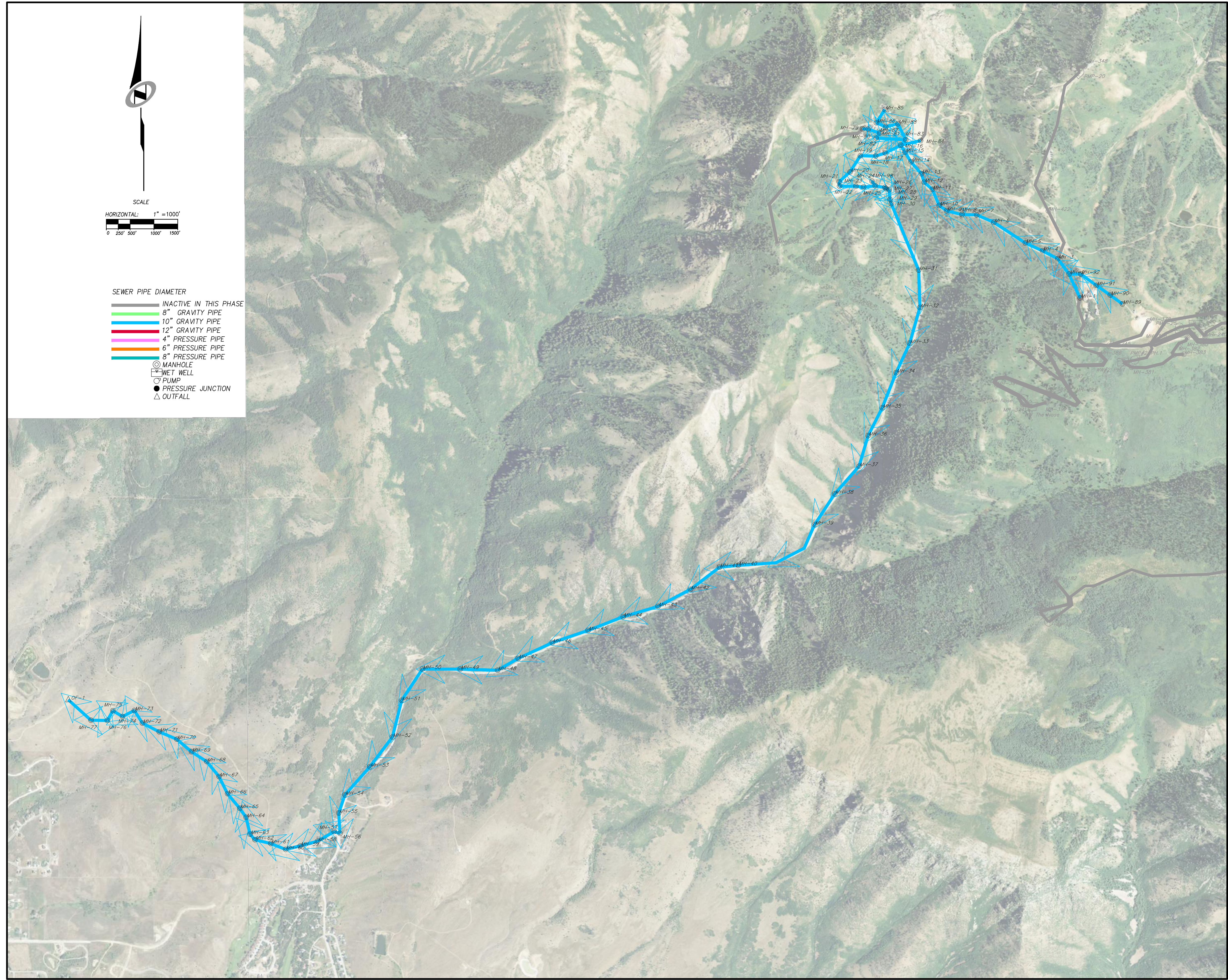
Pump Report

Master Plan

Junction Report

Pipe Report

Pump Report



- SEWER PIPE DIAMETER
- INACTIVE IN THIS PHASE
 - 8" GRAVITY PIPE
 - 10" GRAVITY PIPE
 - 12" GRAVITY PIPE
 - 4" PRESSURE PIPE
 - 6" PRESSURE PIPE
 - 8" PRESSURE PIPE
 - MANHOLE
 - WET WELL
 - PUMP
 - PRESSURE JUNCTION
 - OUTFALL

PRELIMINARY
NOT FOR CONSTRUCTION

NO.	BY	DATE	REVISIONS

POWDER MOUNTAIN RESORT
EXISTING SCHEMATIC LAYOUT
SANITARY SEWER SYSTEM

DATE SUBMITTED: OCT. 2012

PREPARED FOR: POWDER MOUNTAIN

NV5
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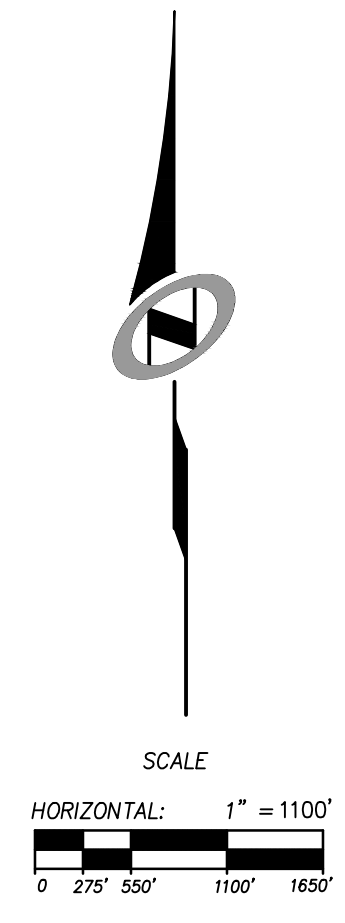
MURRAY, UT 84107
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SHEET NUMBER	1
OF	3 SHEETS
SCALE	VERTICAL: 1" = N/A HORIZONTAL: 1" = 1000'
JOB NUMBER	SLB0793

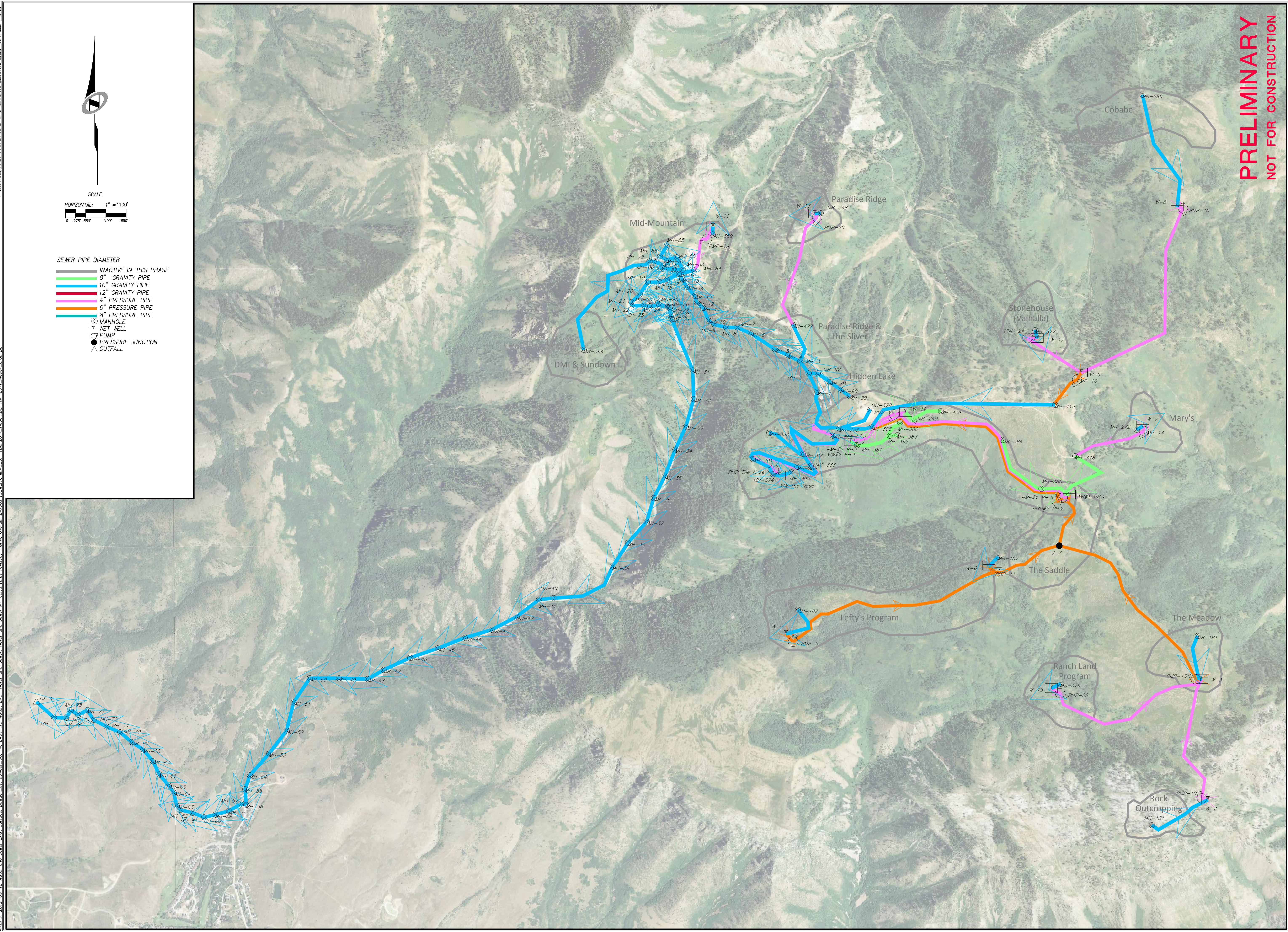
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 The engineer preparing these plans will not be responsible for, or liable for, unauthorized changes to or uses of these plans, and must be approved by the preparer of these plans.

