PROJECT:

WALTON CREEEK TOWNHOMES SITE DEVELOPMENT PLAN

2075 WALTON CREEK ROAD

CITY OF STEAMBOAT SPRINGS, ROUTT COUNTY, STATE OF COLORADO

DRAINAGE STUDY

PREPARED BY:

BASELINE ENGINEERING CORPORATION

TIMOTHY MAXWELL

1169 HILLTOP PARKWAY, SUITE 204

STEAMBOAT SPRINGS, COLORADO 80487

970-879-1825

DRAFT 1st SUBMITTAL: APRIL 5, 2024

DRAFT 2nd SUBMITTAL: AUGUST 22, 2024

JOB # CO20261

BASELINE

Engineering · Planning · Surveying

CERTIFICATION STATEMENT

I HEREBY AFFIRM THAT THIS DRAINAGE STUDY AND PLAN FOR THE WALTON CREEK TOWNHOMES SITE DEVELOPMENT PLAN PROJECT WAS PREPARED BY ME (OR UNDER MY DIRECT SUPERVISION) FOR THE OWNERS THEREOF AND IS, TO THE BEST OF MY KNOWLEDGE, IN ACCORDANCE WITH THE PROVISIONS OF THE CITY OF STEAMBOAT SPRINGS STORM DRAINAGE CRITERIA AND APPROVED VARIANCES. I UNDERSTAND THAT THE CITY OF STEAMBOAT SPRINGS DOES NOT AND WILL NOT ASSUME LIABILITY FOR DRAINAGE FACILITIES DESIGNED BY OTHERS.

_____

REGISTERED PROFESSIONAL ENGINEER

STATE OF COLORADO NO.

NOTE

CITY OF STEAMBOAT SPRINGS PLAN REVIEW AND APPROVAL IS ONLY FOR GENERAL CONFORMANCE WITH CITY DESIGN CRITERIA AND THE CITY CODE. THE CITY IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSION, AND ELEVATIONS THAT SHALL BE CONFIRMED AND CORRELATED AT THE JOB SITE. THE CITY OF STEAMBOAT SPRINGS ASSUMES NO RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF THIS DOCUMENT.

INDEX

ATTACHMENTS

WALTON CREEK TOWNHOMES SITE DEVELOPMENT PLAN

DRAFT DRAINAGE STUDY

I INTRODUCTION

A. LOCATION

1. The project is located at 2075 Walton Creek Road and is at the intersection of Walton Creek Road and Apres Ski Way. The north limit of the site is adjacent to Walton Creek Road, and the east limit of the site is adjacent to Apres Ski Way. The south limit of the site is adjacent to Ski Ranches Townhomes, and the west limit of the site is adjacent to The Meadows Condominiums. The project area is in the southwest quarter of Section 27, Township 6 North, Range 84 West of the 6th P.M. City of Steamboat Springs, Routt County, Colorado.

B. DESCRIPTION OF PROPERTY

1. The site is approximately 0.67 acres, including the Walton Creek Road ingress and egress easement. The Total Drainage Area, including off-site runoff, is roughly 6.45 acres. The proposed project disturbance area is roughly 0.61 acres.

2. A site is currently developed with a single-family residence and is accessed with a gravel driveway from Walton Creek Road. The remainder ground cover generally consists of native grass. The upper end of the site to the east and adjacent to Apres Ski Way is at an elevation of 6965, and the lower end of the site to the west and adjacent to The Meadows Condominiums is at an elevation of 6935, resulting in an approximate difference of 30 feet across the site. Existing slopes vary from approximately 5% to 50%.

3. The subject property is currently zoned Residential Neighborhood Two (RN-2). The adjacent property to the west is zoned Multi-Family Three (MF-3). The adjacent property to the north is zoned Multi-Family Two (MF-2). All other adjacent properties are zoned Residential Neighborhood Two (RN-2). The owner is filing an application to re-zone the subject property as Multi-Family Three (MF-3).

4. According to the Soil Survey, the project area consists entirely of Routt loam, which is Hydraulic Soil Type C, and is poorly draining. The offsite flow consists mainly of Hydrologic Soil Type C. See soils map in the appendix for more information.

5. Per FEMA FIRM 08107C0883D with an effective date of 02/04/2005, the project is entirely outside of the floodway/floodplain.

6. There are no irrigation facilities on or adjacent to the property.

7. There are no wetlands on the site.

C. PROPOSED DEVELOPMENT DESCRIPTION

1. Two multi-family townhome buildings are proposed on the property as well as associated driveways, sidewalks, sanitary sewer services, water services, storm sewer, dry utilities, gathering area, and landscaping.

2. This report was prepared in conjunction with the Site Development Plans dated 08/22/2024 by KASA Architecture and Baseline Engineering for May Riegler Properties.

D. REFERENCED DRAINAGE REPORTS

1. The "City of Steamboat Springs Citywide Stormwater Master Plan" was referenced in the preparation of this report.

II DRAINAGE CRITERIA AND METHODOLOGY USED

A. DESIGN RAINFALL AND STORM FREQUENCY

1. In accordance with City Drainage Criteria, the major storm is the 100-year recurrence interval storm and the minor storm is the 5-year recurrence interval storm.

2. The values of 0.82 inches and 1.79 inches for the 5-year storm and 100-year storm respectively were used for the drainage per the City's Drainage Criteria.

B. RUNOFF CALCULATION METHOD

1. The Proposed and Existing basins, including off-site basins, are around 6.5 acres. This is less than the 160 acre maximum for the Rational Method, therefore the Rational Method has been used to calculate peak flows for both proposed and existing conditions per section 5.6.2.2 of the City's Engineering Standards.

C. CULVERT, INLET, AND STORM SEWER ANALYSIS

1. Hydraflow Storm Sewers Extension for Autodesk Civil 3D, was utilized to create

hydraulic models of the storm sewer system.

D. DETENTION DISCHARGE AND STORAGE METHODOLOGY

1. Stormwater detention has been designed using the FAA method as outlined in section 5.11.7.2 in the City's Engineering Standards. The allowable release rates have been determined by using Table 5.11.1 in the City's Engineering Standards which are based on soil groups.

III EXISTING CONDITIONS (PRE-DEVELOPMENT)

A. ON-SITE DRAINAGE PATTERNS

1. The site is currently developed with a single-family residence and gravel driveway, with the remainder being covered in native grasses. The site is roughly 21% impervious, 0.67 acres in size, and has roughly 30 feet of fall.

2. There is an existing 18" CMP culvert on the upper (northeast) end of the site that conveys offsite runoff under Apres Ski Way and onto the site and into a roadside swale that drains westerly parallel to Walton Creek Road. The on-site runoff sheet flows to the west end of the site. This runoff eventually reaches Walton Creek approximately 3500 feet to the west of the project. The ultimate outfall location is the Yampa River.

3. There is an existing 18" CMP culvert that conveys the off-site runoff under the driveway.

4. Subbasin summary – Refer to the Existing Drainage Basin Map and Runoff Summary table in the appendix for reference.

5. <u>Basin H-1</u>
Includes flow from the parcel and adjacent asphalt roads and gravel driveway. This area discharges into the existing roadside swale parallel with Walton Creek Road, as well as the adjacent property to the west.

B. OFF-SITE DRAINAGE PATTERNS

1. Subbasin Summary – Refer to the Off-Site Drainage Basin Map and Runoff Summary table in the appendix for reference.

2. <u>Basin OS-1</u>
This basin is comprised of flow from developed residential neighborhood lots and their adjacent roadways. The basin area is 5.84 acres, and the imperviousness

of 30% is based on Table 5.6.3 for Single Family Residential for 0.25-0.75 acre size. Runoff is based on updated City Standards. This basin is conveyed under Apres Ski Way via an inlet and 18" CMP into an existing roadside swale in Basin H-1.

IV PROPOSED CONDITIONS

B. GENERAL

1. The proposed improvements include (2) three story townhome buildings with garage entries at the lower level. Building 1 will have 5 units, and Building 2 will have 3 units. In addition, there are proposed driveways, sidewalks, sanitary sewer services, water services, storm sewer, dry utilities, communal patio, and landscaping. The proposed site will be proximately 75% impervious, and the disturbed area is roughly 0.61 acres of the 0.67 acre site.

C. DRAINAGE PATTERNS & BASINS

1. The proposed drainage patterns will not change significantly from existing drainage conditions. The on-site runoff will drain to the west and be conveyed with swales and stormwater piping into a stormwater detention pond, with the ultimate outfall location remaining the same as historic.

2. The off-site runoff will continue to be routed through the site in an 18" deep roadside swale that parallels Walton Creek Road. This runoff will not be detained, with the ultimate outfall location remaining the same as historic. The proposed flow rate will remain the same as historic (19.2 cfs).

3. The on-site and off-site runoff will rejoin in a storm manhole below the detention pond outlet. Just downstream and off property, an existing undersized 12" CMP will be replaced with an 18" HDPE pipe. The cumulative 100-year historic flow to this pipe is 21.6 cfs; and the proposed flow is calculated to be 19.5 cfs. This pipe conveys runoff into an existing roadside swale paralleling Walton Creek Road, and eventually reaches Walton Creek approximately 3500 feet to the west of the project. Walton Creek outfalls to the Yampa River which is the ultimate outfall point for the site.

4. Sub Basin Summary – Refer to the Proposed Drainage Basin Map and Runoff Summary table in the appendix for reference.

On-site Basins

5. Basin P-1
   Basin P-1 Is the overall drainage basin for the site. It contains the overall runoff that will drain into the detention pond. The runoff from this basin has been used to size the detention pond at Design Point 3.

6. Subbasin P-1A:
   This subbasin contains the flow that is conveyed to the stormwater pipe at Design Point 4. The flowrate from this subbasin is used to size the stormwater pipe at that point, with a 100-year runoff of 1.5 cfs. This subbasin then drains into Subbasin P-1B.

7. Subbasin P-1B:
   This subbasin contains the flows that are conveyed into the stormwater pipe at Design Point 5. This basin also collects the runoff from Subbasin P-1A, and this combined flow rate is used to size the stormwater pipe at Design Point 5. The combined 100-year runoff rate at this point is 2.4 cfs. This subbasin then drains into the detention pond.

Off-site Basins

8. Basin OS-1
   The off-site basin will remain unchanged from the historical basin.

D. DETENTION PONDS

1. A single on-site stormwater detention pond is proposed for the site, and will not provide water quality treatment since the property is less than one acre. The pond is sized using the FAA method as outlined in the City's Standards.

2. The pond will capture runoff from Basin P-1, and has a capture area of 0.64 acres. The pond will not capture off-site runoff. The pond will have vertical walls all around due to site constraints. The bottom of the channel is sloped at 2% and has a trickle channel in the center sloped at 0.5% towards the outlet structure. The spillway will be a rectangular weir and will release directly into the roadside swale.

3. The required volume for the pond is 410 cubic feet for the 5-year storm and 1046 cubic feet for the 100-year storm, and will have a depth of 2.0 feet for the 100-year storm. The proposed release rates based on Soil Type C are determined to be 0.06 cfs for the 5-year storm, and 0.35 cfs for the 100-year storm. The 5-year

and 100-year volumes will be released through orifice plates. The outlet structure will be built into the retaining wall, and tie into the storm sewer adjacent to the road that is conveying off-site runoff, with a storm manhole. The emergency spillway is designed for the 100-year storm. See calculations in the appendix for details.

4. The ponds will be privately maintained by the HOA that will be formed for this development.

E. ON-SITE STORM CONVEYANCE SYSTEM

1. The proposed storm sewer system is sized to convey the minor storm event (5-year) without surcharging and the major storm event (100-year) without overtopping. The Hydraflow Express results in the appendix show that the storm drain system is within these criteria.

2. The on-site storm system will be privately maintained by the property owner/HOA.

F. OFF-SITE STORM CONVEYANCE SYSTEM

1. The off-site runoff will remain mostly unchanged from historic conditions, and continue to be routed through the site in an 18" deep roadside swale that parallels Walton Creek Road, and be conveyed beneath the driveways with 18" HDPE culverts. The roadside swale will be riprap reinforced.

2. The proposed storm sewer system is sized to convey the minor storm event (5-year) without surcharging and the major storm event (100-year) without overtopping. The Hydraflow Express results in the appendix show that the storm drain system is within these criteria.

V POST CONSTRUCTION STORMWATER MANAGEMENT

A. PERMANENT BEST MANAGEMENT PRACTICES

1. Permanent stormwater quality is not required for the size since it is under one acre. The on-site detention pond will serve as a permanent stormwater detention facility.

VI CONCLUSIONS

A. GENERAL SUMMARY

Historic drainage patterns and flows will be maintained with the proposed Walton Creek Townhomes development. On-site imperviousness is being increased from 21% to 75%, so a detention pond is being proposed to keep flows slightly less than the current/historic rates, and prevent an adverse impact on adjacent or downstream properties.

Pipe hydraulic results show that the 5-yr storm is contained within the pipes with no surcharging. The hydraulic results also show that the 100-yr storm is contained without overtopping.

B. COMPLIANCE WITH CRITERIA & VARIANCE REQUESTS

1. The drainage design complies with the City Drainage Criteria and no variance is requested.

C. NEW STORMWATER SYSTEM REQUIREMENTS

1. The storm water system will need to be maintained periodically and after significant storm events to ensure the system continues to function as designed. The Walton Creek Townhome HOA will be required to maintain all stormwater conveyance features.

VI REFERENCES

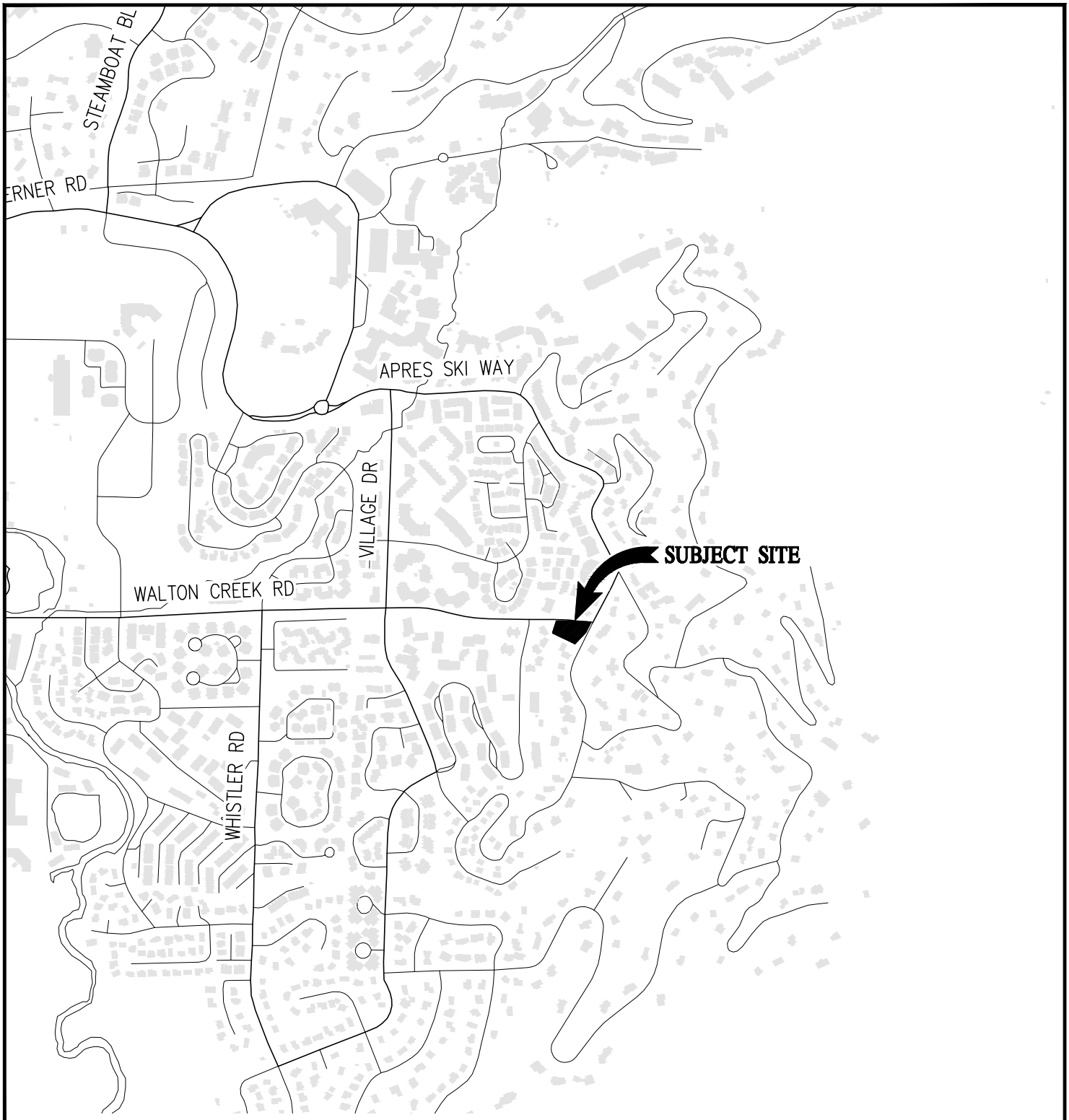
City of Steamboat Springs Drainage Criteria Section 5.0, Effective September 2007, Updated July 2019.

City of Steamboat Springs Engineering Standards, Chapter 4, Streets, September 2007, Updated July

City of Steamboat Springs Citywide Stormwater Master Plan, Short Elliott Hendrickson Inc., March 2013.

