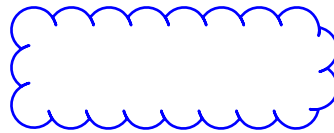


ROLLING HILLS BOOSTER PUMP STATION SMALL SUBDIVISION DRAINAGE REPORT

(THE HILLS AT LORSON RANCH FILING NO. 1)



Add PCD File #
PPR-21-075

PREPARED BY

Rich Gallegos, P.E., CFM
RESPEC
121 S. Tejon St., Suite 1110
Colorado Springs, CO 80903

PREPARED FOR

Widefield Water and Sanitation District
8495 Fontaine Boulevard
Colorado Springs, CO 80925

DECEMBER 2021





ENGINEER'S STATEMENT

The attached drainage letter plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to criteria established by the City/County for drainage reports, and said report is in conformity with the master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors, or omissions on my part in preparing this report.

Richard Gallegos, P.E., CFM Date
Registered Professional Engineer State of Colorado No. 36247

DEVELOPER'S STATEMENT

I, the developer, have read and will comply with all of the requirements specified in this drainage report and plan.

Lucas Hale Date
Widefield Water and Sanitation District
8490 Fontaine Boulevard
Colorado Springs, CO 80925

EL PASO COUNTY

Filed in accordance with the requirements of the Drainage Criteria Manual, Volumes 1 and 2, El Paso County Engineering Criteria Manual, and Land Development Code as amended.

Jennifer Irvine, P.E. Date
County Engineer/EMC Administrator

Conditions:

Correct to ECM
Administrator



On behalf of the Widefield Water and Sanitation District, RESPEC Engineering is submitting this Small Subdivision Drainage Report to support the development of the Rolling Hills Booster Pump station.

1. GENERAL PROPERTY DESCRIPTION WITH ACREAGE

This site is also covered by the "Skyline at Lorson Ranch Filing #1" PRELIM and FINAL Drainage Report. PUDSP212. Specify which drainage report takes precedence.

The 0.707-acre site is located within the larger Lorson Ranch Master Planned Community east of Marksheffel Road and Fontaine Boulevard. More specifically, the pump station is northeast of the intersection of Grayling Drive and Yellowthroat Terrace. The County-approved *Final Drainage Plan (SSF 21-010) Hills at Lorson Ranch Filing 1* (Lorson Ranch FDR), revised March 23, 2021, included the project site within the master plan, which provides an existing and proposed condition analysis. The Lorson Ranch FDR is also in conformance with the Drainage Basin Planning Study for Jimmy Camp Creek.

Pertinent excerpts from the Lorson Ranch FDR report are attached to this Small Subdivision Drainage Report.

2. GENERAL EXISTING DRAINAGE CHARACTERISTICS

The site drains to the south toward Grayling Drive with average slopes of 2%-3%. Currently, underground water lines and appurtenances exist on the site. They shall be extended to a new booster pump housing, which is part of a more extensive regional potable water distribution system.

The Lorson Ranch FDR included the site as part of the existing conditions analysis within Drainage Area C5.2-ex; see attached Lorson Ranch FDR Existing Drainage Area Map. C5.2-ex totals 13.32 acres with peak runoff rates of 3.2 cfs for the 5-year storm event and 21.8 cfs for the 100-year storm event. Flows travel overland and eventually to Jimmy Camp Creek, located to the west.

The site is located in an Unshaded Zone X (areas outside of the 500-year floodplain) flood hazard area per the Federal Emergency Management Agency's Flood Insurance Rate Map panel 08041C0976G, effective date December 7, 2018. See attached floodplain exhibit.

3. GENERAL PROPOSED DRAINAGE CHARACTERISTICS

The site is split between two proposed drainage areas in the Lorson Ranch FDR.

The majority of the improvements will be located in Drainage Area C10.8. Per the FDR, basin C10.8 totals 1.89-acres and generates peak runoff rates of 3.4 cfs for the 5-year storm event and 7.4 cfs for the 100-year storm event. In addition, the drainage area includes portions of a future single-family development located to the north. Runoff rates are based upon a land-use of 1/8 acre single-family lots, with an assumed percent impervious cover of 65%.

The easternmost portion of the site is located in Drainage Area C10.9, which is 3.73-acres in size and will be comprised of future single-family lots, the pump station site, and an



easement for overhead electrical lines. Peak runoff rates for the drainage area are listed as 5.9 cfs for the 5-year storm event and 13.0 cfs for the 100-year storm event in the Lorson Ranch FDR. Land use for this area is assumed to be predominately 1/8 acre single-family lots with 65% impervious cover.