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DATE: 10/25/12 TIME: 12:15:23 PM DRAWING NAME: SEWER.DWG
 LAYOUT: EX.PH1.LP
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- SEWER PIPE DIAMETER
- INACTIVE IN THIS PHASE
 - 8" GRAVITY PIPE
 - 10" GRAVITY PIPE
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 - 4" PRESSURE PIPE
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 - WET WELL
 - PUMP
 - PRESSURE JUNCTION
 - OUTFALL



PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	REVISIONS

POWDER MOUNTAIN RESORT
MASTER PLAN SCHEMATIC LAYOUT
SANITARY SEWER SYSTEM

DATE SUBMITTED: OCT. 2012

PREPARED FOR: POWDER MOUNTAIN

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SHEET NUMBER	3
OF	3 SHEETS
SCALE	VERTICAL: 1" = N/A HORIZONTAL: 1" = 1100'
JOB NUMBER	SLB0793

The engineer preparing these plans will not be responsible for, or liable for, unauthorized changes to or uses of these plans, and must be approved by the preparer of these plans.

Existing Gravity Pipe Summary

Label	Diameter (in)	Hazen-Williams C	Length (ft)	Slope (ft/ft)	Start Node	Stop Node	Flow (gal/min)	Velocity (ft/s)	HGL (In) (ft)	HGL (Out) (ft)	Is Active?
CO-505	10	130	279	0.001	MH-376	W-15	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-453	10	140	398	0.001	MH-387	MH-388	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-495	10	140	199	0.001	MH-272	W-7	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-486	10	140	362	0.003	MH-157	W-6	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-511	8	140	331	0.003	MH-240	W-19	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-490	10	140	227	0.004	MH-377	W-17	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-77	10	140	640	0.005	MH-77	OF-1	139.3324	2.84	5398.35	5395.11	TRUE
CO-15	10	140	171	0.005	MH-15	MH-16	14.2016	1.49	8215.65	8214.85	TRUE
CO-460	10	140	1109	0.005	MH-393	MH-387	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-69	10	140	407	0.005	MH-69	MH-70	73.1166	2.41	5421.72	5419.58	TRUE
CO-65	10	140	401	0.005	MH-65	MH-66	73.0766	2.42	5435	5432.87	TRUE
CO-60	10	140	337	0.006	MH-60	MH-61	73.0266	2.46	5445.78	5443.92	TRUE
CO-498	10	140	179	0.006	MH-374	WW The Nose	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-63	10	140	364	0.006	MH-63	MH-64	73.0566	2.47	5441	5438.96	TRUE
CO-76	10	140	343	0.006	MH-76	MH-77	73.1866	2.5	5400.26	5398.35	TRUE
CO-61	10	140	341	0.006	MH-61	MH-62	73.0366	2.5	5443.92	5441.95	TRUE
CO-66	10	140	401	0.006	MH-66	MH-67	73.0866	2.54	5432.87	5430.47	TRUE
CO-62	10	140	155	0.006	MH-62	MH-63	73.0466	2.56	5441.95	5441	TRUE
CO-74	10	140	236	0.007	MH-74	MH-75	73.1666	2.69	5405.77	5404.13	TRUE
CO-72	10	140	315	0.007	MH-72	MH-73	73.1466	2.7	5410.2	5408	TRUE
CO-67	10	140	407	0.007	MH-67	MH-68	73.0966	2.72	5430.47	5427.55	TRUE
CO-59	10	140	316	0.007	MH-59	MH-60	73.0166	2.75	5448.11	5445.78	TRUE
CO-444	8	140	209	0.008	MH-383	MH-382	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-497	10	140	5263	0.008	MH-419	MH-398	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-71	10	140	397	0.008	MH-71	MH-72	73.1366	2.81	5413.29	5410.2	TRUE
CO-73	10	140	279	0.008	MH-73	MH-74	73.1566	2.84	5408	5405.77	TRUE
CO-447	8	130	824	0.01	MH-385	WW#1 PH.1	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-58	10	140	381	0.013	MH-58	MH-59	70.4124	3.36	5452.91	5448.11	TRUE
CO-442	8	140	960	0.015	MH-382	MH-381	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-13	10	140	334	0.015	MH-13	MH-14	12.1183	2.12	8225.51	8220.59	TRUE
CO-68	10	140	380	0.015	MH-68	MH-69	73.1066	3.65	5427.55	5421.72	TRUE
CO-70	10	140	402	0.016	MH-70	MH-71	73.1266	3.68	5419.58	5413.29	TRUE
CO-75	10	140	235	0.016	MH-75	MH-76	73.1766	3.75	5404.13	5400.26	TRUE
CO-64	10	140	230	0.017	MH-64	MH-65	73.0666	3.82	5438.96	5435	TRUE
CO-482	8	140	203	0.02	MH-381	WW#2 PH.1	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-14	10	140	237	0.021	MH-14	MH-15	12.6391	2.46	8220.59	8215.65	TRUE
CO-448	8	130	1821	0.024	MH-384	MH-385	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-56	10	140	129	0.028	MH-56	MH-57	63.1107	4.42	5473.67	5470.02	TRUE
CO-479	10	130	1233	0.031	MH-182	W-5	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-471	10	140	885	0.042	MH-398	MH-245	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-57	10	140	400	0.043	MH-57	MH-58	63.1207	5.19	5470.02	5452.91	TRUE
CO-487	10	140	1584	0.045	MH-245	MH-1	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-469	8	140	858	0.045	MH-379	MH-240	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-12	10	140	186	0.045	MH-12	MH-13	12.1083	3.3	8233.97	8225.51	TRUE
CO-21	10	140	92	0.049	MH-21	MH-22	54.9582	5.25	8089.02	8084.53	TRUE
CO-55	10	140	430	0.051	MH-55	MH-56	59.4649	5.44	5495.43	5473.67	TRUE
CO-491	10	140	3330	0.051	MH-296	W-8	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-78	10	140	118	0.054	MH-79	MH-80	1.0417	1.71	8328.44	8322.05	TRUE
CO-79	10	140	258	0.056	MH-80	MH-81	2.6042	2.27	8322.05	8307.56	TRUE
CO-494	8	140	2065	0.057	MH-418	WW#1 PH.1	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-85	10	140	217	0.059	MH-86	MH-87	8.8542	3.28	8345.48	8332.73	TRUE
CO-54	10	140	401	0.06	MH-54	MH-55	59.4549	5.79	5519.31	5495.43	TRUE
CO-484	10	140	1288	0.06	MH-181	W-3	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-83	10	140	429	0.062	MH-84	MH-16	3.2274	2.47	8241.53	8214.85	TRUE
CO-81	10	140	624	0.063	MH-82	MH-83	14.5833	3.93	8285	8245.97	TRUE
CO-52	10	140	785	0.064	MH-52	MH-53	59.4349	5.96	5626.8	5576.63	TRUE
CO-17	10	140	211	0.066	MH-17	MH-18	51.8132	5.77	8189.39	8175.39	TRUE
CO-18	10	140	322	0.066	MH-18	MH-19	52.8549	5.8	8175.39	8154	TRUE
CO-458	10	140	713	0.069	MH-391	MH-374	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-16	10	140	366	0.07	MH-16	MH-17	50.7716	5.84	8214.85	8189.39	TRUE
CO-53	10	140	794	0.072	MH-53	MH-54	59.4449	6.25	5576.63	5519.31	TRUE
CO-468	8	140	531	0.075	MH-380	MH-382	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-434	10	140	3631	0.076	MH-364	MH-79	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-35	10	140	659	0.076	MH-35	MH-36	59.2649	6.38	7342.14	7291.98	TRUE
CO-11	10	140	230	0.08	MH-11	MH-12	12.0983	4.06	8252.38	8233.97	TRUE

