PHASE III DRAINAGE REPORT FOR
AMENITY SITE AT RIDGEGATE SOUTHWEST VILLAGE

June 6, 2022
Revised: October 11, 2022
Revised: January 26, 2023
Revised February 16, 2024

Prepared For:
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Project No. 15950.06
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APPENDICES

ENGINEER'S STATEMENT

I affirm that this report and plan for the Phase III drainage design of the Amenity Site at Ridgegate Southwest Village was prepared by me (or under my direct supervision) in accordance with the provisions of Douglas County Drainage Design and Technical Criteria for the owners thereof. I understand that City of Lone Tree does not and will not assume liability for drainage facilities designed by others.

Aaron Clutter, P.E. Date
State of Colorado No. 36742
For and on Behalf of JR Engineering

Shea Homes herby certifies that the drainage facilities for the Amenity Site at Ridgegate Southwest Village shall be constructed according to the design presented in this report. I understand that The City of Lone Tree does not and will not assume liability for the drainage facilities designed and/or certified by my engineer and that Douglas County reviews drainage plans pursuant to Colorado Revised Statutes, Title 30, Article 28; but cannot, on behalf of Ridgegate, guarantee that the final drainage design review will absolve Shea Homes and/or their successors and/or assigns of future liability for improper design. I further understand that approval of the final plat does not imply approval of my engineer's drainage design.

Name of Developer

Authorized Signature

I. GENERAL LOCATION AND DESCRIPTION

A. Site Location

The Amenity Center at Ridgegate Southwest Village site is located in the Northeast quarter of Section 23, Township 6 South, Range 69 West. The site is on Tract AS of Ridgegate Southwest Village Filing 1, south of High Note Avenue, east of Lyric Street, west of Poetry Road, and north of single family detached lots fronting on Alla Breve Circle.

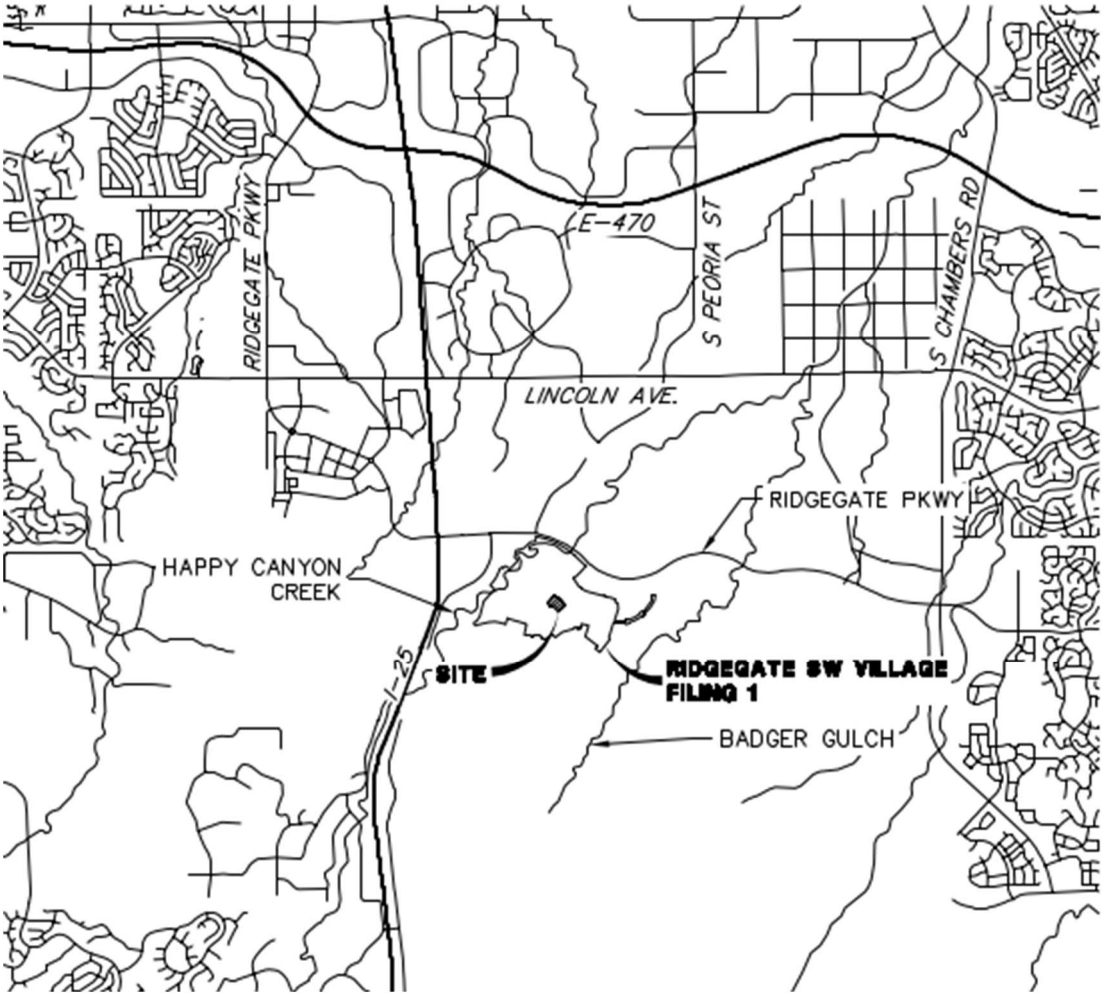

Figure 1 – Vicinity Map

B. Description of Property

The 3.26 acre Amenity Site is located within Ridgegate Southwest Village Filing 1, and consists of a clubhouse building, a fitness building, a swimming pool, and associated drive, parking, and landscape areas.. It was overlot graded as a part of Ridgegate Southwest Village Filing 1 and slopes in the existing condition range from 1% - 25%. Currently, the project site is vacant.

According to information from the USDA's Natural Resource Conservation Service, soils on the site are predominately Fondis-Kutch (hydrologic soils group C) and Fondis clay loam (hydrologic soils group C). Soils belonging to Hydrologic Soils Group C are described as "soils that have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine to fine structure." The NRCS soils maps are provided as Figure 2 in **Appendix A.**

According to FIRM Map Number 08035C0063H, dated September 4, 2020, the Amenity Center site is located within Zone X which is the flood insurance rate zone that corresponds to areas outside the one percent annual chance floodplain. The FEMA FIRM is included as Figure 3 in **Appendix A**.

The hydrology and hydraulics of the stormwater runoff from the proposed improvements is evaluated herein to ensure compliance with the *Phase III Drainage Report for Ridgegate Southwest Village Filing 1- Addendum I Memorandum.*

II. DRAINAGE BASINS AND SUB-BASINS

A. Major Basin Description

The site lies within the Happy Canyon Creek basin, which is a left bank tributary of Cherry Creek. This report has been prepared in conformance the *Phase III Drainage Report for Ridgegate Southwest Village Filing 1 – Addendum I Memorandum.*

The Amenity site is a part of Basin A, delineated in *Phase III Drainage Report for Ridgegate Southwest Village Filing 1 – Addendum I Memorandum*, which is a 146.7 acre basin consisting of commercial lots, residential lots, and open space. Drainage is this development primarily travels via sheet flow or curb and gutter to be collected by storm sewer inlets. This basin drains to EURV Pond A, which provides water quality before outfalling to Happy Canyon Creek. Future on-line detention will be installed in Happy Canyon Creek, providing flood control volume for the site. Proposed improvements to not include any changes to major drainage patterns, EURV Pond A, or Happy Canyon Creek.

B. Minor Basin Description

The Amenity Center site is located primarily in Sub-Basin A25 of the *Phase III Drainage Report for Ridgegate Southwest Village Filing 1 – Addendum I Memorandum* (3.36 acres, 81.9% impervious, C_5:0.73; C_{100}:0.83), with a small portion in Sub-Basin A26 (0.96 acres, 61.5% impervious, C_5:0.54, C_{100}:0.74). In the existing condition, runoff from sub-basin A25 travels via sheet flow to curb and gutter in High Note Avenue and Lyric Street, within basins A21 and A26. In the proposed condition, the site has been further divided to account for proposed improvements.

The following is a summary of the proposed amenity site drainage basins:

- Basin A1 (74.5% impervious) is a 0.46 acre basin made up of the eastern portion of the proposed parking lot and some of the proposed pool deck. Drainage within the basin is to sheet flow to the north end of the parking lot, where it is to be captured by proposed combination type 13 inlet at DP1 and piped north to an existing storm stub into High Note Avenue.
- Basin B1 (72.9% impervious) is a 0.31 acre basin containing the proposed pool deck. Runoff within this basin, including the stormwater from Basin R1 that outfalls to the pool deck, is captured by trench drains and piped to an existing storm stub into Lyric Street.
- Basin B2 (73.5% impervious) is a 0.37 acre basin containing the central portion of the proposed parking lot. Runoff in this basin drains via sheet flow or curb and gutter to the proposed combination type 13 inlet located at DP3 and is piped to an existing storm stub into Lyric Street.
- Basins B3 (62.3% impervious) is a 0.44 acre basin containing the southeastern portion of the proposed parking lot. Runoff in this basin, including offsite drainage from basin O1, is conveyed via sheet flow

and curb and gutter to a proposed combination type 13 inlet at DP4 and piped to an existing storm stub into Lyric Street.

- Basin B4 (38.2% impervious) is a 0.36 acre basin containing the Southwest portion of the proposed parking lot. Runoff from this basin drains via sheet flow and curb and gutter to the proposed combination type 13 inlet at DP5 and is piped to an existing storm stub in Lyric Street.
- Basin B5 (71.2% impervious) is a 0.54 acre basin containing the northwestern portion of the parking lot and the sidewalk fronting the clubhouse and fitness buildings. Runoff within this basin, as well as bypass flows from basins B2, B3, and B4 and offsite drainage from Basin O2, travels via sheet flow and curb and gutter to the proposed combination type 13 inlet at DP 6. Flows captured by the inlet are piped to an existing storm stub into Lyric Street.
- Basin C1 (88.6% impervious) is a 0.19 acre basin containing the synthetic turf and outdoor fitness area. The drainage in this basin, including stormwater from basins R2 and R3 outfalling to the basin, is collected by proposed area drains and piped to an existing storm sewer stub in High Note Avenue.
- Basin R1 (90% impervious) is a 0.05 acre basin consisting only of proposed rooftop, where all runoff is to be captured by roof drain and outfall to the proposed pool deck within Basin B1. Ultimately, stormwater from this basin is piped to existing storm sewer in Lyric Street.
- Basin R2 (90% impervious) is a 0.04 acre basin consisting only of proposed rooftop, where all runoff is to be captured by proposed roof drains and outfall to the synthetic turf area in Basin C1. Ultimately, stromwater in this basin is piped to existing storm sewer in High Note Avenue.
- Basin R3 (90% impervious) is a 0.06 acre basin consisting only of proposed rooftop, where all runoff is to be captured by proposed roof drains and outfall to the synthetic turf area in Basin C1. Ultimately, stromwater in this basin is piped to existing storm sewer in High Note Avenue.
- Basin R4 (90% impervious) is a 0.04 acre basin consisting only of proposed rooftop. All runoff is to be captured by roof drains and piped existing storm sewer in High Note Avenue.
- Basin P1 (0% impervious) is a 0.09 acre basin consisting only of the proposed pool. Rainfall in this basin will remain in the pool.
- Basin OS1 (11.3% impervious) is a 0.27 acre basin containing unpaved area along the north edge of the site, as well as the western patio of the clubhouse building. Runoff from this basin is to be collected by existing curb and gutter in High Note Avenue and Lyric Street and conveyed to existing inlets.
- Basin OS2 (66.2% impervious) is a 0.03 acre basin containing the western entrance to the proposed parking lot. Stormwater from this basin travels as sheet flow to existing curb and gutter in Lyric Street, where it is ultimately captured by existing inlets.
- Basin O1 (36.4% impervious) is a 0.22 acre basin consisting of existing residential lots that drain into Basin B3. Ultimately, stormwater from this basin is piped to existing storm sewer in Lyric Street.
- Basin O2 (48.0% impervious) is a 0.03 acre basin consisting of existing residential lots that drain into Basin B5. Ultimately, stormwater from this basin is piped to existing storm sewer in Lyric Street.

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A. Site Location

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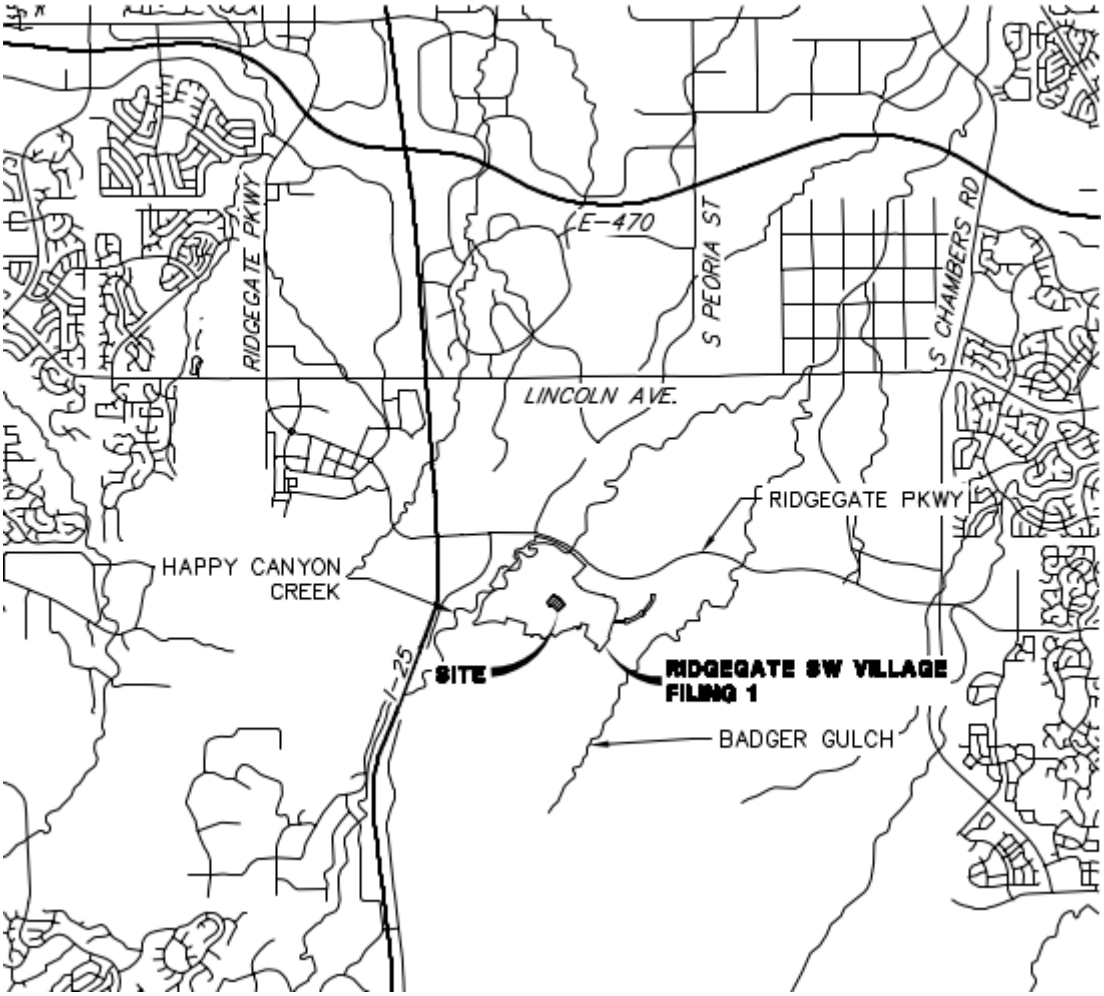

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B. Minor Basin Description

The Amenity Center site is located primarily in Sub-Basin A25 of the *Phase III Drainage Report for Ridgegate Southwest Village Filing 1 – Addendum I Memorandum* (3.36 acres, 81.9% impervious, C_5:0.73; C_{100}:0.83), with a small portion in Sub-Basin A26 (0.96 acres, 61.5% impervious, C_5:0.54, C_{100}:0.74). In the existing condition, runoff from sub-basin A25 travels via sheet flow to curb and gutter in High Note Avenue and Lyric Street, within basins A21 and A26. In the proposed condition, the site has been further divided to account for proposed improvements.

The following is a summary of the proposed amenity site drainage basins:

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- Basin B1 (72.9% impervious) is a 0.31 acre basin containing the proposed pool deck. Runoff within this basin, including the stormwater from Basin R1 that outfalls to the pool deck, is captured by area drains and piped to an existing storm stub into Lyric Street.
- Basin B2 (72.9% impervious) is a 0.37 acre basin containing the central portion of the proposed parking lot. Runoff in this basin drains via sheet flow or curb and gutter to the proposed combination type 13 inlet located at DP3 and is piped to an existing storm stub into Lyric Street.
- Basins B3 (64.1% impervious) is a 0.44 acre basin containing the southeastern portion of the proposed parking lot. Runoff in this basin, including offsite drainage from basin O1, is conveyed via sheet flow

and curb and gutter to a proposed combination type 13 inlet at DP4 and piped to an existing storm stub into Lyric Street.

- Basin B4 (38.2% impervious) is a 0.36 acre basin containing the Southwest portion of the proposed parking lot. Runoff from this basin drains via sheet flow and curb and gutter to the proposed combination type 13 inlet at DP5 and is piped to an existing storm stub in Lyric Street.
- Basin B5 (74.8% impervious) is a 0.54 acre basin containing the northwestern portion of the parking lot and the sidewalk fronting the clubhouse and fitness buildings. Runoff within this basin, as well as bypass flows from basins B2, B3, and B4 and offsite drainage from Basin O2, travels via sheet flow and curb and gutter to the proposed combination type 13 inlet at DP 6. Flows captured by the inlet are piped to an existing storm stub into Lyric Street.
- Basin C1 (87.4% impervious) is a 0.19 acre basin containing the synthetic turf and outdoor fitness area. The drainage in this basin, including stormwater from basins R2 and R3 outfalling to the basin, is collected by proposed area drains and piped to an existing storm sewer stub in High Note Avenue.
- Basin R1 (90% impervious) is a 0.05 acre basin consisting only of proposed rooftop, where all runoff is to be captured by roof drain and outfall to the proposed pool deck within Basin B1. Ultimately, stormwater from this basin is piped to existing storm sewer in Lyric Street.
- Basin R2 (90% impervious) is a 0.04 acre basin consisting only of proposed rooftop, where all runoff is to be captured by proposed roof drains and outfall to the synthetic turf area in Basin C1. Ultimately, stromwater in this basin is piped to existing storm sewer in High Note Avenue.
- Basin R3 (90% impervious) is a 0.06 acre basin consisting only of proposed rooftop, where all runoff is to be captured by proposed roof drains and outfall to the synthetic turf area in Basin C1. Ultimately, stromwater in this basin is piped to existing storm sewer in High Note Avenue.
- Basin R4 (90% impervious) is a 0.04 acre basin consisting only of proposed rooftop. All runoff is to be captured by roof drains and piped existing storm sewer in High Note Avenue.
- Basin P1 (0% impervious) is a 0.09 acre basin consisting only of the proposed pool. Rainfall in this basin will remain in the pool.
- Basin OS1 (10.6% impervious) is a 0.27 acre basin containing unpaved area along the north edge of the site, as well as the western patio of the clubhouse building. Runoff from this basin is to be collected by existing curb and gutter in High Note Avenue and Lyric Street and conveyed to existing inlets.
- Basin OS2 (66.2% impervious) is a 0.03 acre basin containing the western entrance to the proposed parking lot. Stormwater from this basin travels as sheet flow to existing curb and gutter in Lyric Street, where it is ultimately captured by existing inlets.
- Basin O1 (36.4% impervious) is a 0.22 acre basin consisting of existing residential lots that drain into Basin B3. Ultimately, stormwater from this basin is piped to existing storm sewer in Lyric Street.
- Basin O2 (48.0% impervious) is a 0.03 acre basin consisting of existing residential lots that drain into Basin B5. Ultimately, stormwater from this basin is piped to existing storm sewer in Lyric Street.

Table 1. Proposed Basin Summary Table

Tributary Sub-basin	Area (acres)	Percent Impervious	C_5	C_{100}	t_c (min)	Q_5 (cfs)	Q_{100} (cfs)
A1	0.46	74.5	0.65	0.79	5.00	1.5	3.2
B1	0.31	72.9	0.63	0.78	5.00	1.0	2.2
B2	0.37	72.9	0.63	0.78	5.00	1.2	2.6
B3	0.44	64.1	0.56	0.75	5.00	1.2	2.9
B4	0.36	38.2	0.35	0.64	5.00	0.6	2.0
B5	0.54	74.8	0.65	0.79	5.00	1.7	3.8
C1	0.19	87.4	0.75	0.84	5.00	0.7	1.4
R1	0.05	90.0	0.77	0.85	5.00	0.2	0.3
R2	0.04	90.0	0.77	0.85	5.00	0.1	0.3
R3	0.06	90.0	0.77	0.85	5.00	0.2	0.5
R4	0.04	90.0	0.77	0.85	5.00	0.2	0.3
P1	0.09	0.0	0.04	0.48	5.00	0.0	0.4
OS1	0.27	10.6	0.12	0.53	5.00	0.2	1.3
OS2	0.03	66.2	0.58	0.75	5.00	0.1	0.2
Total Onsite	3.26	61.0	0.54	0.73			

Table 2. Previous Basin Summary Table

Tributary Sub-basin	Area (acres)	Percent Impervious	C_5	C_{100}	t_c (min)	Q_5 (cfs)	Q_{100} (cfs)
A25	3.26	81.9	0.73	0.83	7.1	10.6	22.0
Total Onsite	3.26	81.9	0.73	0.83	7.1	10.6	22.0

Table 3. Comparison Table

Drainage Report	Percent Impervious	5-yr Runoff Coefficient	100-yr Runoff Coefficient
Ridgegate SW Village Filing 1	81.9%	0.73	0.83
Amenity Center at Ridgegate SW Village	61.0%	0.54	0.73

III. DRAINAGE DESIGN CRITERIA

A. Regulations

Storm drainage analysis and design criteria for this project were taken from the "Storm Drainage Design and Technical Criteria Manual" (SDDTCM) by Douglas County and the "Urban Storm Drainage Criteria Manual" (USDCM) by Mile High Flood Control District (MHFD).

B. Drainage Studies

The governing master report is the Approved *Phase III Drainage Report for Ridgegate Southwest Village Filing 1 – Addendum I Memorandum* by JR Engineering, LLC, dated September 28, 2021. The referenced information from the governing master report is included in Appendix D of this report.

C. Hydrologic Criteria

All hydrologic criteria was obtained from the "Storm Drainage Design and Technical Criteria Manual" (SDDTCM) by Douglas County and the "Urban Storm Drainage Criteria Manual" (USDCM) by Mile High Flood Control District (MHFD). Onsite drainage improvements were designed based on the 5-year (minor) storm event and the 100-year (major) storm event. Runoff was calculated using the Rational Method, and rainfall intensities for the 5-year and 100-year storm return frequencies were obtained from the Douglas County Storm Drainage Design and Technical Criteria Manual. One-hour point precipitation values of 1.43 inches and 2.60 inches for Douglas County Rainfall Zone 1 were utilized for the Rational Method analysis in conjunction with the intensity-duration curve equation, Equation 5-3 from the USDCM. Runoff coefficients were determined based on data presented in Table 6-5 from the USDCM.

Standard Forms SF-2 and SF-3 were used to determine the runoff from the minor and major storms on this site. Runoff coefficients were determined based on data presented in Table 6-4 for Type C soils from the USDCM. Basin percent impervious values were calculated based on proposed future land use and from data on Table 6-3 from the USDCM. Times of concentration were developed using equations from the USDCM. All runoff calculations and applicable charts and graphs are included in Appendix B of this report.

D. Hydraulic Criteria

Storm sewers are modeled in Bentley StormCAD V8i for minor and major storm events. All storm sewer pipes have been designed to be in accordance with Douglas County *Storm Drainage Design and Technical Criteria Manual* criteria with respect to pipe slope, capacity, velocity, HGL/EGL elevation, and minor hydraulic losses (expansion, contraction, bends). The minor storm discharge shall not surcharge the sewer. All hydraulic calculations and applicable charts and graphs are included in Appendix C of this report.

E. Water Quality Enhancement

All installation and maintenance of construction BMP's shall be done in compliance with Douglas County "Drainage, Erosion, and Sediment Control Manual", Mile High Flood Control District's "Urban Storm Drainage Criteria Manual" and with the Grading, Erosion, and Sediment Control plans and report prepared for this project. This site is tributary to the Ridgegate Filing 1 EURV Pond A which provides permanent water quality for the site.

IV. STORMWATER MANAEMENT FACILITY DESIGN

A. Stormwater Conveyance Facilities

In the existing conditions, as shown in the *Phase III Drainage Report for Ridgegate Southwest Village – Addendum I Memorandum,* the majority of the Amenity Site is denoted as Basin A25, and a small portion is included in Basin A26. Runoff from the site drains into curb and butter in basins A21 and A26, where it is collected by inlets and routed to design points 2.6 and 3.0, respectively. The Routed flow at DP 3.0 in the *Phase III Drainage Report for Ridgegate Southwest Village– Addendum I Memorandum,* which includes upstream flows, is Q_5: 35.82 cfs; Q_{100}: 82.04 cfs. The Routed flow at DP 2.6, which includes upstream flows, is Q_5: 44.35 cfs; Q_{100}: 123.55 cfs. The flows from these two design points converge at DP 3.1, where routed flows are Q_5: 79.64 cfs; Q_{100}: 206.17 cfs.

All runoff from the site will be routed to these design points in the proposed condition as well. Basins OS1 and OS2 will drain to existing curb and gutter and be routed via existing storm inlet to DP 2.6 and DP 3.0,

respectively. Basins R2 and R3 will outfall to Basin C1, which will be routed to DP 2.6 via proposed storm sewer. Runoff in basin A1 will be collected by an inlet at DP 1 and piped to via proposed storm sewer to an existing storm sewer stub, where it will be routed to DP 2.6. Runoff in basins R1, B1, B2, O1, B3, B4, O2, B5, and R4 will be collected by proposed inlets at design points 3, 4, 5, and 6 where it will be piped via proposed storm sewer to an existing stub, then routed to DP 3.0.

In the proposed condition, the minor and major storms are fully captured by the proposed and existing storm sewer. All runoff from the Amenity Center will be ultimately conveyed to Happy Canyon Creek via existing infrastructure in Ridgegate Southwest Village Filing 1. Water quality will be provided in EURV Pond A, as discussed in the Stormwater Storage Facilities section, below.

A StormCAD model was created for the Amenity Site. 5 year and 100 year HGL elevations from the *Phase III Drainage Report for Ridgegate Southwest Village – Addendum I Memorandum* were applied to generate tailwater elevations at the outfalls to existing storm sewer. The tailwater elevation at the outfall of basin A was set to 6030.12' (5 year storm) and 6031.71' (100 year storm), the elevation at the outfall of basin B was set to 6028.56' (5 year storm) and 6029.44 (100 year storm), and the elevation at the outfall of basin C was set to 6021.45' (5 year storm) and 6026.69' (100 year storm). The HGL for the 5 year storm is contained within the pipe at all locations and the HGL for the 100 year storm remains below grade. Calculations from this model are included in Appendix C.

In the 100 year storm model, 2 pipes were found to have velocities lower than the minimum velocity of 4 ft/s prescribed by Douglas County. As shown in the 100 year Pipe/ Node Report included in Appendix C, pipes downstream of DP-1 have a velocity of 1.19 ft/s. The tailwater elevation at the system outfall is above the top of these pipes, causing flow to slow down. However, per the *Phase III Drainage Report for Ridgegate Southwest Village – Addendum I Memorandum*, the time of concentration at DP2.6 is 22.1 minutes. The proposed sewer has time of concentration of 5.0 minutes. Because of the significant difference in these times, it is unlikely that the 100 year storm flow through the proposed system will encounter the peak tailwater elevation at the outfall to existing sewer, therefore velocities are expected to be above the minimum value in the 100 year.

B. Stormwater Storage Facilities

This site is tributary to EURV Pond A northeast of the site, which will be installed with the Ridgegate Filing 1 improvements and provide water quality for the site. Downstream of EURV Pond A, on-line detention will be installed within Happy Canyon Creek as part of the Happy Canyon Creek improvements, providing flood control volume for the site. In the *Phase III Drainage Report for Ridgegate Southwest Village Filing 1– Addendum I Memorandum*, the Amenity Center Site was designed to accommodate 3.06 acres of impervious area (3.26 acres at 81.9% impervious) for the site. Proposed improvements will result in 1.99 acres of impervious area (3.26 acres at 61% impervious). Therefore the design runoff volume for EURV Pond A and the on-line detention in Happy Canyon Creek will not be exceeded in the proposed condition.

C. Water Quality Enhancement Best Management Practices

Temporary sediment basins were installed during the overlot grading phase of the Ridgegate Southwest Village Filing 1 improvements. Additional construction BMPs will be installed as prescribed in the grading, erosion, and sediment control plans and report prepared for this project.
EURV Pond A, constructed as a part of Filing 1, provides water quality for Ridgegate Southwest Village Filing 1, including the Amenity Site.

D. Floodplain Modification

There are no modifications proposed to any floodplain. The project site is outside the one percent annual chance floodplain, and there are no CLOMR, LOMR, or floodplain permitting requirements.

E. Additional Permitting Requirements

An Approved Jurisdictional Determination, provided by the U.S. Army Corps of Engineers, Corps File No. MWO-2019-01406-DEN, has determined that there are no water resources of the U.S. on this site; therefore, a Department of the Army permit will not be required for this site. There are currently no endangered species located on the site. There are no other permitting requirements placed on the site.

V. CONCLUSIONS

A. Compliance with Standards

The purpose of this report is to present the storm drainage conveyance and water quality/detention associated with the proposed Amenity Center at Ridgegate Southwest Village in Lone Tree, Colorado. The design proposed in this report is in compliance with the *Phase III Drainage Report for Ridgegate Southwest Village Filing 1– Addendum I Memorandum,* and with Douglas County and Mile High Flood Control District criteria.

B. Variances

The StormCAD calculations included in Appendix C show pipe velocities below the Douglas County minimum velocity during the 100 year storm. As discussed in the Stormwater Conveyance Facilities section, the 100 year tailwater elevation is not representative of what the true outfall condition would be at the time of concentration for the proposed sewer. Therefore, velocities during the100 year storm are expected to remain within Douglas County Criteria.

C. Drainage Concept

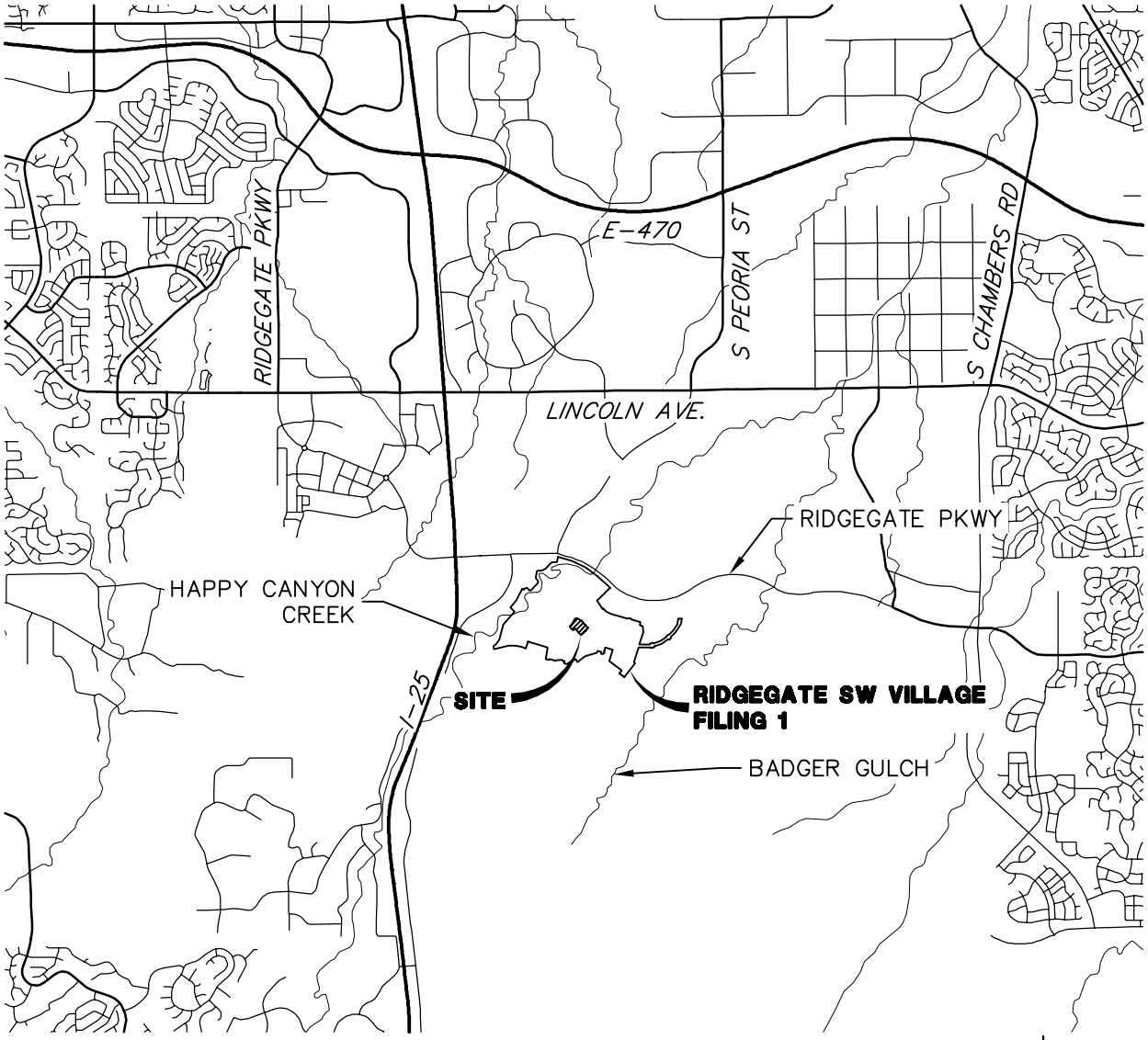
All stormwater runoff will be collected and directed to EURV Pond A via storm sewer. The implementation of the drainage concepts presented within this report will assure proper conveyance of stormwater discharges with no expected adverse impacts to downstream infrastructure with respect to quality, quantity, or timing of stormwater discharges from the proposed development.

VI. REFERENCES

1. Storm Drainage Design and Technical Criteria Manual, Douglas County, July 2008.
2. Urban Storm Drainage Criteria Manual, Mile High Flood Control District, Latest Revision.
3. Phase III Drainage Report for Ridgegate Southwest Village – Addendum I Memorandum, JR Engineering, dated September 28, 2021

APPENDIX A

FIGURES AND EXHIBITS



VICINITY MAP

SCALE 1'=5000'

15950.06
3/25/2022
SHEET 1 OF 1

J·R ENGINEERING
A Westrian Company

Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Castle Rock Area, Colorado

Amenity Center at Ridgegate SW Village

March 30, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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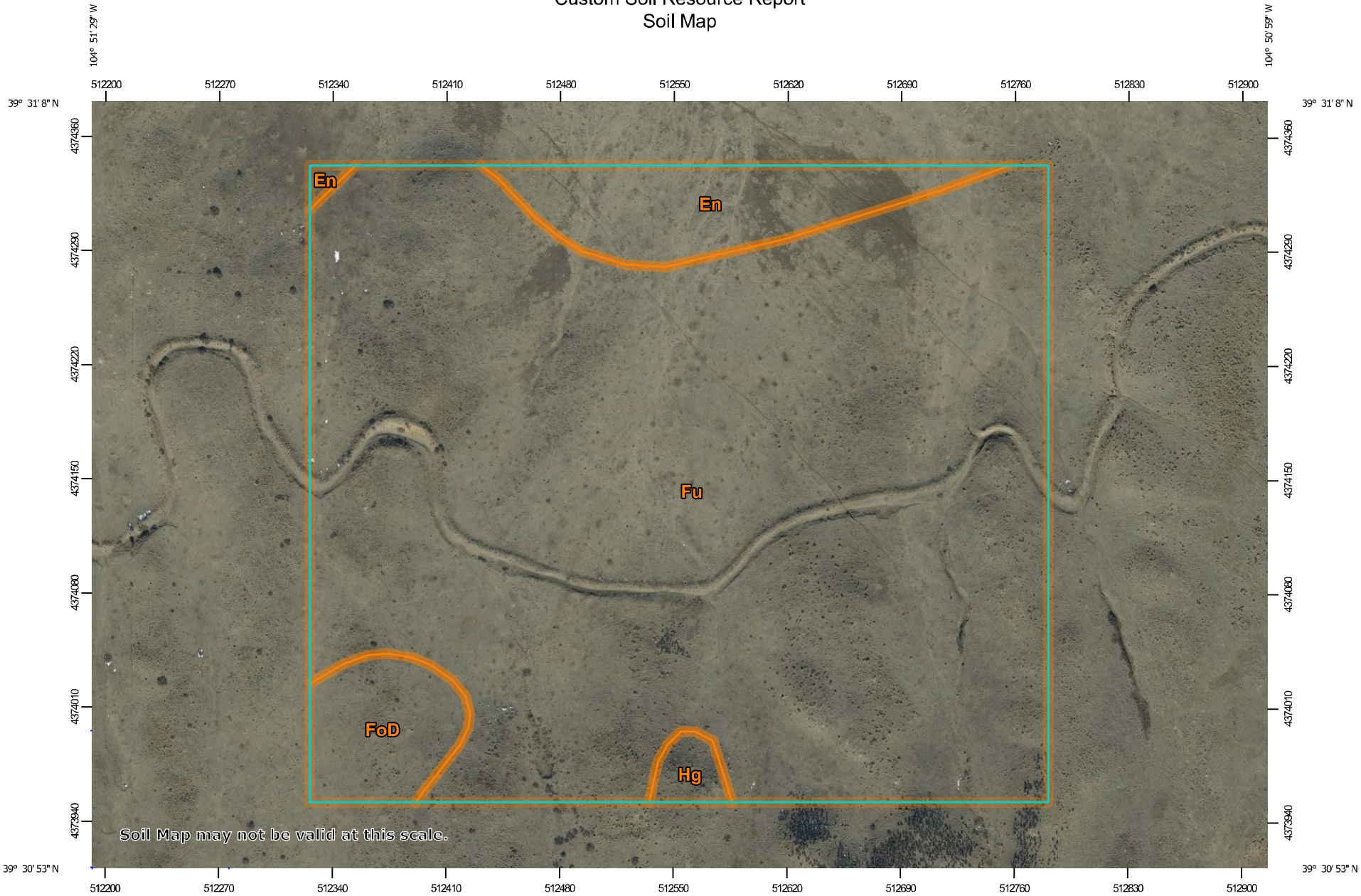
Contents

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:3,310 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 45 90 180 270

Feet
0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Castle Rock Area, Colorado
Survey Area Data: Version 14, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 3, 2018—Dec 4, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
En	Englewood clay loam	3.0	6.9%
FoD	Fondis clay loam, 3 to 9 percent slopes	1.8	4.2%
Fu	Fondis-Kutch association	38.7	88.0%
Hg	Hilly gravelly land	0.4	0.9%
Totals for Area of Interest		**44.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Castle Rock Area, Colorado

En—Englewood clay loam

Map Unit Setting

National map unit symbol: jqym
Elevation: 5,500 to 6,600 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 47 to 52 degrees F
Frost-free period: 120 to 135 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Englewood and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Englewood

Setting

Landform: Terraces, swales
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Weathered from alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 10 inches: clay loam
H2 - 10 to 29 inches: clay
H3 - 29 to 60 inches: clay

Properties and qualities

Slope: 1 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Minor Components

Sampson

Percent of map unit: 10 percent
Hydric soil rating: No

Satanta
Percent of map unit: 9 percent
Hydric soil rating: No

Fluvaquentic haplustolls
Percent of map unit: 1 percent
Landform: Terraces
Hydric soil rating: Yes

FoD—Fondis clay loam, 3 to 9 percent slopes

Map Unit Setting
National map unit symbol: jqyp
Elevation: 5,500 to 6,800 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 47 to 50 degrees F
Frost-free period: 120 to 135 days
Farmland classification: Not prime farmland

Map Unit Composition
Fondis and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fondis

Setting
Landform: Mesas, buttes, ridges
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits over coarse-silty outwash derived from arkose

Typical profile
H1 - 0 to 7 inches: clay loam
H2 - 7 to 24 inches: clay
H3 - 24 to 60 inches: sandy clay loam

Properties and qualities
Slope: 3 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Minor Components

Kutch

Percent of map unit: 5 percent
Hydric soil rating: No

Englewood

Percent of map unit: 5 percent
Hydric soil rating: No

Denver

Percent of map unit: 4 percent
Hydric soil rating: No

Aquic haplustolls

Percent of map unit: 1 percent
Landform: Swales
Hydric soil rating: Yes

Fu—Fondis-Kutch association

Map Unit Setting

National map unit symbol: jqyq
Elevation: 5,500 to 6,800 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 47 to 50 degrees F
Frost-free period: 120 to 135 days
Farmland classification: Not prime farmland

Map Unit Composition

Fondis and similar soils: 50 percent
Kutch and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fondis

Setting

Landform: Valley sides, draws
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits over coarse-silty outwash derived from arkose

Typical profile

H1 - 0 to 7 inches: loam
H2 - 7 to 24 inches: clay
H3 - 24 to 60 inches: sandy clay loam

Properties and qualities

Slope: 5 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Description of Kutch

Setting

Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-textured residuum weathered from calcareous shale

Typical profile

H1 - 0 to 6 inches: sandy loam
H2 - 6 to 32 inches: clay
H3 - 32 to 36 inches: weathered bedrock

Properties and qualities

Slope: 5 to 40 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D

Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Minor Components

Bresser
Percent of map unit: 5 percent
Hydric soil rating: No

Newlin
Percent of map unit: 5 percent
Hydric soil rating: No

Hilly gravelly land
Percent of map unit: 4 percent
Hydric soil rating: No

Aquic haplustolls
Percent of map unit: 1 percent
Landform: Swales
Hydric soil rating: Yes

Hg—Hilly gravelly land

Map Unit Setting
National map unit symbol: jqyw
Elevation: 5,500 to 6,600 feet
Mean annual precipitation: 15 to 18 inches
Mean annual air temperature: 48 to 51 degrees F
Frost-free period: 120 to 135 days
Farmland classification: Not prime farmland

Map Unit Composition
Hilly gravelly land: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hilly Gravelly Land

Setting
Landform: Hills
Landform position (three-dimensional): Side slope, base slope, crest
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile
H1 - 0 to 7 inches: cobbly sandy loam
H2 - 7 to 24 inches: cobbly clay loam
H3 - 24 to 28 inches: weathered bedrock

Properties and qualities

Slope: 5 to 50 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 2.00 in/hr)
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R049XY213CO - Cobbly Foothill
Hydric soil rating: No

Minor Components

Kutch

Percent of map unit: 4 percent
Hydric soil rating: No

Newlin

Percent of map unit: 4 percent
Hydric soil rating: No

Fondis

Percent of map unit: 4 percent
Hydric soil rating: No

Bresser

Percent of map unit: 4 percent
Hydric soil rating: No

Truckton

Percent of map unit: 3 percent
Hydric soil rating: No

Aquic haplustolls

Percent of map unit: 1 percent
Landform: Swales
Hydric soil rating: Yes

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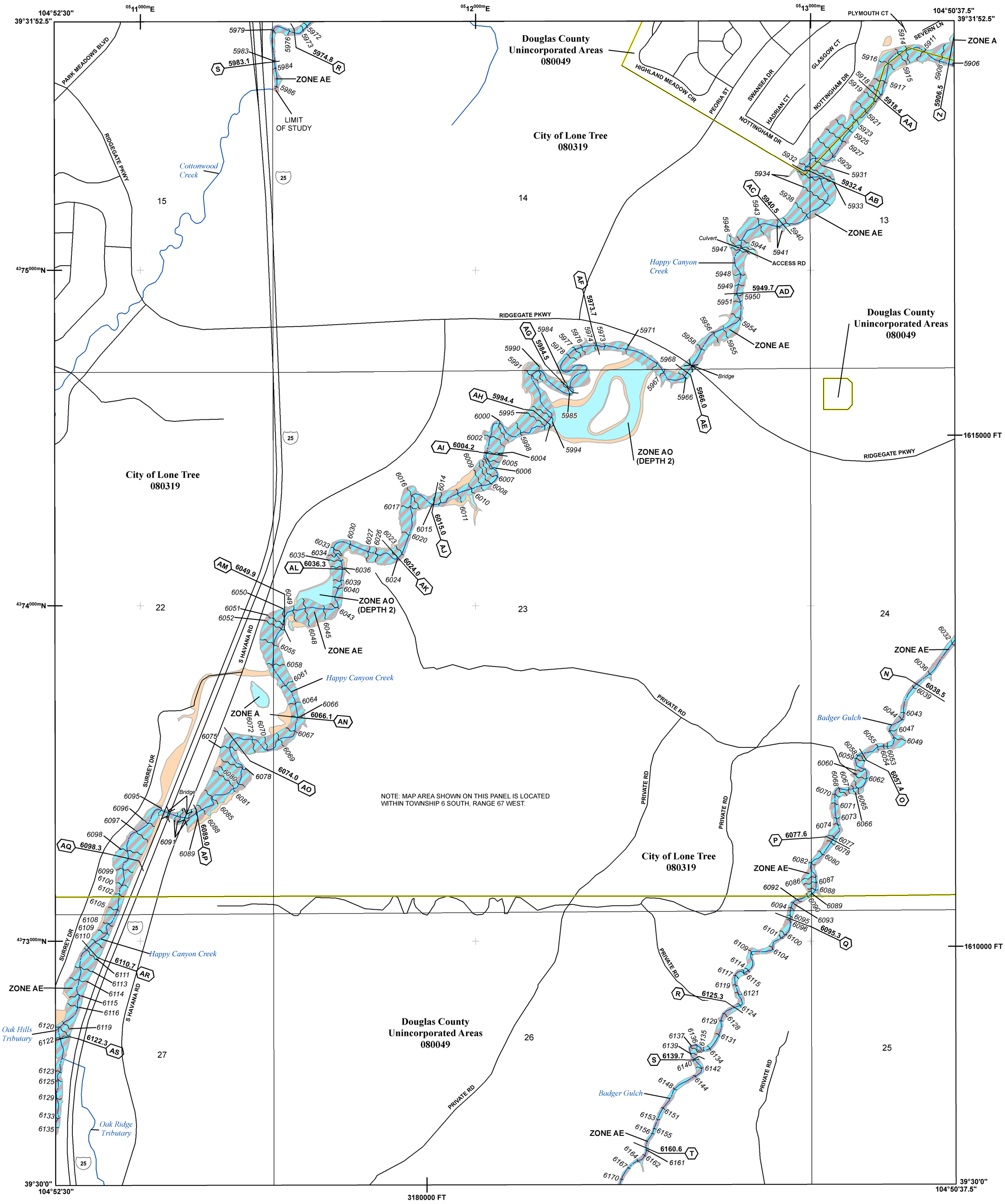


FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A,V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes. *Zone X*

OTHER AREAS
- NO SCREEN — Areas of Minimal Flood Hazard *Zone X*
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Accredited or Provisionally Accredited Levee, Dike, or Floodwall
- Non-accredited Levee, Dike, or Floodwall

OTHER FEATURES
- E 18.2 / 17.5 — Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
- 8 — Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 — Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in the community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided by the Douglas County GIS Department and the Town of Castle Rock GIS Department. Additional input was provided by the City of Lone Tree and Town of Parker. These data are current as of 2010.

