



Memo

To: Roger Hollard (Land Perspectives LLC)

From: Christopher LaRue

Date: June 19, 2020

Re: PP-001108-2019: Canyon Creek Filing No. 7 & 8 Preliminary Plat Application

Cc: Deborah Bachelder, Joe Smith, Chad Schroder, Darren Champion

Responses by Henry Design Group and CWC 7-21-2020

Comments:

Town Staff has reviewed the Canyon Creek Filing No. 7 & 8 Preliminary Plat application for conformance with Municipal Code, Title 10. The application was reviewed at the May 21st, 2020 Development Review Team (DRT) meeting. A list of the Town staff that have commented and referral agencies that have responded are listed below. Referral comments received by the Town after the date of this memo shall be forwarded on to the applicant.

The next step for the Canyon Creek Filing No. 7 & 8 Preliminary Plat is revision and resubmittal for another referral and Development Review Team review. Please make the appropriate revisions to the application materials and provide written response to address each written comment from the Town staff and referral agencies.

Referral agency packets were sent out and referral responses that been received by the Town have been forwarded to you. The following referrals will require a response:

1. Town of Erie – Planning, Engineering (engineering comments will be forwarded when complete), and Parks
2. Anadarko – Didn't provide response, however please obtain a non-objection letter
3. Colorado Geological Survey
4. Leyner Cottonwood Ditch Company (Mike Schmidt)
5. Mountain View Fire Rescue
6. OSTAB
7. Plan West – Landscaping and parks review
8. St. Vrain Valley Schools
9. Vranesh and Raisch
10. Western Midstream
11. Xcel Energy

Please provide a written response to each of the comments below and each applicable referral agency with your resubmittal. The resubmittal shall contain:

- Digital Copies – Please contact Melinda Helmer at mhelmer@erieco.gov prior to re-submittal, and she will provide a link to the Town's file sharing system.

- A PDF of all revised information/materials including responses to referral comments.
- 2 copies - half size sheets of the revised plans and all response letters to the Town.
- 2 copies – full size sheets of the revised plans.
- A copy of the response letter to each referral agency addressing their concerns and comments. Include any updated submittal items that may be needed to address the comments.

Planning Comments (Please note previous comments are in *italics* and new comments are in standard font):

1. ALTA and Title Information:

a. Gas pipelines:

i. Two gas pipelines are shown within Filing No. 7. One is on the northern boundary and the other one runs west to east in a diagonal across the property.

1. The response indicated the northern pipeline shall be removed and relocated at the time of development and the easement vacated prior to finalizing the plat.

Response: The relocation of the gas pipeline won't commence until the time of development. The applicant proposes that the easement will be shown as "to be vacated" on the preliminary plat, and that a plat note be added to the final plat, and possibly the DA, that states "Lots x – y, Block X, shall be restricted from obtaining building permits until such time as the easement shown is vacated by separate document".

2. Both the relocation and the vacation of the easement shall occur prior to approval of the final plat.

Response: See above, the gas line won't be relocated prior to development given a variety of constraints, including potential extensive grading and development work that won't be allowed prior to plat approval and public improvement plan approval

ii. The diagonal gas line doesn't appear to be within easement. Please confirm the status of the easement.

1. Response indicated that per the SUA talks have begun with Kerr McGee/Occidental for relocation of the pipelines. The pipeline will need to have been relocated and appropriate easements (if necessary) dedicated prior to approval of the final plat.

Response: See above for proposed resolution

iii. Gas and oil well pipelines and their associated easements shall not be located on residential lots. It appears the diagonal pipeline runs through proposed lots.

1. It was indicated the final alignment for new easements will not encumber any lots. This is acceptable, but the new easements shall be in place before approval of the final plat.

Response: See above for proposed resolution

2. Town of Erie Natural Areas Inventory:

a. Please address the comments from the Town of Erie Open Space and Trails Advisory Board (OSTAB).

i. Review the updated OSTAB response and provide a response.

Response: A response letter to the OSTAB comments has been provided.

3. Mining and Oil and Gas:

Response. Please see the attached response from Western Environmental.

a. All abandoned mines shall comply with Section 10.6.13 of the UDC.

i. The following applies to abandoned mines:

- 1. All mineshafts shall be capped and contain an appropriate monument in accordance with State requirements, and accepted by the State before Final Plat or Site Plan approvals. This should be completed with the Preliminary Plat.*
 - a. Please review the comments from CGS. Staff continues to be concerned that lots may be impacted by the historical undermining. CGS concerns should be satisfied with any recommendations becoming conditions of the final plat.*
 - b. Strain isolation trenches will need to be depicted on the plans and the Preliminary Plat.*
 - i. Strain lines should not be on platted lots.*
 - ii. Please provide information regarding the depth, width, grading, drainage, and other design details of the trench.*
 - iii. Does the trench need to be contained within its own tract? Do other items (i.e. trails) need to be located away from the trench?*
 - iv. Who is responsible for maintaining the trench?*
 - v. The trench should be listed appropriately within the Tract Summary Chart.*
- 2. Mineshafts shall not be located on a residential lot.*

a. Staff is concerned that should the mineshaft not be located where expected, there could be impacts to the Preliminary Plat. Substantial impacts to the Preliminary Plat may require amending that document.

Response: The location of the shaft shall be verified prior to approval of the preliminary plat

3. Mineshafts may be located in a street right-of-way, tract, or in a non-residential lot with an easement restricted for parking, open space or landscape use. Any modifications to this provision proposed by the applicant for Town consideration shall be in compliance with recommendations from the Geological and Geotechnical Hazards reports and the Colorado Geological Survey.

a. CGS has stated the shaft appears to be within the cul-de-sac, and that plat adjustments may be necessary if it is not where expected. Again, this may require a Preliminary Plat amendment.

4. Minimum dimensions for tracts/easements and minimum distances from abandoned mineshafts to residential lots and non-residential structures shall be determined based on recommendations from the Geological and Geotechnical Hazards reports and the Colorado Geological Survey.

a. CGS agreed with the 50-foot no build zone, however, the area shown could change depending upon the actual location of the shaft. Again, this may require Preliminary Plat amendment.

ii. There are areas that may be subject to a significant subsidence hazard.

1. Prepare an exhibit illustrating this issue relative to the plat. Shade the impacted lots. Depict the mitigation measures (strain trenches).

b. Existing oil and gas well infrastructure and production facilities are subject to Section 10.6.14 of the UDC.

i. The comments in this section were addressed, or as indicated will be addressed with final plat submittal. Staff may have further comments at final plat review.

4. Parks and Open Space / Dedication Requirements:

- a. Whether or not Tract D of Filing No. 8 will count as Open Space has not been determined. This issue is still outstanding and will need to be resolved.
- b. Also, Tract D will need to be created as two tracts if it becomes Town owned. Per Section 10.6.3.C.4.g.viii, oil and gas well sites and required buffers are not eligible to count as open space dedication.

Response: As determined by discussions with staff, Lots 1 and 2 Block 12 have been eliminated, allowing tracts C and G to be eligible for open space dedication. Tract D will be modified and the portion designated drainage will be dedicated to the Town at the time of final plat for regional detention. See attached exhibit and email from Luke Bolinger regarding acceptance of Tract C for Open Space.

5. Preliminary Plat:

a. General Comments:

i. Streets:

1. Final street names will be reviewed at the time of Final Plat *Response: noted*

- a. Generally new street names that do not repeat with Town are required. Please note the following streets will need new names:

- i. Jackson Court

- ii. Balcolm Street

- iii. Telleen Avenue may need a name change where it turns north.

ii. Utilities:

1. General utility easements need to be shown adjacent to front and rear lot lines.

Easements shall also be depicted adjacent to all public streets, and other platted areas including tracts, parcels, and open space areas. See Xcel Energy referral.

Response: UTILITY EASEMENTS HAVE BEEN ADDED ACCORDINGLY

- a. Xcel Energy comments were not addressed.

Response: ADDRESSED. EASEMENTS ADDED.

b. Sheet 1:

i. The Planning and Development signature block is not required on the Preliminary Plat as the document is not signed or recorded. *Response: PLANNING AND DEVELOPMENT CERTIFICATE REMOVED*

1. Change "Community Development Director" to "Planning and Development Director"

ii. Acceptance Certificate: Not required on the Preliminary Plat. *Response: Removed*

1. Please review the tracts listed. All tracts are stated to be owned and maintained by the HOA, with the exception of Tract D in Filing No. 8. There are still multiple missing tracts in the dedication statement. *Response: Reviewed*

iii. Change all dates from 2019 to 2020. *Response: year has been updated*

c. Sheet 2:

i. Tract Summary Chart:

1. Add Oil and gas to the tracts utilized as such. *Response: added*

ii. Notes:

1. Additional notes will be required for the undermining issues. See the notes on Canyon Creek Filing No. 10 as an example.

a. The response indicated the requested notes were being vetted out. Please add the notes.

Response: CWC COULD NOT FIND THE RECORDED PLAT FOR CANYON CREEK FILING

NO. 10 IN THE COUNTY RECORDS; IF THIS HAS NOT BEEN RECORDED YET COULD YOU PROVIDE CWC WITH THE NOTES?

d. Sheet 5:

i. Depict and label the centerline of the Leyner Cottonwood Ditch. Response: Centerline already labeled

1. Per Section 10.6.2 B of the UDC development shall be setback at least 75 feet (150 feet total) from the centerline of a main ditch on both sides. The 150-foot setback shall be located within a non-buildable tract. Please place the centerline and 150-foot setback lines on all the applicable pages of the Preliminary Plat document.

a. Please depict and label the entire 150-foot setback lines. The drawing only labels 75 feet. Response: LABELS ADDED. SETBACK LINES ALREADY DEPICTED

e. Sheet 6:

i. Depict the correct location of the abandoned mine shaft along with the 50-foot buffer.

1. Given the comments from CGS, staff is concerned some of the lots on Jackson Way may need to be adjusted to be out of the buffer.

a. Staff still has concerns given the new set of CGS comments. Response: noted

2. The buffer should be labeled as a 50 foot mine no build zone, as opposed to the current label. Response: label changed

f. Sheet 8:

i. Depict and label the centerline of the Leyner Cottonwood Ditch.

1. Per Section 10.6.2 B of the UDC development shall be setback at least 75 feet (150 feet total) from the centerline of a main ditch on both sides. The 150-foot setback shall be located within a non-buildable tract. Please place the centerline and 150-foot setback lines on all the applicable pages of the Preliminary Plat document.

a. Please depict and label the entire 150-foot setback lines. The drawing only labels 75 feet. Response: LABELS ADDED. SETBACK LINES ALREADY DEPICTED

g. Sheet 9:

i. Depict the oil and gas setbacks and infrastructure.

1. Delete the word "mine" from the 350' Well Setbacks. Response: deleted

ii. Is Block 14 supposed to be located between Block 1 and 2? Blocks numbering should flow in a logical manner. Double checking the Block numbering and reassign for better flow. (update page 3 of the plat and the set as needed) Response: blocks renumbered

h. Sheet 12:

i. Depict the oil and gas setbacks and infrastructure.

1. Delete the word "mine" from the 350' Well Setbacks. Response: deleted

ii. Add garden court tracts east of Block 2 and north of Block 3.

1. This was not addressed. Tract D is stated to be owned by the Metro District, whereas all the other garden courts are to be maintained by the HOA. These tracts need to be created in order to have the proper ownership. Also, if tract D is to be dedicated to the Town, the Town will not want private landscaping and sidewalks on its property. Depict the 30 foot garden court tracts. Response: tracts added

i. Sheet 12:

i. Depict the oil and gas setbacks and infrastructure.

1. Delete the word "mine" from the 350' Well Setbacks. Response: deleted

6. Landscape Plans:

a. General

- i. Amend the plans to incorporate the comments made on the Preliminary Plat as necessary.

Response: The plans have been revised to reflect the Preliminary Plat changes.

- ii. All sheets shall include the appropriate title and Case #: PP-001108-2019.

1. The title block shall match the Preliminary Plat.

- a. This has not been addressed. The description still includes Tract L and has the wrong acreage and number of lots. Update on the entire plan set.

Response: Tract L has been removed and the lot count has been updated.

iii. Tact Summary Chart

1. Update the chart to match the Preliminary Plat and the above comments.

- a. Not addressed. The plat and landscape charts should match.

Response: The plat and landscape charts match.

iv. Ensure the correct Block is on every sheet and is readable.

1. Update the plan set per comment # 5.g.ii.

Response: Block numbering has been updated

v. Review Section 1001.02 of the Parks and Recreation Construction Standards and Specifications and ensure the landscape plan meets all minimum requirements.

1. Show the existing above ground structures (electric towers, oil and gas, etc.) in the plans. Oil and gas should depict all above structures.

- a. The electrical line support poles do not appear to be on the plans. Please depict those in manner that is easily readable.

Response: The overhead electrical support lines outside of the oil/gas well sites are shown---if this request is inside the oil/gas well site beyond a fence line, support poles have not been located as proper PPE must be worn to enter these areas.

vi. Depict the oil and gas infrastructure and depict the SUA and Town setbacks per the oil and gas comments.

1. Make sure the oil and gas well setbacks are labeled fully on every sheet. Some sheets just list "350'", but do not include the statement "Oil/Gas well setback".

Response: More labels have been added.

b. Sheet 3:

- i. Label the no build buffer.

Response: The no build buffer has been labeled.

c. Sheet 9:

- i. Depict the landscaping for the 30 foot green courts adjacent to Block 1, Lots 1 and 2 and Block 3, Lots 1-4.

1. Ensure the green courts and landscaping is contained within a tract per the plat comments.

Response: The green courts are within tracts.

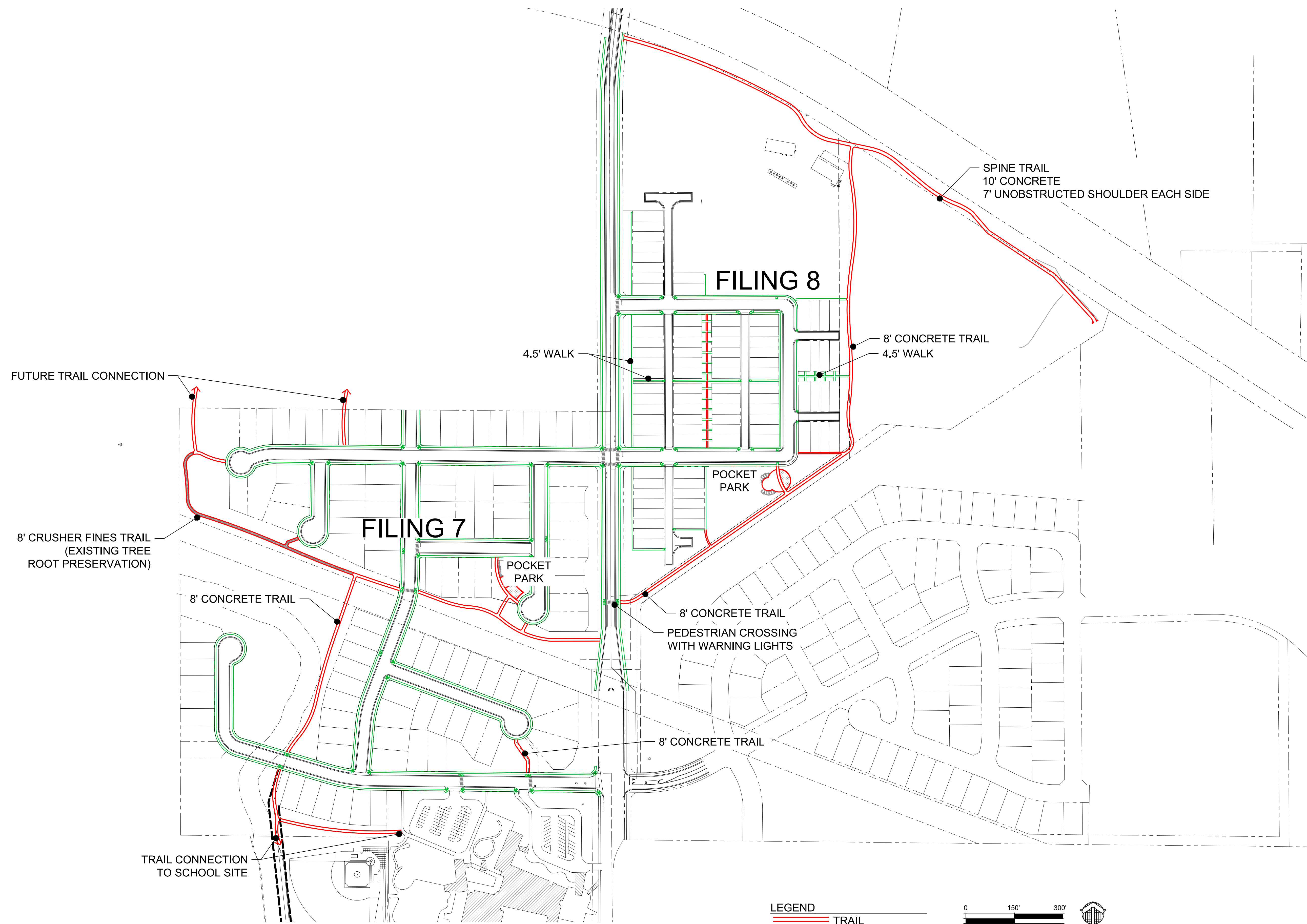
7. Preliminary Construction Plans

- a. Provide written authorization from the property owners who are impacted by the Jay/Jasper Roads traffic circle improvements, and the Jasper Road extension.

