Public Works and Development
6924 S. Lima Street Centennial, Colorado 80112 Phone: 720-874-6650; FAX 720-874-6611
www.co.arapahoe.co.us
Planning Division

Referral Routing

Case Number/Name:	GDP22-002 & LR22-008 Copperleaf East GDP and Comprehensive Plan Amendment
Planner:	Kat Hammer – khammer@arapahoegov.com
	Gretchen Ricehill – gricehill@arapahoegov.com
Engineer:	Emily Gonzalez - egonzalez@arapahoegov.com
Date sent:	December 27, 2022
Date to be returned:	January 24, 2023

The Arapahoe County Planning Division has received an application for a Planned Unit Development. The applicant is requesting approval of a General Development Plan to allow for multi-family. The applicant envisions that the multi-family use on the property will be in the form of apartment buildings with shared amenity areas.

The application includes a concurrent request to amend the County's 2018 Comprehensive Plan by changing the existing land use designation of three parcels located in the vicinity of S. Gun Club Road and Belleview Avenue from Single Family Detached and Attached (6–16 dwelling units per acre) to Multifamily (13 or more dwelling units per acre).

Due to the proximity of the proposed development to your property, or area of influence, this proposal is being referred to your agency for review and comment. Please examine the attached application materials and check the appropriate box below before returning this form and any comments that you may have to the Arapahoe County Planning Division prior to the due date noted above.

	COMMENTS	INSERT YOUR ORGANIZATION & NAME/SIGNATURE
☐	I Have NO Comments to make on the case as submitted	
☒	I Have the following comments to make related to the case:	This area is identified in Aurora Places, the City of Aurora's Comprehensive plan as Established Neighborhood, which can support multifamily development. The expectation is for coordination on the design and construction of Gun Clubs Road.

Comments: (responding by email, letter, or an email attachment is optional)

Public Works and Development
6924 S. Lima Street Centennial, Colorado 80112 Phone: 720-874-6650; FAX 720-874-6611
www.co.arapahoe.co.us
Planning Division

Referral Routing

Case Number/Name:	GDP22-002 & LR22-008 Copperleaf East GDP and Comprehensive Plan Amendment
Planner:	Kat Hammer – khammer@arapahoegov.com
	Gretchen Ricehill – gricehill@arapahoegov.com
Engineer:	Emily Gonzalez - egonzalez@arapahoegov.com
Date sent:	December 27, 2022
Date to be returned:	January 24, 2023

The Arapahoe County Planning Division has received an application for a Planned Unit Development. The applicant is requesting approval of a General Development Plan to allow for multi-family. The applicant envisions that the multi-family use on the property will be in the form of apartment buildings with shared amenity areas.

The application includes a concurrent request to amend the County's 2018 Comprehensive Plan by changing the existing land use designation of three parcels located in the vicinity of S. Gun Club Road and Belleview Avenue from Single Family Detached and Attached (6–16 dwelling units per acre) to Multifamily (13 or more dwelling units per acre).

Due to the proximity of the proposed development to your property, or area of influence, this proposal is being referred to your agency for review and comment. Please examine the attached application materials and check the appropriate box below before returning this form and any comments that you may have to the Arapahoe County Planning Division prior to the due date noted above.

	COMMENTS	INSERT YOUR ORGANIZATION & NAME/SIGNATURE
☑	I Have NO Comments to make on the case as submitted	State of Colorado – Department of Transportation Jacquelyn Jobe, Outdoor Advertising Rep.
☐	I Have the following comments to make related to the case:	

Comments: (responding by email, letter, or an email attachment is optional)

Public Works and Development
6924 S. Lima Street Centennial, Colorado 80112 Phone: 720-874-6650; FAX 720-874-6611
www.co.arapahoe.co.us
Planning Division

Referral Routing

Case Number/Name:	GDP22-002 & LR22-008 Copperleaf East GDP and Comprehensive Plan Amendment
Planner:	Kat Hammer – khammer@arapahoegov.com
	Gretchen Ricehill – gricehill@arapahoegov.com
Engineer:	Emily Gonzalez - egonzalez@arapahoegov.com
Date sent:	December 27, 2022
Date to be returned:	January 24, 2023

The Arapahoe County Planning Division has received an application for a Planned Unit Development. The applicant is requesting approval of a General Development Plan to allow for multi-family. The applicant envisions that the multi-family use on the property will be in the form of apartment buildings with shared amenity areas.

The application includes a concurrent request to amend the County's 2018 Comprehensive Plan by changing the existing land use designation of three parcels located in the vicinity of S. Gun Club Road and Belleview Avenue from Single Family Detached and Attached (6–16 dwelling units per acre) to Multifamily (13 or more dwelling units per acre).

Due to the proximity of the proposed development to your property, or area of influence, th is proposal is being referred to your agency for review and comment. Please examine the attached application materials and check the appropriate box below before returning this form and any comments that you may have to the Arapahoe County Planning Division prior to the due date noted above.

	COMMENTS	INSERT YOUR ORGANIZATION & NAME/SIGNATURE
☐	I Have NO Comments to make on the case as submitted	
☒	I Have the following comments to make related to the case:	Colorado Geological Survey, Amy Crandall

Comments: (responding by email, letter, or an email attachment is optional)

See attached letter.

COLORADO GEOLOGICAL SURVEY

1801 Moly Road
Golden, Colorado 80401

Matthew L. Morgan
State Geologist and Director

January 23, 2023

Kat Hammer
Arapahoe County Public Works and Development
6924 S. Lima Street
Centennial, CO 80112

Location:
SE¼ Section 12,
T5S, R66W of the 6th P.M.
39.6269, -104.7176

Subject: **Copperleaf East General Development Plan and Comprehensive Plan (GDP22-002 and LR22-008); Arapahoe County, CO; CGS Unique No. AR-23-0011**

Dear Ms. Hammer:

Colorado Geological Survey has reviewed the Copperleaf East General Development Plan and Comprehensive Plan referral. The applicant proposes multi-family residential structures on 25.89 acres near Belleview Avenue and South Gun Club Road. With this referral, CGS received a request for review (emails dated December 27, 2022); Letter of Intent (Norris Design, December 16, 2022); Preliminary Development Plan (LJA Engineering, undated); Phase I Drainage Report (LJA Engineering, Inc., December 16, 2022); and Geotechnical Engineering Report (Cole Garner Geotechnical (CGG), July 26, 2022).

The site does not contain steep slopes, is not undermined, and is not exposed to any identified geologic hazards or unusual geotechnical constraints that preclude the proposed development. CGG's characterization of subsurface conditions and preliminary geotechnical recommendations are valid. As noted on page 4 of CGG's report, the clay soils exhibit a low to very high expansion potential and the claystone bedrock is considered moderately plastic and exhibits variable expansive potential. CGG states on page 5, "the expansive materials encountered in our borings (in their current state) pose a relatively high risk of movement of these types of shallow foundations." CGG recommends (page 7) "subexcavation and recompaction extending at least 10 feet below the lowest foundation element of each building and 10 feet below the pool." CGS agrees with CGG's assessment of the site soils and bedrock and their mitigation for expansive soils and bedrock. Therefore, provided CGG's recommendations are strictly adhered to, **CGS has no objection to the approval of the proposed general development plan and comprehensive plan**.

CGS recommends that CGG be provided the opportunity to review and comment on the wall system design and analysis prior to construction. Strict oversight, testing, and verification of earthwork and foundation preparation activities must be performed by a qualified geotechnical professional familiar with all project-specific geotechnical recommendations during construction. Construction personnel and contractors must be aware of the importance of proper earthwork procedures and minimize water ponding and infiltration through construction and the project's life.

Thank you for the opportunity to review and comment on this project. If you have questions or require further review, please call me at 303-384-2632, or email acrandall@mines.edu.

Sincerely,

Amy Crandall

Amy Crandall, P.E.
Engineering Geologist

Public Works and Development
6924 S. Lima Street Centennial, Colorado 80112 Phone: 720-874-6650; FAX 720-874-6611
www.co.arapahoe.co.us
Planning Division

Referral Routing

Case Number/Name:	GDP22-002 & LR22-008 Copperleaf East GDP and Comprehensive Plan Amendment
Planner:	Kat Hammer – khammer@arapahoegov.com
	Gretchen Ricehill – gricehill@arapahoegov.com
Engineer:	Emily Gonzalez - egonzalez@arapahoegov.com
Date sent:	December 27, 2022
Date to be returned:	January 24, 2023

The Arapahoe County Planning Division has received an application for a Planned Unit Development. The applicant is requesting approval of a General Development Plan to allow for multi-family. The applicant envisions that the multi-family use on the property will be in the form of apartment buildings with shared amenity areas.

The application includes a concurrent request to amend the County's 2018 Comprehensive Plan by changing the existing land use designation of three parcels located in the vicinity of S. Gun Club Road and Belleview Avenue from Single Family Detached and Attached (6–16 dwelling units per acre) to Multifamily (13 or more dwelling units per acre).

Due to the proximity of the proposed development to your property, or area of influence, this proposal is being referred to your agency for review and comment. Please examine the attached application materials and check the appropriate box below before returning this form and any comments that you may have to the Arapahoe County Planning Division prior to the due date noted above.

	COMMENTS	INSERT YOUR ORGANIZATION & NAME/SIGNATURE
☒	I Have NO Comments to make on the case as submitted	Lisa Nguyen, Denver International Aiport, Principal Transportation Planner
☐	I Have the following comments to make related to the case:	

Comments: (responding by email, letter, or an email attachment is optional)

DEN Planning + Design have no comments at this time. Thank you for the continued opportunity to review and provide comments.

Public Works and Development
6924 S. Lima Street Centennial, Colorado 80112 Phone: 720-874-6650; FAX 720-874-6611
www.co.arapahoe.co.us
Planning Division

Referral Routing

Case Number/Name:	GDP22-002 & LR22-008 Copperleaf East GDP and Comprehensive Plan Amendment
Planner:	Kat Hammer – khammer@arapahoegov.com
	Gretchen Ricehill – gricehill@arapahoegov.com
Engineer:	Emily Gonzalez - egonzalez@arapahoegov.com
Date sent:	December 27, 2022
Date to be returned:	January 24, 2023

The Arapahoe County Planning Division has received an application for a Planned Unit Development. The applicant is requesting approval of a General Development Plan to allow for multi-family. The applicant envisions that the multi-family use on the property will be in the form of apartment buildings with shared amenity areas.

The application includes a concurrent request to amend the County's 2018 Comprehensive Plan by changing the existing land use designation of three parcels located in the vicinity of S. Gun Club Road and Belleview Avenue from Single Family Detached and Attached (6–16 dwelling units per acre) to Multifamily (13 or more dwelling units per acre).

Due to the proximity of the proposed development to your property, or area of influence, this proposal is being referred to your agency for review and comment. Please examine the attached application materials and check the appropriate box below before returning this form and any comments that you may have to the Arapahoe County Planning Division prior to the due date noted above.

	COMMENTS	INSERT YOUR ORGANIZATION & NAME/SIGNATURE
☐	I Have NO Comments to make on the case as submitted	
☒	I Have the following comments to make related to the case:	ECCV will need to be provided the site plans and construction plans for review and approval for water and sanitary sewer. Otherwise we don't have any other comments

Comments: (responding by email, letter, or an email attachment is optional)

Public Works and Development
6924 S. Lima Street Centennial, Colorado 80112 Phone: 720-874-6650; FAX 720-874-6611
www.co.arapahoe.co.us
Planning Division

Referral Routing

Case Number/Name:	GDP22-002 & LR22-008 Copperleaf East GDP and Comprehensive Plan Amendment
Planner:	Kat Hammer – khammer@arapahoegov.com
	Gretchen Ricehill – gricehill@arapahoegov.com
Engineer:	Emily Gonzalez - egonzalez@arapahoegov.com
Date sent:	December 27, 2022
Date to be returned:	January 24, 2023

The Arapahoe County Planning Division has received an application for a Planned Unit Development. The applicant is requesting approval of a General Development Plan to allow for multi-family. The applicant envisions that the multi-family use on the property will be in the form of apartment buildings with shared amenity areas.

The application includes a concurrent request to amend the County's 2018 Comprehensive Plan by changing the existing land use designation of three parcels located in the vicinity of S. Gun Club Road and Belleview Avenue from Single Family Detached and Attached (6–16 dwelling units per acre) to Multifamily (13 or more dwelling units per acre).

Due to the proximity of the proposed development to your property, or area of influence, this proposal is being referred to your agency for review and comment. Please examine the attached application materials and check the appropriate box below before returning this form and any comments that you may have to the Arapahoe County Planning Division prior to the due date noted above.

	COMMENTS	INSERT YOUR ORGANIZATION & NAME/SIGNATURE
☐	I Have NO Comments to make on the case as submitted	
☒	I Have the following comments to make related to the case:	Derek Clark, MHFD

Comments:
We appreciate the opportunity to review the above referenced submittal. Please see attached letter.

MILE HIGH FLOOD DISTRICT

2480 W. 26th Ave Suite 156-B | Denver, CO 80211
TEL 303 455 6277 | FAX 303 455 7880

www.mhfd.org

MAINTENANCE ELIGIBILITY PROGRAM (MEP)

MHFD Referral Review Comments

For Internal MHFD Use Only.	
MEP ID:	105898
Submittal ID:	10010292
Partner ID:	GDP22-002 & LR22-22-008
MEP Phase:	Referral

Date: January 24, 2023

To: **Kathleen Hammer**
Via Email

RE: MHFD Referral Review Comments

Project Name:	S. GUN CLUB ROAD AND BELLEVIEW AVENUE
Location:	Arapahoe County
Drainageway:	East Tollgate Creek

This letter is in response to the request for our comments concerning the referenced project. We have reviewed this proposal only as it relates to maintenance eligibility of major drainage features, in this case:

- Impacts to Quincy Avenue Regional Detention Facility

We have the following comments to offer:

1) Please provide documentation within the report that the 100-year detention for Copperleaf Parcels N and O were provided in the existing Quincy Avenue Pond design and construction. The MDP is not a sufficient justification since MHFD master plans only include regional infrastructure within their hydrology and do not account for local detention. This is not to be considered an exemption from any detention requirements Arapahoe County may have.
2) Please verify the composite impervious value for the site. Calculations seem to indicate that it is higher than the 62% listed in the report.
3) It was noted in the 2011 East Tollgate Creek MDP that the future expansion of Gun Club Road in the vicinity of Quincy Avenue would reduce the volume of the existing Quincy Avenue Pond. Aerial imagery indicates that this project was completed sometime in late 2021. Is there any documentation from this project that analyzes these impacts to the existing regional pond and how that might impact this development?

MHFD requires responses to the review comments, please include these responses with any future submittal.

We appreciate the opportunity to review this proposal. Please feel free to contact me with any questions or concerns.

Sincerely,

Derek Clark, PE
Project Manager
Mile High Flood District

Public Works and Development
6924 S. Lima Street Centennial, Colorado 80112 Phone: 720-874-6650; FAX 720-874-6611
www.co.arapahoe.co.us
Planning Division

Referral Routing

Case Number/Name:	GDP22-002 & LR22-008 Copperleaf East GDP and Comprehensive Plan Amendment
Planner:	Kat Hammer – khammer@arapahoegov.com
	Gretchen Ricehill – gricehill@arapahoegov.com
Engineer:	Emily Gonzalez - egonzalez@arapahoegov.com
Date sent:	December 27, 2022
Date to be returned:	January 24, 2023

The Arapahoe County Planning Division has received an application for a Planned Unit Development. The applicant is requesting approval of a General Development Plan to allow for multi-family. The applicant envisions that the multi-family use on the property will be in the form of apartment buildings with shared amenity areas.

The application includes a concurrent request to amend the County's 2018 Comprehensive Plan by changing the existing land use designation of three parcels located in the vicinity of S. Gun Club Road and Belleview Avenue from Single Family Detached and Attached (6–16 dwelling units per acre) to Multifamily (13 or more dwelling units per acre).

Due to the proximity of the proposed development to your property, or area of influence, this proposal is being referred to your agency for review and comment. Please examine the attached application materials and check the appropriate box below before returning this form and any comments that you may have to the Arapahoe County Planning Division prior to the due date noted above.

	COMMENTS	INSERT YOUR ORGANIZATION & NAME/SIGNATURE
☐	I Have NO Comments to make on the case as submitted	Arapahoe County Open Spaces
☒	I Have the following comments to make related to the case:	Roger Harvey, Planning Manager

Comments: (responding by email, letter, or an email attachment is optional)

Thank you for opportunity to comment on this residential development proposal. The 2 parcels proposed for residential development are isolated, from main Copperleaf development. Currently Gun Club Road lacks sidewalks and trail connections and safe crossing of Gun Club at signalized locations is few. It would be imperative for this development to make trail connections to Harvest Trail to north, where a underpass of Gun Club Road is located.

As this development is proposed to be part of Copperleaf, the isolation and distance to amenities in Copperleaf make availability of parks and open space extremely difficult by bicycle or walking. The original zoning as Highway Commercial makes much more sense for Public Services, Neighborhood Livability, mobility, and compatibility with surrounding uses. Neighborhood Commercial was the PDP designation zoning, a change to multifamily residential places all calculations of population, dwelling units and land dedication acres for parkland or cash in lieu inaccurate. Increasing the density and increasing the dwelling units will increase the number of people desiring parks, trails and open space. The closest developed park is City of Aurora's Toll Gate Crossing Park, 2000ft away, across Gun Club Road a heavily used arterial which is proposed to be widened for more volume; vehicle speeds and volume make crossing difficult and currently unsafe. Based on a now most likely inaccurate PDP parkland dedication calculation, Copperleaf developers should be required to re-calculate the entire development's phases and fillings dwelling units and population for parkland acres dedicated and compare with original PDP filing for accuracy, the assumption is their will be a deficiency in parkland dedication acres when actual dwelling units and population is calculated compared to PDP. Any deficiency will require Cash in Lieu to be paid to County. It is essential that development pays for itself and all development in County is treated equally. To my knowledge, no calculation has been done to calculate the accuracy of the original PDP

for parkland dedication. This new proposed change of increased population requires this assessment and if deficient, Cash in Lieu payment.

Though highly unlikely, if an assessment finds adequate parkland dedication in main Copperleaf land area even with this new zoning change, the distance and roadway impediments require this development to be considered separate from Copperleaf in terms of park land dedication. The closest Arapahoe Park and Rec District Park or Copperleaf HOA park is a 2 mile traverse. This distance is miles over any acceptable metric for park amenities in proximity to residential. Cash in Lieu of providing parkland, utilizing the appraised value method in lieu of parkland dedication should be required for this zoning change and proposed development.

Thank you,

Roger Harvey

7437 South Fairplay Street
Centennial, CO 80112-4486

January 24, 2023

Gretchen Ricehill
Arapahoe County Land Development Services
Public Works and Development
6924 S Lima Street
Centennial, Colorado 80112

RE: Copperleaf East - GDP
SEMSWA Case No. DPR22-00088, County Case No. GDP22-002 & LR22-008

Dear Ms. Ricehill,

Thank you for your referral request to the Southeast Metro Stormwater Authority (SEMSWA) regarding the proposed Copperleaf East - GDP project. SEMSWA appreciates the opportunity to review the General Development Plan, Phase I Drainage Report and Comprehensive Plan Amendment and offers the following comments:

General Comments:

1. Please set up a meeting with Arapahoe County and SEMSWA prior to the next review to ensure all comments are addressed adequately.
2. Please refer to the Resubmittal Checklist for all required documents and any remaining review fees.
3. Please submit a response letter to the comments with the re-submittal. Response letter is required for further review.

General Development Plan Comments:

4. SEMSWA has no comments on the General Development Plan.

Phase I Drainage Report Comments:

5. Detention is required to be provided. Currently, there does not appear to be any detention provided downstream/off site so onsite detention would be required. Per the FHAD East Toll Gate Creek, the existing detention facility at Qunicy had 26 acre-feet of capacity, but approximately 8 acre-feet were lost with the Gun Club Road reconstruction. Leaving 18 acre-feet to help meet 56.8 acre-feet capacity requirement. As is, the Quincy Ave Regional Detention

Pond does not have capacity for the tributary area without the construction of proposed Regional Detention Pond 503 which is not anticipated to be constructed. Therefore, detention is not provided downstream. If it is desired to utilize the Quincy Pond for detention, a detailed analysis would need to be completed to clearly show that the Quincy Pond does have capacity for the entire tributary (including the development of this parcel).

6. It does appear that possibly Pond 504 does provide WQCV for the site (up to a certain imperviousness). If Pond 504 is to be utilized for WQ, prior to release from the site, pretreatment would be required (20/10 facility) unless WQCV is provided onsite.
7. An offsite pond, designed and constructed by others is referenced as being utilized by this project. Please discuss the timeline for those improvements in more detail. Also, if these improvements are not constructed or under construction then onsite water quality and detention would be required.
8. Please refer to redlines for additional comments and revise accordingly.

<u>Comprehensive Plan Amendment Comments:</u>

9. SEMSWA has no comments on the Comprehensive Plan Amendment.

Thank you for the opportunity to review and comment on this application. We look forward to continued coordination on this project. Please feel free to contact me if you have any questions.

Sincerely,

Tarah Hamlyn

Tarah Hamlyn, PE, CFM
Land Development Engineer

cc: Dan Olsen, Director, Maintenance & Inspection Division, SEMSWA
Ana McCarthy, Business Support Specialist, SEMSWA
Case File

SEMSWA RESUBMITTAL PROCEDURE
THIS SHEET MUST BE ATTACHED TO THE RESUBMITTAL
TO THE CASE ENGINEER

SEMSWA No: DPR22-00088 Case Engineer: Tarah Hamlyn, PE, CFM
Arapahoe County Case No: GDP22-002 & LR22-008

In order to expedite this case in an efficient manner, the following procedure for resubmitting information to Arapahoe County be followed.

Incomplete resubmittal packages should not be forwarded to the SEMSWA case engineer for review until all of the information requested on this form has been provided.

RESUBMITTAL CHECKLIST

The items checked below have been identified in the SEMSWA referral letter as requiring revision and or resubmittal.

	SEMSWA Documents Required with Resubmittal	# of
☒	**A copy of this Resubmittal Checklist**	**X**
☐	Construction Plans	
☐	GESC Plan and Report	
☒	Phase I Drainage Study	1
☐	Phase II Drainage Study	
☐	Phase III Drainage Study /Letter of no impacts	
☐	Drainage Letter of Compliance/Technical Letter	
☐	Engineering Cost Estimate for Public Improvements	
☐	SIA	
☒	**Redlines sent electrically**	**X**
☒	**Letter of point by point response**	**X**
☐	O/M Manual	
☐	Maintenance Agreement	
☐	Floodplain Documents	
☐	Plat	
☐	Easement Vacation	
☐	Fees in the amount of $ (***Fees can be paid via credit card (3.29 % service fee will apply) by calling the SEMSWA office or via check payable to "Southeast Metro Stormwater Authority" or "SEMSWA" mailed to PO Box 17631, Denver, CO 80217-0631 and notating SEMSWA Project Number and reason for payment.)***	
☐	Site Plan	

7437 South Fairplay Street, Centennial, CO 80112-4486
Phone: 303-858-8844 Fax: 303-649-2149 www.semswa.org

ARAPAHOE COUNTY
CHECKLIST FOR DRAINAGE REPORT – PHASE I

Revised July 2018

Yes	No	N/A	Report Requirements
I. COVER SHEET			
X ✓			A. Name of Project/Site Name
✓	X		B. Address
✓	X		C. Owner Contact Information (Name, Address, Phone)
✓	X		D. Developer Contact Info (Name, Company, Address, Phone)
X ✓			E. Engineer Contact Info (Name, Company, Address, Phone)
X ✓			F. Submittal date and revision date(s) as applicable
✓	X		G. Case Number(s)
X ✓			Table of Contents
X ✓			Certification Statement* - Engineer
✓		X	** see Stormwater Manual for Certification verbiage
II. GENERAL LOCATION AND DESCRIPTION			
			A. Site Location
X ✓			1. Site Vicinity Map
✓	X		2. Legal Description
X ✓			3. Township, Range, Section, and ¼ Section
X ✓			4. Existing and proposed streets, roadways, and highways adjacent to and within the proposed development, or within the area served by the proposed drainage improvements
✓	X		5. Names of surrounding or adjacent developments, including land use or zoning information
			B. Description of Property
X ✓			1. Total Site/Project Area in Acres
X ✓			2. Current and Proposed Zoning
X ✓			3. Existing Site Conditions Ground cover, vegetation, site topography and slopes
X ✓			4. Existing irrigation canals or ditches
		X ✓	5. Significant geologic features
X ✓			6. NRCS Soils Classification Map and discussion
X ✓			7. Proposed Land Use, site activities and operations
X ✓			8. Estimated Proposed Impervious Area – existing and proposed. Include removed, replaced, and new impervious area (square feet and acres) and total change in impervious area
X ✓			9. Total Disturbed Area
III. FLOODPLAIN			
			A. Major Drainageway – Designated Floodplain
X ✓			1. Identify site Floodplain Zone

Yes	No	N/A	Report Requirements
x ✓			2. Source of Floodplain Delineation. FEMA Flood Insurance Rate Map(s) including panel date and number and/or UDFCD Flood Hazard Area Delineation (FHAD) study
		x ✓	3. Floodplain Modifications required, including justification to why it is necessary
		x ✓	4. Floodplain Modification Studies required, including Conditional Letter of Map Revision (CLOMR) and Letter of Map Revision (LOMR) requirements
			B. Major Drainageway – Undesignated Floodplain (non-FEMA>130ac)
		x ✓	1. Discuss floodplain issues and resources and strategy for floodplain delineation
		x ✓	2. Discuss general implication/modification to the floodplain

IV. DRAINAGE BASINS

			A. Existing Drainage Basins
✓			1. Existing drainage basin characteristics and flow patterns and paths adjacent to and within the proposed development
✓			2. Existing and proposed land uses and impervious values within the basins
✓			3. Discussion of all drainageway master planning or studies that affect the major drainageways, such as UDFCD Major Drainageway Plan (MDP) and Outfall Systems Planning (OSP) studies
✓			4. Discuss site restrictions imposed by Master Plans, including design imperviousness
		✓	5. Condition of the drainage channel within or adjacent to the development, including existing condition, need for improvements, and impact on proposed development
✓			6. Impacts of proposed development to basin flow patterns and paths, under fully developed conditions

V. EXISTING STORMWATER CONVEYANCE OR STORAGE FACILITIES

			A. Existing Stormwater Storage Facilities
x ✓			1. Accessibility to existing regional or sub-regional detention facility
✓	x		2. Discuss limitations and restrictions from Master development or drainageway plan, mentioning capacity and water quality. Include relevant source pages in Appendix
✓	x		3. Does existing facility meet current Standards and Regulations?
	x	✓	4. Discuss existing storage facility modifications needed, including rebuild or abandonment
			B. Existing Stormwater Conveyance Facilities

Yes	No	N/A	Report Requirements
X ✓			1. Existing Conveyance Facilities and how it will be incorporated into proposed development design
✓	X		2. Discuss limitations and restrictions from Master development or drainageway plan, including capacity. Include relevant source pages in Appendix
X ✓			3. Existing Conveyance Facility Modifications, including rebuild or abandonment
	X	✓	4. Discuss any known issues with existing conveyance system
VI. DRAINAGE DESIGN CRITERIA			
			A. Regulations
X ✓			1. County Criteria and optional provisions selected, as applicable
X ✓			2. UDFCD criteria and optional provisions selected, as applicable
		X ✓	3. Cherry Creek Basin Control Regulation No. 72
			B. Hydrologic Design Criteria
X ✓			1. Methods used to determine runoff calculations
✓	X		2. Design storm recurrence intervals, including water quality, minor and major storms
✓	X		3. Design rainfall
VII. PROPOSED STORMWATER CONVEYANCE OR STORAGE FACILITIES			
			A. Proposed Stormwater Storage Facilities
✓	X		1. Detention and water quality facility(s) conceptual location and design
✓	X		2. Discuss anticipated storage problems and potential solutions
			B. Proposed Stormwater Conveyance Facilities
X ✓			1. Conceptual drainage patterns and change from historic patterns
X ✓			2. Conveyance of off-site runoff from and through project
	X	✓	3. Discussion of anticipated conveyance problems and potential solutions
X. CONCLUSIONS			
			A. Compliance with Standards
✓	X		1. Arapahoe County Criteria
✓	X		2. UDFCD Criteria
✓	X		3. Master Plans and UDFCD Outfall Systems Plans
		X ✓	4. Cherry Creek Basin Control Regulation No. 72
			B. Variances
		X ✓	1. Identify provisions by section number for which a variance will be requested, or has been approved by county (final version of Drainage Report)
		X ✓	2. Provide justification for each variance requested

ARAPAHOE COUNTY
CHECKLIST FOR DRAINAGE REPORT – PHASE I

Revised July 2018

Yes	No	N/A	Report Requirements
			C. Drainage Concept
x ✓			1. Discuss overall effectiveness of stormwater management design to properly convey, store and treat stormwater
			XI. DESIGN ASSUMPTIONS
✓	x		A. Summarize any design assumptions used (i.e. the maximum % imperviousness value, slope of the basin). A summary needs to be included.
	x	✓	B. List any conditions of approval for the Phase II or Phase III Drainage Report. (i.e. completion Master Drainage Plan or FHAD , etc.) If utilizing a pond by others, that infrastructure will need to be designed, reviewed and approved prior to approval of a Phase II or Phase III drainage report for this project.
			XI. REFERENCES
✓	x		A. Reference all criteria, master plans, reports, or other technical information used in development of the concepts discussed in the drainage report
			XII. APPENDICES
			A. Reference Material
✓	x		1. Vicinity Map. North Arrow, Scale, label adjacent arterial roadways and drainageways. No copyrighted material
x ✓			2. FEMA FIRM panel, with site location shown
x ✓			3. NRCS Custom Soil Resource Report (all pages)
✓	x		4. Relevant portions of the FHAD/OSP/MDP Missing some portions
	x	✓	5. Relevant portions of the previous drainage study for the project
			B. Hydrologic Computations
x ✓			1. Design Rainfall Values, ACSWMM Table 6-1 or NOAA Atlas 14
✓	x		2. Land Use Assumptions, C values, for both existing and proposed developed conditions
✓	x		3. Determination of runoff coefficients, times of concentration, and runoff calculations, existing and developed conditions
✓	x		4. Peak flow rate calculations for the minor and major storms
✓		x	8. Hydrograph data, if applicable
✓		x	5. Floodplain hydrology
			D. Drainage Plan
			DRAINAGE PLAN
x ✓			1. 24" x 36" in size, 22" x 34" also acceptable when half size sets will be produced
x ✓			2. Title block and legend
x ✓			3. Scale 1" = 20' to 1" = 100', as required to show sufficient detail
x ✓			4. Show boundaries of entire development or project and any off-site areas which flow to/through the development or project

Should provide the Quincy/Gun Club intersection final documents

Yes	No	N/A	Report Requirements
x ✓			5. Existing topographic contours with labels with a 5-foot maximum contour interval extending a minimum of 100-feet beyond property lines
x ✓			6. Show and label all existing stormwater conveyance or storage facilities
✓	x		7. Conceptual location and outline of detention and water quality facilities
x ✓			8. Drainage basin and sub-basin boundaries
✓	x		9. Show and label existing utilities and structures
x ✓			10. All property lines and existing drainage easements
x ✓			11. Streets and roadways with ROW
x ✓			12. General drainage patterns and flow paths, including those entering and leaving the site
		x ✓	13. Location and elevation of all existing 100-year floodplain boundaries, including the source of designation. All floodplain designations that exist for the site should be included, i.e. FEMA FIS, FHAD, and others.
x ✓			14. Adjacent developments or ownerships
x ✓			15. Case Number(s) in the lower left-hand corner

Southeast Metro Stormwater Authority
Reviewed By:
Tarah Hamlyn, PE, CFM
Land Development Engineer

Date: 01/24/2023

Phase I Drainage Report

for

Copperleaf East/Parcel O

Arapahoe County, Colorado

Arapahoe County Case No. GDP22-002

SEMSWA Case No. DPR22-00088

Prepared for:

Rippey Commercial Investors, LLC
7800 East Union Avenue, Suite 430
Denver, CO 80237
(303) 771-8210

Include developer/owner name

By:

LJA ENGINEERING

December 16, 2022

Please refer to the checklist and ensure all required information is provided.