SCALE

Map Projection:

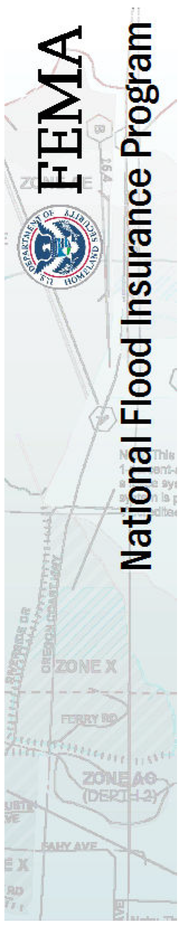
NAD83 UTM Zone 13N
Western Hemisphere; Vertical Datum: NAVD88

1 inch = 500 feet 1:6,000

0 1,000 2,000 Feet

0 250 500 Meters

PANEL LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

DOUGLAS COUNTY, COLORADO
And Incorporated Areas

PANEL 63 OF 495

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
DOUGLAS COUNTY	080049	0063	H
LONE TREE, CITY OF	080319	0063	H

VERSION NUMBER
2.3.3.2

MAP NUMBER
08035C0063H

MAP REVISED
SEPTEMBER 4, 2020

APPENDIX B

HYDROLOGIC CALCULATIONS

COMPOSITE % IMPERVIOUS CALCULATIONS

Subdivision: Ridgegate Filing 1
Location: Douglas County - Zone 1

Project Name: Amenity Site at Ridgegate SW Village
Project No.: 15950.06
Calculated By: DJG
Checked By: JGS
Date: 5/2/22

PROPOSED BASINS

Basin ID	Total Area (ac)	Paving, Drives, Walks			Landscaping			Roofs			Basins Total Weighted
		% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	% Imp.	Area (ac)	Weighted % Imp.	
A1	0.462	100%	0.342	74.0%	2%	0.120	0.5%	90%	0.000	0.0%	74.5%
TOTAL A	0.462										74.5%
B1	0.313	100%	0.217	69.2%	2%	0.086	0.5%	90%	0.011	3.2%	72.9%
B2	0.373	100%	0.270	72.4%	2%	0.103	0.6%	90%	0.000	0.0%	72.9%
B3	0.439	100%	0.278	63.3%	2%	0.161	0.7%	90%	0.000	0.0%	64.1%
B4	0.360	100%	0.133	36.9%	2%	0.227	1.3%	90%	0.000	0.0%	38.2%
B5	0.544	100%	0.404	74.3%	2%	0.140	0.5%	90%	0.000	0.0%	74.8%
TOTAL B	2.029										65.3%
C1	0.187	100%	0.163	87.2%	2%	0.024	0.3%	90%	0.000	0.0%	87.4%
TOTAL C	0.187										87.4%
P1	0.094	0%	0.094	0.0%	2%	0.000	0.0%	90%	0.000	0.0%	0.0%
TOTAL P	0.094										0.0%
R1	0.045	100%	0.000	0.0%	2%	0.000	0.0%	90%	0.045	90.0%	90.0%
R2	0.037	100%	0.000	0.0%	2%	0.000	0.0%	90%	0.037	90.0%	90.0%
R3	0.062	100%	0.000	0.0%	2%	0.000	0.0%	90%	0.062	90.0%	90.0%
R4	0.041	100%	0.000	0.0%	2%	0.000	0.0%	90%	0.041	90.0%	90.0%
TOTAL R	0.185										90.0%
OS1	0.273	100%	0.024	8.8%	2%	0.249	1.8%	90%	0.000	0.0%	10.6%
OS2	0.029	100%	0.019	65.5%	2%	0.010	0.7%	90%	0.000	0.0%	66.2%
TOTAL OS	0.302										16.0%
O1	0.224	100%	0.000	0.0%	2%	0.137	1.2%	90%	0.088	35.2%	36.4%
O2	0.031	100%	0.000	0.0%	2%	0.015	1.0%	90%	0.016	47.0%	48.0%
TOTAL O	0.255										37.8%
TOTAL ONSITE	3.514										61.0%

COMPOSITE RUNOFF COEFFICIENT CALCULATIONS

Subdivision: Ridgegate Filing 1
Location: Douglas County - Zone 1

Project Name: Amenity Site at Ridgegate SW Village
Project No.: 15950.06
Calculated By: DJG
Checked By: JGS
Date: 5/2/22

Basin ID	Total Area (ac)	Basins Total Weighted % Imp.	Hydrologic Soil Group			Hydrologic Soil Group			Minor Coefficients			Major Coefficients			Basins Total Weighted C_5	Basins Total Weighted C_{100}
			Area A (ac)	Area B (ac)	Area C/D (ac)	% A (ac)	% B (ac)	% C/D (ac)	$C_{5,A}$	$C_{5,B}$	$C_{5,C/D}$	$C_{100,A}$	$C_{100,B}$	$C_{100,C/D}$		
A1	0.462	74.5%	0.00	0.00	0.46	0%	0%	100%	0.59	0.63	0.65	0.69	0.78	0.79	0.65	0.79
B1	0.313	72.9%	0.00	0.00	0.31	0%	0%	100%	0.57	0.61	0.63	0.68	0.77	0.78	0.63	0.78
B2	0.373	72.9%	0.00	0.00	0.37	0%	0%	100%	0.57	0.61	0.63	0.68	0.77	0.78	0.63	0.78
B3	0.439	64.1%	0.00	0.00	0.44	0%	0%	100%	0.49	0.53	0.56	0.61	0.73	0.75	0.56	0.75
B4	0.360	38.2%	0.00	0.00	0.36	0%	0%	100%	0.25	0.30	0.35	0.41	0.61	0.64	0.35	0.64
B5	0.544	74.8%	0.00	0.00	0.54	0%	0%	100%	0.59	0.63	0.65	0.69	0.78	0.79	0.65	0.79
C1	0.187	87.4%	0.00	0.00	0.19	0%	0%	100%	0.72	0.74	0.75	0.79	0.84	0.84	0.75	0.84
P1	0.094	0.0%	0.00	0.00	0.09	0%	0%	100%	0.00	0.00	0.04	0.11	0.43	0.48	0.04	0.48
R1	0.045	90.0%	0.00	0.00	0.05	0%	0%	100%	0.75	0.77	0.77	0.81	0.85	0.85	0.77	0.85
R2	0.037	90.0%	0.00	0.00	0.04	0%	0%	100%	0.75	0.77	0.77	0.81	0.85	0.85	0.77	0.85
R3	0.062	90.0%	0.00	0.00	0.06	0%	0%	100%	0.75	0.77	0.77	0.81	0.85	0.85	0.77	0.85
R4	0.041	90.0%	0.00	0.00	0.04	0%	0%	100%	0.75	0.77	0.77	0.81	0.85	0.85	0.77	0.85
OS1	0.273	10.6%	0.00	0.00	0.27	0%	0%	100%	0.05	0.08	0.12	0.19	0.48	0.53	0.12	0.53
OS2	0.029	66.2%	0.00	0.00	0.03	0%	0%	100%	0.51	0.55	0.58	0.63	0.74	0.75	0.58	0.75
O1	0.224	36.4%	0.00	0.00	0.22	0%	0%	100%	0.24	0.29	0.33	0.39	0.60	0.63	0.33	0.63
O2	0.031	48.0%	0.00	0.00	0.03	0%	0%	100%	0.34	0.39	0.43	0.48	0.65	0.68	0.43	0.68
TOTAL	3.51	61.0%	0.00	0.00	3.51	0%	0%	100%	0.46	0.50	0.54	0.59	0.71	0.73	0.54	0.73

Table 6-4. Runoff coefficient equations based on NRCS soil group and storm return period

NRCS Soil Group	Storm Return Period						
	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year
A	$C_A = 0.84i^{1.302}$	$C_A = 0.86i^{1.276}$	$C_A = 0.87i^{1.232}$	$C_A = 0.84i^{1.124}$	$C_A = 0.85i+0.025$	$C_A = 0.78i+0.110$	$C_A = 0.65i+0.254$
B	$C_B = 0.84i^{1.169}$	$C_B = 0.86i^{1.088}$	$C_B = 0.81i+0.057$	$C_B = 0.63i+0.249$	$C_B = 0.56i+0.328$	$C_B = 0.47i+0.426$	$C_B = 0.37i+0.536$
C/D	$C_{C/D} = 0.83i^{1.122}$	$C_{C/D} = 0.82i+0.035$	$C_{C/D} = 0.74i+0.132$	$C_{C/D} = 0.56i+0.319$	$C_{C/D} = 0.49i+0.393$	$C_{C/D} = 0.41i+0.484$	$C_{C/D} = 0.32i+0.588$

Where:

i = % imperviousness (expressed as a decimal)

C_A = Runoff coefficient for Natural Resources Conservation Service (NRCS) HSG A soils

C_B = Runoff coefficient for NRCS HSG B soils

$C_{C/D}$ = Runoff coefficient for NRCS HSG C and D soils.

STANDARD FORM SF-3
STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)

Subdivision: Ridgegate Filing 1
Location: Douglas County - Zone 1
Design Storm: 5-Year

Project Name: Amenity Site at Ridgegate SW Village
Project No.: 15950.06
Calculated By: DJG
Checked By: JGS
Date: 5/2/22

Flow	Design Point	DIRECT RUNOFF							TOTAL RUNOFF				STREET			PIPE				TRAVEL TIME			REMARKS
		Basin ID	Area (Ac)	Runoff Coeff.	t_c (min)	C*A (Ac)	I (in/hr)	Q (cfs)	t_c (min)	C*A (ac)	I (in/hr)	Q (cfs)	Q_{street} (cfs)	C*A (ac)	Slope (%)	Q_{pipe} (cfs)	C*A (ac)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	t_t (min)	
Surface	1	A1	0.46	0.65	5.0	0.30	4.95	1.49								1.5	0.3	2.0	18	11	5.4	0.0	Surface Flow routed to DP1 Captured flow routed to existing storm stub
Surface		R1	0.05	0.77	5.0	0.03	4.95	0.15															Roof Drain flow outfalling to B1
Surface	2	B1	0.31	0.63	5.0	0.20	4.95	0.99															Surface flow routed to DP3 Captured flow routed to DP 1.0
Pipe	1.0								5.0	0.23	4.95	1.1				1.1	0.2	2.0	12	45	5.0	0.1	Combined flow from Basin R1 and B1 Piped to DP1.1
Surface	3	B2	0.37	0.63	5.0	0.24	4.95	1.19					0.4	0.081	2					170	2.8	1.0	Surface flow routed to DP4 Captured flow routed to DP1.1
Pipe	1.1								5.1	0.39	4.91	1.9				1.9	0.4	1.9	18	70	5.4	0.2	Combined captured Flow from Basins R1, B1, B2 Piped to DP1.2
Surface		O1	0.22	0.33	5.0	0.07	4.95	0.35					0.35	0.07	2					170	2.8	1.0	Surface flow from Basin O2 overland to Basin B3
Surface	4	B3	0.44	0.56	5.0	0.25	4.95	1.24	6.0	0.32	4.71	1.5	0.7	0.141	3					200	3.5	1.0	Surface flow routed to DP5 Captured flow routed to DP1.2
Pipe	1.2								6.0	0.57	4.71	2.7				2.7	0.6	1.9	18	150	6.2	0.4	Combined captured flow from Basins R1,B1, B2, B3, O1 Captured flow routed to DP1.3
Surface	5	B4	0.36	0.35	5.0	0.13	4.95	0.64															Surface flow from Basin B4 captured flow routed to DP1.3
Pipe	1.3								6.4	0.70	4.62	3.2				3.2	0.7	1.9	18	60	6.4	0.2	Combined captured flow from Basins R1,B1, B2, B3,B4, O1 Captured flow routed to DP1.4
Surface		O2	0.03	0.43	5.0	0.01	4.95	0.05					0.05	0.01	4					230	4.0	1.0	Surface flow from Basin O2 overland to Basin B5
Surface	6	B5	0.54	0.65	5.0	0.35	4.95	1.73	6.0	0.59	4.71	2.8											Surface flow from Basin B5 and O2, bypass flow from B2 and B3 captured flow routed to DP1.4
Pipe	1.4								6.6	1.29	4.58	5.9				5.9	1.3	1.9	18	40	7.6	0.1	Combined flow from Basins R1,B1, B2, B3, B4 ,B5, O1, O2 Captured flow routed to DP1.5
Surface	7	R4	0.04	0.77	5.0	0.03	4.95	0.15															Surface flow from Basin R4 captured flow routed to DP1.5
Pipe	1.5								6.6	1.32	4.56	6.0				6.0	1.3	2.0	18	20	7.9	0.0	Combined flow from Basins R1, R4, B1, B2, B3, B4, B5, O1, O2 Captured flow routed to existing Storm Sewer
Surface		R2	0.04	0.77	5.0	0.03	4.95	0.15															Roof Drain flow outfalling to C1
Surface		R3	0.06	0.77	5.0	0.05	4.95	0.25															Roof Drain flow outfalling to C1
Surface	8	C1	0.19	0.75	5.0	0.14	4.95	0.69															Surface flow routed to DP9 Captured flow routed to DP 1.6
Pipe	1.6								5.0	0.22	4.95	1.1				1.1	0.2	2.0	18	20	4.8	0.1	Combined Flow from Basins R2, R3, C1 Captured flow routed to existing strorm sewer

Notes: Time of concentration of 5.0 minutes conservatively assumed

STANDARD FORM SF-3

STORM DRAINAGE SYSTEM DESIGN

(RATIONAL METHOD PROCEDURE)

Subdivision: Ridgegate Filing 1
Location: Douglas County - Zone 1
Design Storm: 100-Year

Project Name: Amenity Site at Ridgegate SW Village
Project No.: 15950.06
Calculated By: DJG
Checked By: JGS
Date: 5/2/22

		DIRECT RUNOFF							TOTAL RUNOFF				STREET			PIPE				TRAVEL TIME			
STREET	Design Point	Basin ID	Area (ac)	Runoff Coeff.	t_c (min)	C*A (ac)	I (in/hr)	Q (cfs)	tc (min)	C*A (ac)	I (in/hr)	Q (cfs)	Q_{street} (cfs)	C*A (ac)	Slope (%)	Q_{pipe} (cfs)	C*A (ac)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	t_t (min)	REMARKS
Surface	1	A1	0.46	0.79	5.0	0.36	8.82	3.18								3.2	0.4	2.0	18	11	6.5	0.0	Surface Flow routed to DP1 Captured flow routed to existing storm stub
Surface		R1	0.05	0.85	5.0	0.04	8.82	0.35															Roof Drain flow outfalling to B1
Surface	2	B1	0.31	0.78	5.0	0.25	8.82	2.21															Surface flow routed to DP3 Captured flow routed to DP 1.0
Pipe	1.0								5.0	0.29	8.82	2.6				2.6	0.3	2.0	12	45	6.4	0.1	Combined flow from Basin R1 and B1 Piped to DP1.1
Surface	3	B2	0.37	0.78	5.0	0.29	8.82	2.56					1.76	0.2	2					170	2.8	1.0	Surface flow routed to DP4 Captured flow routed to DP1.1
Pipe	1.1								5.1	0.38	8.76	3.3				3.3	0.4	1.9	18	70	6.5	0.2	Combined captured Flow from Basins R1, B1, B2 Piped to DP1.2
Surface		O1	0.22	0.63	5.0	0.14	8.82	1.23					1.23	0.14	2					170	2.8	1.0	Surface flow from Basin O2 overland to Basin B3
Surface	4	B3	0.44	0.75	5.0	0.33	8.82	2.91	6.0	0.47	8.38	3.9	3.1	0.35	3					200	3.5	1.0	Surface flow routed to DP5 Captured flow routed to DP1.2
Pipe	1.2								6.0	0.50	8.38	4.2				4.2	0.5	1.9	18	150	7.0	0.4	Combined captured flow from Basins R1,B1, B2, B3, O1 Captured flow routed to DP1.3
Surface	5	B4	0.36	0.64	5.0	0.23	8.82	2.03					0.8	0.09	2					60	2.8	0.4	Surface flow from Basin B4 captured flow routed to DP1.3
Pipe	1.3								6.4	0.64	8.24	5.3				5.3	0.6	1.9	18	60	7.5	0.1	Combined captured flow from Basins R1,B1, B2, B3,B4, O1 Captured flow routed to DP1.4
Surface		O2	0.03	0.68	5.0	0.02	8.82	0.18					0.18	0.02	4					230	4.0	1.0	Surface flow from Basin O2 overland to Basin B5
Surface	6	B5	0.54	0.79	5.0	0.43	8.82	3.79	6.0	1.11	8.38	9.3											Surface flow from Basin B5 and O2, bypass flow from B2, B3, B4 captured flow routed to DP1.4
Pipe	1.4								6.5	1.75	8.18	14.3				14.3	1.8	1.9	18	40	9.2	0.1	Combined flow from Basins R1,B1, B2, B3, B4 ,B5, O1, O2 Captured flow routed to DP1.5
Surface	7	R4	0.04	0.85	5.0	0.03	8.82	0.26															Surface flow from Basin R4 captured flow routed to DP1.5
Pipe	1.5								6.6	1.78	8.16	14.5				14.5	1.8	2.0	18	20	9.6	0.0	Combined flow from Basins R1, R4, B1, B2, B3, B4, B5, O1, O2 Captured flow routed to existing Storm Sewer
Surface		R2	0.04	0.85	5.0	0.03	8.82	0.26															Roof Drain flow outfalling to C1
Surface		R3	0.06	0.85	5.0	0.05	8.82	0.44															Roof Drain flow outfalling to C1
Surface	8	C1	0.19	0.84	5.0	0.16	8.82	1.41															Surface flow routed to DP9 Captured flow routed to DP 1.6
Pipe	1.6								5.0	0.24	8.82	2.1				2.1	0.2	2.0	18	20	5.8	0.1	Combined Flow from Basins R2, R3, C1 Captured flow routed to existing strorm sewer

Notes: Time of concentration of 5.0 minutes conservatively assumed

APPENDIX C

HYDRAULIC CALCULATIONS

Scenario: 5 Year
Current Time Step: 0.000 h
Conduit FlexTable: Combined Pipe/Node Report

Upstream Structure	Label	Flow (cfs)	Diameter (in)	Slope (Calculated) (ft/ft)	Invert (Start) (ft)	Invert (Stop) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Velocity (ft/s)	Upstream Structure Headloss Coefficient	Length (User Defined) (ft)
DPB-6	Pipe - (2)	6.10	18.0	0.020	6,028.54	6,028.28	6,034.83	6,034.83	6,029.49	6,029.03	6,029.91	6,029.77	8.03	0.000	12.8
DPA-1	Pipe - (7)	1.49	18.0	0.020	6,031.71	6,031.48	6,039.13	6,040.03	6,032.17	6,031.94	6,032.33	6,032.11	5.38	1.000	11.3
DPA-2	Pipe - (8)	1.49	18.0	0.020	6,031.48	6,030.61	6,040.03	6,038.46	6,031.94	6,030.93	6,032.11	6,031.38	5.38	0.000	43.5
DPB-1	Pipe - (9)	1.90	18.0	0.019	6,035.38	6,034.12	6,039.40	6,041.03	6,035.90	6,034.90	6,036.09	6,034.96	5.62	1.000	68.1
DPB-2	Pipe - (10)	2.70	18.0	0.018	6,033.92	6,031.14	6,041.03	6,037.19	6,034.54	6,032.01	6,034.78	6,032.11	6.21	1.500	150.5
DPB-3	Pipe - (11)	3.20	18.0	0.018	6,030.94	6,029.79	6,037.19	6,035.87	6,031.62	6,030.97	6,031.88	6,031.05	6.51	1.500	62.4
DPB-4	Pipe - (12)	6.00	18.0	0.021	6,029.59	6,028.83	6,035.87	6,035.31	6,030.54	6,030.20	6,030.94	6,030.40	8.05	1.080	36.9
DPB-5	Pipe - (13)	6.10	18.0	0.021	6,028.63	6,028.54	6,035.31	6,034.83	6,029.58	6,029.35	6,030.00	6,029.96	8.07	1.500	4.4
DPC-2	Pipe - (14)	1.10	18.0	0.020	6,022.36	6,022.11	6,031.29	6,029.80	6,022.75	6,022.40	6,022.89	6,022.73	4.92	0.000	12.7
DPC-1	Pipe - (15)	1.10	18.0	-0.020	6,022.36	6,022.64	6,031.29	6,036.51	6,023.03	6,022.65	6,023.17	6,022.99	4.92	1.000	14.0

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Scenario: 5 Year
Current Time Step: 0.000 h
FlexTable: Manhole Table

Label	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Flow (Total Out) (cfs)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Headloss Coefficient (Standard)
DPA-1	6,039.13	6,031.71	1.49	6,032.33	6,032.17	6,032.50	6,032.33	1.000
DPA-2	6,040.03	6,031.48	1.49	6,031.94	6,031.94	6,032.11	6,032.11	0.000
DPB-1	6,039.40	6,035.38	1.90	6,036.09	6,035.90	6,036.28	6,036.09	1.000
DPB-2	6,041.03	6,033.92	2.70	6,034.90	6,034.54	6,034.96	6,034.78	1.500
DPB-3	6,037.19	6,030.94	3.20	6,032.01	6,031.62	6,032.11	6,031.88	1.500
DPB-4	6,035.87	6,029.59	6.00	6,030.97	6,030.54	6,031.05	6,030.94	1.080
DPB-5	6,035.31	6,028.63	6.10	6,030.20	6,029.58	6,030.40	6,030.00	1.500
DPB-6	6,034.83	6,028.54	6.10	6,029.49	6,029.49	6,030.10	6,029.91	0.000
DPC-1	6,036.51	6,022.64	1.10	6,023.17	6,023.03	6,023.31	6,023.17	1.000
DPC-2	6,031.29	6,022.36	1.10	6,022.75	6,022.75	6,023.09	6,022.89	0.000

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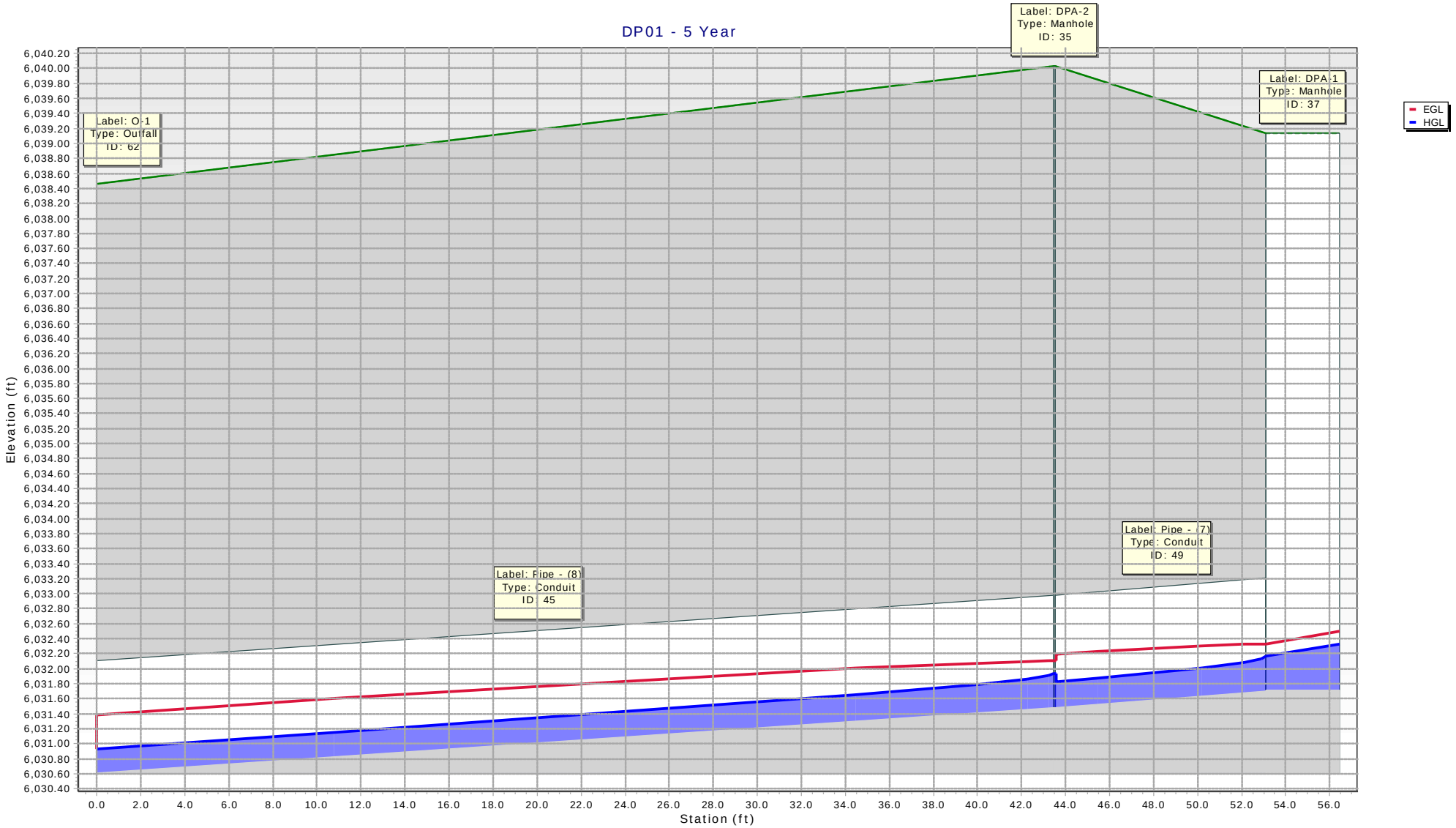
DP01 - 5 Year
Label: DPA-2
Type: Manhole
ID: 35
Label: DPA-1
Type: Manhole
ID: 37
Label: O-1
Type: Outfall
ID: 62
Label: Pipe - (8)
Type: Conduit
ID: 45
Label: Pipe - (7)
Type: Conduit
ID: 49
EGL
HGL
Elevation (ft)
6,040.20
6,040.00
6,039.80
6,039.60
6,039.40
6,039.20
6,039.00
6,038.80
6,038.60
6,038.40
6,038.20
6,038.00
6,037.80
6,037.60
6,037.40
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6,036.80
6,036.60
6,036.40
6,036.20
6,036.00
6,035.80
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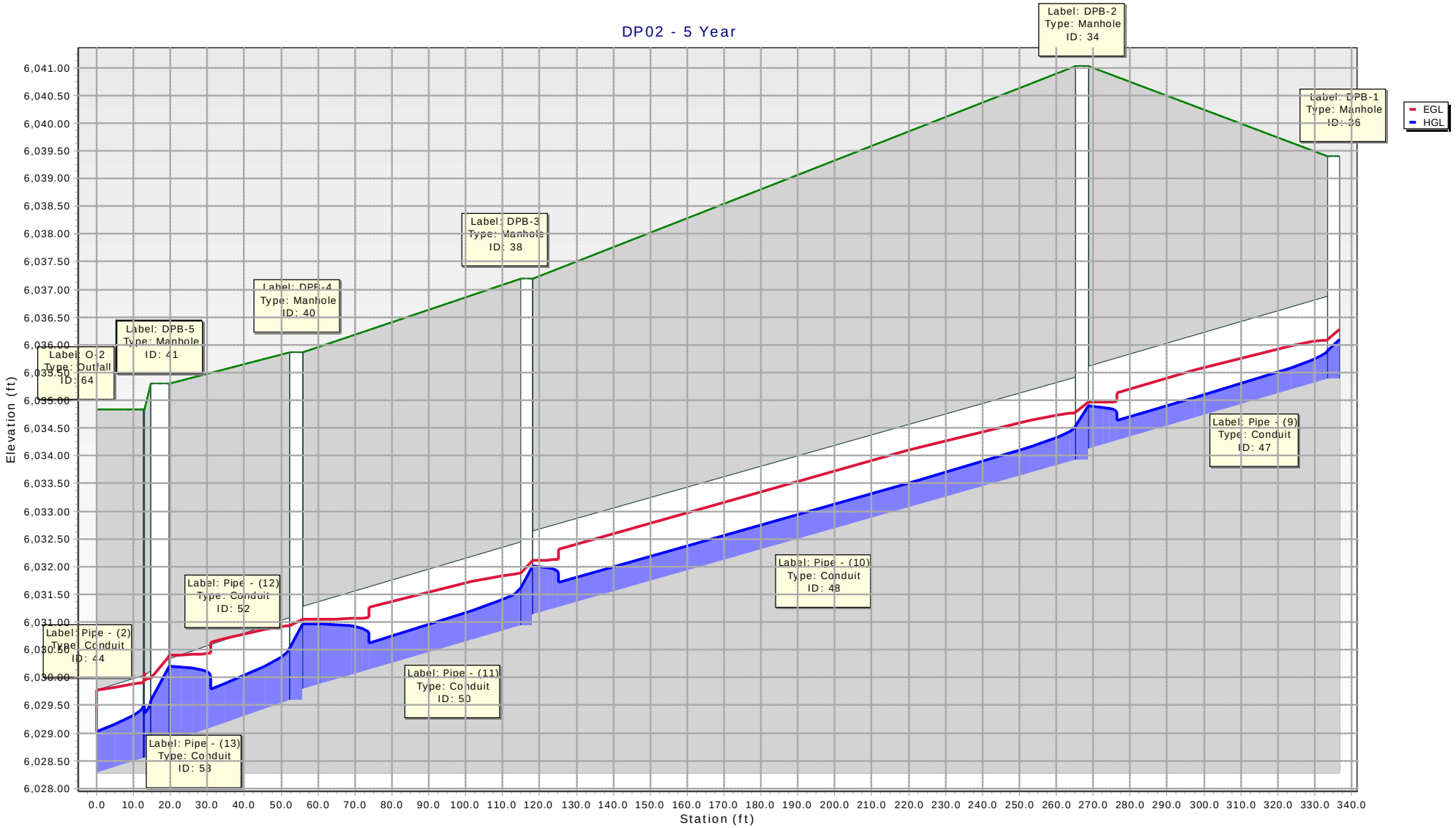
6,033.20
6,033.00
6,032.80
6,032.60
6,032.40
6,032.20
6,032.00
6,031.80
6,031.60
6,031.40
6,031.20
6,031.00
6,030.80
6,030.60
6,030.40
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
20.0
22.0
24.0
26.0
28.0
30.0
32.0
34.0
36.0
38.0
40.0
42.0
44.0
46.0
48.0
50.0
52.0
54.0
56.0
Station (ft)


DP02 - 5 Year
Label: DPB-2
Type: Manhole
ID: 34
Label: DPB-1
Type: Manhole
ID: 36
EGL
HGL
Label: DPB-3
Type: Manhole
ID: 38
Label: DPB-4
Type: Manhole
ID: 40
Label: DPB-5
Type: Manhole
ID: 41
Label: O-2
Type: Outfall
ID: 64
Label: Pipe - (9)
Type: Conduit
ID: 47
Label: Pipe - (10)
Type: Conduit
ID: 48
Label: Pipe - (12)
Type: Conduit
ID: 52
Label: Pipe - (2)
Type: Conduit
ID: 44
Label: Pipe - (11)
Type: Conduit
ID: 50
Label: Pipe - (13)
Type: Conduit
ID: 53
Elevation (ft)
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6,040.50
6,040.00
6,039.50
6,039.00
6,038.50
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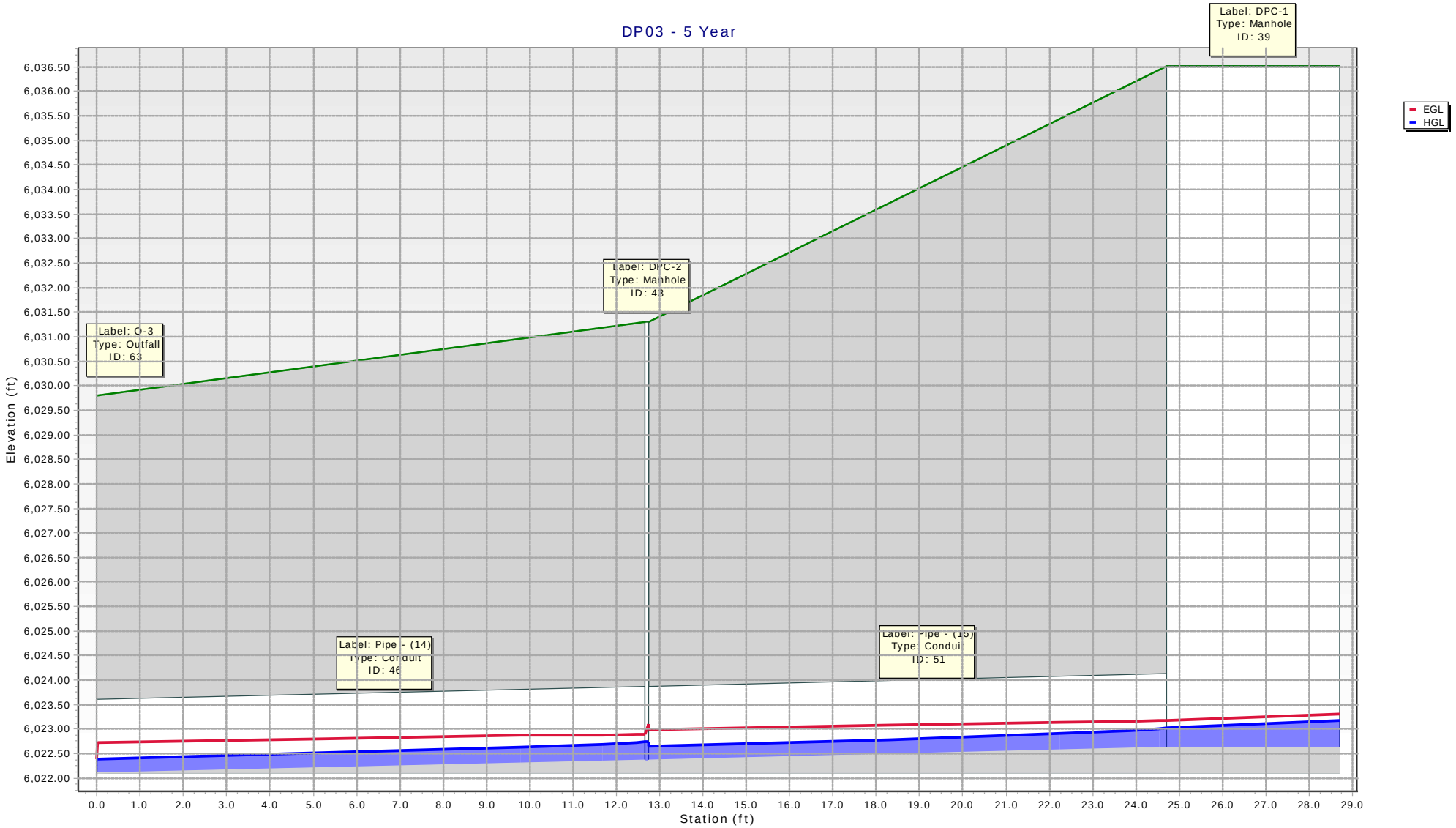
6,031.50
6,031.00
6,030.50
6,030.00
6,029.50
6,029.00
6,028.50
6,028.00
0.0 10.0 20.0 30.0 40.0 50.0 60.0 70.0 80.0 90.0 100.0 110.0 120.0 130.0 140.0 150.0 160.0 170.0 180.0 190.0 200.0 210.0 220.0 230.0 240.0 250.0 260.0 270.0 280.0 290.0 300.0 310.0 320.0 330.0 340.0
Station (ft)


DP03 - 5 Year
Label: DPC-1
Type: Manhole
ID: 39
Label: DPC-2
Type: Manhole
ID: 43
Label: O-3
Type: Outfall
ID: 63
Label: Pipe - (14)
Type: Conduit
ID: 46
Label: Pipe - (15)
Type: Conduit
ID: 51
EGL
HGL
Elevation (ft)
6,036.50
6,036.00
6,035.50
6,035.00
6,034.50
6,034.00
6,033.50
6,033.00
6,032.50
6,032.00
6,031.50
6,031.00
6,030.50
6,030.00
6,029.50
6,029.00
6,028.50
6,028.00
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6,025.50
6,025.00
6,024.50
6,024.00
6,023.50
6,023.00
6,022.50
6,022.00
0.0 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 14.0 15.0 16.0 17.0 18.0 19.0 20.0 21.0 22.0 23.0 24.0 25.0 26.0 27.0 28.0 29.0
Station (ft)

Scenario: 100 Year
Current Time Step: 0.000 h
Conduit FlexTable: Combined Pipe/Node Report

Upstream Structure	Label	Flow (cfs)	Diameter (in)	Slope (Calculated) (ft/ft)	Invert (Start) (ft)	Invert (Stop) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Velocity (ft/s)	Upstream Structure Headloss Coefficient	Length (User Defined) (ft)
DPB-6	Pipe - (2)	14.50	18.0	0.020	6,028.54	6,028.28	6,034.83	6,034.83	6,029.93	6,029.56	6,031.05	6,030.83	9.64	0.000	12.8
DPA-1	Pipe - (7)	3.18	18.0	0.020	6,031.71	6,031.48	6,039.13	6,040.03	6,032.39	6,032.16	6,032.65	6,032.42	6.69	1.000	11.3
DPA-2	Pipe - (8)	3.18	18.0	0.020	6,031.48	6,030.61	6,040.03	6,038.46	6,032.16	6,031.71	6,032.42	6,031.79	6.69	0.000	43.5
DPB-1	Pipe - (9)	3.30	18.0	0.019	6,035.38	6,034.12	6,039.40	6,041.03	6,036.07	6,035.17	6,036.34	6,035.27	6.58	1.000	68.1
DPB-2	Pipe - (10)	4.20	18.0	0.018	6,033.92	6,031.14	6,041.03	6,037.19	6,034.71	6,033.85	6,035.02	6,033.94	7.03	1.500	150.5
DPB-3	Pipe - (11)	5.30	18.0	0.018	6,030.94	6,029.79	6,037.19	6,035.87	6,033.64	6,033.48	6,033.78	6,033.62	3.00	1.500	62.4
DPB-4	Pipe - (12)	14.30	18.0	0.021	6,029.59	6,028.83	6,035.87	6,035.31	6,032.38	6,031.70	6,033.40	6,032.71	8.09	1.080	36.9
DPB-5	Pipe - (13)	14.50	18.0	0.021	6,028.63	6,028.54	6,035.31	6,034.83	6,030.02	6,029.86	6,031.14	6,031.06	9.71	1.500	4.4
DPC-2	Pipe - (14)	2.10	18.0	0.020	6,022.36	6,022.11	6,031.29	6,029.80	6,026.70	6,026.69	6,026.72	6,026.71	1.19	0.000	12.7
DPC-1	Pipe - (15)	2.10	18.0	-0.020	6,022.36	6,022.64	6,031.29	6,036.51	6,026.70	6,026.70	6,026.72	6,026.72	1.19	1.000	14.0

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Scenario: 100 Year
Current Time Step: 0.000 h
FlexTable: Manhole Table