Response: Discussions have occurred with the property owners impacted.

Written authorization shall come in the form of negotiated agreements that will be completed during the processing of the final plat. Until approval of the preliminary plat concepts and preliminary engineering the basis of those agreements cannot be solidified.

CANYON CREEK - SUBDIVISION FILING NOS. 7 & 8
TRAIL & CONNECTIVITY EXHIBIT



LEGEND

TRAIL

SIDEWALK

0 150' 300'

Scale: 1" = 150'

North

NO	REVISION RECORD	DATE
1	1ST SUBMITTAL	8-28-2019
2	2ND SUBMITTAL	3-26-2020
3	2ND SUBMITTAL	7-21-2020
4		

LANDSCAPE ARCHITECT / PLANNER:

henry design group

Landscape Architecture • Planning • Entitlements

1501 Wazee Street Suite 1-C, Denver, Colorado 80202

303.446.2288 • henydesigngroup.com

ENGINEER:

CONSULTING GROUP

9360 Teddy Lane, Suite 203

Lone Tree, CO 80124

303.395.2700

APPLICANT:

Stratus Canyon Creek, LLC.

1842 Montane Drive East

Golden, CO 80401

Richard Dean

720.214.5000

CANYON CREEK SUBDIVISION

FILING NOS. 7 & 8

TRAIL & CONNECTIVITY EXHIBIT

ERIE, COLORADO

DRAWN: AY

CHECKED: KH

ISSUE DATE: 7-21-2020

SHEET:

TRAIL & CONNECTIVITY EXHIBIT

1 of 1



Memo

To: Chris LaRue
From: Chad Schroeder, P.E., CFM, Development Engineer
Date: June 18, 2020
Subject: **Canyon Creek Filing 7 & 8 Preliminary Plat**
CC: David Pasic
Wendi Palmer
Tyler Burhenn

Comments for Preliminary Plat:

1. A portion of this extension of Jasper Road to the proposed roundabout with Jay Road will require acquiring the needed ROW, annexation of the ROW from unincorporated Boulder County parcel(s) into the Town of Erie, and approval of RTD for crossing their property. All agreements and approvals will be required for Final Plat approval.

RESPONSE

Acknowledged.

Please provide the status of negotiations for obtaining the needed ROW from the adjacent property owners. The Town will need assurances that the property owners are willing to provide the needed ROW prior to Preliminary Plat approval. Also provide updates on obtaining the necessary approvals from RTD.

RESPONSE: Lafferty annexation is being approved. A letter will be provided. We have had discussion with RTD and the crossing and noted it is similar to a crossing in Erie and at this point do not see any issues. RTD noted in conversation they do not review "concepts" per se, but more final documents as to not waste review time if the project does not move forward.

2. For the roundabout design, show:

b. Existing accesses and private driveways and propose how the accesses will tie into the roundabout.

RESPONSE

The existing driveways have been added. The final design of the round-a-bout will incorporate the proposed driveway for the Dubois residence.

Provide the driveway reconfiguration and access point for review. The Town needs to approve the roundabout design and access configurations prior to Preliminary Plat approval.

RESPONSE: The configuration of the private drive has been added south of the roundabout. This allows for right and left turns onto Jasper Road and access to the roundabout. The Lafferty property can use this access temporarily until the Lafferty property develops. Once the Lafferty property develops, a new access will be provided to Jasper Road.

3. The approved Wild Rose subdivision will be installing water and sanitary lines required for the Canyon Creek Filings 7 and 8.

- a. 16-inch water line in Jasper and Jay Road from the proposed Wild Rose roundabout to the Lost Creek access.
 - b. 12-inch water line in the future Lombardi Street extension from the proposed Wild Rose roundabout to the existing stub end of Lombardi Street in the Kenosha Farms subdivision.
 - c. 8-inch sewer line from the main trunk line just south of the Erie Village subdivision to the south of the of the proposed Wild Rose subdivision residences.
- If Wild Rose does not get built, then Canyon Creek Filings 7 and 8 will need to install these wet utility lines along with obtaining any of the needed easements and agreements from the Lower Boulder Ditch company, RTD, and respective unincorporated Boulder County properties. All agreements and approvals will be required for Final Plat approval.

RESPONSE:

We have requested the required CAD from the Town and the current builder for Wild Rose from multiple emails, but have not received a response at this time.

The Wild Rose subdivision is currently under construction and the utilities are being installed. The Wild Rose subdivision has provided the CAD files now.

RESPONSE: Acknowledged, we have redesigned the waterline and sanitary sewer layout per the provided Wild Rose Connections.

4. Canyon Creek Filings 7 and 8 are roughly bisected by the Town's Zone 2 and Zone 3. Town staff had our utility consultant review the layout against the Town's Water Master Plan. Their findings are listed below. Revise the proposed Canyon Creek Filing 7 and 8 water system layout as needed.

- a. Due to the pressure issues in Filing 8 and Creekside, two zones are needed to provide water service to Canyon Creek, i.e. Filing 7 in Zone 3 and Filing 8 in Zone 2.
- b. Water mains need to be installed along Jasper Road for each zone.
- c. Filing 8 (Zone 2) should connect to the 16-inch main on Jay road as well as connect to Creekside in two places, in order to provide lopped connection.
- d. Filing 7 (Zone 3) will need to connect to the west along Telleen Avenue to N. 119th Street and to the south to Tynan Drive; both are shown as 12-inch connections in the Town's Water Master Plan.
- e. The Master Plan also shows a 12-inch main from the north side of Filing 7 between Jasper Road and N. 119th Street; this main size could probably be reduced to 8-inch main, given looping in the neighborhood. These connections are all illustrated in the master plan.

REPSONSE

The utility study is not complete and multiple requests have been made to the Town for information to verify pressure zones. The final waterline design will be completed once the utility study is complete.

The pressures needed will be provided shortly for incorporation into the model. The additional water line connections per the Water Master Plan that are highlighted in d. and e. above still need to be addressed.

RESPONSE: The Preliminary Utility Study has been provided per the provided pressure zone information.

5. Other utility layout comments are the following:

a. Water line stubs into the Lafferty property should be provided beyond the Jasper Road build out.

RESPONSE

Added.

The stubs are not shown.

RESPONSE: Two 8" Stubs have been provided to the Lafferty property. Reflected also in the provided Utility Study.

d. Provide the entire sanitary sewer design and show the proposed Wild Rose subdivision 8-inch sanitary sewer line stub.

RESPONSE

The entire sanitary sewer design will be provided with the final construction documents.

Noted. Comment stands for reminder to include with Final Construction documents.

RESPONSE: Acknowledged

6. If the Lafferty property annexation into the Town of Erie does not get completed, then Canyon Creek Filings 7 and 8 will need to annex in the eastern edge of the Lafferty property to provide the required Jasper Road collector right-of-way. Eighty feet of ROW will need to be dedicated for Jasper Road.

RESPONSE

Acknowledged.

Comment still stands as Lafferty annexation is still outstanding.

RESPONSE: Acknowledged

7. The Town is currently looking at different median designs for to be used town-wide. Staff will provide additional details for later Canyon Creek Filing 7 and 8 reviews to incorporate if necessary.

RESPONSE

Acknowledged.

Town Board of Trustees is currently reviewing the Town Median policy. Once finalized, staff will provide the policy along with any potential additional median work to be required.

RESPONSE: Acknowledged

10. There is a possibility that Urban Drainage Flood Control District / Mile High Flood District can assist with water quality / detention pond improvements on the eastern edge of Filing 8. Town staff will provide addition details.

RESPONSE

Acknowledged.

With Canyon Creek Filings 7&8 using the pond for detention and water quality, the Town would like to see a contribution to the Mile High Flood District project. The details on this will be

discussed later on. Please contact Jim Watt with the Mile High Flood District for coordination on the pond project: jwatt@udfcd.org / 303-455-6277.

RESPONSE: Acknowledged and agree further discussion needs to be had. In discussion with MHFCD it appears the pond “could” be changing but also sounds like a potential issue.

11. Provide applicable Town Standard sheets.

RESPONSE

These be provided with the final construction documents.

Noted, Town recommends that these are provided now, but will be required at Final Plat.

12. An area grading plan will be required with the final construction plans.

RESPONSE

Acknowledged.

Noted, comment stands for reminder to include with Final Construction documents.

RESPONSE: Acknowledged

13. See attached Drainage Report Comments from Merrick. Provide forebays for culvert outlets where required.

RESPONSE

Acknowledged.

Please address attached Merrick Drainage review comments.

RESPONSE: See separate responses for Merrick drainage review comments.

14. See attached Traffic Control comments from FHU.

RESPONSE

Acknowledged.

The Town will have FHU review the Jay Road roundabout design again.

RESPONSE: Acknowledged

15. See attached Erosion Control comments.

RESPONSE

Acknowledged.

Please address attached erosion control review comments.

RESPONSE: See separate responses for erosion control review comments.



Internal Memo

To: Chris LaRue, Planning & Development - Senior Planner

From: Darren Champion, Parks and Open Space Project Coordinator

Date: June 5, 2020

Subject: Canyon Creek Filings 7 & 8 – Preliminary Plat

Cc: Patrick Hammer, Parks and Recreation Director

Luke Bolinger, Community Partnership and Special Projects Manager

Parks & Open Space Division staff have reviewed the revised subject plans and offer the following comments:

Responses by Henry Design Group 7-21-2020

General Comments:

- Show the property lines located north of the spine trail.

Response: The property lines north of the spine trail have been added.

- The spine trail scales at 14' wide, correct as follows:
 - o Spine trail width is to be shown as 10' concrete, no crusher fines
 - o Increase unobstructed shoulder/clear zone to 7'
 - o Remove 8' concrete, 4' crusher fines notes

Response: The spine trail has been revised. Please note the 8' concrete, 4' crusher fines was requested by OSTAB on the previous submittal review.

- Show the location of the buried/recessed detention pond head wall in relation to the location of the spine trail.

Response: The detention pond head walls have been added to the plan.

- Provide 4' spine trail shoulders at a 6:1 grade with 6' preferred per attached Detail P25.

Response: A 4' trail shoulder at a 6:1 grade has been added to the plan.

- Staff recommends that the grade adjacent to the spine trail should not exceed 5:1. to allow for the maintenance of the shoulders.

Response: Comment noted. The proposed grade is 6:1.

Landscape comments:

Sheet 1 of 19

- Filing 8, Tract D – Staff understands that the applicant is coordinating with Mile High Flood Control District on engineering design on the detention pond. Parks will make a final decision on if this area is acceptable as dedicated open space once the final design has been provided to Town staff and reviewed.

Response: Comment noted.

Sheet 10 of 19

- *Please address previous comment not addressed* - Staff request additional detail to be shown where the trail connects to Jasper Road extension. An access point shall be required for maintenance vehicles at Jasper Road.

Response: The sheet viewport has been extended to show the Jasper Road sidewalk and spine trail connection.

- Show the radii at the trail interstation where the local trail connects to the spine trail.

Response: The 5' radii has been labeled.

Sheet 11 of 19

- Where the new spine trail intersects with the existing spine trail, provide adequate radii for maintenance vehicles to navigate the turn from all directions.

Response: Adequate radii has been provided.

- Provide a 12" bump out at the point where the new section of spine trail connects to the existing spine trail per attached Detail P27.

Response: 12" bump out has been added with label referring to Town of Erie standard detail.

- Move the connection of the new spine trail connection approximately 50-60' to the west to avoid social trails developing.

Response: The spine trail connection has been moved about 50' west for an improved alignment.



May 15, 2020

VIA E-MAIL

Town of Erie – Community Development Department
Chris LaRue – Town Planner
P.O. Box 750
Erie, Colorado 80516
developmentreferral@erieco.gov

NOTICE OF RIGHT-OF-WAY GRANT OWNED BY KERR-McGEE GATHERING LLC

Re: Sketch Plan – SK-001004-2018
Canyon Creek Filings 7 & 8
Johnson Development Company – Applicant
Township 1 North, Range 69 West, 6th P.M.
Section 13: Part of the S/2
Boulder County, Colorado

Mr. Hodges:

This letter is being sent by Kerr-McGee Gathering LLC (“KMGG”) to inform you KMGG is the owner of valid easements and pipelines located in the S/2 of Section 13, Township 1 North, Range 69 West (the “Property”) for which the Town of Erie Community Development Department is reviewing Sketch Plan – SK-001004-2018 for Canyon Creek Filings 7 & 8. KMGG is submitting this comment timely, in accordance with the Town’s procedural requirements.

KMGG is a named affiliate in a Compatible Surface Use Agreement (“SUA”) effective as of May 10, 2011 and recorded on June 14, 2011 with the Boulder County Clerk and Recorder at reception number 03153652. Additionally, KMGG owns and operates pipelines (“Exiting Lines”) on, under and through the Property. Per the terms of the SUA, additional Right-of-Way Grants are to be executed to allow the Exiting Lines to be relocated to allow for the proposed development of the Property. To date, the additional Right-of-Way Grants have not been executed.

KMGG does not object to Sketch Plan SK-001004-2018 provided Applicant conforms to the terms of the SUA and executes the additional Right-of-Way Grants identified above.

Please contact me at 720-929-3714 if you have any questions or comments about this matter.

Sincerely,
KERR-McGEE GATHERING LLC

Grant Gerrard
Senior Landman

cc: Murph Shelby, Lead Counsel
Brett Cavanagh
Jake Billadeau
Heather Bennett
Kelly Reyos

Response: The relocation of the gas pipeline won't commence until the time of development. The applicant proposes that the easement will be shown as "to be vacated" on the preliminary plat, and that a plat note be added to the final plat, and possibly the DA, that states "Lots x – y, Block X, shall be restricted from obtaining building permits until such time as the easement shown is vacated by separate document". The gas line won't be relocated prior to development given a variety of constraints, including potential extensive grading and development work that won't be allowed prior to plat approval and public improvement plan approval

COLORADO GEOLOGICAL SURVEY

1801 Moly Road
Golden, Colorado 80401



Karen Berry
State Geologist

May 12, 2020

Chris LaRue
Planning & Development
Town of Erie
P.O. Box 750
Erie, CO 80516

Location:
SE SW and W SE Section 13,
T1N, R69W of the 6th P.M.
40.0465, -105.065

Subject: Resubmittal – Canyon Creek Filings 7 & 8 – Preliminary Plat PP-001108-2019
Town of Erie, Boulder County, CO; CGS Unique No. BO-20-0004-2

Dear Chris:

Colorado Geological Survey has reviewed the Canyon Creek Filings 7 & 8 preliminary plat resubmittal. The available referral documents include a Mine Subsidence Investigation, Canyon Creek Subdivision, Filings 7 and 8, and Lafferty Property (Western Environment and Ecology, Inc., February 19, 2020). Since our previous review (November 18, 2019), the lot layout has changed slightly in the southeastern corner of Filing 7.