Detention is required to be provided. Currently, there does not appear to be any detention provided downstream/off site so onsite detention would be required. WQCV is provided downstream (Pond 504), however, pretreatment would be required prior to discharge from the site so the pretreatment could be provided in the detention facility (if onsite) by providing WQCV or in a separate facility.

What is the timing for the Gun Club Road improvements and also for this development? This timing needs to be discussed in detail for any sharing of a facility.

Please set up a meeting with Arapahoe County and SEMSWA prior to resubmittal to ensure all requirements are being met and discussed adequately within this document.

Copperleaf East/Parcel O Phase I Drainage Report

Project No.:	CO1055-07
Document Title:	Phase I Drainage Report
Document No.:	1
Revision:	1
Date:	12/16/2022
Client Name:	Rippey Commercial Investors, LLC
Client No:	1055
Project Manager:	Anna Sparks
Author:	Colton Miskell
QC Manager:	
File name:	Phase I Drainage Report.docx

LJA Engineering
1765 West 121st Avenue, Suite 300
Westminster, CO 80234
303.421.4224
www.lja.com

© Copyright 2022 LJA Engineering. The concepts and information contained in this document are the property of LJA. Use or copying of this document in whole or in part without the written permission of LJA constitutes an infringement of copyright.

Limitation: This report has been prepared on behalf of, and for the exclusive use of, LJA's Client and is subject to, and issued in accordance with, the provisions of the contract between LJA and the Client. LJA accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.

Document history and status

Revision	Date	Description	By	Review	Approved

CERTIFICATION OF ENGINEER

I hereby affirm that this report and plan for the Phase I drainage design of Copperleaf East/Parcel O was prepared by me, or under my direct supervision, for the owners thereof, in accordance with the provisions of the Arapahoe County Stormwater Management Manual and the Urban Storm Drainage Criteria Manual, and approved variances and exceptions thereto. I understand that Arapahoe County does not and will not assume liability for drainage facilities designed by others.

_____ _____

Anna Sparks, PE, CFM
Registered Professional Engineer
State of Colorado No. 42782

Date

_____

Prepared by
Colton Miskell, EIT
Design Engineer

Contents

I. General Location and Description

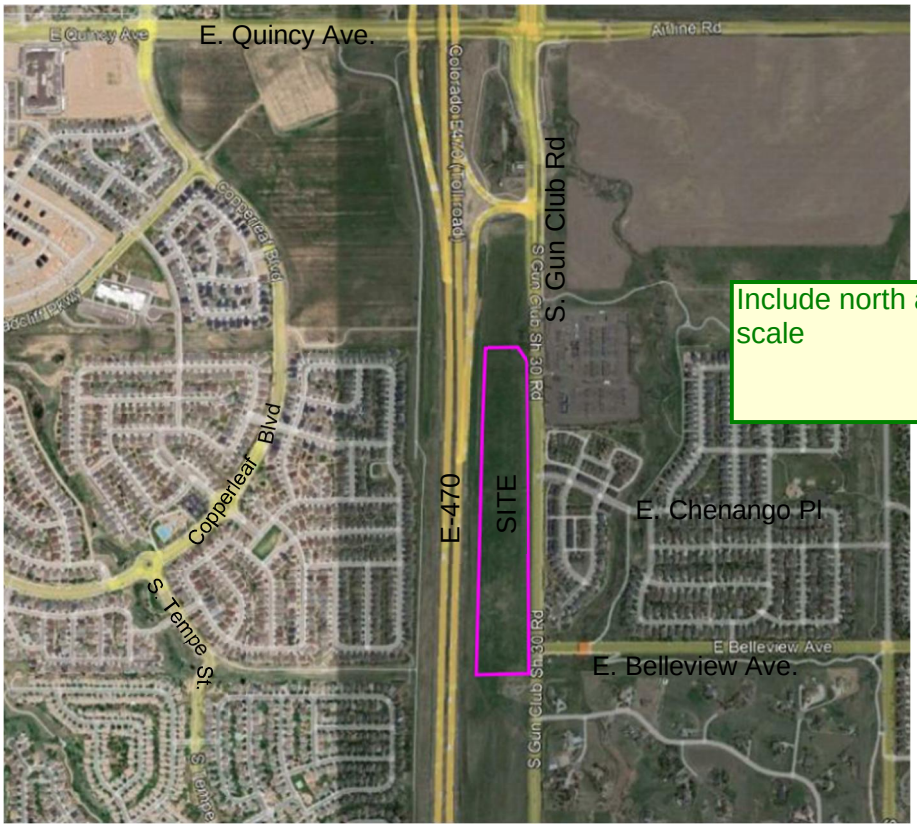
A. Site Location

Copperleaf Parcel O is a proposed multi-family residential development project, Copperleaf East. The site is located within the Southeast Quarter of Section 12, Township 5 South, Range 66 West of the 6th Principal Meridian, Arapahoe County, Colorado. The site is located east of E-470 right-of-way (ROW) and multi-use easement, north of E-470 undeveloped property (likely a remainder parcel during a ROW take), west of South Gun Club Road, and south of existing Public Service Company of Colorado (PSCO) ROW. See the below Vicinity Map for reference. The purpose of this Phase I Drainage Report is to provide a preliminary evaluation of the existing and proposed drainage conditions of the proposed layout, as well as impacts to the surrounding site and existing drainage infrastructure.

Include legal description

What is the land use of the surrounding developments?

Vicinity Map



Include north arrow and scale

B. Description of Property

The project site is a total of 25.90 acres and is currently zoned as MU-PUD. The site is in the process of being rezoned from MU PUD to MF within Arapahoe County. The proposed project will be comprised of multi-family buildings, associated parking and drive aisles, and landscaped areas. Construction of the proposed improvements include paving for the parking and drive aisles, and utility infrastructure. Additionally, on the west side of the site, there is a 75± ft wide parcel of open space dedicated to the

Value does not appear to be consistent with drainage basin areas.

Based on previous discussions regarding the electric lines, there was discussion that the lines would be relocated to the west in this area. Please clarify and discuss in more detail.

Area does not appear to be consistent with drainage basin areas. It appears development will impact more area than indicated here.

County as part of the Copperleaf PDP to satisfy open space requirements. The County has since deeded the land to E-470 Public Highway Authority. The total disturbed area of the site is expected to be approximately 24.5 acres with the south 1.36± acres expected to remain as open space.

The County has the Belleview Avenue Extension over E-470 in their 10-year plan. Belleview Avenue is considered a collector street. The County has a conceptual plan which assessed the feasibility of the Belleview extension over E-470. The reserved ROW on the west side of E-470 currently contains a regional trail. Once extended from S. Tempe Street over E-470, E. Belleview Avenue will slope east through the site to the intersection with S. Gun Club Road. The conceptual Belleview extension alignment was also considered with the Gun Club Road Improvements.

The County partnered with the City of Aurora for the Gun Club Road Improvements. Gun Club Road is considered an arterial street. In the ultimate configuration, Gun Club Road will be a 6-lane arterial. The interim condition for Gun Club Road is a 4-lane arterial as proposed in the Gun Club Road Improvements. S. Gun Club Road is currently a two-lane road with center turn lanes at E. Chenango Place and E. Belleview Avenue. S. Gun Club Road has an existing ditch adjacent to the site which flows north to the E-470 on/off ramps. Because of the existing overhead electric lines on both sides of Gun Club Road, the existing overhead lines on the east side are to remain. The Gun Club Road expansion will occur to the west of the existing asphalt and improved to Alternate 1 according to the Development Agreement in process with the rezoning. The currently planned improvements for Alternate 1 include the two outer lanes adjacent to the site and a water quality pond adjacent to the E-470 on/off ramps north of the site.

The site is currently comprised of undeveloped land that is covered with native vegetation and an imperviousness of 2%. The rezoning of the property and now expired Development Plan and Agreement for Copperleaf Planned Unit Development dated December 7, 2004 established the site for commercial uses. Commercial uses are generally considered to have an imperviousness of 95%, according to the Urban Storm Drainage Criteria Manual (USDCM). Although the property has entitlements for commercial land use, the rezoning to multi-family is in process with a Development Agreement. Multi-family uses are generally considered to have an imperviousness of 75% in the USDCM. The change in land use from commercial to multi-family will reduce the proposed imperviousness and associated runoff of stormwater. In the Development Agreement, the developed flows will be captured in a storm sewer stub and routed north in Gun Club Road to Copperleaf Parcel N for water quality treatment in a proposed pond.

The existing topography of the proposed site consists of slopes varying from 1% to 5% slopes. The site generally slopes to the north. Per the National Resources Conservation Service (NRCS) Soil Survey, the site consists of Fondis silt loam soils that belong to the Hydrologic Soil Group C. The proposed water quality pond is within both Fondis silt loam and Fondis-Colby silt loam, also within Hydrologic Soil Group C. Please reference Appendix B for the soil information obtained from the United States Department of Agriculture (USDA) NRCS for soil information and maps reflecting the soil locations.

What is the timing of the improvements for the Gun Club Road project? There needs to be timing discussion and a discussion for what is required (water quality and detention on site) if the Gun Club Road improvements are not constructed concurrently or prior to this development.

II. Floodplain

A. Major Drainageway – Designated Floodplain

The project site is not within a Federal Emergency Management Agency **(**FEMA) regulated floodplain. The site is located within unshaded Zone X as shown on the FEMA Flood Insurance Rate Maps (FIRM) Map Numbers 08005C0214L and 08005C0502L, effective date of February 17, 2017, included in Appendix B of this report.

These improvements have not been designed, reviewed or approved.

Per the FHAD, the existing detention facility at Qunicy had 26 acre-feet of capacity, but approximately 8 acre-feet were lost with the Gun Club Road reconstruction. Leaving 18 acre-feet to help meet 56.8 acre-feet capacity requirement. As is, the Quincy Ave Regional Detention Pond does not have capacity for the tributary area without the construction of proposed Regional Detention Pond 503 which is not anticipated to be constructed. Therefore, detention is not provided downstream. It does appear that possibly Pond 504 does provide WQCV for the site (up to a certain imperviousness). Prior to release from the site, pretreatment is required (20/10 facility) unless WQCV is provided onsite. Additional discussion is required.

B. Major D

There are no major drainageways onsite. An existing Gun Club Road ditch conveys flows to the existing 66" pipe under the E-470 on/off ramps and on to the existing Quincy Avenue regional detention pond. The project site flows to East Toll Gate Creek. The major drainage concepts can be found in the *Flood Hazard Area Delineation (FHAD) East Toll Gate Creek (Upper)* prepared by J3 Engineering Consultants and dated December 2010.

III. Drainage Basins

A. Existing Drainage Basins

As previously mentioned, the existing topography of the site consists of slopes between 1% to 5%, with the majority of the site sloping to the north. Historically, the runoff from the site is conveyed north to the existing regional detention pond in-line with East Toll Gate Creek by means of a roadside ditch parallel to S. Gun Club Road. The proposed site drainage pattern will generally remain the same. The onsite runoff is piped under the E-470 on/off ramps in an existing 66-inch RCP to the existing Quincy Avenue Regional Detention Pond.

In the *East Toll Gate Creek (Upper) Major Drainageway Plan (MDP) Conceptual Design Report,* prepared by J3 Engineering Consultants, and dated February 2011, the project site occupies the majority of Basin UE7A and a portion of UE5D. Basin UE5D onsite drains east to Junction (Design Point) 554. Basin UE7A drains north to Design Point (DP) 571. Basins UE7A and UE5D have an existing imperviousness of 5% in the MDP. Basins UE7A and UE5D are zoned as MU-PUD in the MDP and were assumed to have an imperviousness of 60%.

When reviewing the conceptual Gun Club Road Improvements, the southern basin boundary line for Basin UE7A appears to be north of the Belleview Avenue right-of-way. This basin boundary is shown as being south of the Belleview Avenue extension in the *East Toll Gate Creek (Upper) Major Drainageway Plan (MDP) Conceptual Design Report* and the *Flood Hazard Area Delineation East Toll Gate Creek (Upper)*. The Belleview Avenue ROW is 84' wide east of Gun Club Road, and the high point in Gun Club Road is approximately 150' north of the Belleview ROW. The south portion of the site within Basin UE5D flows east to the creek, whereas Basin UE7A in the north portion of the site drains north to the creek. The estimated time of arrival in the existing Quincy Avenue Detention Pond is approximately the same for both basins onsite.

IV. Existing Stormwater Conveyance or Storage Facilities

A. Existing Stormwater Storage Facilities

There are no existing stormwater storage facilities located on site. Stormwater detention for Copperleaf East/Parcel O is provided in the existing Quincy Avenue Regional Detention Pond in-line with East Toll Gate Creek. The existing Quincy Avenue pond provides 100-year detention for Copperleaf Parcels N and O at a commercial imperviousness with the surrounding open space deeded to the County in accordance with the Copperleaf PDP (60% weighted imperviousness). Any additional required stormwater storage will be provided in the proposed pond located on the north end of Copperleaf Parcel N. The existing Quincy Avenue pond provides 100-year detention for Copperleaf East/Parcel O. Because the existing Quincy Avenue pond does not provide water quality, water quality will be required prior to discharging into the existing Quincy Avenue pond. The Gun Club Road Improvements propose a water quality pond on the north end of Parcel N that provides water quality for Gun Club Road Improvements, Copperleaf Parcel N and Copperleaf East/Parcel O.

What is the timing of these improvements? What happens if the improvements are not complete or under construction at the time of this project development?

B. Existing Stormwater Conveyance Facilities

Currently, there is a roadside ditch that captures runoff from the project site and half of S. Gun Club Road. This roadside ditch drains north, parallel to S. Gun Club Road, to a 66-inch RCP that runs under the E-470 on/off ramps and outfalls directly into the existing regional pond. This ditch will be removed during the Gun Club Road Improvements and replaced with a storm sewer system. The developed stormwater from Copperleaf East/Parcel O will also be conveyed through this Gun Club Road Improvements storm sewer system.

V. Drainage Design Criteria

The minor storm event in Arapahoe County should be the 5-year event. Please revise accordingly.

A. Hydrologic Criteria

1. Rainfall Source

The drainage design is in accordance with the current Arapahoe County Stormwater Management Manual (Manual), Flood Hazard Area Delineation (FHAD) East Toll Gate Creek (Upper) and the Mile High Flood District (MHFD) Urban Storm Drainage Criteria Manual. Per Table 6-1 from the Manual, the minor storm event used for the hydrologic calculations is the 2-year event; the major storm used is the 100-year event.

The WQCV event usually utilizes the 2-year event. Please include discussion.

5-year P_1 = 1.38 in.
100-year P_1 = 2.67 in.

a. Calculation Method

The Rational Method was utilized to calculate imperviousness values for drainage basins. Runoff coefficients were determined for each basin based on land use. Basins were conceptualized as routed to downstream inlets when possible. Rational Method flowrates, and street and inlet capacities will be provided in a subsequent drainage report, as appropriate. Basin imperviousness calculations are found in Appendix A of this report.

The MDP/FHAD uses CUHP and SWMM for runoff calculations. The rainfall used in the MDP/FHAD is comparable to the Manual P_1 values. The Hydrologic Soil Group for the site is the same as well. Because of the comparable nature of the values, the FHAD calculations were used.

VI. Proposed Stormwater Conveyance or Storage Facilities

a. Drainage Patterns and Basin Discussion

The proposed development will generally follow the same drainage patterns as the existing site. The site will flow to the north and east. The site will be rezoned to multi-family development, with an assumed imperviousness of approximately 75%, according to the Urban Storm Drainage Criteria Manual (as referred to by the Arapahoe County Stormwater Management Criteria). The western and southern portions of the site will remain as open space areas with an associated imperviousness of 2%. The proposed imperviousness of the entire site is 62%, which is greater than the assumed 60% imperviousness as described in the *East Toll Gate Creak (Upper) Major Drainageway Plan (MDP).* These areas, combine with the proposed development, will bring the project site to 62% or less.

The site's FHAD Basins UE5D at DP 554 and UE7A at DP 571 arrive at the existing regional detention pond at the same time, 40 minutes in the SWMM model. The 100-year flowrates from the site are shown in the FHAD SWMM model to arrive one hour earlier than the peak of the existing regional

Are there any hardscape improvements proposed within the open space areas? Only landscape areas can count as 2% so if any trails, pavement, etc would be proposed, 2% would not be accurate.

The final configuration per the Master Plan was not constructed, but the Quincy/Gun Club Road modified the existing detention pond.

Detailed timing discussion - if the project is developed after/concurrently with the gun club road project then the facility could be utilized for this project, if the project is developed prior to the widening then detention and water quality would need to provided onsite.

The site is required to treat the flows prior to them leaving the site unless a separate offline facility is being proposed for the flows from the site. It appears there may be WQCV provided within Pond 504.

There are other options. Detention and water quality are required to be provided for this parcel. There does not appear to be sufficient capacity in the Quincy Pond so detention needs to be provided onsite.

...Cre... ...Baseline Hydrolog... ...3. ... ...e Regional Pond, hydrograph legend as E-470 Pond (SWMM Junction 1653), receives approximately 10 cfs inflow at 40 minutes, the time the site's hydrograph is peaking in the SWMM model. The storm peak flowrate from the site arrives in the existing pond so far in advance of the overall East Tollgate basin reaching the pond, that the effect of the additional imperviousness is minimized. Excerpts from the FHAD reflecting the timing of the site basins compared to the existing Quincy Avenue Pond is included in Appendix B.

The storm sewer drainage design of Copperleaf Parcel O will follow the Arapahoe County Stormwater Management Manual. The drainage design concept of the proposed site is to convey runoff through the drive aisles, parking areas, and swales to inlets located at low points. Once stormwater is collected by the inlets, it will be routed through the existing storm sewer system in South Gun Club Road to a WQCV pond located in Parcel N, at the southeast corner of the intersection of S. Gun Club Road and the on/off ramp for E-470. This future WQCV pond will then outfall through 66-inch RCP under the on/off ramps into the existing Quincy Avenue Regional Detention Pond, where 100-year detention will be provided for the project site, in-line with East Toll Gate Creek.

The Gun Club Road Improvements are currently planned to be constructed before the Copperleaf East development. In the event that the Copperleaf East project is developed before the Gun Club Road Improvements, a swale will be constructed north through the PSCO ROW that bounds the project site to the north. This temporary swale will convey the developed runoff from the Copperleaf East site to the proposed pond on the northern portion of Parcel N. This proposed pond would be constructed temporarily and located in the same area as proposed by the Gun Club Road Improvements.

The required WQCV was calculated using M... ...06. The WQCV is calculated as 0.72 acre-feet for the site and the adjace... ...ements draining to the north. The WQCV for the site and the adjacent Gu... ...s draining east is expected to be 0.05 ac-ft. In total, 0.77 ac-ft of WQCV is e... ...the site and the adjacent Gun Club Road Improvements. See Appendix A f... ...calculations.

This discussion works for a Phase 1, however, at the SDP (Phase II Drainage Report) this will not be sufficient. There will need to be detailed design provided and approved for the facility.

The water quality pond proposed on the nort... ...ovided to treat Parcels N and O, and Gun Club Road Improvements. Wat... ...are discouraged, as they are considered inefficient and redundant for storm... ...quality pond was considered on Parcel O, the Gun Club Road Improveme... ...en add untreated stormwater runoff from the street surface. Even if there was a pond on Parcel O, the stormwater would have to then be retreated on Parcel N prior to releasing to the existing detention pond because of the addition of street runoff. This is the reason why the water quality pond is proposed on Parcel N for the portion of the East Tollgate basin draining north to the existing detention pond.

The water quality pond preliminary design was conceptualized by the Gun Club Road Improvements. The conceptual Gun Club Road Improvements by Arapahoe County are excerpted in Appendix B. As the design progresses, the proposed water quality pond on Parcel N will be coordinated further. Approximately 42 acres of Parcels N and O, and Gun Club Road Improvements flow to the north end of Parcel N to the proposed water quality pond. Because the pond is treating a watershed well under 130 acres, this facility is not considered regional in nature. The responsibilities for construction, operation and maintenance of the facility will be better defined as the Parcels' and Gun Club Road improvements progress.

The future Belleview Avenue extension developed runoff will be conveyed east by curb and gutter to sump inlets located near the curb returns at the west side of the intersection of Belleview Avenue and Gun Club Road. These inlets will pipe the flow south to a proposed stub out constructed with the Gun Club Road Improvements. The proposed storm sewer stub will then convey the developed flows east

Any facility constructed is required to meet current standards (even if temporary). The facility would be required to have capacity for detention and water quality for the entire tributary area.

Detention is also required for these parcels.

PHASE
Copper

Does this mean it is grassed? Any improvements? Any sidewalk, pavement, pavers, etc?

Detention will also be required.

to a proposed Water Quality Pond constructed with the Gun Club Road Improvements at the southeast corner of the intersection of Belleview Avenue and Gun Club Road. Once the water has been treated, the stormwater will outfall into East Toll Gate Creek.

The southern portion of the property, south of the future extension of Belleview Avenue, will remain as open space. This area will drain east where it is captured by an existing inlet in Gun Club Road. Once the Gun Club Road Improvements are constructed, the open space will drain to the proposed inlet across the street from the existing inlet. The Gun Club Road inlets will drain east to a proposed Water Quality Pond at the southeast corner of Belleview Avenue and Gun Club Road. Once the water has been treated, it will outfall into East Toll Gate Creek.

b. Proposed Drainage Facilities

Water quality for the northern portion of the site will be provided in a conceptual Water Quality Control Volume pond, located in Parcel N at the southeast corner of the intersection of S. Gun Club Road and the on/off Ramps for E-470. This proposed pond will then outfall through an existing 66-inch RCP under the E-470 on/off ramps into the existing Quincy Aver
detention is provided in the regional pond. The existing Quin
East Toll Gate Creek.

Detention is required for this site. The Quincy Pond does not appear to have capacity for this development. Please revise discussion accordingly.

Also for this project, if utilizing an online facility for WQ then pretreatment is required prior to the flows leaving the site.

The water quality pond is proposed on Parcel N by the Gur
County/City partnership with the City of Aurora. The De
consideration with Copperleaf Parcels N and O details the d
Gun Club Road Improvements. The developed stormwater f
be conveyed to the proposed water quality pond on Parcel N.
flows from the northern portion of Copperleaf East into the Gun Club Road Improvements storm sewer system.

WQCV for developed runoff from the Belleview Avenue extension and open space area south of the future roadway extension will be provided in a proposed water quality pond, located at the southeast corner of Belleview Avenue and Gun Club Road. This pond is proposed in the Gun Club Road Improvements. The developed runoff from the southern portion from Copperleaf East/Parcel O will be conveyed to the proposed water quality pond at the southeast corner of Belleview Avenue and Gun Club Road. A stub will be provided for the developed flows from the southern portion of Copperleaf East into the Gun Club Road Improvements.

Should the Gun Club Road Improvements occur after the multi-family improvements within Copperleaf East, a swale will convey stormwater north. The soil types within Parcels N and O are both Hydrologic Group C (see Appendix B). As the existing ditch in Gun Club Road conveys stormwater north, the drainage is conveyed to the same location at the north end of Parcel N. Regardless of the timing of the Gun Club Road Improvements, the proposed pond on the north end of Parcel N will provide water quality treatment for the Copperleaf East multi-family improvements.

VII. Conclusion

The Copperleaf East/Parcel O site will consist of multi-family buildings, open space to the west and south, and future E. Belleview Avenue roadway extension. The northern portion of the development will include on-site storm sewer that will connect to storm sewer provided in the Gun Club Road Improvements that will convey the runoff north to the proposed water quality pond located in Parcel N. This WQ pond will then outfall into the existing regional pond, and ultimately to East Toll Gate Creek. The storm sewer in S. Gun Club Road that will service the Copperleaf East development will

be provided in the Gun Club Road Improvements, currently in design (by others) with Arapahoe County and the City of Aurora.

Detention is required for this site. The Quincy Pond does not appear to have capacity for this development. Please revise discussion accordingly.

Also for this project, if utilizing an online facility for WQ then pretreatment is required prior to the flows leaving the site.

In the event that the Gun Club Road Improvements [illegible] off from the Copperleaf East development will be conveyed [illegible]W to a proposed WQ pond located in Parcel N. In the ev[illegible]nts are constructed after Copperleaf East, the access road [illegible] Avenue extension will capture flows into a proposed inlet we[illegible]e future Belleview extension will then continue to the existing[illegible]s today. The future E. Belleview Avenue extension and sou[illegible]y storm sewer, proposed by the Gun Club Road Improvements, to a proposed water quality pond, located at the southeast corner of the intersection of E. Belleview Avenue and S. Gun Club Road. This WQ pond will then outfall into East Toll Gate Creek.

The storm sewer drainage design for Copperleaf East/Parcel O will follow the Arapahoe County Stormwater Management Manual and MHFD Urban Storm Drainage Criteria Manuals. The proposed site drainage patterns are in conformance with the existing topography and surrounding developments. There are no expected impacts to the surrounding properties.

A. List of References

- Arapahoe County Stormwater Management Criteria, revised July 1, 2019;
- *East Toll Gate Creek (Upper) Major Drainageway Plan (MDP) Conceptual Design Report,* prepared by J3 Engineering Consultants, and dated February 2011;
- *Flood Hazard Area Delineation East Toll Gate Creek (Upper),* prepared by J3 Engineering Consultants, and dated December 2010;
- *Mile High Flood District Urban Storm Drainage Criteria Manual* Volumes 1, 2, & 3, current version;
- *Natural Resources Conservation Service Web Soil Survey,* United States Department of Agriculture, available online at http://websoilsurvey.nrcs.usda.gov, accessed November 21, 2022 and December 8, 2022;
- Federal Emergency Management Agency Flood Insurance Rate Map, Community-Panel Numbers 08005C0214L and 08005C0502L, dated February 17, 2017;
- *E-470 Widening – Quincy Avenue to Smith Road/UPRR, Quincy Interchange*, prepared by Felsburg, Holt and Ullevig, Issued for Construction December 10, 2019.

Appendix A. Hydrologic Computations

All pavement/dives/walks should be considered 100% impervious. Please revise accordingly.

Right-of-Way (ROW) Impervious Calculation

Collector

Total ROW width (ft): 88

Surface	Width (ft)	Runoff Coefficients				Impervious (%)
		C_2	C_5	C_{10}	C_{100}	
Group C Soil Lawn 2% Slope	19.00	0.01	0.05	0.15	0.49	2%
Concrete Drive/Walk	6.00	0.74	0.77	0.79	0.85	90%
Paved Street	63.00	0.83	0.85	0.87	0.89	100%
Composite Site Values:		0.65	0.67	0.71	0.80	78.2%
Composite % Impervious Used:						78

Right-of-Way (ROW) Impervious Calculation

Arterial West Half with Median

1055-07

2-Dec-22

Total ROW width (ft): 72

Surface	Width (ft)	Runoff Coefficients				Impervious (%)
		C_2	C_5	C_{10}	C_{100}	
Group C Soil Lawn 2% Slope	21.00	0.01	0.05	0.15	0.49	2%
Concrete Drive/Walk	10.00	0.74	0.77	0.79	0.85	90%
Paved Street	41.00	0.83	0.85	0.87	0.89	100%
Composite Site Values:		0.58	0.61	0.65	0.77	70.0%
Composite % Impervious Used:						70

Right-of-Way (ROW) Impervious Calculation

Arterial West Half

1055-07

2-Dec-22

Total ROW width (ft): 72

Surface	Width (ft)	Runoff Coefficients				Impervious (%)
		C_2	C_5	C_{10}	C_{100}	
Group C Soil Lawn 2% Slope	10.50	0.01	0.05	0.15	0.49	2%
Concrete Drive/Walk	10.00	0.74	0.77	0.79	0.85	90%
Paved Street	51.50	0.83	0.85	0.87	0.89	100%
Composite Site Values:		0.70	0.72	0.75	0.83	84.0%
Composite % Impervious Used:						84

All pavement is to be considered 100% impervious. Please revise accordingly.

Copperleaf East Parcel O

Basin Weighted Runoff Coefficient Calculations

Land Use Is Comprised of the Following Surface Characteristics:						
NRCS Soil Group	**C**	**Imperviousness**	**C_2**	**C_5**	**C_{10}**	**C_{100}**
A	Multifamily	75%	0.60	0.65	0.68	0.79
B	Collector	78%	0.65	0.67	0.71	0.80
C	Arterial West Half w/ median	70%	0.58	0.61	0.65	0.77
D	Arterial West Half w/ turn lane	84%	0.70	0.72	0.75	0.83
E	Concrete	90%	0.64	0.68	0.72	0.81
F	Open Space	2%	0.01	0.05	0.15	0.49

Project No.: 1055-07
Date: 12/06/22

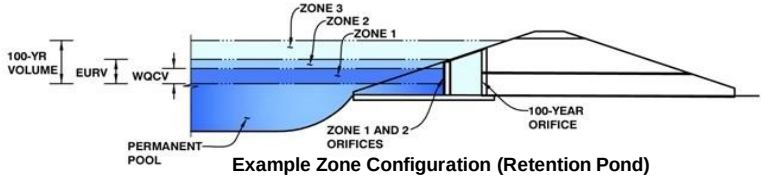
Basin ID	Total Area (Ac.)	A Area (Ac.)	B Area (Ac.)	C Area (Ac.)	D Area (Ac.)	E Area (Ac.)	F Area (Ac.)	Weighted Imp. I (%)	Weighted Runoff Coefficients C_2	C_5	C_{10}	C_{100}
Developed												
A1	24.79	24.79	0.00	0.00	0.00	0.00	0.00	75%	0.60	0.65	0.68	0.79
A2	1.10	0.00	1.10	0.00	0.00	0.00	0.00	78%	0.65	0.67	0.71	0.80
A3	1.39	0.00	0.00	0.00	0.00	0.00	1.39	2%	0.01	0.05	0.15	0.49
A4	4.20	0.00	0.00	0.00	0.00	0.00	4.20	2%	0.01	0.05	0.15	0.49
Developed Imp.	**31.48**	**24.79**	**1.10**	**0.00**	**0.00**	**0.00**	**5.59**	**62%**	**0.50**	**0.54**	**0.59**	**0.74**
OS-1	3.85	0.00	0.00	2.33	1.85	0.00	0.00	83%	0.69	0.71	0.75	0.86
OS-2	0.47	0.00	0.00	0.00	0.47	0.00	0.00	84%	0.70	0.72	0.75	0.83
OS-3	0.26	0.00	0.00	0.00	0.26	0.00	0.00	84%	0.70	0.72	0.75	0.83
Off-Site Imp.	**4.58**	**0.00**	**0.00**	**2.33**	**2.58**	**0.00**	**0.00**	**83%**	**0.69**	**0.72**	**0.75**	**0.86**
Historic/Existing												
EX1	31.48	0.00	0.00	0.00	0.00	0.00	31.48	2%	0.01	0.05	0.15	0.49
Existing Imp.	**31.48**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**31.48**	**2%**	**0.01**	**0.05**	**0.15**	**0.49**

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.06 (July 2022)

Project: Copperleaf East - North Water Quality Pond

Basin ID: A1, A4 and OS-1 (site and adjacent Gun Club Road Improvements)



Example Zone Configuration (Retention Pond)

Watershed Information

Selected BMP Type =	EDB	
Watershed Area =	32.84	acres
Watershed Length =		ft
Watershed Length to Centroid =		ft
Watershed Slope =		ft/ft
Watershed Imperviousness =	67.00%	percent
Percentage Hydrologic Soil Group A =		percent
Percentage Hydrologic Soil Group B =		percent
Percentage Hydrologic Soil Groups C/D =		percent
Target WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	Aurora Reservoir	

After providing required inputs above including 1-hour rainfall depths, click 'Run CUHP' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

			Optional User Overrides
Water Quality Capture Volume (WQCV) =	0.717	acre-feet	acre-feet

Depth Increment = ft

Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Top of Micropool									

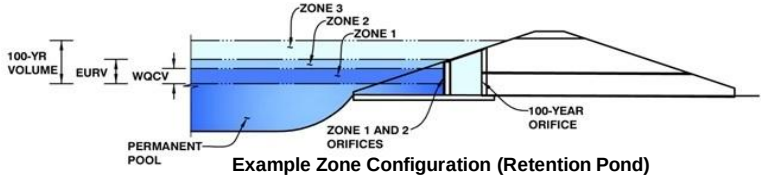
Detention is required for Basins A1 and A4.