Label	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Flow (Total Out) (cfs)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Headloss Coefficient (Standard)
DPA-1	6,039.13	6,031.71	3.18	6,032.65	6,032.39	6,032.91	6,032.65	1.000
DPA-2	6,040.03	6,031.48	3.18	6,032.16	6,032.16	6,032.42	6,032.42	0.000
DPB-1	6,039.40	6,035.38	3.30	6,036.34	6,036.07	6,036.61	6,036.34	1.000
DPB-2	6,041.03	6,033.92	4.20	6,035.17	6,034.71	6,035.27	6,035.02	1.500
DPB-3	6,037.19	6,030.94	5.30	6,033.85	6,033.64	6,033.93	6,033.78	1.500
DPB-4	6,035.87	6,029.59	14.30	6,033.48	6,032.38	6,033.62	6,033.40	1.080
DPB-5	6,035.31	6,028.63	14.50	6,031.70	6,030.02	6,032.71	6,031.14	1.500
DPB-6	6,034.83	6,028.54	14.50	6,029.93	6,029.93	6,031.14	6,031.05	0.000
DPC-1	6,036.51	6,022.64	2.10	6,026.72	6,026.70	6,026.74	6,026.72	1.000
DPC-2	6,031.29	6,022.36	2.10	6,026.70	6,026.70	6,026.72	6,026.72	0.000

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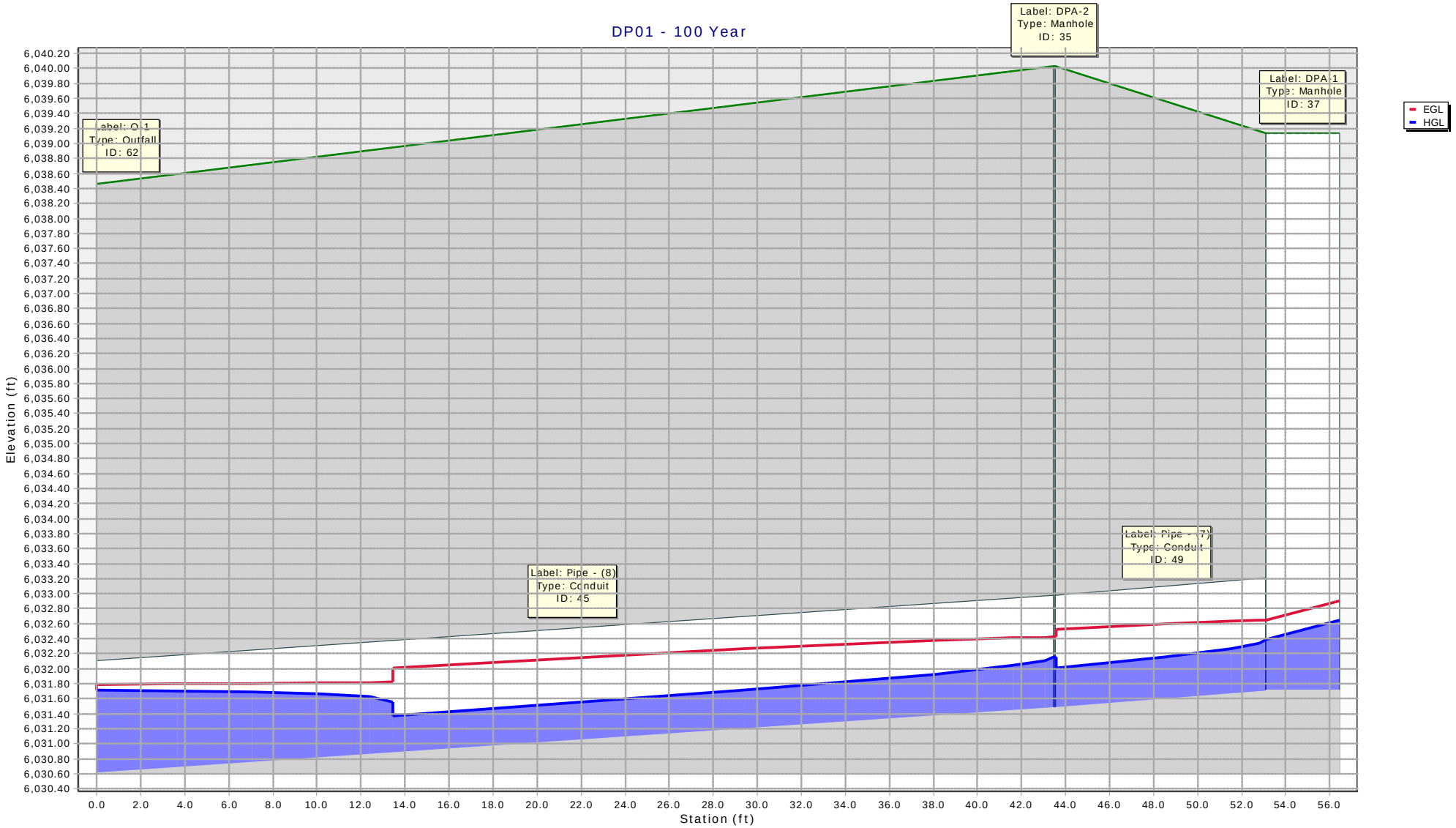
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Type: Manhole
ID: 35
Label: DPA-1
Type: Manhole
ID: 37
Label: O-1
Type: Outfall
ID: 62
Label: Pipe - (8)
Type: Conduit
ID: 45
Label: Pipe - (7)
Type: Conduit
ID: 49
EGL
HGL
Elevation (ft)
Station (ft)
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6,039.60
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6,038.80
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6,037.00
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6,032.20
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6,031.20
6,031.00
6,030.80
6,030.60
6,030.40
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
20.0
22.0
24.0
26.0
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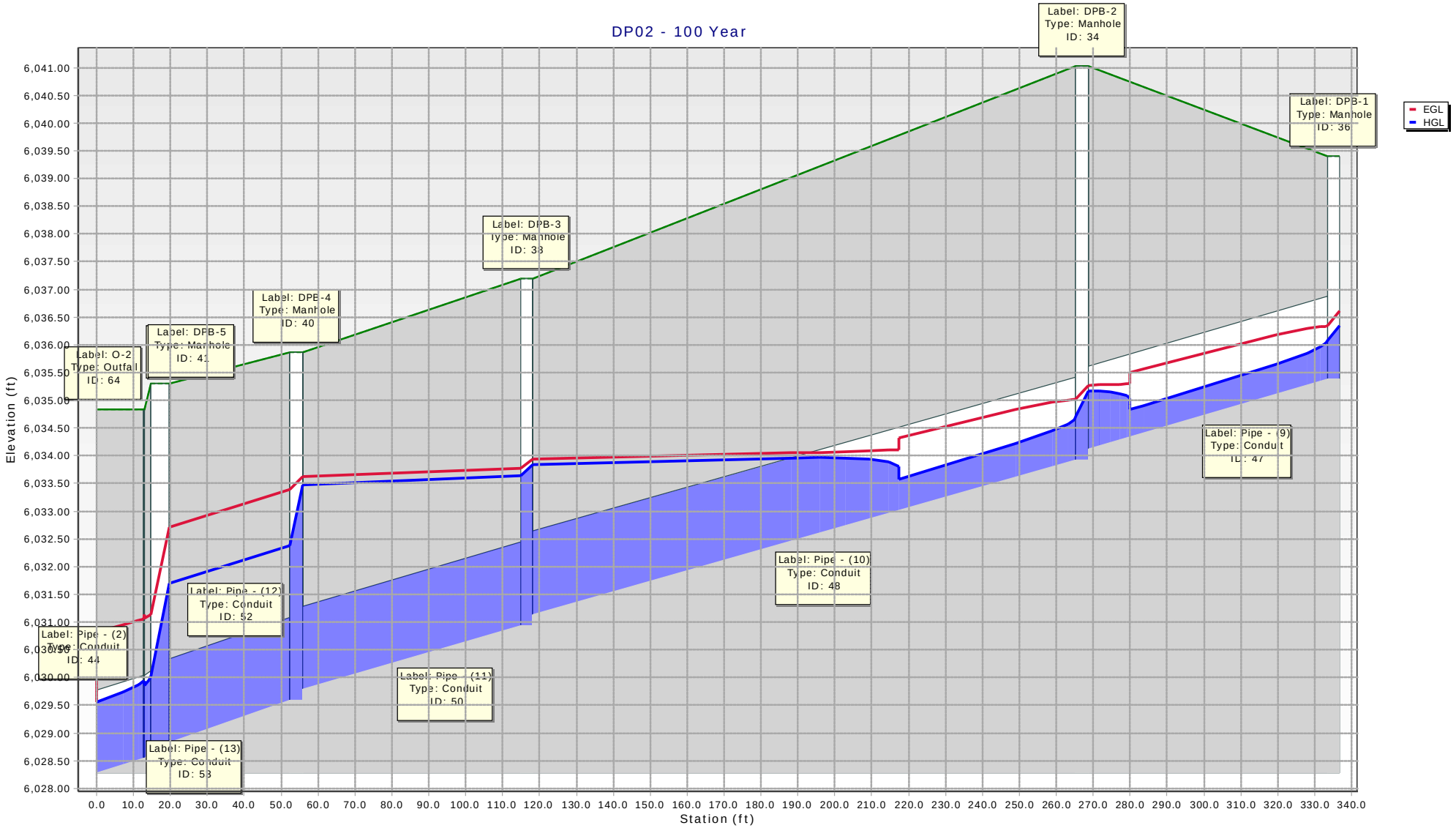
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Label: DPB-1
Type: Manhole
ID: 36
Label: DPB-3
Type: Manhole
ID: 38
Label: DPB-4
Type: Manhole
ID: 40
Label: DPB-5
Type: Manhole
ID: 41
Label: O-2
Type: Outfall
ID: 64
Label: Pipe - (9)
Type: Conduit
ID: 47
Label: Pipe - (10)
Type: Conduit
ID: 48
Label: Pipe - (12)
Type: Conduit
ID: 52
Label: Pipe - (2)
Type: Conduit
ID: 44
Label: Pipe - (11)
Type: Conduit
ID: 50
Label: Pipe - (13)
Type: Conduit
ID: 53
EGL
HGL
Elevation (ft)
Station (ft)
6,041.00
6,040.50
6,040.00
6,039.50
6,039.00
6,038.50
6,038.00
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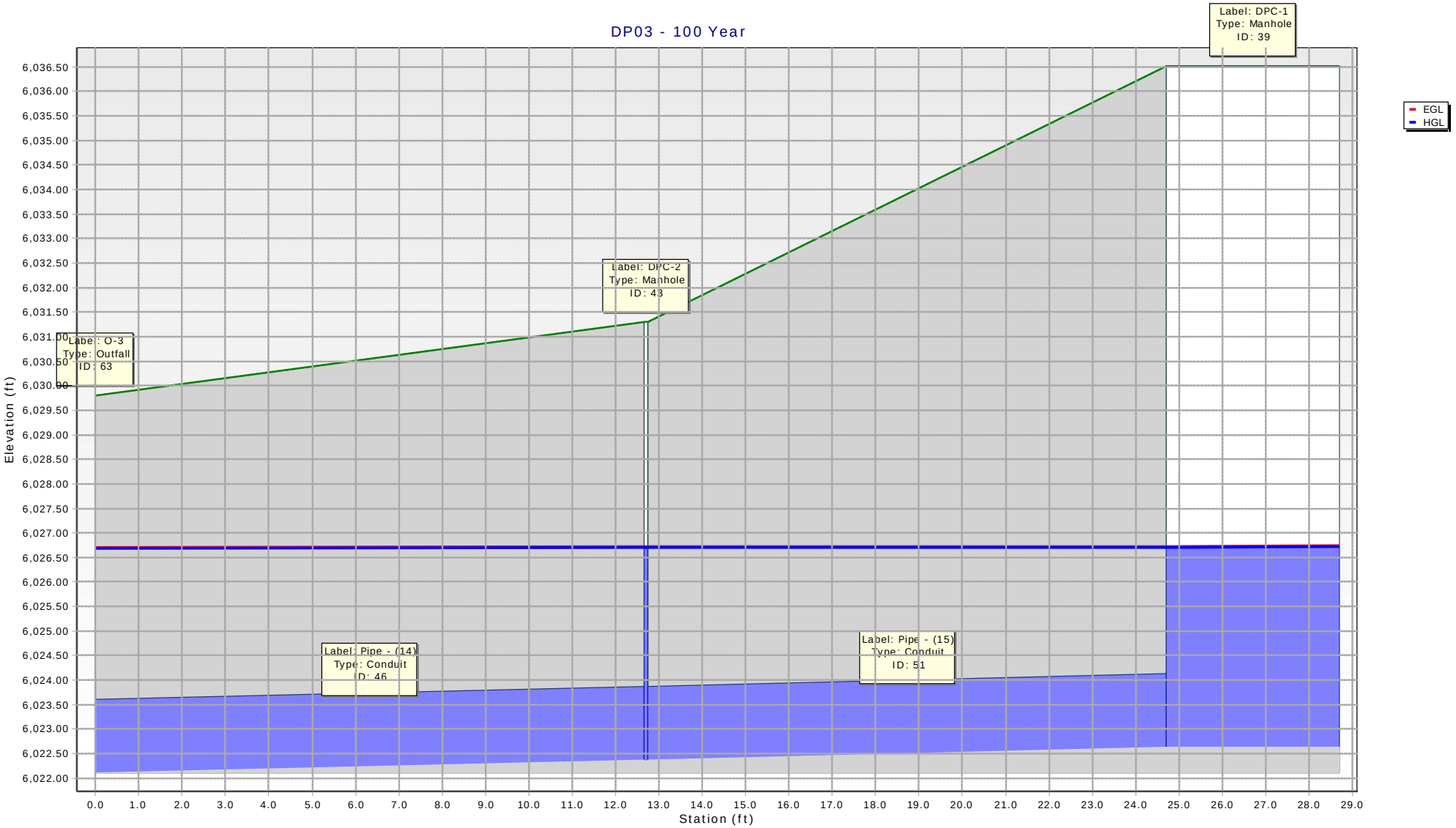
DP03 - 100 Year
Label: DPC-1
Type: Manhole
ID: 39
Label: DPC-2
Type: Manhole
ID: 43
Label: O-3
Type: Outfall
ID: 63
Label: Pipe - (14)
Type: Conduit
ID: 46
Label: Pipe - (15)
Type: Conduit
ID: 51
EGL
HGL
Elevation (ft)
Station (ft)
6,036.50
6,036.00
6,035.50
6,035.00
6,034.50
6,034.00
6,033.50
6,033.00
6,032.50
6,032.00
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1.0
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12.0
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14.0
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17.0
18.0
19.0
20.0
21.0
22.0
23.0
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25.0
26.0
27.0
28.0
29.0

APPENDIX D

REFERENCE MATERIAL

PHASE III DRAINAGE REPORT
FOR
RIDGEGATE SOUTHWEST VILLAGE FILING 1

Prepared For:

Shea Homes
9380 Station Street, Suite 600
Lone Tree, CO 80124
(303) 791-8180
Contact: Ryan McDermed

Prepared By:

JR Engineering, LLC

7200 South Alton Way Suite C400
Centennial, CO 80112
(303) 267-6220
Contact: Aaron Clutter

May 7, 2021

Engineer's Certification

I affirm that this report and plan for the Phase III drainage design of Ridgegate Southwest Village Filing 1 was prepared by me (or under my direct supervision) in accordance with the provisions of Douglas County Drainage Design and Technical Criteria for the owners thereof. I understand that City of Lone Tree does not and will not assume liability for drainage facilities designed by others.

_____

Aaron Clutter, P.E. Date

State of Colorado No. 36742

For and on Behalf of JR Engineering

Shea Homes herby certifies that the drainage facilities for Ridgegate Southwest Village Filing 1 shall be constructed according to the design presented in this report. I understand that The City of Lone Tree does not and will not assume liability for the drainage facilities designed and/or certified by my engineer and that Douglas County reviews drainage plans pursuant to Colorado Revised Statutes, Title 30, Article 28; but cannot, on behalf of Ridgegate, guarantee that the final drainage design review will absolve Shea Homes and/or their successors and/or assigns of future liability for improper design. I further understand that approval of the final plat does not imply approval of my engineer's drainage design.

_____

Name of Developer

_____

Authorized Signature

TABLE OF CONTENTS

I. GENERAL LOCATION AND DESCRIPTION

A. Site Location

The proposed development henceforth referred to as "Ridgegate Southwest Village Filing 1" site is located in Sections 23 and 24, Township 6 South, Range 69 West and Section 18, Township 6 South, Range 67 West of the 6th Principal Meridian. The site is located to the south of Ridgegate Parkway, east of Interstate Highway 25 (I-25), and north of the public service right-of-way. The site is bisected by a reach of Happy Canyon Creek that runs adjacent to the site on the west. A vicinity map showing the project site is shown below and is also presented in Appendix A.

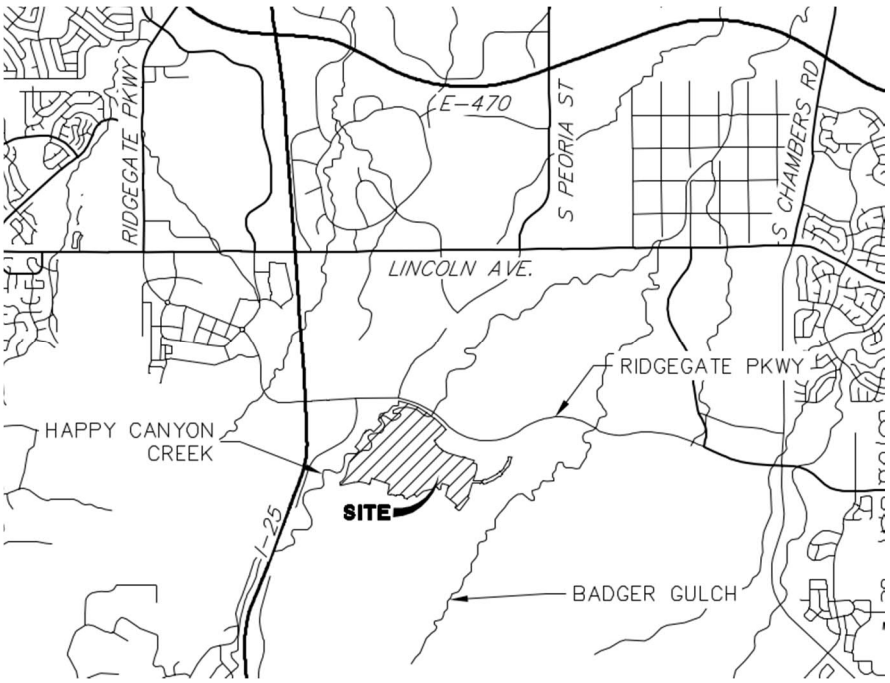

Figure 1: Vicinity Map

B. Description of Property

The proposed site of the Ridgegate Southwest Village Filing 1 development consists of approximately 186.03 acres of undeveloped land. The proposed development will consist of parks, commercial and multi-family lots, public roadways, and 365 residential lots. The site is currently unoccupied and undeveloped, and is vegetated with native grasses and shrubs. The majority of soil is classified by the Natural Resource Conservation Service (NRCS) as Hydrologic Group C and D. Hydrologic Group C soils are described as "soils that have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine to fine structure." Hydrologic Group D soils are described as "soils that have very low infiltration rates when thoroughly wetted and consist chiefly of clay soils with high swelling potential, soils with a permanent high

water table, soils with a claypan or clay layer at or near the surface and shallow soils over nearly impervious material."

The site slopes vary between 0-25%, with some areas up to 33%. The terrain is mountainous and relatively steep throughout. The historic drainage patterns for the entire Ridgegate Southwest Village Development are split in two directions. The western half of the development drains north and west to Happy Canyon Creek, while the eastern half of the development drains to the north and east to Badger Gulch. The Filing 1 improvements within this report will drain west to Happy Canyon Creek.

The site is shown on the Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map (FIRM) Community Panel No's. 08035C0063H and 08035C0064G, September 4, 2020 and March 16, 2016 respectively. The majority of the site lies within Zone X which is the flood insurance rate zone that corresponds to areas outside the one percent annual chance floodplain. See the FIRM Map located in Appendix A. Portions of the site, consisting of approximately 50 acres, are located within the 100 year floodplains of Happy Canyon Creek and Badger Gulch. These 100 year floodplains are further discussed in the "Happy Canyon Creek Flood Hazard Area Delineation", by Muller Engineering Company, dated July 2014. There will be no proposed development within these areas.

There is a major drainageway located adjacent to the site: Happy Canyon Creek. Happy Canyon Creek is located on the western edge of the site and shall be the ultimate outfall for the Filing 1 improvements. Happy Canyon Creek lies within a 100-year floodplain identified as Zone A in the FEMA FIRM Panel No's. 08035C0063H and 08035C0064G.

There is one irrigation canal located on site: Arapahoe Canal. This is an abandoned irrigation canal that crosses the proposed development.

There are no active ditch facilities located within the site. There are no significant geologic features within the area to be developed, and areas of higher topography within the site will remain undeveloped under a conservation easement.

II. DRAINAGE BASINS AND SUB-BASINS

A. Major Drainage Basins

The Ridgegate Southwest Village Filing 1 site lies within the Happy Canyon Creek basin, which is a left bank tributary of Cherry Creek. This report has been prepared in conformance with the "Master Drainage Plan for Ridgegate – Happy Canyon Creek and Badger Gulch Drainage Basins", by Merrick & Company, revised May 2017.

In the existing condition, storm runoff from the undeveloped site on the western half of the site drains into Happy Canyon Creek via overland sheet flow and natural drainage channels. The historic drainage basin map can be referenced in the "Master Drainage Plan for Ridgegate –

Happy Canyon Creek and Badger Gulch Drainage Basins", by Merrick & Company, revised May 2017, and is included in Appendix E.

Development of the project site will result in increased runoff volume to Happy Canyon Creek. One onsite WQ/EURV pond will be provided for the proposed Filing 1 development. This WQ/EURV pond will also provide some detention of the developed runoff, as these developed flows are routed through the outlet structure. The design 100-year discharge for this pond will be approximately 90% of the un-detained 100-year peak flows of the developed site. This discharge percentage of the 100-year developed flow has been established in coordination with Merrick & Company in order to minimize the outlet structure as well as minimizing the adverse effects of the peak discharge from the site coinciding with the peak discharge in the receiving drainageway. Online detention is proposed in Happy Canyon Creek (by others). The inflows into Happy Canyon Creek will be analyzed in a separate drainage report by Merrick & Company. Per the "Master Drainage Plan for Ridgegate – Happy Canyon Creek and Badger Gulch Drainage Basins", by Merrick & Company, revised May 2017, creek stabilization improvements are proposed (by others) within the channels to stabilize the drainageways and protect against the effects of urbanization in the watersheds.

B. Proposed Drainage Basins

There are three developed condition basins denoted within this report. Each basin is representative of a particular storm sewer system and outfall location. These basins are denoted as Basin A, Basin R, and Basin F. Basin A, and a majority of Basin F, will be routed to the proposed EURV Pond A, while Basin R and Sub-Basin F5 will have water quality provided by an existing water quality pond located just north of the site. The proposed basins will primarily follow existing drainage patterns. The drainage basins are presented in the drainage map located in Appendix F.

Basin A consists of Sub-Basins A1-A71 combining for a total of 146.70 acres. This basin represents a majority of the proposed Filing 1 development. These sub-basins are primarily residential lots, commercial lots, and open space. Stormwater runoff from these sub-basins are conveyed via curb and gutter and open space swales. Runoff is captured via a series of on-grade and sump inlets, as well as area inlets in the open space swales. Runoff is then piped north to the proposed EURV Pond A. The treated/detained pond releases are then discharged into Happy Canyon Creek.

Basin R consists of Sub-Basins R1-R19 combining for a total of 36.23 acres. This basin represents the eastern most portion of the proposed Filing 1 development. This basin also incorporates the existing Ridgegate Parkway that is adjacent to the site. Stormwater runoff from these sub-basins are conveyed via curb and gutter and open space swales. Runoff is captured via a series of on-grade and sump inlets, as well as area inlets in the open space swales. Runoff is then piped north where the developed runoff will split. A portion of the runoff will be piped north and outfall into an existing water quality pond located just north of Ridgegate Parkway. This existing water quality pond will provide water quality for the developed runoff prior to

releasing into Happy Canyon Creek. The remaining flows from this basin will be piped south and outfall directly into Happy Canyon Creek undetained. Further discussions of this flow split can be found below.

Basin F consists of Sub-Basins F1-F5 combining for a total of 32.34 acres. This basin represents the future developments that are tributary to the EURV Pond A, and the existing infrastructure along Ridgegate Parkway. These sub-basins are primarily future residential lots, commercial lots, and open space. Stormwater runoff from these sub-basins will be captured by proposed public storm sewer subs or conveyed via future curb and gutter to proposed on-grade and sump inlets. Runoff will then be piped north to the proposed EURV Pond or existing water quality pond. The treated runoff from this basin will be discharged into Happy Canyon Creek.

III. DRAINAGE DESIGN CRITERIA

A. Regulations

Storm drainage analysis and design criteria for this project were taken from the "Storm Drainage Design and Technical Criteria Manual" (SDDTCM) by Douglas County and the "Urban Storm Drainage Criteria Manual" (USDCM) by Mile High Flood Control District (MHFD).

B. Drainage Studies

The site has previously been studied by multiple reports. The "Master Drainage Plan for Ridgegate-Happy Canyon Creek and Badger Gulch Drainage Basins", by Merrick & Company, revised May 2017, has been utilized for the overall master planning of the site.

The "Phase III Drainage Report for Ridgegate Parkway Expansion – Phase I", by Merrick & Company, dated October 2018, the "Phase III Drainage Report for Ridgegate Parkway Expansion – Phase II", by Merrick & Company, dated October 2018, and the "Phase II Drainage Report for Ridgegate Southwest Village", by JR Engineering, dated October 28, 2020, have been utilized to confirm that this drainage report is in conformance with the allowable inflows into Happy Canyon Creek and also to the existing storm sewer system located in Ridgegate Parkway. The allowable versus the proposed inflows into the existing storm sewer systems is presented in Table 2.

The "Happy Canyon Creek Flood Hazard Area Delineation", by Muller Engineering Company, dated July 2014, has been utilized for 100 year floodplain mapping.

C. Water Quality and MS4 Permit Requirements

The Ridgegate Southwest Village development is subject to the requirements of the MS4 standards that went into effect July 1, 2019 (COR090000), or the standards in place at the time of submittal.

D. Hydrology

The Rational method was utilized to determine the hydrology of the site. The watershed areas for each inflow point into the ponds are less than 160 acres and do not require MHFD's Colorado Urban Hydrograph Procedure (CUHP). The overall EURV Pond A watershed has been split into two separate inflow points into the pond, each of which does not exceed 160 acres and does not require CUHP.

Rational method calculations were prepared for the sub-basins that directly impact the sizing of minor drainageways and pipe sizing. The 5-year storm was analyzed as the minor storm and the 100-year storm was analyzed as the major storm for aspects of design. The site is located in Douglas County Rainfall Zone 1. One-hour point rainfall values were taken from the SDDTCM and used in equation 5-1 from the USDCM to calculate intensities. 1-hour point rainfall values of 1.43 inches and 2.60 inches were used for a 5-year and 100-year storm events respectively.

Standard Forms SF-2 and SF-3 were used to determine the runoff from the minor and major storms on this site. Runoff coefficients were determined based on data presented in Table 6-5 from the USDCM. Basin percent impervious values were calculated based on proposed future land use and from data on Table 6-3 from the USDCM. Times of concentration were developed using equations from the USDCM. All runoff and hydrology calculations are included in Appendix B of this report.

E. Hydraulics

The UDFCD spreadsheet UD_Inlet v4.06, released August 2018, was utilized to determine street and inlet capacities of the development. The U.S. Environmental Protection Agency's Stormwater Management Model (EPA SWMM) v.5.0 was utilized to determine the existing flow rates in order to analyze the existing conditions for the site. EPA SWMM was also utilized to analyze the developed condition. Results for the existing and developed conditions can be found in the *Master Drainage Plan for Ridgegate – Happy Canyon Creek and Badger Gulch Drainage Basins* by Merrick & Company, May, 2017. A copy of these results can also be found in Appendix E.

Pipe capacities were modeled in Bentley StormCAD V8i. NeoUDSewer is the approved computer program for storm sewer analysis in Douglas County and has been replaced with the latest version of UD-Sewer. A calibration model was prepared in StormCAD using UDFCD Example 6.13 in accordance with Douglas County criteria. A summary table of all inputs and modeling output has been included in Appendix C.

Using Storm StormCAD V8i, a modeling program for stormwater drainage, the hydraulic grade lines and energy grade lines were determined for the storm sewer network. Manhole and pipe losses for the model were obtained from the *Modeling Hydraulic and Energy Gradients in Storm Sewers: A Comparison of Computation Methods*, by AMEC Earth & Environmental, Inc. The manhole loss coefficients used in the model can be seen in Table 2. Iterative loss coefficients for

manholes that contain 1 or more lateral lines were calculated using the Combined Junction Loss Equation. These iterative loss coefficients can be found in Appendix C.

Drainageway and swale calculations can be found in Appendix C. Swale locations have been provided on the drainage maps in Appendix F.

Table 1. StormCAD Standard Method Conversions

StormCAD Conversion Table			
Bend Loss	Bend Angle	K coefficient Conversion	
	0	0.05	
	22.5	0.1	
	45	0.4	
	60	0.64	
	90	1.32	
Lateral Loss	1 Lateral K coefficient Conversion		
	Bend Angle	Non Surcharged	Surcharged
	45	0.27	0.47
	60	0.52	0.9
	90	1.02	1.77
	2 Laterals K coefficient Conversion		
	45	0.96	
	60	1.16	
	90	1.52	

F. Pond Calculations and Water Quality Enhancement

The Ridgegate Southwest Village Filing 1 site will be serviced by one EURV pond and one existing WQ pond. All runoff from the proposed Filing 1 site will be captured and piped to one of these ponds, where the water will be treated prior to being released into Happy Canyon Creek. Detention will be provided in Happy Canyon Creek per the "Master Drainage Plan for Ridgegate – Happy Canyon Creek and Badger Gulch Drainage Basins", by Merrick & Company, revised May 2017. As a result, detention is not required in the on-site ponds within the Ridgegate Southwest Village development, and will be required to only provide the WQCV and EURV volumes.

As stated previously, the minimum design discharge will be 90% of the 100-year developed inflow for all ponds. These discharge percentages of the 100-year developed flows have been established in coordination with Merrick & Company in their design of the in-line ponds within the channels. The pond outfalls to the receiving drainageways will include energy dissipation for the 100-year outfall and will include a low tail-water basin. The outfalls will be armored with soil riprap into Happy Canyon Creek or Badger Gulch to either the thalweg of the channel or the 100-year floodplain. All calculations pertaining to the proposed pond and the proposed location can be found in the appendix.

IV. STORMWATER MANAGEMENT FACILITY DESIGN

A. Stormwater Conveyance Facilities

The conveyance system within the Ridgegate Southwest Village site is that of a typical subdivision with curb and gutter capturing and conveying flows to on-grade and sump storm sewer inlets. Concentrated off-site flows are proposed to be channelized via swales and routed into the proposed storm sewer system.

All inlets within the proposed roadways will be Type R inlets. Area inlets for the improvements will consist of Type C and Type D inlets. Inlet calculations and sizing can be found in Appendix C.

Storm sewer will be sized to carry the minor storm in a free flowing condition, and the major storm will maintain an HGL a minimum of one foot below finished grade. Storm runoff from the proposed development will be conveyed via proposed storm sewer infrastructure to the proposed EURV Pond A, or to the existing infrastructure within Ridgegate Parkeway.

All storm sewer pipes, inlets, and streets will be public improvements. The EURV pond will reside on property owned by the City of Lone Tree but will be maintained by the Rampart Range Metro District. Easements and tracts will be established to allow for maintenance access to drainage facilities outside of public right-of-way.

B. Stormwater Storage Facilities

There is one proposed EURV pond within the Filing 1 development. This EURV pond will provide water quality for a majority of the Filing 1 site, and will outfall into Happy Canyon Creek. In-line detention is planned to be provided within Happy Canyon (by others) per the *Ridgegate Master Drainage Report* and will not be provided in the on-site ponds. The site will also utilize existing storm sewer infrastructure within Ridgegate Parkway, along with an existing water quality pond located just north of the site.

The proposed EURV pond will utilize forebays at each outfall point into the pond in order to dissipate the energy from the storm runoff and collect sediment. Trickle channels will then convey the runoff to the outlet structure. The outlet structure will include a micropool and contain an initial surcharge volume. The outlet structure will utilize orifice plates for both the water quality capture volume (WQCV) and EURV. The outlet structure's orifice plate will be sized to release the WQCV and EURV events over a period of 40 and 72 hours respectively. For the developed 100-year inflows, an overflow grate on the top of the outlet structure will be used in order to pass discharges above the EURV level and minimize incidental detention. The outlet structure will have a release rate of 446.5 cfs for a 100-year storm event and will require 9.933 ac-ft of storage. All flows up to the 100-year storm event shall enter the channel at the proposed outfall location. This outfall shall utilize a low tail-water basin to dissipate the kinetic energy of the storm discharge, and prevent scouring of Happy Canyon Creek. The pond will also have an emergency spillway to discharge emergency flows above the 100-year storm event. Trash racks

will be used to prevent any trash from escaping the development, and for easy cleaning. A maintenance access trail will also be constructed for easy access to the outlet structure and forebays for maintenance and repairs. Watershed design parameters and design storm results for the proposed EURV pond can be found below in Table 2 & Table 3 respectively. All pond and forebay calculations can be found in Appendix D.

Table 2. Watershed Design Parameters

Watershed Area	171.50 AC
Percent Impervious	48.3%
Watershed Slope	0.031 ft/ft

Table 3. Design Storm Results

Design Storm Period	Volume (AC-FT)	Depth (FT)	Q_{out} (CFS)
WQCV	2.891	5.34	1.1
EURV	7.816	8.06	2.3
100-YR	9.933	9.11	446.5

The pond outfall will utilize riprap within Happy Canyon Creek. The flows from the pond are proposed to discharge into Happy Canyon Creek upstream of the 100-year floodplain and include a low-tailwater basin. In the situation that grading is done within the 100 year floodplain, a no-rise certification and a floodplain permit will be required.

A. Water Quality Enhancement Best Management Practices

Water quality is being provided for the site in the proposed EURV Pond A and an existing water quality pond prior to entering Happy Canyon Creek. Pond A will be designed as an EURV Pond and will utilize forebays and an outlet structure to treat storm water runoff from the proposed development. The forebays will be used to dissipate the energy of the runoff and allow any remaining sediment to settle out of the water before it departs the pond. The outlet structure will utilize an orifice plate to release the WQCV event over a period of 40 hours.

The existing water quality pond located north of Ridgegate Parkway, will provide water quality for Basin R and Sub-Basin F5. This existing pond and the associated tributary areas have been analyzed in the "Phase III Drainage Report for Ridgegate Parkway Expansion – Phase I", by Merrick & Company, dated October 2018, and the "Phase III Drainage Report for Ridgegate Parkway Expansion – Phase II", by Merrick & Company, dated October 2018.

B. Existing Ridgegate Parkway Storm Sewer

There is an existing storm sewer system located in Ridgegate Parkway that will be used to pipe flows to the existing water quality pond located just north of the site. The proposed design flows that enter the existing storm sewer system located in Ridgegate Parkway are all within the previously designed limit. These allowable inflows were specified in the following reports: "Phase III Drainage Report for Ridgegate Parkway Expansion – Phase I", by Merrick & Company, dated October 2018, and the "Phase III Drainage Report for Ridgegate Parkway Expansion – Phase II", by Merrick & Company, dated October 2018. Allowable and proposed inflows for the 5-year and 100-year storm events entering the existing Ridgegate Parkway storm sewer system are shown in the table below. The manhole located at Design point 9.4 will split the developed flows and send a portion of the developed runoff north to the existing water quality pond. The remaining flows will be diverted south, where they will combine with the flows released from EURV Pond A prior to entering Happy Canyon Creek. Based on the analysis conducted by Merrick & Company, 26.8 cfs will be routed to the EURV Pond A outfall, and 63.3 cfs will be routed to the existing water quality pond during a 5-year storm event. During a 100-year storm event, 92.5 cfs will be routed to the EURV Pond A outfall, and 111.0 cfs will be routed to the existing water quality pond. Calculations for this flow split can be found in Appendix E.

Table 4: Allowable vs. Proposed Inflows into Existing Ridgegate Storm Sewer System

RIDGEGATE PARKWAY STORM SEWER ALLOWABLE INFLOWS PER THE 2018 RIDGEGATE PARKWAY PHASE II AND III DRAINAGE REPORT						
Design Point	5-yr Minor Storm			100 yr- Major Storm		
	Allowable Inflow (cfs)	Proposed Inflow (cfs)	**Δ** Inflow (cfs)	Allowable Inflow (cfs)	Proposed Inflow (cfs)	**Δ** Inflow (cfs)
8.5	29.7	23.8	-5.9	86.3	50.9	-35.4
8.9	59.6	54.2	-5.4	160	129.2	-30.8
9.1	87.1	74.6	-12.5	219.2	178.3	-40.9
9.4	91.7	77.8	-13.9	234.3	187.1	-47.2

C. Floodplain Modification

There are no modifications proposed to any floodplain. The project site is outside the one percent annual chance floodplain, and there are no CLOMR, LOMR, or floodplain permitting requirements. In the situation that grading is done within the 100 year floodplain, a no-rise certification and a floodplain permit will be required.

D. Additional Permitting Requirements

An Approved Jurisdictional Determination, provided by the U.S. Army Corps of Engineers, Corps File No. MWO-2019-01406-DEN, has determined that there are no water resources of the U.S. on this site; therefore, a Department of the Army permit will not be required for this site. There are currently no endangered species located on the site. There are no other permitting requirements placed on the site.

V. CONCLUSIONS

A. Compliance with Standards

This report is in compliance with the standards set forth in the "Storm Drainage Design and Technical Criteria Manual" by Douglas County as well as the "Urban Storm Drainage Criteria Manual" by the Mile High Flood Control District (MHFD).

B. Variances

No variances are requested at this time.

C. Drainage Concept

All proposed runoff will be safely conveyed through the site and release at allowable rates at the proposed Pond A outfall and at the existing water quality pond outfall north of Ridgegate Parkway. Water quality is currently or will be provided at both outfall locations. No adverse effects to Happy Canyon Creek or to the downstream infrastructure are expected as a result of the proposed Ridgegate Southwest Village Filing 1 improvements. No impacts are expected with respect to stormwater quality, quantity, or timing.

REFERENCES

1. Happy Canyon Creek Flood Hazard Area Delineation, by Muller Engineering Company, dated July 2014.
2. Master Drainage Plan for Ridgegate-Happy Canyon Creek and Badger Gulch Drainage Basins, Merrick & Company, Revised May 2017.
3. Phase III Drainage Report for Ridgegate Parkway Expansion – Phase I, by Merrick & Company, dated October 2018.
4. Phase III Drainage Report for Ridgegate Parkway Expansion – Phase II, by Merrick & Company, dated October 2018.
5. Storm Drainage Design and Technical Criteria Manual, Douglas County, July 2008.
6. Urban Storm Drainage Criteria Manual, Mile High Flood Control District, Latest Revision.
7. Phase II Drainage Report for Ridgegate Southwest Village, JR Engineering, dated October 28, 2020

MEMORANDUM

J·R ENGINEERING

To: **Jacob James, PE; City of Lone Tree**

From: **Aaron Clutter, PE**

Date: **September 28, 2021**

Subject: **Phase III Drainage Report for Ridgegate Southwest Village Filing 1 – Addendum 1 Memorandum**

I. INTRODUCTION

The purpose of this memorandum is to re-evaluate the approved Phase III Drainage Report for Ridgegate Southwest Village Filing 1 Rational Method hydrologic analysis of Ridgegate Southwest Village Filing 1 using Colorado Urban Hydrograph Procedure (CUHP) in conjunction with hydrograph and reservoir routing through EPA's Storm Water Management Model (SWMM). Storm drainage analysis and design criteria for this project were taken from the "Storm Drainage Design and Technical Criteria Manual" (SDDTCM) by Douglas County and the "Urban Storm Drainage Criteria Manual" (USDCM) by Mile High Flood Control District (MHFD). The proposed storm sewer system for Phase III Ridgegate Southwest Village Filing 1 has been updated as can be seen on the revised drainage maps in **Attachment D** to this memorandum. The EURV Pond A has also been reanalyzed using CUHP/SWMM routing and changes suggested for the pond's structures. Hydrologic modeling results have been added to **Attachment B** to this memorandum.

II. PHASE III DRAINAGE REPORT FOR RIDGEGATE SOUTHWEST VILLAGE FILING 1

The design and calculations of this memo are based on the approved *Phase III Drainage Report for Ridgegate Southwest Village Filing 1,* by JR Engineering, dated May 7, 2021. In this report there are three developed condition basins. Each basin is representative of a particular storm sewer system and outfall location. These basins are denoted as Basin A, Basin R, and Basin F. Basin A, and a majority of Basin F, will be routed to the proposed EURV Pond A, while Basin R and Sub-Basin F5 will have water quality provided by an existing water quality pond located just north of the site. A more detailed description of the basins can be found within the Phase III Drainage Report for Ridgegate Southwest Village Filing 1.

III. REVISED CONDITIONS

As previously mentioned, the proposed storm sewer system for Phase III Ridgegate Southwest Village Filing 1 is to be amended with this memorandum. Using CUHP to determine sub-basin runoff hydrographs and SWMM to perform hydrograph routing, pipe inflows at the various design points have decreased making it possible to reduce pipe sizes. Inlet capacities were not reanalyzed with this memorandum because of the decreased flows;

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Centennial, CO 80112
303-740-9393 • Fax 303-921-7320

☐ 25188 Genesee Trail Road
Suite 110
Golden, CO 80401
303-740-9393 • Fax 303-921-7320

☐ 5475 Tech Center Drive
Suite 235
Colorado Springs, CO 80919
719-593-2593 • Fax 303-921-7320

☐ 2900 South College Avenue
Suite 3D
Fort Collins, CO 80525
970-491-9888 • Fax 303-921-7320

all proposed inlets have enough capacity to capture the lower flows. However, the storm sewer pipes were re-analyzed using Bentley System's StormCAD, results can be found in **Attachment C** to this memorandum. A table comparing flows from the Rational Method used in Phase III Drainage Report Ridgegate Southwest Village Filing 1 and SWMM results used for this memorandum can be found in **Attachment B**. As per Douglas County Criteria, 1-hour point precipitation of 1.43 inches for the 5-year storm event and 2.60 inches for the 100-year storm event were used for design.

Major changes to the storm sewer alignments occurred at Drainage Basins A45A and A45 where the storm sewer is proposed to be realigned closer to the roadways in order to unencumber the future regional park site from the proposed storm sewer. Part of storm sewer pipes that used to be located in drainage basins A68 and A70 have been eliminated in order to minimize parallel drainage infrastructure in the system. Instead, new tie-in points have been proposed at design points 5.6B and 5.7.

Since Bentley System's StormCAD does not account for peak flow time at each design point, it creates a tailwater from the accumulated flows that has caused lower velocities in some lateral pipes. Thus, these lateral pipes that did not meet the 4 ft/sec minimum velocity specified by SDDTCM. In order to prove that the laterals are sized appropriately the pipes were individually analyzed using Bentley System's FlowMaster, results can be found in **Attachment C**.

UD-Detention Workbook (Version 4.04, February 2021) from MHFD was used to design the water quality capture volume (WQCV), excess urban runoff volume (EURV), and the outlet structure. However, the 100-year volume was analyzed and determined using CUHP/SWMM. The maximum depth for the 100-year storm event in EURV Pond A is 9.22 feet with a 100-year peak discharge of 344.25 cfs, results can be found in **Attachment C**. The proposed EURV Pond A outlet structure and forebays have been revised herein to accommodate the reduction in 100-year peak inflow. No changes have been made to the water quality and EURV controls, however the overflow box has been accordingly reduced in size. The EURV Pond A outfall to Happy Canyon Creek has been correspondingly revised to accommodate the lower peak discharge. The Pond A emergency spillway has not been revised, and therefore the 100-year water surface elevation has been lowered with respect to the emergency spillway.