CO-20	10	140	312	0.082	MH-20	MH-21	54.9482	6.36	8114.47	8089.02	TRUE
CO-435	10	140	1058	0.087	MH-378	MH-245	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-51	10	140	795	0.087	MH-51	MH-52	59.4249	6.67	5696.22	5626.8	TRUE
CO-34	10	140	794	0.089	MH-34	MH-35	59.2549	6.71	7412.79	7342.14	TRUE
CO-7	10	140	309	0.091	MH-7	MH-8	12.0583	4.26	8377.38	8349.26	TRUE
CO-47	10	140	503	0.092	MH-47	MH-48	59.3849	6.81	5997.09	5950.66	TRUE
CO-457	10	140	1475	0.093	MH-389	MH-391	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-19	10	140	405	0.098	MH-19	MH-20	54.9382	6.79	8154	8114.47	TRUE
CO-455	10	140	796	0.099	MH-388	MH-389	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-90	10	140	407	0.1	MH-91	MH-92	0.8772	1.98	8751.36	8710.62	TRUE
CO-86	10	140	265	0.1	MH-87	MH-88	10.4167	4.19	8332.73	8306.14	TRUE
CO-502	10	140	1113	0.102	MH-422	MH-3	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-50	10	140	793	0.103	MH-50	MH-51	59.4149	7.12	5777.92	5696.22	TRUE
CO-6	10	140	395	0.103	MH-6	MH-7	12.0483	4.46	8418.12	8377.38	TRUE
CO-49	10	140	799	0.104	MH-49	MH-50	59.4049	7.13	5860.72	5777.92	TRUE
CO-503	10	140	167	0.105	MH-348	W-13	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-10	10	140	370	0.105	MH-10	MH-11	12.0883	4.49	8291.2	8252.38	TRUE
CO-9	10	140	193	0.106	MH-9	MH-10	12.0783	4.5	8311.58	8291.2	TRUE
CO-5	10	140	796	0.107	MH-5	MH-6	12.0383	4.52	8503.41	8418.12	TRUE
CO-22	10	140	347	0.108	MH-22	MH-23	54.9682	7.05	8084.53	8047.17	TRUE
CO-33	10	140	686	0.109	MH-33	MH-34	59.2449	7.25	7487.72	7412.79	TRUE
CO-8	10	140	336	0.112	MH-8	MH-9	12.0683	4.6	8349.26	8311.58	TRUE
CO-4	10	140	398	0.113	MH-4	MH-5	12.0283	4.6	8548.32	8503.41	TRUE
CO-451	10	140	2352	0.113	MH-386	MH-387	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-3	10	140	366	0.113	MH-3	MH-4	12.0183	4.61	8589.75	8548.32	TRUE
CO-48	10	140	789	0.114	MH-48	MH-49	59.3949	7.38	5950.66	5860.72	TRUE
CO-46	10	140	796	0.116	MH-46	MH-47	59.3749	7.42	6089.29	5997.09	TRUE
CO-2	10	140	400	0.118	MH-2	MH-3	12.0083	4.67	8636.82	8589.75	TRUE
CO-84	10	140	334	0.119	MH-85	MH-86	3.125	3.2	8385.07	8345.48	TRUE
CO-32	10	140	786	0.12	MH-32	MH-33	59.2349	7.5	7581.69	7487.72	TRUE
CO-24	10	140	250	0.122	MH-24	MH-25	54.9882	7.39	8027.23	7996.77	TRUE
CO-23	10	140	163	0.122	MH-23	MH-24	54.9782	7.4	8047.17	8027.23	TRUE
CO-483	10	140	1811	0.127	MH-121	W-2	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-37	10	140	778	0.131	MH-37	MH-38	59.2849	7.76	7201.34	7099.62	TRUE
CO-45	10	140	801	0.131	MH-45	MH-46	59.3649	7.77	6194.07	6089.29	TRUE
CO-28	10	140	204	0.132	MH-28	MH-29	59.1949	7.79	7942.1	7915.16	TRUE
CO-488	10	140	2021	0.133	MH-39	MH-40	59.3049	7.82	6982.05	6712.46	TRUE
CO-36	10	140	676	0.134	MH-36	MH-37	59.2749	7.84	7291.98	7201.34	TRUE
CO-30	10	140	1522	0.137	MH-30	MH-31	59.2149	7.9	7901.28	7692.81	TRUE
CO-40	10	140	399	0.138	MH-40	MH-41	59.3149	7.92	6712.46	6657.58	TRUE
CO-29	10	140	99	0.14	MH-29	MH-30	59.2049	7.97	7915.16	7901.28	TRUE
CO-31	10	140	791	0.14	MH-31	MH-32	59.2249	7.98	7692.81	7581.69	TRUE
CO-88	10	140	318	0.143	MH-89	MH-90	0.8572	2.4	8850.05	8804.66	TRUE
CO-44	10	140	798	0.144	MH-44	MH-45	59.3549	8.05	6308.73	6194.07	TRUE
CO-43	10	140	772	0.145	MH-43	MH-44	59.3449	8.07	6420.35	6308.73	TRUE
CO-89	10	140	359	0.148	MH-90	MH-91	0.8672	2.44	8804.66	8751.36	TRUE
CO-41	10	140	775	0.149	MH-41	MH-42	59.3249	8.17	6657.58	6541.98	TRUE
CO-38	10	140	781	0.151	MH-38	MH-39	59.2949	8.19	7099.62	6982.05	TRUE
CO-500	10	140	213	0.155	MH-359	W-11	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-42	10	140	779	0.156	MH-42	MH-43	59.3349	8.31	6541.98	6420.35	TRUE
CO-87	10	140	381	0.158	MH-88	MH-83	13.5417	5.38	8306.14	8245.97	TRUE
CO-1	10	140	562	0.167	MH-1	MH-2	11.1111	5.26	8730.74	8636.82	TRUE
CO-80	10	140	132	0.171	MH-81	MH-82	5.2083	4.19	8307.56	8285	TRUE
CO-26	10	140	33	0.173	MH-26	MH-27	59.1749	8.63	7959.64	7953.94	TRUE
CO-25	10	140	208	0.179	MH-25	MH-26	59.1649	8.74	7996.77	7959.64	TRUE
CO-27	10	140	66	0.179	MH-27	MH-28	59.1849	8.76	7953.94	7942.1	TRUE
CO-82	10	140	158	0.197	MH-83	MH-16	33.3325	7.68	8245.97	8214.85	TRUE
CO-97	10	140	127	0.251	MH-98	MH-25	4.1667	4.66	8028.47	7996.77	TRUE
CO-91	10	140	258	0.286	MH-92	MH-2	0.8872	3.11	8710.62	8636.82	TRUE
CO-499	10	140	364	0.343	MH-392	WW The Nose	(N/A)	(N/A)	(N/A)	(N/A)	FALSE