ATTACHMENT 1

VICINITY MAP



N

GRAPHIC SCALE
1,000 0 1,000
(IN FEET)
1 INCH = 1,000 FT

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MAY RIEGLER PROPERTIES

STEAMBOAT SPRINGS — ROUTT COUNTY

WALTON CREEK TOWNHOMES

2075 WALTON CREEK ROAD

VICINITY MAP

DESIGNED BY	TJM
DRAWN BY	TJM
CHECKED BY	CSR
INITIAL SUBMITTAL	4/05/2024
DRAWING SIZE	8.5" X 11"
SURVEY FIRM	FOUR POINTS, INC.
SURVEY DATE	10/24/2021
JOB NO.	CO20261
DRAWING NAME	20261 VICINITY MAP.dwg
SHEET	1 OF 1

1

C:\CO20261 2075 Walton Creek Rd Townhomes\Drawings\Drainage Maps\20261 VICINITY MAP.dwg, 4/9/2024 10:17:28 AM, Tim Maxwell

ATTACHMENT 2

NRCS SOILS MAP & DATA

Hydrologic Soil Group—Routt Area, Colorado, Parts of Rio Blanco and Routt Counties
(WALTON CREEK TH)

Map Scale: 1:411 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 5 10 20 30

Feet
0 15 30 60 90

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 Rating Polygons

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Lines

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Points

A
A/D
B
B/D
C
C/D
D
Not rated or not available

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 1:24,000.

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: Routt Area, Colorado, Parts of Rio Blanco and Routt Counties
Survey Area Data: Version 13, Aug 23, 2023

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

Date(s) aerial images were photographed: Jul 2, 2021—Aug 25, 2021

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
50F	Routt loam, 25 to 65 percent slopes, very stony	C	0.6	100.0%
Totals for Area of Interest			**0.6**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

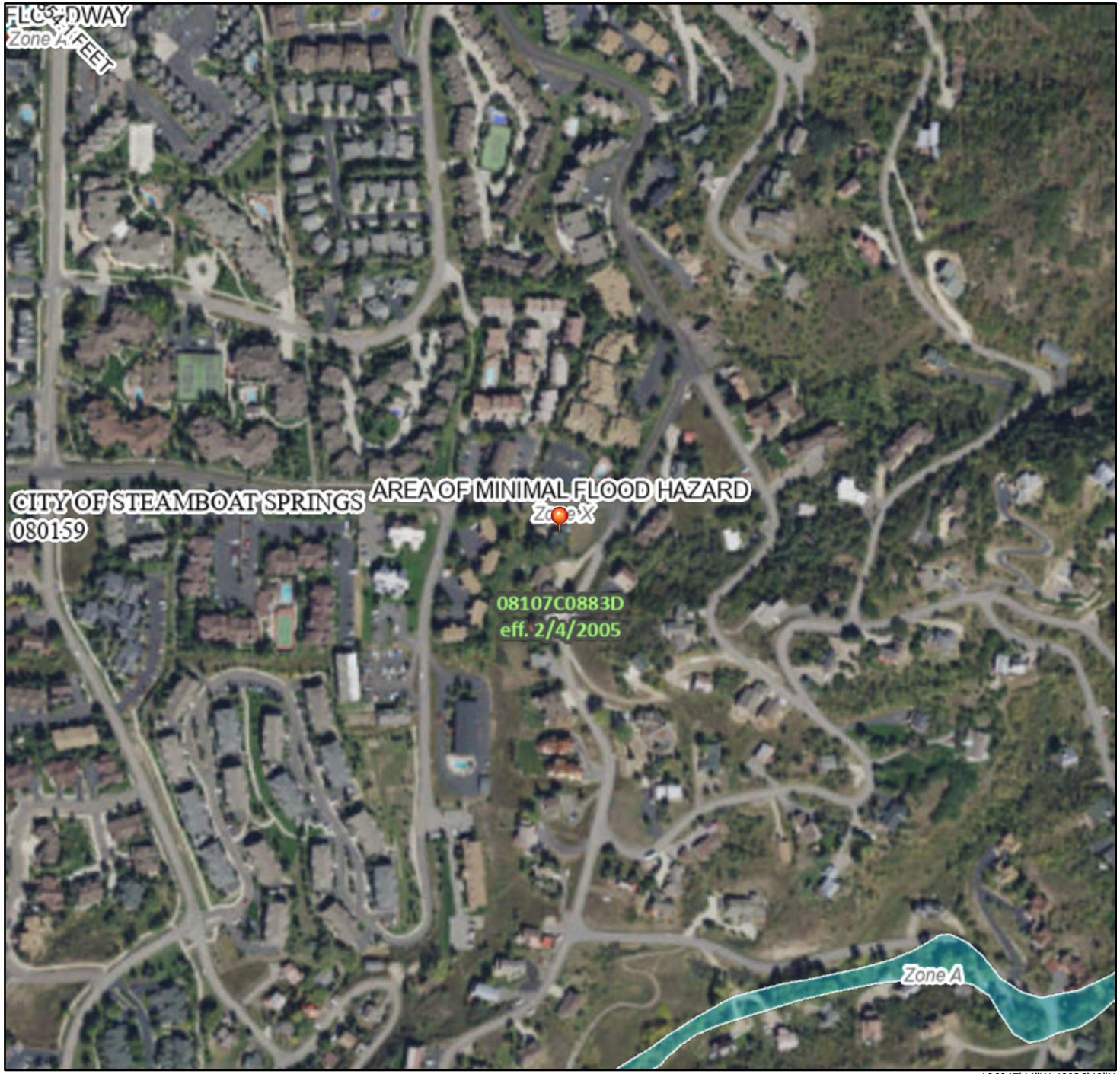
ATTACHMENT 3

FEMA Map

National Flood Hazard Layer FIRMette

FEMA

106°48'21"W 40°27'16"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

106°47'44"W 40°26'49"N

Basemap Imagery Source: USGS National Map 2023

Legend

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

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*
- Area with Flood Risk due to Levee *Zone D*

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

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

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

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/25/2024 at 1:40 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

ATTACHMENT 4

SITE PLAN

WALTON CREEK ROAD

PROPERTY BOUNDARY (TYP.)

CENTERLINE 50' INGRESS & EGRESS EASEMENT

EX. EOA (TYP.)

EAST DRIVE SITE TRIANGLE

WEST DRIVE SITE TRIANGLE

SAW CUT EXISTING ASPHALT

CONST. 8' WIDE CONCRETE SIDEWALK

CONST. RIPRAP LINED DRAINAGE SWALE (TYP), SEE GRADING & DRAINAGE PLAN

CONST. POND OUTLET STRUCTURE, SEE GRADING & DRAINAGE PLAN

5' UTILITY MAINTENANCE AND INSTALLATION EASEMENT

30' UTILITY & IRRIGATOIN EASEMENT

CONST. STORMWATER DETENTION POND WITH TRICKLE CHANNEL, SEE GRADING & DRAINAGE PLAN

CONST. 65 LF STACKED BOULDER LANDSCAPE WALL, MAX HT ~ 2.9'

CONST. ASPHALT PAVING

CONST. 65 LF CONCRETE LANDSCAPE WALL MAX HT ~ 2.9'

STORMWATER DETENTION POND

PROP. (2) PARALLEL PARKING SPACES

THE MEADOWS CONDOMINIUMS FILE NO. 8297

CONST. METAL GRATED STAIRS WITH HANDRAILS (TYP), DESIGN BY OTHERS

CONST. 4X4 CONCRETE PAD & MAIL CLUSTER BOX

CONST. 75 LF RETAINING WALL WITH FALL PROTECTION (MAX HT. ~ 7.1'), DESIGN BY OTHERS

INGRESS/EGRESS EASEMENT

15' SETBACK

10' SETBACK

CONST. 5' WIDE CONCRETE SIDEWALK

LOT 9
RE-SURVEY OF
SKI RANCHES
FILING NO. 3
REC. NO. 211257

BUILDING 2

BUILDING 1

CONST. CONCRETE ENTRYWAY (TYP)

CONST. (2) BIKE RACKS

CONST. 23 LF STACKED BOULDER LANDSCAPE WALL, MAX HT ~ 3.7'

CONST. RIPRAP LINED DRAINAGE SWALE (TYP), SEE GRADING & DRAINAGE PLAN

CONST. COMMUNAL PATIO AREA, RE: LANDSCAPE PLANS

SKI RANCHES
TOWNHOMES
REC. NO. 421206

PROPERTY BOUNDARY (TYP.)

EX. GRAVEL DRIVE

PROP. EDGE OF DRIVEWAY

EX. 12" CMP
INV IN = 6961.07
INV OUT = 6957.92

EX. INLET
RIM=6962.93

CONST. AREA INLET (TYP), SEE GRADING & DRAINAGE PLAN

CONST. METAL GRATED STAIRS WITH HANDRAILS (TYP), DESIGN BY OTHERS

CONST. 5' WIDE CONCRETE SIDEWALK

CONST. CONCRETE ENTRYWAY (TYP)

10' UTILITY & SNOW REMOVAL EASEMENT

CONST. 155 LF RETAINING WALL (MAX HT. ~ 7.3'), DESIGN BY OTHERS

CONST. 5' WIDE CONCRETE SIDEWALK

APRE SKI WAY

EX. EOA (TYP.)

LEGEND

EXISTING LINETYPES	PROPOSED LINETYPES	
		PROPERTY BOUNDARY
		ADJACENT LOT LINE
		EASEMENT
		BUILDING SETBACK
		EDGE OF ASPHALT
		EDGE OF GRAVEL
		EDGE OF BUILDING
		RETAINING WALL

EXISTING SYMBOLS	PROPOSED SYMBOLS	
		FIRE HYDRANT
		WATER VALVE
CS	CS	CURB STOP
S	S	SANITARY MANHOLE
	CO	CLEANOUT
		TYPE 'C' INLET
		AREA INLET
		FLARED END SECTION
D	D	STORM DRAIN MANHOLE
		LIGHT POLE
E	E	ELECTRIC PEDESTAL
		SIGN
D	D	STORM DRAIN MANHOLE

	ASPHALT PAVING
	SIDEWALK PAVING
	CONCRETE PAVING
	GRAVEL PAVING
	RIPRAP

N

GRAPHIC SCALE
10 0 10 20
(IN FEET)
1 INCH = 10 FT

1 / C1 | C1 CIVIL SITE PLAN

BASELINE
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DESIGNED BY	DRAWN BY	CHECKED BY
TJM	TJM	CSR

REVISION DESCRIPTION	PREPARED BY	DATE
ADDRESS DRT COMMENTS	TJM	8/22/2024

MAY RIEGLER PROPERTIES

CITY OF STEAMBOAT SPRINGS ROUTT COUNTY

WALTON CREEK TOWNHOMES
2075 WALTON CREEK ROAD
CIVIL SITE PLAN

PREPARED UNDER THE DIRECT SUPERVISION OF

PRELIMINARY NOT FOR CONSTRUCTION

FOR AND ON BEHALF OF BASELINE CORPORATION

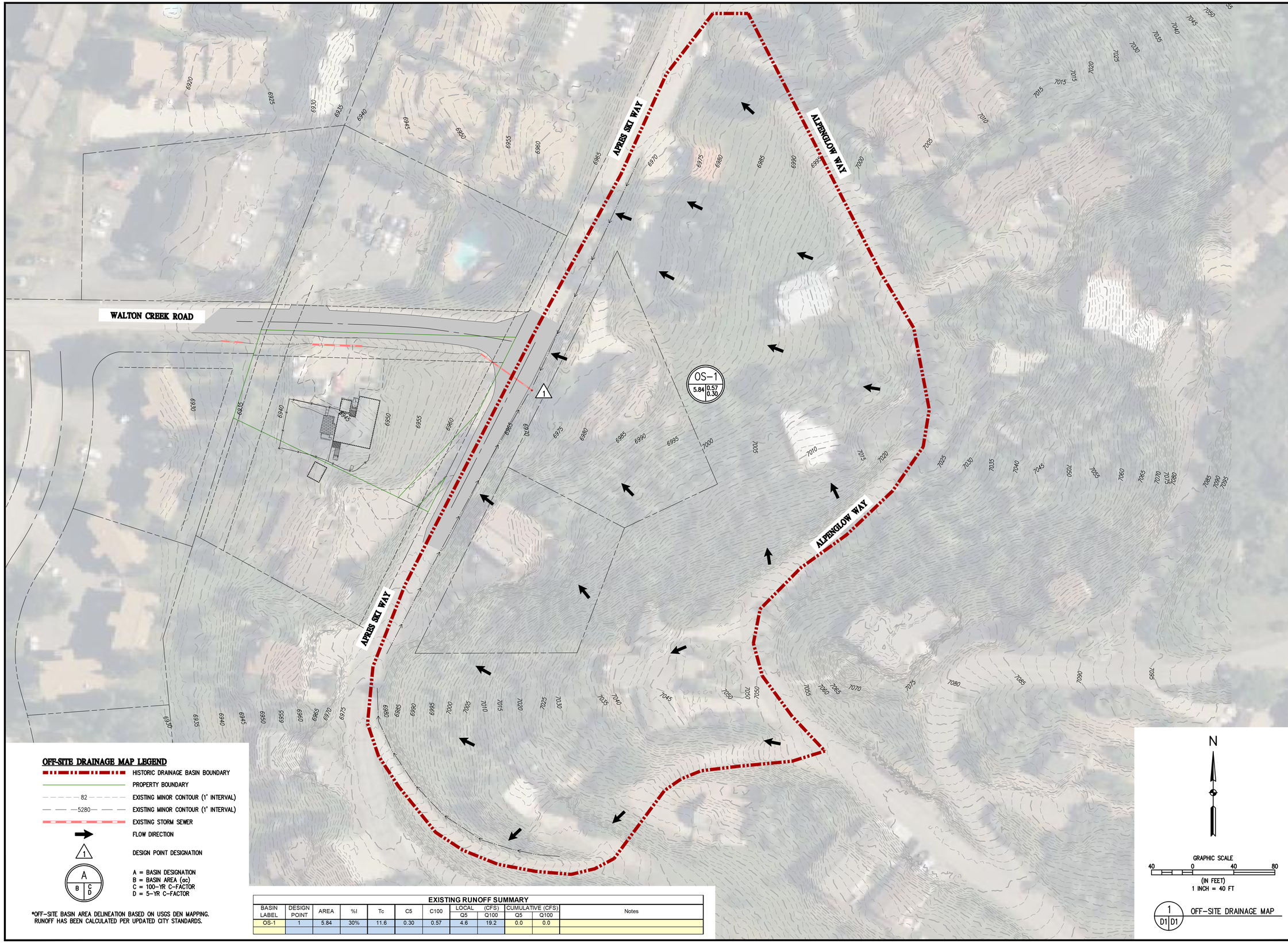
INITIAL SUBMITTAL	4/05/2024
DRAWING SIZE	24" X 36"
SURVEY FIRM	LANDMARK, INC
SURVEY DATE	5/29/2024
JOB NO.	C020261
DRAWING NAME	20261 SITE PLAN.dwg
SHEET	1 OF 9

C1

C:\C020261 2075 Walton Creek Rd Townhomes\Drawings\Preliminary Drawings\20261 SITE PLAN.dwg, 8/21/2024 7:08:54 PM, Tim Maxwell

ATTACHMENT 5

DRAINAGE MAPS



OFF-SITE DRAINAGE MAP LEGEND

- HISTORIC DRAINAGE BASIN BOUNDARY
- PROPERTY BOUNDARY
- 82 — EXISTING MINOR CONTOUR (1' INTERVAL)
- 5280 — EXISTING MINOR CONTOUR (1' INTERVAL)
- EXISTING STORM SEWER
- FLOW DIRECTION
- 1 — DESIGN POINT DESIGNATION
- A = BASIN DESIGNATION; B = BASIN AREA (ac); C = 100-YR C-FACTOR; D = 5-YR C-FACTOR

*OFF-SITE BASIN AREA DELINEATION BASED ON USGS DEN MAPPING. RUNOFF HAS BEEN CALCULATED PER UPDATED CITY STANDARDS.