CONCLUSION

The goal to value engineer the storm drainage system for Phase III Ridgegate Southwest Village Filing 1 was achieved by using SWMM to create a revised hydrologic model. The net effect of using SWMM was a decrease in runoff flow rates and a reduced required 100-year discharge for EURV Pond A. The proposed design has taken into account all flows from onsite and offsite drainage sub-basins delineated in the drainage map. All proposed drainage patterns conform from the previously approved *Phase III Drainage Report for Ridgegate Southwest Village Filing 1,* by JR Engineering, dated May 7, 2021, and this Addendum is in compliance with Douglas County storm drainage criteria.

ATTACHMENTS

A. Douglas County Criteria
B. Hydrologic Calculations
C. Hydraulic Calculations
D. Drainage Maps

Subdivision: Ridgegate
Project Number: 15950.01
Date: 8/24/2021
Location: Douglas County - Zone 1
P1, 5: 1.46 inches
P1, 100: 2.60 inches

CUHP Sub-Basin Runoff Comparison Table

Sub-Basin	Area (ac)	Percent Imp. (%)	Rational Method		CUHP		Comparison			
			Q_5 (cfs)	Q_{100} (cfs)	Q_5 (cfs)	Q_{100} (cfs)	ΔQ_5 (cfs)	$\%Q_5$	ΔQ_{100} (cfs)	$\%Q_{100}$
A1	1.44	10.1%	0.6	4.8	0.8	2.6	+0.16	127%	-2.20	54%
A2	0.43	2.0%	0.1	1.5	0.2	0.8	+0.11	227%	-0.76	50%
A3	4.45	2.0%	0.8	12.9	2.8	10.1	+2.03	370%	-2.78	78%
A4	12.66	2.0%	2.2	37.6	5.9	22.5	+3.75	271%	-15.13	60%
A5	1.95	43.1%	2.7	8.2	2.0	5.2	-0.66	76%	-3.06	63%
A6	1.06	62.6%	2.6	6.3	1.2	2.8	-1.37	47%	-3.51	44%
A7	2.05	46.9%	3.5	10.1	2.0	5.1	-1.47	58%	-5.02	50%
A8	1.38	70.1%	3.7	8.2	1.5	3.3	-2.20	40%	-4.97	40%
A9	2.83	49.0%	4.7	13.1	3.0	7.4	-1.64	65%	-5.66	57%
A10	0.48	69.4%	1.4	3.2	0.5	1.1	-0.93	34%	-2.13	34%
A11	3.76	18.9%	2.4	12.7	1.5	4.8	-0.97	60%	-7.90	38%
A12	0.13	59.6%	0.3	0.9	0.2	0.4	-0.17	53%	-0.45	48%
A13	3.11	59.9%	6.8	16.9	3.1	7.2	-3.72	45%	-9.64	43%
A14	3.51	74.4%	9.7	21.1	6.3	13.1	-3.39	65%	-7.97	62%
A15	2.79	9.4%	1.0	8.3	0.7	2.8	-0.25	74%	-5.45	34%
A16	10.53	12.6%	4.2	29.2	6.1	20.3	+1.89	145%	-8.96	69%
A17	0.86	76.1%	2.8	6.0	1.4	2.9	-1.43	49%	-3.17	48%
A18	0.47	75.0%	1.5	3.3	0.7	1.4	-0.84	44%	-1.87	43%
A19	1.94	58.6%	4.2	10.6	1.8	4.2	-2.46	42%	-6.40	40%
A20	1.04	68.3%	2.8	6.4	0.9	2.1	-1.90	33%	-4.33	33%
A21	1.86	74.2%	5.6	12.2	2.7	5.7	-2.93	48%	-6.57	46%
A23	1.69	63.9%	4.4	10.5	2.1	4.7	-2.33	47%	-5.82	44%
A23A	1.69	53.1%	3.2	8.7	1.9	4.5	-1.34	59%	-4.13	52%
A24	0.80	72.5%	2.3	5.2	1.3	2.8	-1.02	57%	-2.43	54%
A25	3.36	81.9%	10.6	22.0	7.0	14.1	-3.62	66%	-7.89	64%
A26	0.96	61.5%	2.4	5.8	1.0	2.3	-1.37	42%	-3.46	40%
A26A	2.83	70.5%	6.6	14.8	3.9	8.5	-2.66	60%	-6.34	57%
A27	1.48	57.8%	3.5	8.9	1.7	4.0	-1.81	49%	-4.94	45%
A27A	1.53	59.4%	3.9	9.7	1.7	3.8	-2.23	43%	-5.83	40%
A28	0.50	67.0%	1.4	3.2	0.7	1.5	-0.69	49%	-1.70	46%
A28A	0.81	70.8%	2.1	4.7	1.0	2.2	-1.05	50%	-2.44	48%
A29	1.80	56.4%	3.4	8.7	1.8	4.2	-1.62	52%	-4.51	48%
A30	0.59	76.7%	1.9	4.1	0.7	1.5	-1.24	35%	-2.66	35%
A31	1.56	47.7%	2.7	7.6	1.6	3.9	-1.10	59%	-3.73	51%
A32	1.03	56.6%	2.3	5.8	1.0	2.4	-1.25	45%	-3.39	42%
A33	0.79	70.2%	2.2	5.0	0.9	2.0	-1.29	41%	-2.97	40%
A34	1.56	50.7%	2.8	7.8	1.5	3.6	-1.37	52%	-4.16	46%
A36	1.87	54.3%	3.1	8.0	1.7	4.0	-1.39	54%	-3.96	50%
A37	1.00	52.8%	2.0	5.4	0.7	1.7	-1.33	34%	-3.65	32%
A37A	0.66	40.1%	1.0	3.1	0.4	1.2	-0.56	44%	-1.98	37%
A38	1.61	47.1%	2.8	8.1	1.2	3.0	-1.67	41%	-5.13	37%
A38A	1.07	13.3%	0.4	3.1	0.4	1.2	-0.10	78%	-1.83	41%
A39	1.39	62.0%	2.9	7.0	1.3	3.0	-1.58	45%	-3.94	44%
A40	1.73	75.0%	5.3	11.6	3.2	6.7	-2.13	60%	-4.97	57%
A41	1.88	53.0%	3.5	9.4	1.9	4.6	-1.59	55%	-4.76	49%
A42	2.13	35.1%	2.6	9.2	1.0	2.9	-1.63	38%	-6.24	32%
A43	2.50	49.8%	4.3	11.8	3.0	7.3	-1.25	71%	-4.56	62%
A44	1.66	68.1%	4.4	10.0	2.2	4.8	-2.15	51%	-5.21	48%
A45	1.63	69.9%	4.2	9.6	1.9	4.1	-2.33	45%	-5.40	43%
A45A	1.29	76.4%	4.0	8.6	1.7	3.7	-2.26	44%	-4.91	43%
A46	6.61	49.4%	8.8	24.6	12.2	28.4	+3.34	138%	+3.87	116%
A51	1.02	61.2%	2.3	5.7	1.1	2.5	-1.24	47%	-3.18	44%
A52	2.31	63.1%	5.6	13.5	2.1	4.8	-3.56	37%	-8.65	36%
A53	1.95	14.2%	0.9	6.1	0.8	2.7	-0.15	85%	-3.37	45%
A53A	3.04	75.0%	7.5	16.1	5.4	11.2	-2.07	72%	-4.91	70%

Subdivision: Ridgegate
Project Number: 15950.01
Date: 8/24/2021
Location: Douglas County - Zone 1
P1, 5: 1.46 inches
P1, 100: 2.60 inches

CUHP Sub-Basin Runoff Comparison Table

Sub-Basin	Area (ac)	Percent Imp. (%)	Rational Method		CUHP		Comparison			
			Q_5 (cfs)	Q_{100} (cfs)	Q_5 (cfs)	Q_{100} (cfs)	ΔQ_5 (cfs)	$\%Q_5$	ΔQ_{100} (cfs)	$\%Q_{100}$
A54	1.37	70.9%	3.9	8.7	1.9	4.0	-2.03	48%	-4.71	46%
A54A	1.17	46.0%	2.1	6.1	1.4	3.4	-0.70	67%	-2.67	56%
A55	0.90	73.9%	2.8	6.1	1.3	2.7	-1.48	47%	-3.35	45%
A56	1.21	52.7%	2.2	5.8	1.6	3.7	-0.58	73%	-2.04	65%
A57	1.54	51.4%	2.7	7.4	2.1	4.9	-0.62	77%	-2.42	67%
A58	0.76	65.2%	2.0	4.7	0.7	1.6	-1.33	34%	-3.16	33%
A59	2.78	48.8%	4.9	13.7	2.6	6.4	-2.32	53%	-7.28	47%
A60	1.02	65.5%	2.4	5.6	0.9	2.2	-1.45	40%	-3.46	39%
A61	1.10	41.1%	1.8	5.6	1.3	3.3	-0.49	73%	-2.31	59%
A62	1.57	68.7%	3.7	8.4	1.2	2.7	-2.53	31%	-5.73	32%
A63	3.10	58.6%	5.6	13.9	2.4	5.7	-3.19	43%	-8.17	41%
A64	1.78	49.9%	3.1	8.7	2.3	5.6	-0.80	74%	-3.10	64%
A65	2.19	71.9%	5.7	12.6	3.8	8.0	-1.88	67%	-4.60	63%
A66	3.77	61.7%	8.5	20.7	5.3	11.9	-3.21	62%	-8.81	57%
A68	0.66	77.7%	2.0	4.4	0.6	1.4	-1.40	31%	-2.99	32%
A69	1.88	59.9%	4.2	10.4	1.9	4.3	-2.36	44%	-6.06	42%
A70	1.71	43.3%	2.9	8.7	1.9	4.9	-0.96	67%	-3.88	56%
A70A	0.33	88.1%	1.2	2.5	0.5	1.0	-0.74	40%	-1.47	40%
A71	0.77	58.0%	1.7	4.3	1.0	2.2	-0.77	56%	-2.15	51%
F1	6.05	41.5%	8.3	25.7	5.1	13.4	-3.16	62%	-12.29	52%
F2	5.03	52.9%	8.7	23.2	5.1	12.2	-3.61	58%	-11.04	52%
F3	8.14	75.0%	23.1	50.1	15.6	32.3	-7.53	67%	-17.78	65%
F4	5.58	66.0%	11.3	26.3	6.4	14.2	-4.92	56%	-12.15	54%
F5	7.54	75.0%	20.1	43.6	14.8	30.6	-5.38	73%	-13.07	70%
R1	0.75	90.0%	2.9	5.6	1.2	2.4	-1.62	43%	-3.18	43%
R2	1.87	70.9%	5.2	11.6	3.2	6.9	-1.94	63%	-4.73	59%
R3	2.46	75.9%	6.3	13.6	4.5	9.4	-1.78	72%	-4.21	69%
R3A	1.20	73.7%	3.1	6.7	1.8	3.7	-1.31	57%	-3.00	55%
R4	0.44	75.0%	1.4	2.9	1.0	2.1	-0.36	73%	-0.84	71%
R5	0.36	75.0%	1.1	2.3	0.8	1.6	-0.32	71%	-0.72	69%
R6	2.90	50.6%	5.0	13.7	2.7	6.6	-2.34	53%	-7.15	48%
R7	0.55	73.3%	1.7	3.8	0.9	2.0	-0.78	55%	-1.81	52%
R8	0.28	60.9%	0.6	1.6	0.4	0.9	-0.24	62%	-0.67	57%
R9	9.78	85.0%	32.6	66.1	18.9	37.7	-13.71	58%	-28.33	57%
R10	1.10	53.1%	1.9	5.0	1.1	2.6	-0.81	57%	-2.41	52%
R11	2.18	10.0%	0.9	7.0	1.0	3.4	+0.11	112%	-3.56	49%
R12	3.36	30.4%	3.2	12.4	1.5	4.4	-1.80	45%	-8.01	36%
R13	2.33	30.3%	2.7	10.4	1.2	3.5	-1.54	43%	-6.85	34%
R14	2.55	34.6%	3.5	12.3	1.9	5.2	-1.63	53%	-7.08	42%
R15	1.34	53.2%	3.0	7.9	1.7	4.1	-1.24	58%	-3.82	52%
R16	0.28	59.2%	0.7	1.6	0.4	0.8	-0.31	54%	-0.81	50%
R17	1.00	51.1%	2.0	5.5	0.9	2.2	-1.16	43%	-3.37	39%
R18	0.87	67.5%	2.2	5.2	1.0	2.3	-1.23	45%	-2.93	43%
R19	0.63	80.8%	2.0	4.2	0.8	1.7	-1.21	40%	-2.54	40%

Subdivision: Ridgegate
Project Number: 15950.01
Date: 8/24/2021
Location: Douglas County - Zone 1
P1, 5: 1.46 inches
P1, 100: 2.60 inches

SWMM Design Points Runoff Comparison Table

Design Point	Rational Method		SWMM		Comparison			
	Q_5 (cfs)	Q_{100} (cfs)	Q_5 (cfs)	Q_{100} (cfs)	ΔQ_5 (cfs)	$\%Q_5$	ΔQ_{100} (cfs)	$\%Q_{100}$
1	0.7	6.1	1.0	3.4	+0.27	139%	-2.72	55%
1.1	1.3	18.4	3.7	13.4	+2.43	287%	-4.96	73%
1.2	6.3	46.2	9.0	30.2	+2.72	143%	-16.00	65%
1.2A	4.7	43.8	7.9	27.5	+3.15	167%	-16.33	63%
1.3	7.4	63.0	12.7	43.6	+5.31	172%	-19.37	69%
1.4	12.7	75.3	16.2	51.9	+3.48	127%	-23.39	69%
1.4A	10.1	70.5	14.7	48.6	+4.61	146%	-21.86	69%
1.5	17.1	85.3	19.6	60.3	+2.54	115%	-25.04	71%
1.7	19.4	102.0	21.2	65.2	+1.80	109%	-36.76	64%
2	24.1	111.8	24.3	72.5	+0.20	101%	-39.34	65%
2.1	8.1	23.9	6.9	15.7	-1.23	85%	-8.17	66%
2.3	14.3	56.5	14.8	39.4	+0.45	103%	-17.15	70%
2.4	17.5	61.9	17.5	45.7	-0.05	100%	-16.24	74%
2.5	39.2	159.9	41.7	117.5	+2.53	106%	-42.41	73%
2.6	41.8	171.9	44.3	123.6	+2.54	106%	-48.35	72%
2.8	10.2	22.3	5.3	12.0	-4.88	52%	-10.35	54%
2.8A	38.0	91.7	26.6	62.6	-11.41	70%	-29.09	68%
2.9	45.5	107.4	33.1	75.8	-12.39	73%	-31.61	71%
3	49.4	121.7	35.8	82.1	-13.57	73%	-39.64	67%
3.1	82.5	274.3	79.6	206.2	-2.91	96%	-68.11	75%
3.2	81.8	276.8	44.3	100.9	-37.52	54%	-175.94	36%
4	13.6	41.9	10.2	25.6	-3.39	75%	-16.32	61%
4.1	18.3	48.9	11.9	29.2	-6.40	65%	-19.68	60%
4.2	22.2	57.7	14.3	34.8	-7.87	65%	-22.87	60%
4.3	24.3	63.1	15.9	38.7	-8.39	65%	-24.40	61%
4.3A	31.3	74.8	21.4	50.8	-9.89	68%	-23.98	68%
4.6	27.3	60.4	17.5	36.7	-9.78	64%	-23.74	61%
4.7	28.1	63.7	19.0	40.2	-9.12	68%	-23.50	63%
4.8	26.7	60.3	20.7	44.2	-6.04	77%	-16.12	73%
5.1	2.5	9.0	1.5	4.1	-1.04	58%	-4.90	46%
5.1A	6.6	18.0	3.9	10.0	-2.69	59%	-7.96	56%
5.2	29.3	69.8	24.5	53.8	-4.82	84%	-16.05	77%
5.4	36.8	91.1	30.4	67.4	-6.40	83%	-23.67	74%
5.4A	34.8	86.0	29.5	64.8	-5.34	85%	-21.19	75%
5.5	8.1	21.1	5.3	12.1	-2.84	65%	-8.98	57%
5.6	42.7	111.3	35.6	79.5	-7.11	83%	-31.79	71%
5.6A	44.6	115.7	37.3	83.1	-7.29	84%	-32.56	72%
5.6B			116.9	293.8	N/A	N/A	N/A	N/A
5.7	124.0	390.4	162.6	394.6	+38.60	131%	+4.23	101%
5.7A	45.6	117.8	118.8	294.5	+73.23	261%	+176.70	250%
6	7.3	12.1	3.1	7.3	-4.16	43%	-4.82	60%
6.1	13.5	36.0	10.6	23.8	-2.86	79%	-12.23	66%

Subdivision: Ridgegate
Project Number: 15950.01
Date: 8/24/2021
Location: Douglas County - Zone 1
P1, 5: 1.46 inches
P1, 100: 2.60 inches

SWMM Design Points Runoff Comparison Table

Design Point	Rational Method		SWMM		Comparison			
	Q_5 (cfs)	Q_{100} (cfs)	Q_5 (cfs)	Q_{100} (cfs)	ΔQ_5 (cfs)	$\%Q_5$	ΔQ_{100} (cfs)	$\%Q_{100}$
6.1A	7.4	20.0	6.1	13.6	-1.29	83%	-6.40	68%
6.2	18.6	44.5	13.8	30.8	-4.85	74%	-13.70	69%
6.3	20.0	48.7	15.3	34.5	-4.70	77%	-14.24	71%
6.5	23.1	55.8	18.0	40.8	-5.10	78%	-14.97	73%
6.7	8.9	23.3	4.8	11.7	-4.10	54%	-11.59	50%
6.8	39.6	97.6	29.1	66.7	-10.46	74%	-30.92	68%
6.9	8.7	16.0	3.6	8.4	-5.15	41%	-7.60	53%
7.2	53.4	134.9	38.5	87.8	-14.95	72%	-47.12	65%
7.3	59.4	149.8	43.6	99.5	-15.76	73%	-50.30	66%
7.5	61.9	154.1	164.5	399.1	+102.56	266%	+244.99	259%
8	7.7	16.7	4.5	9.3	-3.23	58%	-7.39	56%
8.1	15.8	31.0	10.7	22.3	-5.10	68%	-8.70	72%
8.1A	9.2	17.7	6.2	13.0	-3.00	67%	-4.71	73%
8.2	16.8	33.2	11.7	24.3	-5.15	69%	-8.95	73%
8.3	17.4	34.6	12.4	25.8	-5.00	71%	-8.81	75%
8.4	23.4	50.7	16.0	34.2	-7.41	68%	-16.51	67%
9.4	26.8	92.5	0.0	92.5	N/A	N/A	0.00	0%
9.5	93.5	513.7	149.4	436.8	+55.88	160%	-76.95	85%

Scenario: 5yr
Current Time Step: 0.000 h
Conduit FlexTable: Combined Pipe/Node Report

Upstream Structure	Label	Flow (cfs)	Diameter (in)	Length (User Defined) (ft)	Slope (Calculated) (ft/ft)	Invert (Start) (ft)	Invert (Stop) (ft)	Velocity (ft/s)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Upstream Structure Headloss Coefficient	Manning's n
DPA24-12	Pipe - (96) (2) (2) (1)	18.80	24.0	50.3	0.030	6,076.05	6,074.54	12.34	6,083.06	6,082.22	6,077.61	6,076.13	6,078.40	6,076.90	0.000	0.013
DPA15-25	Pipe - (105)	16.50	30.0	31.5	0.012	6,047.27	6,046.88	8.55	6,053.32	6,053.05	6,049.18	6,049.20	6,049.44	6,049.39	0.050	0.013
DPA15-26	Pipe - (105)(1)	15.59	30.0	25.0	0.012	6,048.08	6,047.77	8.42	6,055.34	6,053.32	6,049.41	6,049.19	6,049.95	6,049.65	0.000	0.013
DPA15-24	Pipe - (106)	17.52	30.0	96.5	0.013	6,046.68	6,045.47	8.72	6,053.05	6,054.05	6,048.10	6,047.27	6,048.68	6,047.60	1.907	0.013
DPA15-23	Pipe - (108)	17.52	30.0	173.0	0.012	6,045.27	6,043.11	8.71	6,054.05	6,052.75	6,046.69	6,045.41	6,047.27	6,045.62	1.010	0.013
DPA15-22	Pipe - (109)	18.98	30.0	70.4	0.013	6,042.91	6,042.03	8.90	6,052.75	6,051.37	6,044.39	6,043.18	6,045.00	6,044.33	1.662	0.013
DPA15-21	Pipe - (110)	18.98	30.0	57.1	0.012	6,041.83	6,041.12	8.88	6,051.37	6,050.15	6,043.31	6,042.28	6,043.92	6,043.40	0.063	0.013
DPA15-20	Pipe - (111)	18.98	30.0	99.2	0.032	6,040.92	6,037.73	12.57	6,050.15	6,046.56	6,042.40	6,038.62	6,043.01	6,040.93	0.070	0.013
DPA15-19	Pipe - (112)	18.98	30.0	106.8	0.035	6,037.53	6,033.79	12.96	6,046.56	6,041.96	6,039.01	6,034.65	6,039.62	6,037.15	0.072	0.013
DPA15-18	Pipe - (113)	18.98	30.0	112.9	0.035	6,033.59	6,029.63	12.96	6,041.96	6,037.09	6,035.07	6,031.68	6,035.68	6,031.98	0.072	0.013
DPA15-17	Pipe - (114)	20.66	30.0	99.3	0.035	6,029.43	6,025.95	13.27	6,037.09	6,032.79	6,030.97	6,026.86	6,031.63	6,029.41	1.084	0.013
DPA15-16	Pipe - (116)	20.66	30.0	279.2	0.032	6,025.75	6,016.71	12.90	6,032.79	6,024.11	6,027.29	6,017.61	6,027.95	6,020.20	0.070	0.013
DPA15-15	Pipe - (117)	20.66	30.0	76.2	0.030	6,016.51	6,014.22	12.55	6,024.11	6,022.52	6,018.05	6,016.53	6,018.71	6,016.82	0.079	0.013
DPA15-14	Pipe - (119)	24.48	30.0	31.0	0.030	6,013.90	6,012.97	13.13	6,022.52	6,021.87	6,015.59	6,014.86	6,016.34	6,015.45	1.253	0.013
DPA15-13	Pipe - (120)	36.70	30.0	49.1	0.030	6,012.73	6,011.26	14.58	6,021.87	6,020.86	6,014.78	6,012.70	6,015.91	6,015.15	0.068	0.013
DPA15-12	Pipe - (121)	36.70	30.0	64.8	0.030	6,010.94	6,009.00	14.58	6,020.86	6,019.16	6,012.99	6,011.53	6,014.12	6,012.40	0.074	0.013
DPA15-11	Pipe - (122)	29.46	36.0	44.8	0.025	6,008.72	6,007.60	12.79	6,019.16	6,017.56	6,010.48	6,009.55	6,011.21	6,010.12	1.444	0.013
DPA15-10	Pipe - (122) (1)	30.40	42.0	16.0	0.017	6,007.10	6,006.83	11.07	6,017.56	6,017.00	6,008.80	6,008.21	6,009.47	6,009.36	1.128	0.013
DPA15-9	Pipe - (122) (1) (1)	30.40	42.0	46.0	0.017	6,006.83	6,006.07	10.98	6,017.00	6,016.01	6,008.53	6,008.01	6,009.20	6,008.49	0.000	0.013
DPA18-4	Pipe - (123)	1.12	18.0	156.0	0.045	6,028.58	6,021.55	6.58	6,039.47	6,027.73	6,028.98	6,021.78	6,029.12	6,022.45	1.068	0.013
DPA18-2	Pipe - (125) (1)	3.91	18.0	51.0	0.020	6,017.38	6,016.36	7.09	6,024.66	6,023.16	6,018.14	6,016.89	6,018.43	6,017.66	1.075	0.013
DPA18-1	Pipe - (125) (1) (1)	3.91	18.0	56.9	0.020	6,016.36	6,015.22	7.09	6,023.16	6,022.52	6,017.12	6,016.53	6,017.41	6,016.62	0.000	0.013
DPA18-3	Pipe - (125) (2)	1.46	18.0	89.5	0.038	6,021.12	6,017.76	6.68	6,027.73	6,024.66	6,021.57	6,018.46	6,021.74	6,018.51	0.959	0.013
DPA43-1	Pipe - (126)	0.67	18.0	35.2	0.025	6,065.48	6,064.60	4.60	6,070.97	6,070.79	6,065.78	6,065.43	6,065.89	6,065.43	1.000	0.013
DPA43-2	Pipe - (127)	7.36	30.0	11.2	0.020	6,063.70	6,063.48	8.05	6,070.88	6,070.79	6,065.42	6,065.43	6,065.48	6,065.48	1.050	0.013
DPA22-19	Pipe - (142)	14.75	30.0	114.1	0.005	6,063.28	6,062.71	5.93	6,070.79	6,071.97	6,064.57	6,063.97	6,065.09	6,064.52	1.660	0.013
DPA22-18	Pipe - (142) (1)	14.75	30.0	191.2	0.005	6,062.51	6,061.55	5.94	6,071.97	6,077.15	6,063.80	6,062.81	6,064.32	6,063.36	0.050	0.013
DPA22-17	Pipe - (143)	14.75	30.0	300.0	0.005	6,061.35	6,059.85	5.93	6,077.15	6,073.48	6,062.64	6,061.11	6,063.16	6,061.66	0.050	0.013
DPA22-16	Pipe - (144)	14.75	30.0	269.6	0.022	6,059.65	6,053.80	10.16	6,073.48	6,062.96	6,060.94	6,054.64	6,061.46	6,056.25	0.050	0.013
DPA22-15	Pipe - (146) (1)	14.75	30.0	223.0	0.035	6,053.60	6,045.80	12.07	6,062.96	6,054.27	6,054.89	6,046.54	6,055.41	6,048.81	0.061	0.013
DPA22-14	Pipe - (147)	14.75	30.0	222.9	0.035	6,044.55	6,036.75	12.07	6,054.27	6,045.58	6,045.84	6,037.49	6,046.36	6,039.76	0.072	0.013
DPA22-13	Pipe - (148)	17.48	30.0	69.2	0.038	6,035.50	6,032.88	13.03	6,045.58	6,042.81	6,036.92	6,034.86	6,037.49	6,035.13	1.239	0.013
DPA22-12	Pipe - (149)	41.74	42.0	111.4	0.024	6,031.82	6,029.10	13.81	6,042.81	6,038.47	6,033.83	6,030.39	6,034.66	6,033.00	1.247	0.013
DPA22-11	Pipe - (152)	41.74	42.0	175.8	0.025	6,028.06	6,023.75	13.83	6,038.47	6,031.66	6,030.07	6,024.99	6,030.90	6,027.89	0.057	0.013
DPA22-9	Pipe - (154)	41.74	42.0	169.6	0.025	6,023.27	6,019.03	13.93	6,031.66	6,029.17	6,025.28	6,021.45	6,026.11	6,021.99	0.074	0.013
DPA22-8	Pipe - (156)	44.35	48.0	115.3	0.020	6,018.53	6,016.23	12.93	6,029.17	6,030.48	6,020.52	6,017.56	6,021.30	6,019.87	1.190	0.013
DPA26-3	Pipe - (169)	5.32	18.0	19.4	0.025	6,041.23	6,040.75	8.34	6,051.43	6,050.38	6,042.12	6,041.39	6,042.49	6,042.23	1.160	0.013
DPA26-1	Pipe - (169) (1) (2)	5.32	24.0	42.9	0.037	6,035.82	6,034.21	9.44	6,042.26	6,041.63	6,036.63	6,035.25	6,036.94	6,035.41	0.000	0.013
DPA26-2	Pipe - (169) (3) (1)	5.32	24.0	118.3	0.037	6,040.25	6,035.82	9.43	6,050.38	6,042.26	6,041.06	6,036.29	6,041.37	6,037.67	0.480	0.013
DPA24-3	Pipe - (170)	33.10	36.0	139.2	0.032	6,029.68	6,025.16	14.52	6,038.99	6,034.23	6,031.55	6,027.13	6,032.34	6,027.83	0.086	0.013
DPA24-2	Pipe - (173)	35.82	36.0	40.8	0.030	6,024.29	6,023.08	14.36	6,034.23	6,032.69	6,026.24	6,024.41	6,027.08	6,026.57	1.056	0.013
DPA24-1	Pipe - (173) (2)	35.82	36.0	64.2	0.031	6,023.08	6,021.10	14.56	6,032.69	6,030.48	6,025.03	6,022.36	6,025.87	6,024.89	0.000	0.013
DPA25-2	Pipe - (174) (1)	1.00	18.0	16.3	0.030	6,028.05	6,027.56	5.52	6,034.78	6,034.23	6,028.42	6,027.81	6,028.56	6,028.24	1.000	0.013
DPA31-2	Pipe - (175)	0.00	18.0	14.5	0.020	6,021.32	6,021.03	0.00	6,031.02	6,029.17	6,021.45	6,021.45	6,021.45	6,021.45	1.000	0.013
DPA31-1	Pipe - (176)	2.68	18.0	49.1	0.020	6,022.01	6,021.03	6.37	6,028.48	6,029.17	6,022.63	6,021.46	6,022.86	6,022.09	1.000	0.013
DPA38-7	Pipe - (177)	5.94	24.0	99.9	0.025	6,085.73	6,083.23	8.43	6,091.38	6,091.82	6,086.59	6,084.22	6,086.92	6,084.45	1.000	0.013
DPA38-6	Pipe - (178)	5.94	24.0	43.9	0.025	6,083.03	6,081.93	8.44	6,091.82	6,089.37	6,083.89	6,082.50	6,084.22	6,083.51	1.010	0.013
DPA38-4	Pipe - (178) (1) (3) (1)	5.94	24.0	138.0	0.050	6,074.11	6,067.21	10.79	6,080.31	6,073.00	6,074.97	6,068.54	6,075.30	6,068.65	0.072	0.013
DPA38-3	Pipe - (178) (1) (3) (1) (2)	7.85	24.0	133.3	0.050	6,067.01	6,060.35	11.69	6,073.00	6,067.86	6,068.01	6,061.36	6,068.40	6,061.74	1.365	0.013
DPA38-5	Pipe - (178) (1) (4)	5.94	24.0	165.1	0.045	6,081.73	6,074.31	10.39	6,089.37	6,080.31	6,082.59	6,074.79	6,082.92	6,076.46	0.074	0.013
DPA33-6	Pipe - (182)	16.18	30.0	64.0	0.042	6,046.35	6,043.69	13.17	6,056.59	6,054.21	6,047.71	6,045.26	6,048.26	6,045.65	1.010	0.013
DPA33-5	Pipe - (183)	19.64	36.0	147.9	0.030	6,043.13	6,038.69	12.19	6,054.21	6,048.59	6,044.55	6,040.70	6,045.10	6,040.94	1.292	0.013
DPA33-4	Pipe - (184)	21.20	36.0	136.7	0.024	6,038.49	6,035.27	11.42	6,048.59	6,044.26	6,039.97	6,036.20	6,040.55	6,038.21	1.260	0.013
DPA33-3	Pipe - (184) (1)	21.20	36.0	36.0	0.025	6,035.07	6,034.16	11.71	6,044.26	6,043.61	6,036.55	6,036.28	6,037.13	6,036.53	0.066	0.013
DPA33-2	Pipe - (185)	24.30	36.0	9.1	0.024	6,033.96	6,033.74	11.97	6,043.61	6,042.87	6,035.55	6,035.03	6,036.18	6,036.12	1.158	0.013
DPA33-1	Pipe - (185) (1)	24.30	36.0	54.2	0.025	6,033.74	6,032.38	12.13	6,042.87	6,042.81	6,035.33	6,034.86	6,035.96	6,035.10	0.000	0.013
DPA40-3	Pipe - (186)	2.78	18.0	113.1	0.040	6,081.17	6,076.65	8.24	6,085.03	6,081.89	6,081.80	6,077.02	6,082.04	6,078.07	1.000	0.013
DPA40-2	Pipe - (187)	2.78	18.0	32.2	0.010	6,076.45	6,076.13	5.01	6,081.89	6,082.92	6,077.08	6,076.66	6,077.32	6,077.05	0.088	0.013
DPA40-1	Pipe - (188)	2.78	18.0	116.3	0.010	6,075.93	6,074.77	5.02	6,082.92	6,081.20	6,076.56	6,075.65	6,076.80	6,075.75	0.515	0.013

DPA33-16	Pipe - (190)	0.77	18.0	49.7	0.044	6,086.14	6,083.94	5.86	6,092.09	6,090.04	6,086.47	6,084.13	6,086.58	6,084.66	0.533	0.013
DPA33-14	Pipe - (190) (1) (1)	3.73	18.0	92.0	0.044	6,074.57	6,070.48	9.32	6,081.20	6,076.62	6,075.31	6,070.90	6,075.60	6,072.25	1.170	0.013
DPA33-15	Pipe - (190) (2)	0.97	18.0	179.8	0.050	6,083.74	6,074.77	6.54	6,090.04	6,081.20	6,084.11	6,075.65	6,084.24	6,075.66	1.176	0.013
DPA33-13	Pipe - (191) (1)	3.73	18.0	62.1	0.050	6,070.28	6,067.18	9.71	6,076.62	6,073.55	6,071.02	6,067.58	6,071.31	6,069.05	0.061	0.013
DPA33-12	Pipe - (192) (1)	3.73	18.0	72.4	0.054	6,066.98	6,063.04	10.02	6,073.55	6,070.02	6,067.72	6,063.44	6,068.01	6,064.99	0.066	0.013
DPA33-11	Pipe - (193) (1)	3.73	18.0	58.2	0.060	6,062.84	6,059.35	10.37	6,070.02	6,067.16	6,063.58	6,059.74	6,063.87	6,061.41	0.063	0.013
DPA33-10	Pipe - (194)	12.71	30.0	75.2	0.035	6,057.85	6,055.22	11.57	6,067.16	6,063.48	6,059.05	6,055.93	6,059.51	6,057.86	1.159	0.013
DPA33-9	Pipe - (195)	12.71	30.0	69.5	0.035	6,055.02	6,052.59	11.56	6,063.48	6,060.35	6,056.22	6,054.14	6,056.68	6,054.39	0.066	0.013
DPA33-8	Pipe - (195) (1)	14.71	30.0	93.8	0.040	6,052.32	6,048.57	12.65	6,060.35	6,057.47	6,053.61	6,050.36	6,054.13	6,050.60	1.035	0.013
DPA33-7	Pipe - (195) (1) (1) (1)	16.18	30.0	42.7	0.043	6,048.37	6,046.55	13.29	6,057.47	6,056.59	6,049.73	6,048.26	6,050.28	6,048.58	1.159	0.013
DPA14-3	Pipe - (196)	1.29	18.0	16.6	0.015	6,036.25	6,036.00	4.67	6,041.79	6,041.72	6,036.68	6,036.33	6,036.83	6,036.64	1.000	0.013
DPA14-2	Pipe - (197)	3.27	18.0	33.7	0.015	6,036.51	6,036.00	6.10	6,041.79	6,041.72	6,037.20	6,036.52	6,037.46	6,037.07	0.078	0.013
DPA1-21	Pipe - (198)	10.64	30.0	220.7	0.005	6,034.27	6,033.16	5.46	6,041.72	6,044.49	6,035.66	6,035.61	6,035.89	6,035.68	1.542	0.013
DPA1-20	Pipe - (198) (1)	13.75	30.0	160.8	0.005	6,032.96	6,032.16	5.82	6,044.49	6,042.47	6,034.21	6,033.37	6,034.70	6,033.90	2.857	0.013
DPA1-19	Pipe - (199) (1)	13.75	30.0	234.9	0.028	6,031.96	6,025.33	10.95	6,042.47	6,032.43	6,033.21	6,027.05	6,033.70	6,027.28	0.050	0.013
DPA1-18	Pipe - (201) (3)	15.30	30.0	286.2	0.045	6,025.13	6,012.25	13.34	6,032.43	6,018.97	6,026.45	6,012.96	6,026.98	6,015.73	1.143	0.013
DPA1-16	Pipe - (203)	15.30	30.0	72.4	0.045	6,011.25	6,008.00	13.33	6,018.97	6,015.13	6,012.57	6,008.74	6,013.10	6,011.22	0.094	0.013
DPA1-15	Pipe - (205)	18.00	30.0	60.8	0.045	6,006.75	6,004.01	13.98	6,015.13	6,012.05	6,008.19	6,006.12	6,008.78	6,006.38	1.212	0.013
DPA1-14	Pipe - (205) (1)	29.14	36.0	74.0	0.025	6,003.51	6,001.66	12.75	6,012.05	6,008.75	6,005.26	6,002.81	6,005.98	6,004.93	1.189	0.013
DPA1-12	Pipe - (209)	38.45	48.0	29.3	0.017	5,995.93	5,995.42	11.82	6,004.83	6,004.77	5,997.99	5,998.23	5,998.53	5,998.49	1.770	0.013
DPA1-13	Pipe - (214)	29.14	36.0	165.8	0.023	6,000.66	5,996.93	12.27	6,008.75	6,004.83	6,002.41	5,998.95	6,003.13	5,999.46	0.090	0.013
DPA1-11	Pipe - (215)	43.64	54.0	36.8	0.017	5,994.92	5,994.28	12.12	6,004.77	6,004.87	5,996.83	5,995.72	5,997.55	5,997.27	1.944	0.013
DPA1-10	Pipe - (215) (1)	43.64	54.0	69.6	0.018	5,994.28	5,993.06	12.16	6,004.87	6,005.71	5,996.19	5,995.55	5,996.91	5,995.91	0.000	0.013
DPA1-9	Pipe - (216)	44.31	54.0	95.1	0.018	5,992.86	5,991.19	12.22	6,005.71	6,007.42	5,994.78	5,992.52	5,995.51	5,994.51	1.060	0.013
DPA5-3	Pipe - (225)	9.35	24.0	190.6	0.021	6,003.82	5,999.82	8.99	6,011.20	6,005.74	6,004.91	6,000.55	6,005.35	6,001.81	1.061	0.013
DPA5-2	Pipe - (225) (1)	9.35	24.0	32.3	0.021	5,999.82	5,999.14	9.00	6,005.74	6,006.00	6,000.91	6,000.50	6,001.35	6,000.76	0.000	0.013
DPA5-1	Pipe - (226)	9.35	24.0	35.2	0.023	5,998.94	5,998.13	9.30	6,006.00	6,004.83	6,000.03	5,998.90	6,000.47	6,000.01	1.050	0.013
DPA4-2	Pipe - (227)	5.32	18.0	13.9	0.050	5,999.12	5,998.42	10.76	6,004.68	6,004.77	6,000.01	5,998.99	6,000.38	6,000.13	1.000	0.013
DPR7-2	Pipe - (229)	1.23	18.0	84.8	0.010	6,066.15	6,065.30	3.98	6,077.42	6,077.41	6,066.56	6,066.42	6,066.71	6,066.43	0.000	0.013
DPR7-1	Pipe - (229) (1)	3.25	18.0	59.4	0.010	6,065.89	6,065.30	5.22	6,077.07	6,077.41	6,066.58	6,066.42	6,066.84	6,066.50	0.000	0.013
DPR6-1	Pipe - (236)	4.54	18.0	142.0	0.010	6,050.57	6,049.15	5.72	6,055.37	6,056.71	6,051.39	6,050.39	6,051.72	6,050.52	0.000	0.013
DPR2-7	Pipe - (237)	10.70	24.0	105.7	0.030	6,048.65	6,045.51	10.59	6,056.71	6,052.84	6,049.82	6,046.98	6,050.31	6,047.27	1.174	0.013
DPR2-6	Pipe - (239)	11.65	24.0	123.1	0.020	6,045.19	6,042.73	9.37	6,052.84	6,048.61	6,046.42	6,043.57	6,046.93	6,044.93	1.083	0.013
DPR2-5	Pipe - (240)	11.65	24.0	71.3	0.018	6,042.53	6,041.28	8.93	6,048.61	6,047.13	6,043.76	6,042.56	6,044.27	6,043.03	0.057	0.013
DPR2-4	Pipe - (241)	12.40	30.0	70.8	0.005	6,040.78	6,040.42	5.71	6,047.13	6,046.63	6,042.26	6,042.25	6,042.52	6,042.41	1.153	0.013
DPR2-3	Pipe - (243)	15.99	30.0	84.8	0.005	6,040.22	6,039.80	6.03	6,046.63	6,047.25	6,041.57	6,041.13	6,042.11	6,041.69	1.244	0.013
DPR2-2	Pipe - (244) (1)	15.99	30.0	131.9	0.005	6,039.60	6,038.94	6.05	6,047.25	6,048.15	6,040.95	6,040.26	6,041.49	6,040.83	0.129	0.013
DPR2-1	Pipe - (245)	15.99	36.0	50.0	0.010	6,038.44	6,037.94	7.75	6,048.15	6,047.56	6,039.72	6,039.23	6,040.20	6,039.70	0.050	0.013
DPR3-1	Pipe - (246)	2.68	18.0	9.7	0.023	6,041.84	6,041.62	6.66	6,046.82	6,046.63	6,042.46	6,042.25	6,042.69	6,042.47	0.000	0.013
DPR3-2	Pipe - (247)	0.95	18.0	35.1	0.020	6,042.32	6,041.62	4.71	6,046.83	6,046.63	6,042.68	6,042.25	6,042.81	6,042.27	0.000	0.013
DPA2-4	Pipe - (262)	1.95	18.0	51.0	0.025	5,986.49	5,985.22	6.28	5,992.40	5,991.23	5,987.02	5,986.69	5,987.21	5,986.71	1.000	0.013
DPA2-3	Pipe - (262) (1) (1)	2.44	18.0	22.9	0.020	5,984.41	5,983.95	1.38	5,991.23	5,991.73	5,986.66	5,986.65	5,986.69	5,986.68	1.000	0.013
DPA2-2	Pipe - (264) (1)	3.40	18.0	84.6	0.025	5,983.75	5,981.60	1.92	5,991.73	5,981.80	5,986.59	5,986.50	5,986.65	5,986.56	1.000	0.013
DPA16-1	Pipe - (337)	5.26	30.0	192.5	0.006	6,007.13	6,006.07	4.64	6,012.66	6,016.01	6,007.98	6,008.01	6,008.18	6,008.04	1.000	0.013
DPA21-1	Pipe - (344)	1.47	18.0	31.2	0.050	6,046.64	6,045.08	7.41	6,053.01	6,052.75	6,047.09	6,045.33	6,047.26	6,046.19	0.000	0.013
DPR1-0	Pipe - (353)	26.70	60.0	27.2	0.010	5,974.43	5,974.16	8.53	5,987.86	5,989.50	5,976.24	5,976.31	5,976.51	5,976.48	0.001	0.013
DPA1-1D	Pipe - (357) (1)	56.29	72.0	27.4	0.011	5,967.78	5,967.47	10.87	5,985.89	5,977.96	5,969.78	5,969.11	5,970.50	5,970.36	0.050	0.013
DPA1-1C	Pipe - (357) (1) (1)	56.29	72.0	30.1	0.012	5,956.36	5,956.00	1.99	5,977.96	5,969.65	5,964.85	5,964.84	5,964.91	5,964.91	0.050	0.013
DPA22-22	Pipe - (362)	6.27	18.0	43.5	0.015	6,067.53	6,066.88	7.23	6,078.66	6,074.61	6,068.50	6,068.06	6,068.92	6,068.34	0.000	0.013
DPA22-21	Pipe - (363)	6.27	18.0	100.3	0.015	6,066.68	6,065.17	7.24	6,074.61	6,071.70	6,067.65	6,065.91	6,068.07	6,066.72	0.992	0.013
DPA22-20	Pipe - (363) (1)	6.86	24.0	89.0	0.010	6,064.67	6,063.78	6.32	6,071.70	6,070.79	6,065.60	6,065.43	6,065.96	6,065.52	1.201	0.013
DPA43-3	Pipe - (364)	6.11	24.0	27.7	0.020	6,064.75	6,064.20	7.83	6,073.59	6,070.88	6,065.62	6,065.48	6,065.96	6,065.61	0.000	0.013
DPR2-13	Pipe - (365)	4.47	18.0	69.5	0.010	6,064.80	6,064.11	5.69	6,077.41	6,074.91	6,065.61	6,064.79	6,065.94	6,065.30	2.466	0.013
DPR2-12	Pipe - (366)	4.47	18.0	125.9	0.010	6,063.91	6,062.65	5.70	6,074.91	6,070.48	6,064.72	6,063.33	6,065.05	6,063.84	0.061	0.013
DPR2-11	Pipe - (367) (1)	4.47	18.0	109.9	0.020	6,062.45	6,060.25	7.36	6,070.48	6,066.60	6,063.26	6,060.81	6,063.59	6,061.66	0.058	0.013
DPR2-10	Pipe - (367) (1) (1)	4.47	18.0	106.2	0.035	6,060.05	6,056.34	8.99	6,066.60	6,062.85	6,060.86	6,056.83	6,061.19	6,058.08	0.058	0.013
DPR2-9	Pipe - (368) (1)	4.47	18.0	83.2	0.035	6,056.14	6,053.23	9.00	6,062.85	6,059.83	6,056.95	6,054.52	6,057.28	6,054.64	0.059	0.013
DPR2-8	Pipe - (368) (1) (1)	6.20	18.0	91.8	0.035	6,053.03	6,049.82	9.85	6,059.83	6,056.71	6,053.99	6,050.40	6,054.41	6,051.91	1.263	0.013
DPA17-1	Pipe - (369)	1.01	18.0	9.0	0.050	6,009.55	6,009.10	6.63	6,017.82	6,017.56	6,009.92	6,009.55	6,010.06	6,009.63	1.000	0.013
DPA17A-1	Pipe - (370)	5.13	18.0	31.2	0.010	6,010.41	6,010.10	5.90	6,019.67	6,019.16	6,011.53	6,011.53	6,011.74	6,011.66	1.000	0.013
DPA24-10	Pipe - (371) (1)	14.33	30.0	45.2	0.035	6,064.91	6,063.33	11.97	6,072.60	6,070.88	6,066.19	6,065.14	6,066.69	6,065.36	1.107	0.013
DPA24-11	Pipe - (371) (2) (1)	18.80	30.0	274.8	0.032	6,074.04	6,065.11	12.58	6,082.22	6,072.60	6,075.51	6,066.74	6,076.12	6,067.22	1.010	0.013
DPA25-1	Pipe - (374)	1.72	18.0	43.3	0.020	6,028.43	6,027.56	5.62	6,034.40	6,034.23	6,028.92	6,027.90	6,029.10	6,028.40	1.000	0.013
DPA36-2	Pipe - (375)	0.49	18.0	31.0	0.030	6,048.14	6,047.21	4.46	6,054.47	6,054.21	6,048.40	6,047.38	6,048.49	6,047.69	1.000	0.013
DPA36-1	Pipe - (376)	3.04	18.0	9.0	0.030	6,047.48	6,047.21	7.64	6,054.45	6,054.21	6,048.14	6,047.69	6,048.40	6,048.29	1.000	0.013
DPA29-2	Pipe - (377)	1.04	18.0	5.1	0.020	6,079.82	6,079.72	4.82	6,085.84	6,085.80	6,080.28	6,080.31	6,080.36	6,080.35	1.000	0.013
DPA29-1	Pipe - (378)	0.68	18.0	35.6	0.020	6,080.43	6,079.72	4.26	6,086.37	6,085.80	6,080.74	6,080.31	6,080.84	6,080.33	1.000	0.013
DPA18-7	Pipe - (411)	0.69	18.0	24.4	0.050	6,036.33	6,035.11	5.91	6,040.87	6,040.90	6,036.64	6,035.29	6,036.75	6,035.83	1.000	0.013
DPA18-6	Pipe - (412)	0.69	18.0	14.8	0.050	6,034.91	6,034.17	5.90	6,040.90	6,040.04	6,035.22	6,034.35	6,035.33	6,034.86	1.000	0.013
DPA18-5	Pipe - (413)	0.69	18.0	109.2	0.048	6,033.97	6,028.78	5.80	6,040.04	6,039.47	6,034.28	6,029.13	6,034.39	6,029.20	0.176	0.013
DPA5-9																