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.06 (July 2022)

Project: Copperleaf East - South Water Quality Pond

Basin ID: A2, A3, OS-2 and OS-3 (site and adjacent Gun Club Road Improvements)



Example Zone Configuration (Retention Pond)

Depth Increment = ft

Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Top of Micropool									

Watershed Information

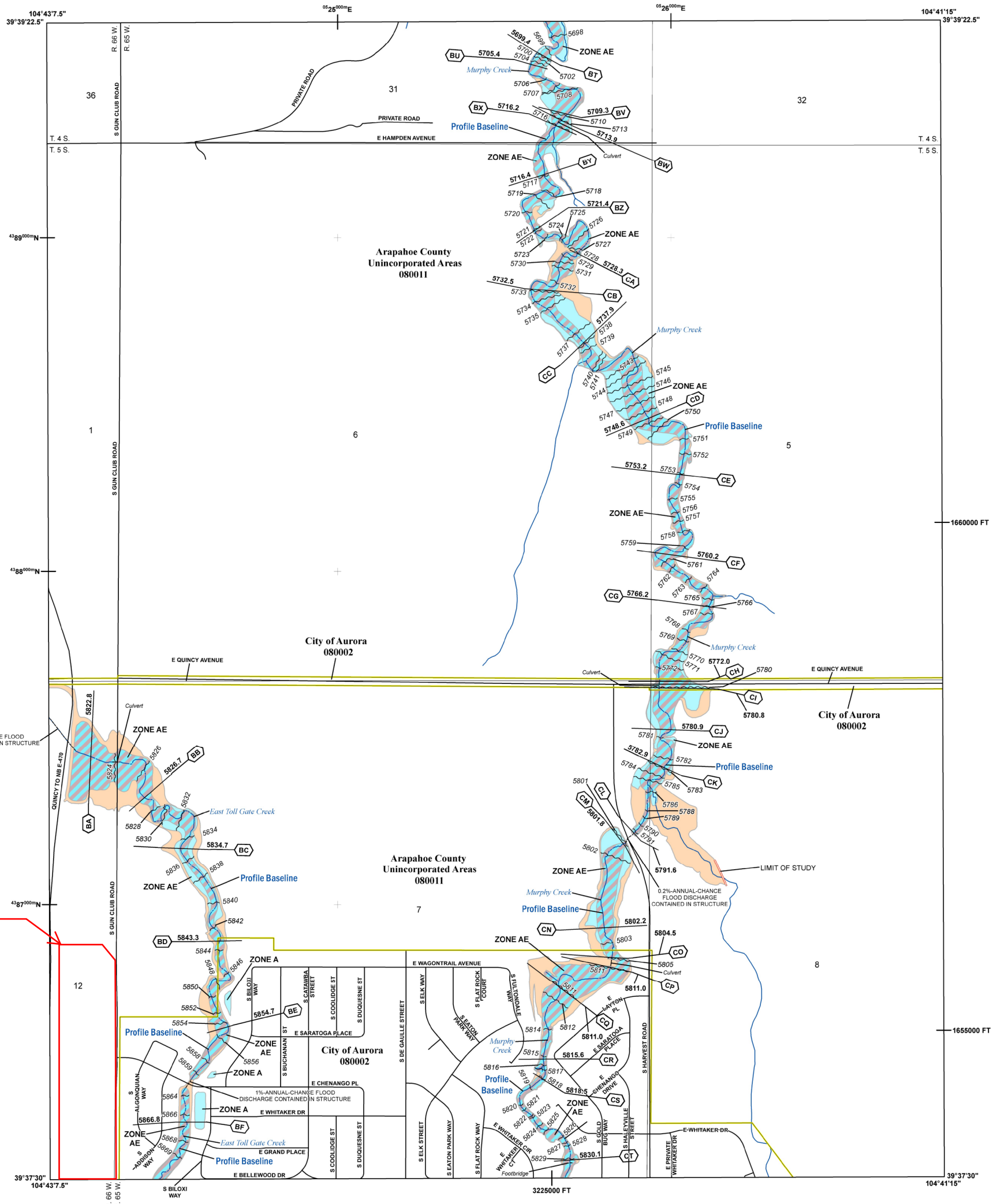
Selected BMP Type =	EDB	
Watershed Area =	3.21	acres
Watershed Length =		ft
Watershed Length to Centroid =		ft
Watershed Slope =		ft/ft
Watershed Imperviousness =	47.00%	percent
Percentage Hydrologic Soil Group A =		percent
Percentage Hydrologic Soil Group B =		percent
Percentage Hydrologic Soil Groups C/D =		percent
Target WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	Aurora Reservoir	

After providing required inputs above including 1-hour rainfall depths, click 'Run CUHP' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

			Optional User Overrides
Water Quality Capture Volume (WQCV) =	0.053	acre-feet	acre-feet

Detention is required for Basins A3 and A2.

Appendix B. Reference Information



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

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

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

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

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

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

NOTES TO USERS

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

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

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction. To determine if flood insurance is available in the community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided by the Arapahoe County and Cities of Aurora and Littleton GIS depts. The coordinate system used for production of the digital FIRM is Universal Transverse Mercator, Zone 13N, referenced to the North American Datum of 1983 and the GRS 1980 spheroid, Western Hemisphere.

SCALE

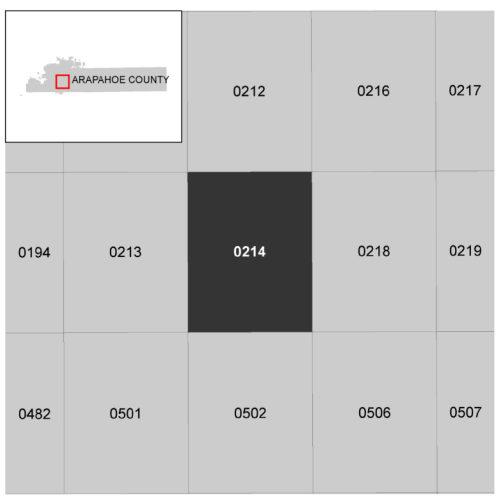
Map Projection:
NAD83 UTM Zone 13N
Western Hemisphere: Vertical Datum: NAVD88

1 inch = 500 feet 1:6,000

0 1,000 2,000 Feet

0 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

ARAPAHOE COUNTY, COLORADO
And Incorporated Areas

PANEL 214 OF 725

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
ARAPAHOE COUNTY	080011	0214	L
AURORA, CITY OF	080002	0214	L

VERSION NUMBER
2.3.3.2

MAP NUMBER
08005C0214L

MAP REVISED
FEBRUARY 17, 2017

SITE

104°43'7.5" 39°37'30" — 104°41'15" 39°37'30"

R. 66 W. R. 65 W.

Profile Baseline — East Toll Gate Creek — ZONE AE — 0.2%-ANNUAL-CHANCE FLOOD DISCHARGE CONTAINED IN STRUCTURE — 1%-ANNUAL-CHANCE FLOOD DISCHARGE CONTAINED IN STRUCTURE

Arapahoe County Unincorporated Areas 080011

City of Aurora 080002

Murphy Creek — Murphy Creek Tributary — Footbridge

S BUCHANAN WAY — E BELLEVIEW AVENUE — E BELLVIEW PL — S GUN CLUB ROAD — S BUCHANAN STREET — E PROGRESS CIRCLE — S BILOXI STREET — S ADDISON COURT — S BILOXI COURT — E CRESTLINE CIRCLE — S BUCHANAN COURT — S COOLIDGE COURT — S ALGONQUIAN STREET — S ALGONQUIAN COURT — E BERRY AVENUE — E GARDEN DR — E BRANDT PLACE — E POWERS DRIVE — S COOLIDGE COURT — S AURORA PARKWAY — S BILOXI WAY — E POWERS PLACE — E DORADO DRIVE — E DORADO PL — E ALEXANDER DR — E IDA PL — E IDA DR — E PLATTE DRIVE — S E-470 EXPRESSWAY — S AURORA PARKWAY — LIMIT OF STUDY — E ORCHARD ROAD — S CENTRAL STREET — E COMMONS AVENUE — E SMOKY HILL ROAD — SMOKY HILL TO SB E-470 — NB E-470 TO SMOKY HILL

S DE GAULLE STREET — S ELK STREET — S EATON PARK STREET — S FLAT ROCK ST — E PROGRESS DR — S FLAT ROCK WAY — E WHITAKER CIRCLE — S GOLD BUG WAY — E WHITAKER DRIVE — E PRIVATE WHITAKER DRIVE — E PRIVATE BELLEVIEW AVE — E BELLEVIEW AVENUE — S HALEYVILLE STREET — E BELMONT PLACE — S HALEYVILLE WAY — S EATON PARK WAY — S ELK WAY — S HALEYVILLE WAY — E CRESTLINE PLACE — E CRESTRIDGE PLACE — E BERRY PLACE — S HARVEST ROAD — E BRANDT AVENUE — E POWERS AVE — E ALEXANDER DRIVE — E ALAMO PLACE — E ALAMO DRIVE — S DE GAULLE ST — S FLAT ROCK WAY — S JAMESTOWN COURT — E ORCHARD DRIVE — S ABERDEEN DR — S POWHATON ROAD — E LAKE DR — E PINEWOOD PLACE — S JAMESTOWN WAY — S KEWAUNEE WAY — E APPLEWOOD CIRCLE — S HARVEST COURT — S IDER WAY — E ARBOR PLACE — S WHEATLANDS PARKWAY — E PINEWOOD DRIVE — S JACKSON GAP CT — S JAMESTOWN CT — S MILLBROOK WAY — S LANGDALE WAY — S HARVEST STREET — S IDER STREET — S IRVINGTON WAY — E WHEATLANDS PKWY — E EUCLID PLACE — LIMIT OF STUDY

Profile Baseline — 5880 ZONE AE — 5887.4 — 5901.5 — 5918.6 BJ — 5921 — 5928 — 5932.2 — 5938.6 BL — 5941.5 BM — 5946 — 5950.6 BN — 5962.4 BO — 5962.4 — 5835.7 — 5840.3 CV — 5850.1 CW — 5850.4 CX — 5861.4 — 5871.9 CZ — 5882.0 DA — 5895 — 5901.1 DB — 5909 — 5920.0 DC — 5928 — 5941.6 DD — 5950 — 5961.0 DE — 5967 — 5971.0 DF — 5975 — 5981.4 — 5983.2 B — 5988.2 DG — 5992.4 C — 5996 — 6011.4 DH

NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 5 SOUTH, RANGE 65 WEST.

1650000 FT — 1645000 FT — 3225000 FT — 43°86'000"N — 43°85'000"N — 43°84'000"N — 43°83'000"N

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

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

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

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

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

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

NOTES TO USERS

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

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

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction. To determine if flood insurance is available in the community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided by the Arapahoe County and Cities of Aurora and Littleton GIS depts. The coordinate system used for production of the digital FIRM is Universal Transverse Mercator, Zone 13N, referenced to the North American Datum of 1983 and the GRS 1980 spheroid, Western Hemisphere.

SCALE

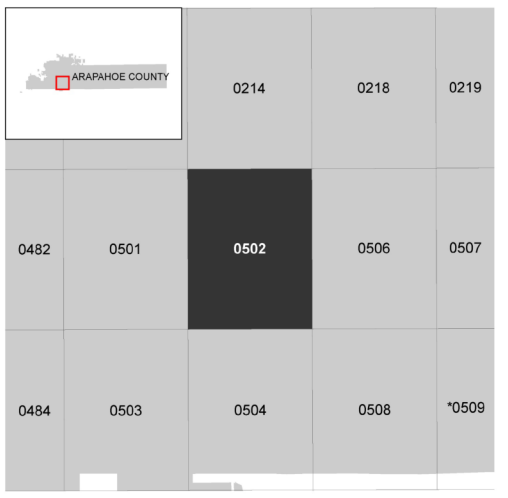
Map Projection:
NAD83 UTM Zone 13N
Western Hemisphere: Vertical Datum: NAVD88

1 inch = 500 feet — 1:6,000

0 — 1,000 — 2,000 Feet

0 — 250 — 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA — National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

ARAPAHOE COUNTY, COLORADO
And Incorporated Areas

PANEL 502 OF 725

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
ARAPAHOE COUNTY	080011	0502	L
AURORA, CITY OF	080002	0502	L

VERSION NUMBER
2.3.3.2

MAP NUMBER
08005C0502L

MAP REVISED
FEBRUARY 17, 2017

Custom Soil Resource Report
Soil Map

Map Scale: 1:4,730 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Arapahoe County, Colorado
Survey Area Data: Version 18, Sep 1, 2022

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

Date(s) aerial images were photographed: Jun 9, 2021—Jun 12, 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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
FdB	Fondis silt loam, 1 to 3 percent slopes	26.9	100.0%
Totals for Area of Interest		**26.9**	**100.0%**

Map Unit Descriptions

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

Arapahoe County, Colorado

FdB—Fondis silt loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 34yh
Elevation: 4,700 to 6,200 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 150 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

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

Description of Fondis

Setting

Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty and/or loamy

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 27 inches: clay
H3 - 27 to 60 inches: clay loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3c
Hydrologic Soil Group: C
Ecological site: R049XB202CO - Loamy Foothill
Hydric soil rating: No

Minor Components

Weld

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

Buick

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

Map Scale: 1:7,920 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 350 700 1400 2100

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 1:20,000.

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

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

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

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

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

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

Soil Survey Area: Arapahoe County, Colorado
Survey Area Data: Version 18, Sep 1, 2022

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

Date(s) aerial images were photographed: Jun 9, 2021—Jun 12, 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
FdB	Fondis silt loam, 1 to 3 percent slopes	C	38.0	88.7%
FoC	Fondis-Colby silt loams, 3 to 5 percent slopes	C	4.9	11.3%
Totals for Area of Interest			**42.9**	**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

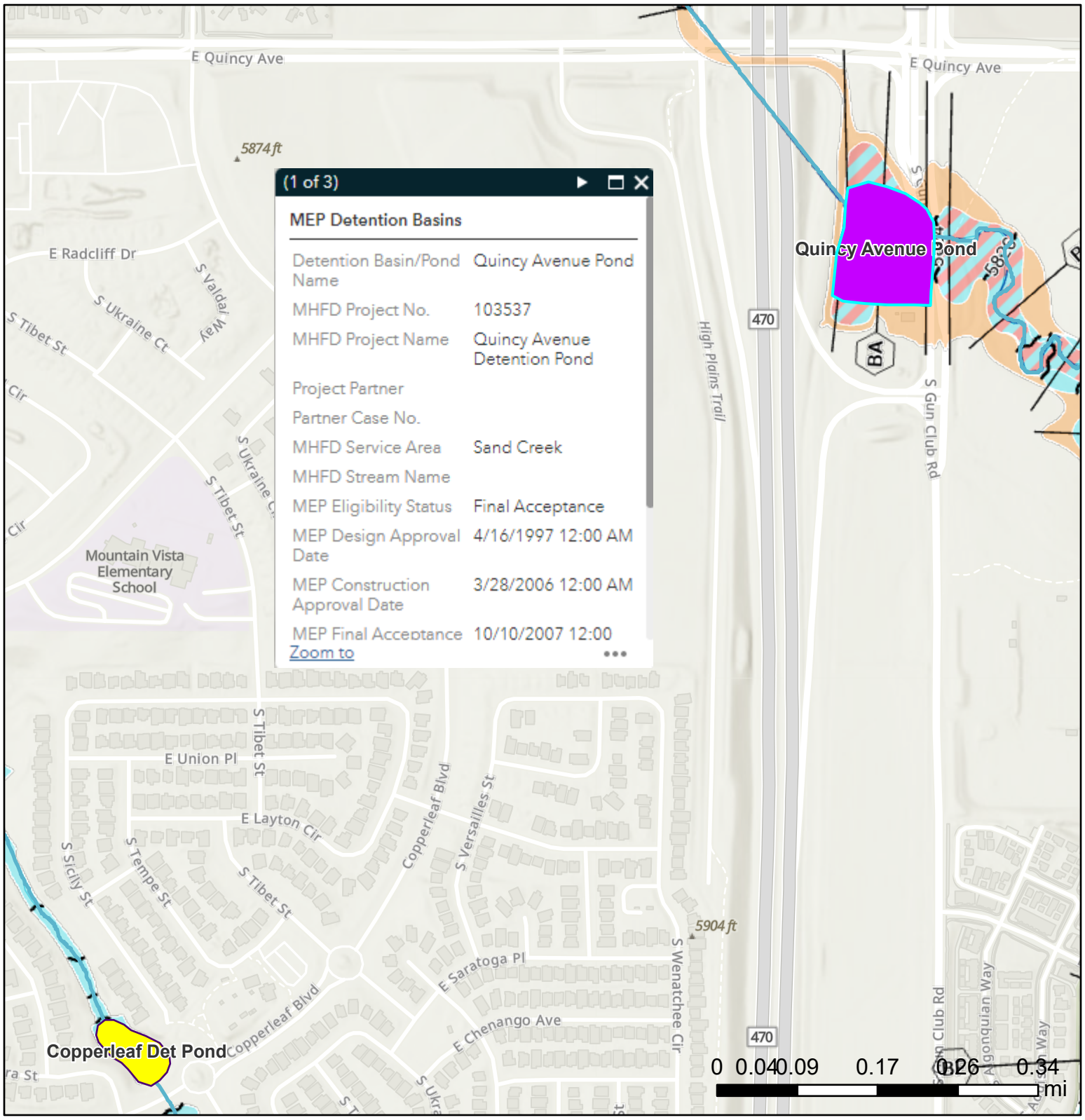
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

MILE HIGH FLOOD DISTRICT

General Data Viewer



Exported from MHFD's Web Map on 11/23/2022

MEP Detention Basins
- In Design
- Design Approval
- Construction Approval
- Final Acceptance
- Ineligible/Not Eligible
- Other
- MHFD Streams

- Effective Effective
- Profile Baselines
- Cross-Sections
- Base Flood Elevations
- Levees

Flood Hazard Boundaries
- Limit Lines
- Limit Lines

Esri, NASA, NGA, USGS, FEMA, Esri Community Maps Contributors, City of Aurora, CO, County and City of Denver, County of Arapahoe, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

PLAN REVISIONS POSTED

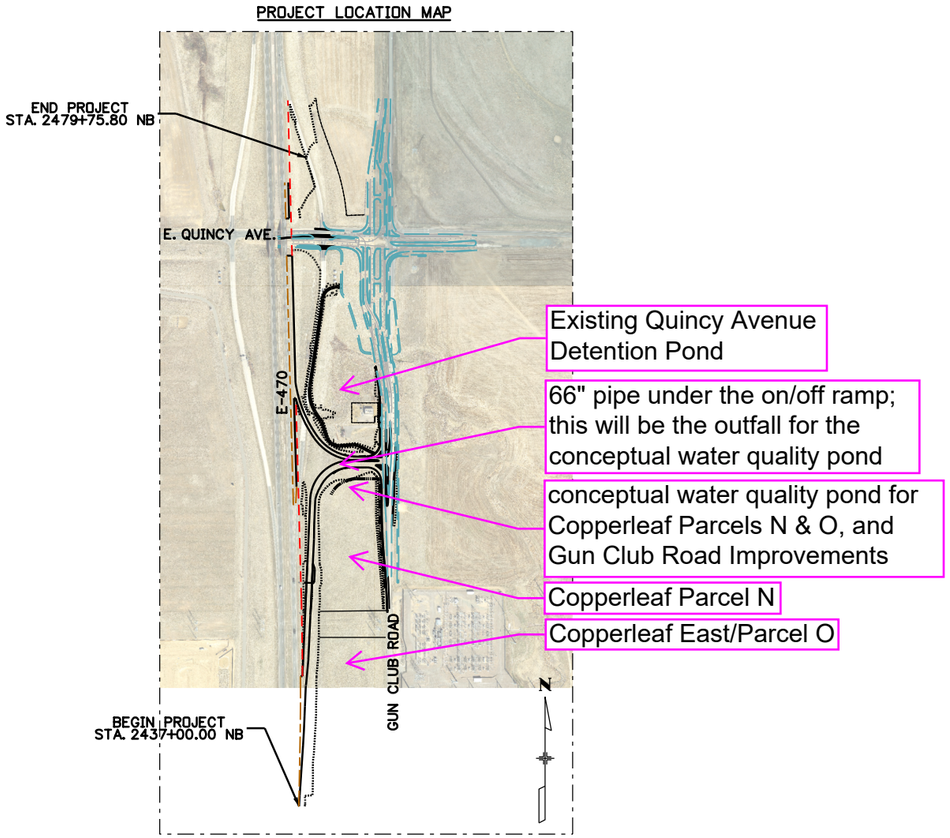
dglezil 12/03/2020 1:58:02 PM

E470 SM
Public Highway Authority

E-470 WIDENING ISSUED FOR CONSTRUCTION PLANS
E-470 WIDENING - QUINCY AVENUE TO SMITH ROAD/UPRR
PACKAGE 1: QUINCY INTERCHANGE

CONTRACT NO. EN-18-WDES-1
ISSUED FOR CONSTRUCTION:DECEMBER 10, 2019

PROJECT LOCATION MAP



NOT TO SCALE

SHEET NO.	DRAWING NO.	SHEET TITLE
1	G001	TITLE SHEET
2	G002	STANDARD PLANS LIST
3	G003	GENERAL NOTES
4-9	G004-G009	SUMMARY OF APPROXIMATE QUANTITIES
10-12	SURV-1-SURV-3	PROJECT CONTROL DIAGRAM
13-21	G101-G109	TYPICAL SECTIONS
22-24	R101-R103	GEOMETRIC LAYOUT
25-29	R001-R104	ROADWAY TABULATION AND KEY MAP - ROADWAY
30-37	R201-R208	ROADWAY PLANS
38-42	R501-R505	ROADWAY PROFILES
43-50	R601-R608	ROADWAY DETAILS
51-54	A050-A500	BUILDING PLANS
55-55	C001	DRAINAGE TABULATION
56-60	C101-C105	DRAINAGE DETAILS
61-64	C201-C204	DRAINAGE PLANS
65-69	C301-C304	DRAINAGE PROFILES
70-76	C401-C405	INITIAL GRADING/EROSION CONTROL PLANS
77-81	C501-C505	INTERIM GRADING/EROSION CONTROL PLANS
82-86	C601-C605	FINAL GRADING/EROSION CONTROL PLANS
87-101	C701-C715	GESC PLAN STANDARD NOTES AND DETAILS
102-109	EN001-EN137	ENVIRONMENTAL PLANS AND TABULATION
110-115	T101-T106	TRAFFIC TABULATION
116-124	T200-T208	SIGNING/STRIPING PLANS
125-129	T301-T305	SIGN CROSS SECTIONS
130-130	T401	TRAFFIC SIGNAL PLAN
131-137	TCP101-TCP104	CONSTRUCTION TRAFFIC CONTROL PLANS
138-147	LC101-LT101	ELECTRICAL DETAILS AND TABULATIONS
148-153	LP101-LP106	LIGHTING PLANS
154-159	U101-U205	UTILITY PLANS

811 Know what's below. Call before you dig.

EN-18-WDES-1: E-470 WIDENING QUINCY TO I-70 - PACKAGE ONE ISSUED FOR CONSTRUCTION DECEMBER 10, 2019

John.Dibble
12/10/2019 4:25:10 PM
DGN MODEL:Sheet-01
FILE NAME:pw:\\fhu-pw.bentley.com:fhu-pw-01\Documents\Clients\CO\117472-01\04_CIVIL\18040\Design\Drawings\Package 1\18040DES_TitleSht.dgn

DESIGNED BY:	JMD
DRAFTED BY:	JMD
CHECKED BY:	

ISSUE RECORD							
NO.	BY	PURPOSE	DATE	NO.	BY	PURPOSE	DATE

FELSBURG HOLT & ULLEVIG

E470 Public Highway Authority

TITLE SHEET

E-470 WIDENING - QUINCY AVENUE TO I-70: PACKAGE 1

SHEET SUBSET NUMBER	ISSUED DATE:	CONTRACT NUMBER	SHEET NUMBER
G001	DECEMBER 10, 2019	EN-18-WDES-1	1
	STRUCTURE NUMBER:		

66" pipe under the on/off ramp; this will be the outfall for the conceptual water quality pond

Existing Quincy Avenue Detention Pond

conceptual water quality pond

Copperleaf Parcel N

MATCH LINE STA 123+00.00

MATCH LINE STA 201+60.00

HCL QUINCY RAMP B

HCL QUINCY RAMP A

GUN CLUB ROAD

FUTURE ROADWAY BY OTHERS

115+00 | 120+00 | 245+00 | 310+00 | 315+00 | 320+00

123A | 123B | 123C | 123D | 123E | 124+72 | 200+00 | 318A | 318B

I.D.	STATION, OFFSET	ITEM	LENGTH (FT)	PAY DEPTH (FT)	MISC (NOTES)
123A	124+03.21, 128.0' LT	18' RCES			SEE DETAIL C101-P1
123B		18' RCP	98		
123C	123+53.55, 42.9' LT	INLET TYPE C		5	
123D		18' RCP	46		
123E	123+79.99, 3.7' RT	INLET TYPE R		5	
318A		18" RCP	12		CONNECT TO EXISITNG 18" RCP (BY OTHERS)
318B	317+93.35, 54.4' LT	INLET TYPE R		5	BY OTHERS

FLOODPLAIN NOTES:

1. NO WORK IN THE FLOODPLAIN MAY COMMENCE UNTIL A FLOODPLAIN DEVELOPMENT PERMIT HAS BEEN OBTAINED FROM THE CITY. THERE SHALL BE NO FILL IN THE FLOODWAY. THERE SHALL BE NO STOCKPILING OF MATERIALS OR STORAGE OF EQUIPMENT IN THE FLOODWAY.

NOTES:

1. UTILITIES ARE DEPICTED ON THESE PLANS IN ACCORDANCE WITH THEIR ACHIEVED "QUALITY LEVEL" AS DEFINED IN THE AMERICAN SOCIETY OF CIVIL ENGINEER'S DOCUMENT ASCE 38," STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA. RELIANCE UPON THIS DATA FOR RISK MANAGEMENT PURPOSES DURING BIDDING DOES NOT RELIEVE THE EXCAVATOR OR UTILITY OWNER FROM FOLLOWING ALL APPLICABLE UTILITY DAMAGE PREVENTION STATUTES, POLICES, AND/OR PROCEDURES DURING EXCAVATION.

LEGEND

- TOP OF CUTS
- TOE OF FILLS
- SAWCUT LINE
- FUTURE ULTIMATE EOP
- DRAINAGE DITCH
- 100-YR FLOODPLAIN
- FLOODWAY
- WETLANDS
- RIPRAP
- PROPOSED PAVEMENT
- FLOODPLAIN NO WORK ZONE

0' 50' 100' 200'

Know what's below. Call before you dig.

EN-18-WDES-1: E-470 WIDENING QUINCY TO I-70 - PACKAGE ONE ISSUED FOR CONSTRUCTION DECEMBER 10, 2019

William.Spencer
12/9/2019 10:43:14 AM
DGN MODEL:CDOT Default
FILE NAME: pw:\\fhu-pw.bentley.com:fhu-pw-01\Documents\Clients\CD\117472-01\04_CIVIL\18401\Hydraulics\Drawings\Package 1\18D401HYDR_PLAN03-P1.dgn

DESIGNED BY:	MCL
DRAFTED BY:	RMW
CHECKED BY:	

ISSUE RECORD

NO.	BY	PURPOSE	DATE	NO.	BY	PURPOSE	DATE

FELSBURG HOLT & ULLEVIG

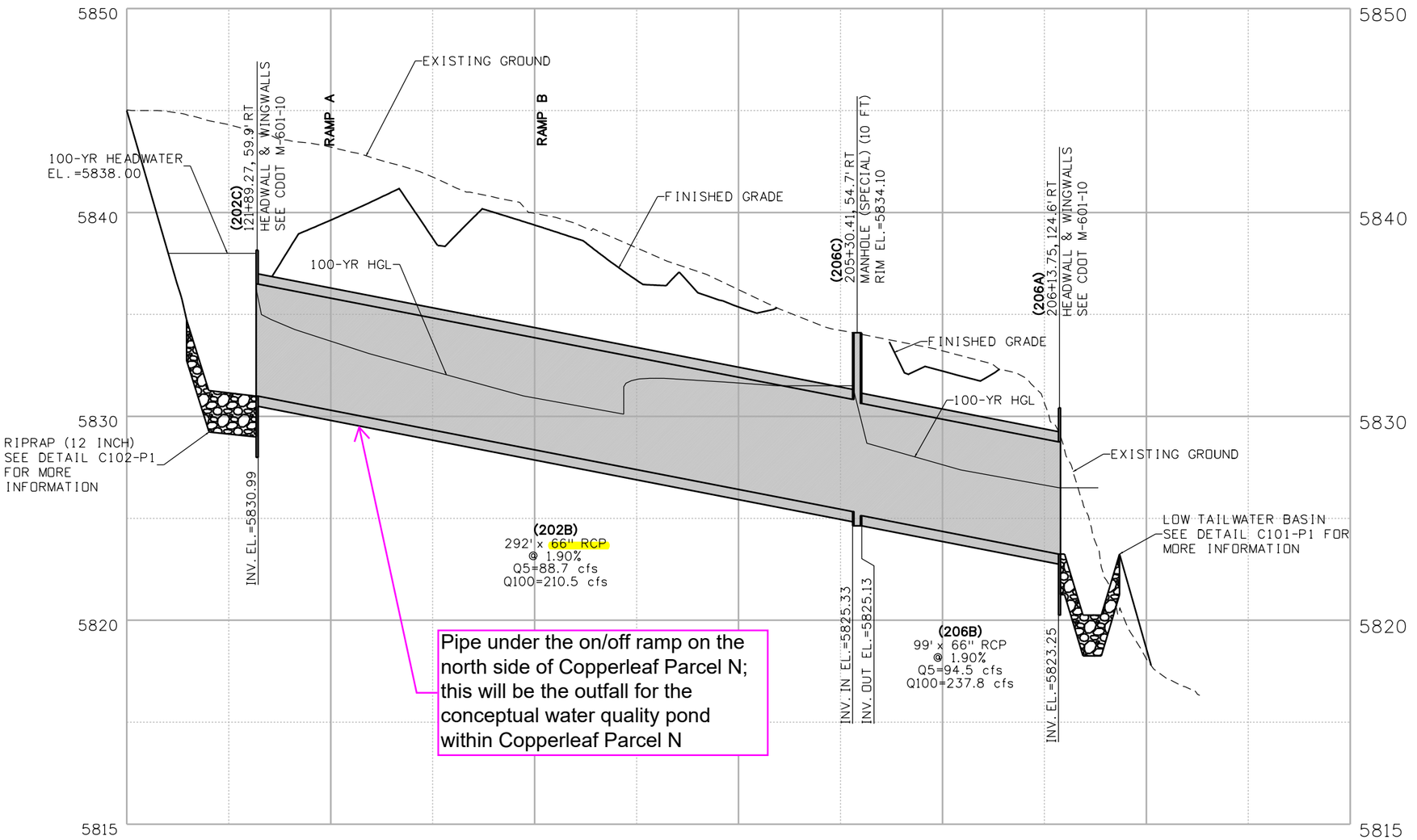
E470 Public Highway Authority

DRAINAGE PLAN STA. 123+00 TO STA. 201+60

E-470 WIDENING - QUINCY AVENUE TO I-70: PACKAGE 1

SHEET SUBSET NUMBER	ISSUED DATE: DECEMBER 10, 2019	CONTRACT NUMBER	SHEET NUMBER
C203	STRUCTURE NUMBER:	EN-18-WDES-1	63

DRAINAGE LINE	FOR PLAN SEE SHEET
202-206	C202



EN-18-WDES-1: E-470 WIDENING QUINCY TO I-70 - PACKAGE ONE ISSUED FOR CONSTRUCTION DECEMBER 10, 2019

Know what's below. Call before you dig.

William.Spencer
12/9/2019 10:43:36 AM
DGN MODEL:CDOT Default
FILE NAME: pw:\\fhu-pw.bentley.com:fhu-pw-01\Documents\Clients\CO\117472-01\04_CIVIL\1BD401\Hydraulics\Drawings\Package 1\1BD401HYDR_PRDF01-P1.dgn

DESIGNED BY:	MCL
DRAFTED BY:	WAS
CHECKED BY:	

ISSUE RECORD

NO.	BY	PURPOSE	DATE	NO.	BY	PURPOSE	DATE

FELSBURG HOLT & ULLEVIG

E470 Public Highway Authority

DRAINAGE PROFILES
DRAINAGE LINE "202-206"
E-470 WIDENING - QUINCY AVENUE TO I-70: PACKAGE 1

SHEET SUBSET NUMBER	ISSUED DATE:	CONTRACT NUMBER	SHEET NUMBER
C301-P1	DECEMBER 10, 2019	EN-18-WDES-1	65
	STRUCTURE NUMBER:		

The Quincy Ave/Gun Club Road intersection has had improvements completed. Please include and discuss the final plans and the final drainage document.