EXISTING RUNOFF SUMMARY

BASIN LABEL	DESIGN POINT	AREA	%I	Tc	C5	C100	LOCAL (CFS) Q5	LOCAL (CFS) Q100	CUMULATIVE (CFS) Q5	CUMULATIVE (CFS) Q100	Notes
OS-1	1	5.84	30%	11.6	0.30	0.57	4.6	19.2	0.0	0.0	

N

GRAPHIC SCALE
40 0 40 80
(IN FEET)
1 INCH = 40 FT

1 / D1|D1 OFF-SITE DRAINAGE MAP

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REVISION	DESCRIPTION	PREPARED BY	DATE
	ADDRESS DRT COMMENTS	TJM	8/22/2024

DESIGNED BY: TJM
DRAWN BY: TJM
CHECKED BY: CST

MAY RIEGLER PROPERTIES

CITY OF STEAMBOAT SPRINGS — ROUTT COUNTY

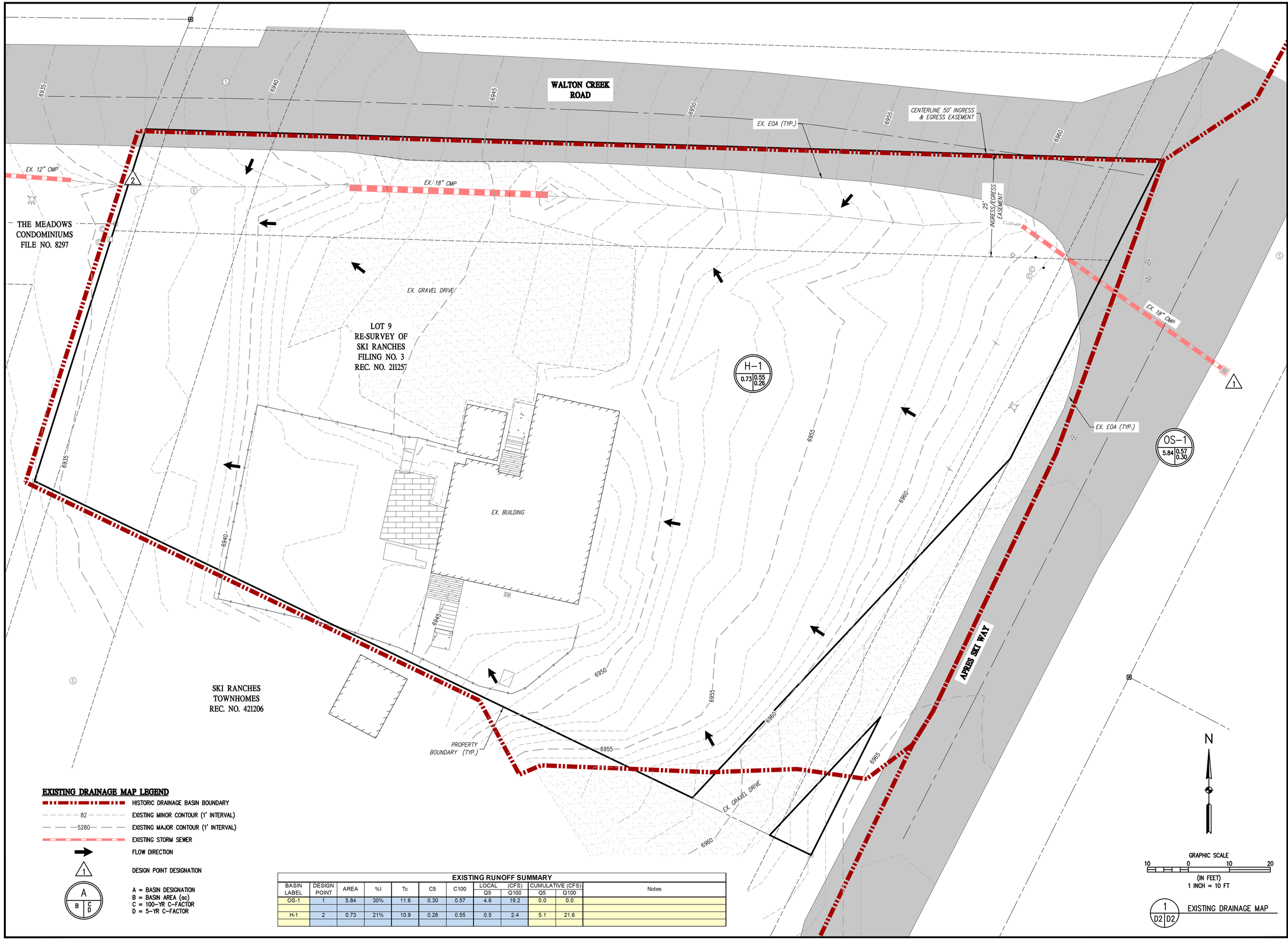
WALTON CREEK TOWNHOMES
2075 WALTON CREEK ROAD
OFF-SITE DRAINAGE MAP

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF BASELINE CORPORATION

INITIAL SUBMITTAL	4/05/2024
DRAWING SIZE	24" X 36"
SURVEY FIRM	FOUR POINTS, INC.
SURVEY DATE	10/24/2021
JOB NO.	C020261
DRAWING NAME	20261 OFF-SITE DRAINAGE.dwg
SHEET	1 OF 3

D1



EXISTING DRAINAGE MAP LEGEND

- HISTORIC DRAINAGE BASIN BOUNDARY
- 82 — EXISTING MINOR CONTOUR (1' INTERVAL)
- 5280 — EXISTING MAJOR CONTOUR (1' INTERVAL)
- EXISTING STORM SEWER
- FLOW DIRECTION
- 1 — DESIGN POINT DESIGNATION
- A = BASIN DESIGNATION; B = BASIN AREA (ac); C = 100-YR C-FACTOR; D = 5-YR C-FACTOR

EXISTING RUNOFF SUMMARY

BASIN LABEL	DESIGN POINT	AREA	%I	Tc	C5	C100	LOCAL (CFS) Q5	LOCAL (CFS) Q100	CUMULATIVE (CFS) Q5	CUMULATIVE (CFS) Q100	Notes
OS-1	1	5.84	30%	11.6	0.30	0.57	4.6	19.2	0.0	0.0	
H-1	2	0.73	21%	10.9	0.26	0.55	0.5	2.4	5.1	21.6	

GRAPHIC SCALE
10 0 10 20
(IN FEET)
1 INCH = 10 FT

1 D2 D2 EXISTING DRAINAGE MAP

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REVISION DESCRIPTION	PREPARED BY	DATE
ADDRESS DRT COMMENTS	TJM	8/22/2024

DESIGNED BY TJM | DRAWN BY TJM | CHECKED BY CST

MAY RIEGLER PROPERTIES

CITY OF STEAMBOAT SPRINGS — ROUTT COUNTY

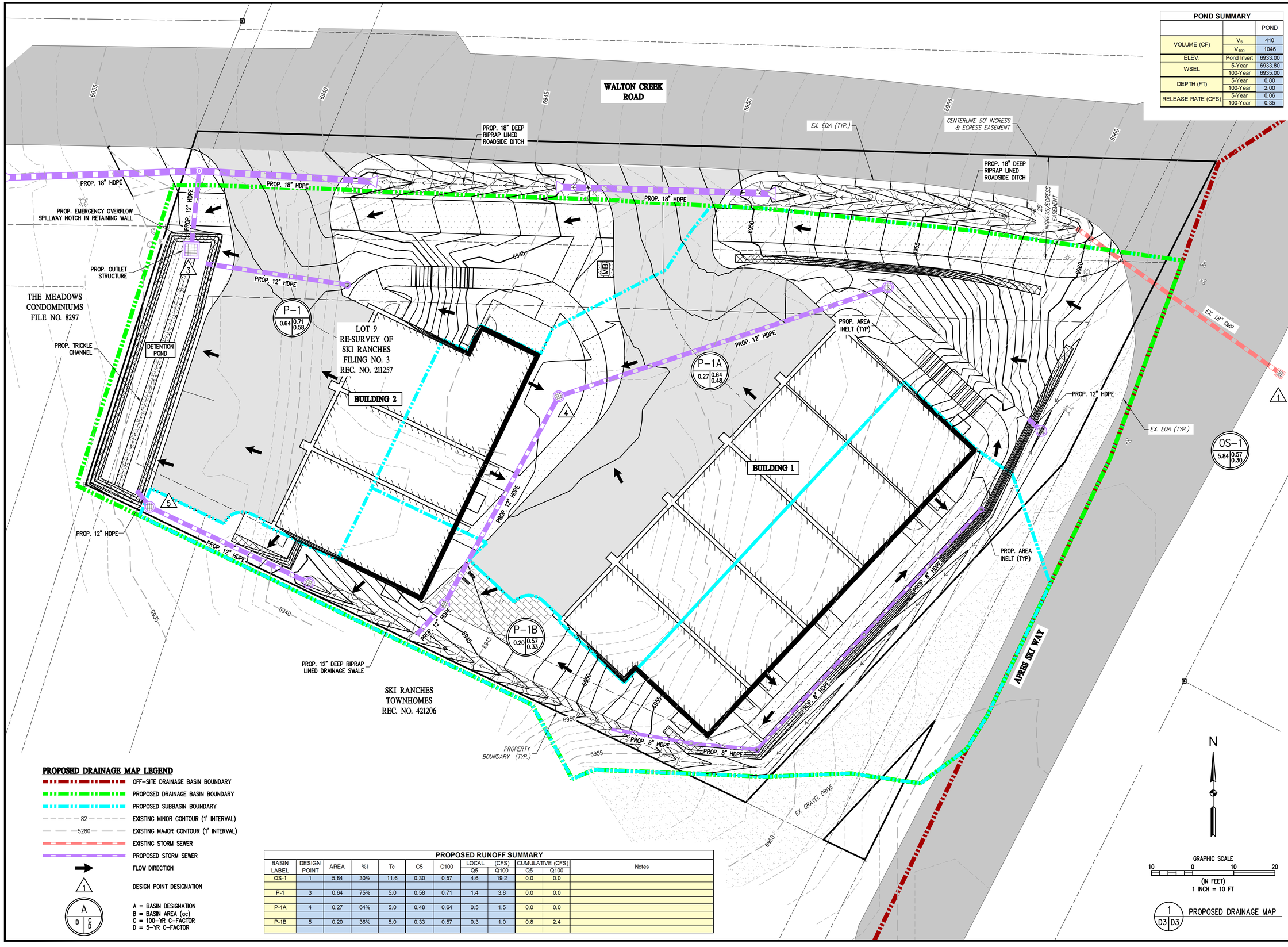
WALTON CREEK TOWNHOMES
2075 WALTON CREEK ROAD
EXISTING DRAINAGE MAP

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF BASELINE CORPORATION

INITIAL SUBMITTAL	4/05/2024
DRAWING SIZE	24" X 36"
SURVEY FIRM	FOUR POINTS, INC
SURVEY DATE	10/24/2021
JOB NO.	C020261
DRAWING NAME	20261 EXISTING DRAINAGE.dwg
SHEET	2 OF 3

D2



POND SUMMARY

		POND
VOLUME (CF)	V_5	410
	V_{100}	1046
ELEV.	Pond Invert	6933.00
WSEL	5-Year	6933.80
	100-Year	6935.00
DEPTH (FT)	5-Year	0.80
	100-Year	2.00
RELEASE RATE (CFS)	5-Year	0.06
	100-Year	0.35

PROPOSED DRAINAGE MAP LEGEND

- OFF-SITE DRAINAGE BASIN BOUNDARY
- PROPOSED DRAINAGE BASIN BOUNDARY
- PROPOSED SUBBASIN BOUNDARY
- 82 EXISTING MINOR CONTOUR (1' INTERVAL)
- 5280 EXISTING MAJOR CONTOUR (1' INTERVAL)
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- FLOW DIRECTION
- 1 DESIGN POINT DESIGNATION
- A = BASIN DESIGNATION; B = BASIN AREA (ac); C = 100-YR C-FACTOR; D = 5-YR C-FACTOR

PROPOSED RUNOFF SUMMARY

BASIN LABEL	DESIGN POINT	AREA	%I	Tc	C5	C100	LOCAL (CFS) Q5	LOCAL (CFS) Q100	CUMULATIVE (CFS) Q5	CUMULATIVE (CFS) Q100	Notes
OS-1	1	5.84	30%	11.6	0.30	0.57	4.6	19.2	0.0	0.0	
P-1	3	0.64	75%	5.0	0.58	0.71	1.4	3.8	0.0	0.0	
P-1A	4	0.27	64%	5.0	0.48	0.64	0.5	1.5	0.0	0.0	
P-1B	5	0.20	36%	5.0	0.33	0.57	0.3	1.0	0.8	2.4	

GRAPHIC SCALE
10 0 10 20
(IN FEET)
1 INCH = 10 FT

1 D3 D3 PROPOSED DRAINAGE MAP

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DESIGNED BY TJM | DRAWN BY TJM | CHECKED BY CST

PREPARED BY TJM DATE 8/22/2024

REVISION DESCRIPTION
ADDRESS DRT COMMENTS

MAY RIEGLER PROPERTIES
CITY OF STEAMBOAT SPRINGS ROUTT COUNTY
WALTON CREEK TOWNHOMES
2075 WALTON CREEK ROAD
PROPOSED DRAINAGE MAP

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF BASELINE CORPORATION

INITIAL SUBMITTAL	4/05/2024
DRAWING SIZE	24" X 36"
SURVEY FIRM	FOUR POINTS, INC
SURVEY DATE	10/24/2021
JOB NO.	C020261
DRAWING NAME	20261 PROPOSED DRAINAGE.dwg
SHEET	3 OF 3

D3

ATTACHMENT 6

RUNOFF CALCULATIONS AND SUMMARY TABLES

BASELINE
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SF-1
RUNOFF COEFFICIENTS

PROJECT NAME: WALTON CREEK TH
PROJECT NUMBER: CO20261
CALCULATED BY: TJM
CHECKED BY: SMB

DATE: 8/21/2024

LAND USE:	SINGLE FAMILY: 0.25 - 0.75 AC	GREENBELTS, AGRICULTURAL	ROOF AREA	DRIVE & WALKS	GRAVEL AREA	PAVED AREA	LAWNS AND GOLF COURSES
% IMPERVIOUS	30%	2%	90%	90%	40%	100%	2%
1.25-YEAR COEFF.	0.18	0.01	0.71	0.71	0.25	0.88	0.01
2-YEAR COEFF.	0.22	0.06	0.73	0.73	0.28	0.89	0.06
5-YEAR COEFF.	0.30	0.16	0.75	0.75	0.35	0.90	0.16
10-YEAR COEFF.	0.38	0.26	0.77	0.77	0.42	0.92	0.26
100-YEAR COEFF.	0.57	0.51	0.83	0.83	0.58	0.96	0.51

HYDROLOGIC SOIL TYPE = C

DESIGN BASIN	DESIGN POINT	SINGLE FAMILY: 0.25 - 0.75 AC	GREENBELTS, AGRICULTURAL	ROOF AREA	DRIVE & WALKS	GRAVEL AREA	PAVED AREA	LAWNS AND GOLF COURSES	TOTAL AREA	PERCENT IMPERV.	RUNOFF COEFFICIENTS				
		(AC)	(AC)	(AC)	(AC)	(AC)	(AC)	(AC)	(AC)	(%)	$C_{1.25}$	C_2	C_5	C_{10}	C_{100}
OS-1	1	5.84							**5.84**	30%	0.18	0.22	0.30	0.38	0.57
H-1	2		0.52	0.04	0.004	0.10	0.07		**0.73**	21%	0.14	0.18	0.26	0.34	0.55
HISTORIC BASIN SUBTOTAL		**5.84**	**0.52**	**0.04**	**0.00**	**0.10**	**0.07**	**0.00**	**6.57**	**29%**	**0.18**	**0.22**	**0.30**	**0.38**	**0.57**
		88.9%	7.9%	0.6%	0.1%	1.6%	1.0%		100%						
P-1	3			0.16	0.12	0.02	0.22	0.12	**0.64**	75%	0.52	0.54	0.58	0.62	0.71
P-1A	4			0.07	0.03		0.07	0.09	**0.27**	64%	0.40	0.44	0.48	0.53	0.64
P-1B	5			0.06	0.01			0.12	**0.20**	36%	0.23	0.26	0.33	0.40	0.57
DEVELOPED BASIN SUBTOTAL		**0.00**	**0.00**	**0.30**	**0.16**	**0.02**	**0.29**	**0.34**	**1.11**	**65%**	**0.42**	**0.45**	**0.49**	**0.54**	**0.65**
				26.9%	14.8%	2.1%	26.1%	30.2%	100%						

BASELINE
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STANDARD FORM SF-2
TIME OF CONCENTRATION

PROJECT NAME: WALTON CREEK TH
PROJECT NUMBER: CO20261
CALCULATED BY: TJM
CHECKED BY: SMB

DATE: 8/21/2024

SUB-BASIN DATA			INITIAL TIME (T_i)			TRAVEL TIME (T_t)							FIRST DESIGN POINT T_c CHECK (URBANIZED BASINS)				FINAL T_c	RUNOFF COEFF.	
DESIGN BASIN (1)	AREA Ac (2)	C_5 (3)	LENGTH (L_o) Ft (4)	SLOPE (S) % (5)	T_i Min. (6)	LENGTH Ft. (7)	SLOPE (S_w) % (8)	Land Surface (9)	K (10)	VEL fps (11)	T_t Min. (12)	COMP. T_c (13)	URBAN BASIN? (14)	i (15)	CHANNELIZED LENGTH (16)	T_c = Eq 6-5 Min. (17)	Min. (18)	C_{10} (19)	C_{100} (20)
OS-1	5.84	0.30	255	19.0%	8.8	630	6.3%	Grassed Waterway	15.0	3.8	2.8	**11.6**	Yes	0.30	630	24.1	**11.6**	0.38	0.57
H-1	0.73	0.26	250	11.0%	10.9		11.0%	Short Pasture/Lawn	7.0	2.3		**10.9**	Yes	0.21		22.4	**10.9**	0.34	0.55
P-1	0.64	0.58	22	33.0%	1.4	240	11.0%	Grassed Waterway	15.0	5.0	0.8	**2.2**	Yes	0.75	240	13.9	**5.0**	0.62	0.71
P-1A	0.27	0.48	28	6.5%	3.2	182	10.5%	Paved Areas	20.0	6.5	0.5	**3.7**	Yes	0.64	182	15.7	**5.0**	0.53	0.64
P-1B	0.20	0.33	22	33.0%	2.1	240	11.0%	Grassed Waterway	15.0	5.0	0.8	**2.9**	Yes	0.36	240	20.7	**5.0**	0.40	0.57

$t_i = 0.395\ (1.1 - C_5)\ L_o^{1/2} / S^{1/3}$ $\quad V = K\ S_w^{0.5}$ $\quad T_t = \frac{L}{60\ V}$ $\quad t_c = (26\text{-}17i) + L_t / (60\ (14i + 9)\ \sqrt{(S_t)})$

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STANDARD FORM SF-3
STORM DRAINAGE DESIGN - RATIONAL METHOD 5-YEAR EVENT

PROJECT NAME: WALTON CREEK TH
PROJECT NUMBER: CO20261
CALCULATED BY: TJM
CHECKED BY: SMB

DATE: 8/21/2024

P_1 (1-Hour Rainfall) = **0.82** in. (5-yr)

		DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
STORM LINE	DESIGN POINT	DESIGN BASIN	AREA (AC)	RUNOFF COEFF C_5	t_c (min)	C*A(ac)	I (in/hr)	Q (cfs)	t_c (min)	Σ(C*A) (ac)	I (in/hr)	Q (cfs)	SLOPE (%)	STREET FLOW(cfs)	DESIGN FLOW(cfs)	SLOPE (%)	PIPE SIZE (in)	LENGTH (ft)	VELOCITY (fps)	t_t (min)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
	1	OS-1	5.84	0.30	11.6	1.75	2.64	4.6													
	2	H-1	0.73	0.26	10.9	0.19	2.73	0.5													
	3	P-1	0.64	0.58	5.0	0.37	3.86	1.4													
	4	P-1A	0.27	0.48	5.0	0.13	3.86	0.5													
	5	P-1B	0.20	0.33	5.0	0.07	3.86	0.3													

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STANDARD FORM SF-3
STORM DRAINAGE DESIGN - RATIONAL METHOD 100-YEAR EVENT

PROJECT NAME: WALTON CREEK TH
PROJECT NUMBER: CO20261
CALCULATED BY: TJM
CHECKED BY: SMB

DATE: 8/21/2024

P_1 (1-Hour Rainfall) = 1.79 in. (100-yr)

		DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
STORM LINE	DESIGN POINT	DESIGN BASIN	AREA (AC)	RUNOFF COEFF C_{100}	t_c (min)	C*A(ac)	I (in/hr)	Q (cfs)	t_c (min)	Σ(C*A) (ac)	I (in/hr)	Q (cfs)	SLOPE (%)	STREET FLOW(cfs)	DESIGN FLOW(cfs)	SLOPE (%)	PIPE SIZE (in)	LENGTH (ft)	VELOCITY (fps)	tt (min)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
	1	OS-1	5.84	0.57	11.6	3.33	5.76	19.2													
	2	H-1	0.73	0.55	10.9	0.40	5.95	2.4													
	3	P-1	0.64	0.71	5.0	0.46	8.42	3.8													
	4	P-1A	0.27	0.64	5.0	0.17	8.42	1.5													
	5	P-1B	0.20	0.57	5.0	0.12	8.42	1.0													

RUNOFF SUMMARY

BASIN LABEL	DESIGN POINT	AREA	%I	Tc	C5	C100	LOCAL (CFS)		CUMULATIVE (CFS)		Notes
							Q5	Q100	Q5	Q100	
OS-1	1	5.84	30%	11.6	0.30	0.57	4.6	19.2	0.0	0.0	
H-1	2	0.73	21%	10.9	0.26	0.55	0.5	2.4	0.0	0.0	
P-1	3	0.64	75%	5.0	0.58	0.71	1.4	3.8	0.0	0.0	
P-1A	4	0.27	64%	5.0	0.48	0.64	0.5	1.5	0.0	0.0	
P-1B	5	0.20	36%	5.0	0.33	0.57	0.3	1.0	0.8	2.4	

ATTACHMENT 7

STORM CONVEYANCE COMPUTATIONS

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Aug 21 2024

PROPOSED WALTON CREEK ROADSIDE CULVERTS - 100YEAR

Circular

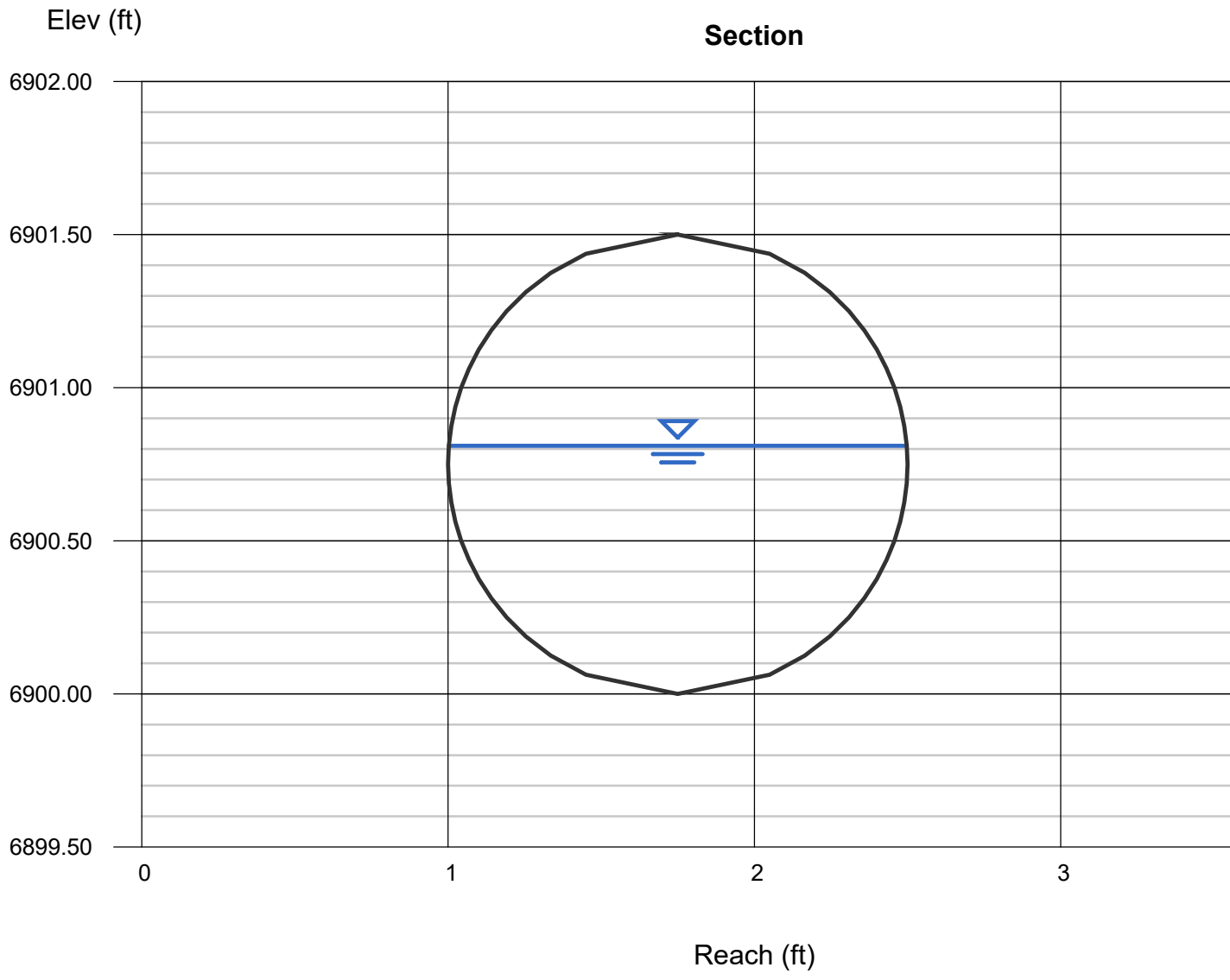
Diameter (ft)	= 1.50
Invert Elev (ft)	= 6900.00
Slope (%)	= 9.00
N-Value	= 0.012

Calculations

Compute by:	Known Q
Known Q (cfs)	= 19.20

Highlighted

Depth (ft)	= 0.81
Q (cfs)	= 19.20
Area (sqft)	= 0.98
Velocity (ft/s)	= 19.63
Wetted Perim (ft)	= 2.48
Crit Depth, Yc (ft)	= 1.47
Top Width (ft)	= 1.49
EGL (ft)	= 6.80



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Aug 21 2024

PROPOSED WALTON CREEK ROADSIDE SWALE - 100YEAR

Triangular

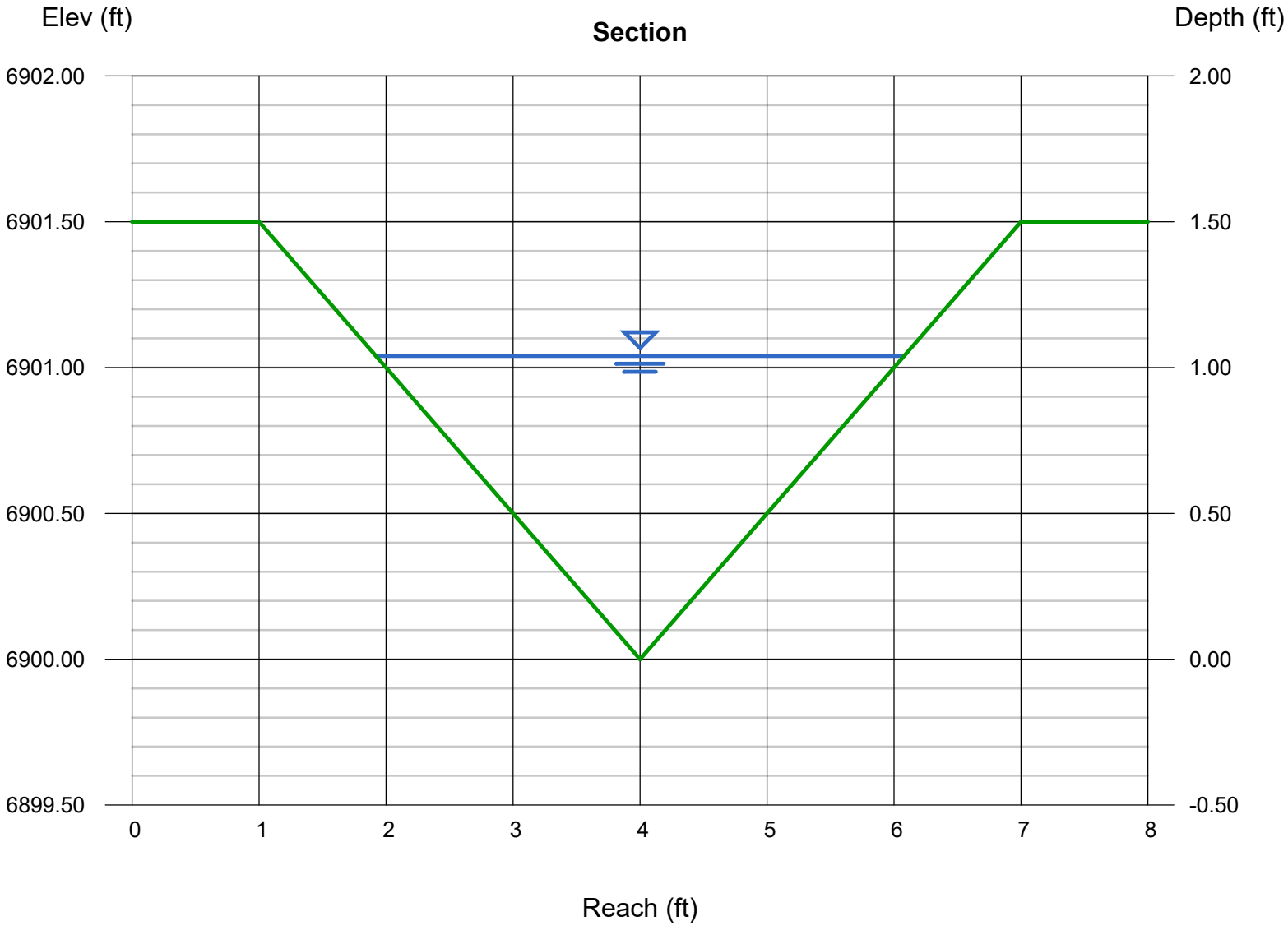
Side Slopes (z:1)	= 2.00, 2.00
Total Depth (ft)	= 1.50
Invert Elev (ft)	= 6900.00
Slope (%)	= 9.00
N-Value	= 0.030

Calculations

Compute by:	Known Q
Known Q (cfs)	= 19.20

Highlighted

Depth (ft)	= 1.04
Q (cfs)	= 19.20
Area (sqft)	= 2.16
Velocity (ft/s)	= 8.88
Wetted Perim (ft)	= 4.65
Crit Depth, Yc (ft)	= 1.42
Top Width (ft)	= 4.16
EGL (ft)	= 2.26



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Aug 21 2024

DESIGN POINT P-1A - 100YEAR

Circular

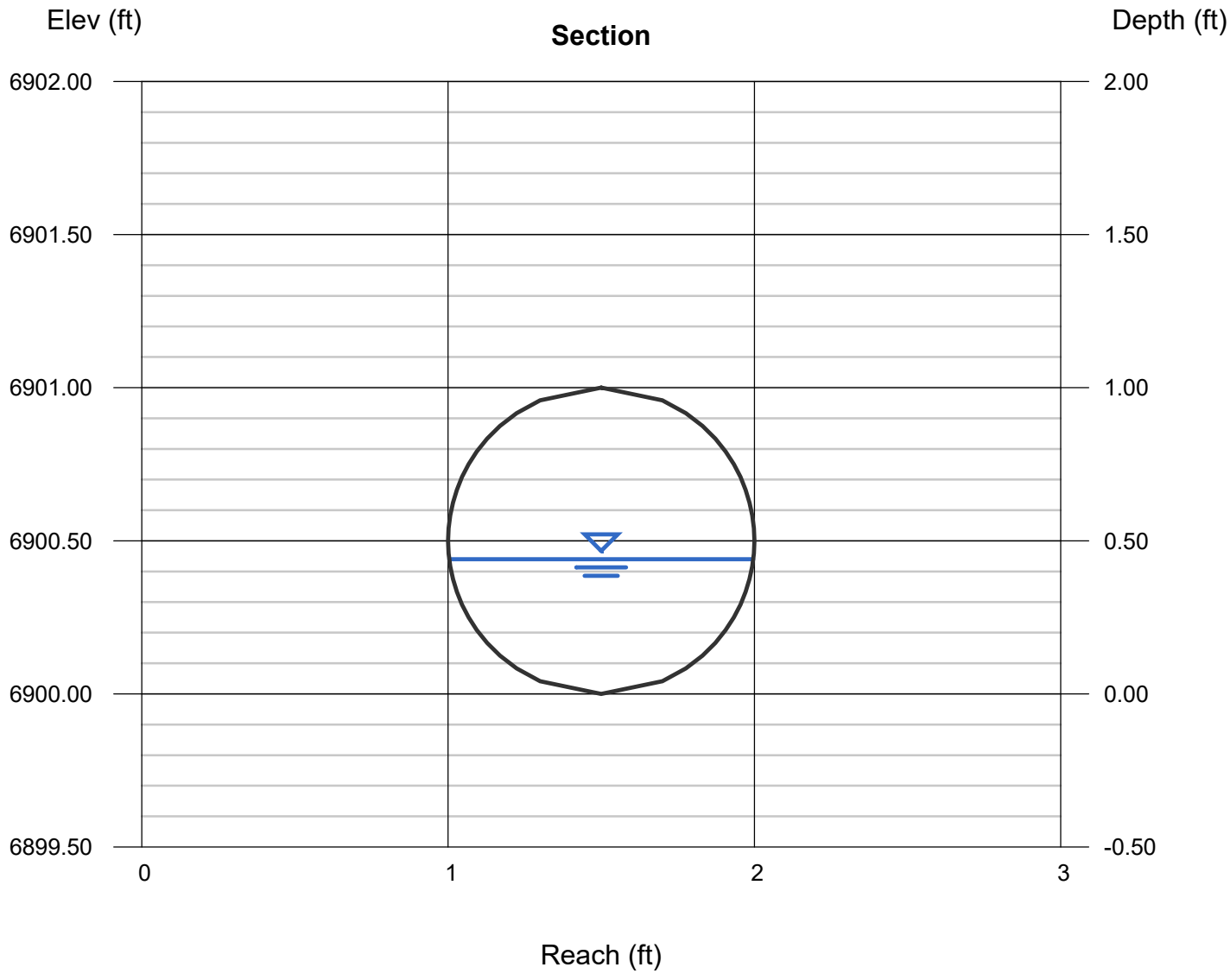
Diameter (ft)	= 1.00
Invert Elev (ft)	= 6900.00
Slope (%)	= 1.00
N-Value	= 0.012

Calculations

Compute by:	Known Q
Known Q (cfs)	= 1.50

Highlighted

Depth (ft)	= 0.44
Q (cfs)	= 1.500
Area (sqft)	= 0.34
Velocity (ft/s)	= 4.48
Wetted Perim (ft)	= 1.45
Crit Depth, Yc (ft)	= 0.52
Top Width (ft)	= 0.99
EGL (ft)	= 0.75



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Aug 21 2024

DESIGN POINT P-1B - 100 YEAR

Circular

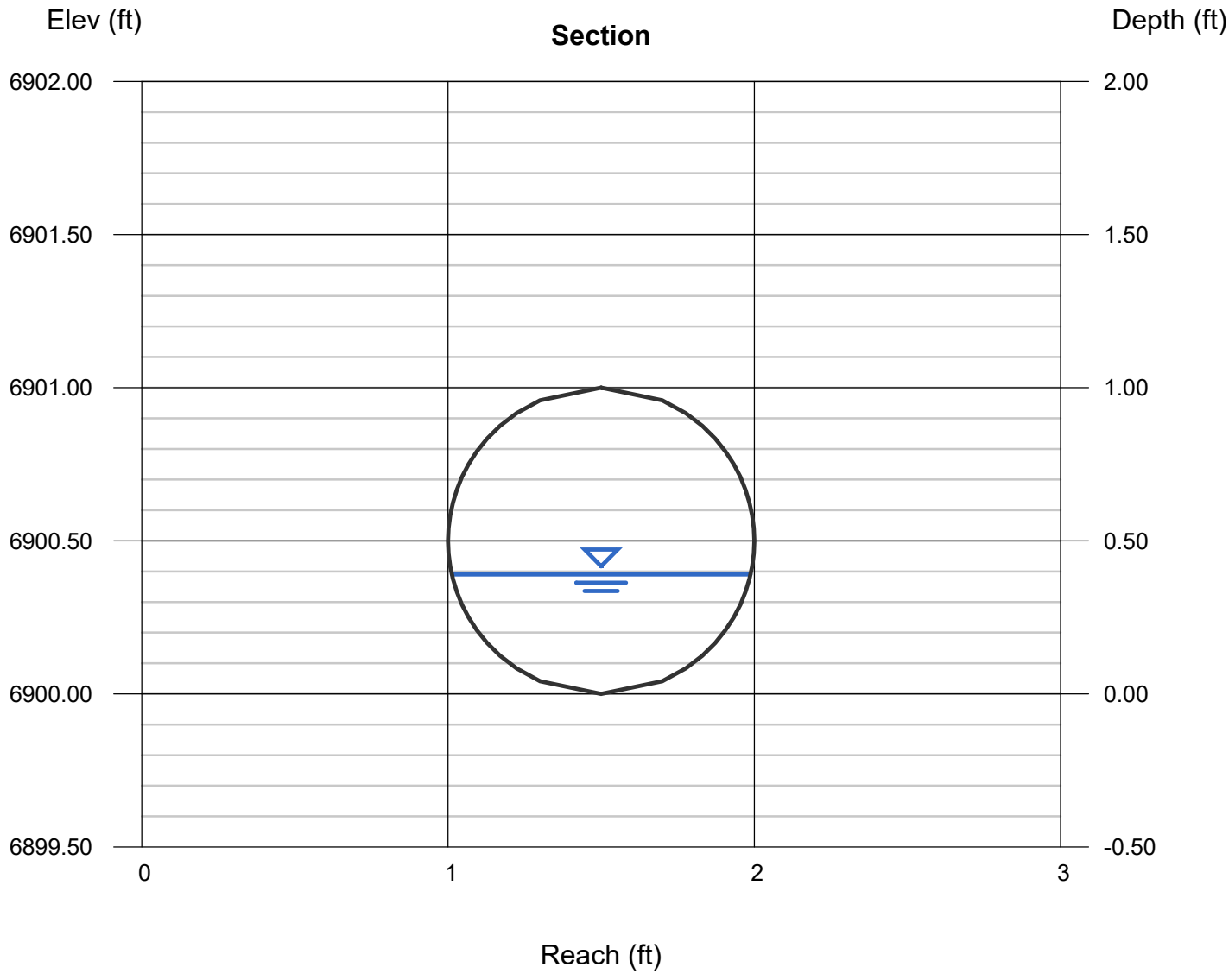
Diameter (ft)	= 1.00
Invert Elev (ft)	= 6900.00
Slope (%)	= 4.00
N-Value	= 0.012

