

October 5, 2023  
Revised May 23, 2024  
Revised May 31, 2024

Hannah Chin  
Public Works and Natural Resources  
City of Longmont  
385 Kimbark Street  
Longmont, CO 80501

**RE: Concept Plan Amendment - Conceptual Drainage**  
*ModernWest 2*

Ms. Chin:

This conceptual drainage letter for the ModernWest 2 project site has been prepared in support of the Concept Plan Amendment application request. It is intended to outline the drainage design standards for the project, identify any challenges, and provide a preliminary analysis based on the proposed land uses.

The ModernWest 2 site is approximately 27.2 acres and is identified as Lot 2, Conveyance Plat for William Property, recorded 12/14/2021 under Reception No. 03934308. The property is bordered by Rogers Road to the north, unimproved Andersen Street right-of-way to the east, undeveloped property to the west, and Andersen Storage as well as the undeveloped ModernWest 1 site to the south. More particularly, the property is situated in the NW  $\frac{1}{4}$  of Section 8, Township 2 North, Range 69 W of the 6<sup>th</sup> Principal Meridian, County of Boulder, State of Colorado. The property is zoned Mixed Use Employment (MU-E) and is proposing commercial, industrial, and multi-family residential land uses which is consistent with the current zoning.

The site is bisected by the Niwot Ditch, flowing from northwest to southeast and divides the property into northern and southern development areas. The proposed concept plan amendment is proposing to sub-divide the property into 3 lots and two outlots, providing drainage and multipurpose uses. The northern area (Lot 3) is proposed as a multi-family residential lot and the southern area is proposed to be sub-divided into two lots. Lot 1 is proposed as an approximately 5.18-acre multi-family residential site and Lot 2 is proposed as an approximately 5.27-acre commercial/industrial site.

Per the Lower Lykins Gulch (LLG) Master Drainage Report, the proposed ModernWest 2 site is located within historic drainage basin LLG-01. The portion of Andersen Street north of the South Flat Ditch is located within basin LLG-03. Developed release rates for the ModernWest 2 site will be designed to match the historic 10-yr and 100-yr release rates for Basin LLG-01 identified in the LLG report. The ModernWest 2 site will provide full spectrum detention for on-site flows, with the maximum allowable release rates (ARR) for the 10 year and 100-year storms matching the rates identified in the LLG Report. The LLG report indicates that the historic 100-year flow ratio for basins LLG-01 and LLG-03 is 0.77 cfs/acre and 0.92 cfs/acre, respectively. All on-site runoff will be directed into Extended Detention Basins (EDB) A and B, located in Outlots A and B respectively, and ultimately outlet into the Niwot Ditch. All improvements related to the Niwot Ditch will be coordinated with the ditch company and the City of Longmont.

**Proposed Site Development:**

This conceptual drainage letter has been prepared for the Concept Plan Amendment application and therefore, a specific site layout is not currently available. ModernWest 2 is to be constructed in conjunction with ModernWest

1, located directly to the south. Public infrastructure to support both projects are anticipated to be constructed with ModernWest 1.

Mountain Brook Drive is to be constructed from Andersen Street west to Rogers Road, approximately 2,000 ft. The improvements will consist of asphalt pavement, concrete curb & gutter, concrete sidewalk, landscaped tree lawns, and storm drainage facilities.

Runoff from the project site will generally be conveyed east via surface flow and storm drainage systems as needed. Detention and water quality will be provided by on-site EDBs located in Outlots A and B, with 100-yr max release rates matching the LLG-01 historic rates including full spectrum detention. With construction of the off-site public improvements required for development of the ModernWest 1 and ModernWest 2 Sites, detention and water quality required for the extension of Mountain Brook Drive will be provided for on the ModernWest 2 site as well as the adjacent property to the west, Airport Prop RE, LLC. Water quality for Mountain Brook Drive from Imagination Street to Andersen Street will be provided with an extended detention basin (EDB A) located on the ModernWest 2 site. EDB A in the interim condition prior to development of the ModernWest 2 site will be sized only for the interim condition. The ModernWest 2 developments will include upsizing EDB A from the interim condition to provide detention and water quality for ModernWest 2 Lots 1 & 2 located south of the Niwot Ditch, and the portion of Andersen Street south of the South Flat Ditch. Detention and water quality for ModernWest 2 Lot 3 will be provided by EDB B located in Outlot B, and EDB B will be sized for the ModernWest 2 site north of the Niwot Ditch. The portion of Andersen Street north of the South Flat Ditch will flow north undetained to the existing roadside ditch at Rogers Road. Total undetained flows for the site will be evaluated during the preliminary and final plat stages.