1. Western Environment's 2/19/2020 Mine Subsidence Investigation has errors, including incorrect figure numbering and figure references, an incorrect or outdated lot layout on "Figure 3 - Concept Plan Showing Hole Locations and Subsidence Zones" (which I believe should be Figure 6), and at least one borehole description (C-10, page 16) is missing important data.
2. CGS agrees with Western's recommendation for a maximum foundation length of 77 feet and strain isolation trenches within "Subsidence Zone A," which appears to include the following proposed lots:

	<u>Block</u>	<u>Lot(s)</u>
Filing 7:	3	4 through 9
	4	4
	8	6 through 11
	9	1 through 3 and 9 through 11
	10	9
	11	1 through 6
Filing 8:	All of proposed Blocks 15 and 16	

3. Since Western's Figure 3/6 lot layout is incorrect, these designations are approximate. CGS recommends that the Town require a corrected Mine Subsidence Investigation showing Western's Subsidence Zones A and B relative to the currently proposed plat.
4. **Chase Mine Shaft.** As noted in our 11/18/2019 review, the main shaft of the Chase Mine is under a soil stockpile in the southeastern portion of proposed Filing 7. If the shaft location is as mapped – which remains unverified – it appears to be within a proposed cul de sac. CGS agrees

with Western Environment (page 1) that no structures should be built within a 50-ft radius of the shaft.

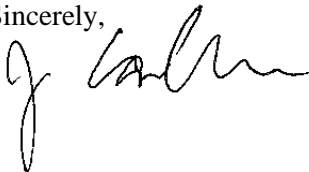
- a. **CGS strongly recommends that the Town require the applicant to locate the shaft in the field prior to final plat application**, since the plat may need to be adjusted to ensure that the shaft is located within the proposed street or cul de sac, and for consistency with the 50 ft. no-structure radius.
 - b. If the actual shaft location differs from the location currently shown on the plat, the plat will need to be corrected to show the actual shaft location and 50-ft radius around the shaft within which no structures are allowed.
 - c. **Once located, the shaft must be stabilized and capped.** A report describing the stabilization methods and implementation should be submitted to the Town and CGS, as well as to the Colorado Division of Reclamation, Mining and Safety (DRMS).
5. **Subsidence hazard associated with shallow Standard / Star / Jackson Mine in NW corner of Filing 7.** It appears that, at minimum, proposed Filing 7 Lots 1 and 2, Block 1 are located within Western's Subsidence Zone B, within which a maximum foundation length of 67 feet and strain isolation trenches are recommended. This should be verified once Western's Figure 6 is corrected to show Subsidence Zones A and B relative to the currently proposed plat.
- a. Western's Figures 2 and 6 show the Jackson shaft north of the northwestern corner of Canyon Creek Filing 7. However, maps on file with CGS indicate that the shaft is within the northwestern corner of Filing 7, and Western's rationale for showing the shaft outside of Canyon Creek Filing 7 is not provided. **CGS continues to recommend that the Town require the applicant to locate, stabilize, and cap (or verify the absence of) the shaft identified on the 1888 Standard, Star & Jackson mine map.**

CGS previously reviewed a Preliminary Geotechnical Engineering Report, Proposed Residential Development, Canyon Creek Subdivision Filing Nos. 7 & 8, Jasper Road and Telleen Avenue (Cole Garner Geotechnical, February 23, 2018). As discussed in our previous review letter, Cole Garner's geotechnical recommendations are valid and should be strictly adhered to. However, we have an additional comment:

6. Cole Garner's report includes, as part of Appendix D, a February 6, 2018 version of Western Environment's Mine Subsidence Assessment Canyon Creek Filings 7 and 8. To avoid the potential use of erroneous and/or incomplete information, the applicant should have Cole Garner update their geotechnical report, either omitting Western's outdated report, or including the corrected future Western report.

Thank you for the opportunity to review and comment on this project. If you have questions or require further review, please call me at 303-384-2643, or e-mail carlson@mines.edu.

Sincerely,



Jill Carlson, C.E.G.
Engineering Geologist

WESTERN ENVIRONMENT AND ECOLOGY, INC

July 8, 2020

Christopher LaRue
Town of Erie
Planning and Development
645 Holbrook Street
Erie, Colorado 80516

Subject: Canyon Creek Filings 7 & 8 and Lafferty Property Preliminary Plat Application . Western Environment and Ecology, Inc. Project Number 780-002-01.

Dear Mr. LaRue:

At the request of Roger Hollard of Land Perspectives LLC, we have prepared the following response to your June 19th, 2020 memo regarding staff comments to the plat application, specifically, as it relates to Western Environment and Ecology, Inc's (Western Environment) Mine Subsidence Investigation dated February 19th, 2020. Listed below are the staff comments pertaining to undermining as presented in **Section 3. Mining and Oil and Gas** of your memo. Our response follows in italics.

- a. All abandoned mines shall comply with Section 10.6 of the UCD.
- 1. All mine shafts shall be capped and contain a appropriate monument in accordance with State requirements and accepted by the State before Final Plat or Site Plan approvals. This should be completed with the Preliminary Plat.
Agreed, Western Environment will provide project design and oversight during the location and structural capping of the three (3) shafts shown on Figure 3 of the above referenced report. However, it is our understanding that the Jackson Mine Main Shaft within the the Lafferty Property, has been capped by the US Geological Survey in 2007. Additionally, the shaft shown in the southwest portion of the Lafferty Property may not occur on the Canyon Creek project. The mine maps for the Jackson Mine are extremely poor and unreliable, therefore Western Environment reviewed historic air photos dated 1937 and could not detect a shaft in or near that location.
- b. Strain isolation trenches will need to be depicted on the plans and the Preliminary Plat.
Agreed. Western Environment has provided a Concept Design of a generic Strain Trench in the appendix of the referenced report.
 - i Strain lines should not be on platted lots.
Some confusion must exist regarding "strain lines". The recommended foundation lengths for the Subsidence Zones A and B incorporate the maximum "worst case" theoretical strain within the individual Zone. The strain lines specifically are not problematic.

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- ii Please provide information regarding the depth, width, grading, drainage and other design details of the trench.
See generic Concept Design in Western Environment Report.
 - iii Does the Trench need to be contained in its own tract? Do other items (ie. trails) need to be located away from the trench?
No.
 - iv Who is responsible for maintaining the trench?
No maintenance required.
 - v The trench should be listed appropriately within the Tract Summary Chart.
Agreed.
2. Mine shafts should not be located on a residential lot.
- a. Staff is concerned that should the mine shaft not be located where expected, there could be impacts to the Preliminary Plat. Substantial impacts to the Preliminary Plat may require amending that document.
Agreed, Shafts will be located, described and shown on the Preliminary Plat.
3. Mine shafts may be located in a street right-of way, tract, or in a non-residential lot with an easement restricted for the parking, open space or landscape use. Any modification to this provision proposed by the applicant for Town consideration shall be in compliance with recommendations from the Geological and Geotechnical Hazards reports and the Colorado Geological Survey.
- a. CGS has stated the shaft appears to be within the cul-de-sac, and that plat adjustments may be necessary if it is not where expected. Again, this may require a Preliminary Plat amendment.
Agreed.
4. Minimum dimensions for tracts/easements and minimum distances from abandoned mine shafts to residential loys and non-residential structures shall be determined based on recommendation from the Geological and Geotechnical Hazards reports and the Colorado Geological Survey.
- a. CGS agreed with the 50-foot no build zone, however, the area shown could change depending upon the actual location of the shaft. Again, this may require Preliminary Plat amendment.
Agreed.
 - ii. There are areas that may be subject to a significant subsidence hazard.
1. Prepare an exhibit illustrating this issue relative to the plat. Shade the impacted lots. Depict the mitigation measures (strain trenches).
Agreed. Figure 3 of the Western Report shows lots requiring mitigation. However, the Preliminary Plat should also identify specific lots.

Western Environment also reviewed the May 12, 2020 Colorado Geological Survey Preliminary Plat Comment Letter. We have incorporated the current Concept Plan with the February 19th version of the report addressing the majority of the CGS issues and confirmed figure numbering and references. Additionally, we will provide Cole and Gardner with the current subsidence report as requested by the CGS.

Should you have any questions or if we could be of further service, do not hesitate to contact me.

Sincerely,

Greg D. Sherman, P.G.

President

cc.

General Comments:

Comment 1.	Provide offsite topography for a distance of at least one hundred fifty feet in every direction 150-ft beyond the property line	Commented [BC1]: ADDED 150' ON ALL SIDES
Comment 2.	Include all work areas within the limits of construction. Including landscaping improvements.	Commented [BC2]: ADDED 150' ON ALL SIDES
Comment 3.	Identify perimeter control for behind curb on all interim and final phased sheets	Commented [BC3]: ADDED SEDIMENT CONTROL LOGS ON STREETS
Comment 4.	Limits of Construction line type does not match the legend	Commented [BC4]: CORRECTED LINE WORK

Specific Comments:

Comment 1.	Sheet 31-Provide perimeter control measures at all areas the site runs-off	Commented [BC5]: ADDED SILT FENCE
Comment 2.	Sheet 31-Evaluate the need for a sediment basin	Commented [BC6]: ADDED
Comment 3.	Sheet 32- Identify limits of construction on northern limits	Commented [BC7]: ADDED 150' ON ALL SIDES
Comment 4.	Sheet 32- Evaluate the need for perimeter control measures	Commented [BC8]: ADDED SILT FENCE WHERE NEEDED
Comment 5.	Sheet 33-Identify limits of construction	Commented [BC9]: ADDED 150' ON ALL SIDES
Comment 6.	Sheet 33- Evaluate the need for a sediment basin	Commented [BC10]: ADDED SEDIMENT BASIN
Comment 7.	Sheet 34- Include perimeter control measures in all areas that the site runs-off	Commented [BC11]: ADDED SILT FENCE WHERE NEEDED
Comment 8.	Sheet 34- Include control measures to protect the ditch on the west side	Commented [BC12]: ADDED SILT FENCE WHERE NEEDED
Comment 9.	Sheet 35- Include perimeter control measures in all areas that the site runs-off	Commented [BC13]: ADDED SILT FENCE WHERE NEEDED
Comment 10.	Sheet 35- Include vehicle tracking control	Commented [BC14]: ADDED VTC
Comment 11.	Sheet 35- Include flow arrows	Commented [BC15]: ADDED FLOW ARROWS
Comment 12.	Sheet 36-Provide Vehicle tracking control on Jasper Rd.	Commented [BC16]: ADDED VTC
Comment 13.	Sheet 36-Evaluate the need for erosion control blanket in swale	Commented [BC17]: ADDED BLANKET
Comment 14.	Sheet 36-Provide perimeter control measures for all areas the site runs-off	Commented [BC18]: ADDED SILT FENCE WHERE NEEDED
Comment 15.	Sheet 37-Evaluate the need for erosion control blanket in swale	Commented [BC19]: ADDED BLANKET
Comment 16.	Sheet 37-Include limits of construction	Commented [BC20]: ADDED 150' ON ALL SIDES
Comment 17.	Sheet 37-Provide perimeter control measures for all areas that run-off	Commented [BC21]: ADDED
Comment 18.	Sheet 38-Identify temporary stabilization methods for southeast	Commented [BC22]: ADDED
Comment 19.	Sheet 38-Identify limits of construction	Commented [BC23]: ADDED 150' ON ALL SIDES

Comment 20.	Sheet 39-Identify temporary stabilization methods west of Jasper Rd and eastern slope	Commented [BC24]: ADDED AND TAGGED
Comment 21.	Sheet 40- Identify temporary stabilization measures	Commented [BC25]: ADDED AND TAGGED
Comment 22.	Sheet 40-Provide perimeter control measures for all areas the site runs-off	Commented [BC26]: ADDED SILT FENCE
Comment 23.	Sheet 41-Identify limits of construction	Commented [BC27]: ADDED 150' ON ALL SIDES
Comment 24.	Sheet 42-Include limits of construction	Commented [BC28]: ADDED 150' ON ALL SIDES
Comment 25.	Sheet 43-Identify stabilization methods for southeast slope	Commented [BC29]: ADDED AND TAGGED
Comment 26.	Sheet 44-Identify permanent stabilization methods for eastern slope	Commented [BC30]: ADDED AND TAGGED
Comment 27.	Sheet 45-Identify permanent stabilization measures	Commented [BC31]: ADDED AND TAGGED

Chris LaRue

From: Mike Schmidt <schmidtmm@gmail.com>
Sent: Monday, April 27, 2020 9:45 AM
To: Development Referral
Subject: Re: Canyon Creek Filings 7 & 8

Hi Chris,

The Leyner Cottonwood secretary has received another development referral for Canyon Creek Filings 7 & 8. Our prior comments attached below still stand. Thanks,

mike

On Wed, Nov 20, 2019 at 4:19 AM Mike Schmidt <schmidtmm@gmail.com> wrote:
Hi Chris,

I'm writing you on behalf of Leyner Cottonwood Ditch Company. Both the ditch company and our shareholders have existing infrastructure at the project location depicted on your map, including the main ditch and both shared and single shareholder irrigation laterals.

The company will serve as an initial point of contact for these interests and we reserve our right to protect and/or approve changes to this infrastructure.

Please contact me or the Company Secretary Kathy Schwartz if you have additional questions.

mike

Noted - The Applicant has had discussions with the Ditch Company and will complete the design and related obligations at the time the constraints associated with the Preliminary Plat are solidified. The process will run concurrent with the Final Plat Construction Plans design, review and approval.



**Town of Erie
Open Space and Trails Advisory Board**

From: Town of Erie Open Space and Trails Advisory Board
(OSTAB)

To: Chris LaRue, Senior Planner, Community Development

Date: May 12, 2020

Subject: Canyon Creek Filings 7 and 8, Preliminary Plat

Responses by Henry Design Group 7-8-2020

Date of Drawing: (see explanation below)

Location: NW of intersection of Telleen Ave. and Jasper Rd.

OSTAB reviewed the associated documents during its meeting on May 11, 2020 (the day prior to the due date, today). During that meeting, we discovered that ALL the documents that staff had provided to our board were obsolete i.e. they were from the previous application in 2019. Fortunately, planner Chris LaRue attended, and was able to display the correct documents. As a result, we know that we discussed the current version of the Landscape Plan. Nevertheless, it is possible that we didn't discover a material change between this application and the prior one.

OSTAB reviewed the referral materials, compared them to Town planning documents, and prepared the following comments and recommendations for the Town's consideration in evaluating this application.

We primarily use the following Town documents as we evaluate the proposed open space and trails in all development application reviews:

1. Natural Area Inventory (NAI) - In 2008, the Town engaged Walsh Environmental Scientists and Engineers of Boulder, Colorado, to identify and evaluate the natural areas within the Town's planning area. Over 125 areas were evaluated. Based upon a variety of characteristics, a numerical "summary rating" was calculated, and the habitat quality of each site was categorized as high, medium, or low;
2. Unified Development Code (UDC), Chapter 6 – Development and Design Standards:
 - a. Section 10.6.2 – Natural and Scenic Resource Protection;
 - b. Section 10.6.3 – Parks, Open Space, and Trails.
3. Parks, Recreation, Open Space, and Trails (PROST) Master Plan.

Open Space:

Discussion:

There are two NAI sites within this application:

1. Site #49, Leyner Cottonwood Ditch East, 14 acres:

"This site follows a section of the Leyner Cottonwood ditch that has a cottonwood woodland in its northeast

corner bend. This woodland is in good condition with a well-developed herbaceous understory and a large

patch of willows. The area appears to be seasonally flooded and provides excellent nesting habitat for

songbirds. The ditch itself is steeply banked and relatively homogeneous with reed canary grass and smooth

brome dominating and occasional cottonwoods intervening. Enhancement efforts should focus on cutting down

and eradicating the grove of Russian olive trees onsite.”