Runoff from both drainage areas listed above are designed to surface flow to Grayling Drive. Based upon the Lorson Ranch FDR, flows from both drainage areas will be collected by a 25' Type R inlet and conveyed to existing Detention Pond C3 via public 30" and 48" RCP storm sewers. Detention Basin C3 has sufficient detention and water quality capacity to develop the Rolling Hills Booster Pump Station.

4. HYRDOLOGOCIAL CALCULATIONS

For this drainage analysis, we have completed two evaluations. The first is to compute the overall percent of impervious cover to verify that the proposed land use complies with the assumptions outlined in the Lorson Ranch FDR. The second is to establish the flow rates within the site to size two sidewalk chases properly.

Compliance with the Lorson Ranch FDR:

As part of the analysis of the proposed conditions completed for Lorson Ranch, the assumptions for the two drainage areas (C10.8 and C10.9) were reviewed. Both areas assume a hydrologic soil type "B" and a maximum percent impervious of 65%. The overall percent impervious calculation for the Rolling Hills Booster Pump Station as designed was completed to verify that the proposed development complies with the FDR analysis.

- Total Acreage: 0.707-acres
 - Total area of pavement/building: 0.07-acres @ 100% Impervious
 - Total area of Gravel Drive/Rock Landscaping: 0.39-acres @ 80% Impervious
 - Total area of vegetated area: 0.25-ac @ 0% Impervious
- Computed Site Percent Impervious: 54%
- Maximum Allowable Percent Impervious: 65%

The site as designed has an overall percent impervious of 54%, which is less than the maximum allowed by the Lorson Ranch FDR of 65%; therefore, the land use design complies with the approved master drainage plan. Sufficient stormwater mitigation capacity and water quality exist within Detention Pond C3.

Sidewalk Chase Calculations:

Two drainage areas were delineated to compute flows directed to two sidewalk chases. Each area considers the proposed grades for the Future Lorson Ranch development, which is imminent. The Rational Method was used to determine the peak 5-year and 100-year flows and utilize the same assumptions given within the Lorson Ranch FDR.

The 5-year, $C(5) = 0.45$, and 100-year, $C(100) = 0.59$, runoff coefficients as those given in the FDR are used to compute peak flow rates. The drainage areas delineated specifically for this analysis also are contained within the larger FDR drainage delineations given within the County approved report.

Sidewalk chases are not recommended due to maintenance requirements. Recommend conveying site flows to rear and connect to RCP flowing to Pond C-3



Drainage Area PR1 consists of 0.29-acres of area on the western portion of the project limits. The drainage area extends offsite and will accept minor sheet flow from the adjacent single-family development. Computed peak flow rates of $Q(5) = 0.7$ cfs and $Q(100) = 1.5$ cfs will surface flow to a 4' wide sidewalk chase and into Grayling Drive. The 4' wide concrete sidewalk will slope to Grayling Drive at a 2% grade and will have sufficient capacity to accommodate the 100-year peak flow rates.

Drainage Area PR2 is 0.56-acres in size, encompassing the east side of the project site. Flows from this drainage area include adjacent single-family lots and open space in the Future Lorson Ranch development area. Peak flow rates of $Q(5) = 1.2$ cfs and $Q(100) = 2.4$ cfs were computed PR2. A proposed 4' wide concrete sidewalk chase at a 2% flowline grade will convey flows to Grayling Drive. The chase will have sufficient capacity to accommodate the 100-year peak flow rates.

5 DRAINAGE FEES

The site is located within an existing easement and will not be platted. As such, no drainage fees are required for the project. However, the site will be platted later when the adjacent future single-family Lorson Ranch subdivision is developed.

Drainage fee will be required when Skyline at Lorson Range Filing #1 is platted to include this area and tract. Please correct statement. This statement conflict with the FDR and Letter of Intent which states that Drainage Basin Fees will be paid.

From Lorson Range Filing #1 FDR

7.0 DRAINAGE AND BRIDGE FEES

The Hills at Lorson Ranch is located within the Jimmy Camp Creek drainage basin which is currently a fee basin in El Paso County. Current El Paso County regulations require drainage and bridge fees to be paid for platting of land as part of the plat recordation process.

Lorson Ranch Metro District will compile and submit to the county on a yearly basis the Drainage and bridge fees for the approved plats and shall show all credits they have received for the same yearly time frame.