Arapahoe County
Colorado's First

PROJECT NO. C07-006

PLAN AND PROFILE OF PROPOSED

SOUTH GUN CLUB ROAD
INTERSECTION IMPROVEMENTS PROJECT

PRELIMINARY DESIGN PLANS
ARAPAHOE COUNTY, COLORADO

TABULATION OF LENGTH & DESIGN DATA

STATION	LINEAR FEET	
	ROADWAY	MAJOR STRUCTURE
GUN CLUB ROAD BEGIN STA. 97+93.21 END STA. 215+43.69	11,750.48	–
QUINCY AVENUE BEGIN STA. 314+50.00 END STA. 346+92.90	3,242.90	–
BELLEVIEW AVENUE BEGIN STA. 5+07.78 END STA. 30+00.00	2,241.72	250.50
TOTALS	17,235.10	250.50

SUMMARY	LIN. FT.	MILES
Roadway	17,235.10	3.26
Major Structure	250.50	0.05
GROSS AND NET LENGTH	17,485.60	3.31

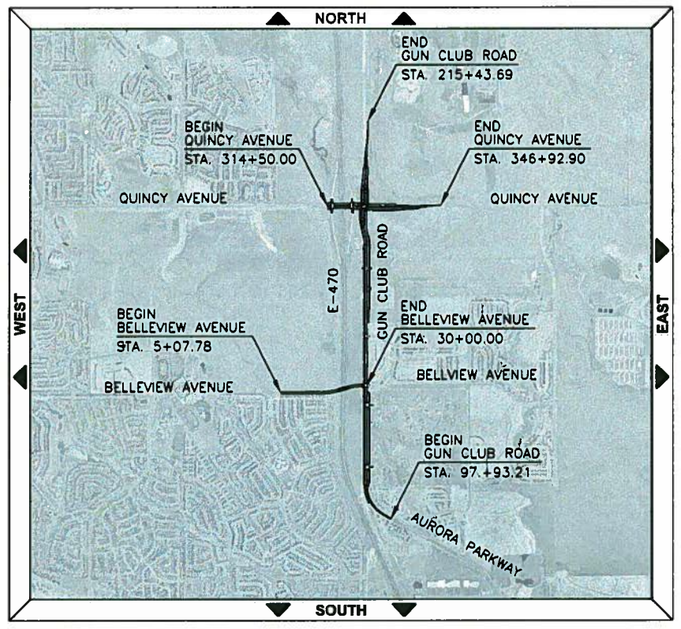
GUN CLUB ROAD DESIGN DATA	
Minimum Curve Radius (Feet)	960
Maximum Grade	6%
Minimum S.S.D. Horizontal (Feet)	NA
Minimum S.S.D. Vertical (Feet)	400
Maximum Design Speed (MPH)	50
2030 Design Traffic	38,000

QUINCY AVENUE DESIGN DATA	
Minimum Curve Radius (Feet)	960
Maximum Grade	6%
Minimum S.S.D. Horizontal (Feet)	NA
Minimum S.S.D. Vertical (Feet)	400
Maximum Design Speed (MPH)	50
2030 Design Traffic	60,000

SCALE OF ORIGINAL DRAWINGS

ON PLAN 1" = 40'

ON PROFILE 1" = 40' HORIZ.
1" = 10' VERT.



VICINITY MAP
NTS

INDEX OF SHEETS

Approved Pavement Section

Roadway	AC	ABC	CTS	MTS
Gun Club Rd.[1]	7"[2]	12"	12"	18"

1: Widening from south of E. Quincy Ave. to Power Plant
2: Top lift shall be 3" SMA per city specification

AC: Asphalt Concrete
ABC: Aggregate Base Course
CTS: Chemical Stabilized Subgrade
MTS: Moisture Treated Subgrade 8/17/2020

Xuan Chen

PRELIMINARY
NOT FOR CONSTRUCTION

Computer File Information			
Creation Date:	7/22/08	Initials:	SED
Last Modification Date:	9/30/10	Initials:	scott
Full Path:	L:\07246\CADD\Sheets		
Drawing File Name:	A07246TTL01.dwg		
Acad Version 2007	Scale: NTS	Units:	English

Index of Revisions		

Arapahoe County Colorado's First | AURORA | 5 years FELSBURG HOLT & ULLEVIG

As Constructed
No Revisions:
Revised:
Void:

SOUTH GUN CLUB ROAD
TITLE SHEET

Designer:	SED	Structure Numbers	
Detailer:	SED		
Sheet Subset:	Title	Subset Sheets:	T-1 of 1

Project No./Code
C07-006
Sheet Number 1

L:\07246\CADD\Sheets\A07246TTL01.dwg, 9/30/2010 7:05:50 AM, scott

NOTES:

1. UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.

2. TEMPORARY CONSTRUCTION EASEMENTS SHALL NOT BE CLEARED AND GRUBBED UNLESS IT IS REQUIRED IN ORDER TO CONSTRUCT THE ROADWAY SECTION. THE CONTRACTOR SHALL USE PARTICULAR CARE TO MINIMIZE DAMAGE TO PLANTINGS WITHIN THE PROPERTY.

Know what's below. Call before you dig.

PROPERTY OF
E-470 PUBLIC HIGHWAY AUTHORITY
22470 EAST 6TH AVENUE PARKWAY
AURORA, CO 80018

PROPERTY OF
RIPPEY HOLDING PARTNERSHIT
MC QUINCY PARTNERSHIP 16.493%
3515 S. TAMARAC DR., SUITE 300
DENVER, CO 80237

SITE

SITE

FUTURE ACCESS

RESET FENCE

CONCRETE SIDEWALK (6 INCH)(TYP.)

PROPOSED SW/PU EASEMENT

PROPOSED RIGHT OF WAY

CURB AND GUTTER TYPE 2 (SECTION II-B)(TYP.)

EXISTING RIGHT OF WAY

RELOCATE IREA TRANSMISSION LINE FROM STA. 141+21.14 TO STA. 161+80.00

ADJUST MANHOLE

MATCHLINE STA. 137+00

MATCHLINE STA. 142+50

137+00

138+00

139+00

140+00

141+00

142+00

STA. 138+77.79
GUN CLUB ROAD
STA. 30+00.00
BELLEVIEW AVENUE

HCL GUN CLUB ROAD

EXISTING SECTION LINE

40' WIDE RIGHT OF WAY

GUN CLUB ROAD

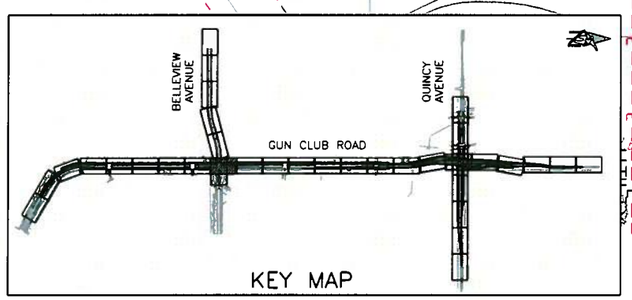
40' WIDE RIGHT OF WAY

PROPERTY OF
NEW TOWN TOLLGATE LLC
1553 PLATTE ST., SUITE 100
DENVER, CO 80202

EXISTING UTILITY EASEMENT

BELLEVIEW AVENUE

PROPERTY OF
NEW TOWN TOLLGATE LLC
1553 PLATTE ST., SUITE 100
DENVER, CO 80202



KEY MAP

LEGEND

- TOP OF CUT
- TOE OF FILL
- MEDIAN COVER MATERIAL (PATTERNED CONCRETE)
- LIMITS OF HOT MIX ASPHALT PAVEMENT
- LIMITS OF HOT MIX ASPHALT (PATCHING)

GUN CLUB ROAD (ULTIMATE)

0 20 40
SCALE: 1"=40'

Computer File Information			
Creation Date:	12/8/09	Initials:	SED
Last Modification Date:	8/25/10	Initials:	scott
Full Path:	L:\07246\CADD\Sheets		
Drawing File Name:	U07246PLN09.dwg		
Acad Version 2007	Scale: 1"=40'	Units:	English

Index of Revisions		

Arapahee County Colorado's First

AURORA

5 years FELSBURG HOLT & ULLEVIG

As Constructed
No Revisions:
Revised:
Void:

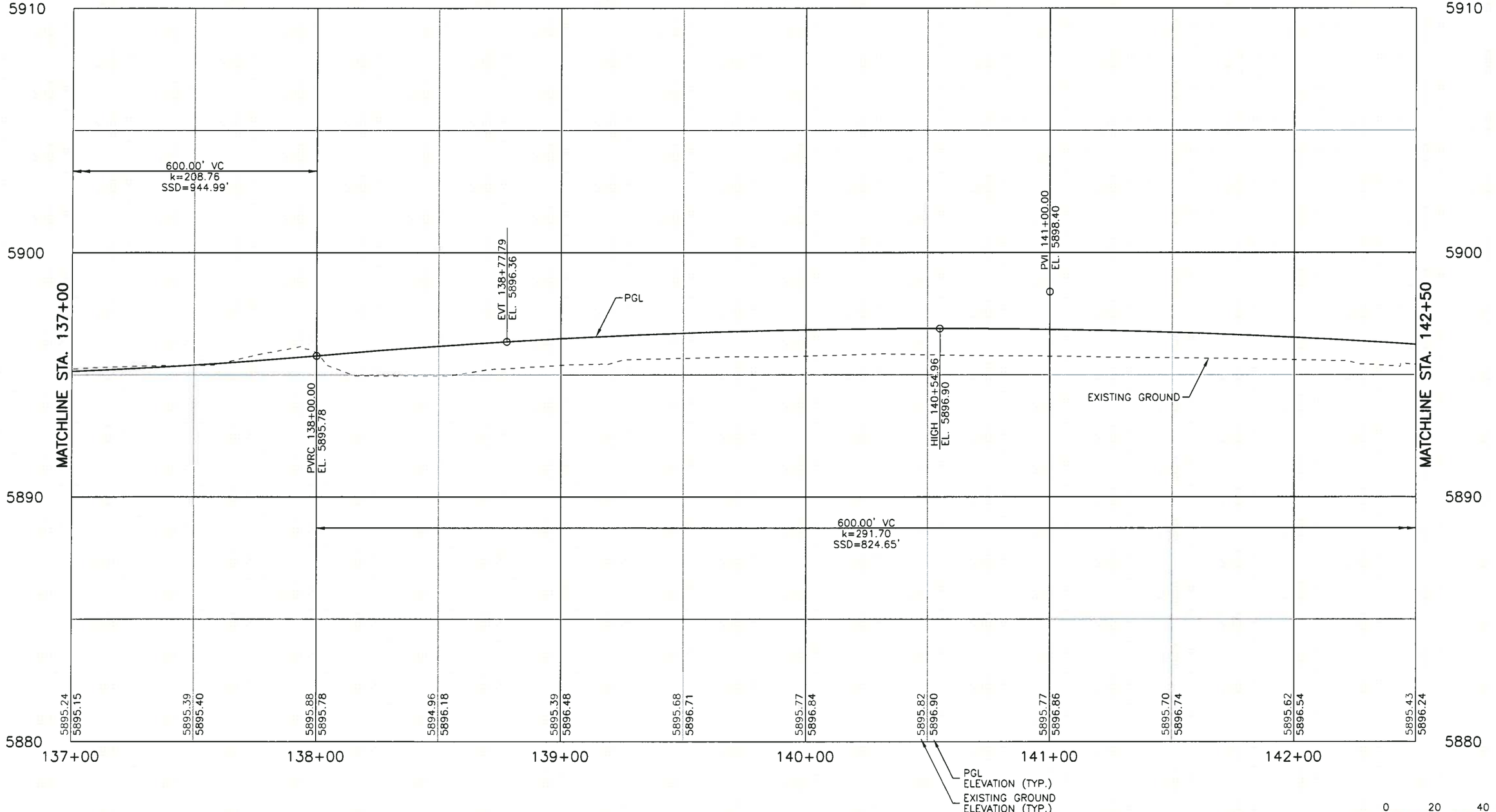
SOUTH GUN CLUB ROAD
ROADWAY PLAN
STA. 137+00 TO STA. 142+50

Designer:	SED	Structure Numbers	
Detailer:	SED		
Sheet Subset:	Roadway	Subset Sheets: GC-17 of 46	

Project No./Code
C07-006
Sheet Number 30

L:\07246\CADD\Sheets\U07246PLN09.dwg, 8/25/2010 1:33:06 PM, scott

GUN CLUB ROAD



0 20 40

SCALE: 1"=40' HORIZ.
1"=10' VERT.

GUN CLUB ROAD (ULTIMATE)

Computer File Information			
Creation Date:	12/16/09	Initials:	SED
Last Modification Date:	6/23/10	Initials:	scott
Full Path:	L:\07246\CADD\Sheets		
Drawing File Name:	U07246PR009.dwg		
Acad Version 2007	Scale: 1"=40'	Units:	English

Index of Revisions		

Arapahoe County Colorado's First

AURORA

5 years FELSBURG HOLT & ULLEVIG

As Constructed
No Revisions:
Revised:
Void:

SOUTH GUN CLUB ROAD
ROADWAY PROFILE
STA. 137+00 TO STA. 142+50

Designer:	SED	Structure Numbers	
Detailer:	SED		
Sheet Subset:	Roadway	Subset Sheets: GC-1B of 46	

Project No./Code
C07-006
Sheet Number 31

L:\07246\CADD\Sheets\U07246PR009.dwg, 6/23/2010 10:55:17 AM, scott

NOTES:

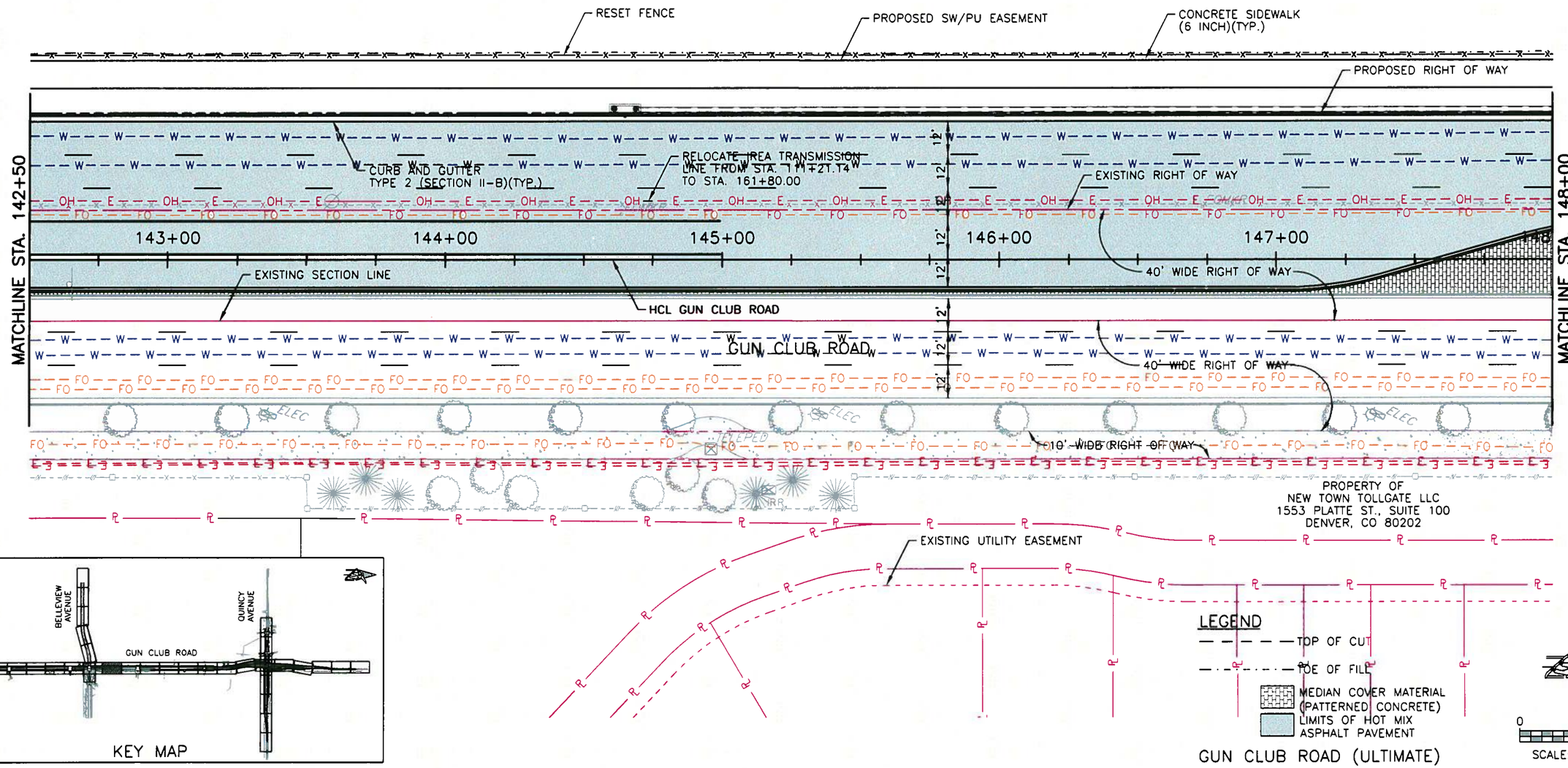
1. UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.
2. TEMPORARY CONSTRUCTION EASEMENTS SHALL NOT BE CLEARED AND GRUBBED UNLESS IT IS REQUIRED IN ORDER TO CONSTRUCT THE ROADWAY SECTION. THE CONTRACTOR SHALL USE PARTICULAR CARE TO MINIMIZE DAMAGE TO PLANTINGS WITHIN THE PROPERTY.

PROPERTY OF
RIPPEY HOLDING PARTNERSHIT
MC QUINCY PARTNERSHIP 16.493%
3515 S. TAMARAC DR., SUITE 300
DENVER, CO 80237

SITE

PROPERTY OF
RIPPEY HOLDING PARTNERSHIT
MC QUINCY PARTNERSHIP 16.493%
3515 S. TAMARAC DR., SUITE 300
DENVER, CO 80237

SITE



KEY MAP

LEGEND

- TOP OF CUT
- TOE OF FILL
- MEDIAN COVER MATERIAL (PATTERNED CONCRETE)
- LIMITS OF HOT MIX ASPHALT PAVEMENT

GUN CLUB ROAD (ULTIMATE)

0 20 40

SCALE: 1"=40'

Computer File Information			
Creation Date:	12/8/09	Initials:	SED
Last Modification Date:	8/25/10	Initials:	scott
Full Path:	L:\07246\CADD\Sheets		
Drawing File Name:	U07246PLN10.dwg		
Acad Version 2007	Scale: 1"=40'	Units:	English

Index of Revisions		

Arapahoe County Colorado's First

AURORA

75 years FELSBURG HOLT & ULLEVIG

As Constructed	
No Revisions:	
Revised:	
Void:	

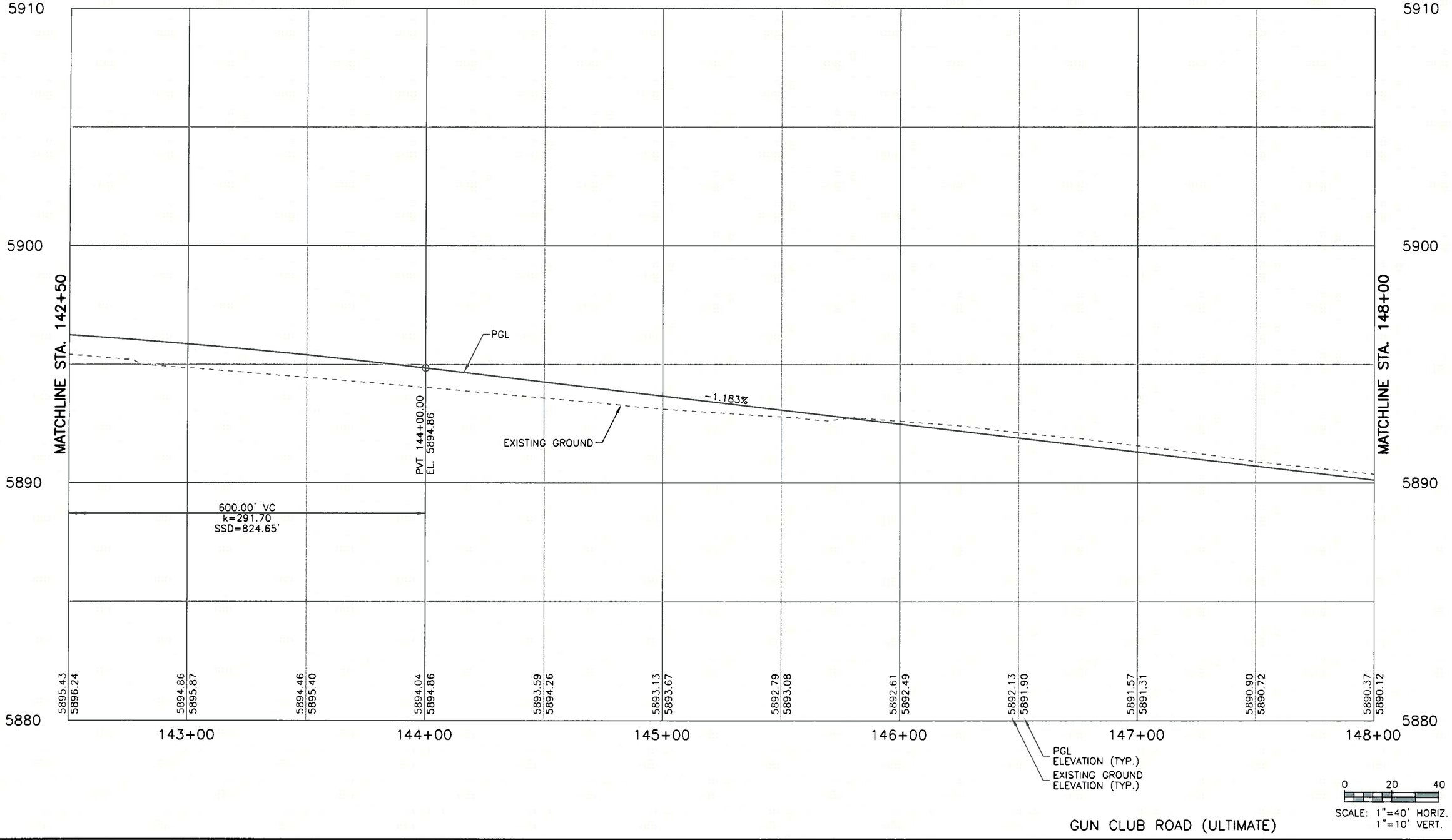
SOUTH GUN CLUB ROAD
ROADWAY PLAN
STA. 142+50 TO STA. 148+00

Designer:	SED	Structure Numbers	
Detailer:	SED		
Sheet Subset:	Roadway	Subset Sheets: GC-19 of 46	

Project No./Code
C07-006
Sheet Number 32

L:\07246\CADD\Sheets\U07246PLN10.dwg, 8/25/2010 1:32:51 PM, scott

GUN CLUB ROAD



GUN CLUB ROAD (ULTIMATE)

Computer File Information			
Creation Date:	12/16/09	Initials:	SED
Last Modification Date:	6/23/10	Initials:	scott
Full Path:	L:\07246\CADD\Sheets		
Drawing File Name:	U07246PRO10.dwg		
Acad Version 2007	Scale: 1"=40'	Units:	English

Index of Revisions		

Arapahoe County Colorado's First

AURORA

75 years FELSBURG HOLT & ULLEVIG

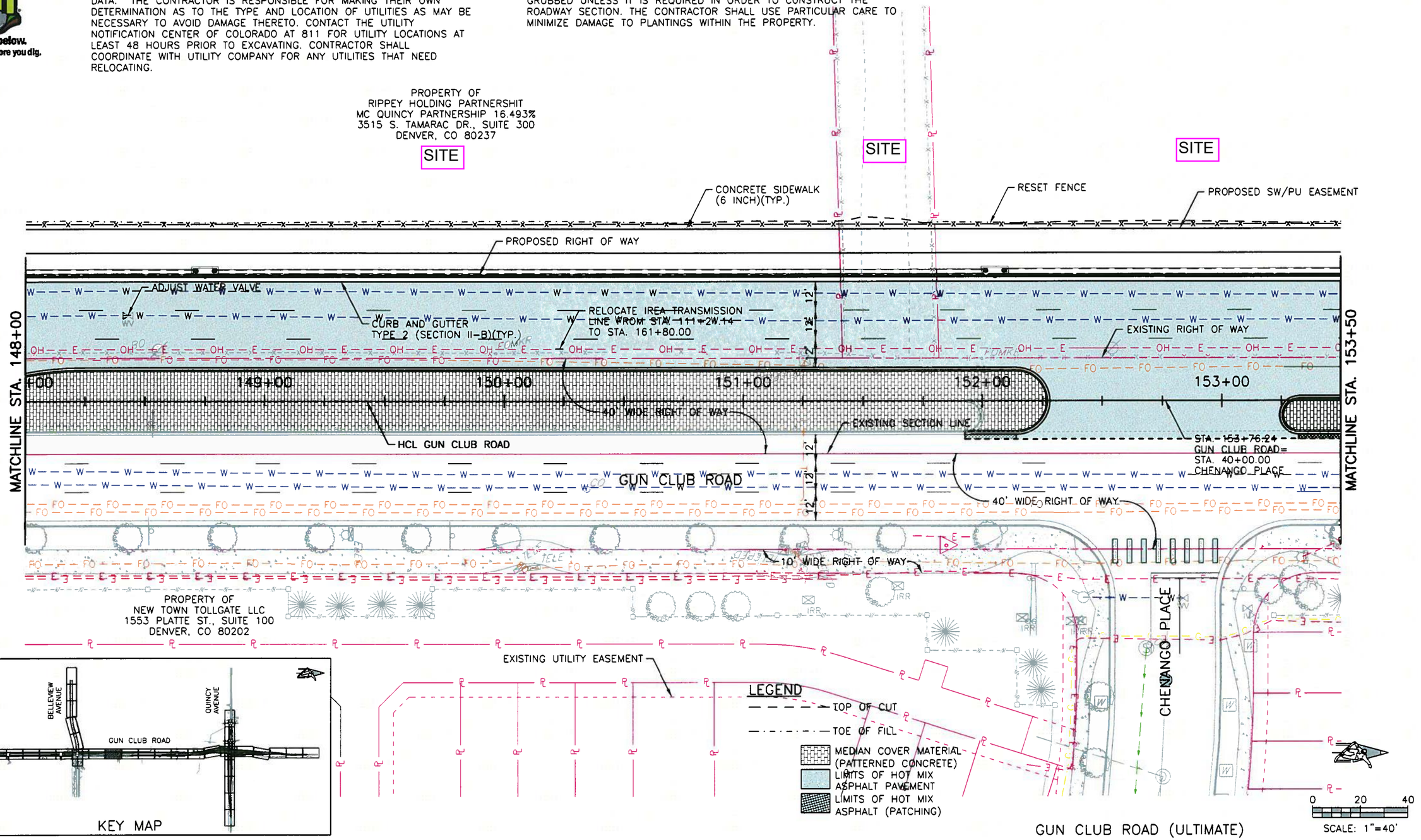
As Constructed	SOUTH GUN CLUB ROAD ROADWAY PROFILE STA. 142+50 TO STA. 148+00	Project No./Code
No Revisions:		C07-006
Revised:	Designer: SED / Structure Numbers	
Void:	Detailer: SED	
	Sheet Subset: Roadway / Subset Sheets: GC-20 of 46	Sheet Number 33

L:\07246\CADD\Sheets\U07246PRO10.dwg, 6/23/2010 10:54:57 AM, scott

Know what's **below.** **Call** before you dig.

NOTES:

1. UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.
2. TEMPORARY CONSTRUCTION EASEMENTS SHALL NOT BE CLEARED AND GRUBBED UNLESS IT IS REQUIRED IN ORDER TO CONSTRUCT THE ROADWAY SECTION. THE CONTRACTOR SHALL USE PARTICULAR CARE TO MINIMIZE DAMAGE TO PLANTINGS WITHIN THE PROPERTY.



GUN CLUB ROAD (ULTIMATE)

Computer File Information			
Creation Date:	12/8/09	Initials:	SED
Last Modification Date:	9/15/10	Initials:	scott
Full Path:	L:\07246\CADD\Sheets		
Drawing File Name:	U07246PLN11.dwg		
Acad Version 2007	Scale: 1"=40'	Units:	English

Index of Revisions		

Arapahoe County Colorado's First

AURORA

75 years FELSBURG HOLT & ULLEVIG

As Constructed	
No Revisions:	
Revised:	
Void:	

SOUTH GUN CLUB ROAD
ROADWAY PLAN
STA. 148+00 TO STA. 153+50

Designer:	SED	Structure Numbers	
Detailer:	SED		
Sheet Subset:	Roadway	Subset Sheets:	GC-21 of 46

Project No./Code
C07-006
Sheet Number 34

L:\07246\CADD\Sheets\U07246PLN11.dwg, 9/15/2010 12:46:02 PM, scott

GUN CLUB ROAD

5900
5890
5880
5870

MATCHLINE STA. 148+00

MATCHLINE STA. 153+50

-1.183%

PGL

EVT. 152+76.15
EL. 5884.49

EXISTING GROUND

148+00	149+00	150+00	151+00	152+00	153+00
5890.37 / 5890.12	5889.81 / 5889.53	5889.15 / 5888.94	5888.52 / 5888.35	5887.88 / 5887.76	5887.38 / 5887.17
5886.66 / 5886.58	5885.85 / 5885.98	5885.44 / 5885.39	5884.15 / 5884.80	5883.49 / 5884.21	5883.12 / 5883.62

PGL ELEVATION (TYP.)

EXISTING GROUND ELEVATION (TYP.)

0 20 40

SCALE: 1"=40' HORIZ.
1"=10' VERT.

GUN CLUB ROAD (ULTIMATE)

Computer File Information			
Creation Date:	12/16/09	Initials:	SED
Last Modification Date:	6/23/10	Initials:	scott
Full Path:	L:\07246\CADD\Sheets		
Drawing File Name:	U07246PRO11.dwg		
Acad Version 2007	Scale: 1"=40'	Units:	English

Index of Revisions		

Arapahoe County Colorado's First

AURORA

5 years FELSBURG HOLT & ULLEVIG

As Constructed
No Revisions:
Revised:
Void:

SOUTH GUN CLUB ROAD
ROADWAY PROFILE
STA. 148+00 TO STA. 153+50

Designer:	SED	Structure Numbers	
Detailer:	SED		
Sheet Subset:	Roadway	Subset Sheets: GC-22 of 46	

Project No./Code
C07-006
Sheet Number 35

L:\07246\CADD\Sheets\U07246PRO11.dwg, 6/23/2010 10:54:28 AM, scott

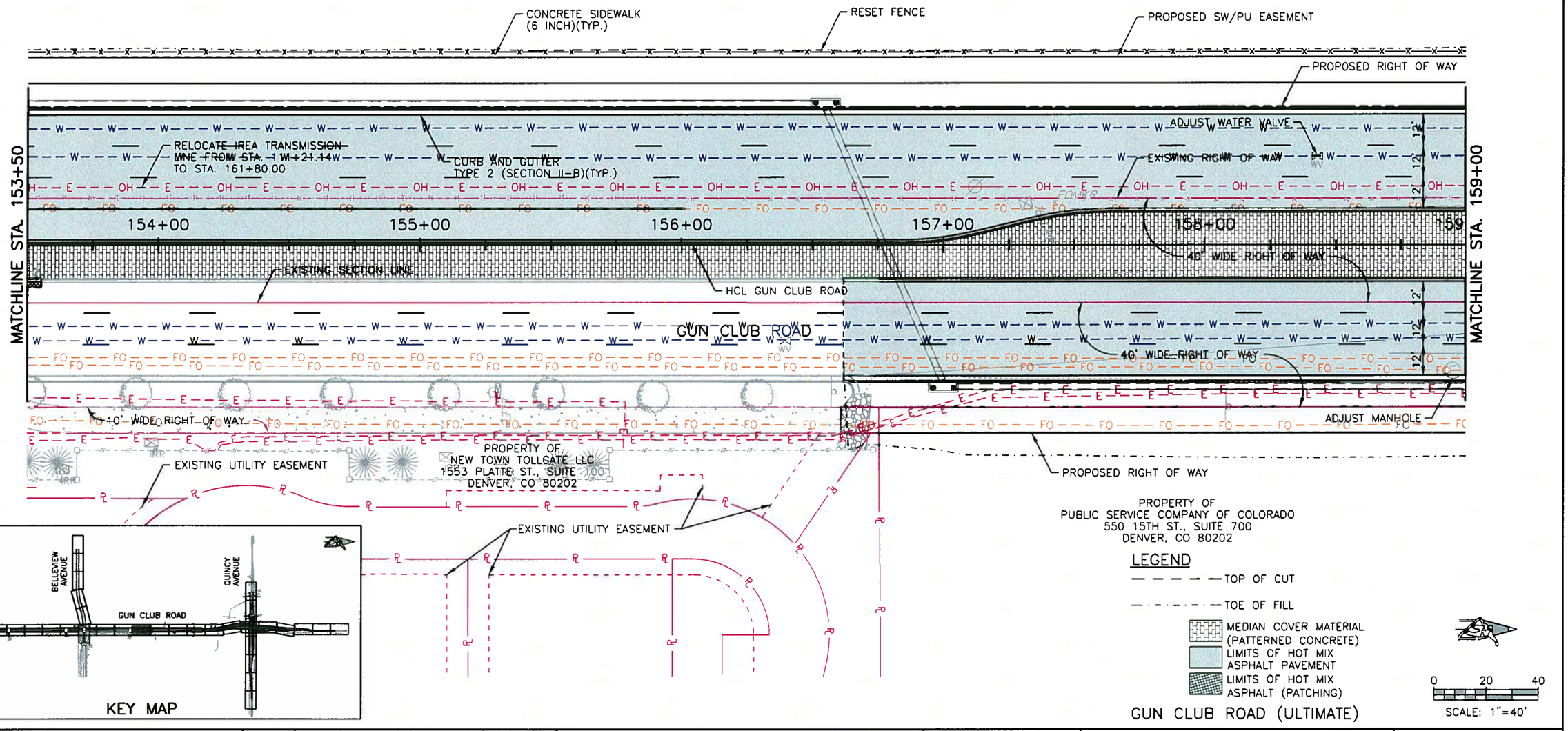
Know what's below. Call before you dig.