2. Site #54, Three Triangles, 18 acres:

“Three Triangles is comprised of a ditch (appears to be a lateral of the Leyner Cottonwood ditch) and a pasture

that seems to be seasonally flooded in places, as evidenced by the presence of reed canary grass near the center.

The structure of the herbaceous cover provides marginal habitat for wildlife. Weeds dominate the site. The

area could benefit from weed control and cutting down the Russian olives.”

NAI Site #49 is in Tracts C (7.5 acres) and G (2.1 acres) in Filing 7, both of which will be dedicated open space owned and maintained by the Town. A small southern section of NAI Site #54 is adjacent to NAI site #49, and also appears to be in Tract C. Most of Site #54 is a lateral from the Ditch that travels northward in Filing 7, then northeastward in Filing 8. We understand that this lateral will be relocated and piped underground. Thus, most of NAI site #54 will be destroyed.

We carefully reviewed the Native and Specimen Tree and Vegetation Protection Report, dated July 22, 2019. It contains a section entitled “Tree and Vegetation Protection Priorities”, which are grouped as “high”, “medium”, and “low” priority. This section follows, with OSTAB comments as needed:

“6.1 High Priority

The highest quality habitat is the mature, cottonwood forest on the west side of the Site where there is a red-tailed hawk nest (Stands 1 and 2). The mature cottonwoods have a diverse understory of native shrubs and have high value for biodiversity, wildlife habitat and aesthetics. The structurally diverse vegetation provides cover for many wildlife species and nesting habitat for birds. Dead and partially dead cottonwoods are important for nesting birds and denning mammals, such as raccoons. Most of this area would be preserved and a trail would be placed beneath the power line in habitat that is currently dominated by non-native Russian olive trees.”

OSTAB Comment: This area is entirely with Tract C. The existence of the red-tailed hawk nest has increased the need to modify that tract so that it both meets to UDC requirements for open space and improves the protection for the red-tailed hawk nest. Our measurements of the width of Tract C between the extended Telleen Avenue and the rear of lots in Block 10 (west side of Kolar Street [see Sheets 5 and 8 of the Preliminary Plat]) are roughly 260-280’. However, the distance between that Block

10 and lots 1 and 2 on the east side of Telleen (see Sheet 8 of the preliminary plat) is only about 180’. This is materially less than the 300’ requirement for dedicated open space in the UDC, and does not provide adequate protection for the red-tailed hawk nest and the entire NAI site. This problem must be rectified.

Response: Lots 1 and 2 of Block 12 have been removed, increasing the Tract C open space corridor width. Please see included report by Ecosystem Services in response to these concerns. Also, included is an exhibit showing the removed lots and e-mail discussion with Town staff regarding the acceptance of revised area for open space.

“The other high priority area is the wetlands/waters on the east side of the Site (5 - Stormwater Channel and 6 - Pond) (Figure 5). Although the wetlands and pond are artificial and fairly low in plant diversity, they still provide habitat to many species, are aesthetically pleasing, and provide accessible natural areas for nearby residents. They also filter stormwater runoff and improve water quality. All of this area will be preserved.”

OSTAB Comment: This area is in Tract D in Filing 8. No changes are recommended.

Response: Comment noted.

"The Cottonwood Ditch is a high priority for multiple reasons. Flow from the ditch is likely a significant source of water that supports the valuable riparian habitat in Stands 1 and 2. The slightly denser vegetation along the ditch increases plant diversity in the area and provides some habitat for wildlife. The ditch has been determined to be eligible for listing on the National Register of Historic Places. The Town of Erie requires preservation of existing main ditches with a minimum setback of 75 feet on both sides (Chapter 10.6.2, Section B.2.). There will be one "free-span" road crossing of the ditch which will not cause impact, and the remainder of the area along the ditch will be preserved as open space with setbacks ranging from 50 to over 150 feet."

OSTAB Comment: As previously stated, this Ditch is located within dedicated open space Tracts C and G. This report states that setbacks range from 50 to over 150 feet. We are unable to locate any setbacks less than the required 75' in the UDC.

Response: Comment noted.

6.2 Medium Priority

The prairie dog colony is considered to be a medium preservation priority (Figure 5). Prairie dogs are considered to be a keystone species because their burrows provide habitat for many other animals including rabbits, salamanders, snakes, and burrowing owls. The prairie dogs are also a prey source for raptors and coyotes. The vegetation in the prairie dog colony is weedy, and this will likely continue to be an issue. Most of the prairie dog colony is located within preservation areas.

OSTAB Comment: No changes are recommended.

Response: Comment noted.

The narrowleaf cottonwood/willow scrub-shrub in Stand #10 and irrigation lateral #2 are listed as medium priority because they increase the overall diversity in the vicinity of Stands #1 and #2. They also serve as buffers for the higher quality habitat. Additionally, irrigation lateral #2 likely provides some water to the adjacent riparian habitat. Most of Stand #10 will be within the designated open space area.

OSTAB Comment: No changes are recommended.

Response: Comment noted.

Stand #3 consists of three large specimen type trees. Two are multi-stemmed peachleaf willows and one is a cottonwood tree. These are listed as medium priority mainly due to their aesthetic value. All three are located on the back half of residential lots and likely to be impacted.

OSTAB Comment: No changes are recommended.

Response: Comment noted.

The dense cottonwoods in Stands #4 and 5 are visually appealing and provide habitat value for birds and wildlife. The aesthetic value of these tall stands of trees is high and would not be replicated by planting new trees. However, their habitat value is limited because the small size of the patches provide limited wildlife cover, the dense canopy results in low biodiversity of the understory, and most of the trees are still too small to be used by canopy nesting species. Most of Stand 4 is expected to be impacted, but no

impacts to Stand 5 are planned.

OSTAB Comment: We concluded that it would be impractical to modify the design to preserve that cottonwood stand.

Response: Comment noted.

6.3 Low Priority

OSTAB Comment: No changes are recommended.

Response: Comment noted.

Recommendations:

1. Increase the width of dedicated open space Tract C in Filing 7 from roughly 180' to close to 300' by eliminating the two proposed lots on the east side of Telleen Avenue (Block 12), as shown in Sheet 8 in the Preliminary Plat;

Response: Lots 1 and 2 of Block 12 have been removed, increasing the Tract C open space corridor. See attached exhibit.

Spine Trail:

Discussion:

Chapter 6 of the PROST Master Plan is devoted to trails. It includes a map (Figure 15) of current and proposed future Spine Trails, and recommendations of improving access to regional trails and neighboring communities. Perhaps the most important future regional trail will connect Erie to the open spaces and trails in eastern Boulder County and the City of Boulder. That regional trail is proposed to follow the Union Pacific/RTD ROW (right of way). A portion of that ROW is the northern border of Filing 8. The previous version of this application described that trail as an "8' concrete trail". This version has correctly described that trail as (1) 8' wide concrete trail; (2) 4' crusher fines on one side; and (3) 2' minimum unobstructed shoulder on each side.

Recommendation: None.

Response: Comment acknowledged. Please note that Darren Champion with Parks Department has requested the trail be 10' wide concrete without crusher fines.

Neighborhood Trails and Sidewalks:

Discussion:

We closely reviewed the neighborhood trails in both Filings and concluded that the trail that will be under the Cottonwood trees in NAI Site #49 should be revised from concrete to a soft surface. The construction of a concrete trail in that area would likely damage the root structure of those trees and impair their health. Similarly, the resulting impervious surface could also impact tree health.

The specific locations for this change are:

1. Landscape Plan Sheet 5: the east/west section from the "T intersection" to the top of that sheet;
2. Landscape Plan Sheet 6: the section from the bottom of that sheet to the short connector to Balcolm St.

We appreciate the "foot bridge crossing" over the drainage ditch between the Pocket Park (Tract E in Filing 8) to the existing trail in the Creekside subdivision (see Sheet 8 in the Landscape Plan).

Recommendation: Change the composition of the trail under the cottonwood trees (see detailed explanation above) from concrete to soft surface.

Response: The specified section of trail has been changed to crusher fines.

developed, as such there is a 99.99% chance they won't be annexed to the Town. The only Town option would be for the Town to work with the owners to acquire those properties for open space.



TECHNICAL MEMORANDUM

March 5, 2020

RE: MBTA Compliance regarding the Red-tailed Hawk Nest at Canyon Creek Filing No. 7 & 8, Erie, Colorado

To Whom It May Concern:

Ecosystem Services, LLC (ECOS) has reviewed the comment from the Erie Open Space and Trails Advisory Board regarding the Red-tailed Hawk Nest at Canyon Creek and has prepared a summary of pertinent background information and our recommendations regarding compliance with the Migratory Bird Treaty Act (MBTA).

1.0 Background Information

The following section quotes the comment received from OSTAB and the pertinent language from Section 8.3 *Migratory Bird Treaty Act & Bald and Golden Eagle Protection Act* included in the *ECOS Threatened and Endangered Species, Habitat & Wetlands Report* (ECOS, July 23, 2019). This section also provides additional regulatory guidance regarding the MBTA, which is pertinent to the red-tailed hawk nest.

1.1 Relevant OSTAB Comment

"...The existence of the red-tailed hawk nest has increased the need to modify that tract so that it both meets to UDC requirements for open space and improves the protection for the red-tailed hawk nest..."

1.2 ECOS Threatened and Endangered Species, Habitat & Wetlands Report

ECOS concluded that "There is good habitat for nesting birds, including a likely red-tailed hawk nest, and very low potential for burrowing owls to nest in the prairie dog colonies. In Colorado, most species of birds nest between April and August and a 50 to 100-foot buffer is usually sufficient to prevent nest abandonment. Raptors may nest much earlier and have larger CPW recommended buffers to avoid impacting nests. Red-tailed hawks begin laying eggs in mid-February..." "Ecos recommends a nesting bird inventory within one week prior to construction to identify any new nests within the Site or within the CPW recommended buffers of the Site."

1.3 MBTA Guidance

Raptors, or birds of prey, and the majority of other birds in the United States are protected by the MBTA, 16 U.S.C. 703. The U.S. Fish and Wildlife Service (USFWS) administers the MBTA, which states that it is illegal to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to Federal regulations. Under the MBTA take is defined as "pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture or collect" a migratory bird. Removal or destruction of active nests (i.e., nests that contain eggs or young), or causing abandonment of an active nest, could constitute a violation of the MBTA. Removal of any active migratory bird nest or any structure that contains an active nest (e.g., tree) where such removal results in take is prohibited.

If nesting migratory birds are present on or near a project area, project timing is an important consideration during project planning. In the *Migratory Bird Conservation Actions for Projects to Reduce the Risk of Take during the Nesting Season* (USFWS Region 6 Migratory Bird Management, June 2014) guidance document, the USFWS recommends that if the proposed project or action includes a reasonable likelihood that take of migratory birds will occur, then complete the project or those actions expected to take migratory birds outside of their nesting season to the greatest extent possible. Where project work must occur during the migratory bird nesting season, project proponents should utilize a qualified biologist to survey those portions of the project area during the nesting season (but prior to the project or action occurring) to determine if migratory birds are present and nesting in those areas. These bird surveys should occur no more than 7-10 days prior to when work actually begins on the project site. If no migratory birds are found nesting in proposed project or action areas immediately prior to the time when construction and associated activities are to occur, then proceed with your project activity as planned.

The USFWS June 2014 guidance also states that in addition to conducting surveys during the nesting season, entities may also benefit from conducting surveys during the previous nesting season. Such surveys will serve to inform the likely presence of nesting migratory birds in the proposed project or work area. While individual migratory birds will not necessarily return to nest at the exact site as in previous years, a survey in the nesting season the year before the project or action allows the company to become familiar with bird species and numbers present in the project area well before the nesting season in the year of proposed action. Migratory bird surveys also should be completed during the best timeframe for detecting the presence of nesting migratory birds, using accepted bird survey protocols.

The USFWS *Destruction and Relocation of Migratory Bird Nests Memorandum* (MBPM-068029; 06/14/2018) states that “A permit is not required to destroy migratory bird inactive nests (i.e., nests without viable eggs or chicks), provided the nest is destroyed and not retained.” Additionally, this memo states, “A permit is not needed to conduct work near an active nest.”

1.4 Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors

The Colorado Parks and Wildlife (CPW) has compiled recommendations to provide guidance under the MBTA and similar state statutes, and to assist in the avoidance of take of raptors. The guidance document notes that “Tolerance limits to disturbance vary among as well as within raptor species...Some individuals within a species also habituate and tolerate human activity at a proximity that would cause the majority of the group to abandon their nests.”

The CPW recommended buffer zones and seasonal restrictions regarding Red-tailed Hawks include:

“RED-TAILED HAWK

Nest Site:

No surface occupancy (beyond that which historically occurred in the area) within 1/3 mile radius of active nests. Seasonal restriction to human encroachment within 1/3 mile radius of active nests from February 15 through July 15. Some members of this species have adapted to urbanization and may tolerate human habitation to within 200 yards of their nest. Development that encroaches on rural sites is likely to cause abandonment.”

2.0 Discussion

In ECOS 36-years of monitoring raptors and other wildlife near project sites, we have noted that tolerance to human noise and disturbance is unique to each individual, independent of species (as noted by CPW above for all raptors and specifically red-tailed hawks as they are known to tolerate human encroachment). Similar to humans, wildlife adapt to the familiar circumstances in which they reside. Therefore, if a raptor resides in a rural area without much noise or activity, then they tend to be sensitive to human encroachment. However, if raptors reside in a heavily populated residential or commercial area, then they tend to be highly tolerant of human encroachment. A classic and well-known example of this is the bald eagle nest that was located at the Kennedy Space Center in Florida, where the eagles often experienced close-proximity rocket launches without experiencing stress.

We are currently monitoring a pair of Golden Eagle in Lyons that are perched on a cliff above a very active public park. The park is located in close proximity to a wedding venue that often plays loud music, and the park is often used for hundreds of campers attending local music festivals. We monitored this pair for the last 3 years, including during the restoration of the creek directly below the nest in 2016, and the eagles were not bothered in the least by noise associated with the construction equipment. In fact, the pair had their highest yield of young in 2016, which illustrates that this pair is completely adapted to human noise and encroachment. We recently noted the same adaptation in red-tailed hawks and Swainson's hawks near active construction sites, as they too were adapted to human encroachment.

During ECOS' onsite assessment we noted that an active oil and gas facility is located approximately 820-feet northwest of the nest and the Red Hawk Elementary School parking lot and playground are located approximately 725-feet to the southeast of the nest. Therefore, it stands to reason that this nesting pair of red-tailed hawks are somewhat adapted to human encroachment or they would not have established a nest here, nor would they continue to occupy it.

Upon further review of the Preliminary Plat, the nearest permanent structures in proximity to the red-tailed hawk nest will be within Block 6 Lot 7 and Block 10 Lot 1. If the red-tailed hawk returns to this nest site after construction, it will be at least 200' from permanent residences, well beyond the 50 to 100-foot buffer that is usually sufficient to prevent nest abandonment.

3.0 Recommendations to Maintain Compliance with the MBTA

ECOS has informed the Canyon Creek project development team of the regulatory requirements of the MBTA and is confident that the project will comply with the MBTA. However, it must be noted that the MBTA does not preclude construction in proximity to a nest, nor does it assign regulatory buffer zones from a nest. The USFWS and CPW have provided recommended guidance intended to assist applicants in avoiding an action that would be deemed a "take" under the MBTA, however said guidance should not be interpreted as a regulatory land use restriction, nor as the basis for one.

ECOS recommends a strategic monitoring plan that entails a series of surveys leading up to the proposed construction date, as we cannot predict if the red-tailed hawks will continue to use this nest or if this issue may become a moot point. Currently, conditions exist which are optimal for nest surveillance as the leaves are off of the trees and the nest is more visible. A subsequent nest monitoring survey may be implemented 6-months prior to construction, and then again within a week of construction. If the nest is deemed to be active, then we recommend that if feasible, construction activity does not occur in the vicinity of the nest when it is occupied or when the pair are raising or fledging young. If project timing does not allow avoidance of the

active nest, then we recommend phasing of onsite actions to accommodate the best, reasonable buffer during construction (e.g., implement actions outside of a reasonable buffer first and then implement actions closer to the nest after the pair has fledged their young).