	Pipe - (414)	3.55	18.0	67.3	0.037	6,017.61	6,015.09	8.64	6,023.03	6,020.33	6,018.33	6,015.51	6,018.61	6,016.68	1.119	0.013
DPA5-8	Pipe - (415)	3.55	18.0	65.7	0.037	6,014.89	6,012.43	8.64	6,020.33	6,017.90	6,015.61	6,012.85	6,015.89	6,014.02	0.264	0.013
DPA5-7	Pipe - (416)	3.55	18.0	83.9	0.037	6,012.23	6,009.09	8.64	6,017.90	6,014.82	6,012.95	6,009.51	6,013.23	6,010.68	0.280	0.013
DPA5-6	Pipe - (417)	3.55	18.0	81.4	0.035	6,008.89	6,006.04	8.44	6,014.82	6,012.14	6,009.61	6,006.47	6,009.89	6,007.58	0.074	0.013
DPA5-5	Pipe - (418) (1)	3.55	18.0	28.1	0.026	6,005.80	6,005.08	7.55	6,012.14	6,011.57	6,006.52	6,006.41	6,006.80	6,006.48	0.515	0.013
DPA6-1	Pipe - (419)	1.15	18.0	35.9	0.020	6,018.68	6,017.96	4.99	6,023.90	6,023.03	6,019.08	6,018.64	6,019.22	6,018.68	0.000	0.013
DPA6-2	Pipe - (420)	2.40	18.0	22.9	0.021	6,018.44	6,017.96	6.25	6,024.39	6,023.03	6,019.02	6,018.64	6,019.24	6,018.79	0.000	0.013
DPA7-4	Pipe - (421)	1.31	18.0	12.2	0.030	6,014.49	6,014.12	6.00	6,019.17	6,019.15	6,015.13	6,015.16	6,015.18	6,015.18	1.000	0.013
DPA7-3	Pipe - (422)	4.80	18.0	205.7	0.031	6,013.92	6,007.54	8.79	6,019.15	6,013.09	6,014.76	6,008.06	6,015.11	6,009.26	1.166	0.013
DPA7-2	Pipe - (422) (1)	4.80	18.0	81.8	0.031	6,007.54	6,005.01	8.78	6,013.09	6,012.05	6,008.38	6,006.12	6,008.73	6,006.30	0.000	0.013
DPA8-3	Pipe - (424)	3.52	18.0	132.2	0.040	6,021.86	6,016.57	8.83	6,028.81	6,022.31	6,022.58	6,016.99	6,022.85	6,018.20	1.296	0.013
DPA8-2	Pipe - (425)	3.52	18.0	40.4	0.020	6,016.37	6,015.57	6.87	6,022.31	6,021.19	6,017.09	6,016.08	6,017.36	6,016.78	0.070	0.013
DPA8-1	Pipe - (425) (1)	3.52	18.0	72.4	0.020	6,015.57	6,014.12	6.89	6,021.19	6,019.15	6,016.29	6,015.16	6,016.56	6,015.27	0.000	0.013
DPA12-3	Pipe - (426)	2.08	18.0	46.2	0.020	6,044.84	6,043.92	5.92	6,050.23	6,049.83	6,045.38	6,044.54	6,045.58	6,044.68	0.000	0.013
DPA12-2	Pipe - (426) (1) (1)	3.14	18.0	168.0	0.035	6,043.52	6,037.64	8.14	6,049.83	6,045.42	6,044.19	6,038.05	6,044.45	6,039.08	1.349	0.013
DPA12-1	Pipe - (426) (1) (1) (1)	3.14	18.0	84.0	0.035	6,037.64	6,034.70	8.14	6,045.42	6,044.49	6,038.31	6,035.61	6,038.57	6,035.73	0.000	0.013
DPA35-1	Pipe - (430) (1)	1.60	18.0	9.2	0.010	6,040.08	6,039.99	4.27	6,048.85	6,048.59	6,040.68	6,040.70	6,040.77	6,040.76	1.099	0.013
DPA35-2	Pipe - (430) (2)	1.46	18.0	41.4	0.010	6,040.69	6,040.28	4.17	6,043.48	6,048.85	6,041.14	6,040.78	6,041.31	6,040.90	1.000	0.013
DPA39-1	Pipe - (431)	1.22	18.0	31.2	0.045	6,062.25	6,060.85	6.75	6,066.51	6,067.86	6,062.66	6,061.36	6,062.81	6,061.44	1.000	0.013
DPA39A-1	Pipe - (432)	2.05	18.0	9.2	0.050	6,067.97	6,067.51	8.17	6,073.17	6,073.00	6,068.51	6,068.54	6,068.71	6,068.58	1.000	0.013
DPA38-1	Pipe - (433)	9.02	30.0	19.2	0.030	6,058.92	6,058.35	9.89	6,067.07	6,067.16	6,059.92	6,059.59	6,060.30	6,059.80	0.063	0.013
DPA38-2	Pipe - (434)	9.02	30.0	24.3	0.030	6,059.85	6,059.12	9.92	6,067.86	6,067.07	6,060.85	6,059.79	6,061.23	6,060.90	1.362	0.013
DPA24-14	Pipe - (435)	10.21	24.0	41.7	0.037	6,080.28	6,078.72	11.36	6,087.39	6,085.80	6,081.42	6,080.31	6,081.89	6,080.54	1.690	0.013
DPA24-15	Pipe - (436)	5.14	18.0	144.7	0.040	6,086.56	6,080.78	9.82	6,093.55	6,087.39	6,087.43	6,082.22	6,087.79	6,082.35	0.072	0.013
DPA24-16	Pipe - (437)	5.14	18.0	119.6	0.040	6,091.54	6,086.76	9.82	6,098.22	6,093.55	6,092.41	6,087.27	6,092.77	6,088.76	1.010	0.013
DPA24-17	Pipe - (439)	5.14	18.0	45.7	0.040	6,093.57	6,091.74	9.82	6,099.28	6,098.22	6,094.44	6,092.78	6,094.80	6,093.02	0.000	0.013
DPA30-1	Pipe - (444)	5.08	18.0	40.6	0.020	6,082.09	6,081.28	7.61	6,087.88	6,087.39	6,082.96	6,082.22	6,083.31	6,082.51	0.000	0.013
DPR4-1	Pipe - (448)	0.78	18.0	32.5	0.025	6,042.99	6,042.18	4.80	6,048.90	6,047.13	6,043.32	6,042.56	6,043.43	6,042.64	0.000	0.013
DPR5-1	Pipe - (449)	0.99	18.0	32.5	0.020	6,046.66	6,046.01	4.77	6,054.57	6,052.84	6,047.03	6,046.98	6,047.16	6,046.99	0.000	0.013
DPA26-4	Pipe - (516)	4.00	18.0	37.4	0.030	6,042.55	6,041.43	8.25	6,051.65	6,051.43	6,043.32	6,042.55	6,043.62	6,042.67	1.010	0.013
DPA28-2	Pipe - (517)	0.68	18.0	41.2	0.020	6,067.45	6,066.62	4.27	6,072.88	6,072.60	6,067.75	6,066.84	6,067.86	6,067.12	1.000	0.013
DPA28-1	Pipe - (518)	1.75	18.0	9.8	0.020	6,066.82	6,066.62	5.64	6,072.82	6,072.60	6,067.31	6,067.00	6,067.50	6,067.39	1.000	0.013
DPA27-1	Pipe - (520)	1.58	18.0	156.6	0.025	6,068.74	6,064.82	5.92	6,074.83	6,070.88	6,069.21	6,065.14	6,069.38	6,065.68	1.000	0.013
DPA37-1	Pipe - (521)	1.48	18.0	31.2	0.040	6,051.86	6,050.61	6.87	6,056.44	6,057.47	6,052.32	6,050.88	6,052.48	6,051.61	1.000	0.013
DPA37A-1	Pipe - (522)	2.05	18.0	9.2	0.050	6,054.35	6,053.89	8.18	6,060.53	6,060.35	6,054.89	6,054.24	6,055.09	6,054.92	1.000	0.013
DPA33-17	Pipe - (524)	0.77	18.0	126.6	0.050	6,092.67	6,086.34	6.12	6,098.75	6,092.09	6,093.00	6,086.53	6,093.11	6,087.11	1.000	0.013
DPA34-1	Pipe - (526)	3.11	18.0	9.2	0.020	6,036.34	6,036.16	6.60	6,044.13	6,043.61	6,037.01	6,036.69	6,037.27	6,037.18	1.000	0.013
DPA42-1	Pipe - (527)	1.77	18.0	15.7	0.020	6,038.81	6,038.50	5.63	6,045.62	6,045.58	6,039.31	6,038.87	6,039.49	6,039.30	1.000	0.013
DPA42-2	Pipe - (528)	0.93	18.0	33.7	0.023	6,039.26	6,038.50	4.88	6,045.68	6,045.58	6,039.62	6,038.75	6,039.75	6,039.12	1.000	0.013
DPA8-4	Pipe - (529)	0.95	18.0	40.0	0.027	6,023.16	6,022.06	5.27	6,029.59	6,028.81	6,023.52	6,022.94	6,023.65	6,022.95	1.000	0.013
DPA5-4	Pipe - (530)	5.70	18.0	37.5	0.015	6,004.88	6,004.32	7.05	6,011.57	6,011.20	6,005.80	6,005.38	6,006.19	6,005.66	1.568	0.013
DPA13-1	Pipe - (532)	1.08	18.0	55.2	0.035	6,045.85	6,043.92	5.96	6,051.96	6,049.83	6,046.24	6,044.54	6,046.38	6,044.58	0.000	0.013
DPA10-1	Pipe - (533)	2.77	18.0	35.0	0.020	6,009.70	6,009.00	6.43	6,015.32	6,015.13	6,010.33	6,009.45	6,010.57	6,010.06	0.088	0.013
DPA7-1	Pipe - (538)	6.36	18.0	57.7	0.010	6,005.59	6,005.01	6.24	6,012.78	6,012.05	6,006.57	6,006.12	6,006.99	6,006.44	0.000	0.013
DPR2-0	Pipe - (539)	15.99	36.0	53.5	0.010	6,037.95	6,037.42	7.75	6,047.56	6,046.03	6,039.23	6,038.45	6,039.71	6,039.31	0.000	0.013
DPA20-1	Pipe - (542)	1.03	18.0	8.9	0.020	6,048.06	6,047.88	4.86	6,053.28	6,053.05	6,049.20	6,049.20	6,049.21	6,049.21	1.000	0.013
DPA19-1	Pipe - (544)	1.66	18.0	31.2	0.020	6,031.26	6,030.63	5.57	6,037.42	6,037.09	6,031.74	6,031.68	6,031.92	6,031.71	0.000	0.013
DPA26-5	Pipe - (545)	2.09	18.0	110.0	0.048	6,047.98	6,042.75	8.07	6,053.24	6,051.65	6,048.53	6,043.62	6,048.73	6,043.68	1.000	0.013
DPA41-1	Pipe - (546)	0.20	18.0	25.1	0.015	6,084.82	6,084.44	2.69	6,088.51	6,090.04	6,084.98	6,084.57	6,085.04	6,084.68	1.000	0.013
DPA10-2	Pipe - (547)	2.09	18.0	19.0	0.020	6,010.28	6,009.90	5.93	6,015.66	6,015.32	6,010.83	6,010.30	6,011.03	6,010.78	0.000	0.013
DPA1-23	Pipe - (549)	6.11	24.0	76.0	0.012	6,039.07	6,038.12	6.63	6,044.45	6,044.56	6,039.94	6,039.13	6,040.28	6,039.36	0.000	0.013
DPA3-1	Pipe - (551)	1.86	18.0	77.7	0.025	5,997.03	5,995.09	6.21	6,003.28	6,005.58	5,997.54	5,995.43	5,997.73	5,996.03	1.000	0.013
DPA11-1	Pipe - (552)	1.58	18.0	56.3	0.015	6,027.19	6,026.33	4.98	6,033.02	6,032.43	6,027.66	6,027.05	6,027.83	6,027.11	0.000	0.013
DPA1-22	Pipe - (553)	6.11	24.0	210.3	0.015	6,037.92	6,034.77	7.07	6,044.56	6,041.72	6,038.79	6,036.01	6,039.13	6,036.15	1.010	0.013
DPA44-1	Pipe - (555)	0.74	18.0	53.3	0.025	6,066.50	6,065.17	4.73	6,072.13	6,071.70	6,066.82	6,066.03	6,066.93	6,066.04	1.000	0.013
DPA15-8	Pipe - (556)	35.59	54.0	85.0	0.005	6,005.57	6,005.15	7.28	6,016.01	6,016.33	6,007.28	6,007.36	6,007.92	6,007.68	1.147	0.013
DPA15-7	Pipe - (559)	37.31	54.0	428.6	0.005	6,004.95	6,002.81	7.41	6,016.33	6,027.30	6,006.71	6,005.87	6,007.36	6,006.03	0.992	0.013
DPA15-3	Pipe - (559) (1)	37.31	54.0	92.3	0.005	6,002.61	6,002.15	7.40	6,027.30	6,027.78	6,005.83	6,005.83	6,005.98	6,005.94	0.216	0.013
DPA15-2	Pipe - (560) (1)	116.92	66.0	315.3	0.013	6,001.15	5,997.05	14.16	6,027.78	6,015.67	6,004.15	5,999.15	6,005.36	6,002.21	1.389	0.013
DPA1-3	Pipe - (560) (1) (1)	162.60	66.0	56.0	0.013	5,987.49	5,986.79	15.24	6,007.42	6,005.58	5,991.05	5,989.69	5,992.60	5,992.24	1.216	0.013
DPA15-1	Pipe - (560) (1) (3)	118.83	66.0	433.9	0.014	5,996.05	5,990.19	14.42	6,015.67	6,007.42	5,999.08	5,992.27	6,000.30	5,995.50	0.152	0.013
DPA22-7	Pipe - (561)	79.64	48.0	75.2	0.019	6,013.61	6,012.18	14.90	6,030.48	6,028.37	6,016.31	6,014.14	6,017.52	6,016.77	1.539	0.013
DPA1-2	Pipe - (562)	164.46	72.0	236.0	0.010	5,984.02	5,981.69	13.97	6,005.58	5,988.54	5,987.51	5,986.50	5,988.95	5,987.21	1.120	0.013
DPA22-5	Pipe - (563)	79.64	54.0	107.3	0.006	6,007.68	6,007.04	9.66	6,028.37	6,027.78	6,010.29	6,009.38	6,011.37	6,010.79	0.347	0.013
DPA23-1	Pipe - (567)	0.64	18.0	69.8	0.035	5,998.25	5,995.81	5.11	6,008.80	6,005.71	5,998.55	5,996.00	5,998.65	5,996.40	1.000	0.013
DPA14-1	Pipe - (568)	1.39	18.0	18.4	0.015	6,036.99	6,036.71	4.79	6,042.27	6,041.79	6,037.43	6,037.22	6,037.59	6,037.33	1.000	0.013
DPA24-9	Pipe - (569)	15.90	30.0	123.6	0.035	6,063.13	6,058.80	12.33	6,070.88	6,066.57	6,064.48	6,059.57	6,065.02	6,061.94	1.229	0.013
DPA24-8	Pipe - (570)	15.90	30.0	139.4	0.035	6,058.60	6,053.73	12.32	6,066.57	6,061.61	6,059.95	6,054.50	6,060.49	6,056.86	0.079	0.013
DPA24-7	Pipe - (571)	15.90	30.0	140.1	0.035	6,053.53	6,048.63	12.32	6,061.61	6,056.61	6,054.88	6,049.40	6,055.42	6,051.76	0.077	0.013
DPA24-6	Pipe - (572)	15.90	30.0	120.3	0.035	6,048.43	6,044.22	12.33	6,056.61	6,052.39	6,049.78	6,046.36	6,050.32	6,046.56	0.063	0.013
DPA24-5																

	Pipe - (573)	21.40	30.0	308.9	0.035	6,044.02	6,033.21	13.39	6,052.39	6,041.63	6,045.59	6,035.25	6,046.27	6,035.64	1.139	0.013
DPA24-4	Pipe - (573) (1)	26.59	36.0	34.6	0.035	6,032.71	6,031.50	14.03	6,041.63	6,040.55	6,034.38	6,034.10	6,035.05	6,034.36	1.291	0.013
DPA24-3A	Pipe - (573) (1) (1)	33.10	36.0	40.5	0.035	6,031.30	6,029.88	14.92	6,040.55	6,038.99	6,033.17	6,031.11	6,033.96	6,033.40	1.175	0.013
DPR1-2	Pipe - (575)	26.70	36.0	120.7	0.017	5,973.96	5,971.91	13.08	5,989.50	5,987.09	5,975.63	5,972.97	5,976.31	5,975.18	1.010	0.010
DPR1-1B	Pipe - (576)	26.70	36.0	137.3	0.017	5,970.91	5,968.58	13.07	5,987.09	5,976.63	5,972.58	5,969.63	5,973.26	5,971.92	0.208	0.010
DPR1-1A	Pipe - (576)(2)	26.70	36.0	50.0	0.025	5,959.27	5,958.02	3.78	5,976.63	5,969.65	5,964.89	5,964.84	5,965.11	5,965.07	0.050	0.010
DPA1-1E	Pipe - (578)	56.29	72.0	31.1	0.012	5,977.50	5,977.13	11.07	5,986.19	5,985.89	5,979.50	5,978.75	5,980.22	5,980.05	0.050	0.013
DPR8-2	Pipe - (579)	0.98	18.0	224.2	0.060	6,021.63	6,008.18	7.00	6,032.00	6,018.73	6,022.00	6,008.38	6,022.13	6,009.14	0.000	0.013
DPR8-1	Pipe - (580)	0.98	36.0	10.0	0.010	6,006.69	6,006.59	3.40	6,018.73	6,016.72	6,007.00	6,006.85	6,007.10	6,007.02	0.640	0.013
DPA18A-1	Pipe - (619)	1.16	18.0	31.2	0.040	6,019.01	6,017.76	6.39	6,024.66	6,024.66	6,019.41	6,018.46	6,019.56	6,018.49	1.000	0.013
DPA18A-2	Pipe - (620)	1.31	18.0	9.2	0.040	6,018.13	6,017.76	6.64	6,024.82	6,024.66	6,018.56	6,018.46	6,018.71	6,018.50	1.000	0.013
DPA18B-2	Pipe - (623)	0.35	18.0	254.8	0.060	6,038.89	6,023.60	5.12	6,045.35	6,029.50	6,039.11	6,023.72	6,039.18	6,024.13	1.000	0.013
DPA18B-1	Pipe - (624)	0.35	18.0	52.2	0.035	6,023.40	6,021.55	4.27	6,029.50	6,027.73	6,023.62	6,021.69	6,023.69	6,021.97	0.710	0.013
DPA32-1	Pipe - (625)	14.07	24.0	42.5	0.010	6,033.22	6,032.80	7.55	6,040.60	6,040.55	6,034.57	6,033.97	6,035.17	6,034.82	1.000	0.013
DPA26A-1	Pipe - (642)	1.67	18.0	33.8	0.050	6,047.20	6,045.51	7.69	6,052.99	6,052.39	6,047.69	6,046.36	6,047.86	6,046.40	1.000	0.013
DPR6A-1	Pipe - (645)	1.75	18.0	33.8	0.020	6,054.40	6,053.73	5.62	6,060.15	6,059.83	6,054.90	6,054.52	6,055.08	6,054.57	1.000	0.013
DPA42A-1	Pipe - (646)	0.00	18.0	35.2	0.020	6,064.92	6,064.22	0.00	6,072.12	6,071.97	6,064.92	6,064.22	6,064.92	6,064.22	1.000	0.013
DPA26A-2	Pipe - (662)	3.94	18.0	8.3	0.050	6,045.93	6,045.51	9.90	6,052.52	6,052.39	6,046.69	6,046.36	6,046.99	6,046.59	1.000	0.013
DPA1-1B	Pipe - (717)	439.86	72.0	44.2	0.003	5,955.81	5,955.68	9.25	5,969.65	5,955.54	5,960.16	5,959.74	5,961.72	5,961.55	3.000	0.013
DPA24-13	Pipe - 96 (2)	11.90	24.0	82.3	0.030	6,078.52	6,076.05	10.95	6,085.80	6,083.06	6,079.76	6,077.61	6,080.29	6,077.93	1.056	0.013

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Scenario: 100yr
Current Time Step: 0.000 h
Conduit FlexTable: Combined Pipe/Node Report

Upstream Structure	Label	Flow (cfs)	Diameter (in)	Length (User Defined) (ft)	Slope (Calculated) (ft/ft)	Invert (Start) (ft)	Invert (Stop) (ft)	Velocity (ft/s)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Upstream Structure Headloss Coefficient	Manning's n
DPA24-12	Pipe - (96) (2) (2) (1)	49.60	24.0	50.3	0.030	6,076.05	6,074.54	15.79	6,083.06	6,082.22	6,080.49	6,078.07	6,084.36	6,081.94	0.000	0.013
DPA15-25	Pipe - (105)	34.28	30.0	31.5	0.012	6,047.27	6,046.88	6.98	6,053.32	6,053.05	6,052.04	6,051.82	6,052.80	6,052.58	0.050	0.013
DPA15-26	Pipe - (105)(1)	32.31	30.0	25.0	0.012	6,048.08	6,047.77	6.58	6,055.34	6,053.32	6,052.24	6,052.08	6,052.91	6,052.76	0.000	0.013
DPA15-24	Pipe - (106)	36.67	30.0	96.5	0.013	6,046.68	6,045.47	7.47	6,053.05	6,054.05	6,050.17	6,049.40	6,051.04	6,050.27	1.907	0.013
DPA15-23	Pipe - (108)	36.67	30.0	173.0	0.012	6,045.27	6,043.11	7.47	6,054.05	6,052.75	6,048.52	6,047.14	6,049.39	6,048.01	1.010	0.013
DPA15-22	Pipe - (109)	40.20	30.0	70.4	0.013	6,042.91	6,042.03	10.54	6,052.75	6,051.37	6,045.04	6,043.89	6,046.30	6,045.53	1.662	0.013
DPA15-21	Pipe - (110)	40.20	30.0	57.1	0.012	6,041.83	6,041.12	10.51	6,051.37	6,050.15	6,043.96	6,042.99	6,045.22	6,044.61	0.063	0.013
DPA15-20	Pipe - (111)	40.20	30.0	99.2	0.032	6,040.92	6,037.73	15.32	6,050.15	6,046.56	6,043.05	6,039.12	6,044.31	6,042.30	0.070	0.013
DPA15-19	Pipe - (112)	40.20	30.0	106.8	0.035	6,037.53	6,033.79	15.82	6,046.56	6,041.96	6,039.66	6,035.14	6,040.92	6,038.56	0.072	0.013
DPA15-18	Pipe - (113)	40.20	30.0	112.9	0.035	6,033.59	6,029.63	15.83	6,041.96	6,037.09	6,035.72	6,033.20	6,036.98	6,034.24	0.072	0.013
DPA15-17	Pipe - (114)	44.18	30.0	99.3	0.035	6,029.43	6,025.95	16.19	6,037.09	6,032.79	6,031.64	6,027.40	6,033.08	6,030.90	1.084	0.013
DPA15-16	Pipe - (116)	44.18	30.0	279.2	0.032	6,025.75	6,016.71	15.71	6,032.79	6,024.11	6,027.96	6,021.38	6,029.40	6,022.63	0.070	0.013
DPA15-15	Pipe - (117)	44.18	30.0	76.2	0.030	6,016.51	6,014.22	9.00	6,024.11	6,022.52	6,021.28	6,020.39	6,022.53	6,021.65	0.079	0.013
DPA15-14	Pipe - (119)	53.75	30.0	31.0	0.030	6,013.90	6,012.97	10.95	6,022.52	6,021.87	6,018.06	6,017.52	6,019.92	6,019.39	1.253	0.013
DPA15-13	Pipe - (120)	53.75	30.0	49.1	0.030	6,012.73	6,011.26	10.95	6,021.87	6,020.86	6,017.40	6,016.55	6,019.26	6,018.42	0.068	0.013
DPA15-12	Pipe - (121)	53.75	30.0	64.8	0.030	6,010.94	6,009.00	10.95	6,020.86	6,019.16	6,016.42	6,015.30	6,018.28	6,017.17	0.074	0.013
DPA15-11	Pipe - (122)	64.81	36.0	44.8	0.025	6,008.72	6,007.60	9.17	6,019.16	6,017.56	6,013.42	6,012.99	6,014.72	6,014.30	1.444	0.013
DPA15-10	Pipe - (122) (1)	67.43	42.0	16.0	0.017	6,007.10	6,006.83	7.01	6,017.56	6,017.00	6,012.13	6,012.06	6,012.90	6,012.82	1.128	0.013
DPA15-9	Pipe - (122) (1) (1)	67.43	42.0	46.0	0.017	6,006.83	6,006.07	7.01	6,017.00	6,016.01	6,012.06	6,011.85	6,012.82	6,012.62	0.000	0.013
DPA18-4	Pipe - (123)	2.88	18.0	156.0	0.045	6,028.58	6,021.55	8.69	6,039.47	6,027.73	6,029.22	6,021.91	6,029.47	6,023.09	1.068	0.013
DPA18-2	Pipe - (125) (1)	10.04	18.0	51.0	0.020	6,017.38	6,016.36	5.68	6,024.66	6,023.16	6,021.38	6,020.91	6,021.88	6,021.41	1.075	0.013
DPA18-1	Pipe - (125) (1) (1)	10.04	18.0	56.9	0.020	6,016.36	6,015.22	5.68	6,023.16	6,022.52	6,020.91	6,020.39	6,021.41	6,020.89	0.000	0.013
DPA18-3	Pipe - (125) (2)	4.10	18.0	89.5	0.038	6,021.12	6,017.76	9.01	6,027.73	6,024.66	6,021.90	6,021.92	6,022.20	6,022.00	0.959	0.013
DPA43-1	Pipe - (126)	1.41	18.0	35.2	0.025	6,065.48	6,064.60	0.80	6,070.97	6,070.79	6,069.49	6,069.48	6,069.50	6,069.49	1.000	0.013
DPA43-2	Pipe - (127)	22.97	30.0	11.2	0.020	6,063.70	6,063.48	4.68	6,070.88	6,070.79	6,069.52	6,069.48	6,069.86	6,069.82	1.050	0.013
DPA22-19	Pipe - (142)	39.36	30.0	114.1	0.005	6,063.28	6,062.71	8.02	6,070.79	6,071.97	6,067.82	6,066.77	6,068.82	6,067.77	1.660	0.013
DPA22-18	Pipe - (142) (1)	39.36	30.0	191.2	0.005	6,062.51	6,061.55	8.02	6,071.97	6,077.15	6,066.72	6,064.96	6,067.72	6,065.96	0.050	0.013
DPA22-17	Pipe - (143)	39.36	30.0	300.0	0.005	6,061.35	6,059.85	8.02	6,077.15	6,073.48	6,064.91	6,061.97	6,065.91	6,063.19	0.050	0.013
DPA22-16	Pipe - (144)	39.36	30.0	269.6	0.022	6,059.65	6,053.80	13.11	6,073.48	6,062.96	6,061.77	6,055.27	6,062.99	6,057.94	0.050	0.013
DPA22-15	Pipe - (146) (1)	39.36	30.0	223.0	0.035	6,053.60	6,045.80	15.73	6,062.96	6,054.27	6,055.72	6,047.07	6,056.94	6,050.92	0.061	0.013
DPA22-14	Pipe - (147)	39.36	30.0	222.9	0.035	6,044.55	6,036.75	15.74	6,054.27	6,045.58	6,046.67	6,040.68	6,047.89	6,041.68	0.072	0.013
DPA22-13	Pipe - (148)	45.65	30.0	69.2	0.038	6,035.50	6,032.88	9.30	6,045.58	6,042.81	6,039.01	6,038.16	6,040.36	6,039.50	1.239	0.013
DPA22-12	Pipe - (149)	117.49	42.0	111.4	0.024	6,031.82	6,029.10	17.92	6,042.81	6,038.47	6,035.05	6,031.54	6,037.54	6,035.71	1.247	0.013
DPA22-11	Pipe - (152)	117.49	42.0	175.8	0.025	6,028.06	6,023.75	12.21	6,038.47	6,031.66	6,031.57	6,029.18	6,033.89	6,031.49	0.057	0.013
DPA22-9	Pipe - (154)	117.49	42.0	169.6	0.025	6,023.27	6,019.03	12.21	6,031.66	6,029.17	6,029.00	6,026.69	6,031.32	6,029.01	0.074	0.013
DPA22-8	Pipe - (156)	123.55	48.0	115.3	0.020	6,018.53	6,016.23	9.83	6,029.17	6,030.48	6,024.90	6,024.05	6,026.41	6,025.55	1.190	0.013
DPA26-3	Pipe - (169)	11.95	18.0	19.4	0.025	6,041.23	6,040.75	10.19	6,051.43	6,050.38	6,042.54	6,041.81	6,043.37	6,043.06	1.160	0.013
DPA26-1	Pipe - (169) (1) (2)	11.95	24.0	42.9	0.037	6,035.82	6,034.21	3.80	6,042.26	6,041.63	6,038.33	6,038.21	6,038.55	6,038.43	0.000	0.013
DPA26-2	Pipe - (169) (3) (1)	11.95	24.0	118.3	0.037	6,040.25	6,035.82	11.87	6,050.38	6,042.26	6,041.49	6,038.33	6,042.02	6,038.55	0.480	0.013
DPA24-3	Pipe - (170)	75.77	36.0	139.2	0.032	6,029.68	6,025.16	17.97	6,038.99	6,034.23	6,032.41	6,029.43	6,034.37	6,031.22	0.086	0.013
DPA24-2	Pipe - (173)	82.04	36.0	40.8	0.030	6,024.29	6,023.08	17.66	6,034.23	6,032.69	6,027.08	6,025.29	6,029.31	6,028.64	1.056	0.013
DPA24-1	Pipe - (173) (2)	82.04	36.0	64.2	0.031	6,023.08	6,021.10	17.93	6,032.69	6,030.48	6,025.87	6,024.05	6,028.10	6,026.16	0.000	0.013
DPA25-2	Pipe - (174) (1)	2.29	18.0	16.3	0.030	6,028.05	6,027.56	7.04	6,034.78	6,034.23	6,029.44	6,029.43	6,029.47	6,029.46	1.000	0.013
DPA31-2	Pipe - (175)	0.00	18.0	14.5	0.020	6,021.32	6,021.03	0.00	6,031.02	6,029.17	6,026.69	6,026.69	6,026.69	6,026.69	1.000	0.013
DPA31-1	Pipe - (176)	5.68	18.0	49.1	0.020	6,022.01	6,021.03	3.21	6,028.48	6,029.17	6,026.83	6,026.69	6,026.99	6,026.85	1.000	0.013
DPA38-7	Pipe - (177)	22.49	24.0	99.9	0.025	6,085.73	6,083.23	12.03	6,091.38	6,091.82	6,087.42	6,085.71	6,088.40	6,086.51	1.000	0.013
DPA38-6	Pipe - (178)	22.49	24.0	43.9	0.025	6,083.03	6,081.93	12.04	6,091.82	6,089.37	6,084.72	6,083.18	6,085.70	6,085.02	1.010	0.013
DPA38-4	Pipe - (178) (1) (3) (1)	22.49	24.0	138.0	0.050	6,074.11	6,067.21	15.63	6,080.31	6,073.00	6,075.80	6,070.61	6,076.78	6,071.40	0.072	0.013
DPA38-3	Pipe - (178) (1) (3) (1) (2)	27.47	24.0	133.3	0.050	6,067.01	6,060.35	16.43	6,073.00	6,067.86	6,068.83	6,062.96	6,070.13	6,064.15	1.365	0.013
DPA38-5	Pipe - (178) (1) (4)	22.49	24.0	165.1	0.045	6,081.73	6,074.31	15.02	6,089.37	6,080.31	6,083.42	6,075.27	6,084.40	6,078.78	0.074	0.013
DPA33-6	Pipe - (182)	51.91	30.0	64.0	0.042	6,046.35	6,043.69	17.94	6,056.59	6,054.21	6,048.67	6,047.47	6,050.52	6,049.21	1.010	0.013
DPA33-5	Pipe - (183)	60.26	36.0	147.9	0.030	6,043.13	6,038.69	16.52	6,054.21	6,048.59	6,045.64	6,044.20	6,047.05	6,045.33	1.292	0.013
DPA33-4	Pipe - (184)	65.24	36.0	136.7	0.024	6,038.49	6,035.27	9.23	6,048.59	6,044.26	6,042.54	6,041.23	6,043.86	6,042.55	1.260	0.013
DPA33-3	Pipe - (184) (1)	65.24	36.0	36.0	0.025	6,035.07	6,034.16	9.23	6,044.26	6,043.61	6,041.14	6,040.80	6,042.46	6,042.12	0.066	0.013
DPA33-2	Pipe - (185)	72.46	36.0	9.1	0.024	6,033.96	6,033.74	10.25	6,043.61	6,042.87	6,038.90	6,038.80	6,040.54	6,040.43	1.158	0.013
DPA33-1	Pipe - (185) (1)	72.46	36.0	54.2	0.025	6,033.74	6,032.38	10.25	6,042.87	6,042.81	6,038.80	6,038.16	6,040.43	6,039.79	0.000	0.013
DPA40-3	Pipe - (186)	10.11	18.0	113.1	0.040	6,081.17	6,076.65	11.77	6,085.03	6,081.89	6,082.39	6,078.77	6,083.06	6,079.28	1.000	0.013
DPA40-2	Pipe - (187)	10.11	18.0	32.2	0.010	6,076.45	6,076.13	5.72	6,081.89	6,082.92	6,078.72	6,078.43	6,079.23	6,078.94	0.088	0.013
DPA40-1	Pipe - (188)	10.11	18.0	116.3	0.010	6,075.93	6,074.77	5.72	6,082.92	6,081.20	6,078.16	6,077.09	6,078.67	6,077.60	0.515	0.013