PH1 Gravity Pipe Summary

Label	Diameter (in)	Hazen-Williams C	Length (ft)	Slope (ft/ft)	Start Node	Stop Node	Flow (gal/min)	Velocity (ft/s)	HGL (In) (ft)	HGL (Out) (ft)	Is Active?
CO-505	10	130	279	0.001	MH-376	W-15	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-453	10	140	398	0.001	MH-387	MH-388	2.6342	0.53	8472.54	8472.04	TRUE
CO-495	10	140	199	0.001	MH-272	W-7	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-486	10	140	362	0.003	MH-157	W-6	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-511	8	140	331	0.003	MH-240	W-19	10.0894	0.06	8764	8764	TRUE
CO-490	10	140	227	0.004	MH-377	W-17	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-77	10	140	640	0.005	MH-77	OF-1	221.1625	3.22	5398.42	5395.17	TRUE
CO-15	10	140	171	0.005	MH-15	MH-16	96.0317	2.56	8215.77	8214.95	TRUE
CO-460	10	140	1109	0.005	MH-393	MH-387	0.5308	0.58	8478.3	8472.54	TRUE
CO-69	10	140	407	0.005	MH-69	MH-70	154.9466	2.98	5421.81	5419.67	TRUE
CO-65	10	140	401	0.005	MH-65	MH-66	154.9066	2.99	5435.09	5432.96	TRUE
CO-60	10	140	337	0.006	MH-60	MH-61	154.8566	3.04	5445.87	5444.01	TRUE
CO-498	10	140	179	0.006	MH-374	WW The Nose	4.2367	1.08	8207.04	8207	TRUE
CO-63	10	140	364	0.006	MH-63	MH-64	154.8866	3.05	5441.09	5439.05	TRUE
CO-76	10	140	343	0.006	MH-76	MH-77	155.0166	3.09	5400.35	5398.42	TRUE
CO-61	10	140	341	0.006	MH-61	MH-62	154.8666	3.09	5444.01	5442.04	TRUE
CO-66	10	140	401	0.006	MH-66	MH-67	154.9166	3.13	5432.96	5430.56	TRUE
CO-62	10	140	155	0.006	MH-62	MH-63	154.8766	3.16	5442.04	5441.09	TRUE
CO-74	10	140	236	0.007	MH-74	MH-75	154.9966	3.32	5405.86	5404.22	TRUE
CO-72	10	140	315	0.007	MH-72	MH-73	154.9766	3.33	5410.29	5408.09	TRUE
CO-67	10	140	407	0.007	MH-67	MH-68	154.9266	3.36	5430.56	5427.64	TRUE
CO-59	10	140	316	0.007	MH-59	MH-60	154.8466	3.4	5448.2	5445.87	TRUE
CO-444	8	140	209	0.008	MH-383	MH-382	1.5725	0.93	8715.76	8714.2	TRUE
CO-497	10	140	5263	0.008	MH-419	MH-398	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-71	10	140	397	0.008	MH-71	MH-72	154.9666	3.48	5413.38	5410.29	TRUE
CO-73	10	140	279	0.008	MH-73	MH-74	154.9866	3.51	5408.09	5405.86	TRUE
CO-447	8	130	824	0.01	MH-385	WW#1 PH.1	61.3897	2.83	8619.17	8612	TRUE
CO-58	10	140	381	0.013	MH-58	MH-59	152.2425	4.17	5452.99	5448.2	TRUE
CO-442	8	140	960	0.015	MH-382	MH-381	5.2383	1.72	8714.2	8700.13	TRUE
CO-13	10	140	334	0.015	MH-13	MH-14	93.9484	3.86	8225.64	8220.72	TRUE
CO-68	10	140	380	0.015	MH-68	MH-69	154.9366	4.52	5427.64	5421.81	TRUE
CO-70	10	140	402	0.016	MH-70	MH-71	154.9566	4.55	5419.67	5413.38	TRUE
CO-75	10	140	235	0.016	MH-75	MH-76	155.0066	4.64	5404.22	5400.35	TRUE
CO-64	10	140	230	0.017	MH-64	MH-65	154.8966	4.72	5439.05	5435.09	TRUE
CO-482	8	140	203	0.02	MH-381	WW#2 PH.1	7.3317	2.13	8700.13	8697	TRUE
CO-14	10	140	237	0.021	MH-14	MH-15	94.4692	4.43	8220.72	8215.77	TRUE
CO-448	8	130	1821	0.024	MH-384	MH-385	4.1767	1.85	8662.04	8619.17	TRUE
CO-56	10	140	129	0.028	MH-56	MH-57	144.9408	5.62	5473.76	5470.11	TRUE
CO-479	10	130	1233	0.031	MH-182	W-5	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-471	10	140	885	0.042	MH-398	MH-245	80.9867	5.55	8839.18	8801.66	TRUE
CO-57	10	140	400	0.043	MH-57	MH-58	144.9508	6.59	5470.11	5452.99	TRUE
CO-487	10	140	1584	0.045	MH-245	MH-1	81.8301	5.68	8801.66	8730.87	TRUE
CO-469	8	140	858	0.045	MH-379	MH-240	4.6975	2.55	8794.67	8764	TRUE
CO-12	10	140	186	0.045	MH-12	MH-13	93.9384	5.95	8234.1	8225.64	TRUE
CO-21	10	140	92	0.049	MH-21	MH-22	136.7883	6.82	8089.11	8084.62	TRUE
CO-55	10	140	430	0.051	MH-55	MH-56	141.295	6.98	5495.51	5473.76	TRUE
CO-491	10	140	3330	0.051	MH-296	W-8	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-78	10	140	118	0.054	MH-79	MH-80	1.0417	1.71	8328.44	8322.05	TRUE
CO-79	10	140	258	0.056	MH-80	MH-81	2.6042	2.27	8322.05	8307.56	TRUE
CO-494	8	140	2065	0.057	MH-418	WW#1 PH.1	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-85	10	140	217	0.059	MH-86	MH-87	8.8542	3.28	8345.48	8332.73	TRUE
CO-54	10	140	401	0.06	MH-54	MH-55	141.285	7.43	5519.39	5495.51	TRUE
CO-484	10	140	1288	0.06	MH-181	W-3	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-83	10	140	429	0.062	MH-84	MH-16	3.2274	2.47	8241.53	8214.95	TRUE
CO-81	10	140	624	0.063	MH-82	MH-83	14.5833	3.93	8285	8245.97	TRUE
CO-52	10	140	785	0.064	MH-52	MH-53	141.265	7.64	5626.88	5576.71	TRUE
CO-17	10	140	211	0.066	MH-17	MH-18	133.6433	7.63	8189.48	8175.48	TRUE
CO-18	10	140	322	0.066	MH-18	MH-19	134.685	7.65	8175.48	8154.09	TRUE
CO-458	10	140	713	0.069	MH-391	MH-374	3.7058	2.66	8256.04	8207.04	TRUE
CO-16	10	140	366	0.07	MH-16	MH-17	132.6016	7.76	8214.95	8189.48	TRUE
CO-53	10	140	794	0.072	MH-53	MH-54	141.275	8.01	5576.71	5519.39	TRUE
CO-468	8	140	531	0.075	MH-380	MH-382	2.0933	2.5	8754.03	8714.2	TRUE
CO-434	10	140	3631	0.076	MH-364	MH-79	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-35	10	140	659	0.076	MH-35	MH-36	141.095	8.18	7342.22	7292.06	TRUE
CO-11	10	140	230	0.08	MH-11	MH-12	93.9284	7.4	8252.51	8234.1	TRUE