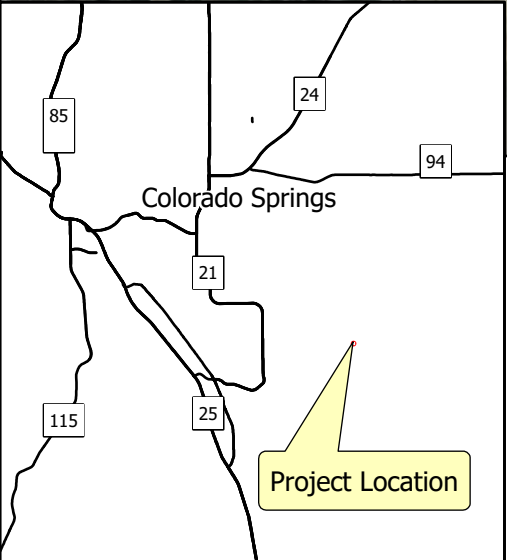
Project Location

lvd

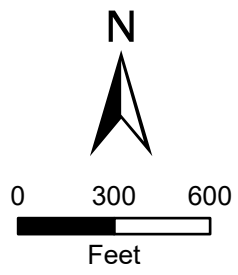
Fontaine Blvd

Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, Maxar

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Project Location



DOCUMENT IS FOR REVIEW PURPOSES ONLY AND NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES. PARCEL DATA SOURCED FROM EL PASO COUNTY OPEN DATA PORTAL. CONSULTANT MAKES NO CLAIMS TO ACCURACY OF DATA.

ROLLING HILLS BOOSTER PUMP STATION

VICINITY MAP

Job No.:	Date: December 2021	By: RLM
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Zone AE (100-year studied floodplain)

Project Location

lvd
Fontaine Blvd

NFP

PANEL 0976G

FIRM
FLOOD INSURANCE RATE MAP
EL PASO COUNTY,
COLORADO
AND INCORPORATED AREAS

PANEL 976 OF 1300
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS CITY OF	080090	0976	G
EL PASO COUNTY	080059	0976	G

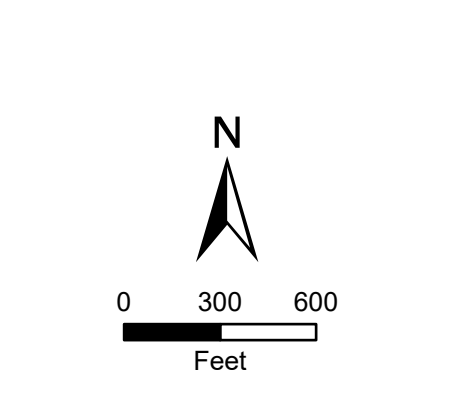
Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
08041C0976G

MAP REVISED
DECEMBER 7, 2018

Federal Emergency Management Agency

Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, Maxar



Prepared by:

RESPEC

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ROLLING HILLS BOOSTER PUMP STATION

FLOOD INSURANCE RATE MAP

Job No.:	Date: December 2021	By: RLM
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LEGEND