DPA33-16	Pipe - (190)	2.62	18.0	49.7	0.044	6,086.14	6,083.94	8.39	6,092.09	6,090.04	6,086.75	6,084.76	6,086.98	6,084.87	0.533	0.013
DPA33-14	Pipe - (190) (1) (1)	13.44	18.0	92.0	0.044	6,074.57	6,070.48	13.13	6,081.20	6,076.62	6,075.94	6,071.34	6,076.92	6,073.93	1.170	0.013
DPA33-15	Pipe - (190) (2)	3.38	18.0	179.8	0.050	6,083.74	6,074.77	9.44	6,090.04	6,081.20	6,084.44	6,077.09	6,084.71	6,077.14	1.176	0.013
DPA33-13	Pipe - (191) (1)	13.44	18.0	62.1	0.050	6,070.28	6,067.18	13.73	6,076.62	6,073.55	6,071.65	6,068.03	6,072.63	6,070.64	0.061	0.013
DPA33-12	Pipe - (192) (1)	13.44	18.0	72.4	0.054	6,066.98	6,063.04	14.19	6,073.55	6,070.02	6,068.35	6,063.86	6,069.33	6,066.73	0.066	0.013
DPA33-11	Pipe - (193) (1)	13.44	18.0	58.2	0.060	6,062.84	6,059.35	14.72	6,070.02	6,067.16	6,064.21	6,061.69	6,065.19	6,062.59	0.063	0.013
DPA33-10	Pipe - (194)	43.63	30.0	75.2	0.035	6,057.85	6,055.22	16.13	6,067.16	6,063.48	6,060.05	6,056.70	6,061.46	6,059.95	1.159	0.013
DPA33-9	Pipe - (195)	43.63	30.0	69.5	0.035	6,055.02	6,052.59	16.13	6,063.48	6,060.35	6,057.22	6,056.32	6,058.63	6,057.55	0.066	0.013
DPA33-8	Pipe - (195) (1)	48.64	30.0	93.8	0.040	6,052.32	6,048.57	17.42	6,060.35	6,057.47	6,054.60	6,053.24	6,056.27	6,054.77	1.035	0.013
DPA33-7	Pipe - (195) (1) (1) (1)	51.91	30.0	42.7	0.043	6,048.37	6,046.55	10.58	6,057.47	6,056.59	6,051.23	6,050.54	6,052.97	6,052.28	1.159	0.013
DPA14-3	Pipe - (196)	2.74	18.0	16.6	0.015	6,036.25	6,036.00	1.55	6,041.79	6,041.72	6,038.50	6,038.49	6,038.54	6,038.52	1.000	0.013
DPA14-2	Pipe - (197)	7.45	18.0	33.7	0.015	6,036.51	6,036.00	4.22	6,041.79	6,041.72	6,038.66	6,038.49	6,038.93	6,038.76	0.078	0.013
DPA1-21	Pipe - (198)	23.77	30.0	220.7	0.005	6,034.27	6,033.16	4.84	6,041.72	6,044.49	6,037.93	6,037.18	6,038.29	6,037.55	1.542	0.013
DPA1-20	Pipe - (198) (1)	30.80	30.0	160.8	0.005	6,032.96	6,032.16	6.63	6,044.49	6,042.47	6,035.14	6,034.05	6,035.85	6,034.98	2.857	0.013
DPA1-19	Pipe - (199) (1)	30.80	30.0	234.9	0.028	6,031.96	6,025.33	13.64	6,042.47	6,032.43	6,033.85	6,028.32	6,034.78	6,028.93	0.050	0.013
DPA1-18	Pipe - (201) (3)	34.46	30.0	286.2	0.045	6,025.13	6,012.25	16.70	6,032.43	6,018.97	6,027.13	6,013.34	6,028.17	6,017.68	1.143	0.013
DPA1-16	Pipe - (203)	34.46	30.0	72.4	0.045	6,011.25	6,008.00	16.68	6,018.97	6,015.13	6,013.25	6,010.46	6,014.29	6,011.23	0.094	0.013
DPA1-15	Pipe - (205)	40.83	30.0	60.8	0.045	6,006.75	6,004.01	17.45	6,015.13	6,012.05	6,008.90	6,008.05	6,010.18	6,009.12	1.212	0.013
DPA1-14	Pipe - (205) (1)	66.68	36.0	74.0	0.025	6,003.51	6,001.66	15.79	6,012.05	6,008.75	6,006.12	6,004.87	6,007.74	6,006.25	1.189	0.013
DPA1-12	Pipe - (209)	87.78	48.0	29.3	0.017	5,995.93	5,995.42	6.99	6,004.83	6,004.77	6,001.75	6,001.64	6,002.51	6,002.40	1.770	0.013
DPA1-13	Pipe - (214)	66.68	36.0	165.8	0.023	6,000.66	5,996.93	9.43	6,008.75	6,004.83	6,004.75	6,003.09	6,006.13	6,004.47	0.090	0.013
DPA1-11	Pipe - (215)	99.50	54.0	36.8	0.017	5,994.92	5,994.28	6.26	6,004.77	6,004.87	6,000.46	6,000.36	6,001.06	6,000.97	1.944	0.013
DPA1-10	Pipe - (215) (1)	99.50	54.0	69.6	0.018	5,994.28	5,993.06	6.26	6,004.87	6,005.71	6,000.36	6,000.18	6,000.97	6,000.79	0.000	0.013
DPA1-9	Pipe - (216)	100.86	54.0	95.1	0.018	5,992.86	5,991.19	6.34	6,005.71	6,007.42	5,999.52	5,999.27	6,000.15	5,999.90	1.060	0.013
DPA5-3	Pipe - (225)	21.09	24.0	190.6	0.021	6,003.82	5,999.82	6.71	6,011.20	6,005.74	6,006.07	6,004.41	6,006.77	6,005.11	1.061	0.013
DPA5-2	Pipe - (225) (1)	21.09	24.0	32.3	0.021	5,999.82	5,999.14	6.71	6,005.74	6,006.00	6,004.41	6,004.13	6,005.11	6,004.83	0.000	0.013
DPA5-1	Pipe - (226)	21.09	24.0	35.2	0.023	5,998.94	5,998.13	6.71	6,006.00	6,004.83	6,003.40	6,003.09	6,004.10	6,003.79	1.050	0.013
DPA4-2	Pipe - (227)	11.89	18.0	13.9	0.050	5,999.12	5,998.42	6.73	6,004.68	6,004.77	6,001.82	6,001.64	6,002.52	6,002.34	1.000	0.013
DPR7-2	Pipe - (229)	2.43	18.0	84.8	0.010	6,066.15	6,065.30	4.84	6,077.42	6,077.41	6,067.52	6,067.47	6,067.55	6,067.50	0.000	0.013
DPR7-1	Pipe - (229) (1)	6.88	18.0	59.4	0.010	6,065.89	6,065.30	3.89	6,077.07	6,077.41	6,067.73	6,067.47	6,067.96	6,067.71	0.000	0.013
DPR6-1	Pipe - (236)	9.40	18.0	142.0	0.010	6,050.57	6,049.15	5.32	6,055.37	6,056.71	6,052.61	6,051.47	6,053.05	6,051.91	0.000	0.013
DPR2-7	Pipe - (237)	22.32	24.0	105.7	0.030	6,048.65	6,045.51	12.83	6,056.71	6,052.84	6,050.34	6,048.11	6,051.31	6,048.89	1.174	0.013
DPR2-6	Pipe - (239)	24.27	24.0	123.1	0.020	6,045.19	6,042.73	11.20	6,052.84	6,048.61	6,046.93	6,045.28	6,048.02	6,046.21	1.083	0.013
DPR2-5	Pipe - (240)	24.27	24.0	71.3	0.018	6,042.53	6,041.28	7.73	6,048.61	6,047.13	6,045.23	6,044.40	6,046.15	6,045.33	0.057	0.013
DPR2-4	Pipe - (241)	25.82	30.0	70.8	0.005	6,040.78	6,040.42	5.26	6,047.13	6,046.63	6,043.91	6,043.63	6,044.34	6,044.06	1.153	0.013
DPR2-3	Pipe - (243)	34.26	30.0	84.8	0.005	6,040.22	6,039.80	6.98	6,046.63	6,047.25	6,042.68	6,042.11	6,043.44	6,042.92	1.244	0.013
DPR2-2	Pipe - (244) (1)	34.26	30.0	131.9	0.005	6,039.60	6,038.94	6.98	6,047.25	6,048.15	6,042.01	6,040.93	6,042.79	6,041.97	0.129	0.013
DPR2-1	Pipe - (245)	34.26	36.0	50.0	0.010	6,038.44	6,037.94	9.50	6,048.15	6,047.56	6,040.34	6,039.85	6,041.16	6,040.66	0.050	0.013
DPR3-1	Pipe - (246)	6.58	18.0	9.7	0.023	6,041.84	6,041.62	3.72	6,046.82	6,046.63	6,043.67	6,043.63	6,043.88	6,043.84	0.000	0.013
DPR3-2	Pipe - (247)	1.99	18.0	35.1	0.020	6,042.32	6,041.62	5.85	6,046.83	6,046.63	6,043.64	6,043.63	6,043.66	6,043.65	0.000	0.013
DPA2-4	Pipe - (262)	4.86	18.0	51.0	0.025	5,986.49	5,985.22	2.75	5,992.40	5,991.23	5,988.44	5,988.33	5,988.56	5,988.45	1.000	0.013
DPA2-3	Pipe - (262) (1) (1)	5.86	18.0	22.9	0.020	5,984.41	5,983.95	3.32	5,991.23	5,991.73	5,988.16	5,988.09	5,988.33	5,988.26	1.000	0.013
DPA2-2	Pipe - (264) (1)	8.05	18.0	84.6	0.025	5,983.75	5,981.60	4.56	5,991.73	5,981.80	5,987.77	5,987.27	5,988.09	5,987.59	1.000	0.013
DPA16-1	Pipe - (337)	12.12	30.0	192.5	0.006	6,007.13	6,006.07	2.47	6,012.66	6,016.01	6,012.02	6,011.85	6,012.12	6,011.95	1.000	0.013
DPA21-1	Pipe - (344)	3.61	18.0	31.2	0.050	6,046.64	6,045.08	9.63	6,053.01	6,052.75	6,047.37	6,047.14	6,047.65	6,047.20	0.000	0.013
DPR1-0	Pipe - (353)	92.50	60.0	27.2	0.010	5,974.43	5,974.16	4.71	5,987.86	5,989.50	5,979.64	5,979.60	5,979.98	5,979.95	0.001	0.013
DPA1-1D	Pipe - (357) (1)	344.25	72.0	27.4	0.011	5,967.78	5,967.47	17.55	5,985.89	5,977.96	5,972.81	5,972.04	5,975.69	5,975.49	0.050	0.013
DPA1-1C	Pipe - (357) (1) (1)	344.25	72.0	30.1	0.012	5,956.36	5,956.00	12.18	5,977.96	5,969.65	5,964.64	5,964.44	5,966.94	5,966.74	0.050	0.013
DPA22-22	Pipe - (362)	13.08	18.0	43.5	0.015	6,067.53	6,066.88	7.40	6,078.66	6,074.61	6,073.45	6,072.78	6,074.31	6,073.63	0.000	0.013
DPA22-21	Pipe - (363)	13.08	18.0	100.3	0.015	6,066.68	6,065.17	7.40	6,074.61	6,071.70	6,071.94	6,070.38	6,072.79	6,071.23	0.992	0.013
DPA22-20	Pipe - (363) (1)	15.73	24.0	89.0	0.010	6,064.67	6,063.78	5.01	6,071.70	6,070.79	6,069.91	6,069.48	6,070.30	6,069.87	1.201	0.013
DPA43-3	Pipe - (364)	20.27	24.0	27.7	0.020	6,064.75	6,064.20	6.45	6,073.59	6,070.88	6,070.10	6,069.87	6,070.74	6,070.52	0.000	0.013
DPR2-13	Pipe - (365)	9.31	18.0	69.5	0.010	6,064.80	6,064.11	6.69	6,077.41	6,074.91	6,065.98	6,065.21	6,066.59	6,065.91	2.466	0.013
DPR2-12	Pipe - (366)	9.31	18.0	125.9	0.010	6,063.91	6,062.65	6.71	6,074.91	6,070.48	6,065.09	6,063.75	6,065.70	6,064.45	0.061	0.013
DPR2-11	Pipe - (367) (1)	9.31	18.0	109.9	0.020	6,062.45	6,060.25	8.88	6,070.48	6,066.60	6,063.63	6,061.11	6,064.24	6,062.33	0.058	0.013
DPR2-10	Pipe - (367) (1) (1)	9.31	18.0	106.2	0.035	6,060.05	6,056.34	10.97	6,066.60	6,062.85	6,061.23	6,057.07	6,061.84	6,058.94	0.058	0.013
DPR2-9	Pipe - (368) (1)	9.31	18.0	83.2	0.035	6,056.14	6,053.23	10.97	6,062.85	6,059.83	6,057.32	6,055.56	6,057.93	6,055.99	0.059	0.013
DPR2-8	Pipe - (368) (1) (1)	13.00	18.0	91.8	0.035	6,053.03	6,049.82	11.88	6,059.83	6,056.71	6,054.38	6,051.47	6,055.32	6,052.32	1.263	0.013
DPA17-1	Pipe - (369)	2.92	18.0	9.0	0.050	6,009.55	6,009.10	1.65	6,017.82	6,017.56	6,013.00	6,012.99	6,013.04	6,013.04	1.000	0.013
DPA17A-1	Pipe - (370)	11.23	18.0	31.2	0.010	6,010.41	6,010.10	6.35	6,019.67	6,019.16	6,015.66	6,015.30	6,016.29	6,015.93	1.000	0.013
DPA24-10	Pipe - (371) (1)	34.83	30.0	45.2	0.035	6,064.91	6,063.33	15.25	6,072.60	6,070.88	6,066.92	6,066.71	6,067.97	6,067.49	1.107	0.013
DPA24-11	Pipe - (371) (2) (1)	49.60	30.0	274.8	0.032	6,074.04	6,065.11	16.14	6,082.22	6,072.60	6,076.33	6,068.09	6,078.05	6,069.67	1.010	0.013
DPA25-1	Pipe - (374)	3.98	18.0	43.3	0.020	6,028.43	6,027.56	7.14	6,034.40	6,034.23	6,029.41	6,029.43	6,029.58	6,029.51	1.000	0.013
DPA36-2	Pipe - (375)	1.08	18.0	31.0	0.030	6,048.14	6,047.21	5.64	6,054.47	6,054.21	6,048.53	6,047.46	6,048.67	6,047.95	1.000	0.013
DPA36-1	Pipe - (376)	7.40	18.0	9.0	0.030	6,047.48	6,047.21	9.76	6,054.45	6,054.21	6,048.53	6,048.02	6,049.02	6,048.91	1.000	0.013
DPA29-2	Pipe - (377)	2.24	18.0	5.1	0.020	6,079.82	6,079.72	1.27	6,085.84	6,085.80	6,083.28	6,083.28	6,083.31	6,083.31	1.000	0.013
DPA29-1	Pipe - (378)	1.48	18.0	35.6	0.020	6,080.43	6,079.72	0.84	6,086.37	6,085.80	6,083.29	6,083.28	6,083.30	6,083.29	1.000	0.013
DPA18-7	Pipe - (411)	1.72	18.0	24.4	0.050	6,036.33	6,035.11	7.76	6,040.87	6,040.90	6,036.82	6,035.39	6,037.00	6,036.26	1.000	0.013
DPA18-6	Pipe - (412)	1.72	18.0	14.8	0.050	6,034.91	6,034.17	7.75	6,040.90	6,040.04	6,035.40	6,034.47	6,035.58	6,035.22	1.000	0.013
DPA18-5	Pipe - (413)	1.72	18.0	109.2	0.048	6,033.97	6,028.78	7.62	6,040.04	6,039.47	6,034.46	6,029.49	6,034.64	6,029.55	0.176	0.013
DPA5-9																

	Pipe - (414)	8.40	18.0	67.3	0.037	6,017.61	6,015.09	10.95	6,023.03	6,020.33	6,018.73	6,015.77	6,019.28	6,017.55	1.119	0.013
DPA5-8	Pipe - (415)	8.40	18.0	65.7	0.037	6,014.89	6,012.43	10.95	6,020.33	6,017.90	6,016.01	6,013.12	6,016.56	6,014.88	0.264	0.013
DPA5-7	Pipe - (416)	8.40	18.0	83.9	0.037	6,012.23	6,009.09	10.95	6,017.90	6,014.82	6,013.35	6,009.76	6,013.90	6,011.62	0.280	0.013
DPA5-6	Pipe - (417)	8.40	18.0	81.4	0.035	6,008.89	6,006.04	10.68	6,014.82	6,012.14	6,010.01	6,009.21	6,010.56	6,009.56	0.074	0.013
DPA5-5	Pipe - (418) (1)	8.40	18.0	28.1	0.026	6,005.80	6,005.08	4.75	6,012.14	6,011.57	6,009.03	6,008.85	6,009.38	6,009.20	0.515	0.013
DPA6-1	Pipe - (419)	2.66	18.0	35.9	0.020	6,018.68	6,017.96	6.36	6,023.90	6,023.03	6,019.30	6,019.34	6,019.53	6,019.38	0.000	0.013
DPA6-2	Pipe - (420)	5.74	18.0	22.9	0.021	6,018.44	6,017.96	7.97	6,024.39	6,023.03	6,019.36	6,019.34	6,019.75	6,019.52	0.000	0.013
DPA7-4	Pipe - (421)	3.30	18.0	12.2	0.030	6,014.49	6,014.12	1.87	6,019.17	6,019.15	6,016.17	6,016.16	6,016.22	6,016.21	1.000	0.013
DPA7-3	Pipe - (422)	11.71	18.0	205.7	0.031	6,013.92	6,007.54	11.08	6,019.15	6,013.09	6,015.22	6,009.06	6,016.02	6,009.75	1.166	0.013
DPA7-2	Pipe - (422) (1)	11.71	18.0	81.8	0.031	6,007.54	6,005.01	6.63	6,013.09	6,012.05	6,009.06	6,008.05	6,009.75	6,008.73	0.000	0.013
DPA8-3	Pipe - (424)	8.56	18.0	132.2	0.040	6,021.86	6,016.57	11.28	6,028.81	6,022.31	6,022.99	6,017.24	6,023.55	6,019.21	1.296	0.013
DPA8-2	Pipe - (425)	8.56	18.0	40.4	0.020	6,016.37	6,015.57	8.67	6,022.31	6,021.19	6,017.50	6,016.42	6,018.06	6,017.48	0.070	0.013
DPA8-1	Pipe - (425) (1)	8.56	18.0	72.4	0.020	6,015.57	6,014.12	8.71	6,021.19	6,019.15	6,016.70	6,016.16	6,017.26	6,016.52	0.000	0.013
DPA12-3	Pipe - (426)	4.82	18.0	46.2	0.020	6,044.84	6,043.92	7.50	6,050.23	6,049.83	6,045.68	6,045.21	6,046.03	6,045.35	0.000	0.013
DPA12-2	Pipe - (426) (1) (1)	7.28	18.0	168.0	0.035	6,043.52	6,037.64	10.29	6,049.83	6,045.42	6,044.57	6,038.27	6,045.04	6,039.92	1.349	0.013
DPA12-1	Pipe - (426) (1) (1) (1)	7.28	18.0	84.0	0.035	6,037.64	6,034.70	10.29	6,045.42	6,044.49	6,038.69	6,037.18	6,039.16	6,037.45	0.000	0.013
DPA35-1	Pipe - (430) (1)	5.17	18.0	9.2	0.010	6,040.08	6,039.99	2.93	6,048.85	6,048.59	6,044.23	6,044.20	6,044.36	6,044.34	1.099	0.013
DPA35-2	Pipe - (430) (2)	4.83	18.0	41.4	0.010	6,040.69	6,040.28	2.73	6,043.48	6,048.85	6,044.46	6,044.37	6,044.58	6,044.49	1.000	0.013
DPA39-1	Pipe - (431)	2.76	18.0	31.2	0.045	6,062.25	6,060.85	8.57	6,066.51	6,067.86	6,062.88	6,062.96	6,063.12	6,063.00	1.000	0.013
DPA39A-1	Pipe - (432)	5.16	18.0	9.2	0.050	6,067.97	6,067.51	2.92	6,073.17	6,073.00	6,070.63	6,070.61	6,070.76	6,070.74	1.000	0.013
DPA38-1	Pipe - (433)	30.20	30.0	19.2	0.030	6,058.92	6,058.35	6.15	6,067.07	6,067.16	6,061.79	6,061.69	6,062.38	6,062.28	0.063	0.013
DPA38-2	Pipe - (434)	30.20	30.0	24.3	0.030	6,059.85	6,059.12	13.89	6,067.86	6,067.07	6,061.72	6,061.83	6,062.63	6,062.42	1.362	0.013
DPA24-14	Pipe - (435)	25.58	24.0	41.7	0.037	6,080.28	6,078.72	8.14	6,087.39	6,085.80	6,083.81	6,083.28	6,084.84	6,084.31	1.690	0.013
DPA24-15	Pipe - (436)	13.43	18.0	144.7	0.040	6,086.56	6,080.78	12.60	6,093.55	6,087.39	6,087.93	6,085.56	6,088.91	6,086.45	0.072	0.013
DPA24-16	Pipe - (437)	13.43	18.0	119.6	0.040	6,091.54	6,086.76	12.60	6,098.22	6,093.55	6,092.91	6,087.63	6,093.89	6,090.10	1.010	0.013
DPA24-17	Pipe - (439)	13.43	18.0	45.7	0.040	6,093.57	6,091.74	12.61	6,099.28	6,098.22	6,094.94	6,093.90	6,095.92	6,094.80	0.000	0.013
DPA30-1	Pipe - (444)	12.16	18.0	40.6	0.020	6,082.09	6,081.28	6.88	6,087.88	6,087.39	6,086.10	6,085.56	6,086.84	6,086.29	0.000	0.013
DPR4-1	Pipe - (448)	1.60	18.0	32.5	0.025	6,042.99	6,042.18	5.94	6,048.90	6,047.13	6,044.41	6,044.40	6,044.42	6,044.42	0.000	0.013
DPR5-1	Pipe - (449)	2.05	18.0	32.5	0.020	6,046.66	6,046.01	5.90	6,054.57	6,052.84	6,048.12	6,048.11	6,048.14	6,048.13	0.000	0.013
DPA26-4	Pipe - (516)	9.18	18.0	37.4	0.030	6,042.55	6,041.43	10.31	6,051.65	6,051.43	6,043.72	6,043.50	6,044.32	6,043.92	1.010	0.013
DPA28-2	Pipe - (517)	1.45	18.0	41.2	0.020	6,067.45	6,066.62	5.34	6,072.88	6,072.60	6,068.04	6,068.09	6,068.12	6,068.10	1.000	0.013
DPA28-1	Pipe - (518)	4.16	18.0	9.8	0.020	6,066.82	6,066.62	7.21	6,072.82	6,072.60	6,068.08	6,068.09	6,068.19	6,068.17	1.000	0.013
DPA27-1	Pipe - (520)	3.89	18.0	156.6	0.025	6,068.74	6,064.82	7.67	6,074.83	6,070.88	6,069.49	6,066.71	6,069.79	6,066.78	1.000	0.013
DPA37-1	Pipe - (521)	3.27	18.0	31.2	0.040	6,051.86	6,050.61	8.65	6,056.44	6,057.47	6,053.27	6,053.24	6,053.33	6,053.30	1.000	0.013
DPA37A-1	Pipe - (522)	5.06	18.0	9.2	0.050	6,054.35	6,053.89	2.86	6,060.53	6,060.35	6,056.35	6,056.32	6,056.47	6,056.45	1.000	0.013
DPA33-17	Pipe - (524)	2.62	18.0	126.6	0.050	6,092.67	6,086.34	8.78	6,098.75	6,092.09	6,093.28	6,086.68	6,093.51	6,087.88	1.000	0.013
DPA34-1	Pipe - (526)	7.23	18.0	9.2	0.020	6,036.34	6,036.16	4.09	6,044.13	6,043.61	6,040.84	6,040.80	6,041.10	6,041.06	1.000	0.013
DPA42-1	Pipe - (527)	4.18	18.0	15.7	0.020	6,038.81	6,038.50	2.37	6,045.62	6,045.58	6,040.70	6,040.68	6,040.79	6,040.77	1.000	0.013
DPA42-2	Pipe - (528)	2.11	18.0	33.7	0.023	6,039.26	6,038.50	6.21	6,045.68	6,045.58	6,040.69	6,040.68	6,040.71	6,040.70	1.000	0.013
DPA8-4	Pipe - (529)	2.17	18.0	40.0	0.027	6,023.16	6,022.06	6.72	6,029.59	6,028.81	6,023.72	6,023.71	6,023.92	6,023.74	1.000	0.013
DPA5-4	Pipe - (530)	13.50	18.0	37.5	0.015	6,004.88	6,004.32	7.64	6,011.57	6,011.20	6,007.43	6,006.81	6,008.34	6,007.72	1.568	0.013
DPA13-1	Pipe - (532)	2.47	18.0	55.2	0.035	6,045.85	6,043.92	7.60	6,051.96	6,049.83	6,046.45	6,045.21	6,046.67	6,045.24	0.000	0.013
DPA10-1	Pipe - (533)	6.44	18.0	35.0	0.020	6,009.70	6,009.00	8.11	6,015.32	6,015.13	6,010.68	6,010.46	6,011.11	6,010.67	0.088	0.013
DPA7-1	Pipe - (538)	14.15	18.0	57.7	0.010	6,005.59	6,005.01	8.01	6,012.78	6,012.05	6,009.09	6,008.05	6,010.09	6,009.04	0.000	0.013
DPR2-0	Pipe - (539)	34.26	36.0	53.5	0.010	6,037.95	6,037.42	9.50	6,047.56	6,046.03	6,039.85	6,039.01	6,040.67	6,040.27	0.000	0.013
DPA20-1	Pipe - (542)	2.42	18.0	8.9	0.020	6,048.06	6,047.88	1.37	6,053.28	6,053.05	6,051.83	6,051.82	6,051.86	6,051.85	1.000	0.013
DPA19-1	Pipe - (544)	4.03	18.0	31.2	0.020	6,031.26	6,030.63	2.28	6,037.42	6,037.09	6,033.25	6,033.20	6,033.33	6,033.28	0.000	0.013
DPA26-5	Pipe - (545)	4.66	18.0	110.0	0.048	6,047.98	6,042.75	10.17	6,053.24	6,051.65	6,048.81	6,044.32	6,049.15	6,044.43	1.000	0.013
DPA41-1	Pipe - (546)	0.76	18.0	25.1	0.015	6,084.82	6,084.44	4.00	6,088.51	6,090.04	6,085.14	6,084.69	6,085.26	6,084.94	1.000	0.013
DPA10-2	Pipe - (547)	4.94	18.0	19.0	0.020	6,010.28	6,009.90	7.55	6,015.66	6,015.32	6,011.13	6,010.55	6,011.49	6,011.26	0.000	0.013
DPA1-23	Pipe - (549)	13.60	24.0	76.0	0.012	6,039.07	6,038.12	8.20	6,044.45	6,044.56	6,040.40	6,039.84	6,040.98	6,040.19	0.000	0.013
DPA3-1	Pipe - (551)	4.33	18.0	77.7	0.025	5,997.03	5,995.09	7.90	6,003.28	6,005.58	5,997.83	5,995.61	5,998.15	5,996.58	1.000	0.013
DPA11-1	Pipe - (552)	3.72	18.0	56.3	0.015	6,027.19	6,026.33	6.34	6,033.02	6,032.43	6,028.36	6,028.32	6,028.46	6,028.39	0.000	0.013
DPA1-22	Pipe - (553)	13.60	24.0	210.3	0.015	6,037.92	6,034.77	8.77	6,044.56	6,041.72	6,039.25	6,038.49	6,039.83	6,038.78	1.010	0.013
DPA44-1	Pipe - (555)	2.81	18.0	53.3	0.025	6,066.50	6,065.17	1.59	6,072.13	6,071.70	6,070.42	6,070.38	6,070.46	6,070.42	1.000	0.013
DPA15-8	Pipe - (556)	79.51	54.0	85.0	0.005	6,005.57	6,005.15	5.00	6,016.01	6,016.33	6,011.41	6,011.27	6,011.80	6,011.66	1.147	0.013
DPA15-7	Pipe - (559)	83.14	54.0	428.6	0.005	6,004.95	6,002.81	5.23	6,016.33	6,027.30	6,010.85	6,010.08	6,011.27	6,010.51	0.992	0.013
DPA15-3	Pipe - (559) (1)	83.14	54.0	92.3	0.005	6,002.61	6,002.15	5.23	6,027.30	6,027.78	6,009.99	6,009.83	6,010.42	6,010.25	0.216	0.013
DPA15-2	Pipe - (560) (1)	293.84	66.0	315.3	0.013	6,001.15	5,997.05	17.77	6,027.78	6,015.67	6,005.88	6,002.97	6,008.72	6,005.35	1.389	0.013
DPA1-3	Pipe - (560) (1) (1)	394.63	66.0	56.0	0.013	5,987.49	5,986.79	16.61	6,007.42	6,005.58	5,994.06	5,993.28	5,998.35	5,997.57	1.216	0.013
DPA15-1	Pipe - (560) (1) (3)	294.50	66.0	433.9	0.014	5,996.05	5,990.19	12.40	6,015.67	6,007.42	6,002.61	5,999.27	6,005.00	6,001.66	0.152	0.013
DPA22-7	Pipe - (561)	206.17	48.0	75.2	0.019	6,013.61	6,012.18	17.89	6,030.48	6,028.37	6,017.47	6,015.82	6,021.75	6,020.40	1.539	0.013
DPA1-2	Pipe - (562)	399.09	72.0	236.0	0.010	5,984.02	5,981.69	16.93	6,005.58	5,988.54	5,989.35	5,987.27	5,992.86	5,990.57	1.120	0.013
DPA22-5	Pipe - (563)	206.17	54.0	107.3	0.006	6,007.68	6,007.04	12.96	6,028.37	6,027.78	6,012.52	6,011.12	6,015.13	6,014.00	0.347	0.013
DPA23-1	Pipe - (567)	1.36	18.0	69.8	0.035	5,998.25	5,995.81	0.77	6,008.80	6,005.71	6,000.20	6,000.18	6,000.21	6,000.19	1.000	0.013
DPA14-1	Pipe - (568)	3.41	18.0	18.4	0.015	6,036.99	6,036.71	1.93	6,042.27	6,041.79	6,038.70	6,038.68	6,038.76	6,038.74	1.000	0.013
DPA24-9	Pipe - (569)	38.70	30.0	123.6	0.035	6,063.13	6,058.80	15.67	6,070.88	6,066.57	6,065.23	6,060.10	6,066.43	6,063.59	1.229	0.013
DPA24-8	Pipe - (570)	38.70	30.0	139.4	0.035	6,058.60	6,053.73	15.65	6,066.57	6,061.61	6,060.70	6,055.02	6,061.90	6,058.59	0.079	0.013
DPA24-7	Pipe - (571)	38.70	30.0	140.1	0.035	6,053.53	6,048.63	15.66	6,061.61	6,056.61	6,055.63	6,049.92	6,056.83	6,053.49	0.077	0.013
DPA24-6	Pipe - (572)	38.70	30.0	120.3	0.035	6,048.43	6,044.22	15.66	6,056.61	6,052.39	6,050.53	6,048.37	6,051.73	6,049.33	0.063	0.013
DPA24-5																

	Pipe - (573)	50.82	30.0	308.9	0.035	6,044.02	6,033.21	16.71	6,052.39	6,041.63	6,046.33	6,038.21	6,048.12	6,039.87	1.139	0.013
DPA24-4	Pipe - (573) (1)	62.61	36.0	34.6	0.035	6,032.71	6,031.50	8.86	6,041.63	6,040.55	6,036.63	6,036.33	6,037.85	6,037.55	1.291	0.013
DPA24-3A	Pipe - (573) (1) (1)	75.77	36.0	40.5	0.035	6,031.30	6,029.88	18.51	6,040.55	6,038.99	6,034.03	6,031.92	6,035.99	6,035.33	1.175	0.013
DPR1-2	Pipe - (575)	92.50	36.0	120.7	0.017	5,973.96	5,971.91	17.83	5,989.50	5,987.09	5,976.82	5,974.20	5,979.57	5,978.17	1.010	0.010
DPR1-1B	Pipe - (576)	92.50	36.0	137.3	0.017	5,970.91	5,968.58	17.83	5,987.09	5,976.63	5,973.77	5,970.85	5,976.52	5,974.90	0.208	0.010
DPR1-1A	Pipe - (576)(2)	92.50	36.0	50.0	0.025	5,959.27	5,958.02	13.09	5,976.63	5,969.65	5,965.01	5,964.44	5,967.67	5,967.10	0.050	0.010
DPA1-1E	Pipe - (578)	344.25	72.0	31.1	0.012	5,977.50	5,977.13	17.91	5,986.19	5,985.89	5,982.53	5,981.65	5,985.40	5,985.18	0.050	0.013
DPR8-2	Pipe - (579)	3.43	18.0	224.2	0.060	6,021.63	6,008.18	10.12	6,032.00	6,018.73	6,022.34	6,008.55	6,022.61	6,010.14	0.000	0.013
DPR8-1	Pipe - (580)	3.43	36.0	10.0	0.010	6,006.69	6,006.59	4.96	6,018.73	6,016.72	6,007.27	6,007.08	6,007.47	6,007.41	0.640	0.013
DPA18A-1	Pipe - (619)	2.97	18.0	31.2	0.040	6,019.01	6,017.76	1.68	6,024.66	6,024.66	6,021.94	6,021.92	6,021.99	6,021.96	1.000	0.013
DPA18A-2	Pipe - (620)	3.04	18.0	9.2	0.040	6,018.13	6,017.76	1.72	6,024.82	6,024.66	6,021.92	6,021.92	6,021.97	6,021.96	1.000	0.013
DPA18B-2	Pipe - (623)	1.25	18.0	254.8	0.060	6,038.89	6,023.60	7.52	6,045.35	6,029.50	6,039.31	6,023.82	6,039.46	6,024.70	1.000	0.013
DPA18B-1	Pipe - (624)	1.25	18.0	52.2	0.035	6,023.40	6,021.55	6.26	6,029.50	6,027.73	6,023.82	6,022.19	6,023.97	6,022.24	0.710	0.013
DPA32-1	Pipe - (625)	14.07	24.0	42.5	0.010	6,033.22	6,032.80	4.48	6,040.60	6,040.55	6,036.49	6,036.33	6,036.81	6,036.64	1.000	0.013
DPA26A-1	Pipe - (642)	3.83	18.0	33.8	0.050	6,047.20	6,045.51	9.79	6,052.99	6,052.39	6,048.38	6,048.37	6,048.48	6,048.44	1.000	0.013
DPR6A-1	Pipe - (645)	3.70	18.0	33.8	0.020	6,054.40	6,053.73	6.96	6,060.15	6,059.83	6,055.57	6,055.56	6,055.67	6,055.63	1.000	0.013
DPA42A-1	Pipe - (646)	0.00	18.0	35.2	0.020	6,064.92	6,064.22	0.00	6,072.12	6,071.97	6,066.77	6,066.77	6,066.77	6,066.77	1.000	0.013
DPA26A-2	Pipe - (662)	8.47	18.0	8.3	0.050	6,045.93	6,045.51	4.79	6,052.52	6,052.39	6,048.42	6,048.37	6,048.78	6,048.72	1.000	0.013
DPA1-1B	Pipe - (717)	439.86	72.0	44.2	0.003	5,955.81	5,955.68	9.25	5,969.65	5,955.54	5,960.62	5,960.50	5,961.89	5,961.77	3.000	0.013
DPA24-13	Pipe - 96 (2)	29.22	24.0	82.3	0.030	6,078.52	6,076.05	9.30	6,085.80	6,083.06	6,081.86	6,080.49	6,083.21	6,081.83	1.056	0.013

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Scenario: 5yr
Current Time Step: 0.000 h
FlexTable: Manhole Table

Label	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Flow (Total Out) (cfs)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Headloss Coefficient (Standard)
DPA1-10	6,004.87	5,994.28	43.64	5,996.19	5,996.19	5,997.73	5,996.91	0.000
DPA1-11	6,004.77	5,994.36	43.64	5,998.23	5,996.83	5,998.49	5,997.55	1.944
DPA1-12	6,004.83	5,995.07	38.45	5,998.95	5,997.99	6,000.06	5,998.53	1.770
DPA1-13	6,008.75	6,000.06	29.14	6,002.47	6,002.41	6,004.59	6,003.13	0.090
DPA1-14	6,012.05	6,003.09	29.14	6,006.12	6,005.26	6,006.38	6,005.98	1.189
DPA1-15	6,015.13	6,006.45	18.00	6,008.90	6,008.19	6,011.39	6,008.78	1.212
DPA1-16	6,018.97	6,010.96	15.30	6,012.62	6,012.57	6,015.38	6,013.10	0.094
DPA1-18	6,032.43	6,024.79	15.30	6,027.05	6,026.45	6,027.28	6,026.98	1.143
DPA1-19	6,042.47	6,031.63	13.75	6,033.23	6,033.21	6,033.76	6,033.70	0.050
DPA1-1B	5,969.65	5,955.33	439.86	5,964.84	5,960.16	5,964.91	5,961.72	3.000
DPA1-1C	5,977.96	5,955.94	56.29	5,964.85	5,964.85	5,966.10	5,964.91	0.050
DPA1-1D	5,985.89	5,967.37	56.29	5,969.81	5,969.78	5,971.12	5,970.50	0.050
DPA1-1E	5,986.19	5,977.50	56.29	5,979.53	5,979.50	5,980.26	5,980.22	0.050
DPA1-2	6,005.58	5,983.46	164.46	5,989.13	5,987.51	5,991.68	5,988.95	1.120
DPA1-20	6,044.49	6,032.67	13.75	6,035.61	6,034.21	6,035.73	6,034.70	2.857
DPA1-21	6,041.72	6,033.97	10.64	6,036.01	6,035.66	6,036.15	6,035.89	1.542
DPA1-22	6,044.56	6,037.67	6.11	6,039.13	6,038.79	6,039.36	6,039.13	1.010
DPA1-23	6,044.45	6,039.07	6.11	6,039.94	6,039.94	6,040.28	6,040.28	0.000
DPA1-3	6,007.42	5,986.84	162.60	5,992.94	5,991.05	5,996.17	5,992.60	1.216
DPA1-9	6,005.71	5,992.30	44.31	5,995.55	5,994.78	5,995.91	5,995.51	1.060
DPA2-2	5,991.73	5,983.20	3.40	5,986.65	5,986.59	5,986.68	5,986.65	1.000
DPA2-3	5,991.23	5,984.20	2.44	5,986.69	5,986.66	5,986.71	5,986.69	1.000
DPA2-4	5,992.40	5,986.29	1.95	5,987.21	5,987.02	5,987.40	5,987.21	1.000
DPA3-1	6,003.28	5,996.83	1.86	5,997.73	5,997.54	5,997.92	5,997.73	1.000
DPA4-2	6,004.68	5,998.91	5.32	6,000.38	6,000.01	6,000.75	6,000.38	1.000
DPA5-1	6,006.00	5,998.65	9.35	6,000.50	6,000.03	6,000.76	6,000.47	1.050
DPA5-2	6,005.74	5,999.34	9.35	6,000.91	6,000.91	6,002.17	6,001.35	0.000
DPA5-3	6,011.20	6,003.53	9.35	6,005.38	6,004.91	6,005.66	6,005.35	1.061
DPA5-4	6,011.57	6,004.63	5.70	6,006.41	6,005.80	6,006.48	6,006.19	1.568
DPA5-5	6,012.14	6,005.59	3.55	6,006.66	6,006.52	6,007.77	6,006.80	0.515
DPA5-6	6,014.82	6,008.68	3.55	6,009.63	6,009.61	6,010.79	6,009.89	0.074
DPA5-7	6,017.90	6,012.03	3.55	6,013.03	6,012.95	6,014.19	6,013.23	0.280
DPA5-8	6,020.33	6,014.69	3.55	6,015.68	6,015.61	6,016.84	6,015.89	0.264
DPA5-9	6,023.03	6,017.40	3.55	6,018.64	6,018.33	6,018.68	6,018.61	1.119
DPA6-1	6,023.90	6,018.47	1.15	6,019.08	6,019.08	6,019.22	6,019.22	0.000
DPA6-2	6,024.39	6,018.21	2.40	6,019.02	6,019.02	6,019.24	6,019.24	0.000
DPA7-1	6,012.78	6,005.29	6.36	6,006.57	6,006.57	6,006.99	6,006.99	0.000
DPA7-2	6,013.09	6,007.33	4.80	6,008.38	6,008.38	6,009.58	6,008.73	0.000
DPA7-3	6,019.15	6,013.71	4.80	6,015.16	6,014.76	6,015.18	6,015.11	1.166
DPA7-4	6,019.17	6,014.16	1.31	6,015.18	6,015.13	6,015.24	6,015.18	1.000
DPA8-1	6,021.19	6,015.58	3.52	6,016.29	6,016.29	6,016.99	6,016.56	0.000
DPA8-2	6,022.31	6,016.13	3.52	6,017.11	6,017.09	6,018.32	6,017.36	0.070
DPA8-3	6,028.81	6,021.65	3.52	6,022.94	6,022.58	6,022.95	6,022.85	1.296
DPA8-4	6,029.59	6,022.95	0.95	6,023.65	6,023.52	6,023.78	6,023.65	1.000
DPA10-1	6,015.32	6,009.33	2.77	6,010.35	6,010.33	6,010.84	6,010.57	0.088
DPA10-2	6,015.66	6,009.91	2.09	6,010.83	6,010.83	6,011.03	6,011.03	0.000
DPA11-1	6,033.02	6,026.97	1.58	6,027.66	6,027.66	6,027.83	6,027.83	0.000
DPA12-1	6,045.42	6,037.46	3.14	6,038.31	6,038.31	6,039.35	6,038.57	0.000
DPA12-2	6,049.83	6,043.51	3.14	6,044.54	6,044.19	6,044.68	6,044.45	1.349
DPA12-3	6,050.23	6,044.64	2.08	6,045.38	6,045.38	6,045.59	6,045.59	0.000
DPA13-1	6,051.96	6,045.64	1.08	6,046.24	6,046.24	6,046.38	6,046.38	0.000
DPA14-1	6,042.27	6,036.52	1.39	6,037.59	6,037.43	6,037.75	6,037.59	1.000
DPA14-2	6,041.79	6,036.13	3.27	6,037.22	6,037.20	6,037.33	6,037.46	0.078
DPA14-3	6,041.79	6,036.13	1.29	6,036.83	6,036.68	6,036.98	6,036.83	1.000
DPA15-1	6,015.67	5,995.73	118.83	5,999.26	5,999.08	6,002.33	6,000.30	0.152
DPA15-10	6,017.56	6,006.57	30.40	6,009.55	6,008.80	6,010.12	6,009.47	1.128
DPA15-11	6,019.16	6,008.16	29.46	6,011.53	6,010.48	6,012.40	6,011.21	1.444
DPA15-12	6,020.86	6,010.65	36.70	6,013.08	6,012.99	6,015.53	6,014.12	0.074
DPA15-13	6,021.87	6,012.44	36.70	6,014.86	6,014.78	6,015.45	6,015.91	0.068
DPA15-14	6,022.52	6,013.61	24.48	6,016.53	6,015.59	6,016.82	6,016.34	1.253
DPA15-15	6,024.11	6,016.21	20.66	6,018.11	6,018.05	6,020.69	6,018.71	0.079
DPA15-16	6,032.79	6,025.46	20.66	6,027.34	6,027.29	6,029.89	6,027.95	0.070
DPA15-17	6,037.09	6,029.14	20.66	6,031.68	6,030.97	6,031.71	6,031.63	1.084
DPA15-18	6,041.96	6,033.25	18.98	6,035.11	6,035.07	6,037.61	6,035.68	0.072
DPA15-19	6,046.56	6,037.19	18.98	6,039.05	6,039.01	6,041.36	6,039.62	0.072
DPA15-2	6,027.78	6,000.54	116.92	6,005.83	6,004.15	6,005.94	6,005.36	1.389
DPA15-20	6,050.15	6,040.63	18.98	6,042.44	6,042.40	6,043.56	6,043.01	0.070
DPA15-21	6,051.37	6,041.54	18.98	6,043.35	6,043.31	6,044.50	6,043.92	0.063
DPA15-22	6,052.75	6,042.62	18.98	6,045.41	6,044.39	6,046.26	6,045.00	1.662
DPA15-23	6,054.05	6,044.94	17.52	6,047.27	6,046.69	6,047.60	6,047.27	1.010
DPA15-24	6,053.05	6,046.34	17.52	6,049.20	6,048.10	6,049.21	6,048.68	1.907
DPA15-25	6,053.32	6,046.94	16.50	6,049.19	6,049.18	6,049.65	6,049.44	0.050
DPA15-26	6,055.34	6,047.08	15.59	6,049.41	6,049.41	6,049.95	6,049.95	0.000
DPA15-3	6,027.30	6,002.09	37.31	6,005.87	6,005.83	6,006.03	6,005.98	0.216