Calculations

Compute by:	Known Q
Known Q (cfs)	= 2.40

Highlighted

Depth (ft)	= 0.39
Q (cfs)	= 2.400
Area (sqft)	= 0.28
Velocity (ft/s)	= 8.45
Wetted Perim (ft)	= 1.35
Crit Depth, Yc (ft)	= 0.67
Top Width (ft)	= 0.98
EGL (ft)	= 1.50



ATTACHMENT 8

POND CALCULATIONS

BASELINE
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STORM STORAGE CALCULATIONS
DETENTION POND

PROJECT NAME: WALTON CREEK TH
PROJECT NUMBER: CO20261
CALCULATED BY: TJM
CHECKED BY: SMB

DATE: 8/21/2024

	DESIGN DRAINAGE AREA	Onsite Area =	**0.64**	**ACRES**
CALCULATED % IMPERVIOUSNESS =	75%	Tc=	5.0	MIN
		Q5=	1.4	
		Q100=	3.8	

5-YR STORM CALCULATIONS

EQUATION: Vi5=CIA*Tc*60	**Vi5 =**	**429**	**CF**
EQUATION: Q5=0.10 A	**RELEASE @ Q5 =**	**0.06**	
EQUATION: Vo5=Q5*Tc*60	**Vo5=**	**19**	**CF**
EQUATION: V5=Vi5-Vo5	**V5=**	**410**	**CF**

100-YR STORM CALCULATIONS

EQUATION: Vi100=CIA*Tc*60	**V100 =**	**1150**	**CF**
EQUATION: Q100=0.54 A	**RELEASE @ Q 100=**	**0.35**	**CFS**
EQUATION: Vo100=Q100*Tc*60	**Vo100 =**	**104**	**CF**
EQUATION: V100=Vi100-Vo100	**V100 =**	**1046**	**CF**
	TOTAL REQUIRED VOLUME =	**1046**	**CF** (100-yr)

OUTLET STRUCTURE DEVELOPED BASIN A AREA

MINIMUM POND VOLUME, V=	1046	cf			
Q5-Release = 0.1*Design Drainage Area	0.06	cfs	**h5=**	**0.77**	**ft**
Q100-Release = 0.54*Design Drainage Area	0.35	cfs	**h100=**	**1.72**	**ft**

SIZE 5-YR OUTLET CONTROL USE ORIFICE EQUATION: Q=Cd (0.65) * A * (2 g h)^0.5

ORIFICE PLATE DIA. AREA, A5= 0.01 **sf OR 1.6 inches in diameter**

SIZE 100-YR OUTLET CONTROL USE ORIFICE EQUATION: Q=Cd (0.6) * A * (2 g h)^0.5

Q100	3.8		
SPILLWAY DEPTH	1.0	ft	
LENGTH OF SPILLWAY	1.5	ft	Q100=CW(2.6) L (hmax ht)^3/2

*SEE 100-YEAR ORIFICE PLATE SIZING SHEET

OUTLET STRUCTURE SIZING SUMMARY

PROVIDE A **1.6** INCH DIAMETER ORIFICE PLATE @ FL ELEVATION FOR 5-YR FLOWS
PROVIDE A *SEE 100-YEAR ORIFICE PLATE SIZING SHEET
PROVIDE A **1.5** LF SPILLWAY

0.35

BASELINE
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VOLUME CALCULATIONS
DETENTION POND

PROJECT NAME: WALTON CREEK TH
PROJECT NUMBER: CO20261
CALCULATED BY: TJM
CHECKED BY: SMB

DATE: 8/21/2024

DETENTION POND DESIGN

DRAINAGE SUMMARY

CALCULATED

5-YR STORAGE REQUIRED = **410** **CF**

100-YR STORAGE REQUIRED = **1046** **CF**

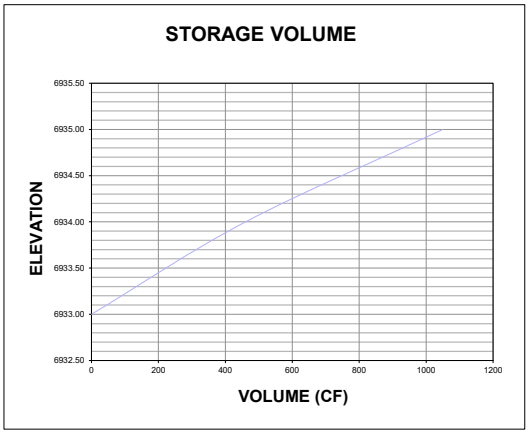
DETENTION POND DESIGN

ASSUMPTIONS

	Elev (ft)	Area (sf)	Volume (cf)	**Sum Vol (cf)**
AREA=	6933.00	0	0	**0**
	6934.0	585	460	**460**
	6935.0	585	590	**1050**

5-YR ELEV. = **6933.80 ft** **D5-yr=** **0.80 ft**

100-YR + WQCV ELEV. = **6935.0 ft** **D100-yr=** **2.0 ft**



BASELINE
Engineering • Planning • Surveying

100-Year Orifice Plate on Outlet Pipe from Pond Outlet Structure

PROJECT NAME: WALTON CREEK TH
PROJECT NUMBER: CO20261
CALCULATED BY: TJM
CHECKED BY: SMB

DATE: 8/21/2024

POND	PONDING DEPTH	OUTLET PIPE DIAMETER	OUTLET PIPE RADIUS	ORIFICE PLATE HEIGHT	ORIFICE PLATE HEIGHT	ORIFICE AREA	DEPTH TO OUTLET INVERT	ANGLE	CENTROID	EFFECTIVE HEAD	RELEASE RATE
	(FT)	(FT)	(FT)	(IN)	(FT)	(SQFT)	(FT)		(FT)	(FT)	(CFS)
A	2	1	0.5	**1.05**	0.088	0.034	2	1.20	0.05	3.95	**0.35**

5.14.1 Orifices

Multiple orifices may be used in a detention facility, and the hydraulics of each can be superimposed to develop the outlet-rating curve. For a single orifice or a group of orifices, orifice flow can be determined using Equation 12-7.

$$Q = C_o A_o (2gH_o)^{0.5}$$ Equation 12-7

Where:

Q = the orifice flow rate through a given orifice (cfs)

C_o = discharge coefficient (0.60 recommended for square-edge orifices)

A_o = area of orifice (ft^2)

H_o = effective head on each orifice opening (ft)

g = gravitational acceleration constant (32.2 ft/sec^2)

If the orifice discharges as a free outfall, the effective head is measured from the centroid of the orifice to the upstream water surface elevation. If the downstream jet of the orifice is submerged, then the effective head is the difference in elevation between the upstream and downstream water surfaces.

ATTACHMENT 9

TABLES USED FOR REPORT

5.5.1 INTRODUCTION

Presented in this Section are design rainfall data for the minor and major storm events. These data are used to determine storm runoff peak flows and volumes in conjunction with the runoff models described in Section 5.6, Storm Runoff. All hydrologic analyses for Steamboat Springs shall utilize the rainfall data presented in this Section for calculating storm runoff.

5.5.2 RAINFALL ANALYSIS

For the City of Steamboat Springs, rainfall analysis shall be completed by using Equation 1 in this Section or by using the Colorado Urban Hydrograph Procedure (CUHP) developed by the Urban Drainage and Flood Control District. Rainfall data is generally based on NOAA Atlas 14, Volume 8. A detailed memo regarding the evaluation of NOAA Atlas 14 is available from the City upon request. To develop design flow rates, Equation 1 is used with the Rational Method and CUHP is used with SWMM or PCSWMM and HEC-1 or HEC-HMS. These runoff methodologies are discussed in Section 5.6, Storm Runoff.

5.5.3 INTENSITY-DURATION-FREQUENCY CURVES

Equation 1 shall be used to calculate rainfall intensity for a given time of concentration or to develop intensity-duration-frequency curves for the Rational Method for runoff analysis. The 1-hour rainfall depths from NOAA Atlas 14 for Steamboat Springs (station ID 05-7936) are used in Equation 1 for the durations and return periods of interest. Equation 1 was developed using data from NOAA Atlas 14. A detailed memo on the development of the equation is available from the City upon request.

$$I = P_1 \times \frac{49.1}{(T_d + 7.84)^{0.919}} \quad (1)$$

Where:

I = rainfall intensity (inches per hour)
P_1 = 1-hour rainfall depth (inches)
T_d = storm duration (minutes)

Rainfall intensities as a function of various storm durations and recurrence intervals are provided in Table 5.5.1 for reference. These values were calculated using Equation 1. Table 5.5.1 includes a 1-hour rainfall depth and intensities as a function of storm duration for the 80th percentile storm event (the event having a 1.25-year return period) to be used to design permanent stormwater treatment facilities using the TSS design standard. The values in Table 5.5.1 are subject to revision and users of these Engineering Standards are encouraged to check for updates.

Table 5.5.1.P1 and Intensity-Duration-Frequency Values

Return Period	P1	Rainfall Intensity for Storm Duration				
		5-min	10-min	15-min	30-min	60-min
1.25-year	0.38	1.79	1.33	1.06	0.66	0.39
2-year	0.55	2.58	1.90	1.52	0.95	0.56
5-year	0.82	3.84	2.84	2.26	1.42	0.83
10-year	1.04	4.89	3.61	2.88	1.81	1.06
25-year	1.34	6.30	4.66	3.71	2.33	1.36
50-year	1.57	7.38	5.46	4.35	2.73	1.60
100-year	1.79	8.42	6.22	4.96	3.12	1.82
500-year	2.31	10.86	8.03	6.40	4.02	2.35

$$t_c = t_i + t_t \quad (1)$$

Where:

t_c = time of concentration (min)
t_i = initial or overland flow time (min)
t_t = travel time in the ditch, channel, gutter, storm drain, etc. (min)

The initial or overland flow time, t_i, may be calculated using the following equation:

$$t_i = 0.395\ (1.1 - C_5)\ L_o^{1/2} / S^{1/3} \quad (2)$$

Where:

t_i = initial or overland flow time (min)
C_5 = runoff coefficient for 5-year return period
L_o = length of overland flow, (ft, 300 max)
S = average slope along the initial flow path (percent)

Equation 2 was developed for use with the Rational Method. The 5-year runoff coefficient, C_5, is presented in Table 5.6.1, along with C values for other return periods.

Table 5.6.1. Design Runoff Coefficients

Percent Impervious	Runoff Coefficients, C_x						
	1.25-yr	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
0%	0.003	0.04	0.15	0.25	0.37	0.44	0.50
5%	0.03	0.08	0.18	0.28	0.39	0.46	0.52
10%	0.06	0.11	0.21	0.30	0.41	0.47	0.53
15%	0.10	0.14	0.24	0.32	0.43	0.49	0.54
20%	0.13	0.17	0.26	0.34	0.44	0.50	0.55
25%	0.16	0.20	0.28	0.36	0.46	0.51	0.56
30%	0.18	0.22	0.30	0.38	0.47	0.52	0.57
35%	0.22	0.25	0.33	0.40	0.48	0.53	0.57
40%	0.25	0.28	0.35	0.42	0.50	0.54	0.58
45%	0.28	0.31	0.37	0.44	0.51	0.55	0.59
50%	0.31	0.34	0.40	0.46	0.53	0.57	0.60
55%	0.34	0.37	0.43	0.48	0.55	0.58	0.62
60%	0.36	0.41	0.46	0.51	0.57	0.60	0.63
65%	0.42	0.45	0.49	0.54	0.59	0.62	0.65
70%	0.47	0.49	0.53	0.57	0.62	0.65	0.68
75%	0.52	0.54	0.58	0.62	0.66	0.68	0.71
80%	0.58	0.60	0.63	0.66	0.70	0.72	0.74
85%	0.64	0.66	0.68	0.71	0.75	0.77	0.79
90%	0.71	0.73	0.75	0.77	0.80	0.82	0.83
95%	0.79	0.80	0.82	0.84	0.87	0.88	0.89
100%	0.88	0.89	0.90	0.92	0.94	0.95	0.96

The overland flow length, L_o, is generally defined as the length over which the flow characteristics appear as sheet flow or very shallow flow in broad, grassed swales. Changes in land slope, surface characteristics, and small drainage ditches or gullies will tend to force the overland flow into a

combined flow condition, which results in higher flow velocities and shorter travel times. The initial flow time in both urban and non-urban areas shall be limited to the time to travel 300 feet.

For watersheds longer than 300 feet, the travel time, t_t, must be added to the overland flow time. Travel time can be calculated using Manning's equation and the hydraulic properties of the storm drain, gutter, swale, ditch, or channel or can be approximated using Equation 3 for average velocity and Table 5.6.2 for the conveyance factor:

$$V = K S_w^{0.5} \quad (3)$$

Where:

V = velocity (fps)
S_w = watercourse slope (ft/ft)
K = conveyance factor

The minimum conveyance factor, K, that shall be used for a developed site shall be 7, corresponding to short pasture and lawns.

Table 5.6.2. Travel Time Conveyance Factors

Land Surface	Conveyance Factor, K
Heavy meadow	2.5
Tillage/Field	5
Short pasture and lawns	7
Nearly bare ground	10
Grassed waterways	15
Paved areas and shallow swales	20

Reference: UDFCD (2016)

The time of concentration, t_c is the sum of the initial flow time, t_i and the travel time, t_t. The minimum recommended t_c for non-urban watersheds is 10 minutes.

Urbanized Watersheds

Overland flow in urbanized watersheds can occur from the back of the lot to the street, in parking lots, in landscape areas, or within park areas and can be calculated using the procedure described for non-urbanized watersheds. Travel time, t_t, to the first design point or inlet is often determined based on the conveyance coefficient for paved areas and shallow swales but can be estimated using Manning's equation.

The time of concentration for the first design point in an urbanized watershed shall not exceed the time of concentration calculated using Equation 4, which was developed using rainfall/runoff data collected in urbanized regions (USDCM, 2016).

$$t_c = (26\text{-}17i) + L_t / (60\,(14i + 9)\,\sqrt{(S_t)}) \quad (4)$$

Where:

t_c = minimum time of concentration for the first design point (min)
L_t = length of channelized flow path (ft)
i = imperviousness as a decimal
S_t = slope of the channelized flow path (ft)

Table 5.6.3. Recommended Imperviousness Values

Land Use or Cover	Percent Impervious
Commercial/Mixed Use	
Downtown and Base Areas*	95
All Other Commercial Areas	75
Residential	
Single Family	
2.5 acres or larger lot size	12
0.75 – 2.5 acres lot size	20
0.25 – 0.75 acres lot size	30
0.25 acres or smaller lot size	45
Multifamily and Resort Residential	75
Industrial	
Light industrial	80
Heavy industrial	90
Parks, cemeteries	10
Playgrounds	25
Schools	55
Railroad yards	50
Undeveloped Areas	
Historic Flow analysis	2
Greenbelts, agriculture	2
Off-site flow analysis	45
(when land use not defined)	
Streets & Surfacing	
Paved (concrete/asphalt)	100
Road base or recycled asphalt	80
Gravel (uniformly graded)	40
Drives and walks	90
Roofs	90
Lawns and golf courses (all soils)	2

Reference: UDFCD (2016)
*Downtown and Base Area Commercial defined as CO, G1, and G2 zoned parcels

5.6.2.3 HEC Models

The USACE HEC has developed models designed to simulate various hydrologic and hydraulic processes. The HEC-1 Flood Hydrograph Package was the first hydrologic model developed. Its successor, HEC-HMS (Hydrologic Modeling System), is designed to simulate the precipitation-runoff processes of branching watershed systems. It is designed to be applicable in a wide range of geographic areas for modeling the widest possible range of hydrologic conditions. This includes large river basin water supply and flood hydrology, and small urban or natural watershed runoff.

Either program is acceptable for use in the City of Steamboat Springs. The designer is referred to the HEC-1 and HEC-HMS User's Manuals for additional guidance. The following subsections offer guidance for determining some of the inputs to the HEC programs.

5.11.1 INTRODUCTION

The main purpose of a detention basin is to store runoff and reduce peak discharge by allowing flow to be discharged at a slower, more controlled rate. This controlled discharge rate is the lesser of available downstream capacity and historic site runoff rates. Detention helps to control flood peaks in urbanized areas. Use of detention includes individual site options such as a channel or small landscaped basin and regional options serving multiple sites such as construction of a large pond or reservoir.

5.11.2 DETENTION VERSUS RETENTION

Stormwater storage reservoirs are either detention or retention basins. A detention basin detains water temporarily, releasing it slowly through a pipe or channel. Because of its ability to release flow during inflow, the required storage volume is reduced. Detention basins also have a positive means of outflow, eliminating problems that come with a residual pool. Alternately, a retention basin retains water without any release during inflow. Once the storm event is over, basin drainage may occur due to evaporation and percolation into the soil. The use of retention basins is not permitted within the City of Steamboat Springs.

5.11.3 HISTORIC AND PRE-DEVELOPMENT FLOWS

Historic runoff from a site is generally the amount of runoff a site produced during a given storm prior to anything being constructed on the site. When there is no construction on a site (i.e., no man-made imperviousness), and the Rational Method is being used to determine peak runoff, historic flow rates shall be calculated using the flow rates listed in **Table 5.11.1**.