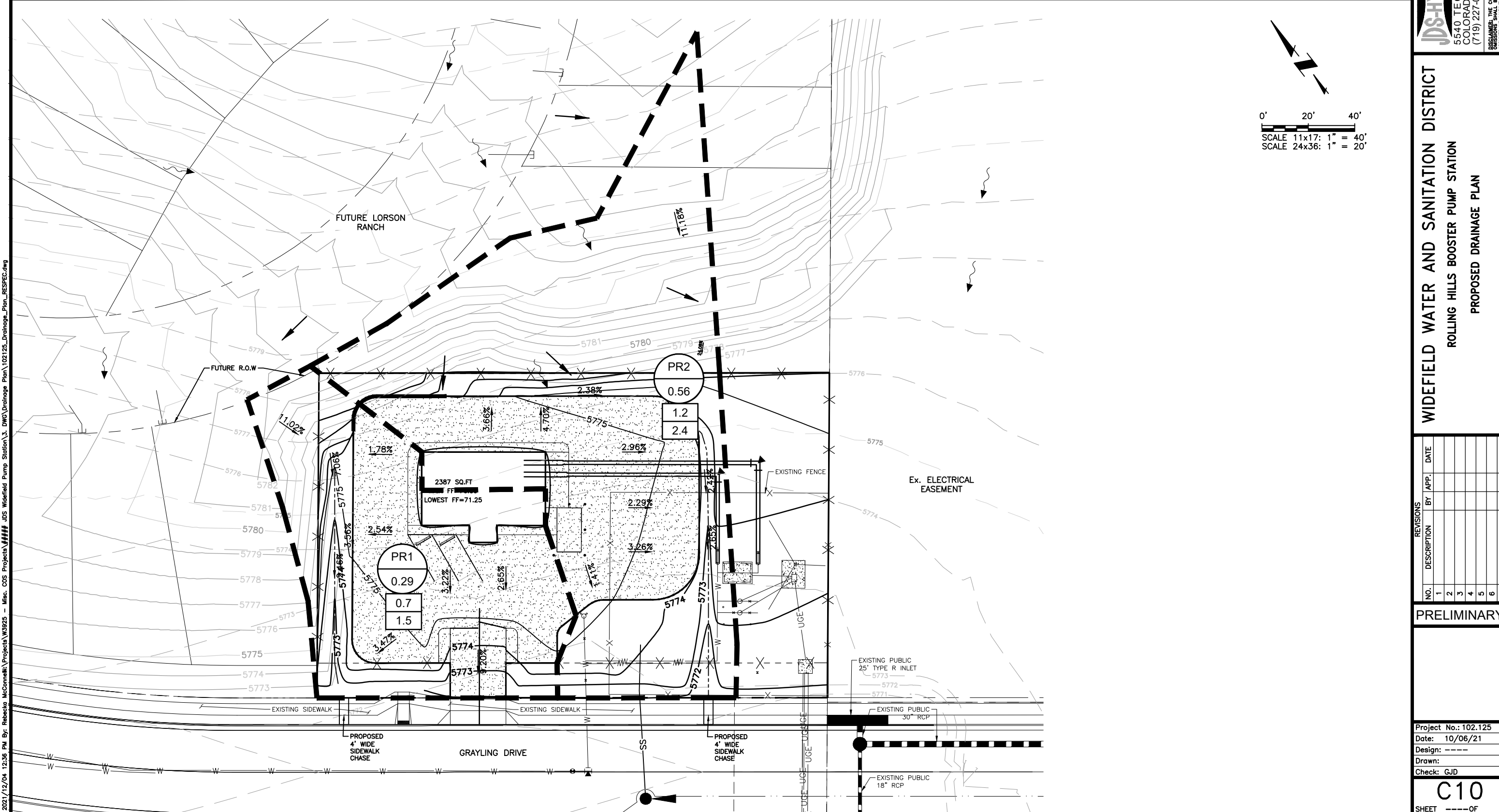
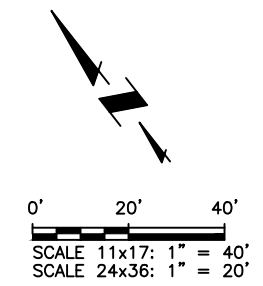
	EX PROPERTY LINE		EX WATER VALVE		PP FIRE HYDRANT
	EX RIGHT-OF-WAY		EX SANITARY SEWER MANHOLE		DEVELOPED FLOW DIRECTION
	EX FENCE		EX LIGHT POLE		PRE-DEVELOPED FLOW DIRECTION
	EX WATER LINE		PP CONTOURS-MAJOR		BASE COURSE
	EX SANITARY SEWER LINE		PP CONTOURS-MINOR		DRAINAGE AREA
	EX RAW WATER LINE		PP U.G. ELECTRIC LINE		
	EX U.G. ELECTRIC LINE		PP FENCE		
	EX CONTOURS-MAJOR		PP YARD PIPING/UTILITY		
	EX CONTOURS-MINOR				

NOTE:

1. AERIAL IMAGERY IS NOT ACCURATELY SCALED AND SHOULD BE UTILIZED FOR REFERENCE ONLY (SOURCE: GOOGLE MAPS).
2. THE PARTIES RESPONSIBLE FOR THIS PLAN HAVE FAMILIARIZED THEMSELVES WITH ALL CURRENT ACCESSIBILITY CRITERIA AND SPECIFICATIONS AND THE PROPOSED PLAN REFLECTS ALL SITE ELEMENTS REQUIRED BY THE APPLICABLE ADA DESIGN STANDARDS AND GUIDELINES AS PUBLISHED BY THE UNITED STATES DEPARTMENT OF JUSTICE. APPROVAL OF THIS PLAN BY EL PASO COUNTY DOES NOT ASSURE COMPLIANCE WITH THE ADA OR ANY REGULATIONS OR GUIDELINES ENACTED OR PROMULGATED UNDER OR WITH RESPECT TO SUCH LAWS.
3. PROPOSED BUILDING SITE IS LOCATED OUTSIDE OF FLOODPLAIN (SEE FEMA FLOODPLAIN MAP).