NOTES:

1. UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.
2. TEMPORARY CONSTRUCTION EASEMENTS SHALL NOT BE CLEARED AND GRUBBED UNLESS IT IS REQUIRED IN ORDER TO CONSTRUCT THE ROADWAY SECTION. THE CONTRACTOR SHALL USE PARTICULAR CARE TO MINIMIZE DAMAGE TO PLANTINGS WITHIN THE PROPERTY.

PROPERTY OF
RIPPEY HOLDING PARTNERSHIP
MC QUINCY PARTNERSHIP 16.493%
3515 S. TAMARAC DR., SUITE 300
DENVER, CO 80237

SITE



GUN CLUB ROAD (ULTIMATE)

Computer File Information			
Creation Date:	12/8/09	Initials:	SED
Last Modification Date:	8/25/10	Initials:	scott
Full Path:	L:\07246\CADD\Sheets		
Drawing File Name:	U07246PLN12.dwg		
Acad Version 2007	Scale: 1"=40'	Units:	English

Index of Revisions		

Arapahoe County Colorado's First

AURORA

75 years FELSBURG HOLT & ULLEVIG

As Constructed
No Revisions:
Revised:
Void:

SOUTH GUN CLUB ROAD
ROADWAY PLAN
STA. 153+50 TO STA. 159+00

Designer:	SED	Structure Numbers	
Detailer:	SED		
Sheet Subset:	Roadway	Subset Sheets: GC-23 of 46	

Project No./Code
C07-006
Sheet Number 36

L:\07246\CADD\Sheets\U07246PLN12.dwg, 8/25/2010 1:32:24 PM, scott

GUN CLUB ROAD

5890

5880

5870

MATCHLINE STA. 153+50

MATCHLINE STA. 159+00

-1.183%

PGL

EXISTING GROUND

5883.12	5882.54	5882.01	5881.29	5880.80	5880.16	5879.55	5878.85	5878.03	5877.24	5876.61	5876.32
5883.62	5883.03	5882.44	5881.84	5881.25	5880.66	5880.07	5879.48	5878.89	5878.30	5877.70	5877.11

154+00 155+00 156+00 157+00 158+00 159+00

PGL ELEVATION (TYP.)

EXISTING GROUND ELEVATION (TYP.)

0 20 40

SCALE: 1"=40' HORIZ.
1"=10' VERT.

GUN CLUB ROAD (ULTIMATE)

Computer File Information			
Creation Date:	12/16/09	Initials:	SED
Last Modification Date:	6/23/10	Initials:	scott
Full Path:	L:\07246\CADD\Sheets		
Drawing File Name:	U07246PRO12.dwg		
Acad Version 2007	Scale: 1"=40'	Units:	English

00000

Index of Revisions		

Arapahoe County Colorado's First

AURORA

5 years FELSBURG HOLT & ULLEVIG

As Constructed

No Revisions:

Revised:

Void:

SOUTH GUN CLUB ROAD
ROADWAY PROFILE
STA. 153+50 TO STA. 159+00

Designer:	SED	Structure Numbers	
Detailer:	SED		
Sheet Subset:	Roadway	Subset Sheets: GC-24 of 46	

Project No./Code

C07-006

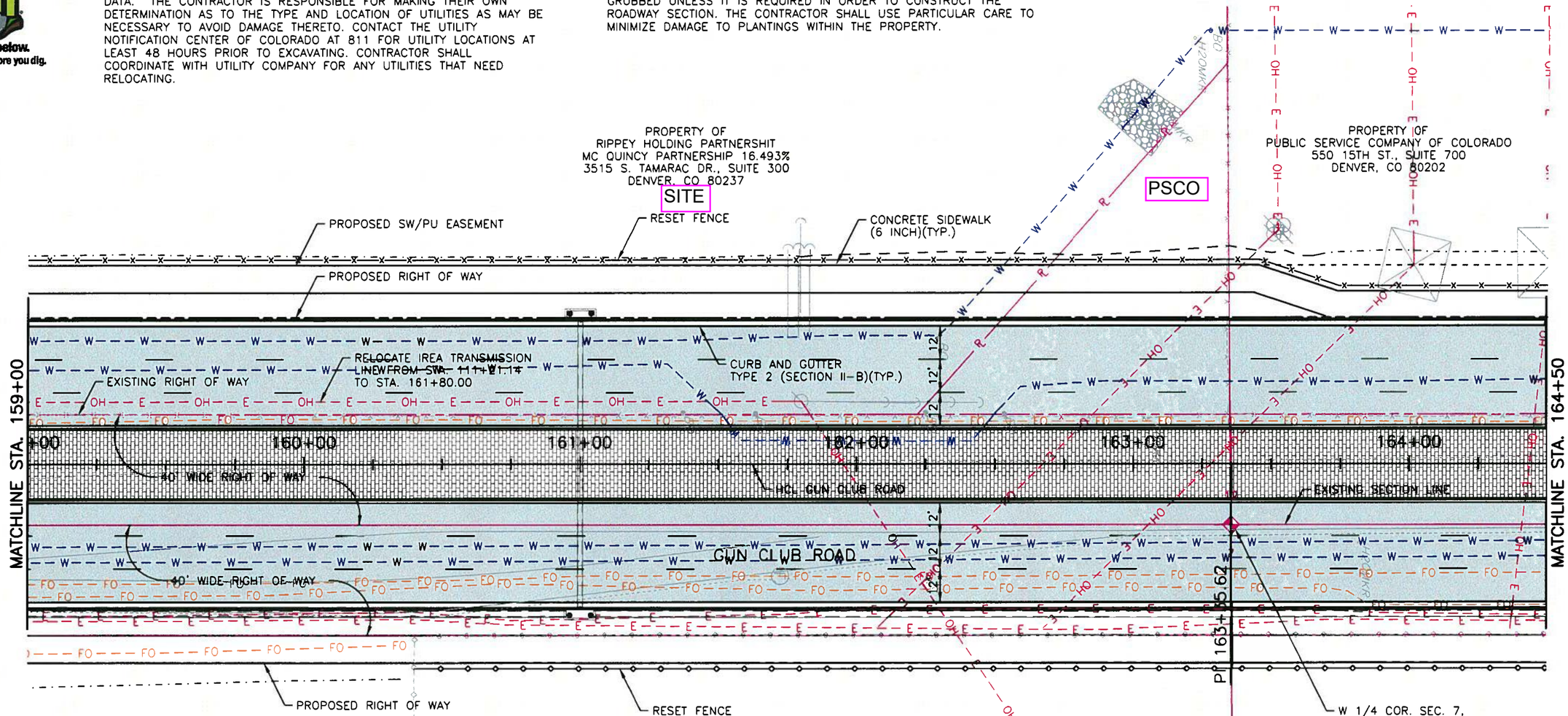
Sheet Number 37

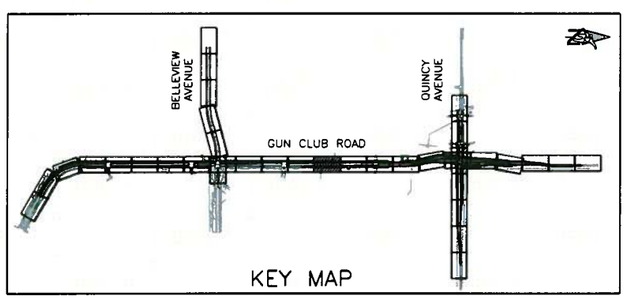
L:\07246\CADD\Sheets\U07246PRO12.dwg, 6/23/2010 10:58:36 AM, scott

Know what's **below.** **Call** before you dig.

NOTES:

1. UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.
2. TEMPORARY CONSTRUCTION EASEMENTS SHALL NOT BE CLEARED AND GRUBBED UNLESS IT IS REQUIRED IN ORDER TO CONSTRUCT THE ROADWAY SECTION. THE CONTRACTOR SHALL USE PARTICULAR CARE TO MINIMIZE DAMAGE TO PLANTINGS WITHIN THE PROPERTY.





LEGEND

- TOP OF CUT
- TOE OF FILL
- MEDIAN COVER MATERIAL (PATTERNED CONCRETE)
- LIMITS OF HOT MIX ASPHALT PAVEMENT

GUN CLUB ROAD (ULTIMATE)

0 20 40
SCALE: 1"=40'

Computer File Information			
Creation Date:	12/8/09	Initials:	SED
Last Modification Date:	8/25/10	Initials:	scott
Full Path:	L:\07246\CADD\Sheets		
Drawing File Name:	U07246PLN13.dwg		
Acad Version 2007	Scale: 1"=40'	Units:	English

Index of Revisions		

Arapahoe County Colorado's First

AURORA

5 years FELSBURG HOLT & ULLEVIG

As Constructed
No Revisions:
Revised:
Void:

SOUTH GUN CLUB ROAD
ROADWAY PLAN
STA. 159+00 TO STA. 164+50

Designer:	SED	Structure Numbers	
Detailer:	SED		
Sheet Subset:	Roadway	Subset Sheets: GC-25 of 46	

Project No./Code
C07-006
Sheet Number 38

L:\07246\CADD\Sheets\U07246PLN13.dwg, 8/25/2010 1:33:59 PM, scott

GUN CLUB ROAD

5880

5870

5860

MATCHLINE STA. 159+00

MATCHLINE STA. 164+50

-1.183%

PVC 159+25.00
EL. 5876.82

PGL

EXISTING GROUND

PVI 163+00.00
EL. 5872.38

750.00' VC
k=432.74
SSD=997.66'

159+00	160+00	161+00	162+00	163+00	164+00
5876.32 / 5877.11	5875.99 / 5876.51	5875.65 / 5875.87	5874.83 / 5875.16	5873.73 / 5874.39	5873.06 / 5873.57
5872.67 / 5872.69	5872.21 / 5871.75	5871.51 / 5870.76	5870.69 / 5869.70	5869.63 / 5868.59	5868.46 / 5867.42

PGL ELEVATION (TYP.)

EXISTING GROUND ELEVATION (TYP.)

0 20 40

SCALE: 1"=40' HORIZ.
1"=10' VERT.

GUN CLUB ROAD (ULTIMATE)

Computer File Information			
Creation Date:	12/16/09	Initials:	SED
Last Modification Date:	6/23/10	Initials:	scott
Full Path:	L:\07246\CADD\Sheets		
Drawing File Name:	U07246PRO13.dwg		
Acad Version 2007	Scale: 1"=40'	Units:	English

Index of Revisions		

Arapahoe County Colorado's First

AURORA

75 years FELSBURG HOLT & ULLEVIG

As Constructed
No Revisions:
Revised:
Void:

SOUTH GUN CLUB ROAD
ROADWAY PROFILE
STA. 159+00 TO STA. 164+50

Designer:	SED	Structure Numbers	
Detailer:	SED		
Sheet Subset:	Roadwoy	Subset Sheets: GC-26 of 46	

Project No./Code
C07-006
Sheet Number 39

L:\07246\CADD\Sheets\U07246PRO13.dwg, 6/23/2010 11:03:28 AM, scott

ID NO.	STATION, OFFSET	ITEM	LENGTH	PAY DEPTH	MISC. (NOTES)
B3	137+05.05, 52.0' LT.	INLET TYPE R	L10	10 FT.	
B2		30" RCP	36'		
B1	137+05.06, 14.2' LT.	MANHOLE SLAB BASE		10 FT.	CONNECT EX. STORM SEWER

Know what's below. Call before you dig.

PROPERTY OF
E-470 PUBLIC HIGHWAY AUTHORITY
22470 EAST 6TH AVENUE PARKWAY
AURORA, CO 80018

Prop. Sump Inlet

Prop. Inlet with 42" Stub for Developed Flows

SITE

Prop. Sump Inlet

PROPERTY OF
RIPPEY HOLDING PARTNERSHIP
MC QUINCY PARTNERSHIP 16.493%
3515 S. TAMARAC DR., SUITE 300
DENVER, CO 80237

SITE

PROPOSED EASEMENT

PROPOSED RIGHT OF WAY

EXISTING RIGHT OF WAY

B3

B2

B1

137+00

138+00

139+00

140+00

141+00

142+00

MATCHLINE STA. 137+00

MATCHLINE STA. 142+50

30+00

29+00

31+00

EXISTING SECTION LINE

40' WIDE RIGHT OF WAY

HCL GUN CLUB ROAD

GUN CLUB ROAD

Ex. Inlet

EXISTING UTILITY EASEMENT

PROPERTY OF
NEW TOWN TOLLGATE LLC
1553 PLATTE ST., SUITE 100
DENVER, CO 80202

BELLEVIEW AVENUE

PROPERTY OF
NEW TOWN TOLLGATE LLC
1553 PLATTE ST., SUITE 100
DENVER, CO 80202

SEE SHEET DR-23
FOR THIS AREA

NOTES:

1. UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.
2. TEMPORARY CONSTRUCTION EASEMENTS SHALL NOT BE CLEARED AND GRUBBED UNLESS IT IS REQUIRED IN ORDER TO CONSTRUCT THE ROADWAY SECTION. THE CONTRACTOR SHALL USE PARTICULAR CARE TO MINIMIZE DAMAGE TO PLANTINGS WITHIN THE PROPERTY.

LEGEND

RIPRAP

TOP OF CUT

TOE OF FILL

0 20 40

SCALE: 1"=40'

L:\07246\CADD\Sheets\D07246PLN09.dwg, 6/23/2010 10:07:49 AM, scott

Computer File Information			
Creation Date:	12/16/09	Initials:	SED
Last Modification Date:	6/23/10	Initials:	Scott
Full Path:	L:\07246\CADD\Sheets		
Drawing File Name:	D07246PLN09.dwg		
Acad Version 2007	Scale: 1"=40'	Units:	English

Index of Revisions		

Arapahoe County Colorado's First

AURORA

5 years FELSBURG HOLT & ULLEVIG

As Constructed

No Revisions:

Revised:

Void:

SOUTH GUN CLUB ROAD
DRAINAGE AND GRADING PLAN
STA. 137+00 TO STA. 142+50

Designer:	SCD	Structure Numbers	
Detailer:	RSA		
Sheet Subset:	Drainage	Subset Sheets:	DR-9 of 24

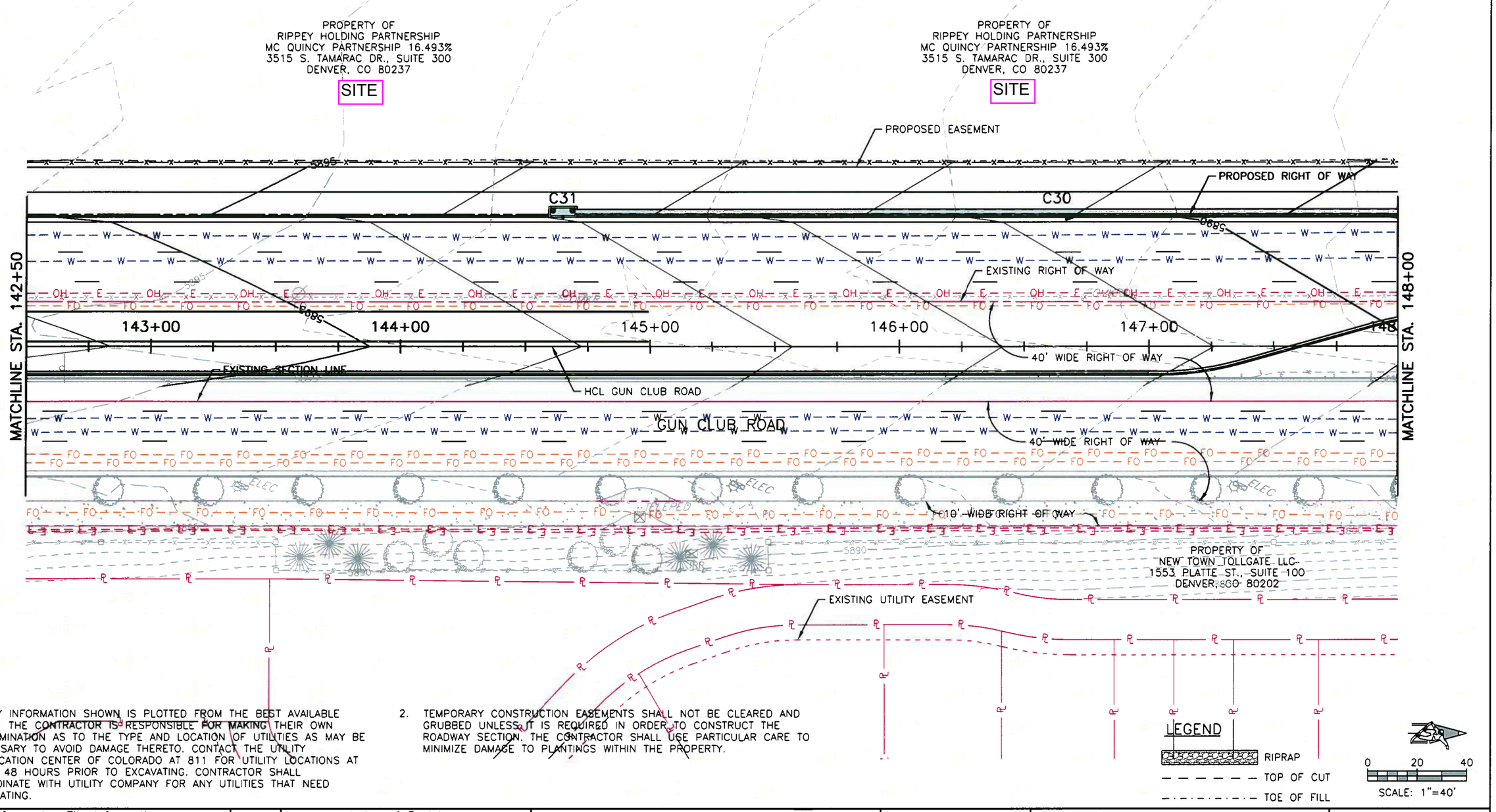
Project No./Code

C07-006

Sheet Number 117

Know what's below. Call before you dig.

ID NO.	STATION, OFFSET	ITEM	LENGTH	PAY DEPTH	MISC. (NOTES)
C31	144+65.00, 52.0' LT.	INLET TYPE R	L10	5 FT.	
C30		18" RCP	400'		



NOTES:

1. UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.
2. TEMPORARY CONSTRUCTION EASEMENTS SHALL NOT BE CLEARED AND GRUBBED UNLESS IT IS REQUIRED IN ORDER TO CONSTRUCT THE ROADWAY SECTION. THE CONTRACTOR SHALL USE PARTICULAR CARE TO MINIMIZE DAMAGE TO PLANTINGS WITHIN THE PROPERTY.

Computer File Information			
Creation Date:	12/16/09	Initials:	SED
Last Modification Date:	6/23/10	Initials:	Scott
Full Path:	L:\07246\CADD\Sheets		
Drawing File Name:	D07246PLN10.dwg		
Acad Version 2007	Scale: 1"=40'	Units:	English

Index of Revisions		

Arapahoe County Colorado's First

AURORA

75 years FELSBURG HOLT & ULLEVIG

As Constructed
No Revisions:
Revised:
Void:

SOUTH GUN CLUB ROAD
DRAINAGE AND GRADING PLAN
STA. 142+50 TO STA. 148+00

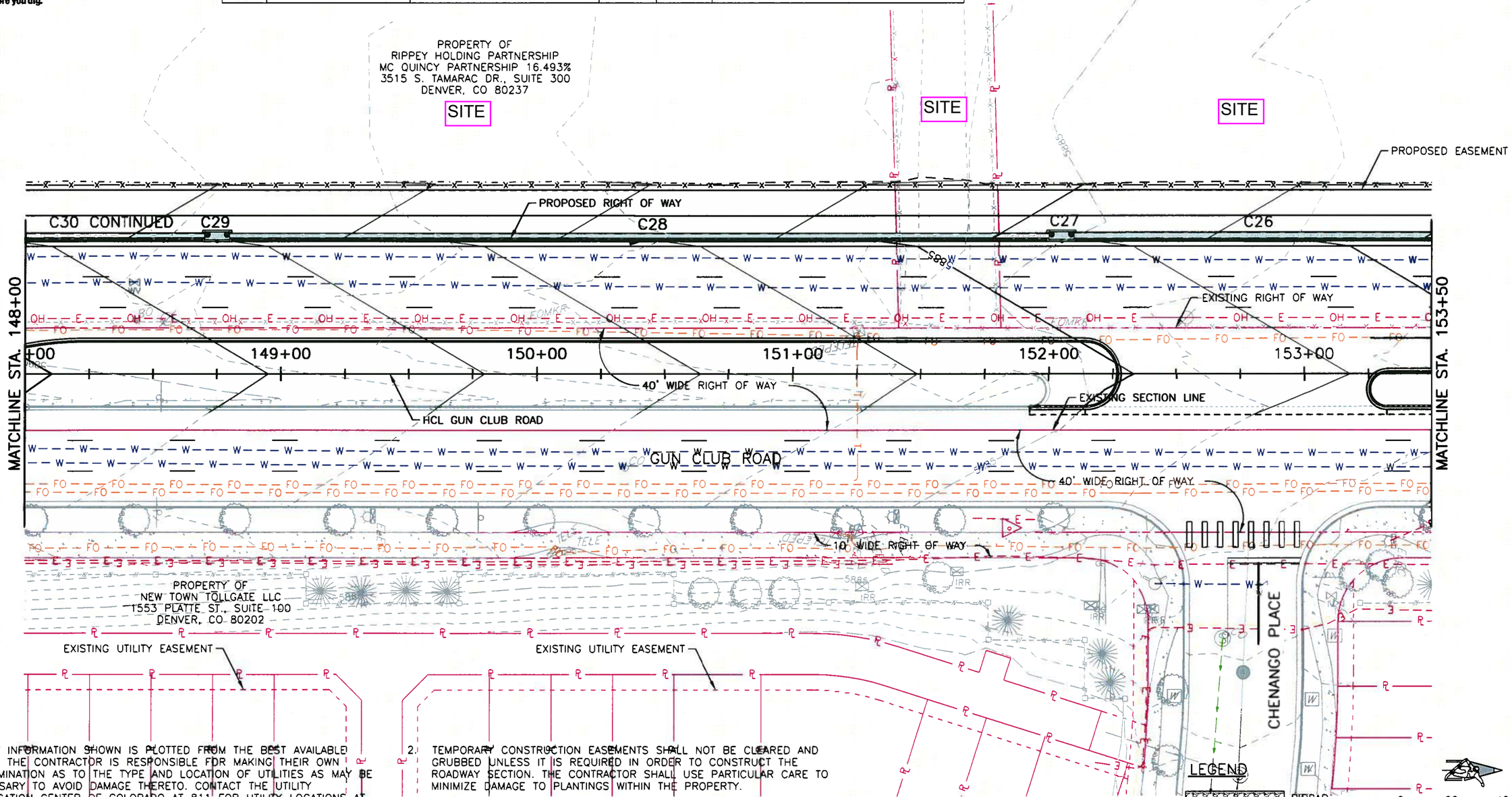
Designer:	SCD	Structure Numbers	
Detailer:	RSA		
Sheet Subset:	Drainage	Subset Sheets:	DR-10 of 24

Project No./Code
C07-006
Sheet Number 118

L:\07246\CADD\Sheets\D07246PLN10.dwg, 6/23/2010 10:09:52 AM, scott

Know what's **below.** **Call** before you dig.

ID NO.	STATION, OFFSET	ITEM	LENGTH	PAY DEPTH	MISC. (NOTES)
C29	148+75.00, 52.0' LT.	INLET TYPE R	L10	5 FT.	
C28		18" RCP	320'		
C27	152+05.00, 52.0' LT.	INLET TYPE R	L10	5 FT.	
C26		24" RCP	440'		



NOTES:

1. UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.
2. TEMPORARY CONSTRUCTION EASEMENTS SHALL NOT BE CLEARED AND GRUBBED UNLESS IT IS REQUIRED IN ORDER TO CONSTRUCT THE ROADWAY SECTION. THE CONTRACTOR SHALL USE PARTICULAR CARE TO MINIMIZE DAMAGE TO PLANTINGS WITHIN THE PROPERTY.

Computer File Information			
Creation Date:	12/16/09	Initials:	SED
Last Modification Date:	6/23/10	Initials:	Scott
Full Path:	L:\07246\CADD\Sheets		
Drawing File Name:	D07246PLN11.dwg		
Acad Version 2007	Scale: 1"=40'	Units:	English

Index of Revisions		

Arapahoe County Colorado's First

AURORA

3 years FELSBURG HOLT & ULLEVIG

As Constructed

No Revisions:

Revised:

Void:

SOUTH GUN CLUB ROAD DRAINAGE AND GRADING PLAN STA. 148+00 TO STA. 153+50

Designer:	SCD	Structure Numbers	
Detailer:	RSA		
Sheet Subset:	Drainage	Subset Sheets:	DR-11 of 24

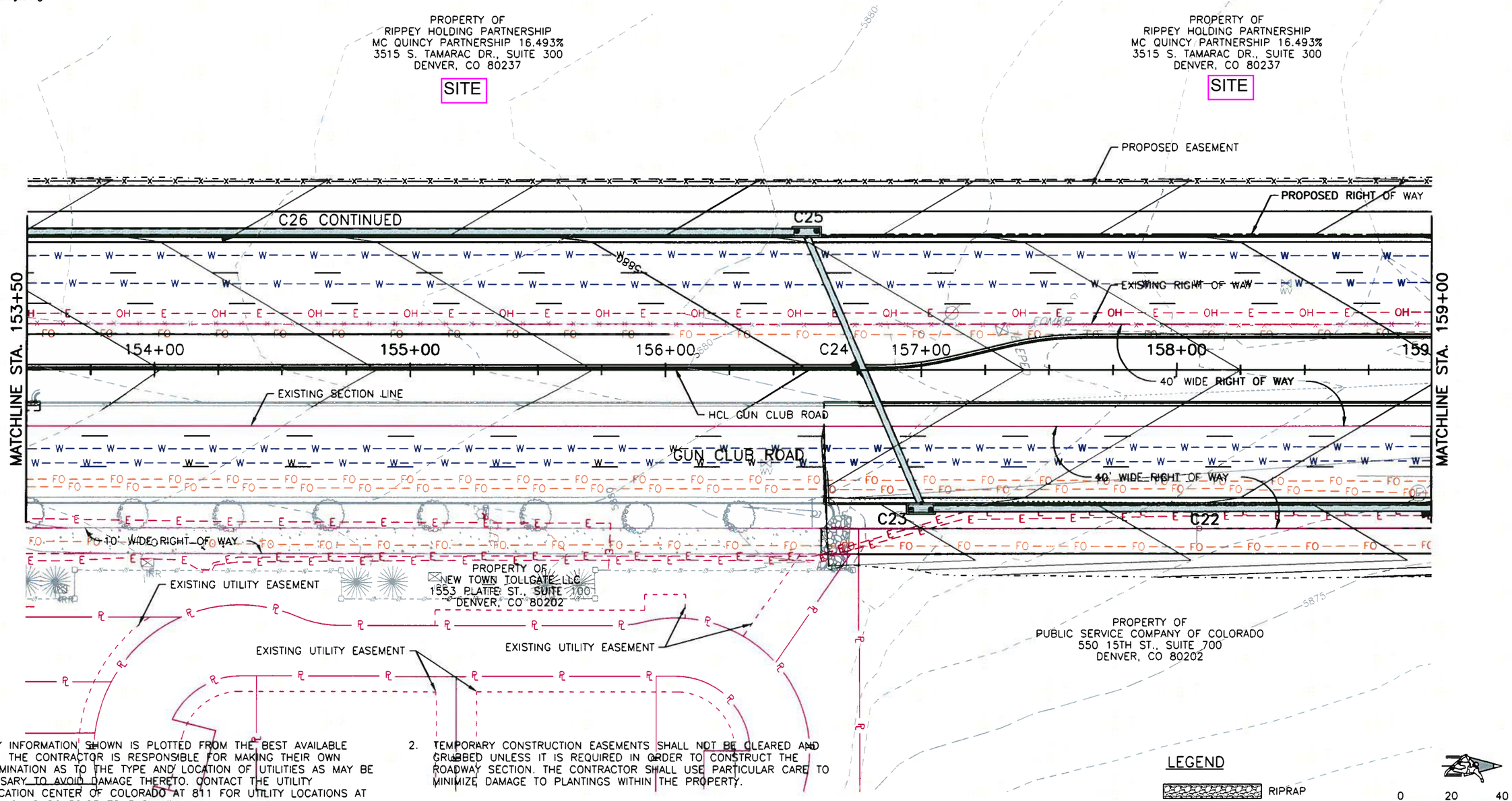
Project No./Code: C07-006

Sheet Number: 119

L:\07246\CADD\Sheets\D07246PLN11.dwg, 6/23/2010 10:10:16 AM, scott

Know what's below. Call before you dig.

ID NO.	STATION, OFFSET	ITEM	LENGTH	PAY DEPTH	MISC. (NOTES)
C25	156+55.00, 52.0' LT.	INLET TYPE R	L10	5 FT.	
C24		24" RCP	115'		
C23	157+00.00, 52.0' RT.	INLET TYPE R	L10	10 FT.	
C22		24" RCP	390'		



NOTES:

1. UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.
2. TEMPORARY CONSTRUCTION EASEMENTS SHALL NOT BE CLEARED AND GRUBBED UNLESS IT IS REQUIRED IN ORDER TO CONSTRUCT THE ROADWAY SECTION. THE CONTRACTOR SHALL USE PARTICULAR CARE TO MINIMIZE DAMAGE TO PLANTINGS WITHIN THE PROPERTY.