For the purposes of these criteria, when a site already has improvements constructed upon it, defined as a “Pre-development” condition , that construction may be considered part of the site’s historic condition and historic flows for these sites shall be computed based on a composite C value determined in accordance with Section 5.6, Storm Runoff. Prior to any redevelopment of a parcel, any previous detention identified as part of the prior development proposal shall be factored into the runoff calculations for the site in question and accounted for with the revised runoff characteristics in order to preserve the pre-development runoff rates as identified in any previous drainage studies. If a HEC model of the watershed exists, it can be used to generate historic runoff rates by changing the imperviousness of the watershed to historic conditions (as defined above) as specified in Section 5.6, Storm Runoff.
Total allowable peak runoff rates from a developed, redeveloped, or significantly remodeled site shall be the pre-development flow rates for the minor and major design storm events.

Table 5.11.1 Historic Flow Rates (cfs/acre)

CONTROL FREQUENCY	SOIL GROUP		
	A	B	C and D
Minor Storm	0.04	0.08	0.10
Major Storm	0.27	0.46	0.54

The predominant soil group for the watershed area tributary to the detention pond shall be used for determining the historic flow rates. Information on the soils in Steamboat Springs can be found in published SCS Soil Surveys.

ATTACHMENT 10

FINAL DRAINAGE STUDY CHECKLIST (STANDARD FORM NO. 3)

Standard Form No. 3 Final Drainage Study Checklist

Instructions:

1. The applicant shall identify with a "check mark" if information is provided with letter. If applicant believes information is not required, indicate with "N/A" and attach separate sheet with explanation.
2. The reviewer will determine if information labeled "N/A" is required and whether additional information must be submitted.

I. General

__✓__ A. Report typed and legible in 8½" x 11" format.
__✓__ B. Report bound (comb, spiral, or staple – no notebook).
__✓__ C. Drawings that are 8½ x 11 or 11 x 17 bound within report, larger drawings (up to 24 x 36) included in a pocket attached to the report. Drawings shall be at an appropriate size and scale to be legible and include project area.

II. Cover

__✓__ A. Report Type – Final Drainage Study.
__✓__ B. Project Name, Subdivision, Original Date, Revision Date.
__✓__ C. Preparer's name, firm, address, phone number.
__✓__ D. "DRAFT" for 1st submittal and revisions; "FINAL" once approved.

III. Title Sheet

__✓__ A. Table of Contents.
__✓__ B. Certification, PE Stamp, signature, and date from licensed Colorado PE.
__✓__ C. Note: City of Steamboat Springs plan review and approval is only for general conformance with City design criteria and the City code. The City is not responsible for the accuracy and adequacy of the design, dimensions, and elevations that shall be confirmed and correlated at the job site. The City of Steamboat Springs assumes no responsibility for the completeness or accuracy of this document.

IV. Introduction

__✓__ A. Description of site location, size in acres, existing and proposed land use, and any pertinent background info.
__✓__ B. Reference planning application type and plan set date and preparer.
__✓__ C. Identify drainage reports for adjacent development.

V. Drainage Criteria and Methodology Used

__✓__ A. Identify design rainfall and storm frequency.
__✓__ B. Identify the runoff calculation method used.
__✓__ C. Identify culvert and storm sewer design methodology.
__✓__ D. Identify detention discharge and storage methodology.
__N/A__ E. Discuss HEC-HMS methodologies and parameters, if HEC-HMS is used.

VI. Existing Conditions (Pre-Development/Historic)

- ✓ A. Indicate ground cover, imperviousness, topography, and size of site (acres).
- ✓ B. Describe existing stormwater system (sizes, materials, etc.).
- ✓ C. Describe other notable features (canals, major utilities, etc.).
- ✓ D. Note site outfall locations and ultimate outfall location (typically Yampa River).
- ✓ E. Note capacity of existing system and identify any constraints.
- ✓ F. Identify NRCS soil type.
- ✓ G. Discuss any existing easements.
- ✓ H. Identify the FEMA Map reviewed, if site is in floodplain/way, and zone designation.

VII. Proposed Conditions

- ✓ A. Indicate ground cover, imperviousness, topography, and disturbed area (acres).
- ✓ B. Describe proposed stormwater system (sizes, materials, etc.).
- ✓ C. Describe proposed outlets and indicate historic and proposed flow for each.
- ✓ D. Include calculations for all culverts, ditches, ponds, etc. in appendix.
- ✓ E. Include a summary table for the 5- and 100-year events showing historic flow and proposed flow for total site and each basin.
- ✓ F. Discuss proposed easements.
- ✓ G. Describe off-site flows to be passed thru site.
- ✓ H. Summarize any impacts to downstream properties or indicate none. Reference CLOMR/LOMR and impacts.

I. Detention Ponds.

- ✓ 1. Indicate pond volume and area (size and depth) requirement.
- ✓ 2. Indicate release rates.
- ✓ 3. Discuss outfall design, location, and overflow location.
- ✓ 4. Discuss maintenance requirements.

J. Curb and Gutter

- n/a 1. Indicate gutter capacity.
- n/a 2. Indicate curb capacity.
- n/a 3. Indicate design velocity
- n/a 4. Indicate design depth of flow in street.

K. Culverts

- ✓ 1. Indicate whether each culvert is under inlet or outlet control.
- ✓ 2. Show that headwater is less than the maximum allowable.
- ✓ 3. Indicate design velocity.
- ✓ 4. Indicate required and provided flow rates.
- ✓ 5. Discuss whether outlet protection is required and what will be used.

L. Inlets

- ✓ 1. Indicate inlet capacity.
- ✓ 2. Indicate the type of inlet(s) used.

M. Channels

- ✓ 1. Indicate design velocity (and type of dissipation if required).
- ✓ 2. Indicate required and provided flow capacity.
- ✓ 3. Show critical cross-section(s) including water surface.

N. Site Discharge

- ✓ 1. Discuss use and design of detention to ensure discharge is less than or equal to historic flow.
- ✓ 2. Provide documentation that downstream facilities are adequate and no adverse impacts to downstream property owners (i.e. no rise certification)

VIII. Post Construction Stormwater Management

__✓__ A. Discuss in general terms which permanent BMP practices will be used to control pollutant and sediment discharge after construction is complete. Exhibit A, Storm Water Quality Plan shall be attached that will give details (see separate checklist)

IX. Conclusions

__✓__ A. Provide general summary.
__✓__ B. Note if site complies with criteria and any variances to criteria.
__✓__ C. Indicate if peak proposed flow is less than, equal to, or greater than peak historic flow for each outfall, design point, and for the total site.
__✓__ D. List proposed new stormwater system requirements.

X. References

__✓__ A. Provide a reference list of all criteria, master plans, drainage reports and technical information used.

XI. Tables

__✓__ A. Include a copy of all tables prepared for the study.

XII. Figures

__✓__ A. Vicinity Map.
__✓__ B. Site Plan (include the horizontal and vertical datum used and all benchmarks).
C. Existing conditions.
__✓__ 1. Delineate existing basin boundaries.
__✓__ 2. Delineate offsite basins impacting the site.
__✓__ 3. Show existing and proposed topography at an interval of at least 2-ft.
__✓__ 4. Show existing runoff flow arrows.
__✓__ 5. Show existing stormwater features (structures, sizes, materials, etc.).
__N/A__ 6. Show floodplain limits and information.
__✓__ 7. For each basin show bubble with basin number, acreage and % impervious.
__✓__ 8. For each outlet show bubble with acreage and historic flow and proposed flow or provide information in summary table on figure.
D. Proposed Conditions
__✓__ 1. Delineate proposed basin boundaries.
__✓__ 2. Show proposed runoff flow arrows.
__✓__ 3. Show existing and proposed topography at an interval of at least 2-ft.
__✓__ 4. For each basin show bubble with basin number, acreage and percent impervious or provide a summary table or figure.
__✓__ 5. For each outlet show bubble with acreage, historic flow, and proposed flow or provide a summary table or figure.
__N/A__ 6. Show floodplain limits and information.
__✓__ 7. Show proposed building footprints and FFE for commercial and multi-family
__✓__ 8. Show property lines and easements (existing and proposed).
__✓__ 9. Label public and private facilities. A general note can be placed on the plans in lieu of labeling all facilities, if applicable.

XIII. Appendices

__✓__ A. Runoff Calculations.
__✓__ B. Culvert Calculations.
__✓__ C. Pond Calculations.
__✓__ D. Other Calculations.

Acknowledgements

Standard Form No. 3 was prepared by: Tim Maxwell 8/21/2024
Date

Include Attachment A – Scope Approval Form (see Standard Form No. 5)
Include Attachment B – Storm Water Quality Plan (see Standard Form No. 4)

ATTACHMENT 11

EXHIBIT A – SCOPE APPROVAL FORM (STANDARD FORM NO. 5)

Standard Form No. 5 Drainage and Stormwater Treatment Scope Approval Form

Prior to starting a development plan and before the first drainage submittal, a Drainage and Stormwater Treatment Scope Approval Form must be submitted for review and signed by the City Engineer. A signed form shall also be included in every drainage submittal as Attachment A. This Scope Approval Form is for City requirements only. Values may be approximate. The City encourages supporting calculations and figures to be attached.

Project Information	
Project name:	Walton Creek Townhomes
Project location:	2075 Walton Creek Road
Developer name/contact info:	May Riegler Properties
Drainage engineer name/contact info:	Tim Maxwell tim.maxwell@baselinecorp.com
Application Type:	Development Plan
Proposed Land Use:	Two multifamily townhome structures.

Project Site Parameters	
Total parcel area (acres):	0.67
Disturbed area (acres):	0.67
Existing impervious area (acres, if applicable):	0.09 Acre (13% IMP)
Proposed new impervious area (acres):	0.34 Acre
Proposed total impervious area (acres):	0.38 Acre (57% IMP)
Proposed number of project outfalls:	1
Number of additional parking spaces:	2 Outside Spaces/8 Garage Spaces
Description and site percentage of existing cover/land use(s):	Site is mostly undeveloped native grasses with a gravel drive and single family residence covering approx 6% of the site. Walton Creek Road encroaches onto approx. 7% of site.
Description and site percentage of proposed cover/land use(s):	Multi-family townhomes with associated drives and walks over approx 50% of the site.
Expected maximum proposed conveyance gradient (%):	10%
Description of size (acres) and cover/land use(s) of offsite areas draining to the site	1.68 acres of single family residences.

Type of Study Required:

☐ Drainage Letter
☑ Final Drainage Study
☐ Conceptual Drainage Study
☐ Stormwater Quality Plan

Hydrologic Evaluation:

☑ Rational Method ☐ CUHP/SWMM ☐ HEC-HMS ☐ Other_____

Project Drainage	
Number of subbasins to be evaluated:	(2) on-site and (1) off-site
Presence of pass through flow (circle):	YES ◉ NO ○
Description of proposed stormwater conveyance on site:	Storm Sewer and Detention Ponds. Routing off-site flow through ditches and storm sewer to historical discharge point
Project includes roadway conveyance as part of design evaluation (circle):	YES ○ NO ◉
Description of conveyance of site runoff downstream of site, identify any infrastructure noted in Stormwater Master Plan noted as lacking capacity for minor or major storm event:	Runoff outlets to a swale parallel to Walton Creek Rd and drains to Walton Creek via culverts and open channel. Due to updated NOAA atlas rainfall it is assumed that downstream conveyance features may lack capacity.
Detention expected onsite (circle):	YES ◉ NO ○
Presence of Floodway or Floodplain on site (circle):	YES ○ NO ◉
Anticipated modification of Floodway or Floodplain proposed (circle):	YES ○ NO ◉
Describe culvert or storm sewer conveyance evaluative method:	Hydraflow Storm Sewer Extension for Autodesk Civil 3D

Permanent Stormwater Treatment Facility Design Standard (check all that apply with only one standard per tributary basin):

☐ WQCV Standard ☐ TSS Standard ☐ Infiltration Standard
☐ Constrained Redevelopment WQCV Standard
☐ Constrained Redevelopment TSS Standard
☐ Constrained Redevelopment Infiltration Standard
☑ Does not Require Permanent Stormwater Treatment (attach Exclusion Tracking Form)

SITE DOES NOT MEET APPLICABILITY FOR PERMANENT STORMWATER FACILITIES PER SECTION 5.12.3 OF THE CITY ENGINEERING STANDARDS:
1. DISTURBED AREA IS LESS THAN 1 ACRE.
2. DEVELOPMENT IS NOT A PART OF A LARGER COMMON DEVELOPMENT PLAN.
3. LESS THAN 10 PARKING SPACES WILL BE ADDED.
4. LAND USE IS MULTI FAMILY RESIDENTIAL.

Project Permanent Stormwater Treatment	
Justification of choice of proposed design standard, including how the site meets the constrained redevelopment standard, infiltration test results, etc.:	N/A
Concept-level permanent stormwater treatment facility design details (type, location of facilities, proprietary structure selection, treatment train concept, etc.):	N/A
Proposed LID measures to reduce runoff volume:	N/A
Will treatment evaluation include off-site, pass through flow (circle):	YES ○ NO ◉

Approvals

Baseline Engineering, Tim Maxwell	8/21/2024	970-819-0284
Prepared By: (Insert drainage engineer name & firm)	Date	Phone number

Approved By:

See approval letter by City	March 19, 2024
Printed Name: City Engineer	Date

Standard Form No. 6 Permanent Stormwater Treatment Facility Exclusions Tracking Form

If a site development is eligible for an exclusion from the requirement to implement permanent stormwater treatment facilities, this form must be filled out and submitted for approval. If an exclusion is sought, this form shall be attached to the development's Drainage and Stormwater Treatment Scope Approval Form when it is submitted for review. The City is required to track all sites excluded from the requirement to implement permanent stormwater treatment facilities. Initial values may be approximate, but final values must meet the requirements of Section 5.12.3 of the City's Engineering Standards. Supporting calculations, figures, and narrative must be included.

Project Information	
Project/site name:	Walton Creek Townhomes
Project/site location:	2075 Walton Creek Road
Developer name/ contact info:	May Riegler Properties
Drainage engineer name/contact info:	Tim Maxwell tim.maxwell@baselinecorp.com
Owner name/ contact info:	May Riegler Properties - Gaby Riegler gaby@mayriegler.com
Anticipated Construction Completion Date:	FALL 2025

Project Site Parameters	
Total parcel area (acres):	0.67
Disturbed area (acres):	0.67
Existing impervious area (acres):	0.09 ACRES
Proposed new impervious area (acres):	0.34 Acre
Proposal total impervious area (acres):	0.38 ACRES
Excluded impervious area (acres):	0.38 ACRES

Exclusion Category:

☐ 1. Pavement Management Site ☐ 2. Excluded Roadway Redevelopment

☐ 3. Excluded Existing Roadway Area ☐ 4. Aboveground & Underground Utilities

☐ 5. Large Lot Single Family Site

☐ 6. Non-Residential & Non-Commercial Infiltration Conditions

☐ 7. Sites with Land Disturbance to Undeveloped Land that will Remain Undeveloped

☐ 8. Stream Stabilization Sites ☐ 9. Trails

☒ SITE DOES NOT MEET APPLICABILITY REQUIREMENTS PER SECTION 5.12.3 OF CITY ENGINEERING STANDARDS.

1. Pavement Management Site		
Describe the nature of the activity having to do with roads and bridges used for vehicle traffic or those contiguous impervious areas used for pedestrian or bicycle traffic, roadway drainage, or roadside parking.		
N/A		
Existing Impervious Area:		
Proposed Impervious Area:		Impervious area must not increase.

2. Excluded Roadway Redevelopment		
Length of roadway redevelopment:	N/A	
Total additional paved area:		
Additional paved area/mile:		Must be less than 1 acre.
Maximum increase in paved width:		Must be no more than 8.25'.

3. Excluded Existing Roadway Area		
Existing Roadway Ave. Width (feet):	N/A	
Proposed Roadway Ave. Width (feet):		
Average of Increase in Roadway Width:		Must be less than 2x.
Only the existing roadway portion of the project may be excluded from requiring permanent water quality treatment. If existing roadway drains to new roadway, existing roadway runoff must be accounted for in the design of the treatment facility for the new roadway.		

4. Aboveground & Underground Utilities
Describe the type of utility or utilities, the owner(s) of each utility, the nature, location, length, and width of the land disturbance, whether utilities are new or being maintained, and how vegetation, topography, and drainage patterns will be reestablished once the project is completed.
N/A

5. Large Lot Single Family Site		
Zoning:	N/A	Must be single family or agricultural
Parcel size (acres):		Must be at least 2.5 acres.
Proposed Site Imperviousness (%):		Must be less than 10%.
If proposed site imperviousness is 10% or more and less than or equal to 20%, a report is required to justify exclusion. See Engineering Standards.		

6. Non-Residential/Non-Commercial Infiltration Conditions

Submit a narrative study that describe the nature and extent of the non-residential and non-commercial development, and how vegetation will be reestablished once the disturbance is completed. Describe topography and drainage patterns on the existing and proposed sites.

Existing vegetation and percent coverage:	N/A	
Proposed vegetation and percent coverage:		Must be at least 70%
80% percentile runoff flow rate (cfs):		
Soil types on site and percent of each:		Must be A or B HSG.

The City may accept more detailed studies that do not meet these criteria if they show the required infiltration is achieved.

7. Sites with Land Disturbance to Undeveloped Land that will Remain Undeveloped

Describe the nature and extent of the land disturbance and how vegetation will be reestablished once the disturbance is completed.

N/A

8. Stream Stabilization Sites

Describe the name of the stream and the nature and location of the stabilization activities including which banks and the length of the stabilization.

N/A

9. Trails

Describe the trail geometry, trail location with respect to other roadways, trails, or sidewalks, and anticipated trail use. Confirm the trail is not an attached or detached sidewalk that is part of a roadway.