### **Drainage Basins:**

#### **Existing Basins**

The ModernWest 2 project site and Andersen Street is situated within 3 existing drainage basins per the LLG report, Basin LLG-01.02, Basin LLG-01.03, and Basin LLG-03.01.

Basin LLG-01.02 is approximately 36 acres of irrigated farmland at 2% impervious and contains the portion of the project site that lies between the Niwot Ditch and the South Flat Ditch. Basin LLG-01.02 generally flows from northwest to the southeast between the Niwot Ditch and the South Flat Ditch.

Basin LLG-01.03 is approximately 25.9 acres of irrigated farmland at 2% impervious and contains the portion of the project site that lies south of the Niwot Ditch. Basin LLG-01.03 generally flows from southwest to northeast to the Niwot Ditch.

Basin LLG-03.01 is approximately 22.9 acres of irrigated farmland and single-family homes at 12% impervious and contains the portion of Andersen Street north of the South Flat Ditch. Basin LLG-03.01 generally flows southwest to northeast to the existing roadside ditch along Rogers Road.

#### **Proposed Basins**

The ModernWest 2 project site will be divided into 2 on-site detained major basins (Basin A and Basin B), 2 off-site detained basins (Basin MB and Basin AN), and 1 undetained basin (Basin OS). The proposed average % impervious were calculated using the tabulated values presented in the Boulder County Storm Drainage Criteria Manual (BCSDCM). Based on the expected elevation differences between the ModernWest 2 site and the undeveloped adjacent properties, no off-site runoff is expected to contribute to any on-site flows.

Basin A is approximately 13.4 acres at an average of 75% impervious, based on BCSDCM values for lawns, commercial, and multi-family areas, and corresponds to the on-site area to be detained in the Outlot A EDB (Phase 1). Basin A is located between the Niwot Ditch on the north side, and the proposed Mountain Brook Drive ROW on the south side. Basin A will consist of a mixture of commercial and multi-family construction, and an drainage/outlot area. Basin A generally flows west to east to Outlot A and EDB A. EDB A will ultimately outfall to the Niwot Ditch.

Basin B is approximately 11.9 acres at an average of 65% impervious, based on BCSDCM values for lawns and multi-family areas, and corresponds to the on-site area to be detained in the Outlot B EDB (Phase 2). Basin B is located between the Niwot Ditch on the south side and, Rogers Road and the South Flat Ditch on the north side. Basin B will consist primarily of multi-family construction with an drainage/outlot area. Basin B generally flows west to east to Outlot B and EDB B. EDB B will ultimately outfall to the Niwot Ditch.

Basin MB is 2.36 acres at 78% impervious, based on BCSDCM values for lawns, concrete, and asphalt, and corresponds to the portion of Mountain Brook Drive detained in the Outlot A EDB. Basin MB will consist of asphalt pavement, concrete curb & gutter, concrete sidewalk, and landscaped tree lawn. Basin MB generally flows west to east to Type R inlets before entering EDB A.

Basin AN is approximately 0.97 acres at an average of 75% impervious, based on BCSDCM values for lawns, concrete, and asphalt, and corresponds to the portion of Andersen Street detained in the Outlot A EDB. Basin AN will consist of asphalt pavement, concrete curb & gutter, concrete sidewalk, and landscaped areas. Basin AN generally flows north to south to Type R inlets before entering EDB A.

Basin OS is approximately 0.55 acres at an average of 75% impervious, based on BCSDCM values for lawns, concrete, and asphalt, and will consist of the undetained portions of Andersen Street ROW.