CO-20	10	140	312	0.082	MH-20	MH-21	136.7783	8.3	8114.56	8089.11	TRUE
CO-435	10	140	1058	0.087	MH-378	MH-245	0.01	0.58	8893	8801.66	TRUE
CO-51	10	140	795	0.087	MH-51	MH-52	141.255	8.6	5696.3	5626.88	TRUE
CO-34	10	140	794	0.089	MH-34	MH-35	141.085	8.66	7412.87	7342.22	TRUE
CO-7	10	140	309	0.091	MH-7	MH-8	93.8884	7.76	8377.51	8349.39	TRUE
CO-47	10	140	503	0.092	MH-47	MH-48	141.215	8.79	5997.17	5950.74	TRUE
CO-457	10	140	1475	0.093	MH-389	MH-391	3.175	2.92	8393.04	8256.04	TRUE
CO-19	10	140	405	0.098	MH-19	MH-20	136.7683	8.89	8154.09	8114.56	TRUE
CO-455	10	140	796	0.099	MH-388	MH-389	3.165	2.99	8472.04	8393.04	TRUE
CO-90	10	140	407	0.1	MH-91	MH-92	0.8772	1.98	8751.36	8710.62	TRUE
CO-86	10	140	265	0.1	MH-87	MH-88	10.4167	4.19	8332.73	8306.14	TRUE
CO-502	10	140	1113	0.102	MH-422	MH-3	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-50	10	140	793	0.103	MH-50	MH-51	141.245	9.17	5778	5696.3	TRUE
CO-6	10	140	395	0.103	MH-6	MH-7	93.8784	8.17	8418.25	8377.51	TRUE
CO-49	10	140	799	0.104	MH-49	MH-50	141.235	9.19	5860.8	5778	TRUE
CO-503	10	140	167	0.105	MH-348	W-13	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-10	10	140	370	0.105	MH-10	MH-11	93.9184	8.25	8291.33	8252.51	TRUE
CO-9	10	140	193	0.106	MH-9	MH-10	93.9084	8.2	8311.71	8291.33	TRUE
CO-5	10	140	796	0.107	MH-5	MH-6	93.8684	8.26	8503.54	8418.25	TRUE
CO-22	10	140	347	0.108	MH-22	MH-23	136.7983	9.24	8084.62	8047.26	TRUE
CO-33	10	140	686	0.109	MH-33	MH-34	141.075	9.37	7487.8	7412.87	TRUE
CO-8	10	140	336	0.112	MH-8	MH-9	93.8984	8.42	8349.39	8311.71	TRUE
CO-4	10	140	398	0.113	MH-4	MH-5	93.8584	8.44	8548.45	8503.54	TRUE
CO-451	10	140	2352	0.113	MH-386	MH-387	2.0933	2.7	8738.03	8472.54	TRUE
CO-3	10	140	366	0.113	MH-3	MH-4	93.8484	8.45	8589.88	8548.45	TRUE
CO-48	10	140	789	0.114	MH-48	MH-49	141.225	9.53	5950.74	5860.8	TRUE
CO-46	10	140	796	0.116	MH-46	MH-47	141.205	9.59	6089.37	5997.17	TRUE
CO-2	10	140	400	0.118	MH-2	MH-3	93.8384	8.58	8636.95	8589.88	TRUE
CO-84	10	140	334	0.119	MH-85	MH-86	3.125	3.2	8385.07	8345.48	TRUE
CO-32	10	140	786	0.12	MH-32	MH-33	141.065	9.7	7581.77	7487.8	TRUE
CO-24	10	140	250	0.122	MH-24	MH-25	136.8183	9.69	8027.32	7996.85	TRUE
CO-23	10	140	163	0.122	MH-23	MH-24	136.8083	9.7	8047.26	8027.32	TRUE
CO-483	10	140	1811	0.127	MH-121	W-2	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-37	10	140	778	0.131	MH-37	MH-38	141.115	10.04	7201.43	7099.7	TRUE
CO-45	10	140	801	0.131	MH-45	MH-46	141.195	10.05	6194.15	6089.37	TRUE
CO-28	10	140	204	0.132	MH-28	MH-29	141.025	10.08	7942.18	7915.24	TRUE
CO-488	10	140	2021	0.133	MH-39	MH-40	141.135	10.12	6982.13	6712.54	TRUE
CO-36	10	140	676	0.134	MH-36	MH-37	141.105	10.14	7292.06	7201.43	TRUE
CO-30	10	140	1522	0.137	MH-30	MH-31	141.045	10.22	7901.36	7692.89	TRUE
CO-40	10	140	399	0.138	MH-40	MH-41	141.145	10.24	6712.54	6657.66	TRUE
CO-29	10	140	99	0.14	MH-29	MH-30	141.035	10.32	7915.24	7901.36	TRUE
CO-31	10	140	791	0.14	MH-31	MH-32	141.055	10.32	7692.89	7581.77	TRUE
CO-88	10	140	318	0.143	MH-89	MH-90	0.8572	2.4	8850.05	8804.66	TRUE
CO-44	10	140	798	0.144	MH-44	MH-45	141.185	10.42	6308.81	6194.15	TRUE
CO-43	10	140	772	0.145	MH-43	MH-44	141.175	10.44	6420.43	6308.81	TRUE
CO-89	10	140	359	0.148	MH-90	MH-91	0.8672	2.44	8804.66	8751.36	TRUE
CO-41	10	140	775	0.149	MH-41	MH-42	141.155	10.57	6657.66	6542.06	TRUE
CO-38	10	140	781	0.151	MH-38	MH-39	141.125	10.6	7099.7	6982.13	TRUE
CO-500	10	140	213	0.155	MH-359	W-11	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
CO-42	10	140	779	0.156	MH-42	MH-43	141.165	10.75	6542.06	6420.43	TRUE
CO-87	10	140	381	0.158	MH-88	MH-83	13.5417	5.38	8306.14	8245.97	TRUE
CO-1	10	140	562	0.167	MH-1	MH-2	92.9412	9.82	8730.87	8636.95	TRUE
CO-80	10	140	132	0.171	MH-81	MH-82	5.2083	4.19	8307.56	8285	TRUE
CO-26	10	140	33	0.173	MH-26	MH-27	141.005	11.18	7959.72	7954.02	TRUE
CO-25	10	140	208	0.179	MH-25	MH-26	140.995	11.32	7996.85	7959.72	TRUE
CO-27	10	140	66	0.179	MH-27	MH-28	141.015	11.34	7954.02	7942.18	TRUE
CO-82	10	140	158	0.197	MH-83	MH-16	33.3325	7.68	8245.97	8214.95	TRUE
CO-97	10	140	127	0.251	MH-98	MH-25	4.1667	4.66	8028.47	7996.85	TRUE
CO-91	10	140	258	0.286	MH-92	MH-2	0.8872	3.11	8710.62	8636.95	TRUE
CO-499	10	140	364	0.343	MH-392	WW The Nose	0.5308	3.03	8330.74	8207	TRUE