DPA15-7	6,016.33	6,004.43	37.31	6,007.36	6,006.71	6,007.68	6,007.36	0.992
DPA15-8	6,016.01	6,004.92	35.59	6,008.01	6,007.28	6,008.04	6,007.92	1.147
DPA15-9	6,017.00	6,006.86	30.40	6,008.53	6,008.53	6,009.68	6,009.20	0.000
DPA16-1	6,012.66	6,006.88	5.26	6,008.18	6,007.98	6,008.38	6,008.18	1.000
DPA17-1	6,017.82	6,009.34	1.01	6,010.06	6,009.92	6,010.19	6,010.06	1.000
DPA17A-1	6,019.67	6,009.60	5.13	6,011.74	6,011.53	6,011.94	6,011.74	1.000
DPA18-1	6,023.16	6,016.18	3.91	6,017.12	6,017.12	6,017.88	6,017.41	0.000
DPA18-2	6,024.66	6,017.25	3.91	6,018.46	6,018.14	6,018.51	6,018.43	1.075
DPA18-3	6,027.73	6,020.80	1.46	6,021.73	6,021.57	6,022.01	6,021.74	0.959
DPA18-4	6,039.47	6,028.33	1.12	6,029.13	6,028.98	6,029.20	6,029.12	1.068
DPA18-5	6,040.04	6,033.76	0.69	6,034.30	6,034.28	6,034.81	6,034.39	0.176
DPA18-6	6,040.90	6,034.70	0.69	6,035.33	6,035.22	6,035.87	6,035.33	1.000
DPA18-7	6,040.87	6,036.12	0.69	6,036.75	6,036.64	6,036.85	6,036.75	1.000
DPA18A-1	6,024.66	6,018.80	1.16	6,019.41	6,019.41	6,019.56	6,019.56	-
DPA18A-2	6,024.82	6,017.92	1.31	6,018.56	6,018.56	6,018.71	6,018.71	-
DPA18B-1	6,029.50	6,023.40	0.35	6,023.67	6,023.62	6,024.08	6,023.69	0.710
DPA18B-2	6,045.35	6,038.89	0.35	6,039.18	6,039.11	6,039.26	6,039.18	1.000
DPA19-1	6,037.42	6,031.05	1.66	6,031.74	6,031.74	6,031.92	6,031.92	0.000
DPA20-1	6,053.28	6,047.85	1.03	6,049.21	6,049.20	6,049.22	6,049.21	1.000
DPA21-1	6,053.01	6,046.49	1.47	6,047.09	6,047.09	6,047.26	6,047.26	0.000
DPA22-11	6,038.47	6,027.77	41.74	6,030.12	6,030.07	6,032.73	6,030.90	0.057
DPA22-12	6,042.81	6,031.36	41.74	6,034.86	6,033.83	6,035.13	6,034.66	1.247
DPA22-13	6,045.58	6,035.17	17.48	6,037.63	6,036.92	6,039.89	6,037.49	1.239
DPA22-14	6,054.27	6,044.26	14.75	6,045.88	6,045.84	6,048.14	6,046.36	0.072
DPA22-15	6,062.96	6,053.31	14.75	6,054.93	6,054.89	6,056.53	6,055.41	0.061
DPA22-16	6,073.48	6,059.36	14.75	6,060.97	6,060.94	6,061.52	6,061.46	0.050
DPA22-17	6,077.15	6,061.02	14.75	6,062.67	6,062.64	6,063.22	6,063.16	0.050
DPA22-18	6,071.97	6,062.22	14.75	6,063.83	6,063.80	6,064.38	6,064.32	0.050
DPA22-19	6,070.79	6,062.95	14.75	6,065.43	6,064.57	6,065.52	6,065.09	1.660
DPA22-20	6,071.70	6,064.42	6.86	6,066.03	6,065.60	6,066.84	6,065.96	1.201
DPA22-21	6,074.61	6,066.43	6.27	6,068.06	6,067.65	6,068.34	6,068.07	0.992
DPA22-22	6,078.66	6,067.52	6.27	6,068.50	6,068.50	6,068.92	6,068.92	0.000
DPA22-5	6,028.37	6,007.16	79.64	6,010.66	6,010.29	6,013.29	6,011.37	0.347
DPA22-7	6,030.48	6,013.27	79.64	6,018.17	6,016.31	6,020.48	6,017.52	1.539
DPA22-8	6,029.17	6,017.97	44.35	6,021.45	6,020.52	6,021.45	6,021.30	1.190
DPA22-9	6,031.66	6,022.90	41.74	6,025.34	6,025.28	6,028.24	6,026.11	0.074
DPA23-1	6,008.80	5,997.60	0.64	5,998.65	5,998.55	5,998.75	5,998.65	1.000
DPA24-1	6,032.69	6,021.07	35.82	6,025.03	6,025.03	6,027.18	6,025.87	0.000
DPA24-10	6,072.60	6,064.58	14.33	6,066.74	6,066.19	6,067.22	6,066.69	1.107
DPA24-11	6,082.22	6,073.33	18.80	6,076.13	6,075.51	6,076.90	6,076.12	1.010
DPA24-12	6,083.06	6,075.22	18.80	6,077.61	6,077.61	6,077.93	6,078.40	0.000
DPA24-13	6,085.80	6,077.88	11.90	6,080.31	6,079.76	6,080.33	6,080.29	1.056
DPA24-14	6,087.39	6,079.99	10.21	6,082.22	6,081.42	6,082.35	6,081.89	1.690
DPA24-15	6,093.55	6,086.35	5.14	6,087.46	6,087.43	6,088.96	6,087.79	0.072
DPA24-16	6,098.22	6,091.35	5.14	6,092.78	6,092.41	6,093.02	6,092.77	1.010
DPA24-17	6,099.28	6,093.49	5.14	6,094.44	6,094.44	6,094.80	6,094.80	0.000
DPA24-2	6,034.23	6,023.95	35.82	6,027.13	6,026.24	6,027.83	6,027.08	1.056
DPA24-3	6,038.99	6,029.35	33.10	6,031.62	6,031.55	6,033.91	6,032.34	0.086
DPA24-3A	6,040.55	6,030.70	33.10	6,034.10	6,033.17	6,034.95	6,033.96	1.175
DPA24-4	6,041.63	6,032.05	26.59	6,035.25	6,034.38	6,035.64	6,035.05	1.291
DPA24-5	6,052.39	6,043.67	21.40	6,046.36	6,045.59	6,046.56	6,046.27	1.139
DPA24-6	6,056.61	6,048.09	15.90	6,049.81	6,049.78	6,052.17	6,050.32	0.063
DPA24-7	6,061.61	6,053.21	15.90	6,054.92	6,054.88	6,057.28	6,055.42	0.077
DPA24-8	6,066.57	6,058.28	15.90	6,059.99	6,059.95	6,062.35	6,060.49	0.079
DPA24-9	6,070.88	6,062.79	15.90	6,065.14	6,064.48	6,065.69	6,065.02	1.229
DPA25-1	6,034.40	6,028.22	1.72	6,029.10	6,028.92	6,029.28	6,029.10	1.000
DPA25-2	6,034.78	6,027.68	1.00	6,028.56	6,028.42	6,028.69	6,028.56	1.000
DPA26-1	6,042.26	6,035.63	5.32	6,036.63	6,036.63	6,038.02	6,036.94	0.000
DPA26-2	6,050.38	6,040.04	5.32	6,041.21	6,041.06	6,042.05	6,041.37	0.480
DPA26-3	6,051.43	6,041.02	5.32	6,042.55	6,042.12	6,042.67	6,042.49	1.160
DPA26-4	6,051.65	6,042.34	4.00	6,043.62	6,043.32	6,043.68	6,043.62	1.010
DPA26-5	6,053.24	6,047.77	2.09	6,048.73	6,048.53	6,048.93	6,048.73	1.000
DPA26A-1	6,052.99	6,046.99	1.67	6,047.86	6,047.69	6,048.04	6,047.86	1.000
DPA26A-2	6,052.52	6,045.72	3.94	6,046.99	6,046.69	6,047.29	6,046.99	1.000
DPA27-1	6,074.83	6,068.53	1.58	6,069.38	6,069.21	6,069.55	6,069.38	1.000
DPA28-1	6,072.82	6,066.60	1.75	6,067.50	6,067.31	6,067.68	6,067.50	1.000
DPA28-2	6,072.88	6,067.23	0.68	6,067.86	6,067.75	6,067.97	6,067.86	1.000
DPA29-1	6,086.37	6,080.22	0.68	6,080.84	6,080.74	6,080.95	6,080.84	1.000
DPA29-2	6,085.84	6,079.61	1.04	6,080.36	6,080.28	6,080.44	6,080.36	1.000
DPA30-1	6,087.88	6,082.01	5.08	6,082.96	6,082.96	6,083.31	6,083.31	0.000
DPA31-1	6,028.48	6,021.80	2.68	6,022.86	6,022.63	6,023.10	6,022.86	1.000
DPA31-2	6,031.02	6,021.32	0.00	6,021.45	6,021.45	6,021.45	6,021.45	1.000
DPA32-1	6,040.60	6,032.79	14.07	6,034.57	6,034.57	6,035.17	6,035.17	-
DPA33-1	6,042.87	6,033.17	24.30	6,035.33	6,035.33	6,036.42	6,035.96	0.000
DPA33-10	6,067.16	6,057.56	12.71	6,059.59	6,059.05	6,059.80	6,059.51	1.159
DPA33-11	6,070.02	6,062.63	3.73	6,063.60	6,063.58	6,065.15	6,063.87	0.063
DPA33-12	6,073.55	6,066.77	3.73	6,067.74	6,067.72	6,069.20	6,068.01	0.066
DPA33-13	6,076.62	6,070.07	3.73	6,071.04	6,071.02	6,072.38	6,071.31	0.061
DPA33-14	6,081.20	6,074.36	3.73	6,075.65	6,075.31	6,075.66	6,075.60	1.170
DPA33-15	6,090.04	6,083.54	0.97	6,084.26	6,084.11	6,084.79	6,084.24	1.176
DPA33-16	6,092.09	6,085.94	0.77	6,086.53	6,086.47	6,087.11	6,086.58	0.533
DPA33-17	6,098.75	6,092.46	0.77	6,093.11	6,093.00	6,093.23	6,093.11	1.000
DPA33-2	6,043.61	6,033.63	24.30	6,036.28	6,035.55	6,036.53	6,036.18	1.158
DPA33-3	6,044.26	6,034.73	21.20	6,036.59	6,036.55	6,038.60	6,037.13	0.066
DPA33-4	6,048.59	6,038.16	21.20	6,040.70	6,039.97	6,040.76	6,040.55	1.260

	6,054.21	6,042.79	19.64	6,045.26	6,044.55	6,045.65	6,045.10	1.292
DPA33-6	6,056.59	6,046.05	16.18	6,048.26	6,047.71	6,048.58	6,048.26	1.010
DPA33-7	6,057.47	6,048.07	16.18	6,050.36	6,049.73	6,050.60	6,050.28	1.159
DPA33-8	6,060.35	6,052.03	14.71	6,054.14	6,053.61	6,054.39	6,054.13	1.035
DPA33-9	6,063.48	6,054.73	12.71	6,056.25	6,056.22	6,058.19	6,056.68	0.066
DPA34-1	6,044.13	6,036.13	3.11	6,037.27	6,037.01	6,037.52	6,037.27	1.000
DPA35-1	6,048.85	6,039.87	1.60	6,040.78	6,040.68	6,040.90	6,040.77	1.099
DPA35-2	6,043.48	6,040.48	1.46	6,041.31	6,041.14	6,041.47	6,041.31	1.000
DPA36-1	6,054.45	6,047.27	3.04	6,048.40	6,048.14	6,048.65	6,048.40	1.000
DPA36-2	6,054.47	6,047.93	0.49	6,048.49	6,048.40	6,048.58	6,048.49	1.000
DPA37-1	6,056.44	6,051.34	1.48	6,052.48	6,052.32	6,052.65	6,052.48	1.000
DPA37A-1	6,060.53	6,054.14	2.05	6,055.09	6,054.89	6,055.29	6,055.09	1.000
DPA38-1	6,067.07	6,058.63	9.02	6,059.94	6,059.92	6,061.05	6,060.30	0.063
DPA38-2	6,067.86	6,059.56	9.02	6,061.36	6,060.85	6,061.74	6,061.23	1.362
DPA38-3	6,073.00	6,067.01	7.85	6,068.54	6,068.01	6,068.58	6,068.40	1.365
DPA38-4	6,080.31	6,073.86	5.94	6,075.00	6,074.97	6,076.67	6,075.30	0.072
DPA38-5	6,089.37	6,081.48	5.94	6,082.62	6,082.59	6,083.63	6,082.92	0.074
DPA38-6	6,091.82	6,082.78	5.94	6,084.22	6,083.89	6,084.45	6,084.22	1.010
DPA38-7	6,091.38	6,085.73	5.94	6,086.92	6,086.59	6,087.25	6,086.92	1.000
DPA39-1	6,066.51	6,062.04	1.22	6,062.81	6,062.66	6,062.96	6,062.81	1.000
DPA39A-1	6,073.17	6,067.76	2.05	6,068.71	6,068.51	6,068.91	6,068.71	1.000
DPA40-1	6,082.92	6,075.72	2.78	6,076.69	6,076.56	6,077.07	6,076.80	0.515
DPA40-2	6,081.89	6,076.24	2.78	6,077.10	6,077.08	6,078.16	6,077.32	0.088
DPA40-3	6,085.03	6,080.97	2.78	6,082.04	6,081.80	6,082.28	6,082.04	1.000
DPA41-1	6,088.51	6,084.61	0.20	6,085.04	6,084.98	6,085.10	6,085.04	1.000
DPA42-1	6,045.62	6,038.61	1.77	6,039.49	6,039.31	6,039.68	6,039.49	1.000
DPA42-2	6,045.68	6,038.97	0.93	6,039.75	6,039.62	6,039.87	6,039.75	1.000
DPA42A-1	6,072.12	6,064.41	0.00	6,064.92	6,064.92	6,064.92	6,064.92	-
DPA43-1	6,070.97	6,065.28	0.67	6,065.89	6,065.78	6,066.00	6,065.89	1.000
DPA43-2	6,070.88	6,063.71	7.36	6,065.48	6,065.42	6,065.61	6,065.48	1.050
DPA43-3	6,073.59	6,064.67	6.11	6,065.62	6,065.62	6,065.96	6,065.96	0.000
DPA44-1	6,072.13	6,066.03	0.74	6,066.93	6,066.82	6,067.04	6,066.93	1.000
DPR1-0	5,987.86	5,974.43	26.70	5,976.24	5,976.24	5,976.51	5,976.51	0.001
DPR1-1A	5,976.63	5,959.27	26.70	5,964.90	5,964.89	5,967.19	5,965.11	0.050
DPR1-1B	5,987.09	5,970.35	26.70	5,972.72	5,972.58	5,974.93	5,973.26	0.208
DPR1-2	5,989.50	5,973.40	26.70	5,976.31	5,975.63	5,976.48	5,976.31	1.010
DPR2-0	6,047.56	6,037.95	15.99	6,039.23	6,039.23	6,039.70	6,039.71	0.000
DPR2-1	6,048.15	6,038.11	15.99	6,039.74	6,039.72	6,040.31	6,040.20	0.050
DPR2-10	6,066.60	6,059.84	4.47	6,060.88	6,060.86	6,061.72	6,061.19	0.058
DPR2-11	6,070.48	6,062.24	4.47	6,063.28	6,063.26	6,063.79	6,063.59	0.058
DPR2-12	6,074.91	6,063.70	4.47	6,064.74	6,064.72	6,065.24	6,065.05	0.061
DPR2-13	6,077.41	6,064.59	4.47	6,066.42	6,065.61	6,066.50	6,065.94	2.466
DPR2-2	6,047.25	6,039.27	15.99	6,041.02	6,040.95	6,041.59	6,041.49	0.129
DPR2-3	6,046.63	6,039.89	15.99	6,042.25	6,041.57	6,042.47	6,042.11	1.244
DPR2-4	6,047.13	6,040.49	12.40	6,042.56	6,042.26	6,043.03	6,042.52	1.153
DPR2-5	6,048.61	6,042.28	11.65	6,043.79	6,043.76	6,045.15	6,044.27	0.057
DPR2-6	6,052.84	6,044.94	11.65	6,046.98	6,046.42	6,047.27	6,046.93	1.083
DPR2-7	6,056.71	6,048.40	10.70	6,050.39	6,049.82	6,050.52	6,050.31	1.174
DPR2-8	6,059.83	6,052.82	6.20	6,054.52	6,053.99	6,054.57	6,054.41	1.263
DPR2-9	6,062.85	6,055.93	4.47	6,056.97	6,056.95	6,058.23	6,057.28	0.059
DPR3-1	6,046.82	6,041.63	2.68	6,042.46	6,042.46	6,042.69	6,042.69	0.000
DPR3-2	6,046.83	6,042.11	0.95	6,042.68	6,042.68	6,042.81	6,042.81	0.000
DPR4-1	6,048.90	6,042.84	0.78	6,043.32	6,043.32	6,043.43	6,043.43	0.000
DPR5-1	6,054.57	6,046.66	0.99	6,047.03	6,047.03	6,047.16	6,047.16	0.000
DPR6-1	6,055.37	6,050.36	4.54	6,051.39	6,051.39	6,051.72	6,051.72	0.000
DPR6A-1	6,060.15	6,052.55	1.75	6,054.90	6,054.90	6,055.08	6,055.08	-
DPR7-1	6,077.07	6,065.50	3.25	6,066.58	6,066.58	6,066.84	6,066.84	0.000
DPR7-2	6,077.42	6,066.16	1.23	6,066.56	6,066.56	6,066.71	6,066.71	0.000
DPR8-1	6,018.73	6,006.36	0.98	6,007.06	6,007.00	6,007.83	6,007.10	0.640
DPR8-2	6,032.00	6,021.42	0.98	6,022.00	6,022.00	6,022.13	6,022.13	0.000

Scenario: 100yr
Current Time Step: 0.000 h
FlexTable: Manhole Table

Label	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Flow (Total Out) (cfs)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Headloss Coefficient (Standard)
DPA1-10	6,004.87	5,994.28	99.50	6,000.36	6,000.36	6,000.97	6,000.97	0.000
DPA1-11	6,004.77	5,994.36	99.50	6,001.64	6,000.46	6,002.40	6,001.06	1.944
DPA1-12	6,004.83	5,995.07	87.78	6,003.09	6,001.75	6,004.47	6,002.51	1.770
DPA1-13	6,008.75	6,000.06	66.68	6,004.87	6,004.75	6,006.25	6,006.13	0.090
DPA1-14	6,012.05	6,003.09	66.68	6,008.05	6,006.12	6,009.12	6,007.74	1.189
DPA1-15	6,015.13	6,006.45	40.83	6,010.46	6,008.90	6,010.67	6,010.18	1.212
DPA1-16	6,018.97	6,010.96	34.46	6,013.34	6,013.25	6,017.68	6,014.29	0.094
DPA1-18	6,032.43	6,024.79	34.46	6,028.32	6,027.13	6,028.93	6,028.17	1.143
DPA1-19	6,042.47	6,031.63	30.80	6,033.90	6,033.85	6,034.83	6,034.78	0.050
DPA1-1B	5,969.65	5,955.33	439.86	5,964.44	5,960.62	5,966.74	5,961.89	3.000
DPA1-1C	5,977.96	5,955.94	344.25	5,964.75	5,964.64	5,968.20	5,966.94	0.050
DPA1-1D	5,985.89	5,967.37	344.25	5,972.96	5,972.81	5,976.49	5,975.68	0.050
DPA1-1E	5,986.19	5,977.50	344.25	5,982.68	5,982.53	5,985.55	5,985.40	0.050
DPA1-2	6,005.58	5,983.46	399.09	5,993.28	5,989.35	5,997.57	5,992.86	1.120
DPA1-20	6,044.49	6,032.67	30.80	6,037.18	6,035.14	6,037.45	6,035.85	2.857
DPA1-21	6,041.72	6,033.97	23.77	6,038.49	6,037.93	6,038.52	6,038.29	1.542
DPA1-22	6,044.56	6,037.67	13.60	6,039.84	6,039.25	6,040.19	6,039.83	1.010
DPA1-23	6,044.45	6,039.07	13.60	6,040.40	6,040.40	6,040.98	6,040.98	0.000
DPA1-3	6,007.42	5,986.84	394.63	5,999.27	5,994.06	6,001.66	5,998.35	1.216
DPA1-9	6,005.71	5,992.30	100.86	6,000.18	5,999.52	6,000.79	6,000.15	1.060
DPA2-2	5,991.73	5,983.20	8.05	5,988.09	5,987.77	5,988.26	5,988.09	1.000
DPA2-3	5,991.23	5,984.20	5.86	5,988.33	5,988.16	5,988.45	5,988.33	1.000
DPA2-4	5,992.40	5,986.29	4.86	5,988.56	5,988.44	5,988.68	5,988.56	1.000
DPA3-1	6,003.28	5,996.83	4.33	5,998.15	5,997.83	5,998.47	5,998.15	1.000
DPA4-2	6,004.68	5,998.91	11.89	6,002.52	6,001.82	6,003.22	6,002.52	1.000
DPA5-1	6,006.00	5,998.65	21.09	6,004.13	6,003.40	6,004.83	6,004.10	1.050
DPA5-2	6,005.74	5,999.34	21.09	6,004.41	6,004.41	6,005.11	6,005.11	0.000
DPA5-3	6,011.20	6,003.53	21.09	6,006.81	6,006.07	6,007.72	6,006.77	1.061
DPA5-4	6,011.57	6,004.63	13.50	6,008.85	6,007.43	6,009.20	6,008.34	1.568
DPA5-5	6,012.14	6,005.59	8.40	6,009.21	6,009.03	6,009.56	6,009.38	0.515
DPA5-6	6,014.82	6,008.68	8.40	6,010.05	6,010.01	6,011.91	6,010.56	0.074
DPA5-7	6,017.90	6,012.03	8.40	6,013.51	6,013.35	6,015.27	6,013.90	0.280
DPA5-8	6,020.33	6,014.69	8.40	6,016.16	6,016.01	6,017.93	6,016.56	0.264
DPA5-9	6,023.03	6,017.40	8.40	6,019.34	6,018.73	6,019.38	6,019.28	1.119
DPA6-1	6,023.90	6,018.47	2.66	6,019.30	6,019.30	6,019.53	6,019.53	0.000
DPA6-2	6,024.39	6,018.21	5.74	6,019.36	6,019.36	6,019.75	6,019.75	0.000
DPA7-1	6,012.78	6,005.29	14.15	6,009.09	6,009.09	6,010.09	6,010.09	0.000
DPA7-2	6,013.09	6,007.33	11.71	6,009.06	6,009.06	6,009.75	6,009.75	0.000
DPA7-3	6,019.15	6,013.71	11.71	6,016.16	6,015.22	6,016.21	6,016.02	1.166
DPA7-4	6,019.17	6,014.16	3.30	6,016.22	6,016.17	6,016.28	6,016.22	1.000
DPA8-1	6,021.19	6,015.58	8.56	6,016.70	6,016.70	6,017.76	6,017.26	0.000
DPA8-2	6,022.31	6,016.13	8.56	6,017.54	6,017.50	6,019.52	6,018.06	0.070
DPA8-3	6,028.81	6,021.65	8.56	6,023.71	6,022.99	6,023.74	6,023.55	1.296
DPA8-4	6,029.59	6,022.95	2.17	6,023.92	6,023.72	6,024.13	6,023.92	1.000
DPA10-1	6,015.32	6,009.33	6.44	6,010.72	6,010.68	6,011.44	6,011.11	0.088
DPA10-2	6,015.66	6,009.91	4.94	6,011.13	6,011.13	6,011.49	6,011.49	0.000
DPA11-1	6,033.02	6,026.97	3.72	6,028.36	6,028.36	6,028.46	6,028.46	0.000
DPA12-1	6,045.42	6,037.46	7.28	6,038.69	6,038.69	6,040.33	6,039.16	0.000
DPA12-2	6,049.83	6,043.51	7.28	6,045.21	6,044.57	6,045.35	6,045.04	1.349
DPA12-3	6,050.23	6,044.64	4.82	6,045.68	6,045.68	6,046.03	6,046.03	0.000
DPA13-1	6,051.96	6,045.64	2.47	6,046.45	6,046.45	6,046.67	6,046.67	0.000
DPA14-1	6,042.27	6,036.52	3.41	6,038.76	6,038.70	6,038.81	6,038.76	1.000
DPA14-2	6,041.79	6,036.13	7.45	6,038.68	6,038.66	6,038.74	6,038.93	0.078
DPA14-3	6,041.79	6,036.13	2.74	6,038.54	6,038.50	6,038.57	6,038.54	1.000
DPA15-1	6,015.67	5,995.73	294.50	6,002.97	6,002.61	6,005.35	6,005.00	0.152
DPA15-10	6,017.56	6,006.57	67.43	6,012.99	6,012.13	6,014.30	6,012.90	1.128
DPA15-11	6,019.16	6,008.16	64.81	6,015.30	6,013.42	6,017.17	6,014.72	1.444
DPA15-12	6,020.86	6,010.65	53.75	6,016.55	6,016.42	6,018.42	6,018.28	0.074
DPA15-13	6,021.87	6,012.44	53.75	6,017.52	6,017.40	6,019.39	6,019.26	0.068
DPA15-14	6,022.52	6,013.61	53.75	6,020.39	6,018.06	6,021.65	6,019.92	1.253
DPA15-15	6,024.11	6,016.21	44.18	6,021.38	6,021.28	6,022.63	6,022.53	0.079
DPA15-16	6,032.79	6,025.46	44.18	6,028.06	6,027.96	6,031.57	6,029.40	0.070
DPA15-17	6,037.09	6,029.14	44.18	6,033.20	6,031.64	6,033.28	6,033.08	1.084
DPA15-18	6,041.96	6,033.25	40.20	6,035.81	6,035.72	6,039.24	6,036.99	0.072
DPA15-19	6,046.56	6,037.19	40.20	6,039.75	6,039.66	6,042.93	6,040.92	0.072
DPA15-2	6,027.78	6,000.54	293.84	6,009.83	6,005.88	6,010.25	6,008.72	1.389
DPA15-20	6,050.15	6,040.63	40.20	6,043.14	6,043.05	6,044.76	6,044.31	0.070
DPA15-21	6,051.37	6,041.54	40.20	6,044.04	6,043.96	6,045.69	6,045.22	0.063
DPA15-22	6,052.75	6,042.62	40.20	6,047.14	6,045.04	6,048.01	6,046.30	1.662
DPA15-23	6,054.05	6,044.94	36.67	6,049.40	6,048.52	6,050.27	6,049.39	1.010
DPA15-24	6,053.05	6,046.34	36.67	6,051.82	6,050.17	6,051.85	6,051.04	1.907
DPA15-25	6,053.32	6,046.94	34.28	6,052.08	6,052.04	6,052.76	6,052.80	0.050
DPA15-26	6,055.34	6,047.08	32.31	6,052.24	6,052.24	6,052.91	6,052.91	0.000
DPA15-3	6,027.30	6,002.09	83.14	6,010.08	6,009.99	6,010.51	6,010.42	0.216

DPA15-7	6,016.33	6,004.43	83.14	6,011.27	6,010.85	6,011.66	6,011.27	0.992
DPA15-8	6,016.01	6,004.92	79.51	6,011.85	6,011.41	6,011.95	6,011.80	1.147
DPA15-9	6,017.00	6,006.86	67.43	6,012.06	6,012.06	6,012.82	6,012.82	0.000
DPA16-1	6,012.66	6,006.88	12.12	6,012.12	6,012.02	6,012.21	6,012.12	1.000
DPA17-1	6,017.82	6,009.34	2.92	6,013.04	6,013.00	6,013.09	6,013.04	1.000
DPA17A-1	6,019.67	6,009.60	11.23	6,016.29	6,015.66	6,016.92	6,016.29	1.000
DPA18-1	6,023.16	6,016.18	10.04	6,020.91	6,020.91	6,021.41	6,021.41	0.000
DPA18-2	6,024.66	6,017.25	10.04	6,021.92	6,021.38	6,022.00	6,021.88	1.075
DPA18-3	6,027.73	6,020.80	4.10	6,022.19	6,021.90	6,023.36	6,022.20	0.959
DPA18-4	6,039.47	6,028.33	2.88	6,029.49	6,029.22	6,029.55	6,029.47	1.068
DPA18-5	6,040.04	6,033.76	1.72	6,034.50	6,034.46	6,035.25	6,034.64	0.176
DPA18-6	6,040.90	6,034.70	1.72	6,035.58	6,035.40	6,036.45	6,035.58	1.000
DPA18-7	6,040.87	6,036.12	1.72	6,037.00	6,036.82	6,037.18	6,037.00	1.000
DPA18A-1	6,024.66	6,018.80	2.97	6,021.94	6,021.94	6,021.99	6,021.99	-
DPA18A-2	6,024.82	6,017.92	3.04	6,021.92	6,021.92	6,021.97	6,021.97	-
DPA18B-1	6,029.50	6,023.40	1.25	6,023.92	6,023.82	6,024.80	6,023.97	0.710
DPA18B-2	6,045.35	6,038.89	1.25	6,039.46	6,039.31	6,039.61	6,039.46	1.000
DPA19-1	6,037.42	6,031.05	4.03	6,033.25	6,033.25	6,033.33	6,033.33	0.000
DPA20-1	6,053.28	6,047.85	2.42	6,051.86	6,051.83	6,051.89	6,051.86	1.000
DPA21-1	6,053.01	6,046.49	3.61	6,047.37	6,047.37	6,047.65	6,047.65	0.000
DPA22-11	6,038.47	6,027.77	117.49	6,031.71	6,031.57	6,035.87	6,033.89	0.057
DPA22-12	6,042.81	6,031.36	117.49	6,038.16	6,035.05	6,039.50	6,037.54	1.247
DPA22-13	6,045.58	6,035.17	45.65	6,040.68	6,039.01	6,041.68	6,040.36	1.239
DPA22-14	6,054.27	6,044.26	39.36	6,046.75	6,046.67	6,050.60	6,047.89	0.072
DPA22-15	6,062.96	6,053.31	39.36	6,055.79	6,055.72	6,058.46	6,056.94	0.061
DPA22-16	6,073.48	6,059.36	39.36	6,061.83	6,061.77	6,063.05	6,062.99	0.050
DPA22-17	6,077.15	6,061.02	39.36	6,064.96	6,064.91	6,065.96	6,065.91	0.050
DPA22-18	6,071.97	6,062.22	39.36	6,066.77	6,066.72	6,066.77	6,067.72	0.050
DPA22-19	6,070.79	6,062.95	39.36	6,069.48	6,067.82	6,069.87	6,068.82	1.660
DPA22-20	6,071.70	6,064.42	15.73	6,070.38	6,069.91	6,070.42	6,070.30	1.201
DPA22-21	6,074.61	6,066.43	13.08	6,072.78	6,071.94	6,073.63	6,072.79	0.992
DPA22-22	6,078.66	6,067.52	13.08	6,073.45	6,073.45	6,074.31	6,074.31	0.000
DPA22-5	6,028.37	6,007.16	206.17	6,013.43	6,012.52	6,018.01	6,015.13	0.347
DPA22-7	6,030.48	6,013.27	206.17	6,024.05	6,017.47	6,025.55	6,021.75	1.539
DPA22-8	6,029.17	6,017.97	123.55	6,026.69	6,024.90	6,026.85	6,026.41	1.190
DPA22-9	6,031.66	6,022.90	117.49	6,029.18	6,029.00	6,031.49	6,031.32	0.074
DPA23-1	6,008.80	5,997.60	1.36	6,000.21	6,000.20	6,000.21	6,000.21	1.000
DPA24-1	6,032.69	6,021.07	82.04	6,025.87	6,025.87	6,029.22	6,028.10	0.000
DPA24-10	6,072.60	6,064.58	34.83	6,068.09	6,066.92	6,069.67	6,067.97	1.107
DPA24-11	6,082.22	6,073.33	49.60	6,078.07	6,076.33	6,081.94	6,078.05	1.010
DPA24-12	6,083.06	6,075.22	49.60	6,080.49	6,080.49	6,081.83	6,084.36	0.000
DPA24-13	6,085.80	6,077.88	29.22	6,083.28	6,081.86	6,083.29	6,083.21	1.056
DPA24-14	6,087.39	6,079.99	25.58	6,085.56	6,083.81	6,086.45	6,084.84	1.690
DPA24-15	6,093.55	6,086.35	13.43	6,088.00	6,087.93	6,090.46	6,088.91	0.072
DPA24-16	6,098.22	6,091.35	13.43	6,093.90	6,092.91	6,094.80	6,093.89	1.010
DPA24-17	6,099.28	6,093.49	13.43	6,094.94	6,094.94	6,095.92	6,095.92	0.000
DPA24-2	6,034.23	6,023.95	82.04	6,029.43	6,027.08	6,031.22	6,029.31	1.056
DPA24-3	6,038.99	6,029.35	75.77	6,032.58	6,032.41	6,035.98	6,034.37	0.086
DPA24-3A	6,040.55	6,030.70	75.77	6,036.33	6,034.03	6,036.64	6,035.99	1.175
DPA24-4	6,041.63	6,032.05	62.61	6,038.21	6,036.63	6,039.87	6,037.85	1.291
DPA24-5	6,052.39	6,043.67	50.82	6,048.37	6,046.33	6,049.33	6,048.12	1.139
DPA24-6	6,056.61	6,048.09	38.70	6,050.61	6,050.53	6,054.18	6,051.73	0.063
DPA24-7	6,061.61	6,053.21	38.70	6,055.72	6,055.63	6,059.29	6,056.83	0.077
DPA24-8	6,066.57	6,058.28	38.70	6,060.79	6,060.70	6,064.28	6,061.90	0.079
DPA24-9	6,070.88	6,062.79	38.70	6,066.71	6,065.23	6,067.49	6,066.43	1.229
DPA25-1	6,034.40	6,028.22	3.98	6,029.58	6,029.41	6,029.74	6,029.58	1.000
DPA25-2	6,034.78	6,027.68	2.29	6,029.47	6,029.44	6,029.49	6,029.47	1.000
DPA26-1	6,042.26	6,035.63	11.95	6,038.33	6,038.33	6,038.55	6,038.55	0.000
DPA26-2	6,050.38	6,040.04	11.95	6,041.75	6,041.49	6,043.00	6,042.02	0.480
DPA26-3	6,051.43	6,041.02	11.95	6,043.50	6,042.54	6,043.92	6,043.37	1.160
DPA26-4	6,051.65	6,042.34	9.18	6,044.32	6,043.72	6,044.43	6,044.32	1.010
DPA26-5	6,053.24	6,047.77	4.66	6,049.15	6,048.81	6,049.48	6,049.15	1.000
DPA26A-1	6,052.99	6,046.99	3.83	6,048.48	6,048.38	6,048.59	6,048.48	1.000
DPA26A-2	6,052.52	6,045.72	8.47	6,048.78	6,048.42	6,049.13	6,048.78	1.000
DPA27-1	6,074.83	6,068.53	3.89	6,069.79	6,069.49	6,070.09	6,069.79	1.000
DPA28-1	6,072.82	6,066.60	4.16	6,068.19	6,068.08	6,068.29	6,068.19	1.000
DPA28-2	6,072.88	6,067.23	1.45	6,068.12	6,068.04	6,068.19	6,068.12	1.000
DPA29-1	6,086.37	6,080.22	1.48	6,083.30	6,083.29	6,083.31	6,083.30	1.000
DPA29-2	6,085.84	6,079.61	2.24	6,083.31	6,083.28	6,083.33	6,083.31	1.000
DPA30-1	6,087.88	6,082.01	12.16	6,086.10	6,086.10	6,086.84	6,086.84	0.000
DPA31-1	6,028.48	6,021.80	5.68	6,026.99	6,026.83	6,027.16	6,026.99	1.000
DPA31-2	6,031.02	6,021.32	0.00	6,026.69	6,026.69	6,026.69	6,026.69	1.000
DPA32-1	6,040.60	6,032.79	14.07	6,036.49	6,036.49	6,036.80	6,036.80	-
DPA33-1	6,042.87	6,033.17	72.46	6,038.80	6,038.80	6,040.43	6,040.43	0.000
DPA33-10	6,067.16	6,057.56	43.63	6,061.69	6,060.05	6,062.59	6,061.46	1.159
DPA33-11	6,070.02	6,062.63	13.44	6,064.27	6,064.21	6,067.14	6,065.19	0.063
DPA33-12	6,073.55	6,066.77	13.44	6,068.41	6,068.35	6,071.02	6,069.33	0.066
DPA33-13	6,076.62	6,070.07	13.44	6,071.71	6,071.65	6,074.30	6,072.63	0.061
DPA33-14	6,081.20	6,074.36	13.44	6,077.09	6,075.94	6,077.14	6,076.92	1.170
DPA33-15	6,090.04	6,083.54	3.38	6,084.76	6,084.44	6,085.01	6,084.71	1.176
DPA33-16	6,092.09	6,085.94	2.62	6,086.88	6,086.75	6,088.07	6,086.98	0.533
DPA33-17	6,098.75	6,092.46	2.62	6,093.51	6,093.28	6,093.74	6,093.51	1.000
DPA33-2	6,043.61	6,033.63	72.46	6,040.80	6,038.90	6,041.06	6,040.54	1.158
DPA33-3	6,044.26	6,034.73	65.24	6,041.23	6,041.14	6,042.55	6,042.46	0.066
DPA33-4	6,048.59	6,038.16	65.24	6,044.20	6,042.54	6,044.34	6,043.86	1.260

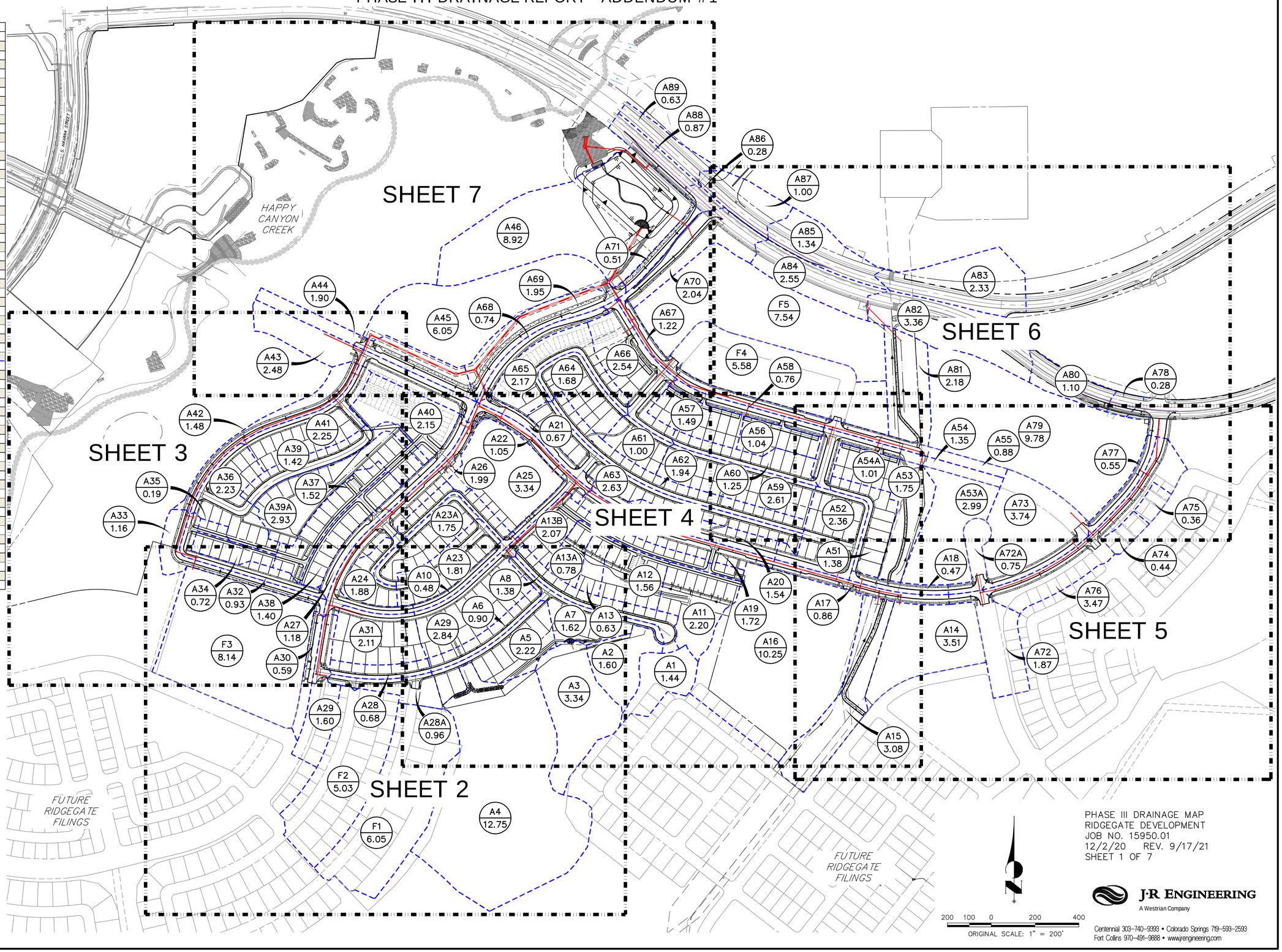
	6,054.21	6,042.79	60.26	6,047.47	6,045.64	6,047.96	6,047.05	1.292
DPA33-6	6,056.59	6,046.05	51.91	6,050.54	6,048.67	6,052.28	6,050.53	1.010
DPA33-7	6,057.47	6,048.07	51.91	6,053.24	6,051.23	6,054.77	6,052.97	1.159
DPA33-8	6,060.35	6,052.03	48.64	6,056.32	6,054.60	6,057.55	6,056.27	1.035
DPA33-9	6,063.48	6,054.73	43.63	6,057.31	6,057.22	6,060.57	6,058.63	0.066
DPA34-1	6,044.13	6,036.13	7.23	6,041.10	6,040.84	6,041.36	6,041.10	1.000
DPA35-1	6,048.85	6,039.87	5.17	6,044.37	6,044.23	6,044.49	6,044.36	1.099
DPA35-2	6,043.48	6,040.48	4.83	6,043.60	6,043.48	6,043.71	6,043.60	1.000
DPA36-1	6,054.45	6,047.27	7.40	6,049.02	6,048.53	6,049.50	6,049.02	1.000
DPA36-2	6,054.47	6,047.93	1.08	6,048.67	6,048.53	6,048.80	6,048.67	1.000
DPA37-1	6,056.44	6,051.34	3.27	6,053.33	6,053.27	6,053.38	6,053.33	1.000
DPA37A-1	6,060.53	6,054.14	5.06	6,056.47	6,056.35	6,056.60	6,056.47	1.000
DPA38-1	6,067.07	6,058.63	30.20	6,061.83	6,061.79	6,062.42	6,062.38	0.063
DPA38-2	6,067.86	6,059.56	30.20	6,062.96	6,061.72	6,064.15	6,062.63	1.362
DPA38-3	6,073.00	6,067.01	27.47	6,070.61	6,068.83	6,070.74	6,070.13	1.365
DPA38-4	6,080.31	6,073.86	22.49	6,075.87	6,075.80	6,079.38	6,076.78	0.072
DPA38-5	6,089.37	6,081.48	22.49	6,083.49	6,083.42	6,085.33	6,084.40	0.074
DPA38-6	6,091.82	6,082.78	22.49	6,085.71	6,084.72	6,086.51	6,085.70	1.010
DPA38-7	6,091.38	6,085.73	22.49	6,088.40	6,087.42	6,089.38	6,088.40	1.000
DPA39-1	6,066.51	6,062.04	2.76	6,063.12	6,062.88	6,063.36	6,063.12	1.000
DPA39A-1	6,073.17	6,067.76	5.16	6,070.76	6,070.63	6,070.89	6,070.76	1.000
DPA40-1	6,082.92	6,075.72	10.11	6,078.43	6,078.16	6,078.93	6,078.67	0.515
DPA40-2	6,081.89	6,076.24	10.11	6,078.77	6,078.72	6,079.28	6,079.23	0.088
DPA40-3	6,085.03	6,080.97	10.11	6,083.06	6,082.39	6,083.73	6,083.06	1.000
DPA41-1	6,088.51	6,084.61	0.76	6,085.26	6,085.14	6,085.37	6,085.26	1.000
DPA42-1	6,045.62	6,038.61	4.18	6,040.79	6,040.70	6,040.88	6,040.79	1.000
DPA42-2	6,045.68	6,038.97	2.11	6,040.71	6,040.69	6,040.74	6,040.71	1.000
DPA42A-1	6,072.12	6,064.41	0.00	6,066.77	6,066.77	6,066.77	6,066.77	-
DPA43-1	6,070.97	6,065.28	1.41	6,069.50	6,069.49	6,069.51	6,069.50	1.000
DPA43-2	6,070.88	6,063.71	22.97	6,069.87	6,069.52	6,070.52	6,069.86	1.050
DPA43-3	6,073.59	6,064.67	20.27	6,070.10	6,070.10	6,070.74	6,070.74	0.000
DPA44-1	6,072.13	6,066.03	2.81	6,070.46	6,070.42	6,070.50	6,070.46	1.000
DPR1-0	5,987.86	5,974.43	92.50	5,979.64	5,979.64	5,979.98	5,979.98	0.001
DPR1-1A	5,976.63	5,959.27	92.50	5,965.14	5,965.01	5,969.20	5,967.67	0.050
DPR1-1B	5,987.09	5,970.35	92.50	5,974.34	5,973.77	5,978.31	5,976.52	0.208
DPR1-2	5,989.50	5,973.40	92.50	5,979.60	5,976.82	5,979.95	5,979.57	1.010
DPR2-0	6,047.56	6,037.95	34.26	6,039.85	6,039.85	6,040.66	6,040.67	0.000
DPR2-1	6,048.15	6,038.11	34.26	6,040.38	6,040.34	6,041.42	6,041.16	0.050
DPR2-10	6,066.60	6,059.84	9.31	6,061.26	6,061.23	6,062.49	6,061.84	0.058
DPR2-11	6,070.48	6,062.24	9.31	6,063.67	6,063.63	6,064.37	6,064.24	0.058
DPR2-12	6,074.91	6,063.70	9.31	6,065.13	6,065.09	6,065.82	6,065.70	0.061
DPR2-13	6,077.41	6,064.59	9.31	6,067.47	6,065.98	6,067.71	6,066.59	2.466
DPR2-2	6,047.25	6,039.27	34.26	6,042.11	6,042.01	6,042.93	6,042.79	0.129
DPR2-3	6,046.63	6,039.89	34.26	6,043.63	6,042.68	6,043.84	6,043.44	1.244
DPR2-4	6,047.13	6,040.49	25.82	6,044.40	6,043.91	6,045.33	6,044.34	1.153
DPR2-5	6,048.61	6,042.28	24.27	6,045.28	6,045.23	6,046.21	6,046.15	0.057
DPR2-6	6,052.84	6,044.94	24.27	6,048.11	6,046.93	6,048.89	6,048.02	1.083
DPR2-7	6,056.71	6,048.40	22.32	6,051.47	6,050.34	6,051.91	6,051.31	1.174
DPR2-8	6,059.83	6,052.82	13.00	6,055.56	6,054.38	6,055.63	6,055.32	1.263
DPR2-9	6,062.85	6,055.93	9.31	6,057.36	6,057.32	6,059.23	6,057.93	0.059
DPR3-1	6,046.82	6,041.63	6.58	6,043.67	6,043.67	6,043.88	6,043.88	0.000
DPR3-2	6,046.83	6,042.11	1.99	6,043.64	6,043.64	6,043.66	6,043.66	0.000
DPR4-1	6,048.90	6,042.84	1.60	6,044.41	6,044.41	6,044.42	6,044.42	0.000
DPR5-1	6,054.57	6,046.66	2.05	6,048.12	6,048.12	6,048.14	6,048.14	0.000
DPR6-1	6,055.37	6,050.36	9.40	6,052.61	6,052.61	6,053.05	6,053.05	0.000
DPR6A-1	6,060.15	6,052.55	3.70	6,055.57	6,055.57	6,055.67	6,055.67	-
DPR7-1	6,077.07	6,065.50	6.88	6,067.73	6,067.73	6,067.96	6,067.96	0.000
DPR7-2	6,077.42	6,066.16	2.43	6,067.52	6,067.52	6,067.55	6,067.55	0.000
DPR8-1	6,018.73	6,006.36	3.43	6,007.40	6,007.27	6,008.99	6,007.47	0.640
DPR8-2	6,032.00	6,021.42	3.43	6,022.34	6,022.34	6,022.61	6,022.61	0.000