JDS-HYDRO CONSULTANTS, INC.
 5540 TECH CENTER DR., SUITE 100
 COLORADO SPRINGS, COLORADO 80919
 (719) 227-0072

DISCLAIMER: THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS. ANY ERRORS OR OMISSIONS SHALL BE REPORTED TO JDS-HYDRO CONSULTANTS, INC. JDS-HYDRO ASSUMES NO LIABILITY FOR UNAUTHORIZED CHANGES AND/OR REVISIONS MADE TO PLANS.



2021/12/04 12:36 PM By: Rebecca McConnell\Projects\W3925 - Misc. COS Projects\### JDS Widefield Pump Station\3. DWG\Drainage Plan\102125_Drainage_Plan_RESPEC.dwg

WIDEFIELD WATER AND SANITATION DISTRICT
ROLLING HILLS BOOSTER PUMP STATION
PROPOSED DRAINAGE PLAN

NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
3				
4				
5				
6				
7				

PRELIMINARY

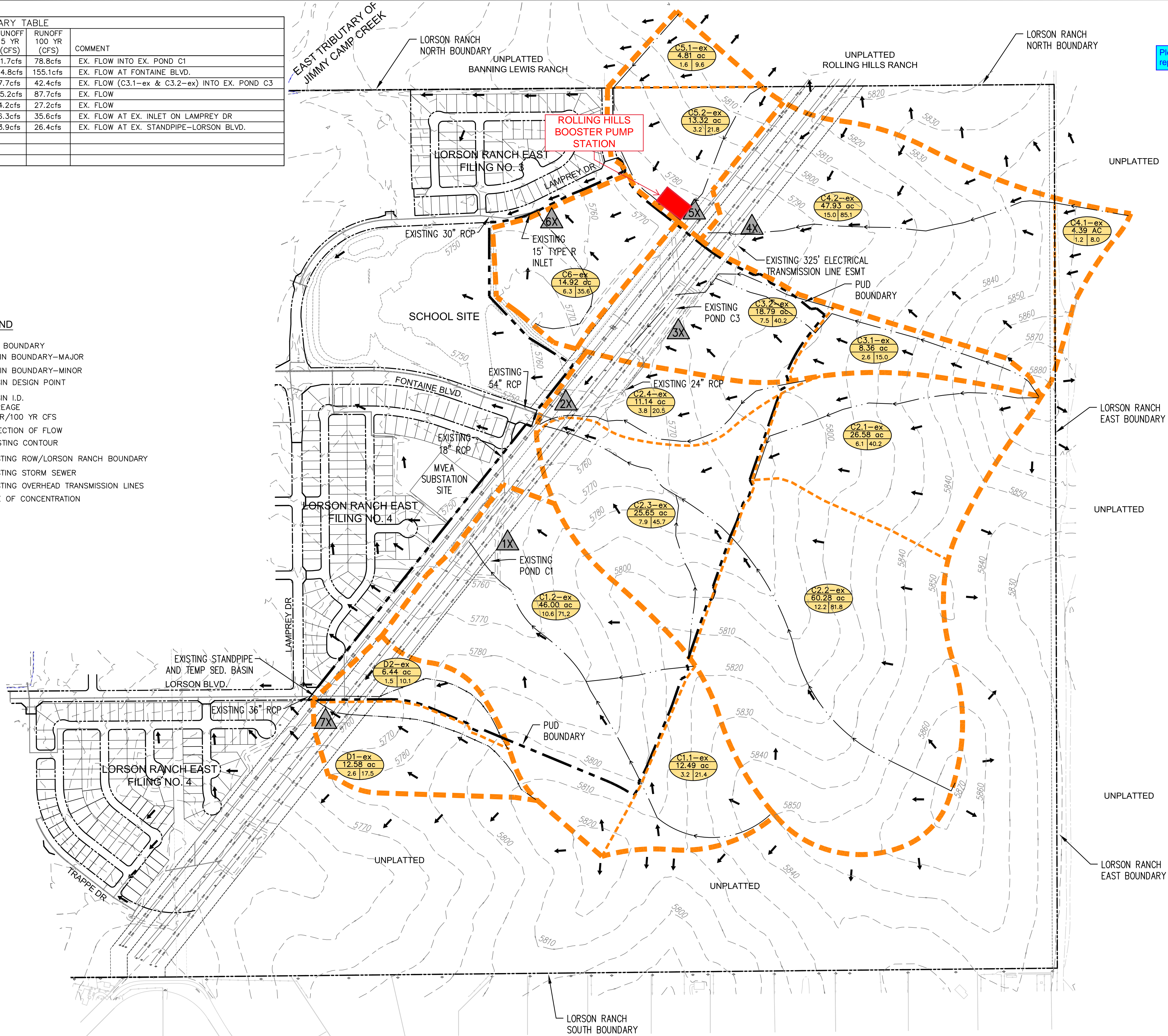
Project No.: 102.125
 Date: 10/06/21
 Design: ----
 Drawn: ----
 Check: GJD