Basin	Design Point	Area (acres)	Proposed 100-yr C-values*	Impervious %**	Proposed 100-yr flows (cfs)***
<b>A</b>	<b>TBD</b>	<b>13.4</b>	<b>0.85</b>	<b>75</b>	<b>10.3</b>
<b>B</b>	<b>TBD</b>	<b>11.9</b>	<b>0.80</b>	<b>65</b>	<b>9.2</b>
<b>MB</b>	<b>TBD</b>	<b>2.36</b>	<b>0.86</b>	<b>78</b>	<b>1.8</b>
<b>AN</b>	<b>TBD</b>	<b>1.0</b>	<b>0.85</b>	<b>75</b>	<b>0.6</b>
<b>Total - Detained</b>		<b>28.5</b>			<b>21.9</b>
<b>OS</b>	<b>TBD</b>	<b>0.6</b>	<b>0.85</b>	<b>75</b>	<b>0.5</b>
<b>Total - Undetained</b>		<b>0.6</b>			<b>0.5</b>

\*Per Boulder County Storm Drainage Criteria Manual equations for NRCS Type C soil.

\*\*Per Boulder County Storm Drainage Criteria Manual.

\*\*\*100-yr flows are based on historic rates for Basin LLG-01 of the LLG Report (0.77cfs/acre).

Table 1: Drainage Summary

**Summary of Storm Sewer Designs**

The proposed storm sewer system in Mountain Brook Drive consists of 24” RCP and three Type R inlets. The final sizing and location of the Type R inlets and pipe will be presented with the final drainage report for ModernWest 1.

The on-site and Andersen Street storm sewer systems have not yet been designed. Design of the on-site and Andersen Street storm sewer systems will follow the preliminary grading design for the site and Andersen Street.

The storm sewer system designs will conform to the City of Longmont standards and requirements. All storm sewer pipes will be designed to have a minimum slope of 0.5%, or a minimum velocity of 3.0 fps in the minor storm for pipes where a slope of 0.5% is not feasible. Pipes will be 18" RCP minimum in areas within ROW and any private storm sewer pipes will be a minimum of 15" inner diameter where they connect to a public manhole.

**Summary of Irrigation Ditch Improvements:**

**Niwot Ditch**

The Niwot Ditch will require construction of approximately 100 lineal feet of 5' x 4' Reinforced Concrete Box Culvert (RCBC) at Andersen Street. The RCBC will have headwalls and wingwalls at both the upstream and downstream ends. The final design for the culvert and headwalls is to be coordinated with the ditch company and City of Longmont. The existing outfall for the Andersen Street storm sewer and the proposed outfall from EDB A will be connected to the side of the box culvert. Construction of the Niwot Ditch improvements will occur with either the on-site greenway improvements or the construction of Andersen Street, whichever comes first.

**South Flat Ditch**

The South Flat Ditch will require construction of approximately 120 lineal feet of 24" Reinforced Concrete Pipe (RCP) at Andersen Street. The RCP will have Flared End Sections (FES) at both the upstream and downstream ends. The final design for the culvert is to be coordinated with the ditch company and City of Longmont. Construction of the South Flat Ditch improvements will occur with the construction of the north half of Andersen Street.

**Stormwater Quality Design:**

The ModernWest 2 development will incorporate two Extended Detention Basins on site, EDB A and EDB B. The EDBs will be constructed with the separate phases of construction, with EDB A corresponding to Phase 1 and EDB B corresponding to Phase 2. EDB A will be designed to provide full spectrum detention for drainage Basin A, drainage Basin MB, and drainage Basin AN. In addition, due to site constraints with the Niwot Ditch outfall, EDB A will receive the outflow from the ModernWest 1 EDB. The EDB A outlet structure has been designed through SWMM modeling to release at the appropriate rate for the contributing area of ModernWest 1 and ModernWest2. EDB B will be designed to provide full spectrum detention for Basin B.

The ModernWest 2 development will comply with Federal Aviation Administration (FAA) guidance regarding hazardous wildlife attractants within the 5000' separation from the Air Operations Area. The FAA strongly recommends that detention facilities within the separation be restricted to a maximum detention period of 48 hours. The release rates for EDB A and EDB B of the ModernWest 2 development will be designed such that the WQCV will be released over a 40-hour period and all larger storms will be released over a 40–48-hour period.

The preliminary design volumes for EDB A were calculated with precipitation data presented in the City of Longmont Storm Drainage Criteria Manual (LSDCM) using the Mile High Flood District (MHFD) Detention workbook version 4.06 released July 2022. The calculated preliminary Water Quality Capture Volume (WQCV) is 0.416 acre-ft. The calculated preliminary Excess Urban Runoff Volume (EURV) is 0.804 acre-ft. The calculated preliminary 100-year detention volume is 0.947 acre-ft. The calculated preliminary total detention basin volume is 2.168 acre-ft.