As stated above, the MBTA does not preclude or require authorization for the removal of an inactive nest. Therefore, if it is determined that any tree containing a nest must be removed for safety, to prevent a taking, or other reasons then said removal may be legally implemented under the MBTA. Certain allowances to the guidance summarized in this Memo are often granted via consultation with USFWS (e.g., if an emergency exists) and we therefore recommend coordination with the USFWS as necessary.

In short, compliance with the MBTA is more of a construction timing issue rather than a permanent restriction on land use. ECOS is available to assist the Canyon Creek team and Erie in working through this issue by devising a rational, scientific approach of monitoring, confirmation, planning, avoidance, or mitigation to maintain compliance with the MBTA.

Sincerely,

Ecosystem Services, LLC

A handwritten signature in black ink that reads "Grant E. Gurnée". The signature is written in a cursive, flowing style.

Grant E. Gurnée, P.W.S.

Owner – Senior Wildlife Biologist

From: **Luke Bolinger** <lbolinger@erieco.gov>

Date: Thu, Jul 2, 2020 at 10:47 AM

Subject: RE: Canyon Creek Open Space

To: Roger Hollard <rghollard@gmail.com>

Cc: Patrick Hammer <phammer@erieco.gov>, Chris LaRue <clarue@erieco.gov>, Richard Dean <rdean@stratuscompanies.com>, Christian Dean <christian@stratuscompanies.com>

Hi Roger,

Thanks again for all of your patience as we talked through all of this.

The Town would accept your solution as outlined as you described below. We will accept this as open space dedication with it being maintained by the metro district/HOA. We would also like to keep our communications open and present some options to ensure that the open space dedication will have smooth transition into initial and final acceptance.

Once the final acreage is calculated in Filings 7/8, we can start a discussion on the Lafferty subject when we come to that crossroad.

Thanks again and have a great holiday weekend.

Luke Bolinger, CPRP | Community Partnership & Special Projects Manager

Town of Erie | Parks and Recreation

150 Bonnell Avenue | P.O. Box 750 | Erie, CO 80516

Phone: 303-926-2796 | Fax: 303-926-2706

www.erieco.gov/parksandrec | [Facebook](#) | [Twitter](#) | [LinkedIn](#)

From: Roger Hollard <rghollard@gmail.com>

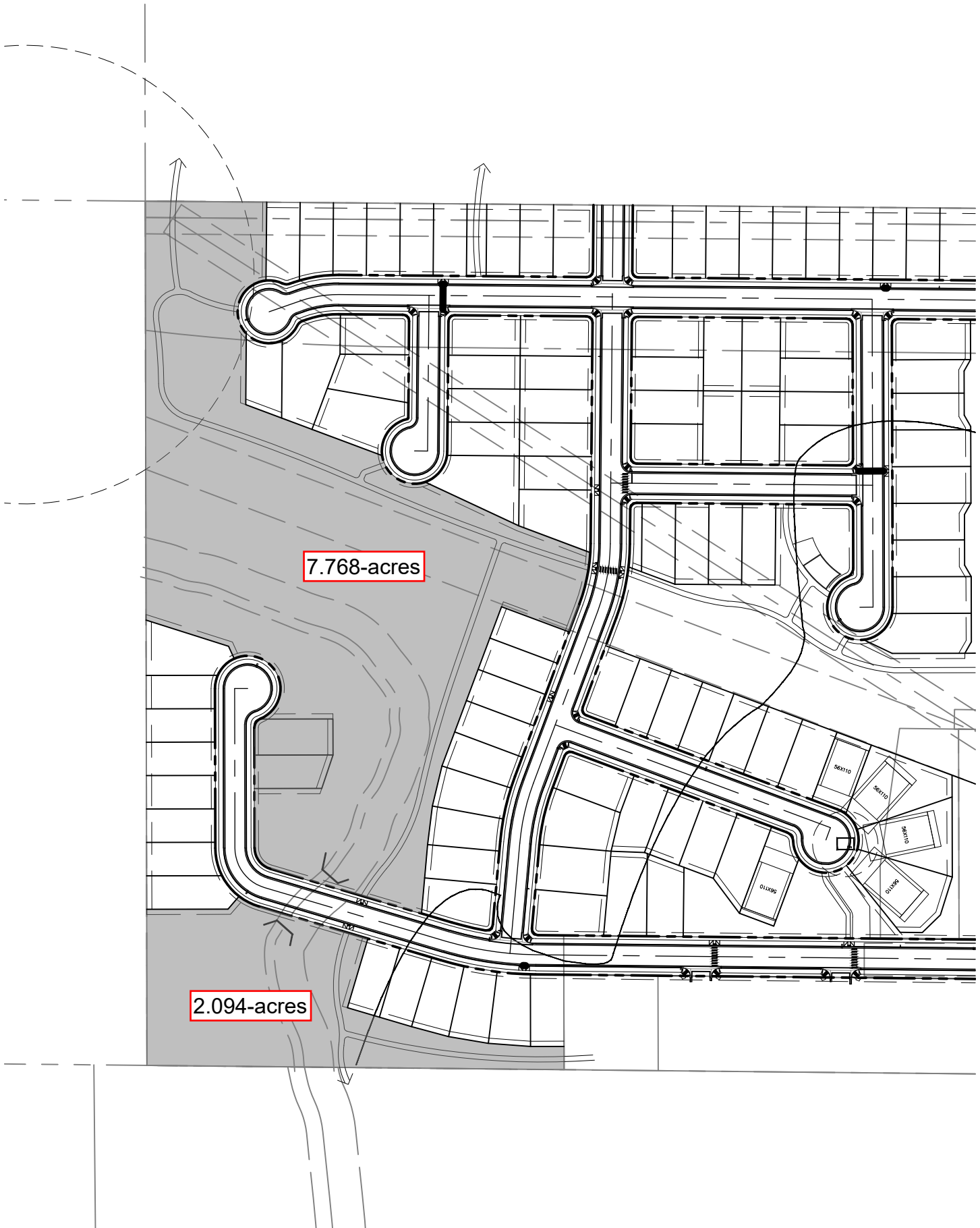
Sent: Friday, June 26, 2020 10:56 AM

To: Luke Bolinger <lbolinger@erieco.gov>

Cc: Patrick Hammer <phammer@erieco.gov>; Chris LaRue <clarue@erieco.gov>; Richard Dean <rdean@stratuscompanies.com>; Christian Dean <christian@stratuscompanies.com>

Subject: Re: Canyon Creek Open Space

Luke, the three properties located west of Canyon Creek and Lafferty are encumbered by conservation easements. While Erie's comp plan shows them as potential future Erie properties, they can't be





TO: Town of Erie
Darren Champion

FROM: Plan West Inc.
David Brehm – dbrehm@planwest.com

DATE: May 13, 2020

**Canyon Creek Filing – Filing 7 and 8 – Parks Related Review – Preliminary Landscape Plans
Second Submittal 03-24-2020**

Responses by Henry Design Group 7-20-2018

General comments and observations:

1. The plans have been updated for clarity as requested in the December 2, 2019 referral comment letter.
Response: Comment noted.
2. The landscape is thoughtful. Street trees are located outside the site triangles to maximize the number of trees.
Response: Comment noted.
3. Pocket parks meet the Towns' requirements.
Response: Comment noted.

Landscape and Parkes-related review comments:

4. Grading for the pocket parks will need to be reviewed with final documents.
Response: Comment noted. Final and detailed grading will be provided with the final landscape plan.
5. Final Pocket park design should include more detail regarding the community garden.
Response: Additional details have been added, including box sizes and garden hose spigots. If needed, more detail will be provided with the final landscape plan.
6. The plans need to clarify the limits of irrigated grasses. Are all areas irrigated including native shortgrass and native tallgrass areas? Add a note or delineate the limits of irrigated landscape and non-irrigated landscape.
Response: Native short and tall grass areas will be temporarily irrigated for establishment. Note 1 of the landscape notes on Sheet 15 has been expanded to clarify this.
7. Irrigation plans to be submitted with final landscape design plans.
Response: Irrigation plans will be provided with the final landscape plan.

End of Comments



It is acknowledged that the cash-in-lieu fees of \$970 for SFD and \$846 for Paired Homes will be paid on a per unit basis at the time of building permit.

RE:

Dear

Thank you for referring the _____ to the School District. The District has reviewed the development proposal in terms of (1) available school capacity, (2) required land dedications and/or cash-in-lieu fees and (3) transportation/access considerations. After reviewing the above proposal, **the School District finds _____ and _____ exceed the benchmark.**

General Comments:

Detailed information on the specific capacity issues, the land dedication requirements and transportation impacts for this proposal follow in Attachment A. The recommendation of the District noted above applies to the attendance boundaries current as of the date of this letter. These attendance boundaries may change in the future as new facilities are constructed and opened. If you have any further questions or concerns regarding this referral, please feel free to contact me via e-mail at kragerud_ryan@svvdsd.org or at the number below.

Sincerely,

Ryan Kragerud, AICP
Planning/GIS

Enc.: Attachment A – Specific Project Analysis
Cash-in-lieu chart

Error! AutoText entry not defined.

May 19, 2020

The property has been included in the appropriate NCWCD subdistrict. Confirmation of that fact has been previously forwarded to the Town for the project file. The comment regarding Left Hand Water District is noted.

Chris LaRue
Community Development Dept.
P.O. Box 750
Erie, CO 80516
developmentreferral@erieco.gov

Re: Canyon Creek Filings 7 & 8 – Preliminary Plat – PP-001108-2019

Dear Chris:

You asked for comments regarding the Preliminary Plat for Canyon Creek Filings 7 & 8 by May 19, 2020. We previously provided comments in November, 2019, and this letter provides comments that were not further addressed in the materials made available with the more recent submittal.

The Town should assure that the property has been included into the Northern Colorado Water Conservancy District (“NCWCD”) and its Municipal Subdistrict prior to providing any water service. Exception No. 17 in the title commitment previously provided by the applicant references an Order of Inclusion for the NCWCD, but it does not reference any Order of Inclusion for NCWCD’s Municipal Subdistrict. Based on that title commitment, it appears that the property may not have been included in NCWCD’s Municipal Subdistrict. Prior to providing any water service to the property, the Town should confirm that the entire Canyon Creek Filings 7 & 8 area has been included in both the NCWCD and its Municipal Subdistrict.

It appears that the property is not currently in the Left Hand Water District. However, if it is determined by the Town or Left Hand that the property is in the Left Hand Water District, the property should be excluded from that District prior to the approval of the final plat.

The Town should not provide sanitary sewer service to the property until such time as it provides water service to the property. This is necessary for the Town to properly account for the sanitary sewer return flows to the Town’s wastewater and reuse systems.

May 19, 2020

Page 2

It should also be determined whether there are any appurtenant decreed surface water rights that should be conveyed to the Town. If so, the Applicant should comply with Town Municipal Code Section 8-1-9 regarding dedication of water rights.

Finally, all non-tributary ground water rights should be dedicated to the Town. Please contact us with any questions or comments.

Sincerely,

VRANESH AND RAISCH, LLP

A handwritten signature in blue ink, appearing to read "Paul Zilis", with a stylized flourish at the end.

By: Paul Zilis

cc: Todd Fessenden



Right of Way & Permits

1123 West 3rd Avenue
Denver, Colorado 80223
Telephone: **303.571.3306**
Facsimile: 303. 571.3284
donna.l.george@xcelenergy.com

May 22, 2020

Town of Erie Community Development Services
645 Holbrook / PO Box 750
Erie, CO 80516

Attn: Chris LaRue

RE: Canyon Creek Filing No.s 7 and 8 – 2nd referral, Case # PP-001108-2019

Public Service Company of Colorado's Right of Way & Permits Referral Desk has determined **there is a conflict** with the above captioned project and must *deny* this case.

Please address the requests from the attached previous response submittal dated November 15, 2019 as there are insufficient easements within certain lots in these platted areas.

Comment response requested.

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



Right of Way & Permits

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

November 15, 2019

Town of Erie Community Development Services
645 Holbrook / PO Box 750
Erie, CO 80516

Attn: Chris LaRue

Re: Canyon Creek Filing Nos. 7 and 8, Case # PP-001108-2019

Public Service Company of Colorado's (PSCo) Right of Way & Permits Referral Desk has reviewed the preliminary plat for **Canyon Creek Filing Nos. 7 and 8**. Per the attached highlighted plat sheets, PSCo requests the following utility easements *within the highlighted lots*:

- 6-feet wide for natural gas facilities highlighted in blue
- 8-feet wide for electric facilities highlighted in green
- 10-feet wide highlighted in purple for possible joint trenching as well as utility connectivity purposes within the development

Please note that Right-of-Way and Permits does not design layouts; however, this is based upon PSCo's standard easement widths for these utilities within residential lots, including those areas through tracts that are not designated for utility use on the tract summary chart.

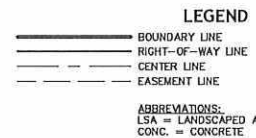
The property owner/developer/contractor must complete the application process for any new natural gas or electric service via xcelenergy.com/InstallAndConnect. It is then the responsibility of the developer to contact the Designer assigned to the project for approval of design details. Additional easements may need to be acquired by separate document for new facilities.

As a safety precaution, PSCo would like to remind the developer to call the Utility Notification Center by dialing 811 for utility locates prior to construction.

RESPONSE: Easements have been added. The 10' easements have been changed to 8' easements. The 8' easements have been used due to the setback requirements and building roof overhangs to ensure clearance.