C10
 SHEET ----OF

DESIGN POINT SUMMARY TABLE					
DESIGN POINT	Basin	Drainage Area (AC)	Runoff 5 Yr (CFS)	Runoff 100 Yr (CFS)	Comment
1X	C1-ex	58.49	11.7cfs	78.8cfs	EX. FLOW INTO EX. POND C1
2X	C2-ex	123.65	24.8cfs	155.1cfs	EX. FLOW AT FONTAINE BLVD.
3X	C3-ex	27.15	7.7cfs	42.4cfs	EX. FLOW (C3.1-ex & C3.2-ex) INTO EX. POND C3
4X	C4-ex	52.32	15.2cfs	87.7cfs	EX. FLOW
5X	C5-ex	18.13	4.2cfs	27.2cfs	EX. FLOW
6X	C6-ex	14.92	6.3cfs	35.6cfs	EX. FLOW AT EX. INLET ON LAMPREY DR
7X	D2-ex	19.02	3.9cfs	26.4cfs	EX. FLOW AT EX. STANDPIPE-LORSON BLVD.

Please place drainage maps at the end of the report.

- LEGEND**
- PUD BOUNDARY
 - BASIN BOUNDARY-MAJOR
 - BASIN BOUNDARY-MINOR
 - BASIN DESIGN POINT
 - BASIN I.D. ACREAGE 5 YR/100 YR CFS
 - DIRECTION OF FLOW
 - EXISTING CONTOUR
 - EXISTING ROW/LORSON RANCH BOUNDARY
 - EXISTING STORM SEWER
 - OVH EXISTING OVERHEAD TRANSMISSION LINES
 - TIME OF CONCENTRATION



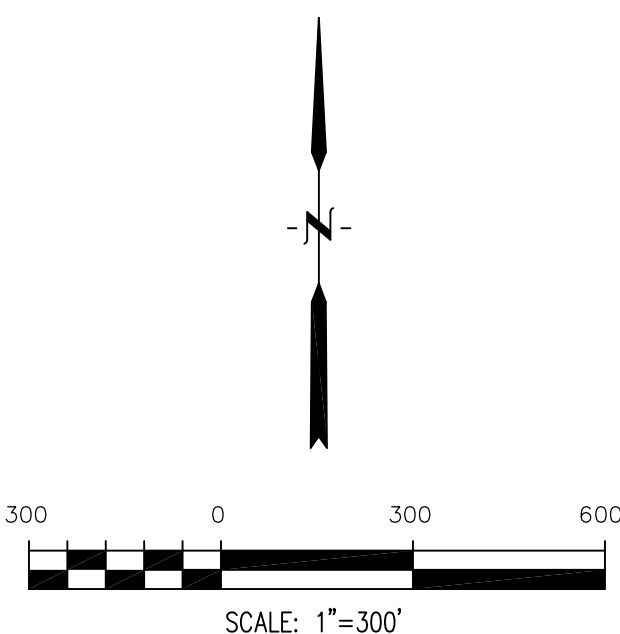
CORE ENGINEERING GROUP
 15004 1ST AVENUE S.
 PHOENIX, AZ 85006
 CONTACT: RICHARD L. SCHINDLER, P.E.
 EMAIL: Rich@cegi.com