RIDGEGATE FILING 1 DEVELOPMENT

PHASE III DRAINAGE REPORT - ADDENDUM #1

Sub-Basin	Area (ac)	Percent Imp. (%)	Q_5 (cfs)	Q_{100} (cfs)
A1	1.44	10.1%	0.8	2.6
A2	0.43	2.0%	0.2	0.8
A3	4.45	2.0%	2.8	10.1
A4	12.66	2.0%	5.9	22.5
A5	1.95	43.1%	2.0	5.2
A6	1.06	62.6%	1.2	2.8
A7	2.05	46.9%	2.0	5.1
A8	1.38	70.1%	1.5	3.3
A9	2.83	49.0%	3.0	7.4
A10	0.48	69.4%	0.5	1.1
A11	3.76	18.9%	1.5	4.8
A12	0.13	59.6%	0.2	0.4
A13	3.11	59.9%	3.1	7.2
A14	3.51	74.4%	6.3	13.1
A15	2.79	9.4%	0.7	2.8
A16	10.53	12.6%	6.1	20.3
A17	0.86	76.1%	1.4	2.9
A18	0.47	75.0%	0.7	1.4
A19	1.94	58.6%	1.8	4.2
A20	1.04	68.3%	0.9	2.1
A21	1.86	74.2%	2.7	5.7
A23	1.69	63.9%	2.1	4.7
A23A	1.69	53.1%	1.9	4.5
A24	0.80	72.5%	1.3	2.8
A25	3.36	81.9%	7.0	14.1
A26	0.96	61.5%	1.0	2.3
A26A	2.83	70.5%	3.9	8.5
A27	1.48	57.8%	1.7	4.0
A27A	1.53	59.4%	1.7	3.8
A28	0.50	67.0%	0.7	1.5
A28A	0.81	70.8%	1.0	2.2
A29	1.80	56.4%	1.8	4.2
A30	0.59	76.7%	0.7	1.5
A31	1.56	47.7%	1.6	3.9
A32	1.03	56.6%	1.0	2.4
A33	0.79	70.2%	0.9	2.0
A34	1.56	50.7%	1.5	3.6
A36	1.87	54.3%	1.7	4.0
A37	1.00	52.8%	0.7	1.7
A37A	0.66	40.1%	0.4	1.2
A38	1.61	47.1%	1.2	3.0
A38A	1.07	13.3%	0.4	1.2
A39	1.39	62.0%	1.3	3.0
A40	1.73	75.0%	3.2	6.7
A41	1.88	53.0%	1.9	4.6
A42	2.13	35.1%	1.0	2.9
A43	2.50	49.8%	3.0	7.3
A44	1.66	68.1%	2.2	4.8
A45	1.63	69.9%	1.9	4.1
A45A	1.29	76.4%	1.7	3.7
A46	6.61	49.4%	12.2	28.4
A51	1.02	61.2%	1.1	2.5
A52	2.31	63.1%	2.1	4.8
A53	1.95	14.2%	0.8	2.7
A53A	3.04	75.0%	5.4	11.2
A54	1.37	70.9%	1.9	4.0
A54A	1.17	46.0%	1.4	3.4
A55	0.90	73.9%	1.3	2.7
A56	1.21	52.7%	1.6	3.7
A57	1.54	51.4%	2.1	4.9
A58	0.76	65.2%	0.7	1.6
A59	2.78	48.8%	2.6	6.4
A60	1.02	65.5%	0.9	2.2
A61	1.10	41.1%	1.3	3.3
A62	1.57	68.7%	1.2	2.7
A63	3.10	58.6%	2.4	5.7
A64	1.78	49.9%	2.3	5.6
A65	2.19	71.9%	3.8	8.0
A66	3.77	61.7%	5.3	11.9
A68	0.66	77.7%	0.6	1.4
A69	1.88	59.9%	1.9	4.3
A70	1.71	43.3%	1.9	4.9
A70A	0.33	88.1%	0.5	1.0
A71	0.77	58.0%	1.0	2.2
F1	6.05	41.5%	5.1	13.4
F2	5.03	52.9%	5.1	12.2
F3	8.14	75.0%	15.6	32.3
F4	5.58	66.0%	6.4	14.2
F5	7.54	75.0%	14.8	30.6
R1	0.75	90.0%	1.2	2.4
R2	1.87	70.9%	3.2	6.9
R3	2.46	75.9%	4.5	9.4
R3A	1.20	73.7%	1.8	3.7
R4	0.44	75.0%	1.0	2.1
R5	0.36	75.0%	0.8	1.6
R6	2.90	50.6%	2.7	6.6
R7	0.55	73.3%	0.9	2.0
R8	0.28	60.9%	0.4	0.9
R9	9.78	85.0%	18.9	37.7
R10	1.10	53.1%	1.1	2.6
R11	2.18	10.0%	1.0	3.4
R12	3.36	30.4%	1.5	4.4
R13	2.33	30.3%	1.2	3.5
R14	2.55	34.6%	1.9	5.2
R15	1.34	53.2%	1.7	4.1
R16	0.28	59.2%	0.4	0.8
R17	1.00	51.1%	0.9	2.2
R18	0.87	67.5%	1.0	2.3
R19	0.63	80.8%	0.8	1.7

Design Point	Q_5 (cfs)	Q_{100} (cfs)
1	1.0	3.4
1.1	3.7	13.4
1.2	9.0	30.2
1.2A	7.9	27.5
1.3	12.7	43.6
1.4	16.2	51.9
1.4A	14.7	48.6
1.5	19.6	60.3
1.7	21.2	65.2
2	24.3	72.5
2.1	6.9	15.7
2.3	14.8	39.4
2.4	17.5	45.7
2.5	41.7	117.5
2.6	44.3	123.6
2.8	5.3	12.0
2.8A	26.6	62.6
2.9	33.1	75.8
3	35.8	82.1
3.1	79.6	206.2
3.2	44.3	100.9
4	10.2	25.6
4.1	11.9	29.2
4.2	14.3	34.8
4.3	15.9	38.7
4.3A	21.4	50.8
4.6	17.5	36.7
4.7	19.0	40.2
4.8	20.7	44.2
5.1	1.5	4.1
5.1A	3.9	10.0
5.2	24.5	53.8
5.4	30.4	67.4
5.4A	29.5	64.8
5.5	5.3	12.1
5.6	35.6	79.5
5.6A	37.3	83.1
5.6B	116.9	293.8
5.7	162.6	394.6
5.7A	118.8	294.5
6	3.1	7.3
6.1	10.6	23.8
6.1A	6.1	13.6
6.2	13.8	30.8
6.3	15.3	34.5
6.5	18.0	40.8
6.7	4.8	11.7
6.8	29.1	66.7
6.9	3.6	8.4
7.2	38.5	87.8
7.3	43.6	99.5
7.5	164.5	399.1
8	4.5	9.3
8.1	10.7	22.3
8.1A	6.2	13.0
8.2	11.7	24.3
8.3	12.4	25.8
8.4	16.0	34.2
9.4	0.0	92.5
9.5	149.4	436.8



PHASE III DRAINAGE MAP
RIDGEGATE DEVELOPMENT
JOB NO. 15950.01
12/2/20 REV. 9/17/21
SHEET 1 OF 7

200 100 0 200 400
ORIGINAL SCALE: 1" = 200'

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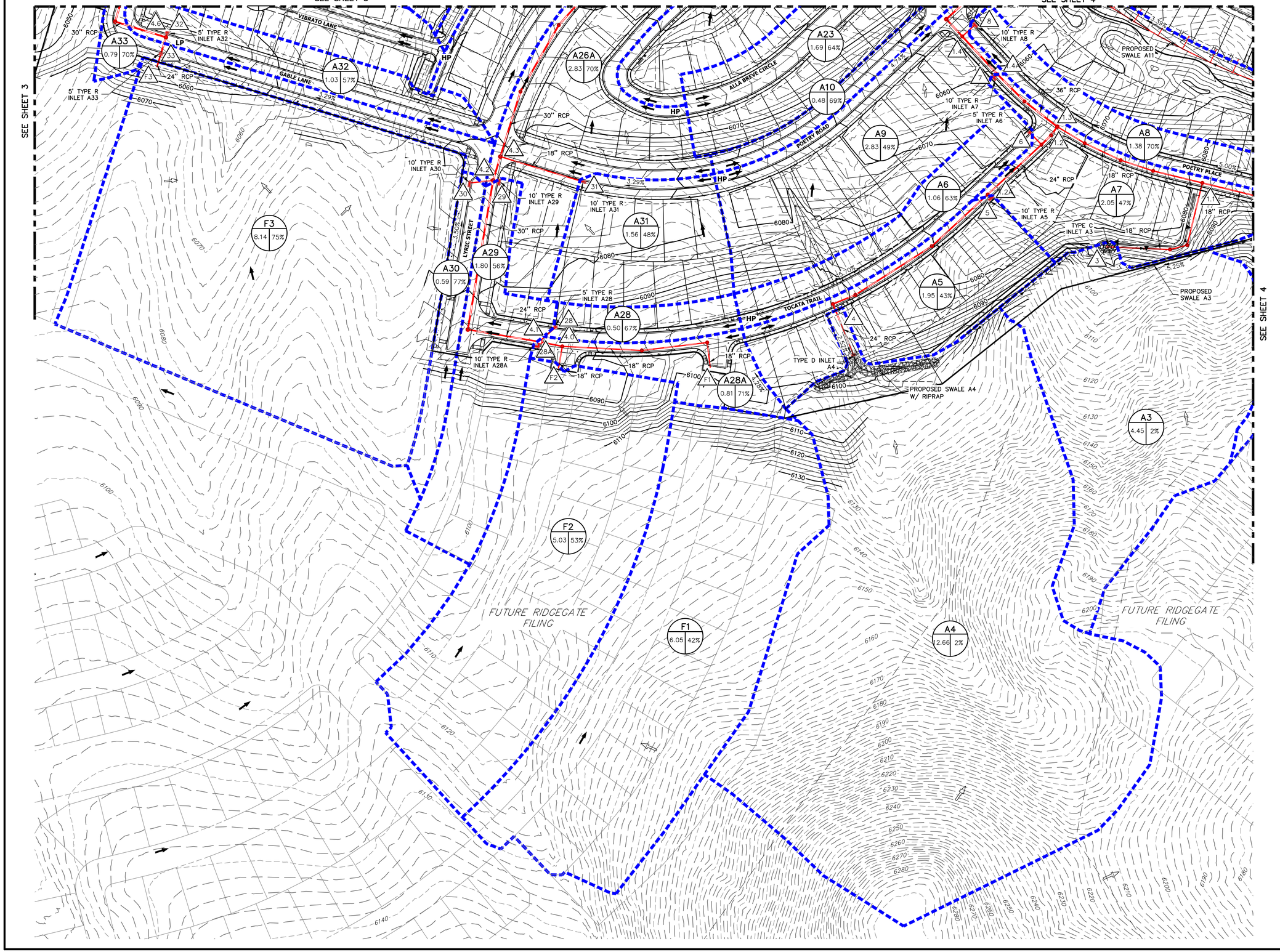
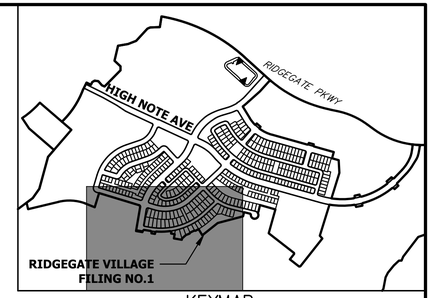
RIDGEGATE FILING 1 DEVELOPMENT

PHASE III DRAINAGE REPORT - ADDENDUM #1





KEYMAP
SCALE: 1"=1000'

80 40 0 80 160
ORIGINAL SCALE: 1" = 80'

LEGEND:

- PROPOSED STORM SEWER
- 6000 PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- 6000 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- DRAINAGE BASIN
- A = BASIN DESIGNATION; B = AREA IN ACRES; C = PERCENT IMPERVIOUS
- 1 DESIGN POINT
- HP HIGH POINT
- LP LOW POINT
- DRAINAGE ARROW
- EXISTING DRAINAGE ARROW
- PROPOSED DRAINAGE SWALE

PHASE III DRAINAGE MAP
RIDGEGATE DEVELOPMENT
JOB NO. 15950.01
6/4/21 REV. 9/17/21
SHEET 2 OF 7

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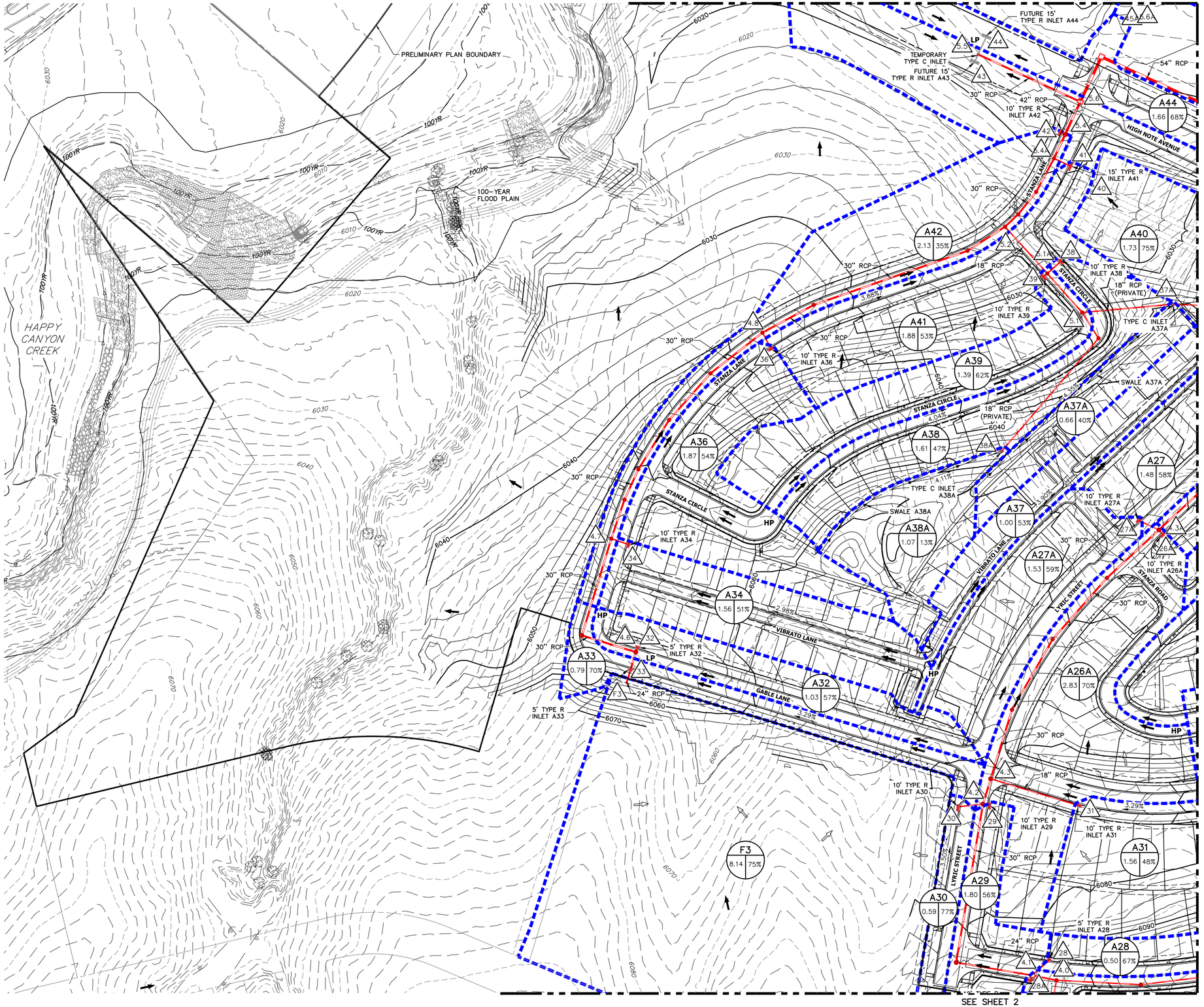
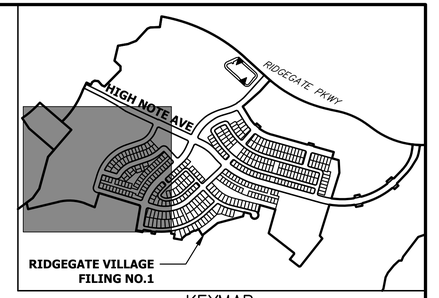
RIDGEGATE FILING 1 DEVELOPMENT

PHASE III DRAINAGE REPORT - ADDENDUM #1





KEYMAP
SCALE: 1"=1000'

N

80 40 0 80 160
ORIGINAL SCALE: 1" = 80'

LEGEND:

- PROPOSED STORM SEWER
- 6000 PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- 6000 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- DRAINAGE BASIN
- A = BASIN DESIGNATION; B = AREA IN ACRES; C = PERCENT IMPERVIOUS
- DESIGN POINT
- HP HIGH POINT
- LP LOW POINT
- DRAINAGE ARROW
- EXISTING DRAINAGE ARROW
- PROPOSED DRAINAGE SWALE

PHASE III DRAINAGE MAP
RIDGEGATE DEVELOPMENT
JOB NO. 15950.01
6/4/21 REV. 9/17/21
SHEET 3 OF 7

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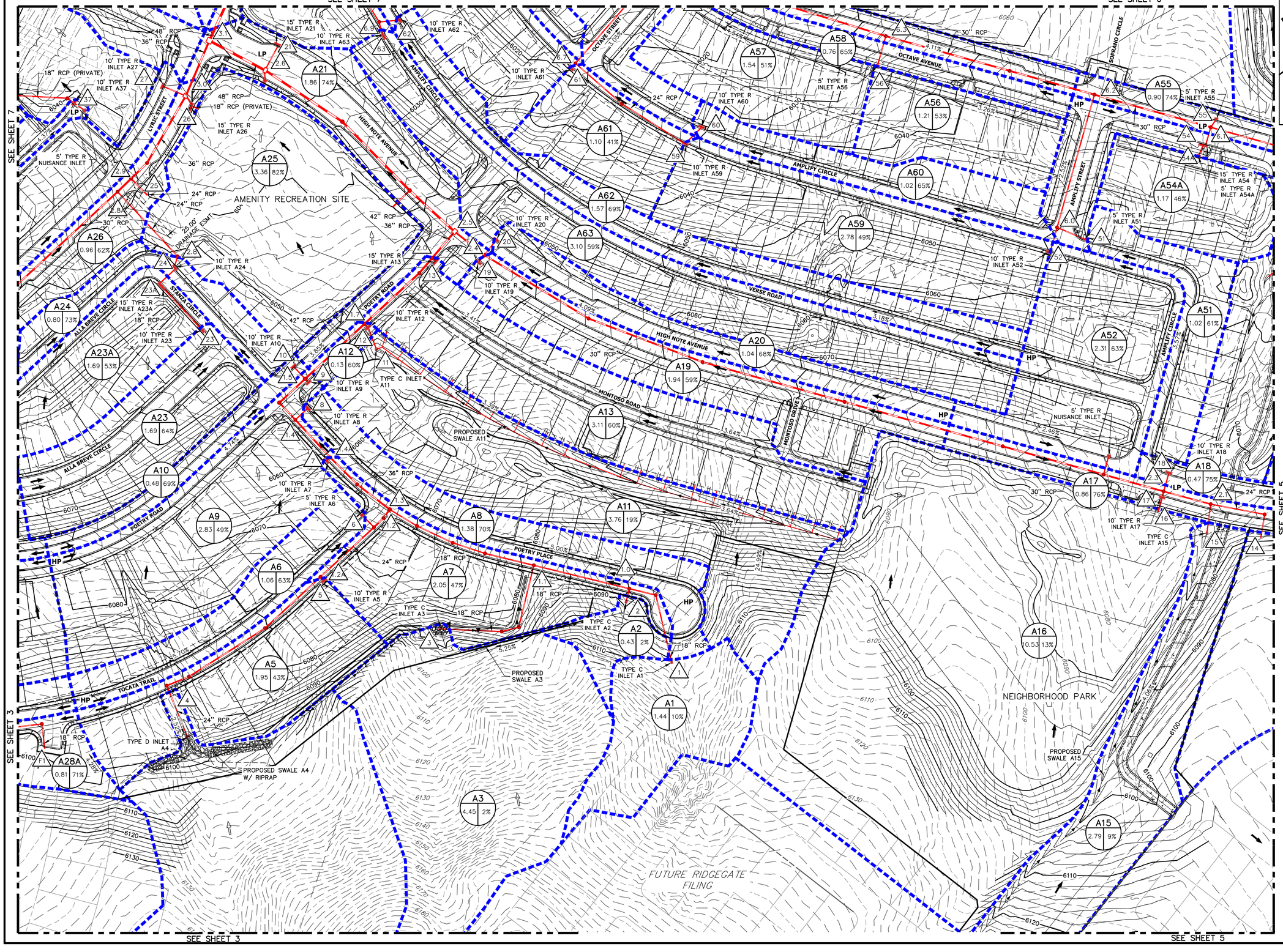
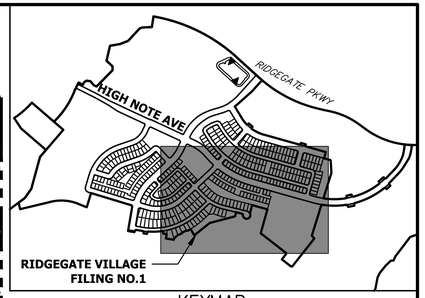
RIDGEGATE FILING 1 DEVELOPMENT

PHASE III DRAINAGE REPORT - ADDENDUM #1





KEYMAP
SCALE: 1"=1000'

80 40 0 80 160
ORIGINAL SCALE: 1" = 80'

LEGEND:

- PROPOSED STORM SEWER
- 6000 PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- 6000 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
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- A = BASIN DESIGNATION; B = AREA IN ACRES; C = PERCENT IMPERVIOUS
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- EXISTING DRAINAGE ARROW
- PROPOSED DRAINAGE SWALE

PHASE III DRAINAGE MAP
RIDGEGATE DEVELOPMENT
JOB NO. 15950.01
6/4/21 REV. 9/17/21
SHEET 4 OF 7

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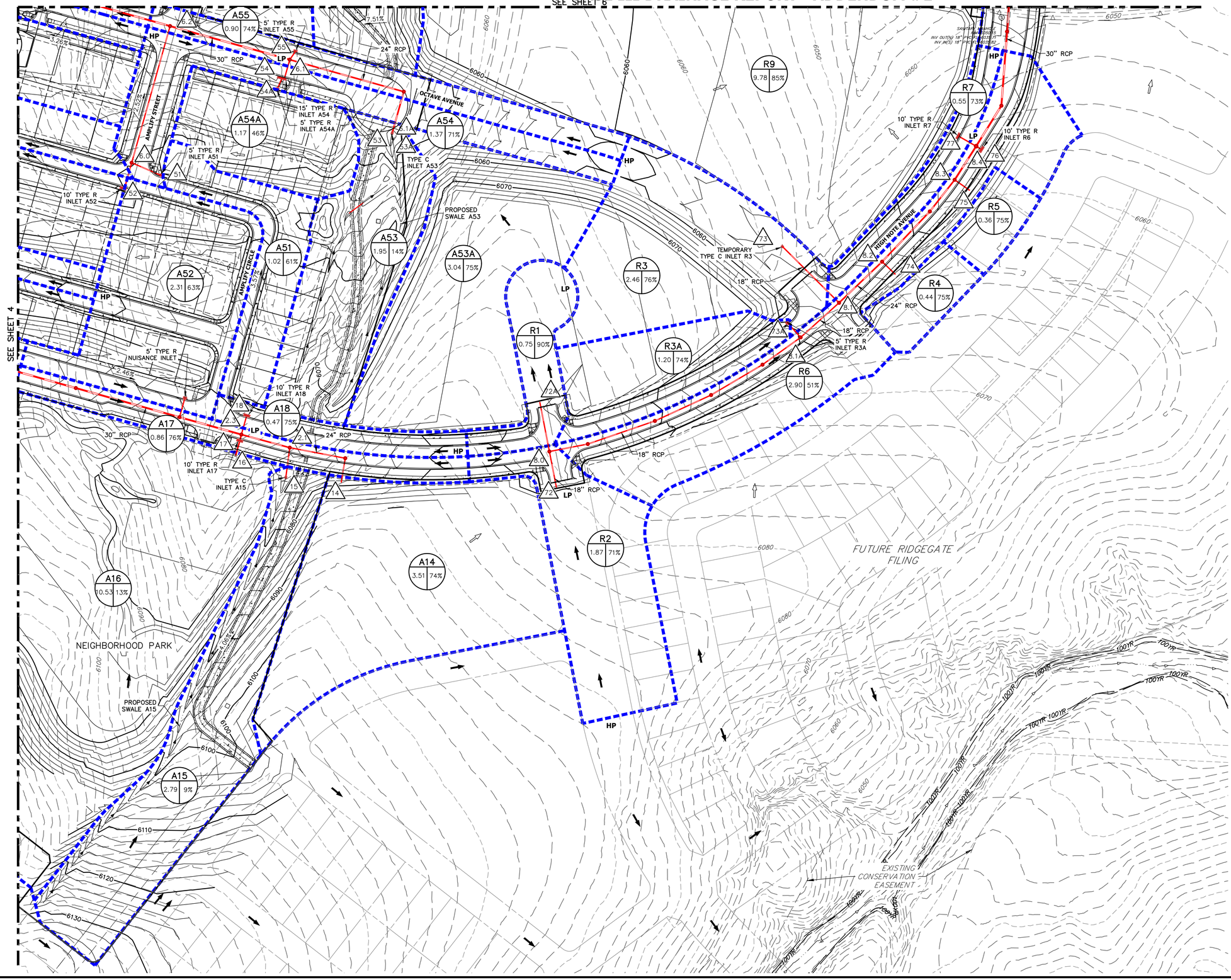
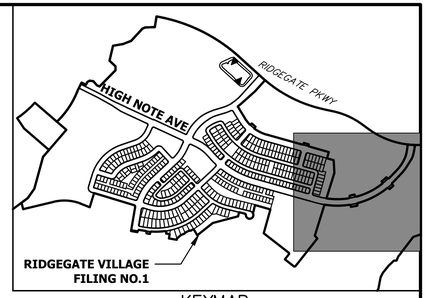
RIDGEGATE FILING 1 DEVELOPMENT

PHASE III DRAINAGE REPORT - ADDENDUM #1





KEYMAP
SCALE: 1"=1000'

80 40 0 80 160
ORIGINAL SCALE: 1" = 80'

LEGEND:

- PROPOSED STORM SEWER
- 6000 PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- 6000 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- DRAINAGE BASIN
- A = BASIN DESIGNATION; B = AREA IN ACRES; C = PERCENT IMPERVIOUS
- DESIGN POINT
- HP HIGH POINT
- LP LOW POINT
- DRAINAGE ARROW
- EXISTING DRAINAGE ARROW
- PROPOSED DRAINAGE SWALE

PHASE III DRAINAGE MAP
RIDGEGATE DEVELOPMENT
JOB NO. 15950.01
6/4/21 REV. 9/17/21
SHEET 5 OF 7

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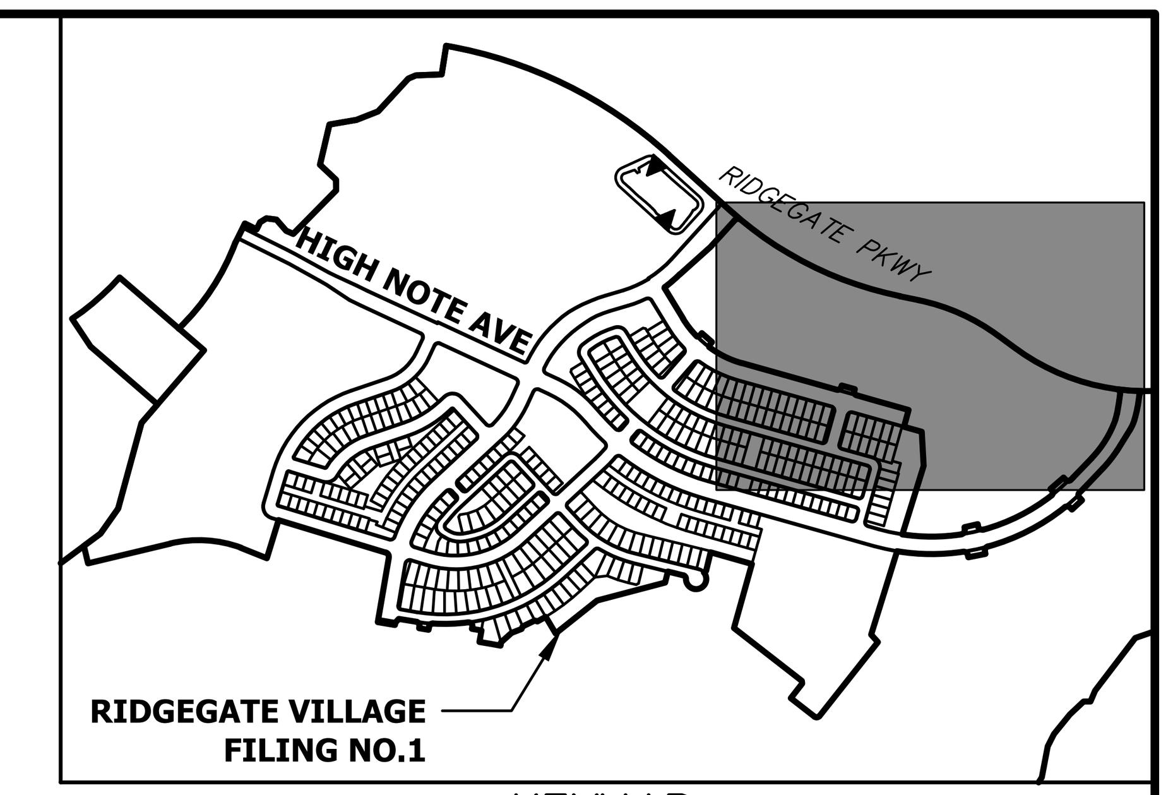
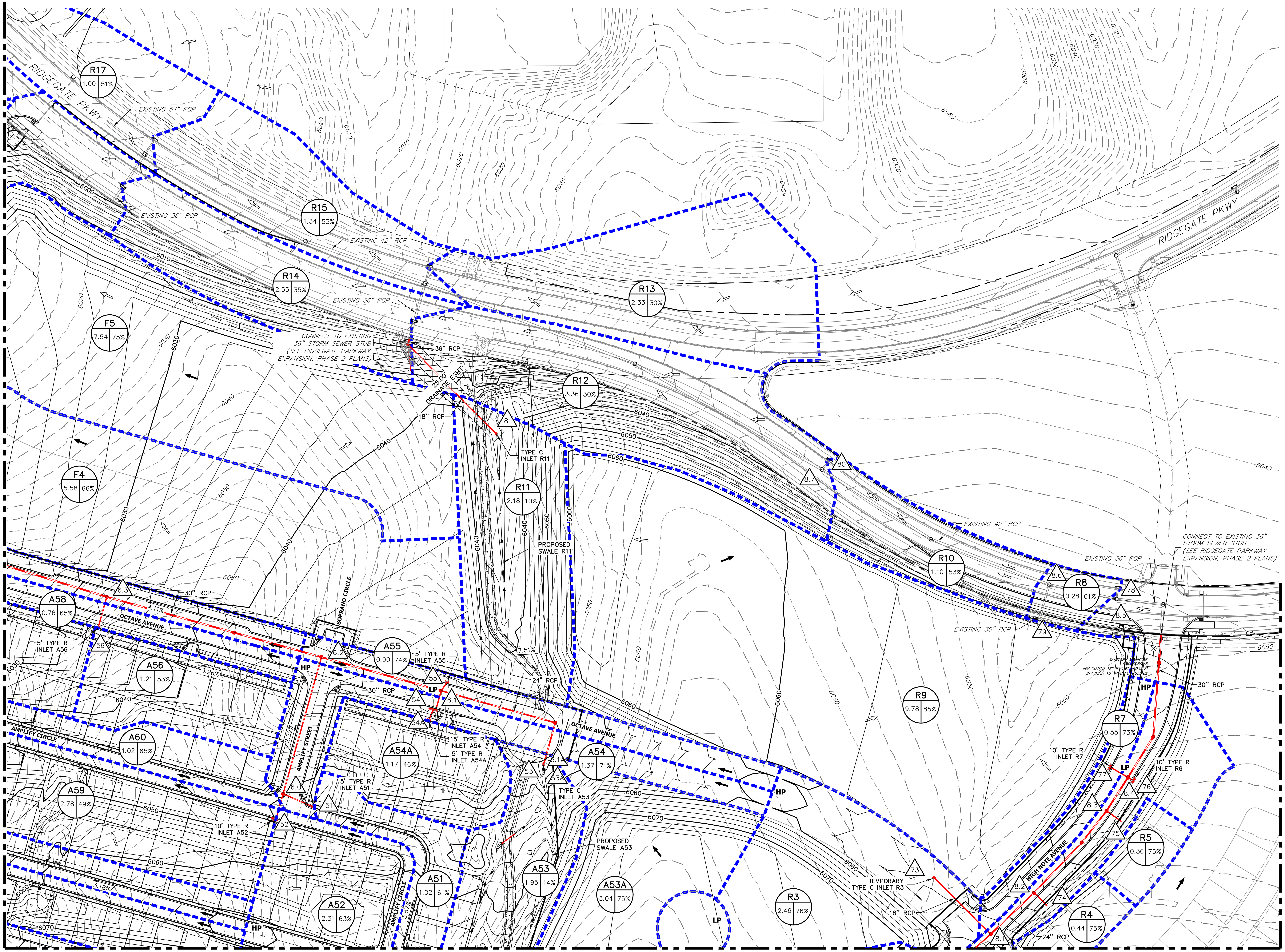
RIDGEGATE FILING 1 DEVELOPMENT

PHASE III DRAINAGE REPORT - ADDENDUM #1



KEYMAP
SCALE: 1"=1000'



LEGEND:

- PROPOSED STORM SEWER
- 6000 PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- 6000 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- DRAINAGE BASIN
- A = BASIN DESIGNATION; B = AREA IN ACRES; C = PERCENT IMPERVIOUS
- DESIGN POINT
- HP HIGH POINT
- LP LOW POINT
- DRAINAGE ARROW
- EXISTING DRAINAGE ARROW
- PROPOSED DRAINAGE SWALE

PHASE III DRAINAGE MAP
RIDGEGATE DEVELOPMENT
JOB NO. 15950.01
6/4/21 REV. 9/17/21
SHEET 6 OF 7

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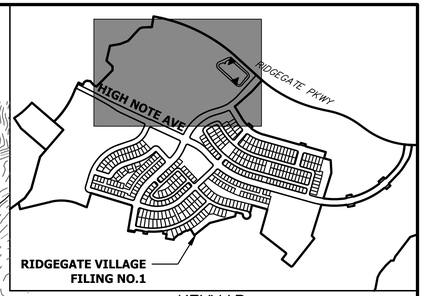
RIDGEGATE FILING 1 DEVELOPMENT

PHASE III DRAINAGE REPORT - ADDENDUM #1



KEYMAP
SCALE: 1"=1000'

EURV POND A		
Tributary Area:	171.50	AC
Percent Impervious:	48.30	%
WQCV:	2.892	AC-FT
WQCV WSEL:	5983.35	FT
EURV:	7.815	AC-FT
EURV WSEL:	5986.08	FT
100-YR VOLUME:	10.145	AC-FT
100-YR WSEL:	5987.22	FT
INFLOW:	430.84	CFS
OUTFLOW:	344.25	CFS

LEGEND:

- PROPOSED STORM SEWER
- 6000 PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- 6000 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- DRAINAGE BASIN
- A (B / C) = A = BASIN DESIGNATION, B = AREA IN ACRES, C = PERCENT IMPERVIOUS
- 1 = DESIGN POINT
- HP = HIGH POINT
- LP = LOW POINT
- DRAINAGE ARROW
- EXISTING DRAINAGE ARROW
- PROPOSED DRAINAGE SWALE

PHASE III DRAINAGE MAP
RIDGEGATE DEVELOPMENT
JOB NO. 15950.01
6/4/21 REV. 9/17/21
SHEET 7 OF 7

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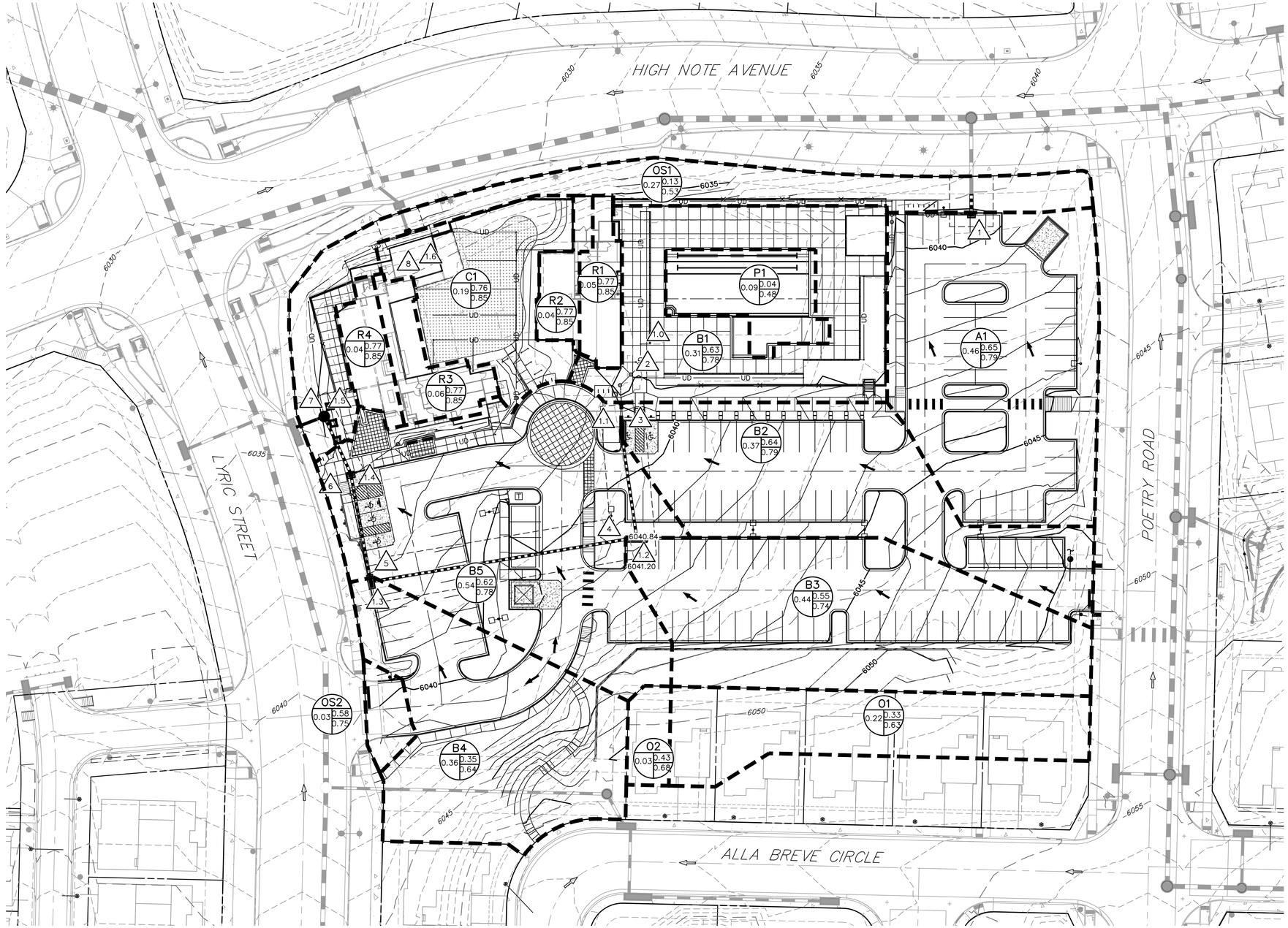
APPENDIX E

DRAINAGE MAPS



BASIN SUMMARY TABLE

Tributary Sub-basin	Area (acres)	Percent Impervious	C_5	C_{100}	t_c (min)	Q_5 (cfs)	Q_{100} (cfs)
A1	0.46	75%	0.65	0.79	5.0	1.5	3.2
B1	0.31	73%	0.63	0.78	5.0	1.0	2.2
B2	0.37	73%	0.64	0.79	5.0	1.2	2.6
B3	0.44	62%	0.55	0.74	5.0	1.2	2.9
B4	0.36	38%	0.35	0.64	5.0	0.6	2.0
B5	0.54	71%	0.62	0.78	5.0	1.7	3.7
C1	0.19	89%	0.76	0.85	5.0	0.7	1.4
P1	0.09	0%	0.04	0.48	5.0	0.0	0.4
R1	0.05	90%	0.77	0.85	5.0	0.2	0.3
R2	0.04	90%	0.77	0.85	5.0	0.1	0.3
R3	0.06	90%	0.77	0.85	5.0	0.2	0.5
R4	0.04	90%	0.77	0.85	5.0	0.2	0.3
OS1	0.27	11%	0.13	0.53	5.0	0.2	1.3
OS2	0.03	66%	0.58	0.75	5.0	0.1	0.2
O1	0.22	36%	0.33	0.63	5.0	0.4	1.3
O2	0.03	48%	0.43	0.68	5.0	0.1	0.2

30 15 0 30 60

ORIGINAL SCALE: 1" = 30'

LEGEND

- 5680 — EXISTING CONTOUR
- 5680 — PROPOSED CONTOUR
- PROPOSED FLOW ARROW
- EXISTING FLOW ARROW
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- A = BASIN DESIGNATION; B = AREA IN ACRES; C = 5-YR RUNOFF COEFFICIENT; D = 100-YR RUNOFF COEFFICIENT
- DESIGN POINT
- PROPERTY LINE
- BASIN BOUNDARY
- MATCHLINE
- PROPOSED DRAINAGE DITCH

OVERALL DRAINAGE PLAN
AMENITY SITE AT RIDGEGATE SW VILLAGE
JOB NO. 15950.06
02/15/2024
SHEET 1 OF 1

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