N/A

Approvals

Baseline Engineering, Tim Maxwell	8/21/2024	970-819-0284
Prepared By: (Insert drainage engineer name & firm)	Date	Phone

Approved By:

See approval letter by City	March 19, 2024	
Print Name: City Engineer	Date	Phone

March 19, 2024

May Riegler Properties, LLC (Gaby & Kevin
Riegler)
<NO STREET ADDRESS>

RE: Approval Letter for Preconsultation - Drainage Scope Approval Form or Waiver Request for 2075 Walton Creek Townhomes (PL20240037)

Dear May Riegler Properties, LLC (Gaby & Kevin Riegler),

The following are approved:

1. Drainage & Stormwater Treatment Scope Approval Form

If you have any questions or concerns please contact me at (970) 871-7019 or via email at acamano@steamboatsprings.net.

Sincerely,

Adan Camano
Staff Engineer

PROJECT:

WALTON CREEEK TOWNHOMES SITE DEVELOPMENT PLAN

2075 WALTON CREEK ROAD

CITY OF STEAMBOAT SPRINGS, ROUTT COUNTY, STATE OF COLORADO

STORMWATER QUALITY PLAN

PREPARED BY:

BASELINE ENGINEERING CORPORATION

TIMOTHY MAXWELL

1169 HILLTOP PARKWAY, SUITE 204

STEAMBOAT SPRINGS, COLORADO 80487

970-879-1825

DRAFT 1ST SUBMITTAL: APRIL 5, 2024

DRAFT 2nd SUBMITTAL: August 22, 2024

JOB # CO20261

BASELINE

Engineering · Planning · Surveying

CERTIFICATION STATEMENT

I HEREBY AFFIRM THAT THIS DRAINAGE STUDY AND PLAN FOR THE WALTON CREEK TOWNHOMES SITE DEVELOPMENT PLAN PROJECT WAS PREPARED BY ME (OR UNDER MY DIRECT SUPERVISION) FOR THE OWNERS THEREOF AND IS, TO THE BEST OF MY KNOWLEDGE, IN ACCORDANCE WITH THE PROVISIONS OF THE CITY OF STEAMBOAT SPRINGS STORM DRAINAGE CRITERIA AND APPROVED VARIANCES. I UNDERSTAND THAT THE CITY OF STEAMBOAT SPRINGS DOES NOT AND WILL NOT ASSUME LIABILITY FOR DRAINAGE FACILITIES DESIGNED BY OTHERS.

_____

REGISTERED PROFESSIONAL ENGINEER

STATE OF COLORADO NO.

NOTE

CITY OF STEAMBOAT SPRINGS PLAN REVIEW AND APPROVAL IS ONLY FOR GENERAL CONFORMANCE WITH CITY DESIGN CRITERIA AND THE CITY CODE. THE CITY IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSION, AND ELEVATIONS THAT SHALL BE CONFIRMED AND CORRELATED AT THE JOB SITE. THE CITY OF STEAMBOAT SPRINGS ASSUMES NO RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF THIS DOCUMENT.

INDEX

ATTACHMENTS

WALTON CREEK TOWNHOMES SITE DEVELOPMENT PLAN

STORMWATER QUALITY PLAN

I INTRODUCTION

A. LOCATION

1. The project is located at 2075 Walton Creek Road and is at the intersection of Walton Creek Road and Apres Ski Way. The north limit of the site is adjacent to Walton Creek Road, and the east limit of the site is adjacent to Apres Ski Way. The south limit of the site is adjacent to Ski Ranches Townhomes, and the west limit of the site is adjacent to The Meadows Condominiums. The project area is in the southwest quarter of Section 27, Township 6 North, Range 84 West of the 6th P.M. City of Steamboat Springs, Routt County, Colorado.

B. DESCRIPTION OF PROPERTY

1. The site is approximately 0.67 acres, including the Walton Creek Road ingress and egress easement. The Total Drainage Area, including off-site runoff, is roughly 6.45 acres. The proposed project disturbance area is roughly 0.61 acres.

2. A site is currently developed with a single-family residence and is accessed with a gravel driveway from Walton Creek Road. The remainder ground cover generally consists of native grass. The upper end of the site to the east and adjacent to Apres Ski Way is at an elevation of 6965, and the lower end of the site to the west and adjacent to The Meadows Condominiums is at an elevation of 6935, resulting in an approximate difference of 30 feet across the site. Existing slopes vary from approximately 5% to 50%.

3. The subject property is currently zoned Residential Neighborhood Two (RN-2). The adjacent property to the west is zoned Multi-Family Three (MF-3). The adjacent property to the north is zoned Multi-Family Two (MF-2). All other adjacent properties are zoned Residential Neighborhood Two (RN-2). The owner is filing an application to re-zone the subject property as Multi-Family Three (MF-3).

4. According to the Soil Survey, the project area consists entirely of Routt loam, which is Hydraulic Soil Type C, and is poorly draining. The offsite flow consists mainly of Hydrologic Soil Type C. See soils map in the appendix for more information.

5. Per FEMA FIRM 08107C0883D with an effective date of 02/04/2005, the project is entirely outside of the floodway/floodplain.

6. There are no irrigation facilities on or adjacent to the property.

7. There are no wetlands on the site.

C. PURPOSE OF THIS STORMWATER QUALITY PLAN

1. This plan is meant to identify site-generated stormwater runoff, and presents the design details for the permanent stormwater detention pond required to minimize runoff leaving the site, in accordance with the City's Standards.

2. Since the site us less than one acre, permanent stormwater quality facilities are not required.

3. Two multi-family townhome buildings are proposed on the property as well as associated driveways, sidewalks, sanitary sewer services, water services, storm sewer, dry utilities, and landscaping.

4. This report was prepared in conjunction with the Site Development Plans dated 08/22/2024 by KASA Architecture and Baseline Engineering for May Riegler Properties.

D. REFERENCED DRAINAGE REPORTS

1. The "City of Steamboat Springs Citywide Stormwater Master Plan" was referenced in the preparation of this report.

II DRAINAGE CRITERIA AND METHODOLOGY USED

A. DESIGN RAINFALL AND STORM FREQUENCY

1. In accordance with City Drainage Criteria, the major storm is the 100-year recurrence interval storm and the minor storm is the 5-year recurrence interval storm.

2. The values of 0.82 inches and 1.79 inches for the 5-year storm and 100-year storm respectively were used for the drainage per the City's Drainage Criteria.

B. RUNOFF CALCULATION METHOD

1. The Proposed and Existing basins, including off-site basins, are around 6.5 acres. This is less than the 160 acre maximum for the Rational Method, therefore the Rational Method has been used to calculate peak flows for both proposed and existing conditions per section 5.6.2.2 of the City's Engineering Standards.

C. CULVERT, INLET, AND STORM SEWER ANALYSIS

1. Hydraflow Storm Sewers Extension for Autodesk Civil 3D, was utilized to create hydraulic models of the storm sewer system.

D. DETENTION DISCHARGE AND STORAGE METHODOLOGY

1. Stormwater detention has been designed using the FAA method as outlined in section 5.11.7.2 in the City's Engineering Standards. The allowable release rates have been determined by using Table 5.11.1 in the City's Engineering Standards which are based on soil groups.

III PROPOSED CONDITIONS

A. DRAINAGE PATTERNS & BASINS

1. The proposed improvements include (2) three story townhome buildings with garage entries at the lower level. Building 1 will have 5 units, and Building 2 will have 3 units. In addition, there are proposed driveways, sidewalks, sanitary sewer services, water services, storm sewer, dry utilities, communal patio, and landscaping. The proposed site will be proximately 75% impervious, and the disturbed area is roughly 0.61 acres of the 0.67 acre site.

2. There is one major overall Basin that will be detained on site. The basin to be detained is 0.64 acres in sizes. The portion of the site that cannot be detained is 0.03 acres (or 5% of the entire site), which is less than the 20% requirement.

B. DETENTION PONDS

1. A single on-site stormwater detention pond is proposed for the site, and will not provide water quality treatment since the property is less than one acre. The pond is sized using the FAA method as outlined in the City's Standards.

2. The pond will capture runoff from Basin P-1, and has a capture area of 0.64 acres. The pond will not capture off-site runoff. The pond will have vertical walls all around due to site constraints. The bottom of the channel is sloped at 2% and has a trickle channel in the center sloped at 0.5% towards the outlet structure. The spillway will be a rectangular weir and will release directly into the roadside

swale.

3. The required volume for the pond is 410 cubic feet for the 5-year storm and 1046 cubic feet for the 100-year storm, and will have a depth of 2.0 feet for the 100-year storm. The proposed release rates based on Soil Type C are determined to be 0.06 cfs for the 5-year storm, and 0.35 cfs for the 100-year storm. The 5-year and 100-year volumes will be released through orifice plates. The outlet structure will be built into the retaining wall, and tie into the storm sewer adjacent to the road that is conveying off-site runoff, with a storm manhole. The emergency spillway is designed for the 100-year storm. See calculations in the appendix for details.

4. The ponds will be privately maintained by the HOA that will be formed for this development.

C. CONSTRUCTION PHASING

1. There will be a single phase of construction. The detention pond will need to be in place to catch runoff before it leaves the site.

IV OPERATION AND MAINTENANCE PALN REQUIREMENTS

A. POST CONSTRUCTION STORMATER QUALITY FEATURES

1. The detention pond will need to be maintained on a regular basis to ensure that sediment build-up and vegetation do not impact how the pond is designed to function.

B. CONSTRUCTION BMP'S

1. Construction BMP's will include a stabilized vehicle tracking control pad, silt fence or sediment logs, inlet and outlet control, ditch check dams, and concrete washout area.

2. A Construction SWMP will be submitted under separate cover prior to construction.

C. MAINTENANCE SCHEDULE & RESPONSIBILITY

1. Maintenance during construction will be performed by the General Contractor or his designee. Inspections on construction BMPs should be performed every 14 days and immediately following storm events. An inspection report shall be prepared for each inspection. Maintenance shall be performed as identified in the

inspection report.

2. Once construction is complete, the owner will be responsible for maintenance of the storm water conveyance and treatment features within the Property. Storm sewer system components shall be inspected, repaired, and cleaned on a routine basis to ensure the system functions as intended. See below for the minimum required inspection and maintenance schedule

EXTENDED DETENTION BASIN

Activity	Required Frequency
Inspection for debris at outlet, sediment in the forebay, and damage to structures or embankments; maintain or repair as necessary	Twice annually
Remove sediment from forebay, trickle channel(s), and micropool; aeration of vegetated areas	Annually
Mowing	As needed to maintain 6" height and control weeds
Irrigation and application of fertilizer, herbicide, and pesticide	As needed to maintain vegetative health

Notes: Maintenance frequency is highly dependent on construction activity within the tributary area, associated erosion control measures, and the design of the facility. More frequent removal of accumulated sediment may be required, but detention basins are generally low maintenance facilities.

ATTACHMENT 1

STORMWATER QUALITY PLAN CHECKLIST (STANDARD FORM NO. 4)

Standard Form No. 4 Stormwater Quality Plan Checklist

This list is not an exhaustive list of every possible item that may be required or requested in a Stormwater Quality Plan but provides a general guideline for preparation of the Stormwater Quality Plan.

Instructions:

1. The applicant shall identify with a "check mark" if information is provided within the Stormwater Quality Plan. If applicant believes information is not required, indicate with "N/A" and attach separate sheet with explanation. If information is included with the associated drainage letter or study, indicated with a "D."
2. The reviewer will determine if information labeled "N/A" is required and whether additional information must be submitted.

I. General

__✓__ A. Report typed and legible in 8½" x 11" format.
__✓__ B. Report bound (comb, spiral, or staple – no notebook) and in digital PDF format.
__✓__ C. Drawings that are 11" x 17" bound within letter, larger drawings (up to 24" x 36") included in a pocket attached to the letter, and a digital PDF copy. Drawings shall be at an appropriate size and scale to be legible and include project area.

II. Cover

__✓__ A. Report Type – Stormwater Quality Plan.
__✓__ B. Project Name, Subdivision or Development, Original Date, Revision Date.
__✓__ C. Preparer's name, firm, address, and phone number.
__✓__ D. "DRAFT" for 1st submittal and revisions; "FINAL" once approved.

III. Title Sheet

__✓__ A. Table of Contents.
__✓__ B. Certification, PE Stamp, signature and date from licensed Colorado PE (for Final).
__✓__ C. Note: City of Steamboat Springs plan review and approval is only for general conformance with City design criteria and City code. The City is not responsible for the accuracy and adequacy of the design, dimensions, and elevations that shall be confirmed and correlated at the job site. The City of Steamboat Springs assumes no responsibility for the completeness or accuracy of this document.

IV. Introduction and Background

__✓__ A. Description of site location, study limits, size in acres, existing and proposed land use, soil data, permeability of the site, drainage patterns, and any pertinent background info.
__✓__ B. State purpose and goal of Stormwater Quality Plan and report along with any special requirements of the desired outcome.
__✓__ C. List any project stakeholders and/or requestors.
__✓__ D. Describe the background of the flooding source and any previous studies.

V. Design Criteria and Methodology Used

- ✓ A. Identify design rainfall and storm frequency used to design permanent stormwater treatment facilities.
- ✓ B Identify the runoff calculation method used to design permanent stormwater treatment facilities.
- ✓ C. Identify the standard the design will meet and the means and methodologies by which it will use to meet the standard.
- ✓ D. Provide all details supporting the use of the selected design standard.

VI. Proposed Conditions

- ✓ A. Identify total site area, total site imperviousness, area to be treated, and impervious area to be treated. Include justification for treating less than the total site area.
- ✓ B. Describe potential site contaminant sources including sediment.
- ✓ C. Identify source and quantity of on-site and off-site stormwater flows that need to be managed and how they will be managed.
- ✓ D. For each permanent treatment facility, identify the design standard, MDCIA level (if applicable), area treated (& percentage of total), imperviousness of area treated, C values of area treated, soil types, and all pertinent data for design.
- ✓ E. Volume based facilities: Provide total storage pond volume, WQCV, drain time, release rate, sediment storage, outlet & overflow structures, area and depth of pond, micropool, forebays, etc. (include all calculations in the appendix).
- N/A F. Flow based facilities: Provide design flow rate and all treatment calculations and how flows larger than the water quality design flow rate will be handled. If proprietary facilities are proposed, provide the justification and sizing requirements from manufacturer.
- ✓ G. If stormwater detention is provided, discuss how water quality is provided within the detention facility. No underground detention is allowed.

VII. Operation and Maintenance Plan Requirements

See template O&M plan and guidance document.

- ✓ A. Describe general project information, facility description, ROW and access information, vegetation management, hydraulic design parameters, environmental permitting, snow and ice control, and additional pertinent information in the notes.
- ✓ B. Indicate, describe, and detail the permanent stormwater treatment facilities.
- ✓ C Include section details where necessary of the permanent treatment facilities.
- ✓ D. Provide an inspection and maintenance schedule and procedure of permanent treatment facilities and who is responsible for them.
- ✓ E. Identify design specifications for construction.

Acknowledgements

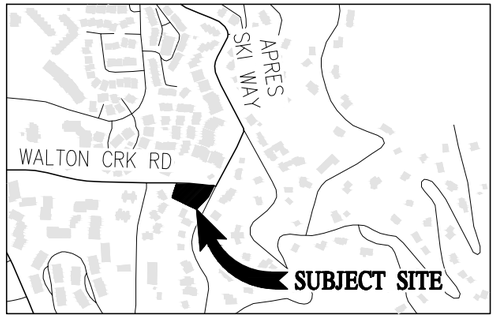
Standard Form No. 4 prepared by: Tim Maxwell 8/21/2024
Date

Include appropriate Project Sheet(s) and Design Checklist(s) (See Section 5.12)
Include this form as part of the Stormwater Quality Plan.

ATTACHMENT 2

OWNERSHIP AND MAINTENANCE PLAN

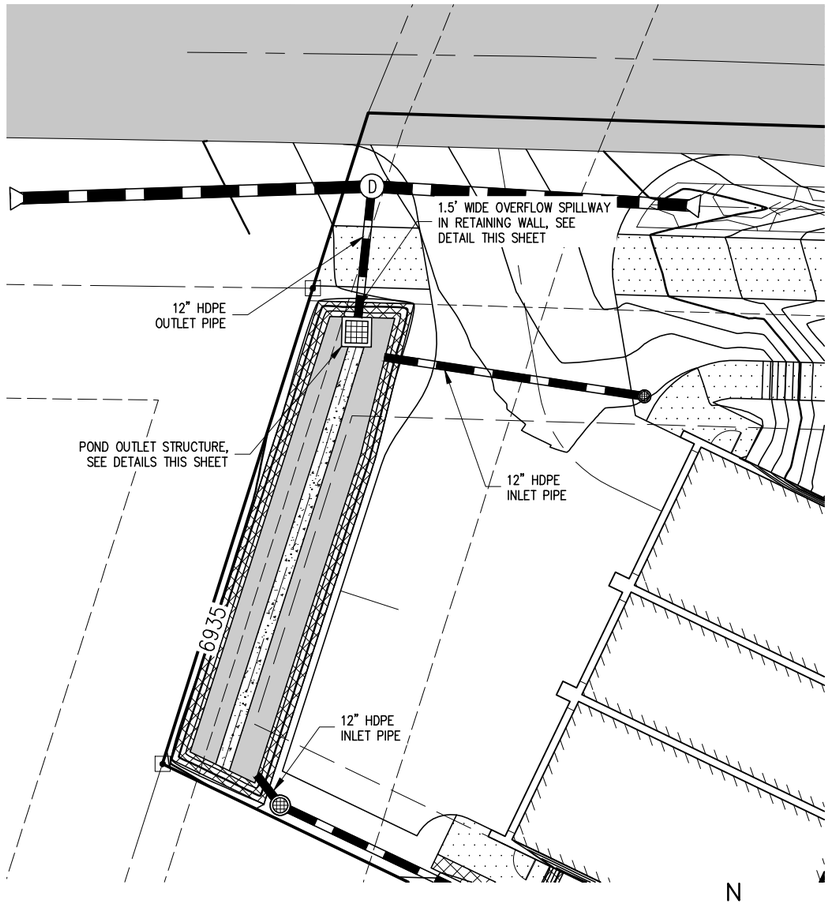
WALTON CREEK TOWNHOMES SITE DEVELOPMENT PLAN
EXTENDED DETENTION BASIN
DRAFT OWNERSHIP AND MAINTENANCE PLAN
CONSTRUCTED IN [MONTH, YEAR]



VICINITY MAP
SCALE: 1" = 1000'

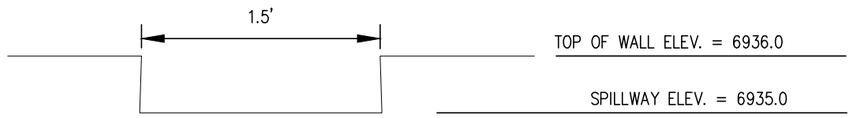
NOTES:
1. FOR ADDITIONAL DESIGN INFORMATION, REFER TO THE CONSTRUCTION PLANS FOR THIS PROJECT.
2. SEE DETAILED NOTES ON THE SECOND SHEET OF THIS PLAN FOR ALL MAINTENANCE REQUIREMENTS.