DATE: _____
 DESCRIPTION: _____
 NO. _____
 PROJECT: THE HILLS AT LORSON RANCH
 EAST OF POWERLINES
 EL PASO COUNTY, COLORADO
 PREPARED FOR: LORSON LLC
 212 NORTH WAHATCH AVE, SUITE 301
 COLORADO SPRINGS, COLORADO 80903 (719) 635-3200
 CONTACT: JEFF MARK

DRAWN: RLS
 DESIGNED: RLS
 CHECKED: RLS

**EXISTING CONDITIONS
 PUD / PRELIMINARY PLAN
 THE HILLS AT LORSON RANCH**

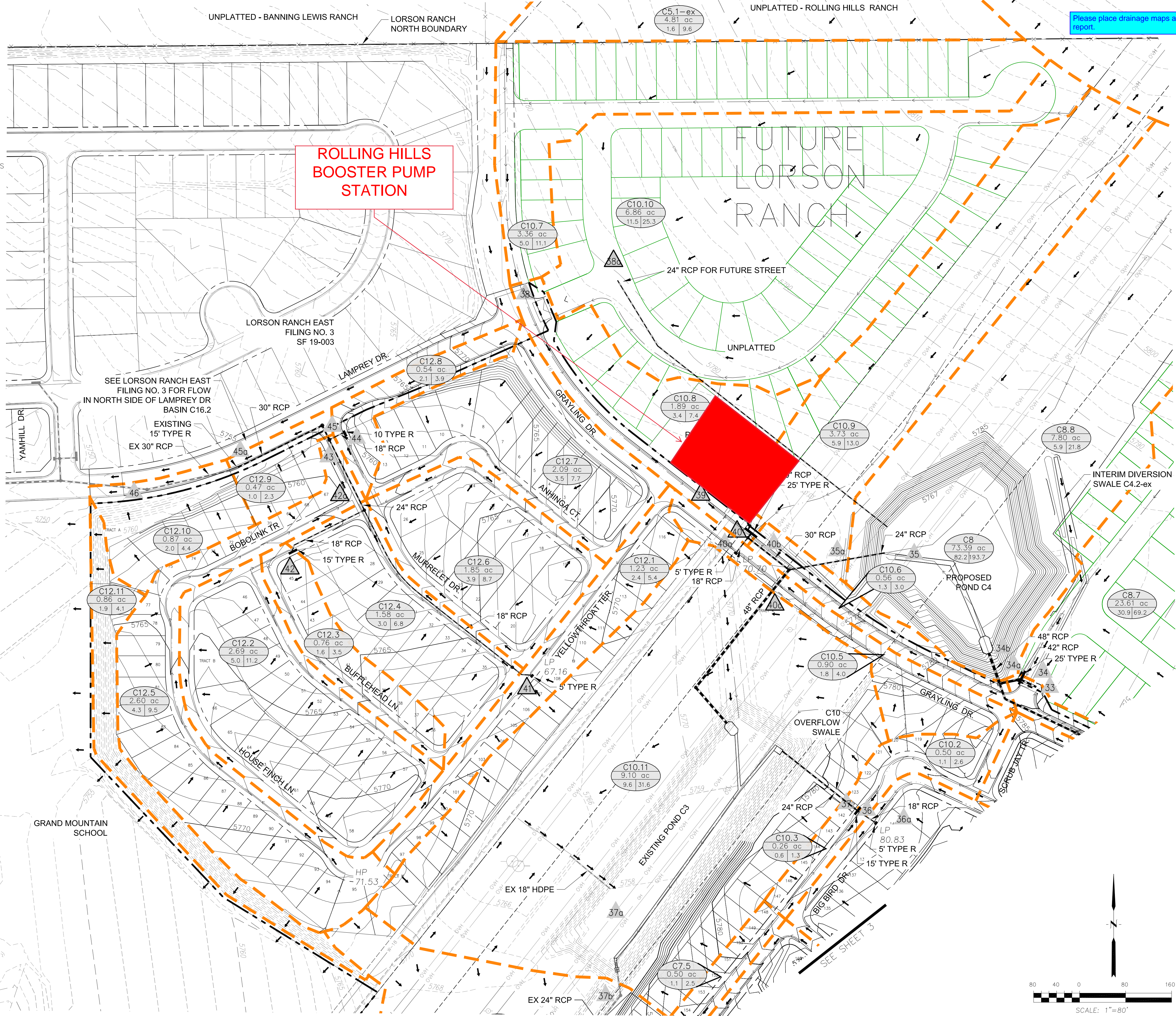
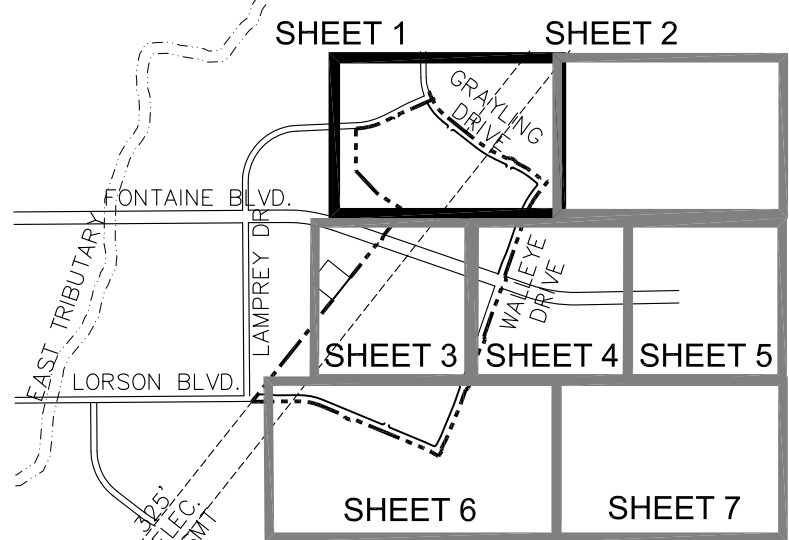
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 PROJECT NO. 100.061
 SHEET NUMBER 1
 TOTAL SHEETS: 1