MP Gravity Pipe Summary

Label	Diameter (in)	Hazen-Williams C	Length (ft)	Slope (ft/ft)	Start Node	Stop Node	Flow (gal/min)	Velocity (ft/s)	HGL (In) (ft)	HGL (Out) (ft)	Is Active?
CO-505	10	130	279	0.001	MH-376	W-15	10.4267	0.71	8069.55	8069.55	TRUE
CO-453	10	140	398	0.001	MH-387	MH-388	2.6342	0.53	8472.54	8472.04	TRUE
CO-495	10	140	199	0.001	MH-272	W-7	18.2392	0.93	8236.75	8236.75	TRUE
CO-486	10	140	362	0.003	MH-157	W-6	82.7426	1.94	8541.19	8541	TRUE
CO-511	8	140	331	0.003	MH-240	W-19	10.0894	0.06	8764	8764	TRUE
CO-490	10	140	227	0.004	MH-377	W-17	32.9961	0.13	8636	8636	TRUE
CO-77	10	140	640	0.005	MH-77	OF-1	1241.5214	5.07	5400.81	5395.63	TRUE
CO-15	10	140	171	0.005	MH-15	MH-16	965.4856	4.46	8216.26	8215.42	TRUE
CO-460	10	140	1109	0.005	MH-393	MH-387	0.5308	0.58	8478.3	8472.54	TRUE
CO-69	10	140	407	0.005	MH-69	MH-70	1175.3056	4.8	5423.12	5420.13	TRUE
CO-65	10	140	401	0.005	MH-65	MH-66	1175.2656	4.8	5436.84	5433.94	TRUE
CO-60	10	140	337	0.006	MH-60	MH-61	1175.2156	4.8	5448.22	5445.78	TRUE
CO-498	10	140	179	0.006	MH-374	WW The Nose	4.2367	1.08	8207.04	8207	TRUE
CO-63	10	140	364	0.006	MH-63	MH-64	1175.2456	4.8	5442.18	5439.51	TRUE
CO-76	10	140	343	0.006	MH-76	MH-77	1175.3756	4.8	5403.3	5400.81	TRUE
CO-61	10	140	341	0.006	MH-61	MH-62	1175.2255	4.8	5445.78	5443.31	TRUE
CO-66	10	140	401	0.006	MH-66	MH-67	1175.2756	4.8	5433.94	5431.02	TRUE
CO-62	10	140	155	0.006	MH-62	MH-63	1175.2356	4.8	5443.31	5442.18	TRUE
CO-74	10	140	236	0.007	MH-74	MH-75	1175.3556	4.8	5406.71	5405	TRUE
CO-72	10	140	315	0.007	MH-72	MH-73	1175.3356	4.8	5411.02	5408.74	TRUE
CO-67	10	140	407	0.007	MH-67	MH-68	1175.2856	5.4	5431.02	5428.1	TRUE
CO-59	10	140	316	0.007	MH-59	MH-60	1175.2055	4.8	5450.51	5448.22	TRUE
CO-444	8	140	209	0.008	MH-383	MH-382	1.5725	0.93	8715.76	8714.2	TRUE
CO-497	10	140	5263	0.008	MH-419	MH-398	262.0096	3.97	8879.33	8839.62	TRUE
CO-71	10	140	397	0.008	MH-71	MH-72	1175.3256	5.64	5413.84	5411.02	TRUE
CO-73	10	140	279	0.008	MH-73	MH-74	1175.3456	4.8	5408.74	5406.71	TRUE
CO-447	8	130	824	0.01	MH-385	WW#1 PH.1	61.3897	2.83	8619.17	8612	TRUE
CO-58	10	140	381	0.013	MH-58	MH-59	1172.6015	7.05	5453.46	5450.51	TRUE
CO-442	8	140	960	0.015	MH-382	MH-381	5.2383	1.72	8714.2	8700.13	TRUE
CO-13	10	140	334	0.015	MH-13	MH-14	963.4022	7.23	8226.1	8221.18	TRUE
CO-68	10	140	380	0.015	MH-68	MH-69	1175.2955	7.68	5428.1	5423.12	TRUE
CO-70	10	140	402	0.016	MH-70	MH-71	1175.3155	7.75	5420.13	5413.84	TRUE
CO-75	10	140	235	0.016	MH-75	MH-76	1175.3656	4.8	5405	5403.3	TRUE
CO-64	10	140	230	0.017	MH-64	MH-65	1175.2556	8.07	5439.51	5436.84	TRUE
CO-482	8	140	203	0.02	MH-381	WW#2 PH.1	7.3317	2.13	8700.13	8697	TRUE
CO-14	10	140	237	0.021	MH-14	MH-15	963.923	8.35	8221.18	8216.26	TRUE
CO-448	8	130	1821	0.024	MH-384	MH-385	4.1767	1.85	8662.04	8619.17	TRUE
CO-56	10	140	129	0.028	MH-56	MH-57	1165.2998	9.9	5474.22	5470.57	TRUE
CO-479	10	130	1233	0.031	MH-182	W-5	41.6767	3.85	8114.13	8077	TRUE
CO-471	10	140	885	0.042	MH-398	MH-245	842.9143	10.71	8839.62	8802.11	TRUE
CO-57	10	140	400	0.043	MH-57	MH-58	1165.3097	11.71	5470.57	5453.46	TRUE
CO-487	10	140	1584	0.045	MH-245	MH-1	884.3827	11.08	8802.11	8731.3	TRUE
CO-469	8	140	858	0.045	MH-379	MH-240	4.6975	2.55	8794.67	8764	TRUE
CO-12	10	140	186	0.045	MH-12	MH-13	963.3923	11.42	8234.56	8226.1	TRUE
CO-21	10	140	92	0.049	MH-21	MH-22	1157.1472	12.3	8089.58	8085.09	TRUE
CO-55	10	140	430	0.051	MH-55	MH-56	1161.6539	12.5	5495.98	5474.22	TRUE
CO-491	10	140	3330	0.051	MH-296	W-8	32.6489	4.55	8501.12	8332	TRUE
CO-78	10	140	118	0.054	MH-79	MH-80	34.9475	4.75	8328.54	8322.14	TRUE
CO-79	10	140	258	0.056	MH-80	MH-81	36.51	4.88	8322.14	8307.64	TRUE
CO-494	8	140	2065	0.057	MH-418	WW#1 PH.1	73.0076	6.23	8729.18	8612	TRUE
CO-85	10	140	217	0.059	MH-86	MH-87	8.8542	3.28	8345.48	8332.73	TRUE
CO-54	10	140	401	0.06	MH-54	MH-55	1161.6439	13.36	5519.86	5495.98	TRUE
CO-484	10	140	1288	0.06	MH-181	W-3	15.635	3.92	8447	8371	TRUE
CO-83	10	140	429	0.062	MH-84	MH-16	120.2267	7.24	8241.71	8215.42	TRUE
CO-81	10	140	624	0.063	MH-82	MH-83	48.4892	5.54	8285.06	8246.02	TRUE
CO-52	10	140	785	0.064	MH-52	MH-53	1161.6239	13.74	5627.35	5577.18	TRUE
CO-17	10	140	211	0.066	MH-17	MH-18	1154.0022	13.92	8189.95	8175.95	TRUE
CO-18	10	140	322	0.066	MH-18	MH-19	1155.0439	13.93	8175.95	8154.56	TRUE
CO-458	10	140	713	0.069	MH-391	MH-374	3.7058	2.66	8256.04	8207.04	TRUE
CO-16	10	140	366	0.07	MH-16	MH-17	1152.9606	14.16	8215.42	8189.95	TRUE
CO-53	10	140	794	0.072	MH-53	MH-54	1161.6339	14.4	5577.18	5519.86	TRUE
CO-468	8	140	531	0.075	MH-380	MH-382	2.0933	2.5	8754.03	8714.2	TRUE
CO-434	10	140	3631	0.076	MH-364	MH-79	33.9058	5.36	8604.22	8328.54	TRUE
CO-35	10	140	659	0.076	MH-35	MH-36	1161.4539	14.71	7342.69	7292.53	TRUE
CO-11	10	140	230	0.08	MH-11	MH-12	963.3822	14.27	8252.97	8234.56	TRUE