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

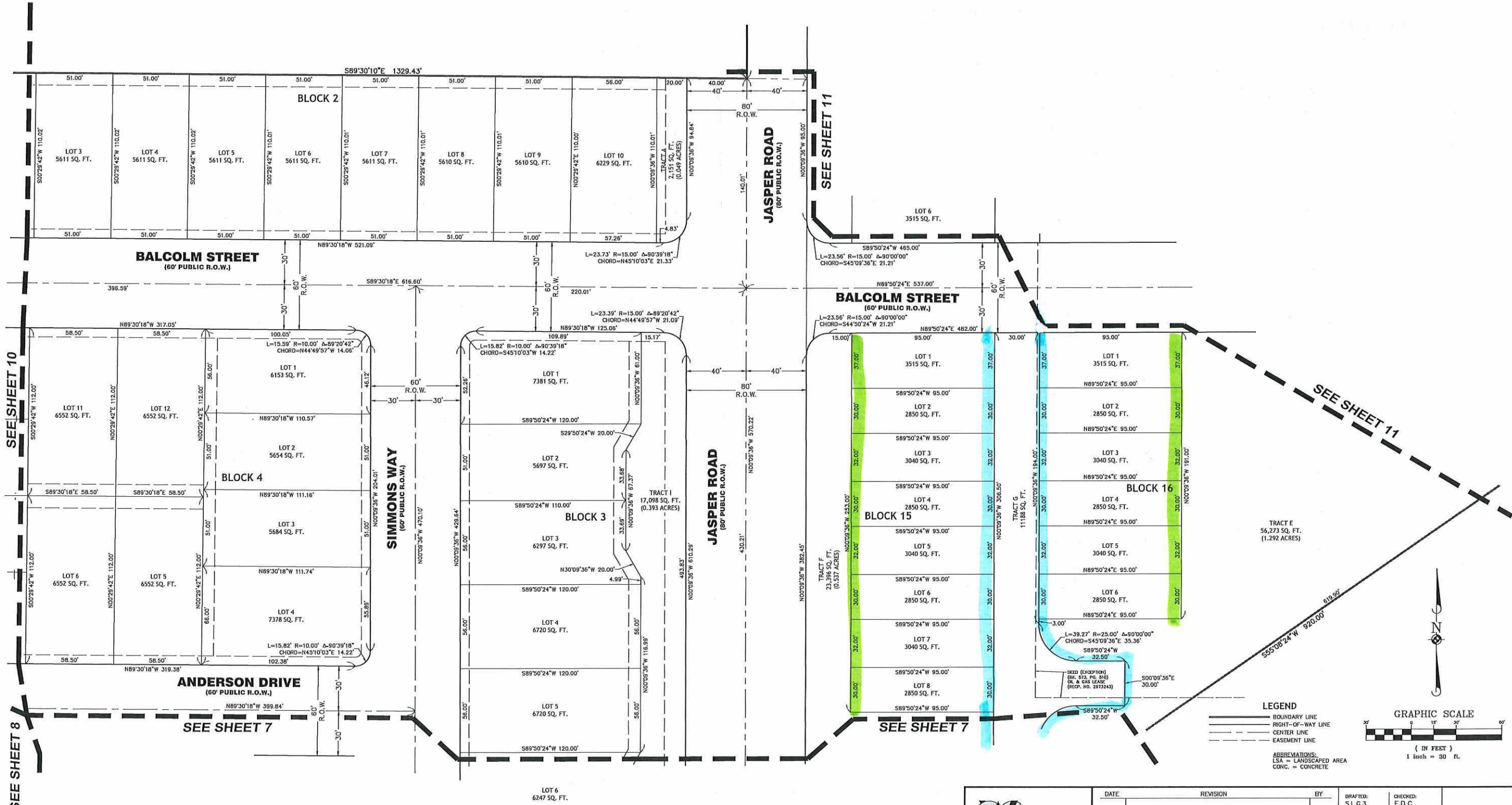
TRACT "O" AND "L", CREEKSIDE SUBDIVISION AND A PORTION OF THE SOUTH ONE-HALF OF SECTION 13,
TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN,
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
70.847 ACRES - 197 LOTS / 22 TRACTS
PP-001108-2019



CANYON CREEK SUBDIVISION FILING NOS. 7 & 8

PRELIMINARY PLAT

TRACT "O" AND "L", CREEKSIDE SUBDIVISION AND A PORTION OF THE SOUTH ONE-HALF OF SECTION 13,
TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN,
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
70.847 ACRES - 197 LOTS / 22 TRACTS
PP-001108-2019



DATE	REVISION	BY	DRAWN: S.L.G.3	CHECKED: E.D.C.
08/27/19				
SURVEY PREPARED FOR:			STRATUS CANYON CREEK, LLC	
SHEET NO. 10 of 13 SHEETS				

DATE	REVISION	BY	DRAFTED: S.L.G.3	CHECKED: E.D.C.	SHEET NO. 11 of 13 SHEETS
			DATE: 08/27/19	JOB NO. 128-00237 50-00091	
			SURVEY PREPARED FOR:		
			STRATUS CANYON CREEK, LLC		

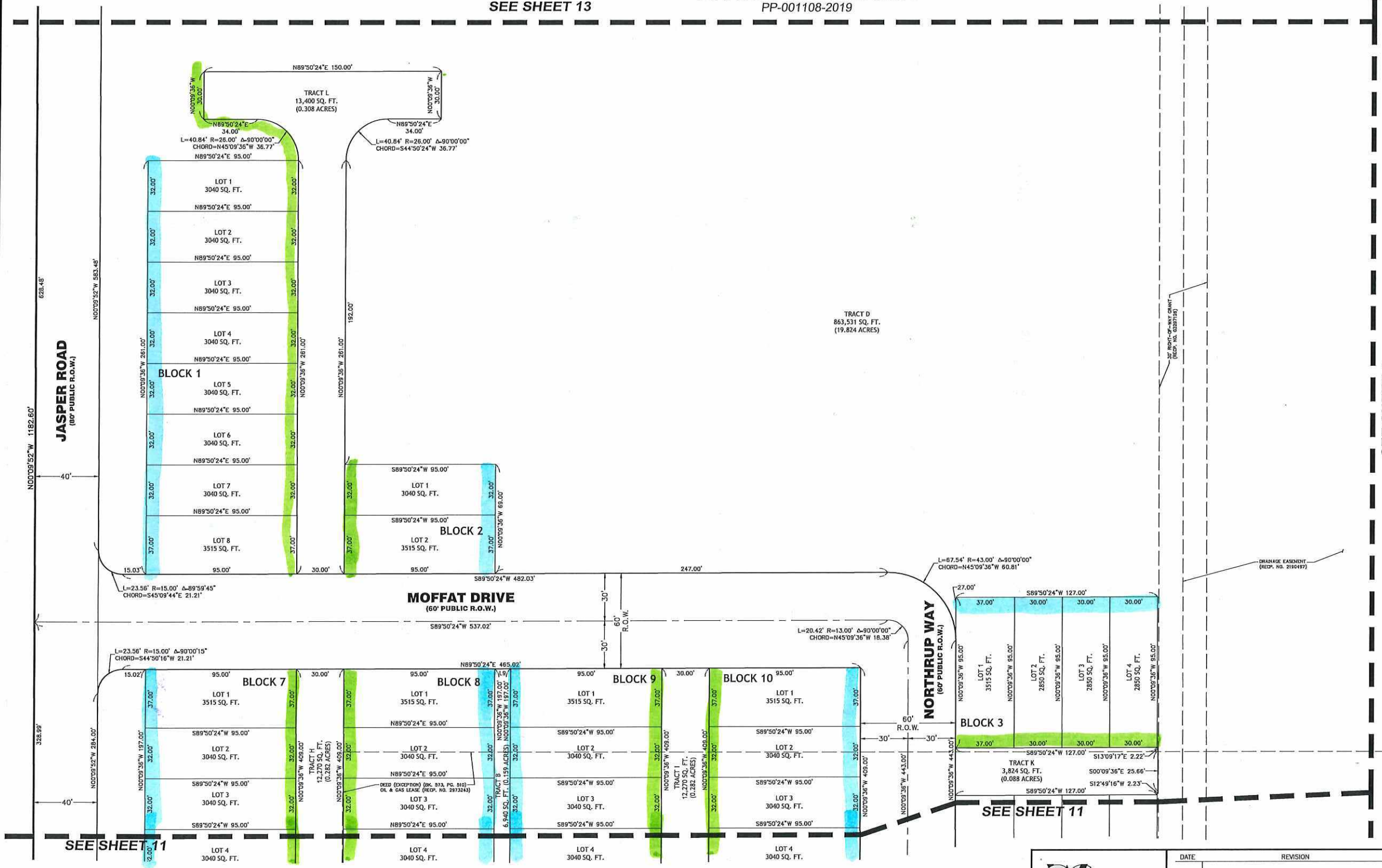
CANYON CREEK SUBDIVISION FILING NOS. 7 & 8

PRELIMINARY PLAT

TRACT "O" AND "L", CREEKSIDE SUBDIVISION AND A PORTION OF THE SOUTH ONE-HALF OF SECTION 13,
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TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
70.847 ACRES - 197 LOTS / 22 TRACTS
PP-001108-2019

SEE SHEET 13

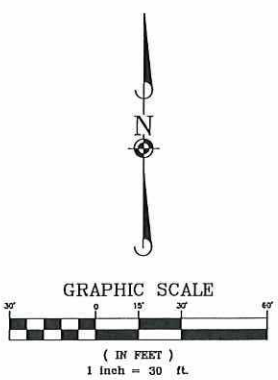
PP-001108-2019



SEE SHEET 4

LEGEND
— BOUNDARY LINE
— RIGHT-OF-WAY LINE
— CENTER LINE
— EASEMENT LINE

ABBREVIATIONS:
LSA = LANDSCAPED AREA
CONC. = CONCRETE



DATE	REVISION	BY	DRAWN BY	CHECKED BY
08/27/19			S.L.G.3	E.D.C.
08/27/19			DATE	JOB NO.
08/27/19			130-00237	130-00091
SURVEY PREPARED FOR:				
STRATUS CANYON CREEK, LLC				
SHEET NO. 12 of 13 SHEETS				

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PLANNING & DEVELOPMENT

Planning



Town of Erie
645 Holbrook Street
P.O. Box 750
Erie, Colorado 80516
(303) 926-2770

Memo

To: Roger Hollard (Land Perspectives LLC), Karen Henry
From: Christopher LaRue
Date: September 4, 2020
Re: PP-001108-2019: Canyon Creek Filing No. 7 & 8 Preliminary Plat Application
cc: Deborah Bachelder, David Smith, Chad Schroder, Darren Champion, Luke Bolinger

Responses by Henry Design Group and CWC 7-21-2020

9/4/2020 Comments from the Town of Erie

Responses provided by Design Team 11-16-20

Comments:

Town Staff has reviewed the Canyon Creek Filing No. 7 & 8 Preliminary Plat application for conformance with Municipal Code, Title 10. The application was reviewed at the August 27th, 2020 Development Review Team (DRT) meeting. A list of the Town staff that have commented and referral agencies that have responded are listed below. Referral comments received by the Town after the date of this memo shall be forwarded on to the applicant.

The next step for the Canyon Creek Filing No. 7 & 8 Preliminary Plat is revision and resubmittal for another referral and Development Review Team review. Please make the appropriate revisions to the application materials and provide written response to address each written comment from the Town staff and referral agencies.

Please provide a written response to each of the comments below and each applicable referral agency with your resubmittal. The resubmittal shall contain:

- Digital Copies – Please contact Melinda Helmer at mhelmer@erieco.gov prior to re-submittal, and she will provide a link to the Town's file sharing system.

Planning Comments (Please note previous comments are in *italics*, *applicant responses are in blue*, and *new comments from the Town are in red font*):
Responses to new comments from the Design Team are in green font.

1. ALTA and Title Information:

a. Gas pipelines:

- i. *Two gas pipelines are shown within Filing No. 7. One is on the northern boundary and the other one runs west to east in a diagonal across the property.*
 1. *The response indicated the northern pipeline shall be removed and relocated at the time of development and the easement vacated prior to finalizing the plat.*
 2. *Both the relocation and the vacation of the easement shall occur prior to approval of the final plat.*
- ii. *The diagonal gas line doesn't appear to be within easement. Please confirm the status of the easement.*
 1. *Response indicated that per the SUA talks have begun with Kerr McGee/Occidenial for relocation of the pipelines. The pipeline will need to have been relocated and appropriate easements (if necessary) dedicated prior to approval of the final plat.*
- iii. *Gas and oil well pipelines and their associated easements shall not be located on residential lots. It appears the diagonal pipeline runs through proposed lots.*
 1. *It was indicated the final alignment for new easements will not encumber any lots. This is acceptable, but the new easements shall be in place before approval of the final plat.*

Response: The relocation of the gas pipeline won't commence until the time of development. The applicant proposes that the easement will be shown as "to be vacated" on the preliminary plat, and that a plat note be added to the final plat, and possibly the DA, that states "Lots x – y, Block X, shall be restricted from obtaining building permits until such time as the easement shown is vacated by separate document".

Response: See above, the gas line won't be relocated prior to development given a variety of constraints, including potential extensive grading and development work that won't be allowed prior to plat approval and public improvement plan approval

Noting the easement will be shown as "to be vacated" on the preliminary plat is acceptable. Adding plat notes onto the Final Plat about restricting development on lots prior to vacating the gas easements and relocating the gas lines is unacceptable. That infrastructure shall be relocated prior to moving forward with final plat acceptance and approval of the DA (This will be a condition on the Preliminary Plat).

Response: Comment Acknowledged.

2. Mining and Oil and Gas:

- a. *All abandoned mines shall comply with Section 10.6.13 of the UDC.*
 - i. *The following applies to abandoned mines:*

1. *All mineshafts shall be capped and contain an appropriate monument in accordance with State requirements, and accepted by the State before Final Plat or Site Plan approvals. This should be completed with the Preliminary Plat.*
 - a. *Please review the comments from CGS. Staff continues to be concerned that lots may be impacted by the historical undermining. CGS concerns should be satisfied with any recommendations becoming conditions of the final plat.*
 - b. *Strain isolation trenches will need to be depicted on the plans and the Preliminary Plat.*
 - i. *Strain lines should not be on platted lots.*
 - ii. *Please provide information regarding the depth, width, grading, drainage, and other design details of the trench.*
 - iii. *Does the trench need to be contained within its own tract? Do other items (i.e. trails) need to be located away from the trench?*
 - iv. *Who is responsible for maintaining the trench?*
 - v. *The trench should be listed appropriately within the Tract Summary Chart.*
2. *Mineshafts shall not be located on a residential lot.*
 - a. *Staff is concerned that should the mineshaft not be located where expected, there could be impacts to the Preliminary Plat. Substantial impacts to the Preliminary Plat may require amending that document.*
3. *Mineshafts may be located in a street right-of-way, tract, or in a non-residential lot with an easement restricted for parking, open space or landscape use. Any modifications to this provision proposed by the applicant for Town consideration shall be in compliance with recommendations from the Geological and Geotechnical Hazards reports and the Colorado Geological Survey.*
 - a. *CGS has stated the shaft appears to be within the cul-de-sac, and that plat adjustments may be necessary if it is not where expected. Again, this may require a Preliminary Plat amendment.*
4. *Minimum dimensions for tracts/easements and minimum distances from abandoned mineshafts to residential lots and non-residential structures shall be determined based on recommendations from the Geological and Geotechnical Hazards reports and the Colorado Geological Survey.*
 - a. *CGS agreed with the 50-foot no build zone, however, the area shown could change depending upon the actual location of the shaft. Again, this may require Preliminary Plat amendment.*
 - ii. *There are areas that may be subject to a significant subsidence hazard.*
 1. *Prepare an exhibit illustrating this issue relative to the plat. Shade the impacted lots. Depict the mitigation measures (strain trenches).*
 - b. *Existing oil and gas well infrastructure and production facilities are subject to Section 10.6.14 of the UDC.*
 - i. *The comments in this section were addressed, or as indicated will be addressed with final plat submittal. Staff may have further comments at final plat review.*

Response. Please see the attached response from Western Environmental.

Response: The location of the shaft shall be verified prior to approval of the preliminary plat

Please see the response from CGS and address all the concerns contained within the letter. Has the mine shaft location been verified? If so, please accurately depict it on the plans. Please note per Section 10.6.13.B the no build buffer shall not be located within residential lots. With the existing plan, there appears to be enough room to adjust the lots and/or the road to accommodate the requirements of Section 10.6.13.B

Response: The mine shaft has been verified and the lots have been adjusted to accommodate the required 50-foot setback from the mine shaft. Dimensions have been added to the Preliminary Plat.

See the attached letter from Western Environmental dated September 15, 2020 addressing comments from CGS. The strain isolation trench details are attached to the letter as well as provided on the Preliminary CDs as requested above.

The final Western Environment and Ecology Mine Subsidence Investigation Report dated July 8, 2020 has been forward to Cole Garner for their information and use. Cole Garner's relationship with the project is solely for the benefit of, and tied to their relationship with KB HOME COLORADO. Stratus Canyon Creek LLC does not have a business relationship with Cole Garner and lacks the authority to cause them to update the report prepared for KB HOME COLORADO at this time. Cole Garner has been advised that as they move forward with development observation and geotechnical services for KB HOME to refer to and utilize the Western report as appropriate.

3. Parks and Open Space / Dedication Requirements:

- a. Whether or not Tract D of Filing No. 8 will count as Open Space has not been determined. This issue is still outstanding and will need to be resolved.
- b. Also, Tract D will need to be created as two tracts if it becomes Town owned. Per Section 10.6.3.C.4.g.viii, oil and gas well sites and required buffers are not eligible to count as open space dedication.

Response: As determined by discussions with staff, Lots 1 and 2 Block 12 have been eliminated, allowing tracts C and G to be eligible for open space dedication. Tract D will be modified and the portion designated drainage will be dedicated to the Town at the time of final plat for regional detention. See attached exhibit and email from Luke Bolinger regarding acceptance of Tract C for Open Space.

See comments from the Parks Department.

Add a blanket easement for the drainage area to allow the trail to go through if not already on the plat.