LEGEND

- PUD BOUNDARY
- BASIN BOUNDARY
- BASIN DESIGN POINT
- BASIN I.D. ACREAGE
- 5 YR/100 YR CFS
- DIRECTION OF FLOW
- EXISTING CONTOUR
- PROPOSED CONTOUR
- ROW/LORSON RANCH BOUNDARY
- EXISTING STORM SEWER
- EXISTING OVERHEAD TRANSMISSION LINES
- PROPOSED STORM SEWER
- TIME OF CONCENTRATION
- HIGH POINT
- LOW POINT

RUNOFF SUMMARY			
D.P.	5 YEAR cfs	100 YEAR cfs	NOTES
33	7.3	15.3	FLOW IN STORM SEWER
34	30.9	69.2	STREET FLOW
34a	38.2	84.5	FLOW IN STORM SEWER
34b	83.3	189.9	FLOW IN STORM SEWER
35	131.6	277.0	POND C4 INFLOW
35a	16.5	43.7	POND C4 OUTFLOW
36a	5.2	11.6	STREET FLOW
36	7.2	18.2	STREET FLOW
37	12.4	27.5	FLOW IN STORM SEWER
37a	41.2	111.6	POND C3 INFLOW
37b	4.9	32.1	POND C3 OUTFLOW
38a	11.5	25.3	FLOW IN STORM SEWER
38	6.8	21.9	STREET FLOW
39	8.8	25.7	STREET FLOW
40a	1.8	6.9	STREET FLOW
40	14.7	38.5	STREET FLOW
40b	16.5	42.5	FLOW IN STORM SEWER
40c	33.0	86.2	FLOW IN STORM SEWER
41	2.4	5.4	STREET FLOW
42	6.4	14.1	STREET FLOW
42a	8.8	16.9	FLOW IN STORM SEWER
43	7.3	18.9	STREET FLOW
44	8.2	9.4	STREET FLOW
45	17.0	25.2	FLOW IN STORM SEWER
45a	8.0	30.6	STREET FLOW
46	24.9	40.0	FLOW IN STORM SEWER



Please place drainage maps at the end of the report.

CORE ENGINEERING GROUP
 15004 1ST AVE. S.
 BURNSVILLE, MN 55306
 PH: 763-570-1100
 FAX: 763-570-1100
 EMAIL: Rich@cegg.com

DATE: _____
 DESCRIPTION: _____
 NO: _____

PROJECT: THE HILLS AT LORSON RANCH
 212 N. WAHATCHA AVE. SUITE 301
 COLORADO SPRINGS, COLORADO 80903
 CONTACT: JEFF MARK

DRAWN: RL6
 DESIGNED: LAB
 CHECKED: LAB

DEVELOPED CONDITIONS
THE HILLS AT LORSON RANCH
C10 and C12 BASINS

DATE: OCT 22, 2020
 PROJECT NO: 100.061
 SHEET NUMBER: 1
 TOTAL SHEETS: 7