Computer File Information			
Creation Date:	12/16/09	Initials:	SED
Last Modification Date:	6/23/10	Initials:	Scott
Full Path:	L:\07246\CADD\Sheets		
Drawing File Name:	D07246PLN12.dwg		
Acad Version 2007	Scale: 1"=40'	Units:	English

Index of Revisions		

Arapahoe County Colorado's First

AURORA

75 years FELSBURG HOLT & ULLEVIG

As Constructed
No Revisions:
Revised:
Void:

SOUTH GUN CLUB ROAD
DRAINAGE AND GRADING PLAN
STA. 153+50 TO STA. 159+00

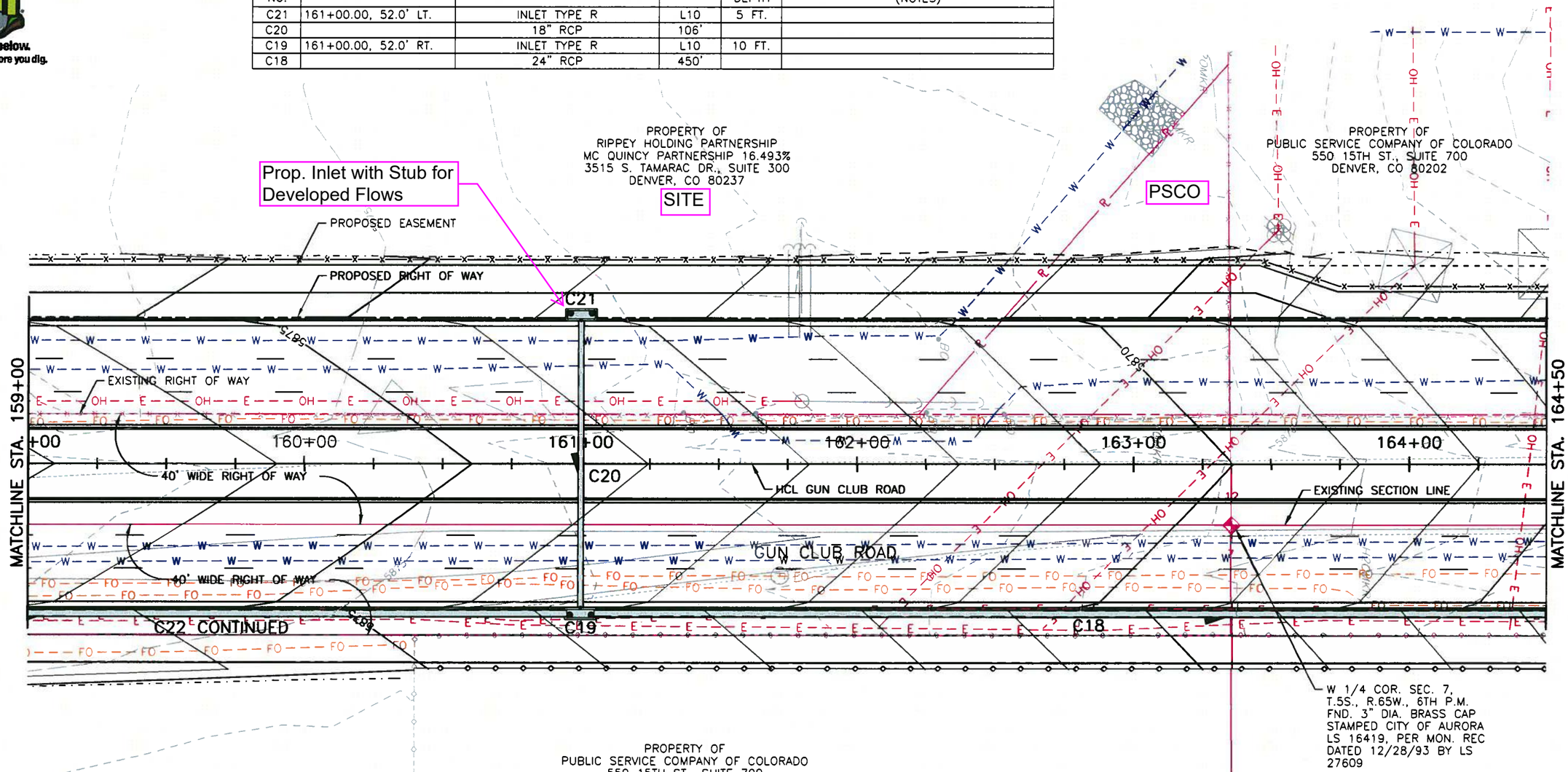
Designer: SCD	Structure Numbers	
Detailer: RSA		
Sheet Subset: Drainage	Subset Sheets: DR-12 of 24	

Project No./Code
C07-006
Sheet Number 120

L:\07246\CADD\Sheets\D07246PLN12.dwg, 6/23/2010 10:10:41 AM, scott

Know what's below. Call before you dig.

ID NO.	STATION, OFFSET	ITEM	LENGTH	PAY DEPTH	MISC. (NOTES)
C21	161+00.00, 52.0' LT.	INLET TYPE R	L10	5 FT.	
C20		18" RCP	106'		
C19	161+00.00, 52.0' RT.	INLET TYPE R	L10	10 FT.	
C18		24" RCP	450'		



NOTES:

1. UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.
2. TEMPORARY CONSTRUCTION EASEMENTS SHALL NOT BE CLEARED AND GRUBBED UNLESS IT IS REQUIRED IN ORDER TO CONSTRUCT THE ROADWAY SECTION. THE CONTRACTOR SHALL USE PARTICULAR CARE TO MINIMIZE DAMAGE TO PLANTINGS WITHIN THE PROPERTY.

LEGEND

RIPRAP
TOP OF CUT
TOE OF FILL

0 20 40
SCALE: 1"=40'

Computer File Information			
Creation Date:	12/16/09	Initials:	SED
Last Modification Date:	6/23/10	Initials:	Scott
Full Path:	L:\07246\CADD\Sheets		
Drawing File Name:	D07246PLN13.dwg		
Acad Version 2007	Scale: 1"=40'	Units:	English

Index of Revisions		

Arapahoe County Colorado's First

AURORA

5 years FELSBURG HOLT & ULLEVIG

As Constructed
No Revisions:
Revised:
Void:

SOUTH GUN CLUB ROAD
DRAINAGE AND GRADING PLAN
STA. 159+00 TO STA. 164+50

Designer: SCD
Detailer: RSA
Sheet Subset: Drainage
Structure Numbers
Subset Sheets: DR-13 of 24

Project No./Code
C07-006

Sheet Number 12

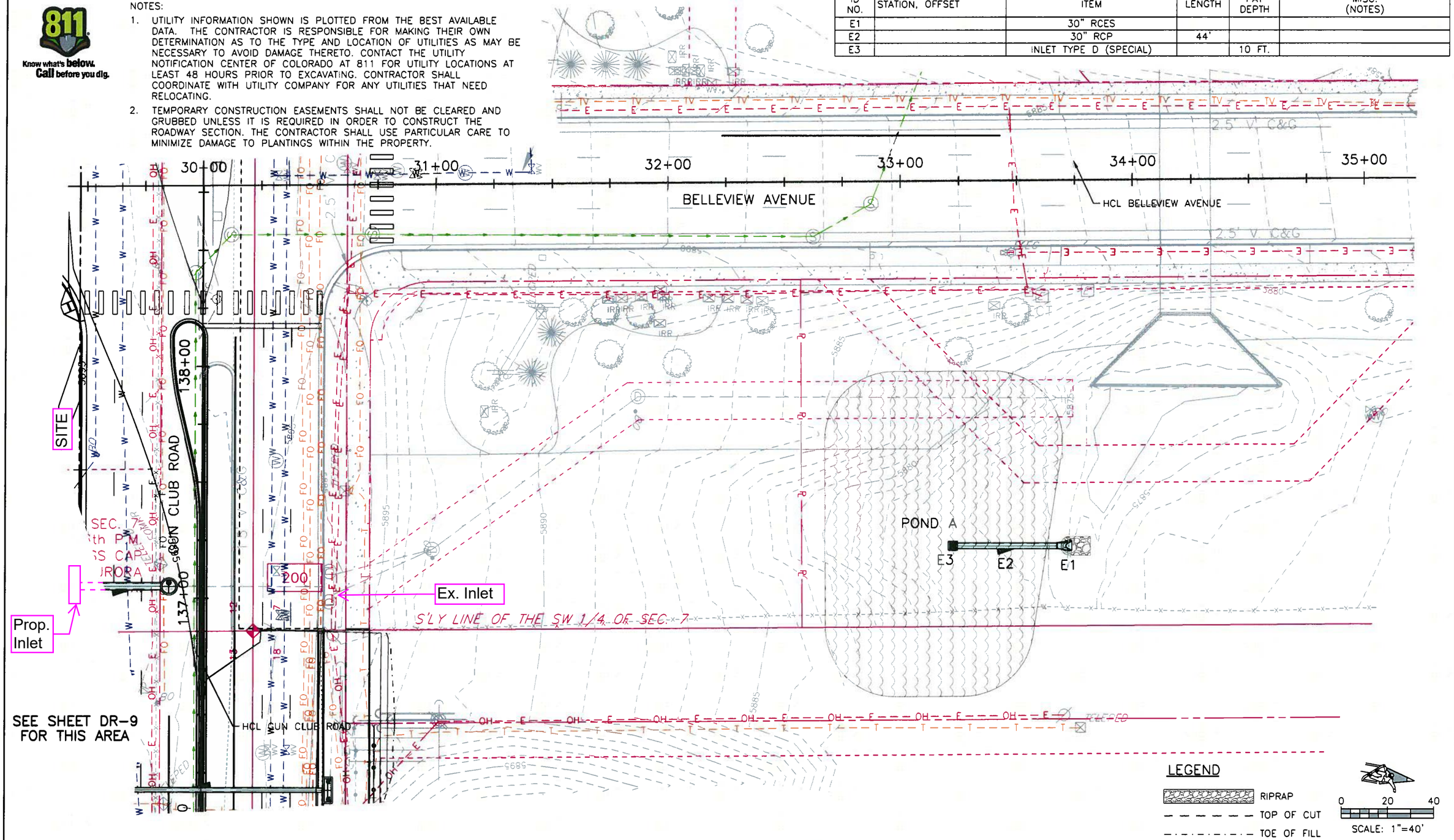
L:\07246\CADD\Sheets\D07246PLN13.dwg, 6/23/2010 10:11:08 AM, scott

Know what's **below.** **Call** before you dig.

NOTES:

1. UTILITY INFORMATION SHOWN IS PLOTTED FROM THE BEST AVAILABLE DATA. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811 FOR UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO EXCAVATING. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ANY UTILITIES THAT NEED RELOCATING.
2. TEMPORARY CONSTRUCTION EASEMENTS SHALL NOT BE CLEARED AND GRUBBED UNLESS IT IS REQUIRED IN ORDER TO CONSTRUCT THE ROADWAY SECTION. THE CONTRACTOR SHALL USE PARTICULAR CARE TO MINIMIZE DAMAGE TO PLANTINGS WITHIN THE PROPERTY.

ID NO.	STATION, OFFSET	ITEM	LENGTH	PAY DEPTH	MISC. (NOTES)
E1		30" RCES			
E2		30" RCP	44'		
E3		INLET TYPE D (SPECIAL)		10 FT.	



Computer File Information			
Creation Date:	2/23/10	Initials:	SED
Last Modification Date:	6/23/10	Initials:	scott
Full Path:	L:\07246\CADD\Sheets		
Drawing File Name:	D07246PLN23.dwg		
Acad Version 2007	Scale: 1"=40'	Units:	English

Index of Revisions		

Arapahoe County Colorado's First

AURORA

5 years FELSBURG HOLT & ULLEVIG

As Constructed

No Revisions:

Revised:

Void:

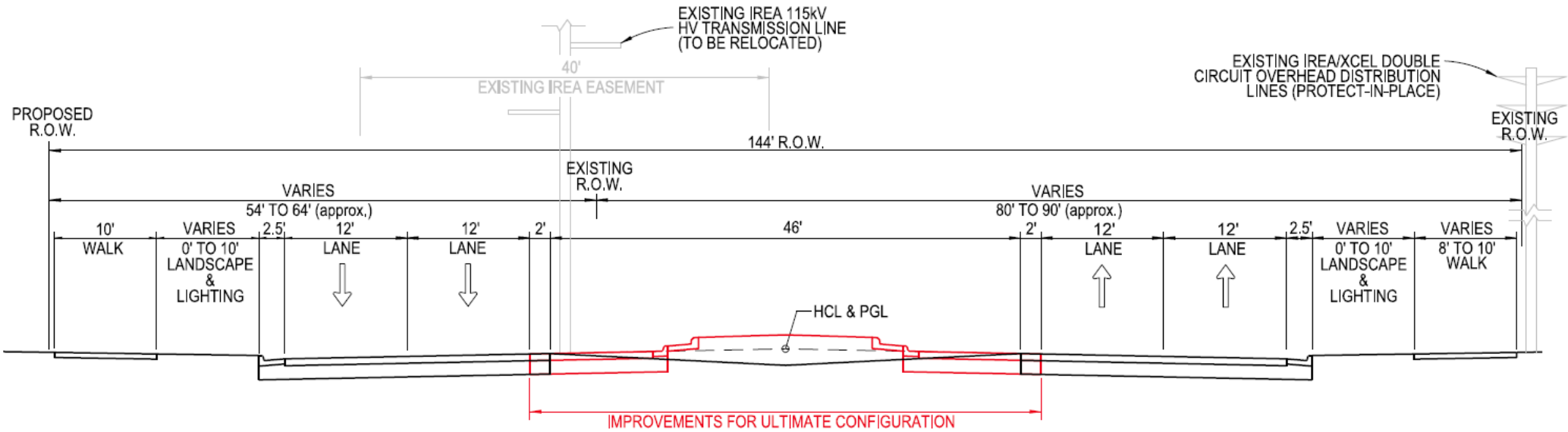
SOUTH GUN CLUB ROAD
DRAINAGE AND GRADING PLAN

Designer:	SCD	Structure Numbers	
Detailer:	RSA		
Sheet Subset:	Drainage	Subset Sheets: DR-23 of 24	

Project No./Code: C07-006

Sheet Number: 131

Alternative 1



GUN CLUB ROAD – ALTERNATIVE 1

(LOOKING NORTH)
4-LANE ARTERIAL

N

0' 50' 100'

E-470 South-bound (SB) Lanes

E-470 North-bound (NB) Lanes

E-470 Multi-use Parcel

SITE

GUN CLUB RD

Low point per profile would be at STA 36+21.59 which allows inlets to placed at the curb returns which is ideal.

150' span

150' span

BELLEVIEW AVE

E. BELLEVIEW AVENUE (84' R.O.W.)

25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00 37+99

R=930'

R=930'

SITE

Traffic analysis may require a different lane configuration than what is shown

E. PROGRESS CIRCLE (60' R.O.W.)

15' EASEMENT

15' EASEMENT

STONE WALL

STONE WALL

GRASS/NATURAL GROUND

ASPHALT

CONCRETE WALK

STORM INLET

TRAFFIC SIGNAL POLE WITH SIGNALS

TRAFFIC SIGNAL POLE WITH SIGNS AND LIGHTS

TRAFFIC SIGNAL POLE WITH SIGNS AND STREET LIGHT

20' SCCV EASEMENT

15' UTILITY EASEMENT

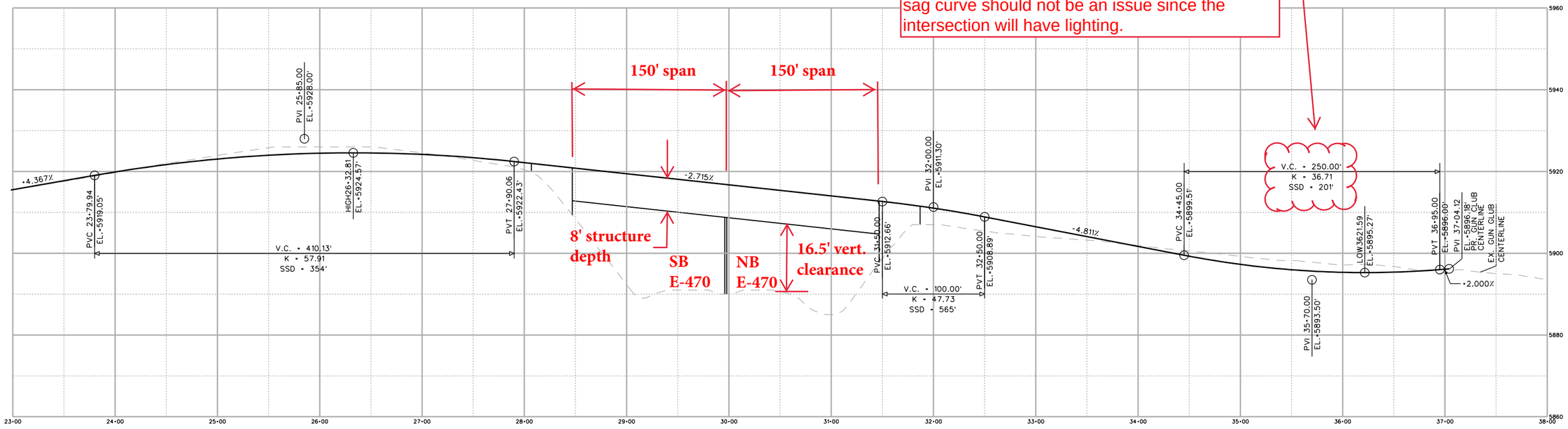
TOLLGATE CROSSING METRO DISTRICT #2
2154 E. COMMONS AVE., SUITE 2000
CENTENNIAL, CO 80122-1560
PARCEL ID: 2071-07-3-23-051

EAST CHERRY CREEK VALLEY WATER AND SANITATION DISTRICT
PARCEL ID: 2073-13-1-00-005
(NO ADD)

PROGRESS CIRCLE TRUST
21004 E. PROGRESS CIRCLE
AURORA, CO 80016-4013
PARCEL ID: 2071-18-2-01-001

TOLLGATE CROSSING METRO DISTRICT #1
2154 E. COMMONS AVE., SUITE 2000
CENTENNIAL, CO 80122-1560
PARCEL ID: 2071-07-3-23-059

Design variance would be needed for this VC. Standard K-value for sag curve of a collector is not met. To meet criteria would require increasing VC length which would steepen profile towards E-470. We laid that out and it doesn't look good. This profile ideally situates the low point at the curb return which would allow for better drainage. Stopping Sight Distance for this sag curve should not be an issue since the intersection will have lighting.



East Toll Gate Creek (Upper)

Major Drainageway Plan
Conceptual Design Report
February 2011

Project Sponsors:

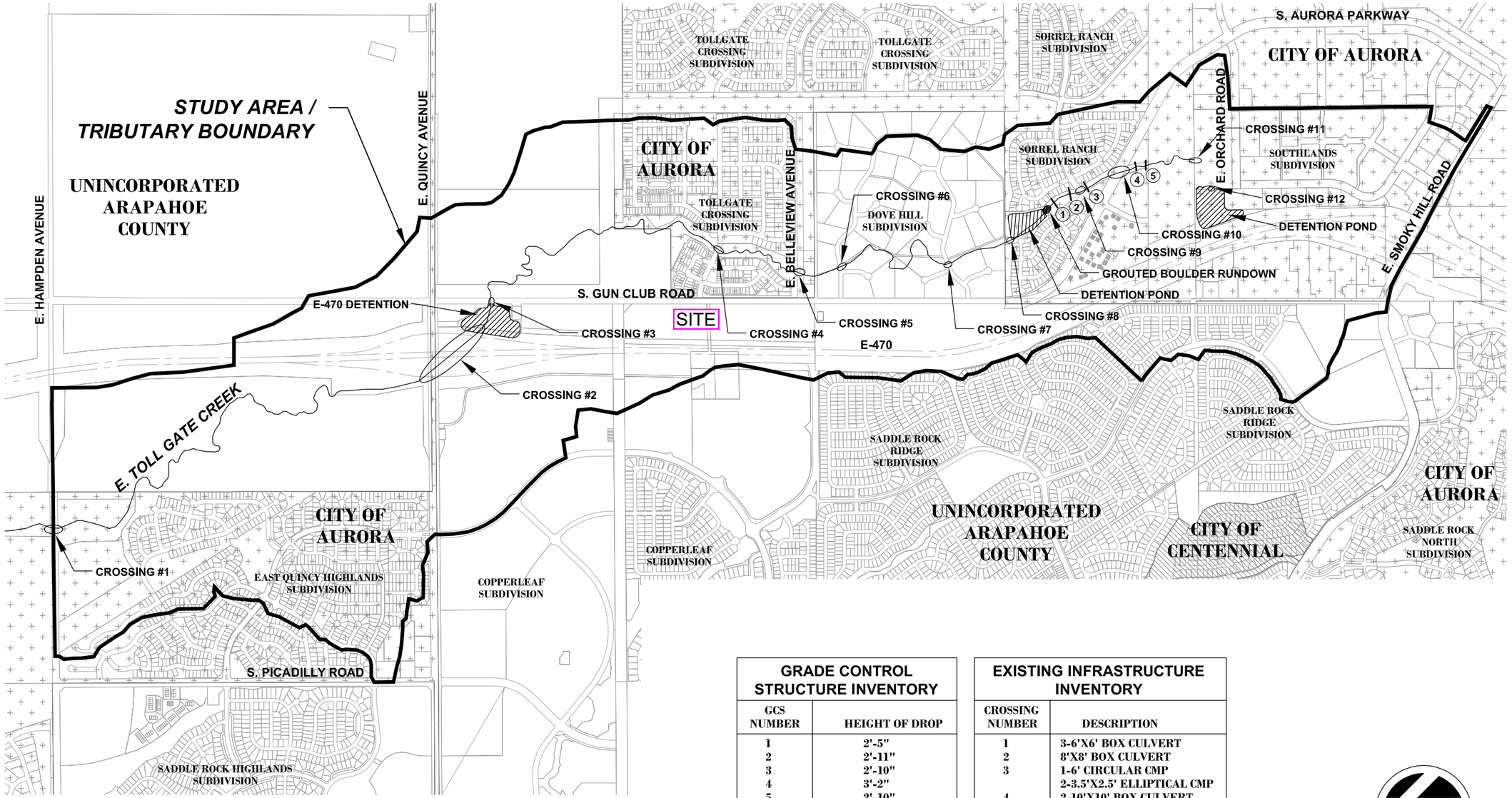
Urban Drainage and Flood Control District

Southeast Metro Stormwater Authority

City of Aurora

Prepared By:

3151 South Vaughn Way, Ste. 680
Aurora, CO 80014
303-368-5601



GRADE CONTROL STRUCTURE INVENTORY	
GCS NUMBER	HEIGHT OF DROP
1	2'-5"
2	2'-11"
3	2'-10"
4	3'-2"
5	2'-10"

EXISTING INFRASTRUCTURE INVENTORY	
CROSSING NUMBER	DESCRIPTION
1	3-6'X6' BOX CULVERT
2	8'X8' BOX CULVERT
3	1-6' CIRCULAR CMP
	2-3.5'X2.5' ELLIPTICAL CMP
4	2-10'X10' BOX CULVERT
5	2-10'X10' BOX CULVERT
6	12'X6'ARCH CULVERT
7	12'X6'ARCH CULVERT
8	OUTLET STRUCTURE
9	20'X6' BOX CULVERT
10	20'X6' BOX CULVERT
11	OUTFALL STRUCTURE
12	OUTLET STRUCTURE

LEGEND

- CITY OF AURORA
- CITY OF CENTENNIAL
- UNINCORPORATED ARAPAHOE COUNTY

0 750 1,500 3,000

(IN FEET)

1 inch =1,500 ft.

ENGINEERING CONSULTANTS
3151 S. Vaughn Way, Suite 680
Aurora, CO 80014
Tel: 303-368-5601
Fax: 303-368-5603

DESIGNED BY:	JRD	DATE: 11/05/10
DRAWN BY:	SCD	DATE: 11/05/10
CHECKED BY:	KSC	DATE: 11/05/10

URBAN DRAINAGE FLOOD CONTROL DISTRICT, SOUTHEAST METRO STORMWATER AUTHORITY, CITY OF AURORA

EAST TOLL GATE CREEK (UPPER) MAJOR DRAINAGEWAY PLAN CONCEPTUAL DESIGN REPORT

EXISTING INFRASTRUCTURE MAP

FIGURE 2-5

SECTION 3.0 HYDROLOGIC ANALYSIS

The special uses are briefly described as follows;

- The Open Space-Special designation was used to estimate the variety of open space uses that could be developed within the tract(s) of land that are bounded by Quincy Road to the south, Hampden Road to the north, E-470 to the east and the East Quincy Highlands development to the west. This area is heavily encumbered with restricted allowable uses. Ultimately, the open space designation allows for uses ranging from its natural state to a golf facility. Therefore, a percent imperviousness was developed that allows for parking facilities, access/circulation roads, regional park facilities, etc.
- The existing power station consists of electrical equipment, work and parking areas and is comprised completely of gravel. Therefore a percent impervious consistent with packed gravel areas was utilized.
- MU-PUD allows for mix-use development. The exact product mixes will be determined off of entitlement documentation but may consist of open space, residential, industrial or commercial.
- E-470 R & D allows for research and development facilities to be developed, which could take the form of an office park.

A total of 35 subwatersheds were delineated within the Project Area for East Toll Gate Creek. Figure 3-1 is an overall map of the Project Area and depicts the major watershed and subwatershed boundaries. Table 3-4 provides the future condition physical characteristics of each minor subwatershed. The subwatersheds vary in size from 12.16 acres to 107.58 acres.

Soils information for the Project Area was obtained from the USDA Web Soil Survey. This information was utilized to determine the composite infiltration rates for the individual sub-basins and is included on Figure 3-2. The soils are classified into four hydrologic soil groups (HSG) identified at A, B, C and D. Soils within the Project Area were generally divided between HSG B and C while small areas of Type D soils were encountered. Composite soil information for the individual sub-basins was generated based on the percent of each HSG. This information generated a weighted Horton's infiltration value used in the generation of the individual sub-basin hydrographs. In general terms, Type 'B' soils are identified as having medium runoff, moderate infiltration rates and a moderate erosion hazard while Type 'C' soils are identified as having low infiltration rates when thoroughly wetted, moderate runoff, and moderate to severe erosion hazard. Type 'D' soils are classified as having very slow infiltration rates, high runoff potential, high shrink-swell potential and severe erosion potential.

Table 3-4
Future Condition Subwatershed Characteristics for Upper East Toll Gate Creek

Sub-Basin	Basin ID	Area (ac.)	Dist. to Centroid (ft)	Length (ft)	Slope (%)	Impervious (%)	Infiltration		
							Initial (in/hr)	Final (in/hr)	Decay Coeff. (1/sec)
UE-1A	11	135.04	2991.12	5205.02	0.0154	90.0	4.06	0.0018	0.57
UE-1B	12	31.55	1450.94	2051.81	0.0107	79.9	4.28	0.0018	0.59
UE-2A	21	28.74	1172.69	2371.25	0.0114	90.0	3.56	0.0018	0.54
UE-2B	22	22.34	1641.02	3174.86	0.0378	73.1	3.08	0.0018	0.51
UE-3A	31	25.79	478.37	1138.90	0.0250	80.6	4.07	0.0018	0.57
UE-3B	32	12.16	640.99	869.09	0.0204	63.2	4.50	0.0018	0.60
UE-3C	33	28.16	1105.10	1252.94	0.0349	37.4	4.30	0.0018	0.59
UE-3D	34	26.69	920.83	1390.22	0.0173	63.8	3.62	0.0018	0.54
UE-3E	35	50.75	798.86	1729.20	0.0224	34.9	3.82	0.0018	0.55
UE-4A	41	24.26	583.97	1230.24	0.0520	13.0	3.72	0.0018	0.55
UE-4B	42	37.70	1587.70	2544.96	0.0303	45.0	3.17	0.0018	0.51
UE-4C	43	39.10	1954.66	2919.84	0.0260	45.6	3.04	0.0018	0.50
UE-5A	51	37.95	977.33	1787.81	0.0475	18.7	3.65	0.0018	0.54
UE-5B	52	68.61	1388.64	2259.84	0.0420	20.0	3.23	0.0018	0.52
UE-5C	53	26.43	1743.98	2003.76	0.0369	20.0	3.00	0.0018	0.50
UE-5D	54	30.21	1296.77	2578.22	0.0206	60.0	3.00	0.0018	0.50
UE-6A	61	53.06	1739.76	2204.93	0.0243	35.9	3.00	0.0018	0.50
UE-6B	62	29.95	1600.37	1811.04	0.0156	57.4	3.00	0.0018	0.50
UE-6C	63	53.50	1420.32	2557.10	0.0295	34.9	3.00	0.0018	0.50
UE-6D	64	23.36	1155.79	1325.81	0.0271	26.0	3.00	0.0018	0.50
UE-6E	65	107.58	2207.57	2242.94	0.0078	17.8	3.00	0.0018	0.50
UE-7A	71	30.72	1364.35	2889.74	0.0104	60.0	3.00	0.0018	0.50
UE-7B	72	29.63	1060.75	2220.77	0.0278	63.2	3.00	0.0018	0.50
UE-7C	73	54.40	397.06	1475.23	0.0298	45.8	3.00	0.0018	0.50
UE-8A	81	34.30	1570.27	3036.00	0.0270	38.4	3.00	0.0018	0.50
UE-8B	82	49.47	2289.41	3493.25	0.0240	60.5	3.00	0.0018	0.50
UE-8C	83	50.50	1393.39	1846.94	0.0254	62.2	3.00	0.0018	0.50
UE-8D	84	53.25	2702.30	4551.89	0.0213	48.6	3.00	0.0018	0.50
UE-9A	91	49.92	1197.50	2512.75	0.0219	45.0	3.00	0.0018	0.50
UE-9D	92	47.10	1596.14	2767.78	0.0126	49.2	3.00	0.0018	0.50
UE-9C	93	69.82	1160.02	2209.15	0.0281	34.2	3.00	0.0018	0.50
UE-10A	101	83.84	2097.74	2138.93	0.0351	24.3	3.00	0.0018	0.50
UE-10B	102	47.49	2192.78	1625.18	0.0400	36.3	3.00	0.0018	0.50
UE-10C	103	78.46	2644.75	1614.10	0.0409	20.0	3.00	0.0018	0.50
UE-10D	104	66.05	2386.03	1548.10	0.0368	12.8	3.00	0.0018	0.50

SECTION 3.0 HYDROLOGIC ANALYSIS

Table 3-6
Future Land Use Peak Flow Summary for Upper East Toll Gate Creek

Mainstem Station	Design Point	Location	Drainage Area (square miles)	Peak Flows (cfs)						
				2-year	5-year	10-year	25-year	50-year	100-year	500-year
217+20	531	400 feet upstream of S. Aurora Parkway	0.30	59	89	107	157	188	226	1069
213+20	532	S. Aurora Parkway	0.32	67	104	126	184	222	268	1112
207+50	533	E. Alexander Drive	0.36	77	126	155	233	284	346	1212
195+40	535	Inflow into the Sorrel Ranch Detention Pond	0.49	115	202	256	394	485	593	1519
194+50	-	Outfall from the Sorrel Ranch Detention Pond	-	64	109	142	204	230	266	1503
185+40	551	E. Crestline Circle	0.78	125	221	283	465	560	678	2221
165+50	552	E. Progress Circle	0.89	115	214	288	479	584	766	2259
156+50	553	E. Belleview Avenue	0.98	122	231	311	524	657	985	2395
145+90	561	E. Chenango Place	1.06	125	243	331	561	698	1033	2512
124+50	563	Downstream Design Point of Toll Gate Subdivision	1.23	129	259	363	622	780	1141	2754
93+00	503	South Gun Club Road	1.49	132	267	385	667	856	1253	2896
93+00	1653	Inflow to Existing E-470 Detention Pond	1.40	141	289	419	726	936	1367	3099
91+40	-	Outflow to Existing E-470 8' x 8' Box Culvert		137	258	353	564	697	863	
67+30	601	Station 67+30	1.87	156	293	369	573	723	896	3290
38+00	602	Station 38+00	2.07	162	319	374	579	717	907	3342
7+00	504	E. Hampden Avenue	2.56	177	393	428	635	797	1061	3404