CO-20	10	140	312	0.082	MH-20	MH-21	1157.1373	15.11	8115.03	8089.58	TRUE
CO-435	10	140	1058	0.087	MH-378	MH-245	40.635	5.94	8893.13	8802.11	TRUE
CO-51	10	140	795	0.087	MH-51	MH-52	1161.6139	15.54	5696.77	5627.35	TRUE
CO-34	10	140	794	0.089	MH-34	MH-35	1161.4439	15.65	7413.34	7342.69	TRUE
CO-7	10	140	309	0.091	MH-7	MH-8	963.3423	15.03	8377.97	8349.85	TRUE
CO-47	10	140	503	0.092	MH-47	MH-48	1161.5739	15.87	5997.64	5951.21	TRUE
CO-457	10	140	1475	0.093	MH-389	MH-391	3.175	2.92	8393.04	8256.04	TRUE
CO-19	10	140	405	0.098	MH-19	MH-20	1157.1272	16.24	8154.56	8115.03	TRUE
CO-455	10	140	796	0.099	MH-388	MH-389	3.165	2.99	8472.04	8393.04	TRUE
CO-90	10	140	407	0.1	MH-91	MH-92	0.8772	1.98	8751.36	8710.62	TRUE
CO-86	10	140	265	0.1	MH-87	MH-88	10.4167	4.19	8332.73	8306.14	TRUE
CO-502	10	140	1113	0.102	MH-422	MH-3	35.0088	6.06	8703.12	8590.34	TRUE
CO-50	10	140	793	0.103	MH-50	MH-51	1161.6039	16.61	5778.47	5696.77	TRUE
CO-6	10	140	395	0.103	MH-6	MH-7	963.3322	15.78	8418.71	8377.97	TRUE
CO-49	10	140	799	0.104	MH-49	MH-50	1161.5939	16.65	5861.27	5778.47	TRUE
CO-503	10	140	167	0.105	MH-348	W-13	8.8642	4.12	8491.56	8475	TRUE
CO-10	10	140	370	0.105	MH-10	MH-11	963.3723	15.89	8291.79	8252.97	TRUE
CO-9	10	140	193	0.106	MH-9	MH-10	963.3622	15.93	8312.17	8291.79	TRUE
CO-5	10	140	796	0.107	MH-5	MH-6	963.3223	16.02	8504	8418.71	TRUE
CO-22	10	140	347	0.108	MH-22	MH-23	1157.1573	16.89	8085.09	8047.73	TRUE
CO-33	10	140	686	0.109	MH-33	MH-34	1161.4339	17	7488.27	7413.34	TRUE
CO-8	10	140	336	0.112	MH-8	MH-9	963.3523	16.3	8349.85	8312.17	TRUE
CO-4	10	140	398	0.113	MH-4	MH-5	963.3122	16.33	8548.91	8504	TRUE
CO-451	10	140	2352	0.113	MH-386	MH-387	2.0933	2.7	8738.03	8472.54	TRUE
CO-3	10	140	366	0.113	MH-3	MH-4	963.3023	16.35	8590.34	8548.91	TRUE
CO-48	10	140	789	0.114	MH-48	MH-49	1161.584	17.26	5951.21	5861.27	TRUE
CO-46	10	140	796	0.116	MH-46	MH-47	1161.5639	17.37	6089.84	5997.64	TRUE
CO-2	10	140	400	0.118	MH-2	MH-3	896.391	16.28	8637.38	8590.34	TRUE
CO-84	10	140	334	0.119	MH-85	MH-86	3.125	3.2	8385.07	8345.48	TRUE
CO-32	10	140	786	0.12	MH-32	MH-33	1161.4239	17.59	7582.24	7488.27	TRUE
CO-24	10	140	250	0.122	MH-24	MH-25	1157.1773	17.71	8027.79	7997.32	TRUE
CO-23	10	140	163	0.122	MH-23	MH-24	1157.1672	17.74	8047.73	8027.79	TRUE
CO-483	10	140	1811	0.127	MH-121	W-2	7.1281	4.18	8721.05	8492	TRUE
CO-37	10	140	778	0.131	MH-37	MH-38	1161.4739	18.23	7201.9	7100.17	TRUE
CO-45	10	140	801	0.131	MH-45	MH-46	1161.5539	18.23	6194.62	6089.84	TRUE
CO-28	10	140	204	0.132	MH-28	MH-29	1161.384	18.3	7942.65	7915.71	TRUE
CO-488	10	140	2021	0.133	MH-39	MH-40	1161.494	18.37	6982.6	6713.01	TRUE
CO-36	10	140	676	0.134	MH-36	MH-37	1161.4639	18.41	7292.53	7201.9	TRUE
CO-30	10	140	1522	0.137	MH-30	MH-31	1161.404	18.56	7901.83	7693.36	TRUE
CO-40	10	140	399	0.138	MH-40	MH-41	1161.5039	18.6	6713.01	6658.13	TRUE
CO-29	10	140	99	0.14	MH-29	MH-30	1161.3939	18.74	7915.71	7901.83	TRUE
CO-31	10	140	791	0.14	MH-31	MH-32	1161.4139	18.75	7693.36	7582.24	TRUE
CO-88	10	140	318	0.143	MH-89	MH-90	0.8572	2.4	8850.05	8804.66	TRUE
CO-44	10	140	798	0.144	MH-44	MH-45	1161.5439	18.92	6309.28	6194.62	TRUE
CO-43	10	140	772	0.145	MH-43	MH-44	1161.5339	18.96	6420.9	6309.28	TRUE
CO-89	10	140	359	0.148	MH-90	MH-91	0.8672	2.44	8804.66	8751.36	TRUE
CO-41	10	140	775	0.149	MH-41	MH-42	1161.5139	19.2	6658.13	6542.53	TRUE
CO-38	10	140	781	0.151	MH-38	MH-39	1161.4839	19.26	7100.17	6982.6	TRUE
CO-500	10	140	213	0.155	MH-359	W-11	29.4402	6.76	8114.03	8082	TRUE
CO-42	10	140	779	0.156	MH-42	MH-43	1161.5239	19.53	6542.53	6420.9	TRUE
CO-87	10	140	381	0.158	MH-88	MH-83	13.5417	5.38	8306.14	8246.02	TRUE
CO-1	10	140	562	0.167	MH-1	MH-2	895.4939	18.69	8731.3	8637.38	TRUE
CO-80	10	140	132	0.171	MH-81	MH-82	39.1142	7.65	8307.64	8285.06	TRUE
CO-26	10	140	33	0.173	MH-26	MH-27	1161.3639	20.35	7960.19	7954.49	TRUE
CO-25	10	140	208	0.179	MH-25	MH-26	1161.3539	20.62	7997.32	7960.19	TRUE
CO-27	10	140	66	0.179	MH-27	MH-28	1161.3739	20.65	7954.49	7942.65	TRUE
CO-82	10	140	158	0.197	MH-83	MH-16	67.2383	9.42	8246.02	8215.42	TRUE
CO-97	10	140	127	0.251	MH-98	MH-25	4.1667	4.66	8028.47	7997.32	TRUE
CO-91	10	140	258	0.286	MH-92	MH-2	0.8872	3.11	8710.62	8637.38	TRUE
CO-499	10	140	364	0.343	MH-392	WW The Nose	0.5308	3.03	8330.74	8207	TRUE