Response: A blanket drainage easement label was added to note 14. The table has been updated accordingly. Open Space credit is not being requested for Tract D. The tract will be dedicated to the Town for ownership and maintenance given it is a regional detention pond,

4. Preliminary Plat:

a. *General Comments:*

i. *Streets:*

1. *Final street names will be reviewed at the time of Final Plat*

- a. Generally new street names that do not repeat with Town are required.

Please note the following streets will need new names:

i. Jackson Court

ii. Balcolm Street

iii. Telleen Avenue may need a name change where it turns north.

Response: noted

Please adjust the street names as noted.

Response: The street names have been updated on the Preliminary Plat as requested.

ii. *Utilities:*

1. *General utility easements need to be shown adjacent to front and rear lot lines. Easements shall also be depicted adjacent to all public streets, and other platted areas including tracts, parcels, and open space areas. See Xcel Energy referral.*

- a. Xcel Energy comments were not addressed.

Response: UTILITY EASEMENTS HAVE BEEN ADDED ACCORDINGLY

See the Xcel Energy response. Concerns are still not addressed.

Response: Sidewalks in the green courts have been adjusted to 6-feet in width for access based on Xcel requirements. The 6-foot wall will be accessible from the public streets on each end of the common area.

b. *Sheet 2:*

i. *Notes:*

1. *Additional notes will be required for the undermining issues. See the notes on Canyon Creek Filing No. 10 as an example.*

- a. *The response indicated the requested notes were being vetted out. Please add the notes.*

Response: CWC COULD NOT FIND THE RECORDED PLAT FOR CANYON CREEK FILING NO. 10 IN THE COUNTY RECORDS; IF THIS HAS NOT BEEN RECORDED YET COULD YOU PROVIDE CWC WITH THE NOTES?

Recorded documents attached.

Response: The note has been added to Sheet 2 of the Preliminary Plat as requested.

c. *Sheet 6:*

- i. *Depict the correct location of the abandoned mine shaft along with the 50-foot buffer.*

1. *Given the comments from CGS, staff is concerned some of the lots on Jackson Way may need to be adjusted to be out of the buffer.*
 - a. *Staff still has concerns given the new set of CGS comments.*
2. *The buffer should be labeled as a 50 foot mine no build zone, as opposed to the current label.*

Response: noted

See response from CGS and provide responses.

Response: label changed

Per comment above, the buffer cannot be within residential lots per UDC section 10.6.13.

Response: Comment has been previously addressed above.

5. Preliminary Construction Plans

- a. *Provide written authorization from the property owners who are impacted by the Jay/Jasper Roads traffic circle improvements, and the Jasper Road extension.*

Response: Discussions have occurred with the property owners impacted. Written authorization shall come in the form of negotiated agreements that will be completed during the processing of the final plat. Until approval of the preliminary plat concepts and preliminary engineering the basis of those agreements cannot be solidified.

Staff had a conversation with Harvey Blair on 9/4/2020. Mr. Blair indicated he had not been spoken to about the road extension. It is imperative the two land owners be brought into the conversation ASAP, as the extension of this road is integral to the development. Written concurrence for the road improvements as proposed on the Preliminary Plat will be required with the Preliminary Plat.

Ditch Laterals: Mr. Blair indicated he is a user of, and is part of the ownership group, for the ditch laterals that run through Canyon Creek 7 & 8 and the Lafferty property. He indicated concerns that the owners/users have not been consulted regarding the plans for the laterals. Please provide documentation from the ditch laterals ownership group demonstrating they are in agreement with the plans for the development.

Response: The applicant has been in coordination with the ditch lateral company and is working through this as part of the Lafferty application. The Blair property will be accommodated through this process.

Subsequent to the applicant's discussions with staff, coordination with Mr. Blair has occurred and it was discussed that the final alignment and right-of-way will be determined and indicated at time of Final plat.

6. Anticipated Conditions of approval for the Preliminary Plat:

- a. The oil and gas pipeline infrastructure shall have new easements dedicated, and be relocated, prior to final plat acceptance and approval of the DA.
 - b. Per UDC Section 10.6.13.B.1, all mineshafts shall be capped and contain the proper monument in accordance with State requirements. The monument shall be depicted on the final plat.
 - c. Railroad crossing? At time of final plat submittal, an executed RTD rail crossing agreement shall be provided.
 - d. Offsite right-of-way for the road improvements shall be annexed and initially zoned prior the final plat ~~submittal~~. **Approval** The annexed area shall be depicted on the final plat.
 - e. Prior to, or with the Final plat copies of the agreements for the undergrounding & maintenance of the ditch laterals shall be provided to the Town. **See above.**
 - f. With the Final Plat submittal, a copy of the WAPA power line agreement application shall be provided. The agreement shall be finalized prior to the final acceptance of the final plat and approval of the DA. **Noted**
6. Please provide the update PD document, as one has not been submitted per the 4/28/20 e-mail (attached). **The revised PD Amendment was submitted on July 1, 2020 and September 15, 2020. The PD Amendment has been included herein again.**

Since review is a cumulative process and dependent on various criteria, we reserve the right to provide further comment(s) and request additional information upon receipt of this requested information. Please do not hesitate to contact me at 303.926.2776 for further clarification or with any questions or concerns that you may have.

WESTERN ENVIRONMENT AND ECOLOGY, INC

September 15, 2020

Christopher LaRue
Town of Erie
Planning and Development
645 Holbrook Street
Erie, Colorado 80516

Subject: Canyon Creek Filings 7 & 8 and Lafferty Property Preliminary Plat Application . Western Environment and Ecology, Inc. Project Number 780-002-01.

Dear Mr. LaRue:

At the request of Roger Hollard of Land Perspectives LLC, we have prepared the following response to Jill Carlson of the Colorado Geological Survey (CGS) August 27th, 2020 memo regarding the re-submittal to staff for comments to the plat application. Listed below are Ms Carlson's comments in italics followed by our response.

CGS: Chase Mine shaft: see CGS 8/27/2020 Comment 2, above. Standard Mine shaft as shown on the "Standard Star and Jackson Mines" map (1888): We continue to recommend, for public safety, that the applicant's consultant take steps to verify that no shaft is located on the property in the area of Filing 7, Tract C and Blocks 1 and 8. This could consist of geophysics or close observation of grading in this area by a qualified inspector to look for evidence of a mine opening. Jackson Mine Main Shaft: We will address this when the Lafferty property is submitted for CGS review.

WEE: Extensive exploratory excavation performed between August 10th and the 18th 2020 resulted in the identification of the Chase Mine Main Shaft. This required moving an estimated 50,000 to 100,000 yards of stockpiled soil placing the shaft within 40 feet of the mapped location.

However, research performed by Western Environment has been unable to confirm the location or existence of the Standard Mine shaft referenced above. This included review of the "Standard, Star and Jackson Mines" map dated 1888. It is our opinion that this document is uniquely inaccurate with the lack of any verifiable or reliable survey monuments that could indicate that a mine shaft is located in the vicinity of Filing 7. Therefore, Western Environment choose to use the CGS 1989 Mining and Surface Features Boulder-Weld Coal Field Map. This map is reproduced on Figure 2 of the July 8th, 2020 report. Furthermore, the results of the borings completed by Western Environment tend to confirm, at least in general, this depiction.

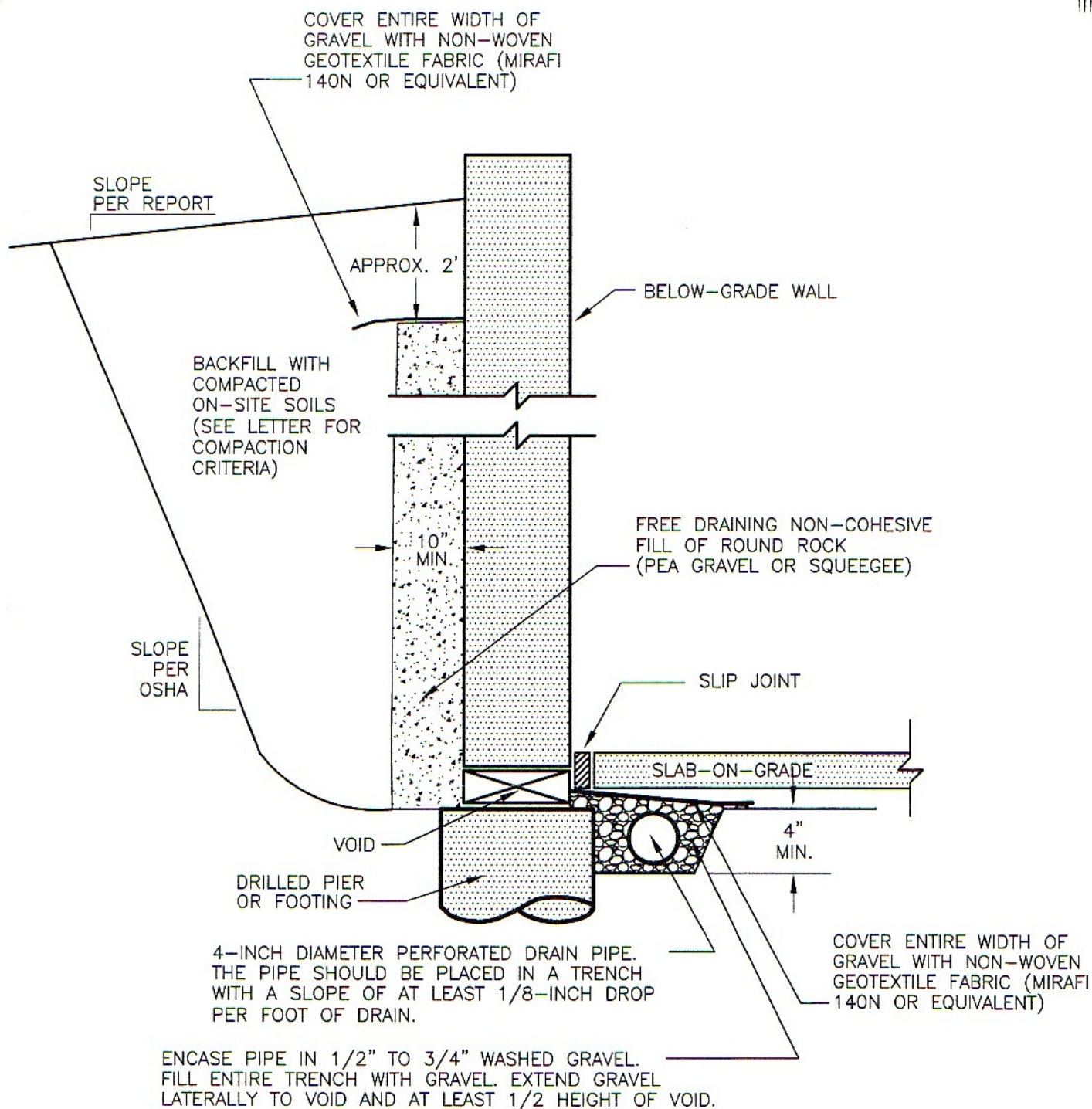
Therefore, based upon these inherent inaccuracies, all reported shaft locations within Subsidence Zone B occur within Open Space. However, due to the concerns expressed by the CGS in their July 27th, 2020 memo, **Western Environment agrees with the CGS that a "qualified inspector" be present during all over-lot grading activities within Filing 7, Track C, Blocks 1 and 8 to identify unmapped shafts.**

It appears that the additional CGS comments confirm or agree with Western Environment's July 8th Plat Application response. Should you have any questions or if we could be of further service, do not hesitate to contact me.

Sincerely,

Greg D. Sherman, P.G.
President

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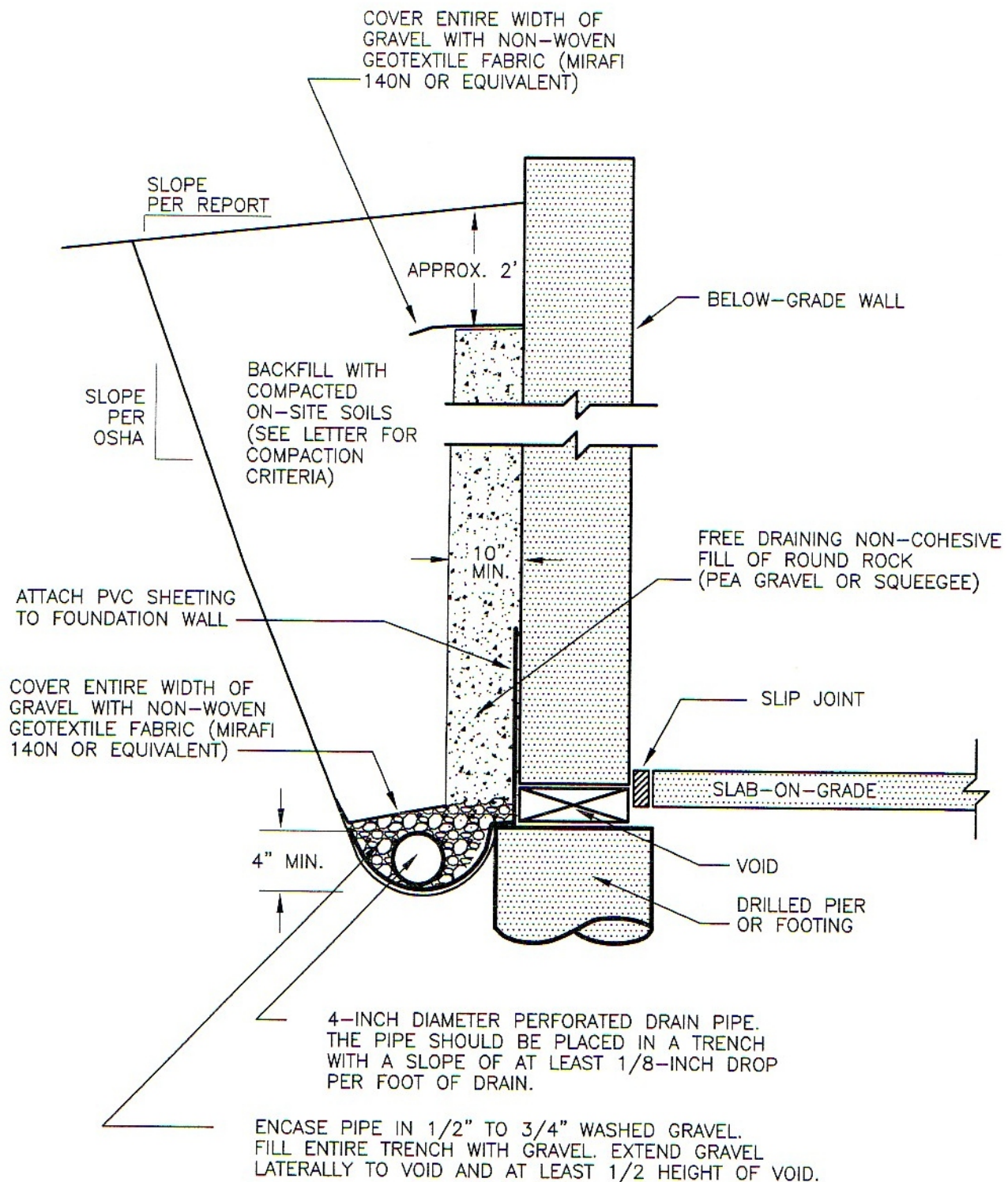


NOTE:

THE BOTTOM OF THE DRAIN SHOULD BE AT LEAST 4 INCHES BELOW BOTTOM OF VOID AT THE HIGHEST POINT AND SLOPE DOWNWARD TO A POSITIVE GRAVITY OUTLET OR TO A SUMP WHERE WATER CAN BE REMOVED BY PUMPING.

Conceptual Strain Isolation Trench

Fig. 1



NOTE:

THE BOTTOM OF THE DRAIN SHOULD BE AT LEAST 2 INCHES BELOW BOTTOM OF VOID AT THE HIGHEST POINT AND SLOPE DOWNWARD TO A POSITIVE GRAVITY OUTLET OR TO A SUMP WHERE WATER CAN BE REMOVED BY PUMPING.