TABLE B2: Existing Conditions CUHP Input Parameters

							Maximum Depression Storage (Watershed in)		Infiltration			
Catchment Name	Raingage	Area (mi^2)	Distance to Centroid (mi)	Length (mi)	Slope (ft/ft)	Percent Imperviousness	Pervious	Impervious	Initial Rate (in/hr)	Horton's Decay Coefficient (1/seconds)	Final Rate (in/hr)	Comment
11	100-year	0.211	0.5665	0.9858	0.0154	90.0	0.4	0.1	4.06	0.0018	0.57	Sub-Basin UE-1A
12	100-year	0.0493	0.2748	0.3886	0.0107	79.9	0.4	0.1	4.28	0.0018	0.59	Sub-Basin UE-1B
21	100-year	0.0449	0.2221	0.4491	0.0114	90.0	0.4	0.1	3.56	0.0018	0.54	Sub-Basin UE-2A
22	100-year	0.0349	0.3108	0.6013	0.0378	66.8	0.4	0.1	3.08	0.0018	0.51	Sub-Basin UE-2B
31	100-year	0.0403	0.0906	0.2157	0.025	7.7	0.4	0.1	4.07	0.0018	0.57	Sub-Basin UE-3A
32	100-year	0.019	0.1214	0.1646	0.0204	59.8	0.4	0.1	4.5	0.0018	0.6	Sub-Basin UE-3B
33	100-year	0.0447	0.2093	0.2373	0.0349	37.4	0.4	0.1	4.3	0.0018	0.59	Sub-Basin UE-3C
34	100-year	0.0417	0.1744	0.2633	0.0173	47.2	0.4	0.1	3.62	0.0018	0.54	Sub-Basin UE-3D
35	100-year	0.0793	0.1513	0.3275	0.0224	34.9	0.4	0.1	3.82	0.0018	0.55	Sub-Basin UE-3E
41	100-year	0.0379	0.1106	0.233	0.052	13.0	0.4	0.1	3.72	0.0018	0.55	Sub-Basin UE-4A
42	100-year	0.0589	0.3007	0.482	0.0303	45.0	0.4	0.1	3.17	0.0018	0.51	Sub-Basin UE-4B
43	100-year	0.0611	0.3702	0.553	0.026	37.6	0.4	0.1	3.04	0.0018	0.5	Sub-Basin UE-4C
51	100-year	0.0593	0.1851	0.3386	0.0475	18.7	0.4	0.1	3.65	0.0018	0.54	Sub-Basin UE-5A
52	100-year	0.1072	0.263	0.428	0.042	20.0	0.4	0.1	3.23	0.0018	0.52	Sub-Basin UE-5B
53	100-year	0.0413	0.3303	0.3795	0.0369	20.0	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-5C
54	100-year	0.0472	0.2456	0.4883	0.0206	5.0	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-5D
61	100-year	0.0829	0.3295	0.4176	0.0243	35.9	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-6A
62	100-year	0.0468	0.3031	0.343	0.0156	57.4	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-6B
63	100-year	0.0836	0.269	0.4843	0.0295	34.9	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-6C
64	100-year	0.0365	0.2189	0.2511	0.0271	26.0	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-6D
65	100-year	0.1681	0.4181	0.4248	0.0078	5.4	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-6E
71	100-year	0.048	0.2584	0.5473	0.0104	5.0	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-7A
72	100-year	0.0463	0.2009	0.4206	0.0278	12.6	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-7B
73	100-year	0.085	0.0752	0.2794	0.0298	14.9	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-7C
81	100-year	0.0536	0.2974	0.575	0.027	38.4	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-8A
82	100-year	0.0773	0.4336	0.6616	0.024	6.2	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-8B
83	100-year	0.0789	0.2639	0.3498	0.0254	10.3	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-8C
84	100-year	0.0832	0.5118	0.8621	0.0213	48.6	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-8D
91	100-year	0.078	0.2268	0.4759	0.0219	45.0	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-9A
92	100-year	0.0736	0.3023	0.5242	0.0126	49.2	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-9D
93	100-year	0.1091	0.2197	0.4184	0.0281	34.2	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-9C
101	100-year	0.1310	0.3973	0.4051	0.0351	10.5	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-10A
102	100-year	0.0742	0.4153	0.3078	0.0400	25.5	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-10B
103	100-year	0.1226	0.5009	0.3057	0.0409	5.0	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-10C
104	100-year	0.1032	0.4519	0.2932	0.0368	7.0	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-10D

FLOOD HAZARD AREA DELINEATION

EAST TOLL GATE CREEK (UPPER)

DECEMBER 2010

PROJECT SPONSORS:

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT

SOUTHEAST METRO STORMWATER AUTHORITY

CITY OF AURORA

PREPARED BY:

ENGINEERING CONSULTANTS

3151 South Vaughn Way, Ste. 680
Aurora, CO 80014
303-368-5601

SECTION 3.0 HYDROLOGIC ANALYSIS

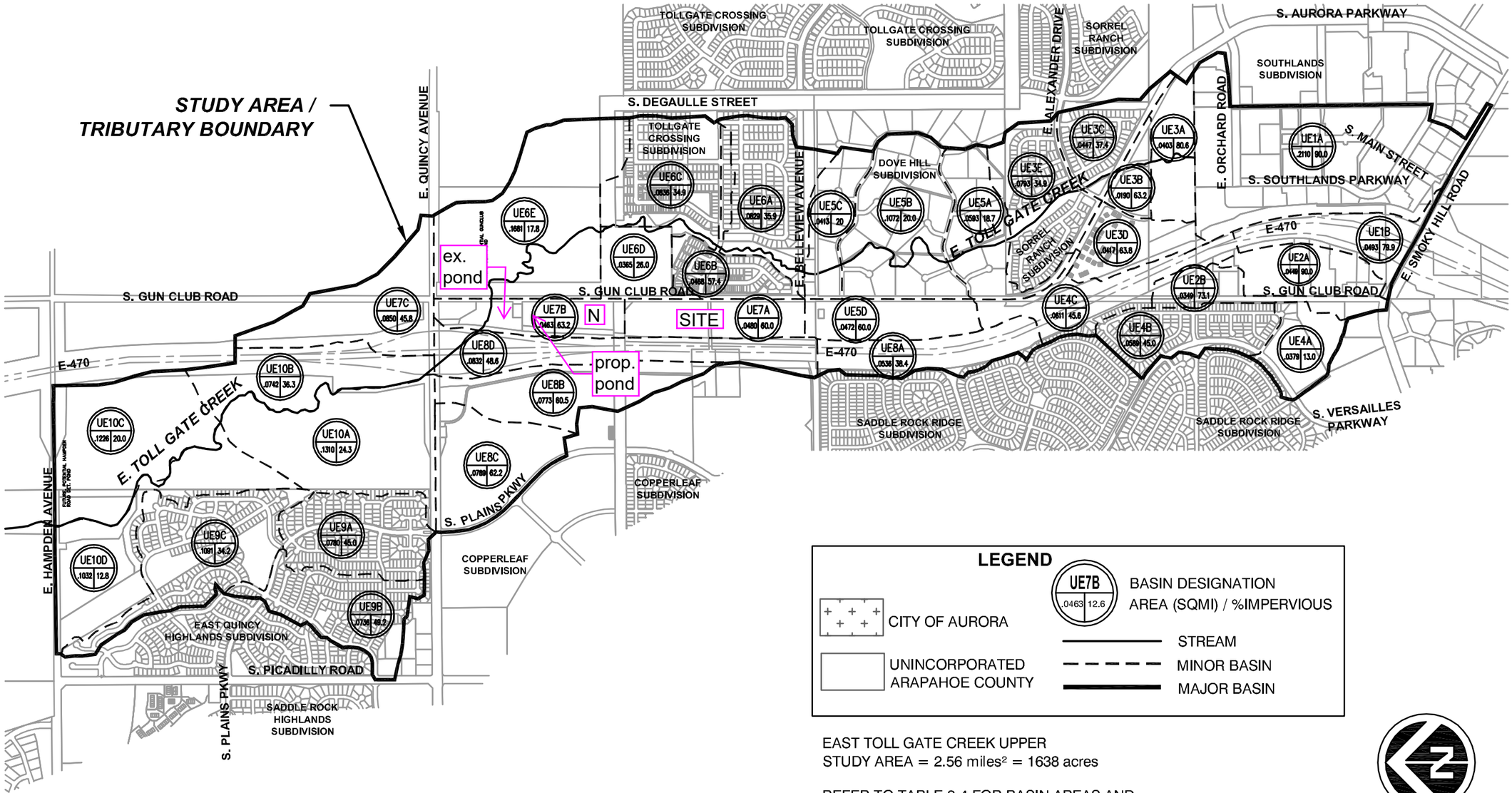
Table 3-6
Future Land Use Peak Flow Summary for Upper East Toll Gate Creek

Mainstem Station	Design Point	Location	Drainage Area (square miles)	Peak Flows (cfs)						
				2-year	5-year	10-year	25-year	50-year	100-year	500-year
217+20	531	400 feet upstream of S. Aurora Parkway	0.30	59	89	107	157	188	226	1069
213+20	532	S. Aurora Parkway	0.32	67	104	126	184	222	268	1112
207+50	533	E. Alexander Drive	0.36	77	126	155	233	284	346	1212
195+40	535	Inflow into the Sorrel Ranch Detention Pond	0.49	115	202	256	394	485	593	1519
194+50	-	Outfall from the Sorrel Ranch Detention Pond	-	64	109	142	204	230	266	1503
185+40	551	E. Crestline Circle	0.78	125	221	283	465	560	678	2221
165+50	552	E. Progress Circle	0.89	115	214	288	479	584	766	2259
156+50	553	E. Belleview Avenue	0.98	122	231	311	524	657	985	2395
145+90	561	E. Chenango Place	1.06	125	243	331	561	698	1033	2512
124+50	563	Downstream Design Point of Toll Gate Subdivision	1.23	129	259	363	622	780	1141	2754
93+00	503	South Gun Club Road	1.49	132	267	385	667	856	1253	2896
93+00	1653	Inflow to Existing E-470 Detention Pond	1.40	141	289	419	726	936	1367	3099
91+40	-	Outflow to Existing E-470 8' x 8' Box Culvert		137	258	353	564	697	863	
67+30	601	Station 67+30	1.87	156	293	369	573	723	896	3290
38+00	602	Station 38+00	2.07	162	319	374	579	717	907	3342
7+00	504	E. Hampden Avenue	2.56	177	393	428	635	797	1061	3404

TABLE B2: Future Conditions CUHP Input Parameters

							Maximum Depression Storage (Watershed in)		Infiltration			
Catchment Name	Raingage	Area (mi^2)	Distance to Centroid (mi)	Length (mi)	Slope (ft/ft)	Percent Imperviousness	Pervious	Impervious	Initial Rate (in/hr)	Horton's Decay Coefficient (1/seconds)	Final Rate (in/hr)	Comment
11	100-year	0.211	0.5665	0.9858	0.0154	90.0	0.4	0.1	4.06	0.0018	0.57	Sub-Basin UE-1A
12	100-year	0.0493	0.2748	0.3886	0.0107	79.9	0.4	0.1	4.28	0.0018	0.59	Sub-Basin UE-1B
21	100-year	0.0449	0.2221	0.4491	0.0114	90.0	0.4	0.1	3.56	0.0018	0.54	Sub-Basin UE-2A
22	100-year	0.0349	0.3108	0.6013	0.0378	73.1	0.4	0.1	3.08	0.0018	0.51	Sub-Basin UE-2B
31	100-year	0.0403	0.0906	0.2157	0.025	80.6	0.4	0.1	4.07	0.0018	0.57	Sub-Basin UE-3A
32	100-year	0.019	0.1214	0.1646	0.0204	63.2	0.4	0.1	4.5	0.0018	0.6	Sub-Basin UE-3B
33	100-year	0.0447	0.2093	0.2373	0.0349	37.4	0.4	0.1	4.3	0.0018	0.59	Sub-Basin UE-3C
34	100-year	0.0417	0.1744	0.2633	0.0173	63.8	0.4	0.1	3.62	0.0018	0.54	Sub-Basin UE-3D
35	100-year	0.0793	0.1513	0.3275	0.0224	34.9	0.4	0.1	3.82	0.0018	0.55	Sub-Basin UE-3E
41	100-year	0.0379	0.1106	0.233	0.052	13.0	0.4	0.1	3.72	0.0018	0.55	Sub-Basin UE-4A
42	100-year	0.0589	0.3007	0.482	0.0303	45.0	0.4	0.1	3.17	0.0018	0.51	Sub-Basin UE-4B
43	100-year	0.0611	0.3702	0.553	0.026	45.6	0.4	0.1	3.04	0.0018	0.5	Sub-Basin UE-4C
51	100-year	0.0593	0.1851	0.3386	0.0475	18.7	0.4	0.1	3.65	0.0018	0.54	Sub-Basin UE-5A
52	100-year	0.1072	0.263	0.428	0.042	20.0	0.4	0.1	3.23	0.0018	0.52	Sub-Basin UE-5B
53	100-year	0.0413	0.3303	0.3795	0.0369	20.0	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-5C
54	100-year	0.0472	0.2456	0.4883	0.0206	60.0	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-5D
61	100-year	0.0829	0.3295	0.4176	0.0243	35.9	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-6A
62	100-year	0.0468	0.3031	0.343	0.0156	57.4	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-6B
63	100-year	0.0836	0.269	0.4843	0.0295	34.9	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-6C
64	100-year	0.0365	0.2189	0.2511	0.0271	26.0	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-6D
65	100-year	0.1681	0.4181	0.4248	0.0078	17.8	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-6E
71	100-year	0.048	0.2584	0.5473	0.0104	60.0	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-7A
72	100-year	0.0463	0.2009	0.4206	0.0278	63.2	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-7B
73	100-year	0.085	0.0752	0.2794	0.0298	45.8	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-7C
81	100-year	0.0536	0.2974	0.575	0.027	38.4	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-8A
82	100-year	0.0773	0.4336	0.6616	0.024	60.5	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-8B
83	100-year	0.0789	0.2639	0.3498	0.0254	62.2	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-8C
84	100-year	0.0832	0.5118	0.8621	0.0213	48.6	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-8D
91	100-year	0.078	0.2268	0.4759	0.0219	45.0	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-9A
92	100-year	0.0736	0.3023	0.5242	0.0126	49.2	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-9D
93	100-year	0.1091	0.2197	0.4184	0.0281	34.2	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-9C
101	100-year	0.1310	0.3973	0.4051	0.0351	24.3	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-10A
102	100-year	0.0742	0.4153	0.3078	0.0400	36.3	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-10B
103	100-year	0.1226	0.5009	0.3057	0.0409	20.0	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-10C
104	100-year	0.1032	0.4519	0.2932	0.0368	12.8	0.4	0.1	3	0.0018	0.5	Sub-Basin UE-10D

Include Figure ES-2 as well.



LEGEND

- CITY OF AURORA
- UNINCORPORATED ARAPAHOE COUNTY
- UE7B .0463 12.6 — BASIN DESIGNATION, AREA (SQMI) / %IMPERVIOUS
- STREAM
- MINOR BASIN
- MAJOR BASIN

EAST TOLL GATE CREEK UPPER
STUDY AREA = 2.56 miles² = 1638 acres

REFER TO TABLE 3-4 FOR BASIN AREAS AND PERCENT IMPERVIOUS VALUES

0 750 1,500 3,000

(IN FEET)
1 inch =1,500 ft.

J3 Engineering Consultants Inc.
3151 S. Vaughn Way, Suite 680
Aurora, CO 80014
Tel: 303-368-5601 Fax: 303-368-5603

DESIGNED BY: JRD	DATE: 05/26/09	URBAN DRAINAGE FLOOD CONTROL DISTRICT, SOUTHEAST METRO STORMWATER AUTHORITY, CITY OF AURORA
DRAWN BY: SCD	DATE: 10/05/09	EAST TOLL GATE CREEK (UPPER) FLOOD HAZARD AREA DELINEATION
CHECKED BY: KSC	DATE:	SUBWATERSHED BOUNDARIES

FIGURE B-1

SEE SHEET 3-3A

S. PLAINS

MINOR STM CONVEYANCE (TYP)

E. QUINCY AVENUE

EXISTING 8'X8' BOX CULVERT

EX. E-470 DET. POND

EXISTING 1-6' CIRCULAR CMP
2-3.5'X2.5' ELLIPTICAL CMP

S. GUN CLUB ROAD

E-470

E. TOLL GATE CREEK

prop. pond

N

PSCO

SITE

COPPERLEAF SUBDIVISION

EAST TOLL GATE CREEK WATERSHED BOUNDARY

UNINCORPORATED ARAPAHOE COUNTY

CITY OF AURORA

EAST TOLL GATE CREEK WATERSHED BOUNDARY

EXISTING 2-10'X10' BOX CULVERT

TOLLGATE CROSSING SUBDIVISION

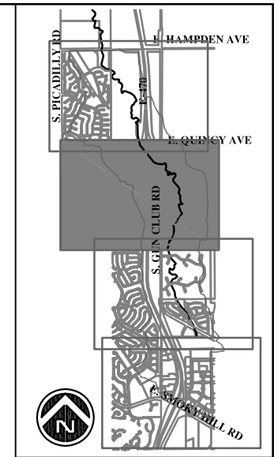
MINOR STM CONVEYANCE (TYP)

EXISTING 2-10'X10' BOX CULVERT

E. BELLEVIEW AVENUE

S. DEGAULLE STREET

SEE SHEET 3-3C



KEY MAP SCALE: 1"=8,000'

LEGEND

- EXISTING CONTOUR
- DESIGN POINT (541)
- BASIN DESIGNATION (UE7B 0.0112)
- CONVEYANCE ELEMENT (1084)
- DETENTION POND DESIGNATION (501)
- MINOR BASIN
- MAJOR BASIN
- FLOW ARROW

0 300 600 1200

(IN FEET)
1 inch =600 ft.

J3 Engineering Consultants Inc.
3151 S. Vaughn Way, Suite 680
Aurora, CO 80014
Tel: 303-368-5601 Fax: 303-368-5603

DESIGNED BY: JRD	DATE: 05/26/09	
DRAWN BY: SCD	DATE: 10/05/09	
CHECKED BY: KSC	DATE:	

URBAN DRAINAGE FLOOD CONTROL DISTRICT,
SOUTHEAST METRO STORMWATER AUTHORITY,
CITY OF AURORA

EAST TOLL GATE CREEK (UPPER)
FLOOD HAZARD AREA DELINEATION

EPA SWMM SCHEMATIC

FIGURE B-3B

SEE SHEET 3-3B

SITE

EXISTING 2-10'X10' BOX CULVERT

MINOR STM CONVEYANCE (TYP)

E. BELLEVIEW AVENUE

S. DE

EXISTING 6'CIRCULAR CMP

EAST TOLL GATE CREEK WATERSHED BOUNDARY

DOVE HILL SUBDIVISION

TOLLGATE CROSSING SUBDIVISION

S. GUN CLUB ROAD

E-470

EAST TOLL GATE CREEK WATERSHED BOUNDARY

SADDLE ROCK RIDGE SUBDIVISION

EXISTING 6' CIRCULAR CMP

E. TOLL GATE CREEK

EXISTING OUTLET STRUCTURE

S. DEGAULLE STREET

EX. SORREL RANCH DET. POND

SORREL RANCH SUBDIVISION

EXISTING 20'X6' BOX CULVERT

E. ALEXANDER DRIVE

UNINCORPORATED ARAPAHOE COUNTY

EXISTING 20'X8' BOX CULVERT

SORREL RANCH SUBDIVISION

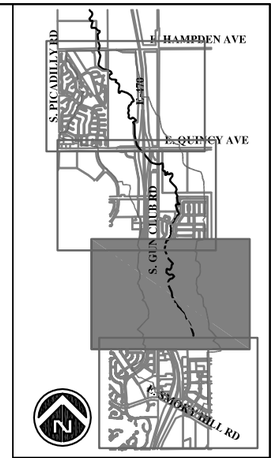
MINOR STM CONVEYANCE (TYP)

CITY OF AURORA

S. AURORA PARKWAY

EAST TOLL GATE CREEK WATERSHED BOUNDARY

SEE SHEET 3-3D



KEY MAP SCALE: 1"=8,000'

LEGEND

EXISTING CONTOUR

DESIGN POINT 541

BASIN DESIGNATION UE7B 0.0112

CONVEYANCE ELEMENT 1084

DETENTION POND DESIGNATION 501

MINOR BASIN

MAJOR BASIN

FLOW ARROW

0 300 600 1200

(IN FEET)
1 inch =600 ft.

J3 Engineering Consultants Inc.
3151 S. Vaughn Way, Suite 680
Aurora, CO 80014
Tel: 303-368-5601 Fax: 303-368-5603

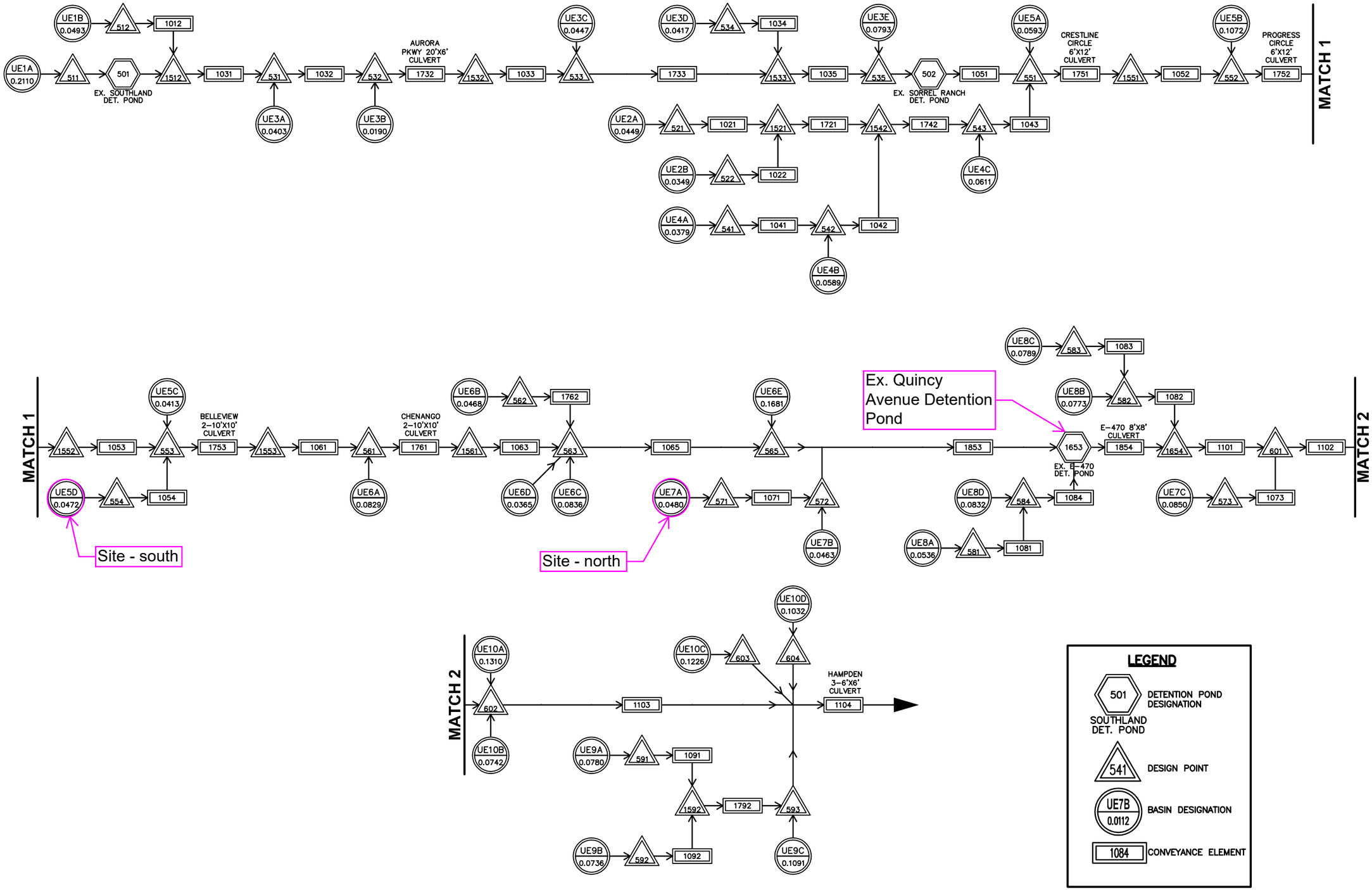
DESIGNED BY: JRD	DATE: 05/26/09	
DRAWN BY: SCD	DATE: 10/05/09	
CHECKED BY: KSC	DATE:	

URBAN DRAINAGE FLOOD CONTROL DISTRICT,
SOUTHEAST METRO STORMWATER AUTHORITY,
CITY OF AURORA

EAST TOLL GATE CREEK (UPPER)
FLOOD HAZARD AREA DELINEATION

EPA SWMM SCHEMATIC

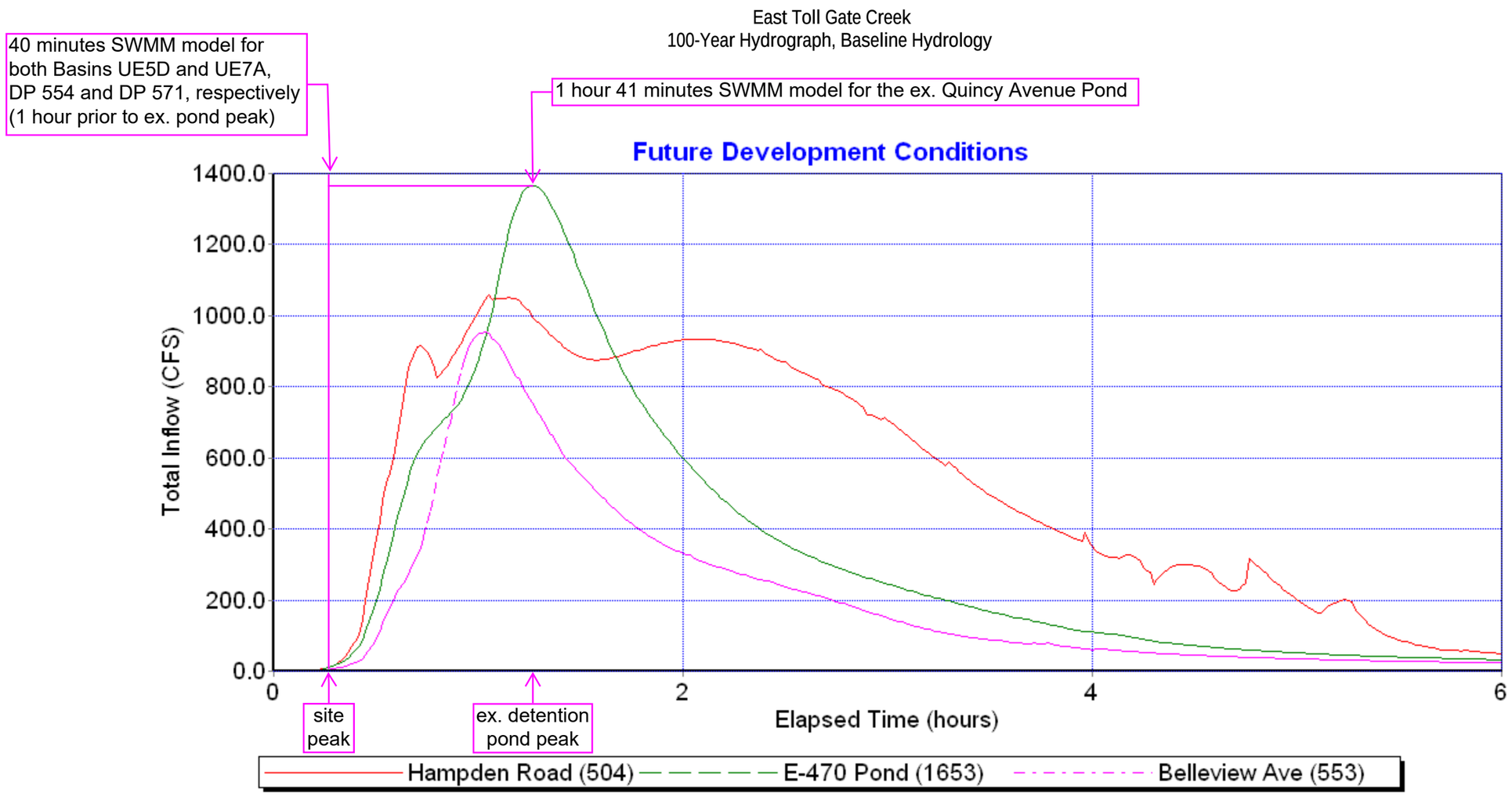
FIGURE B-3C



J3 Engineering Consultants Inc.
3151 S. Vaughn Way, Suite 680
Aurora, CO 80014
Tel: 303-368-5601 Fax: 303-368-5603

DESIGNED BY: JRD	DATE: 05/26/09	URBAN DRAINAGE FLOOD CONTROL DISTRICT, SOUTHEAST METRO STORMWATER AUTHORITY, CITY OF AURORA
DRAWN BY: SCD	DATE: 10/05/09	EAST TOLL GATE CREEK (UPPER) FLOOD HAZARD AREA DELINEATION
CHECKED BY: KSC	DATE:	EPA SWMM ROUTING SCHEMATIC

FIGURE B-4


East Toll Gate Creek
100-Year Hydrograph, Baseline Hydrology
40 minutes SWMM model for both Basins UE5D and UE7A, DP 554 and DP 571, respectively (1 hour prior to ex. pond peak)
1 hour 41 minutes SWMM model for the ex. Quincy Avenue Pond
Future Development Conditions
Total Inflow (CFS)
1400.0
1200.0
1000.0
800.0
600.0
400.0
200.0
0.0
0
2
4
6
Elapsed Time (hours)
site peak
ex. detention pond peak
Hampden Road (504)
E-470 Pond (1653)
Belleview Ave (553)

EPA SWMM OUTPUT

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.0 (Build 5.0.014)
--------------------------------------------------------------

  East Toll Gate Creek Upper
  100-year event ~ Future Land Use Conditions
  East Tollgate Creek Upper - Southlands to Hampden

***********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
***********************************************************

***************
Analysis Options
***************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Water Quality .......... NO
Flow Routing Method ...... KINWAVE
Starting Date ............ JAN-01-2005 00:00:00
Ending Date .............. JAN-01-2005 23:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Routing Time Step ........ 10.00 sec

WARNING 05: minimum elevation drop used for Conduit 101
WARNING 05: minimum elevation drop used for Conduit 102
WARNING 05: minimum elevation drop used for Conduit 41
WARNING 05: minimum elevation drop used for Conduit 535
WARNING 05: minimum elevation drop used for Conduit 34
WARNING 05: minimum elevation drop used for Conduit 53
WARNING 05: minimum elevation drop used for Conduit 22
WARNING 05: minimum elevation drop used for Conduit 93
WARNING 05: minimum elevation drop used for Conduit 32
WARNING 05: minimum elevation drop used for Conduit 64
WARNING 05: minimum elevation drop used for Conduit 62
WARNING 05: minimum elevation drop used for Conduit 84
WARNING 05: minimum elevation drop used for Conduit 33
WARNING 05: minimum elevation drop used for Conduit 571
WARNING 05: minimum elevation drop used for Conduit 11
WARNING 05: minimum elevation drop used for Conduit 54
WARNING 05: minimum elevation drop used for Conduit 103
WARNING 05: minimum elevation drop used for Conduit 1804
WARNING 05: minimum elevation drop used for Conduit 43
WARNING 05: minimum elevation drop used for Conduit 52
WARNING 05: minimum elevation drop used for Conduit 35
WARNING 05: minimum elevation drop used for Conduit 91
WARNING 05: minimum elevation drop used for Conduit 72
WARNING 05: minimum elevation drop used for Conduit 572
WARNING 05: minimum elevation drop used for Conduit 21
WARNING 05: minimum elevation drop used for Conduit 92
WARNING 05: minimum elevation drop used for Conduit 65
WARNING 05: minimum elevation drop used for Conduit 73
WARNING 05: minimum elevation drop used for Conduit 83
WARNING 05: minimum elevation drop used for Conduit 593
WARNING 05: minimum elevation drop used for Conduit 565
WARNING 05: minimum elevation drop used for Conduit 81
WARNING 05: minimum elevation drop used for Conduit 104
WARNING 05: minimum elevation drop used for Conduit 63
WARNING 05: minimum elevation drop used for Conduit 604
WARNING 05: minimum elevation drop used for Conduit 61
WARNING 05: minimum elevation drop used for Conduit 511
WARNING 05: minimum elevation drop used for Conduit 12
WARNING 05: minimum elevation drop used for Conduit 51
WARNING 05: minimum elevation drop used for Conduit 42
WARNING 05: minimum elevation drop used for Conduit 82
WARNING 05: minimum elevation drop used for Conduit 31
WARNING 05: minimum elevation drop used for Conduit 603

**************************        Volume         Volume
Flow Routing Continuity        acre-feet      10^6 gal
**************************     ---------      ---------
Dry Weather Inflow .......         0.000          0.000
Wet Weather Inflow .......         0.000          0.000
Groundwater Inflow .......         0.000          0.000
RDII Inflow ..............         0.000          0.000
External Inflow ..........       264.093         86.059
External Outflow .........       272.018         88.641
Internal Outflow .........         0.000          0.000
Evaporation Loss .........         0.000          0.000
Initial Stored Volume ....         0.000          0.000
Final Stored Volume ......         4.290          1.398
Continuity Error (%) .....        -4.625