MP Pressure Pipe Summary

Label	Diameter (in)	Hazen-Williams C	Length (ft)	Slope (ft/ft)	Start Node	Stop Node	Flow (gal/min)	Velocity (ft/s)	HGL (In) (ft)	HGL (Out) (ft)	Is Active?
P-39	4	140	228	0	WW The Nose	PMP The Nose	0.8234	0.02	8,207.00	8,207.00	TRUE
P-16	2.5	140	247	0	WW#2 PH.1	PMP#2 PH.1	2.5145	0.16	8,697.00	8,696.98	TRUE
P-40	1	140	7,024.00	-0.085	PMP The Nose	MH-245	0.8234	0.34	8,807.00	8,801.56	TRUE
P-17	4	140	167	0.006	W-2	PMP-10	30.0004	0.77	8,492.00	8,491.88	TRUE
P-43	4	140	118	0	W-13	PMP-20	34.9988	0.89	8,475.00	8,474.89	TRUE
P-5	1	140	597	-0.24	PMP#2 PH.1	MH-398	2.5145	1.03	8,842.74	8,839.08	TRUE
P-47	4	130	268	0	W-15	PMP-22	41.9985	1.07	8,069.55	8,069.15	TRUE
P-30	6	140	167	0	W-3	PMP-13	105.00	1.19	8,371.00	8,370.83	TRUE
P-31	5	140	5,479.00	-0.04	PMP-13	J-7	104.9987	1.72	8,670.87	8,657.62	TRUE
P-33	4	140	142.00	0	W-7	PMP-14	72.9977	1.86	8,236.75	8,236.23	TRUE
P-23	6	140	290	0	W-5	PMP-9	167.00	1.89	8,077.00	8,076.32	TRUE
P-48	3	130	4,612.00	-0.065	PMP-22	W-3	42.00	1.91	8,399.23	8,371.00	TRUE
P-18	2.5	140	3,545.00	0.034	PMP-10	W-3	30.00	1.96	8,395.65	8,371.00	TRUE
P-44	2.5	140	3,231.00	-0.071	PMP-20	MH-422	34.9988	2.29	8,733.10	8,703.21	TRUE
P-7	2.5	140	6,493.00	-0.035	PMP#1 PH.1	MH-398	38.08	2.49	8,909.74	8,839.50	TRUE
P-21	2.5	140	191	0	WW#1 PH.1	PMP#1 PH.1	38.08	2.49	8,612.00	8,609.93	TRUE
P-24	5	140	6,359.00	-0.073	PMP-9	W-6	167.00	2.73	8,577.32	8,541.00	TRUE
P-37	6	140	228	0.395	W-9	PMP-16	262.00	2.97	8,787.00	8,785.77	TRUE
P-38	6	140	956	-0.191	PMP-16	MH-419	262.00	2.97	8,884.67	8,879.50	TRUE
P-41	4	140	372	0	W-11	PMP-19	117.00	2.99	8,082.00	8,078.74	TRUE
P-42	4	140	1,041.00	-0.154	PMP-19	MH-84	117.00	2.99	8,250.95	8,241.82	TRUE
P-32	3	140	2,076.00	-0.238	PMP-14	MH-418	73.00	3.31	8,760.08	8,729.25	TRUE
P-34	4	140	159	0	W-8	PMP-15	130.00	3.32	8,332.00	8,330.31	TRUE
P-36	4	140	6,025.00	-0.076	PMP-15	W-9	129.9977	3.32	8,851.17	8,787.00	TRUE
P-53	4	130	265.00	0	W-17	PMP-24	131.9492	3.37	8,636.00	8,632.67	TRUE
P-54	4	130	1,753.00	-0.091	PMP-24	W-9	131.95	3.37	8,809.02	8,787.00	TRUE
P-56	2	140	322	0	W-19	PMP-25	40.30	4.12	8,764.00	8,752.53	TRUE
P-57	2	140	717	-0.117	PMP-25	MH-398	40.2975	4.12	8,864.70	8,839.17	TRUE
P-51	6	130	382	0	WW#1 PH.1	PMP#2 PH.2	500.00	5.67	8,612.00	8,604.15	TRUE
P-52	6	140	6,487.00	-0.035	PMP#2 PH.2	MH-398	499.9984	5.67	8,955.68	8,839.50	TRUE
P-25	6	140	253	0	W-6	PMP-11	499.9993	5.67	8,541.00	8,536.47	TRUE
P-29	6	140	1,931.00	-0.024	PMP-11	J-7	500.00	5.67	8,692.21	8,657.62	TRUE
P-28	6	130	1,560.00	-0.015	J-7	WW#1 PH.1	605.00	6.87	8,657.62	8,612.00	TRUE

PH1 Pressure Pipe Summary

Label	Diameter (in)	Hazen-Williams C	Length (ft)	Slope (ft/ft)	Start Node	Stop Node	Flow (gal/min)	Velocity (ft/s)	HGL (In) (ft)	HGL (Out) (ft)	Is Active?
P-39	4	140	167	0.006	W-2	PMP-10	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-16	2.5	140	3545	0.034	PMP-10	W-3	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-40	6	140	290.00	0	W-5	PMP-9	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-17	5	140	6359	-0.073	PMP-9	W-6	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-43	6	140	253	0	W-6	PMP-11	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-5	6	140	1931	-0.024	PMP-11	J-7	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-47	6	140	167	0	W-3	PMP-13	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-30	5	140	5479	-0.04	PMP-13	J-7	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-31	3	140	2,076.00	-0.238	PMP-14	MH-418	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-33	4	140	142.00	0	W-7	PMP-14	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-23	4	140	159	0	W-8	PMP-15	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-48	4	140	6,025.00	-0.076	PMP-15	W-9	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-18	6	140	228.00	0.395	W-9	PMP-16	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-44	6	140	956.00	-0.191	PMP-16	MH-419	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-7	4	140	372.00	0	W-11	PMP-19	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-21	4	140	1041	-0.154	PMP-19	MH-84	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-24	4	140	118.00	0	W-13	PMP-20	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-37	2.5	140	3231	-0.071	PMP-20	MH-422	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-38	4	130	268	0	W-15	PMP-22	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-41	3	130	4612	-0.065	PMP-22	W-3	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-42	6	130	1,560.00	-0.015	J-7	WW#1 PH.1	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-32	6	130	382.00	0	WW#1 PH.1	PMP#2 PH.2	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-34	6	140	6487	-0.035	PMP#2 PH.2	MH-398	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-36	4	130	265.00	0	W-17	PMP-24	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-53	4	130	1,753.00	-0.091	PMP-24	W-9	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-54	4	140	228.00	0	WW The Nose	PMP The Nose	0.82	0.02	8,207.00	8,207.00	TRUE
P-56	2.5	140	247	0	WW#2 PH.1	PMP#2 PH.1	2.51	0.16	8,697.00	8,696.98	TRUE
P-57	1	140	7024	-0.085	PMP The Nose	MH-245	0.8234	0.34	8,807.00	8,801.56	TRUE
P-51	1	140	597	-0.24	PMP#2 PH.1	MH-398	2.51	1.03	8,842.74	8,839.08	TRUE
P-52	2.5	140	6,493.00	-0.035	PMP#1 PH.1	MH-398	38.1646	2.49	8,909.73	8,839.21	TRUE
P-25	2.5	140	191	0	WW#1 PH.1	PMP#1 PH.1	38.1646	2.49	8,612.00	8,609.93	TRUE
P-29	2	140	322.00	0	W-19	PMP-25	40.30	4.12	8,764.00	8,752.53	TRUE
P-28	2	140	717.00	-0.117	PMP-25	MH-398	40.30	4.12	8,864.70	8,839.17	TRUE

EX Pressure Pipe Summary

Label	Diameter (in)	Hazen-Williams C	Length (ft)	Slope (ft/ft)	Start Node	Stop Node	Flow (gal/min)	Velocity (ft/s)	HGL (In) (ft)	HGL (Out) (ft)	Is Active?
P-39	1	140	597	-0.24	PMP#2 PH.1	MH-398	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-16	2.5	140	6493	-0.035	PMP#1 PH.1	MH-398	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-40	2.5	140	247.00	0	WW#2 PH.1	PMP#2 PH.1	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-17	4	140	167	0.006	W-2	PMP-10	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-43	2.5	140	3545	0.034	PMP-10	W-3	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-5	2.5	140	191	0	WW#1 PH.1	PMP#1 PH.1	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-47	6	140	290	0	W-5	PMP-9	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-30	5	140	6359	-0.073	PMP-9	W-6	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-31	6	140	253.00	0	W-6	PMP-11	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-33	6	140	1,931.00	-0.024	PMP-11	J-7	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-23	6	140	167	0	W-3	PMP-13	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-48	5	140	5,479.00	-0.04	PMP-13	J-7	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-18	3	140	2,076.00	-0.238	PMP-14	MH-418	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-44	4	140	142.00	0	W-7	PMP-14	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-7	4	140	159.00	0	W-8	PMP-15	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-21	4	140	6025	-0.076	PMP-15	W-9	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-24	6	140	228.00	0.395	W-9	PMP-16	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-37	6	140	956	-0.191	PMP-16	MH-419	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-38	4	140	228	0	WW The Nose	PMP The Nose	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-41	1	140	7024	-0.085	PMP The Nose	MH-245	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-42	4	140	372.00	0	W-11	PMP-19	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-32	4	140	1,041.00	-0.154	PMP-19	MH-84	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-34	4	140	118	0	W-13	PMP-20	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-36	2.5	140	3,231.00	-0.071	PMP-20	MH-422	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-53	4	130	268.00	0	W-15	PMP-22	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-54	3	130	4,612.00	-0.065	PMP-22	W-3	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-56	6	130	1560	-0.015	J-7	WW#1 PH.1	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-57	6	130	382	0	WW#1 PH.1	PMP#2 PH.2	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-51	6	140	6487	-0.035	PMP#2 PH.2	MH-398	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-52	4	130	265.00	0	W-17	PMP-24	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-25	4	130	1753	-0.091	PMP-24	W-9	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-29	2	140	322.00	0	W-19	PMP-25	(N/A)	(N/A)	(N/A)	(N/A)	FALSE
P-28	2	140	717.00	-0.117	PMP-25	MH-398	(N/A)	(N/A)	(N/A)	(N/A)	FALSE