The preliminary design volumes for EDB B were calculated with precipitation data presented in the LSDCM using the MHFD Detention workbook version 4.06 released July 2022. The calculated preliminary WQCV is 0.252 acre-ft. The calculated preliminary EURV is 0.495 acre-ft. The calculated preliminary 100-year detention volume is 0.644 acre-ft. The calculated preliminary total detention basin volume is 1.391 acre-ft.

Erosion control features and other Best Management Practices (or “BMP’s”) will be utilized by the Contractor during construction. These various erosion control measures will include the installation of silt fence, riprap, rock socks, inlet protection, and permanent seeding.

The ModernWest 2 development will incorporate LID concepts to the maximum extent practical. The development will utilize grass lined drainage swales where it is feasible to convey runoff to the appropriate EDB. Additionally, the development will utilize disconnected impervious areas where feasible to provide initial water quality treatment.

**Summary:**

The intent of this Drainage Letter is to describe and confirm that the proposed drainage and stormwater improvements on the ModernWest 2 site will conform to the approved Lower Lykins Gulch Report. In addition, the proposed drainage improvements will have no adverse effects on adjacent properties, existing drainage facilities, and downstream drainageways.

Respectfully Submitted,



Mickey Leyba  
President/Project Manager



Lucas T. Flax, P.E.  
VP of Engineering/Project Engineer

Attachments:

- LLG Report Excerpt – Figure 8 Existing Conditions Map
- Preliminary Drainage Basin Area Exhibit

# Figure 8: Lower Lykins Gulch Existing Conditions Routing Map

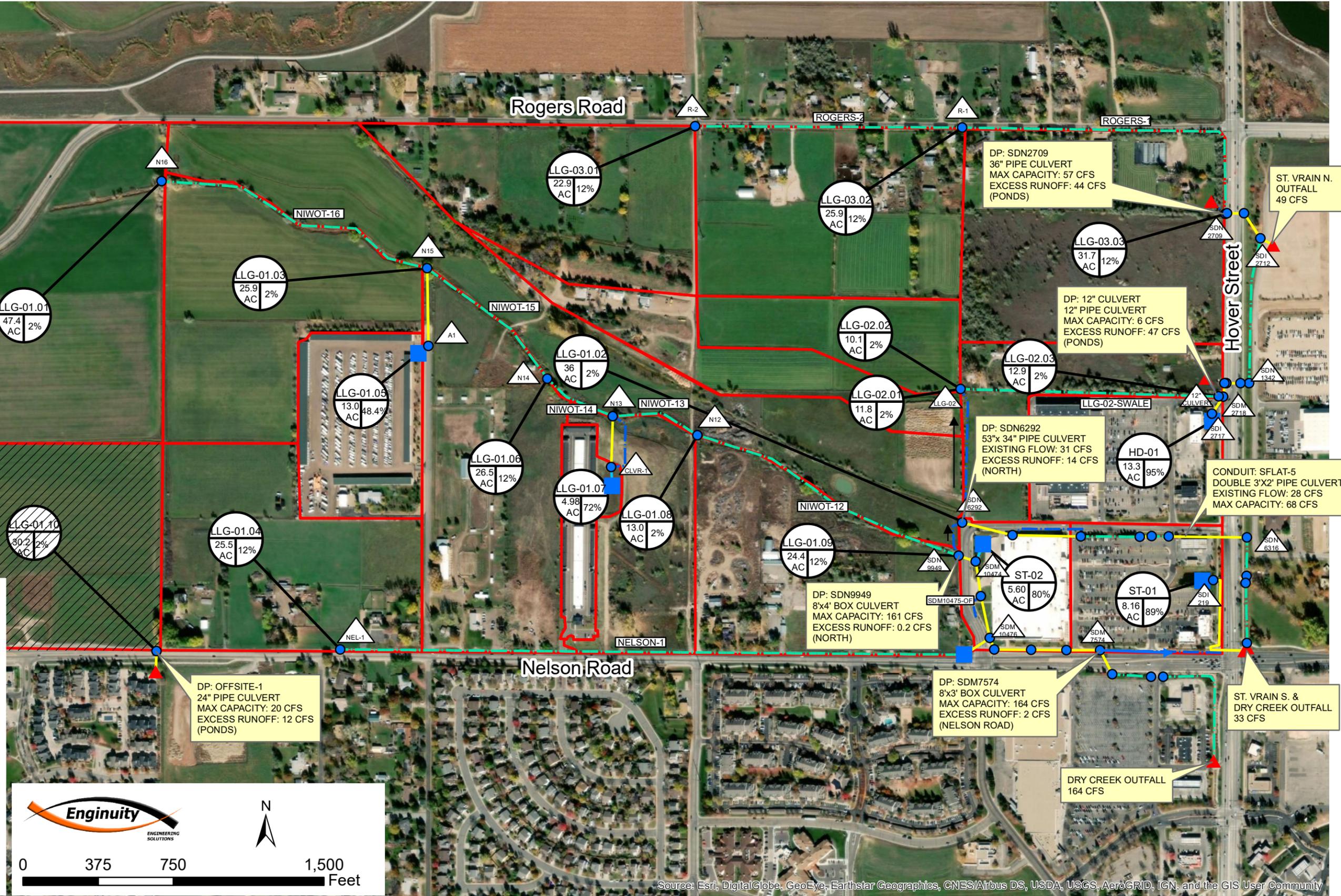
LLG-01 SUB-BASINS					
Design Point/ Flow Element	Q 2-Year (cfs)	Q 5-Year (cfs)	Q 10-Year (cfs)	Q 100-Year (cfs)	Culvert Capacity (cfs)
Dry Creek Outfall	7	12	38	164	164
SDM7574	7	12	38	166	164
SDM10476	7	12	38	166	166
SDM10474	6	10	33	160	160
SDN9949	4	8	30	191	161
NIWOT-12	4	6	24	160	160
N12	4	6	24	163	163
NIWOT-13	4	6	22	149	149
N13	4	6	22	152	152
NIWOT-14	3	5	22	148	148
N14	3	5	22	150	150
NIWOT-15	2	3	15	114	114
N15	2	3	15	108	108
NIWOT-16	0.3	1	9	64	64
N16	0.3	1	9	64	64
A1	2	2	3	14	14
CLVR-1	0.5	0.6	1	4	4
NELSON-1	1	2	6	32	32
NEL-1	1	2	6	32	32
St. Vrain S. Outfall	0.1	0.2	3	33	33
SDN6316	0.1	0.3	3	35	35
SDN6292	0.2	0.6	4	46	68
SDI219	0.8	1	1.3	4	4
OFFSITE-1	0.2	0.4	4	32	20