*******************************
Highest Flow Instability Indexes
*******************************
Link 1053 (2)
Link 1753 (2)
Link 1752 (2)
Link 1061 (2)
Link 1853 (2)

************************
Routing Time Step Summary
************************
Minimum Time Step           :    10.00 sec
Average Time Step           :    10.00 sec
Maximum Time Step           :    10.00 sec
Percent in Steady State     :     0.00
Average Iterations per Step :     1.01
```

EPA SWMM OUTPUT

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days	hr:min
JUNCT_1533	JUNCTION	1.08	4.94	1166.63	0	00:38
JUNCT_35	JUNCTION	0.00	0.00	1159.14	0	00:00
JUNCT_535	JUNCTION	1.07	4.94	1164.08	0	00:39
JUNCT_1051	JUNCTION	0.80	1.91	1161.05	0	01:12
JUNCT_1551	JUNCTION	1.01	6.00	1150.96	0	01:02
JUNCT_1552	JUNCTION	1.00	6.00	1126.78	0	01:21
JUNCT_1553	JUNCTION	0.85	4.26	1114.50	0	01:03
JUNCT_61	JUNCTION	0.00	0.00	1104.26	0	00:00
JUNCT_1561	JUNCTION	0.81	4.44	1108.20	0	01:03
JUNCT_62	JUNCTION	0.00	0.00	1096.68	0	00:00
JUNCT_562	JUNCTION	0.05	1.16	1097.84	0	00:40
JUNCT_563	JUNCTION	1.02	4.56	1090.22	0	01:09
JUNCT_565	JUNCTION	1.02	4.50	1070.09	0	01:17
JUNCT_72	JUNCTION	0.00	0.00	1065.58	0	00:00
JUNCT_71	JUNCTION	0.00	0.00	1113.64	0	00:00
JUNCT_571	JUNCTION	0.11	2.49	1116.13	0	00:40
JUNCT_572	JUNCTION	0.11	2.45	1068.03	0	00:42
JUNCT_503	JUNCTION	1.16	4.93	1070.51	0	01:16
JUNCT_81	JUNCTION	0.00	0.00	1126.59	0	00:00
JUNCT_581	JUNCTION	0.13	2.69	1129.27	0	00:40
JUNCT_84	JUNCTION	0.00	0.00	1066.48	0	00:00
JUNCT_584	JUNCTION	0.17	3.21	1069.69	0	00:47
JUNCT_82	JUNCTION	0.00	0.00	1061.95	0	00:00
JUNCT_83	JUNCTION	0.00	0.00	1062.55	0	00:00
JUNCT_583	JUNCTION	0.09	2.96	1065.51	0	00:35
JUNCT_582	JUNCTION	0.11	3.03	1064.99	0	00:35
JUNCT_1654	JUNCTION	1.11	3.94	1061.14	0	01:39
JUNCT_73	JUNCTION	0.00	0.00	1053.00	0	00:00
JUNCT_573	JUNCTION	0.07	3.12	1056.12	0	00:30
JUNCT_601	JUNCTION	1.18	4.08	1048.24	0	01:45
JUNCT_102	JUNCTION	0.00	0.00	1024.96	0	00:00
JUNCT_101	JUNCTION	0.00	0.00	1024.96	0	00:00
JUNCT_602	JUNCTION	1.24	4.14	1029.10	0	01:54
JUNCT_104	JUNCTION	0.00	0.00	1000.00	0	00:00
JUNCT_604	JUNCTION	0.00	0.00	1000.00	0	00:00
JUNCT_93	JUNCTION	0.00	0.00	1000.00	0	00:00
JUNCT_91	JUNCTION	0.00	0.00	1046.74	0	00:00
JUNCT_92	JUNCTION	0.00	0.00	1046.49	0	00:00
JUNCT_593	JUNCTION	0.19	4.00	1004.00	0	00:33
JUNCT_1804	JUNCTION	0.65	3.69	1001.80	0	01:03
JUNCT_103	JUNCTION	0.00	0.00	1000.00	0	00:00
JUNCT_65	JUNCTION	0.00	0.00	1065.58	0	00:00
JUNCT_63	JUNCTION	0.00	0.00	1085.66	0	00:00
JUNCT_64	JUNCTION	0.00	0.00	1085.66	0	00:00
JUNCT_53	JUNCTION	0.00	0.00	1110.91	0	00:00
JUNCT_54	JUNCTION	0.00	0.00	1118.00	0	00:00
JUNCT_554	JUNCTION	0.11	2.71	1120.71	0	00:40
JUNCT_52	JUNCTION	0.00	0.00	1120.96	0	00:00
JUNCT_42	JUNCTION	0.00	0.00	1204.61	0	00:00
JUNCT_41	JUNCTION	0.00	0.00	1249.41	0	00:00
JUNCT_542	JUNCTION	0.12	2.64	1207.25	0	00:40
JUNCT_21	JUNCTION	0.00	0.00	1237.51	0	00:00
JUNCT_521	JUNCTION	0.10	2.80	1240.31	0	00:35
JUNCT_22	JUNCTION	0.00	0.00	1223.29	0	00:00
JUNCT_522	JUNCTION	0.09	2.33	1225.62	0	00:40
JUNCT_1521	JUNCTION	0.15	3.66	1206.98	0	00:40
JUNCT_1542	JUNCTION	0.17	4.04	1201.16	0	00:41
JUNCT_43	JUNCTION	0.00	0.00	1163.10	0	00:00
JUNCT_543	JUNCTION	0.18	4.32	1167.42	0	00:42
JUNCT_51	JUNCTION	0.00	0.00	1145.14	0	00:00
JUNCT_31	JUNCTION	0.00	0.00	1169.31	0	00:00
JUNCT_12	JUNCTION	0.00	0.00	1204.00	0	00:00
JUNCT_512	JUNCTION	0.13	3.25	1207.25	0	00:35
JUNCT_11	JUNCTION	0.00	0.00	1183.28	0	00:00
JUNCT_511	JUNCTION	0.00	0.00	1183.28	0	00:00
JUNCT_1512	JUNCTION	0.52	3.23	1186.51	0	00:40
JUNCT_531	JUNCTION	0.68	2.34	1171.65	0	00:38
JUNCT_32	JUNCTION	0.00	0.00	1167.71	0	00:00
JUNCT_1532	JUNCTION	1.04	3.96	1168.95	0	00:39
JUNCT_33	JUNCTION	0.00	0.00	1163.06	0	00:00
JUNCT_34	JUNCTION	0.00	0.00	1167.39	0	00:00
JUNCT_534	JUNCTION	0.11	3.12	1170.51	0	00:35
JUNCT_603	JUNCTION	0.00	0.00	1000.00	0	00:00
ROOT_JUNCT_1804	OUTFALL	0.00	0.00	998.11	0	00:00
JUNCT_541	DIVIDER	0.05	0.65	1250.06	0	00:40
JUNCT_591	DIVIDER	0.16	3.00	1049.74	0	00:26
JUNCT_592	DIVIDER	0.17	3.00	1049.49	0	00:28
JUNCT_1592	DIVIDER	0.20	4.00	1048.04	0	00:30
JUNCT_504	DIVIDER	1.28	4.13	1004.13	0	02:11
JUNCT_561	DIVIDER	0.86	4.44	1108.71	0	01:03
JUNCT_553	DIVIDER	0.89	4.29	1115.20	0	01:02
JUNCT_552	DIVIDER	1.06	6.00	1126.96	0	00:48
JUNCT_551	DIVIDER	0.99	6.00	1151.14	0	00:40
JUNCT_533	DIVIDER	1.04	3.96	1167.02	0	00:38
JUNCT_532	DIVIDER	0.68	2.33	1170.04	0	00:40
JUNCT_501	STORAGE	4.75	9.43	1192.72	0	01:20
JUNCT_502	STORAGE	2.30	9.08	1168.22	0	01:12
JUNCT_1653	STORAGE	1.77	13.18	1078.46	0	01:41

EPA SWMM OUTPUT

****
Node InFlow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal
JUNCT_1533	JUNCTION	0.00	451.66	0 00:37	0.000	16.773
JUNCT_35	JUNCTION	156.15	156.15	0 00:35	2.316	2.316
JUNCT_535	JUNCTION	0.00	593.21	0 00:38	0.000	19.084
JUNCT_1051	JUNCTION	0.00	266.49	0 01:12	0.000	19.067
JUNCT_1551	JUNCTION	0.00	773.36	0 00:45	0.000	29.545
JUNCT_1552	JUNCTION	0.00	876.61	0 01:00	0.000	33.636
JUNCT_1553	JUNCTION	0.00	974.31	0 01:03	0.000	36.509
JUNCT_61	JUNCTION	130.31	130.31	0 00:40	2.568	2.568
JUNCT_1561	JUNCTION	0.00	1030.96	0 01:03	0.000	39.075
JUNCT_62	JUNCTION	96.71	96.71	0 00:40	1.726	1.726
JUNCT_562	JUNCTION	0.00	96.71	0 00:40	0.000	1.726
JUNCT_563	JUNCTION	0.00	1141.35	0 01:09	0.000	44.443
JUNCT_565	JUNCTION	0.00	1194.98	0 01:17	0.000	49.091
JUNCT_72	JUNCTION	119.78	119.78	0 00:35	1.779	1.779
JUNCT_71	JUNCTION	93.46	93.46	0 00:40	1.827	1.827
JUNCT_571	JUNCTION	0.00	93.46	0 00:40	0.000	1.827
JUNCT_572	JUNCTION	0.00	194.23	0 00:40	0.000	3.609
JUNCT_503	JUNCTION	0.00	1252.68	0 01:16	0.000	52.700
JUNCT_81	JUNCTION	77.00	77.00	0 00:40	1.722	1.722
JUNCT_581	JUNCTION	0.00	77.00	0 00:40	0.000	1.722
JUNCT_84	JUNCTION	124.33	124.33	0 00:45	2.898	2.898
JUNCT_584	JUNCTION	0.00	189.05	0 00:47	0.000	4.641
JUNCT_82	JUNCTION	159.43	159.43	0 00:40	2.951	2.951
JUNCT_83	JUNCTION	214.85	214.85	0 00:35	2.945	2.945
JUNCT_583	JUNCTION	0.00	214.85	0 00:35	0.000	2.945
JUNCT_582	JUNCTION	0.00	353.31	0 00:35	0.000	5.896
JUNCT_1654	JUNCTION	0.00	888.39	0 01:39	0.000	63.236
JUNCT_73	JUNCTION	314.27	314.27	0 00:30	3.276	3.276
JUNCT_573	JUNCTION	0.00	314.27	0 00:30	0.000	3.276
JUNCT_601	JUNCTION	0.00	896.18	0 01:45	0.000	66.515
JUNCT_102	JUNCTION	124.73	124.73	0 00:35	2.309	2.309
JUNCT_101	JUNCTION	172.71	172.71	0 00:40	3.606	3.606
JUNCT_602	JUNCTION	0.00	906.70	0 01:54	0.000	72.853
JUNCT_104	JUNCTION	105.80	105.80	0 00:45	2.717	2.717
JUNCT_604	JUNCTION	0.00	105.80	0 00:45	0.000	2.717
JUNCT_93	JUNCTION	206.43	206.43	0 00:35	3.307	3.307
JUNCT_91	JUNCTION	160.09	160.09	0 00:35	2.645	2.645
JUNCT_92	JUNCTION	135.51	135.51	0 00:40	2.581	2.581
JUNCT_593	JUNCTION	0.00	470.91	0 00:41	0.000	8.592
JUNCT_1804	JUNCTION	0.00	1060.62	0 01:03	0.000	88.635
JUNCT_103	JUNCTION	147.79	147.79	0 00:40	3.286	3.286
JUNCT_65	JUNCTION	153.34	153.34	0 00:45	4.462	4.462
JUNCT_63	JUNCTION	178.22	178.22	0 00:40	3.574	3.574
JUNCT_64	JUNCTION	0.00	0.00	0 00:00	0.000	0.000
JUNCT_53	JUNCTION	36.45	36.45	0 00:45	1.107	1.107
JUNCT_54	JUNCTION	101.01	101.01	0 00:40	1.776	1.776
JUNCT_554	JUNCTION	0.00	101.01	0 00:40	0.000	1.776
JUNCT_52	JUNCTION	135.48	135.48	0 00:40	2.818	2.818
JUNCT_42	JUNCTION	106.21	106.21	0 00:40	1.975	1.975
JUNCT_41	JUNCTION	48.42	48.42	0 00:40	0.940	0.940
JUNCT_542	JUNCTION	0.00	150.47	0 00:40	0.000	2.933
JUNCT_21	JUNCTION	127.64	127.64	0 00:35	2.100	2.100
JUNCT_521	JUNCTION	0.00	127.64	0 00:35	0.000	2.100
JUNCT_22	JUNCTION	79.00	79.00	0 00:40	1.461	1.461
JUNCT_522	JUNCTION	0.00	79.00	0 00:40	0.000	1.461
JUNCT_1521	JUNCTION	0.00	202.02	0 00:40	0.000	3.568
JUNCT_1542	JUNCTION	0.00	352.06	0 00:41	0.000	6.502
JUNCT_43	JUNCTION	103.12	103.12	0 00:40	2.085	2.085
JUNCT_543	JUNCTION	0.00	450.43	0 00:42	0.000	8.592
JUNCT_51	JUNCTION	72.72	72.72	0 00:40	1.510	1.510
JUNCT_31	JUNCTION	186.16	186.16	0 00:30	2.128	2.128
JUNCT_12	JUNCTION	127.86	127.86	0 00:35	2.179	2.179
JUNCT_512	JUNCTION	0.00	127.86	0 00:35	0.000	2.179
JUNCT_11	JUNCTION	586.11	586.11	0 00:40	9.857	9.857
JUNCT_511	JUNCTION	0.00	586.11	0 00:40	0.000	9.857
JUNCT_1512	JUNCTION	0.00	147.02	0 00:42	0.000	11.040
JUNCT_531	JUNCTION	0.00	225.88	0 00:38	0.000	13.165
JUNCT_32	JUNCTION	51.93	51.93	0 00:35	0.720	0.720
JUNCT_1532	JUNCTION	0.00	268.13	0 00:39	0.000	13.882
JUNCT_33	JUNCTION	85.83	85.83	0 00:35	1.339	1.339
JUNCT_34	JUNCTION	111.05	111.05	0 00:35	1.561	1.561
JUNCT_534	JUNCTION	0.00	111.05	0 00:35	0.000	1.561
JUNCT_603	JUNCTION	0.00	147.79	0 00:40	0.000	3.286
ROOT_JUNCT_1804	OUTFALL	0.00	1060.62	0 01:03	0.000	88.635
JUNCT_541	DIVIDER	0.00	48.42	0 00:40	0.000	0.940
JUNCT_591	DIVIDER	0.00	160.09	0 00:35	0.000	2.645
JUNCT_592	DIVIDER	0.00	135.51	0 00:40	0.000	2.581
JUNCT_1592	DIVIDER	0.00	291.44	0 00:40	0.000	5.230
JUNCT_504	DIVIDER	0.00	1061.08	0 01:03	0.000	88.636
JUNCT_561	DIVIDER	0.00	1032.76	0 01:03	0.000	39.076
JUNCT_553	DIVIDER	0.00	985.18	0 01:02	0.000	36.511
JUNCT_552	DIVIDER	0.00	766.16	0 01:00	0.000	32.690
JUNCT_551	DIVIDER	0.00	677.77	0 00:47	0.000	29.178
JUNCT_533	DIVIDER	0.00	346.25	0 00:38	0.000	15.217
JUNCT_532	DIVIDER	0.00	268.15	0 00:39	0.000	13.885
JUNCT_501	STORAGE	0.00	586.11	0 00:40	0.000	9.857
JUNCT_502	STORAGE	0.00	593.21	0 00:38	0.000	19.084
JUNCT_1653	STORAGE	0.00	1366.89	0 01:15	0.000	57.339

EPA SWMM OUTPUT

```
**********************
Node Surcharge Summary
**********************
Surcharging occurs when water rises above the top of the highest conduit.
-------------------------------------------------------------------------
                                            Max. Height   Min. Depth
                                  Hours      Above Crown    Below Rim
Node                 Type      Surcharged          Feet         Feet
-------------------------------------------------------------------------
JUNCT_35             JUNCTION       23.00         0.000        0.000
JUNCT_61             JUNCTION       23.00         0.000        0.000
JUNCT_62             JUNCTION       23.00         0.000        0.000
JUNCT_72             JUNCTION       23.00         0.000        0.000
JUNCT_71             JUNCTION       23.00         0.000        0.000
JUNCT_81             JUNCTION       23.00         0.000        0.000
JUNCT_84             JUNCTION       23.00         0.000        0.000
JUNCT_82             JUNCTION       23.00         0.000        0.000
JUNCT_83             JUNCTION       23.00         0.000        0.000
JUNCT_73             JUNCTION       23.00         0.000        0.000
JUNCT_102            JUNCTION       23.00         0.000        0.000
JUNCT_101            JUNCTION       23.00         0.000        0.000
JUNCT_104            JUNCTION       23.00         0.000        0.000
JUNCT_604            JUNCTION       23.00         0.000        0.000
JUNCT_93             JUNCTION       23.00         0.000        0.000
JUNCT_91             JUNCTION       23.00         0.000        0.000
JUNCT_92             JUNCTION       23.00         0.000        0.000
JUNCT_593            JUNCTION        0.46         0.000        0.000
JUNCT_103            JUNCTION       23.00         0.000        0.000
JUNCT_65             JUNCTION       23.00         0.000        0.000
JUNCT_63             JUNCTION       23.00         0.000        0.000
JUNCT_64             JUNCTION       23.00         0.000        0.000
JUNCT_53             JUNCTION       23.00         0.000        0.000
JUNCT_54             JUNCTION       23.00         0.000        0.000
JUNCT_52             JUNCTION       23.00         0.000        0.000
JUNCT_42             JUNCTION       23.00         0.000        0.000
JUNCT_41             JUNCTION       23.00         0.000        0.000
JUNCT_21             JUNCTION       23.00         0.000        0.000
JUNCT_22             JUNCTION       23.00         0.000        0.000
JUNCT_43             JUNCTION       23.00         0.000        0.000
JUNCT_51             JUNCTION       23.00         0.000        0.000
JUNCT_31             JUNCTION       23.00         0.000        0.000
JUNCT_12             JUNCTION       23.00         0.000        0.000
JUNCT_11             JUNCTION       23.00         0.000        0.000
JUNCT_511            JUNCTION       23.00         0.000        0.000
JUNCT_32             JUNCTION       23.00         0.000        0.000
JUNCT_33             JUNCTION       23.00         0.000        0.000
JUNCT_34             JUNCTION       23.00         0.000        0.000
JUNCT_603            JUNCTION       23.00         0.000        0.000
JUNCT_591            DIVIDER         0.72         0.000        0.000
JUNCT_592            DIVIDER         0.76         0.000        0.000
JUNCT_1592           DIVIDER         0.50         0.000        0.000
JUNCT_501            STORAGE        23.00         9.433        0.127
JUNCT_502            STORAGE        23.00         9.080        0.920
JUNCT_1653           STORAGE         1.36         3.177        4.823
```

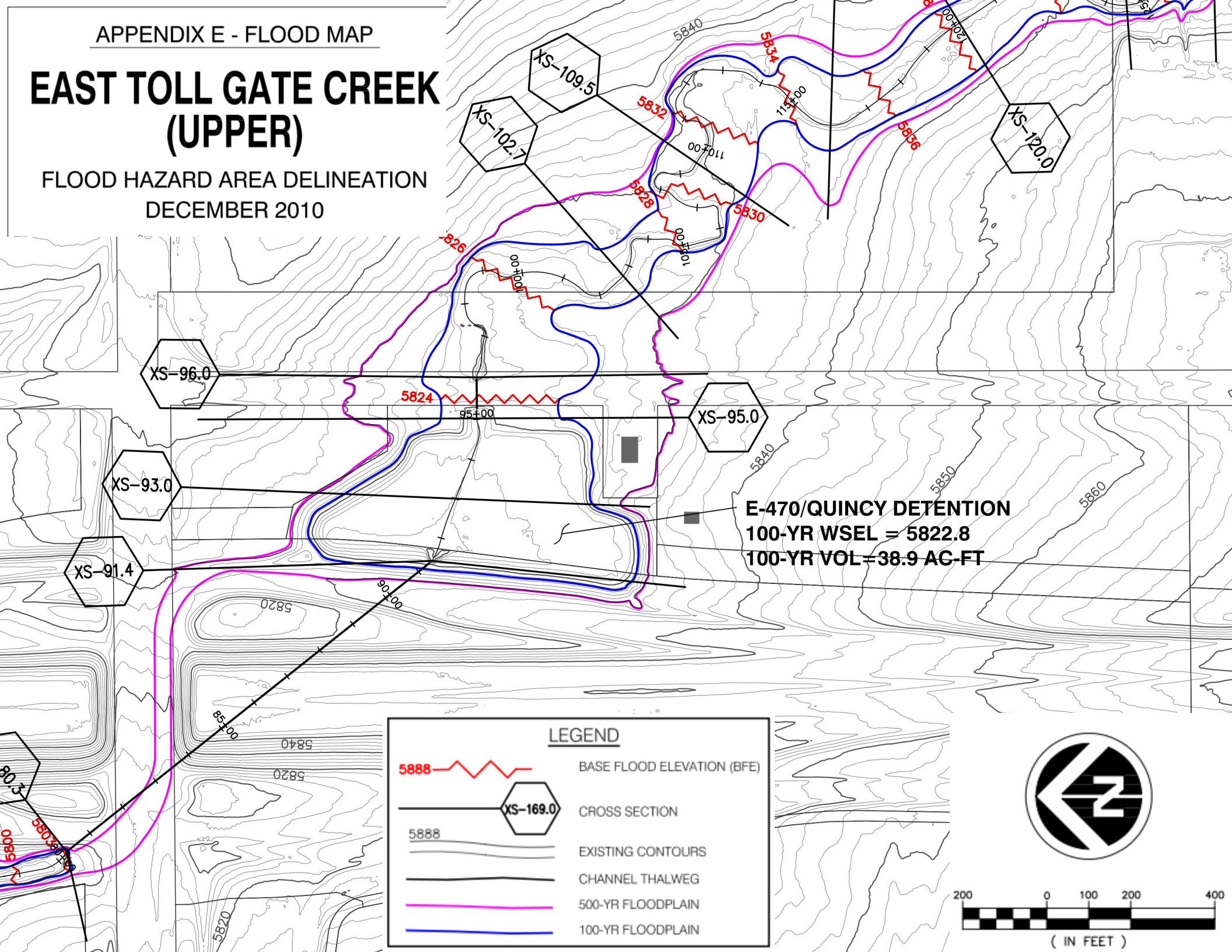
```
**********************
Node Flooding Summary
**********************

Flooding refers to all water that overflows a node, whether it ponds or not.
-------------------------------------------------------------------------------
                                                                  Total   Maximum
                                  Maximum   Time of Max           Flood    Ponded
                        Hours       Rate    Occurrence          Volume    Volume
Node                  Flooded        CFS   days hr:min       10^6 gal   acre-in
-------------------------------------------------------------------------------
JUNCT_593                0.46      0.00      0  00:00          0.000      0.00
JUNCT_591                0.72      0.00      0  00:00          0.000      0.00
JUNCT_592                0.76      0.00      0  00:00          0.000      0.00
JUNCT_1592               0.50      0.00      0  00:00          0.000      0.00


**********************
Storage Volume Summary
**********************

-------------------------------------------------------------------------------------------
-
                           Average     Avg       Maximum     Max    Time of Max
Maximum
                            Volume    Pcnt        Volume    Pcnt     Occurrence
Outflow
  Storage Unit          1000 ft3    Full      1000 ft3    Full    days hr:min
CFS
  ---------------------------------------------------------------------------------------
  -
  JUNCT_501              311.116      32       955.498      98       0  01:20
107.67
  JUNCT_502               52.564       7       609.220      83       0  01:12
266.49
  JUNCT_1653             130.501       4      1695.974      47       0  01:41
862.53


**********************
Outfall Loading Summary
**********************

-----------------------------------------------------------
                        Flow       Avg.       Max.       Total
                        Freq.      Flow       Flow       Volume
Outfall Node            Pcnt.       CFS        CFS    10^6 gal
-----------------------------------------------------------
ROOT_JUNCT_1804        99.53    143.77    1060.62       88.635
-----------------------------------------------------------
System                 99.53    143.77    1060.62       88.635
```

38.9 ac-ft

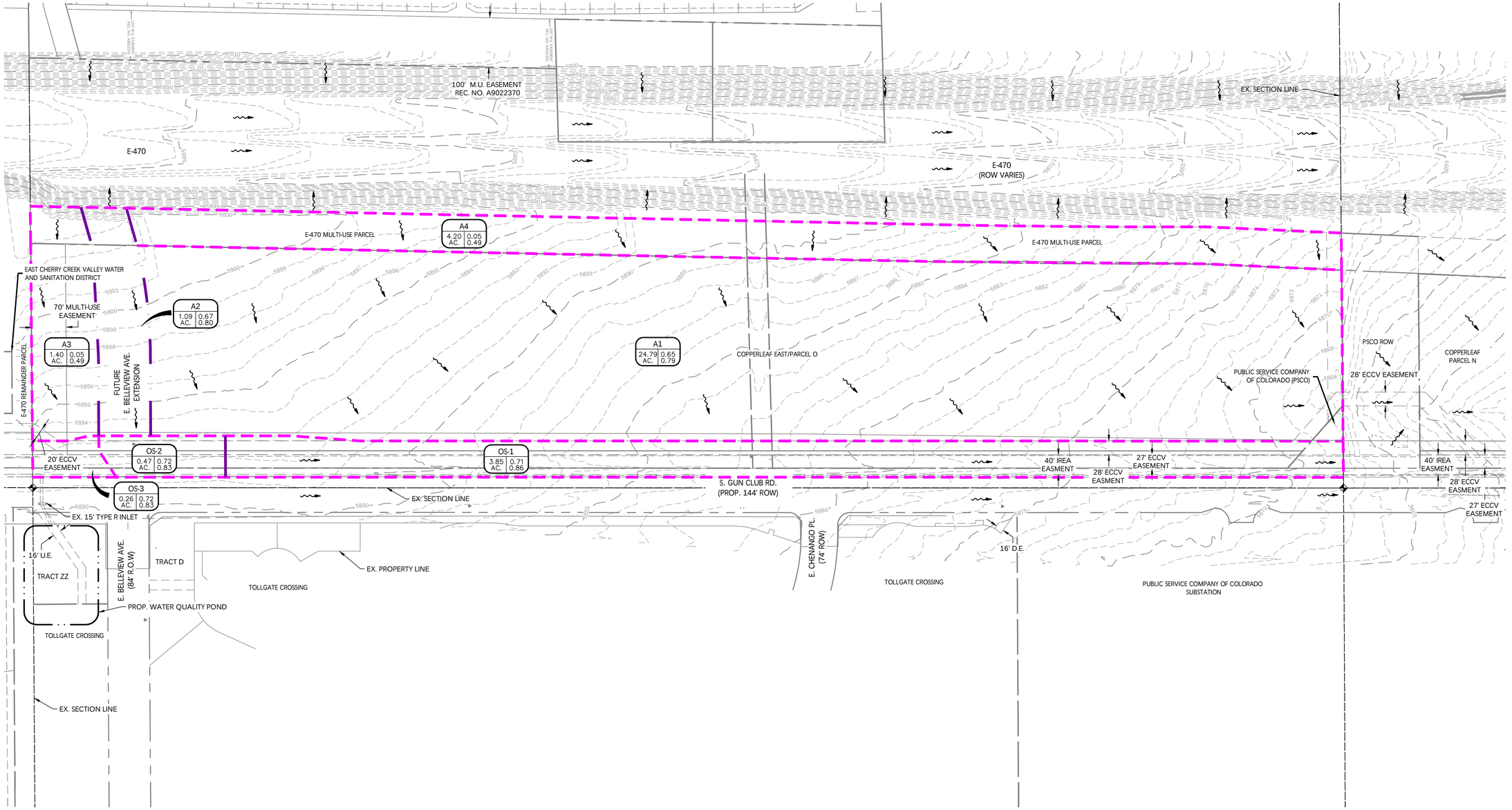
APPENDIX E - FLOOD MAP

EAST TOLL GATE CREEK (UPPER)

FLOOD HAZARD AREA DELINEATION
DECEMBER 2010



Appendix C. Proposed Drainage Maps



LEGEND

- Property Line
- Right of Way Line
- Easement Line
- Existing Type 'R' Inlet
- Existing Storm Sewer Line
- Sub-Basin Boundary Line
- Basin Boundary Line
- Existing Major Contour
- Existing Minor Contour
- Flow Direction Arrow
- Drainage Basin ID (A: Acre AC. | C2 C100)

100 0 50 100
SCALE
1 inch = 100 ft.

Arapahoe County Case No. GDP22-002
SEMSWA Case No. DPR22-00088

I:\JOB FOLDERS\1055\1055-07\PROD\DRAINAGE\PHASE I\PHASE 1 DRAINAGE MAP PRINTED ON: 12/9/2022 1:18 PM

LJA ENGINEERING
1765 W. 121st Avenue
Suite 300
Westminster, CO 80234
303-421-4224 • www.lja.com

No.	Rev. Date:	Revision Type:
1		
2		
3		
4		
5		
6		

Designed: CGM
Prepared: CGM
Approved: ACS
Job No.: 1055-07
Scale Horiz: 1" = 100'
Scale Vert: N/A
Sheet: 1 of 1
Date: 12/01/2022

Proj. Name: COPPERLEAF EAST/PARCEL O
Location: ARAPAHOE COUNTY, COLORADO
Plan Set: PHASE I DRAINAGE PLAN
Sheet Name: DRAINAGE PLAN

811 Know what's below. Call before you dig.

No. 1

Right of Way & Permits

1123 West 3rd Avenue
Denver, Colorado 80223
Telephone: **303.571.3306**
Facsimile: 303. 571. 3284
donna.l.george@xcelenergy.com

January 20, 2023

Arapahoe County Public Works and Development
6924 South Lima Street
Centennial, CO 80112

Attn: Kat Hammer and Gretchen Ricehill

Re: Copperleaf East GDP and Comprehensive Plan Amendment
Case #s GDP22-002 and LR22-22-008

Public Service Company of Colorado's (PSCo) Right of Way & Permits Referral Desk has reviewed the request for the **Copperleaf East GDP and Comprehensive Plan Amendment** and has no objection to this proposal, contingent upon PSCo's ability to maintain all existing rights and this amendment should not hinder our ability for future expansion, including all present and any future accommodations for natural gas transmission and electric transmission related facilities.

Additionally, for this *multi-family apartment-type* scenario, and to ensure that adequate utility easements are available within this development and per state statutes §31-23-214 (3) and 30-28-133(e), PSCo requests that the following language or plat note be placed on the preliminary and final plats for the subdivision:

> *Minimum 10-foot-wide dry utility easements are hereby dedicated on private property abutting all public streets, and around the perimeter of each lot in the subdivision or platted area including tracts, parcels and/or open space areas. These easements are dedicated to the Arapahoe County for the benefit of the applicable utility providers for the installation, maintenance, and replacement of electric, gas, television, cable, and telecommunications facilities (Dry Utilities). Utility easements shall also be granted within any access easements and private streets in the subdivision. Permanent structures, improvements, objects, buildings, wells, water meters and other objects that may interfere with the utility facilities or use thereof (Interfering Objects) shall not be permitted within said utility easements and the utility providers, as grantees, may remove any Interfering Objects at no cost to such grantees, including, without limitation, vegetation. Public Service Company of Colorado (PSCo) and its successors reserve the right to require additional easements and to require the property owner to grant PSCo an easement on its standard form.*

Public Service Company also requests that all utility easements be depicted graphically on the preliminary and final plats. While these easements may accommodate certain utilities to be

installed in the subdivision, some additional easements may be required as planning and building progresses.

The property owner/developer/contractor must complete the application process for any new natural gas or electric service via xcelenergy.com/InstallAndConnect. It is then the responsibility of the developer to contact the Designer assigned to the project for approval of design details.

Donna George
Right of Way and Permits
Public Service Company of Colorado dba Xcel Energy
Office: 303-571-3306 – Email: donna.l.george@xcelenergy.com