LEGEND
AREA TO BE MOWED (SEE NOTE 4 NEXT SHEET)

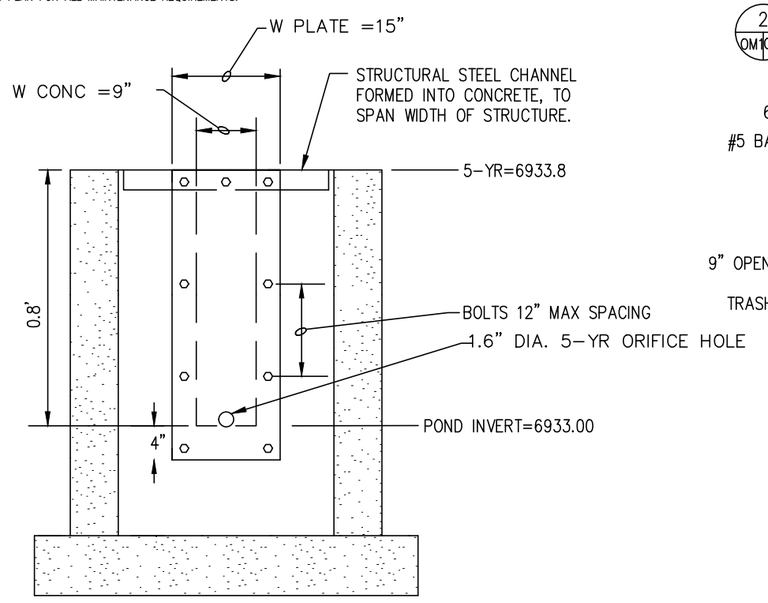


1 OM1 OM1 DETENTION POND PLAN

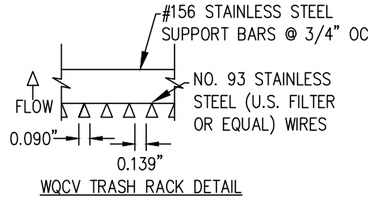
GRAPHIC SCALE
20 0 20 40
(IN FEET)
1 INCH = 20 FT



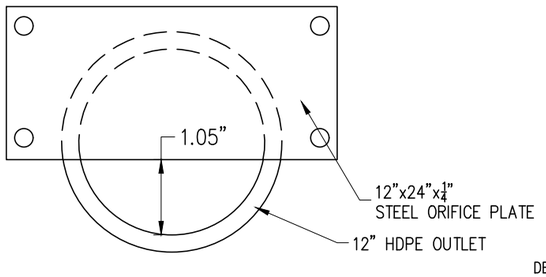
2 OM1 OM1 EMERGENCY SPILLWAY DETAIL
NO SCALE



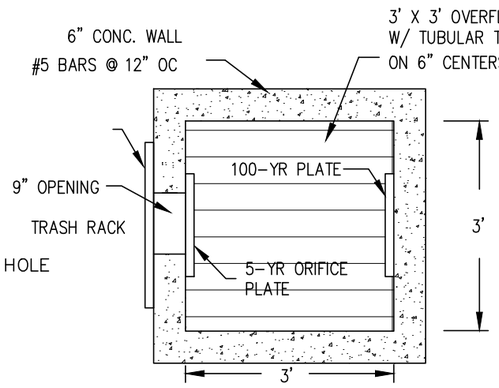
WATER QUALITY ORIFICE



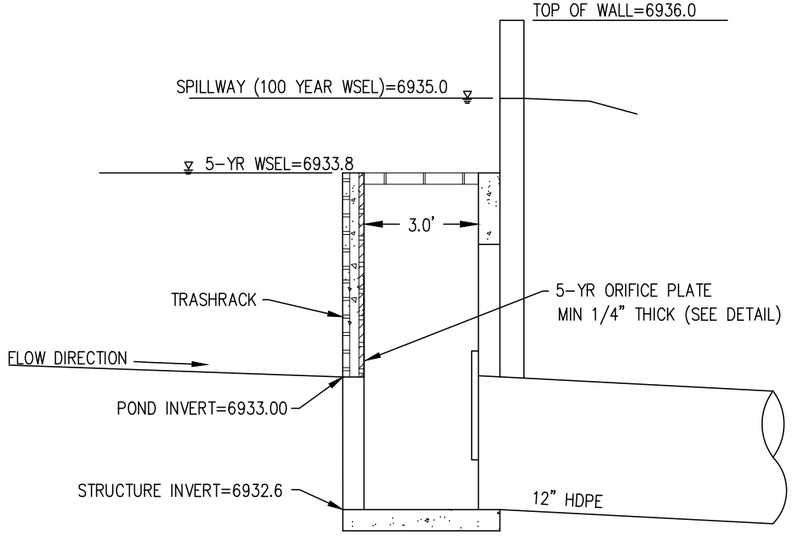
WQCV TRASH RACK DETAIL



4 OM1 OM1 100-YEAR ORIFICE PLATE
NOT TO SCALE



PLAN VIEW



3 OM1 OM1 WATER QUALITY POND OUTLET STRUCTURE
NO SCALE

DETAIL NOTES:
1. OVERFLOW TRASH RACKS SHALL BE MOUNTED USING STAINLESS STEEL HARDWARE AND PROVIDED WITH HINGED AND LOCKABLE OR BOLTABLE ACCESS PANELS.
2. OVERFLOW TRASH RACKS SHALL BE STAINLESS STEEL, ALUMINUM, OR STEEL. STEEL TRASH RACKS SHALL BE DIP GALVANIZED AND MY BE HOT POWDER COATED AFTER GALVANIZING.
3. WATER QUALITY CAPTURE VOLUME WELL-SCREEN TRASH RACKS SHALL BE STAINLESS STEEL AND SHALL BE ATTACHED BY INTERMITTENT WELDS ALONG THE EDGE OF THE MOUNTING FRAME.

BASELINE
Engineering · Planning · Surveying
112 N RUBEY DRIVE, SUITE 210 • GOLDEN, COLORADO 80403
P: 3033401988 • F: 3033401989 • www.baselinecorp.com

DESIGNED BY T.J.M. | DRAWN BY T.J.M. | CHECKED BY SMB

REVISION DESCRIPTION	PREPARED BY	DATE

MAY RIEGLER PROPERTIES
STEAMBOAT SPRINGS ROUTT COUNTY
WALTON CREEK TOWNHOMES
2075 WALTON CREEK ROAD
OWNERSHIP & MAINTENANCE PLAN

INITIAL SUBMITTAL	4/05/2024
DRAWING SIZE	11" X 17"
SURVEY FIRM LANDMARK, INC	SURVEY DATE 5/29/2024
JOB NO.	C020261
DRAWING NAME	20261 O&M PLAN.dwg
SHEET	1 OF 2

OM1

WALTON CREEK TOWNHOMES SITE DEVELOPMENT PLAN
EXTENDED DETENTION BASIN
DRAFT OWNERSHIP AND MAINTENANCE PLAN
CONSTRUCTED IN (MONTH, YEAR)

1. GENERAL PROJECTION INFORMATION

A. LOCATED AT 2075 WALTON CREEK ROAD. SUBDIVISION & LEGAL NAME = LOT 9 RE-SURVEY OF SKI RANCHES, FILING NO. 3, REC. NO. 211257

B. RECEIVING WATER: WALTON CREEK

C. PROPERTY OWNER(S) NAME = MAY RIEGLER PROPERTIES; CONTACT NAME, ADDRESS, PHONE NUMBER & EMAIL = GABY RIEGLER, 7200 WISCONSIN AVE. #500, BETHESDA MD 20814, (202) 373-8309, GABY@MAYRIEGLER.COM

D. AGENCY RESPONSIBLE FOR MAINTENANCE NAME, CONTACT NAME, ADDRESS, PHONE NUMBER, & EMAIL; MAY RIELGER PROPERTIES (SAME AS ABOVE)

E. DESIGN ENGINEER, CONTACT NAME, ADDRESS, PHONE NUMBER, EMAIL, & PE LICENCE NUMBER = BASELINE ENGINEERING, CHRIS RUNDALL, 1169 HILLTOP PKWY, SUITE 204, STEAMBOAT SPRINGS, 970-879-1825, CRUNDALL@BASELINECORP.COM, PE #40319

2. GENERAL FACILITY DESCRIPTION
THIS FACILITY IS A STORMWATER DETENTION POND THAT WILL CAPTURE AND DETAIN THE 100-YEAR STORM VOLUME. THE FACILITY HAS BEEN ADOPTED AND APPROVED BY CITY OF STEAMBOAT SPRINGS AS PART OF THE WALTON CREEK TOWNHOMES SITE DEVELOPMENT PLAN PROJECT. IT WILL RECEIVE RUNOFF FROM 0.64 ACRES AND WILL OCCUPY A PARCEL OF 625 SQ FT. (0.01 ACRE) THAT WILL BE USED TO DETAIN THE 100-YEAR STORM VOLUME AND PROVIDE FOR MAINTENANCE AND ACCESS OPERATIONAL ACTIVITIES.

3. INSPECTION & MAINTENANCE FREQUENCY & PROCEDURE

A. THE FOLLOWING ITEMS SHOULD BE INSPECTED: TWICE ANNUALLY = OUTLET STRUCTURE FOR DEBRIS AND DAMAGE TO OUTLET STRUCTURE AND EMBANKMENTS; ANNUALLY = REMOVE SEDIMENT FROM BOTTOM OF DETENTION BASIN AND AERATE VEGETATED AREAS; AS NEEDED = MOW TO MAINTAIN 6" GRASS HEIGHT AND CONTROL WEEDS; AS NEEDED = REPAIR IRRIGATION AND APPLY FERTILIZER, HERBICIDE, AND PESTICIDE. . ITEMS SHOULD BE MAINTAINED, REPAIRED, OR REPLACED AS NEEDED. AN INSPECTION FORM SHALL BE COMPLETED AFTER EACH INSPECTION.

B. REVISIONS TO MAINTENANCE FREQUENCY:

DATES / REASONS FOR CHANGES:

C. TRAFFIC CONTROL SHALL ONLY INCLUDE ENSURING VEHICLES ARE NOT PARKED IN THE STREET AT POINTS NEEDED TO ACCESS THE DETENTION BASIN. THE HOA WILL BE RESPONSIBLE.

D. THE FACILITY DOES NOT REQUIRE CONFINED SPACE ENTRY PROCEDURES.

E. DEWATERING AND WATER CONTROL CLEANING THE OUTLET STRUCTURE AND BOTTOM OF DETENTION BASIN MAY REQUIRE DEWATERING. A TRASH PUMP WILL BE REQUIRED. WATER WILL NEED TO BE PUMPED INTO A WATER TRUCK AND DISPOSED OF AT A PROPER FACILITY TO ACCEPT THIS WATER SO THAT A PERMIT IS NOT REQUIRED. IF DEWATERING IS CONDUCTED IN ACCORDANCE WITH THE PROCEDURES SPECIFIED HEREIN, A DEWATERING PERMIT SHOULD NOT BE REQUIRED.

F. SEDIMENT, DEBRIS, & TRASH REMOVAL & DISPOSAL
REMOVAL SHALL BE CONDUCTED TWICE ANNUALLY AT A MINIMUM OR WHEN SEDIMENT REACHES 6 INCHES IN THE OUTLET STRUCTURE OF BOTTOM OF DETENTION BASIN. REMOVAL SHALL BE CONDUCTED AS NEEDED, BUT ESPECIALLY WHEN ANY DEBRIS BLOCKS FLOW AT THE OUTLET STRUCTURE. SEDIMENT AND DEBRIS SHALL BE REMOVED BY SHOVEL OR A VACUUM TRUCK AND DISPOSED OF AT A LANDFILL OR GRAVEL PIT THAT ACCEPT THESE WASTES OR IF SMALL VOLUMES IN REFUSE CONTAINER. THE LONGEST DISTANCE BETWEEN THE EDGE OF AN ACCESS ROAD AND THE FAR CORNER OF A STRUCTURE REQUIRING SEDIMENT REMOVAL IS 25 FEET.

G. VEGETATION MANAGEMENT
SEE SECTION 4 OF THE NOTES ON THIS SHEET.

H. WETLAND AREAS ARE NOT ANTICIPATED ON SITE. SEE SECTION 8.0 OF THE NOTES ON THIS SHEET.

I. MATERIALS TESTING OF SEDIMENT REMOVED FROM SITE IS NOT REQUIRED.

J. TEMPORARY BEST MANAGEMENT PRACTICES SUCH AS INLET CONTROL AT THE OUTLET STRUCTURE SHALL BE REMOVED ONCE VEGETATION IS ESTABLISHED.

4. EQUIPMENT, STAFFING, AND VEGETATION MANAGEMENT

A. EQUIPMENT REQUIRED: VACUUM TRUCK, SHOVEL, AERATOR, MOWER.

B. STAFFING: THE HOA & LANDSCAPE CONTRACTOR WILL BE ABLE TO MAINTAIN TREATMENT FACILITY.

C. SEED: [TBD] SEED MIXES HAVE BEEN PLANTED AT THE SITE. THE [TBD.] SEED MIX HAS BEEN PLANTED WITHIN THE DETENTION BASIN. SEED MIXES ARE AS FOLLOWS:

BOTANICAL NAME	COMMON NAME	LBS PURE LIVE SEED/AC
[SEED MIX NAME]:		
Xxxxx xxxxxxxxxxx	Xxxxxx Xxxxxx	X.X
[REPEAT AS NECESSARY TO INCLUDE ALL MIX SPECIES]		

[REPEAT AS NECESSARY TO INCLUDE ALL MIXES IF NOT CITY STANDARD SPECIFICATION]

ANY AREAS THAT LACKING VEGETATION SHALL BE RESEEDED WITH THE ABOVE LISTED SEED MIX AND MULCHED.

D. MOWING: THE EXTENDED DETENTION BASIN SHALL BE MOWED TO A HEIGHT OF 6" AT COMPLETION OF CONSTRUCTION, REQUIRED MOW AREA WAS ESTIMATED TO BE 495 SQ FT (0.01 ACRES).

E. WEEDS & UNDESIRABLE VEGETATION: WEEDS SHALL BE MOWED. NO WEED KILLER SHALL BE USED ON THE SITE. NOXIOUS WEEDS AND OTHER UNDESIRABLE VEGETATION SHALL BE REMOVED BY HAND TOOLS AND MOWING.

5. SNOW AND ICE CONTROL

FACILITY IS LOCATED WITHIN A SNOW STORAGE AREA.

6. RIGHT-OF-WAY, ADJACENT OWNERSHIP, & ACCESS

A. RIGHT-OF-WAY DESCRIPTION: WALTON CREEK ROAD AND THE ACCESS TO THE SITE IS CLOSEST RIGHT-OF-WAY TO THE MAINTENANCE ACCESS.

B. ADJACENT OWNERSHIP: THE ADJACENT PROPERTIES ARE THE MEADOWS CONDOMINIUMS AND SKI RANCHES TOWNHOMES.

C. ACCESS INFORMATION AND DETAILS: ACCESS IS FROM WALTON CREEK ROAD TO THE PRIVATE PROJECT ACCESS.

D. MAINTENANCE OPERATIONS WILL NOT IMPACT OR OBSTRUCT RIGHT-OF-WAY AND A RIGHT-OF-WAY PERMIT IS NOT REQUIRED.

7. HYDRAULIC DESIGN

A. FLOW RATES (CFS):

	INFLOW	OUTFLOW
5-YEAR:	1.4 CFS	0.06 CFS
100-YEAR:	3.8 CFS	0.35 CFS

B. VOLUMES, DEPTHS, & WSELS:

ITEM	VOLUME	WSEL	DEPTH	INVERT
5-YEAR	410 CF	6933.80	0.80'	6933.28
100-YEAR	1050 CF	6935.00	2.00'	6933.28
EMERGENCY SPILLWAY	N/A	6936.00	3.00'	6935.00

8. SENSITIVE AREAS, WETLANDS, & PERMITS

THE SITE DOES NOT HAVE ANY WETLANDS. NO PORTION OF THE SITE IS LOCATED IN THE FLOODWAY AND FLOODPLAIN.

8. MISCELLANEOUS INFORMATION

A. PROJECT SURVEY:
EXISTING CONDITIONS TOPOGRAPHIC SURVEY WAS PREPARED BY LANDMARK INC. BASED ON INFORMATION GATHERED MAY 29, 2024. SITE BENCHMARK: TBD.

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DESIGNED BY T.J.M. | DRAWN BY T.J.M. | CHECKED BY S.M.B.

REVISION DESCRIPTION	PREPARED BY	DATE

ROUTT COUNTY
STEAMBOAT SPRINGS

MAY RIEGLER PROPERTIES

WALTON CREEK TOWNHOMES
2075 WALTON CREEK ROAD
OWNERSHIP & MAINTENANCE PLAN NOTES

INITIAL SUBMITTAL	4/05/2024
DRAWING SIZE	11" X 17"
SURVEY FIRM	SURVEY DATE
LANDMARK, INC	5/29/2024
JOB NO.	C020261
DRAWING NAME	
20261 O&M NOTES.dwg	
SHEET 2 OF 2	

OM2