LLG-02 SUB-BASINS					
Design Point/ Flow Element	Q 2-Year (cfs)	Q 5-Year (cfs)	Q 10-Year (cfs)	Q 100-Year (cfs)	Culvert Capacity (cfs)
SDI2712	6	9	22	73	73
SDN1342	3	3	7	16	16
SDM2718	3	3	7	16	16
12-INCH CULVERT	0.1	0.2	4	50	6
SDI2717	3	3	3	12	12
LLG-02-SWALE	0	0.1	2	37	37
LLG-02	0.1	0.3	3	38	38

LLG-03 SUB-BASINS					
Design Point/ Flow Element	Q 2-Year (cfs)	Q 5-Year (cfs)	Q 10-Year (cfs)	Q 100-Year (cfs)	Culvert Capacity (cfs)
St. Vrain N. Outfall	6	9	21	49	49
SDI2712	6	9	22	73	73
SDN2709	3	6	18	101	57
ROGERS-1	2	3	10	56	56
ROGERS-2	1	2	5	27	27



**FIGURE 8 LEGEND**

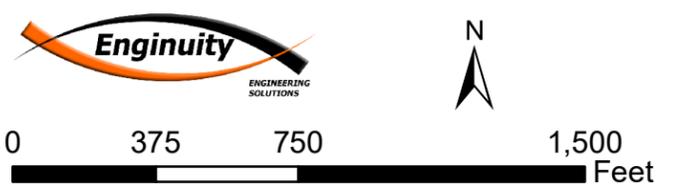
- Exist Cond Junctions
- Exist Cond Detention
- ▲ Exist Cond Outfalls

Sub-Basin ID

DESIGN POINT

**Conveyance Elements**

- CHANNEL
- DUMMY
- SURFACE OVERFLOW
- PIPE
- POND-OUTLETS
- Existing Conditions Sub-Basins



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