Conceptual Strain Isolation Trench



Internal Memo

To: Chris LaRue, Planning & Development – Senior Planner

From: Darren Champion, Parks and Open Space Project Coordinator

Date: September 1, 2020

Subject: Canyon Creek Filings 7 & 8 – Preliminary Plat

Cc: Patrick Hammer, Parks & Recreation Director Luke Bolinger, Community Partnership and Special Projects Manager

Parks & Open Space Division staff have reviewed the subject plans and offer the following comments. Addressing these comments will be a condition of approval of the Final Plat as outlined below. A Final Accepted Landscape Plan is required for Final Plat approval.

Responses by Henry Design Group 11-12-2020

AT THE TIME OF FINAL PLAT, THE FOLLOWING COMMENTS ARE REQUIRED TO BE ADDRESSED:

General Comments:

-Provide 4' spine trail shoulders at a 5:1 grade with 6' preferred per attached Detail P25. Please provide more information on the plan set on how the spine trail correlates with the varying height of the headwall.

Response: 4' spine trail shoulders at 5:1 grade have been provided. The existing headwalls are at grade and labels have been added to the landscape plan.

-Staff recommends that the grade adjacent to the spine trail should not exceed 5:1. to allow for the maintenance outside of the 4' spine trail shoulders.

Response: Grading adjacent to the trail will not exceed 5:1 and labels have been added to the plan.

Landscape comments:

Sheet 10 of 19

- *Please address previous comment not addressed* -Staff request additional detail to be shown where the trail connects to Jasper Road extension. An access point shall be required for maintenance vehicles at Jasper Road. Staff requires a SW10A ramp and a trail stop sign at that access point. Depending on the final configuration of the trail crossing at this location, the ramp may need to be adjusted. This can be discussed prior to the acceptance of the final plat.

Response: An SW10A ramp and a trail stop sign have been added to the landscape plan.

- Please adjust all radii, where local trails or sidewalks connect to the spine trail, to reflect Detail P27 as follows:

- o Provide 3' radii where the spine trail meets the 5' sidewalk at Jasper Road

- Provide 5' radii at the 8' local trail connection
- Provide 12" monolithic bump out at the point where the new trail connects to an existing trail or sidewalk

Response: Trail radii have been provided as requested. The town's monolithic bump out detail drawing has been added to the site details sheet of the landscape plan for clarification.



Memo

To: Chris LaRue
From: Chad Schroeder, P.E., CFM, Development Engineer
Date: September 10, 2020
Subject: **Canyon Creek Filing 7 & 8 Preliminary Plat**
CC: David Pasic
Wendi Palmer
Tyler Burhenn

Comments for Preliminary Plat:

1. A portion of this extension of Jasper Road to the proposed roundabout with Jay Road will require acquiring the needed ROW, annexation of the ROW from unincorporated Boulder County parcel(s) into the Town of Erie, and approval of RTD for crossing their property. All agreements and approvals will be required for Final Plat approval.

RESPONSE1

Acknowledged.

Please provide the status of negotiations for obtaining the needed ROW from the adjacent property owners. The Town will need assurances that the property owners are willing to provide the needed ROW prior to Preliminary Plat approval. Also provide updates on obtaining the necessary approvals from RTD.

RESPONSE2

Lafferty annexation is being approved. A letter will be provided. We have had discussion with RTD and the crossing and noted it is similar to a crossing in Erie and at this point do not see any issues. RTD noted in conversation they do not review "concepts" per se, but more final documents as to not waste review time if the project does not move forward.

We need to have an official signed acknowledgement from both land owners in unincorporated Boulder County that they will agree to selling the needed sections of their land and have it annexed into the Town of Erie.

Please provide correspondence from RTD about the status of crossing agreements.

Per our meeting with on October 7th and information presented from RTD the crossing agreements will be done at Final Plat. RTD noted this design crossing is similar to Moffat Drive crossing but will not review preliminary designs should the project not proceed forward.

2. For the roundabout design, show:

b. Existing accesses and private driveways and propose how the accesses will tie into the roundabout.

RESPONSE1

The existing driveways have been added. The final design of the round-a-bout will incorporate the proposed driveway for the Dubois residence.

Provide the driveway reconfiguration and access point for review. The Town needs to approve the roundabout design and access configurations prior to Preliminary Plat approval.

RESPONSE2

The configuration of the private drive has been added south of the roundabout. This allows for right and left turns onto Jasper Road and access to the roundabout. The Lafferty property can use this access temporarily until the Lafferty property develops. Once the Lafferty property develops, a new access will be provided to Jasper Road.

Address attached FHU November 12, 2019 comments on the roundabout design.

RESPONSE3

Acknowledged. The design of the roundabout will be finalized with the Final Plat when the traffic study is finalized and coordination with FHU and the Town of Erie on the what requirements are for the RAB given the Town of Erie does not have criteria for the RAB.

3. The approved Wild Rose subdivision will be installing water and sanitary lines required for the Canyon Creek Filings 7 and 8.

a. 16-inch water line in Jasper and Jay Road from the proposed Wild Rose roundabout to the Lost Creek access.

b. 12-inch water line in the future Lombardi Street extension from the proposed Wild Rose roundabout to the existing stub end of Lombardi Street in the Kenosha Farms subdivision.

c. 8-inch sewer line from the main trunk line just south of the Erie Village subdivision to the south of the of the proposed Wild Rose subdivision residences.

If Wild Rose does not get built, then Canyon Creek Filings 7 and 8 will need to install these wet utility lines along with obtaining any of the needed easements and agreements from the Lower Boulder Ditch company, RTD, and respective unincorporated Boulder County properties. All agreements and approvals will be required for Final Plat approval.

RESPONSE1

We have requested the required CAD from the Town and the current builder for Wild Rose from multiple emails, but have not received a response at this time.

The Wild Rose subdivision is currently under construction and the utilities are being installed. The Wild Rose subdivision has provided the CAD files now.

RESPONSE2

Acknowledged, we have redesigned the waterline and sanitary sewer layout per the provided Wild Rose Connections.

The offsite sanitary sewer line north of the roundabout will probably need and additional manhole to stay within the utility easement. Verify easement location and adjust accordingly.

Additional manhole has been added

Acknowledged. An additional manhole has been added to keep the sanitary sewer line located within the verified existing utility easement. The utility easement has been added to the plans.

A utility easement from the St Vrain School District will be required for the water line at Final Plat. Has the school district been contacted about this easement?

We have reached out the School, but based on the alignment provided we should not be in the school property. We laid the line in on the Town of Erie property per county records. The final location will be confirmed based on land ownership with Town of Erie at the time of Final Plat.

An agreement with the Leyner Cottonwood Ditch will need to be provided for the water line utility easement and water line being within the ditch easement. Has the ditch company been contacted about this water line?

Per our October the 7th meeting the final agreement will be provided with Final Plat.

Additional easements may be needed to be provide for the other offsite water line connections that Merrick calls out per the Town Water Master Plan.

Acknowledged. Easement will be obtained from ownership at time of Final Plat.

4. Canyon Creek Filings 7 and 8 are roughly bisected by the Town's Zone 2 and Zone 3 Town staff had our utility consultant review the layout against the Town's Water Master Plan. Their findings are listed below. Revise the proposed Canyon Creek Filing 7 and 8 water system layout as needed.

- a. Due to the pressure issues in Filing 8 and Creekside, two zones are needed to provide water service to Canyon Creek, i.e. Filing 7 in Zone 3 and Filing 8 in Zone2.
- b. Water mains need to be installed along Jasper Road for each zone.
- c. Filing 8 (Zone 2) should connect to the 16-inch main on Jay road as well as connect to Creekside in two places, in order to provide lopped connection.
- d. Filing 7 (Zone 3) will need to connect to the west along Telleen Avenue to N. 119th Street and to the south to Tynan Drive; both are shown as 12-inch connections in the Town's Water Master Plan.
- e. The Master Plan also shows a 12-inch main from the north side of Filing 7 between Jasper Road and N. 119th Street; this main size could probably be reduced to 8-inch main, given looping in the neighborhood. These connections are all illustrated in the master plan.

RESPONSE1

The utility study is not complete and multiple requests have been made to the Town for information to verify pressure zones. The final waterline design will be completed once the utility study is complete.

The pressures needed will be provided shortly for incorporation into the model. The additional water line connections per the Water Master Plan that are highlighted in d. and e. above still need to be addressed.

RESPONSE2

The Preliminary Utility Study has been provided per the provided pressure zone information.

Address attached Merrick August 28, 2020 comments on the utility study and on the construction plans.

Primary areas of concern are:

- Need additional offsite water line connections.
- Provide evaluation of utility installation safety and stability in the mine subsidence areas.
- Update the water demand calculations for the water and sanitary sewer systems per the latest design criteria as recommended by Merrick.

A separate comment response letter has been provided to address the Merrick August 28, 2020 comments on the utility study. Additional offsite water line connections have been provided.

The evaluation of the utility installation safety and stability in the mine subsidence areas is still on going.

The most recent values for sewer loading were used in the report and calculations based on what is available on the Town of Erie website.

7. The Town is currently looking at different median designs for to be used town-wide. Staff will provide additional details for later Canyon Creek Filing 7 and 8 reviews to incorporate if necessary.

RESPONSE1

Acknowledged.

Town Board of Trustees is currently reviewing the Town Median policy. Once finalized, staff will provide the policy along with any potential additional median work to be required.

RESPONSE2

Acknowledged.

Attached is the latest draft of the Town Median study which should be adopted by the Board of Trustees sometime this Fall. Please review for potential incorporation of medians in Jasper Road. A continuation of medians in Jasper Road is desirable.

Jasper Road has been redesigned to incorporate medians as requested. The new roadway section for Jasper Road reflects the Town of Erie Drawing Number ST4.

10. There is a possibility that Urban Drainage Flood Control District / Mile High Flood District can assist with water quality / detention pond improvements on the eastern edge of Filing 8. Town staff will provide addition details.

RESPONSE1

Acknowledged.

With Canyon Creek Filings 7&8 using the pond for detention and water quality, the Town would like to see a contribution to the Mile High Flood District project. The details on this will be discussed later on. Please contact Jim Watt with the Mile High Flood District for coordination on the pond project: jwatt@udfcd.org / 303-455-6277.

RESPONSE2

Acknowledged and agree further discussion needs to be had. In discussion with MHFCD it appears the pond "could" be changing but also sounds like a potential issue.

The plans need to assume the MHFD detention pond project will not be happening and that all detention needs for Canyon Creek Filings 7 and 8 and be accommodated without the MHFD pond project. However, there could still be a possibility the MHFD project occurs. At such time the Canyon Creek Filings 7 and 8 drainage facilities should be able to merge with the MHFD pond project. Please continue to coordinate with MHFD on the status of their pond project.

Acknowledged. We have provided an updated phase II drainage study with the analysis of the 100-yr peak inflows from Canyon Creek Filings 7 and 8 to the existing Regional Detention and Water Quality Pond 1045. These 100-yr peak inflows have been compared with the current Town of Erie OSP. The findings from the Canyon Creek Filings 7 and 8 drainage study show that the current configuration of the Regional Detention and Water Quality Pond 1045 is designed to support the developments without modifications to the pond.

11. Provide applicable Town Standard sheets.

RESPONSE1

These be provided with the final construction documents.

Noted, Town recommends that these are provided now, but will be required at Final Plat.

RESPONSE2

No Response

Comment stands, no additional action required at this time.

Acknowledged. Town Standard drawings will be provided with the Final Construction documents.

12. An area grading plan will be required with the final construction plans.

RESPONSE

Acknowledged.

Noted, comment stands for reminder to include with Final Construction documents.

RESPONSE2

Acknowledged

Comment stands, no additional action required at this time.

Acknowledged. An area grading plan will be provided with the Final Construction documents.

13. See attached Drainage Report Comments from Merrick. Provide forebays for culvert outlets where required.

RESPONSE1

Acknowledged.

Please address attached Merrick Drainage review comments.

RESPONSE2

See separate responses for Merrick drainage review comments.

Per Merrick comment #6, we need to have a meeting to discuss water quality options for Sub-basins F-1 and F-2.

In the updated drainage study, Basins F-1 and F-2 have been updated to be D-1 and D-2. We have designed a retention and water quality pond per MHFD standards. This pond provides the required water quality volume and releases the WQCV within 12 hours through a single stage outlet structure. The release is discharged to a historical drainage path.

14. See attached Traffic Control comments from FHU.

RESPONSE1

Acknowledged.

The Town will have FHU review the Jay Road roundabout design again.

RESPONSE2

Acknowledged

Address attached FHU November 12, 2019 comments on the roundabout design.

Per the FHU comments, the final design of the roundabout should be confirmed by future traffic analyses. Our understanding is that the future traffic study will be completed with the Final Plat.

Comments to the Developer

General

1. Construction drawings show a boundary of mine subsidence. Provide the Town with a copy of the geotechnical investigation report for this area. What were the findings and recommendations in the geotechnical report? How will public utility infrastructure be protected from potential soil subsidence in this area?
2. The construction drawings are showing public utilities located within the 50' mine no build zone. Utility's cannot be installed in no-build zones. Extension remediation of the "no build zones" and a report on final geotechnical conditions will be required before construction can occur in these areas.
3. Per the Subsurface Utility Engineering legislation, locate and verify existing underground utilities. The construction plans shall note the existing utility type, size, depth, and pipe material at all proposed utility crossings or potential conflicts.
4. Include standard details for water and sanitary sewer utilities in future construction plans.

Potable Water System

5. Update water demand calculations per the latest design criteria. (Town's option)

6. Correct the existing potable storage volumes listed in paragraph 3.3.2 of the Utility Report. The existing Zone 2 storage available storage volume is 0.3 MG while the Zone 3 storage volume is 5.5 MG.
7. There are only two proposed water system connections for each pressure zone. In previous communications, we have insisted upon a third connection to the system, as shown in the Water System Master Plan map (and modeled in the Town's ultimate hydraulic model). The third connection provides looping through the development and strengthens the overall system.

In the June 2020 communication, we provided recommendations for water system connections along with existing system pressures at these locations. In addition to the proposed connections at Jay Road (north) and east of the Telleen Avenue PRV (south), the Zone 2 development should connect to the existing 8-inch main at the McGregor Circle/Northup Street intersection (southeast). In addition to the proposed connections at Jasper Road/Telleen Avenue (east) and Tynan Drive/Stanley Drive (south), the Zone 3 development should connect to the 12-inch main at N. 119th Street/Tynan Drive (west).

8. Given the neighborhood's location at the edge of the Zone 2/Zone 3 boundary, the high pressure is expected in Filing 7, while low pressures are expected in Filing 8. Design water services and plumbing accordingly.
9. While the Zone 3 water main in Jasper Road could be reduced to 8-inch, the Zone 2 main must be 12-inch pipe to maintain acceptable, system-wide hydraulics. Revise drawings and model accordingly.

10. Revise the construction plans (sheet 27) to show the correct location of the 12-inch Zone 2 water main east of the existing PRV on Telleen Avenue.
11. Locate and show the existing Meadowlark and Jay Road water lines in the plans. Also, the construction plans (sheet 31) show an existing water line in Jay Road/Jasper Road intersection. Who owns this line?
12. In future reviews, include the water main profile drawings on either side of storm and sanitary sewer crossings in their next submittal. The plans shall identify water main high- and low-grade points on the profile drawings. Where a lateral is not available to bleed air off high points, the developer will need to install an Air Relief Valve (ARV).

Wherever feasible, the water main should have minimum slope 0.5%. Local high points should occur at service taps (preferred) or fire hydrant tees (need to be maintained) to avoid the use of unnecessary air relief valves in the system. This provision may require portions of the utility to be deeper or shallower than the standard 4-foot depth.
13. Water line isolation valves shall be restrained to tees/crosses, per the Town's updated Section 600 design criteria.

Sanitary Sewer System

14. Update water demand calculations per the latest design criteria. (Town's option)
15. Provide updated pipe capacity calculations once the sewer main profile has been developed, using proposed pipe slopes. The Utility Report uses a Manning's roughness coefficient of $n=0.015$; this value is more conservative than the value used in the Town's master plan and hydraulic model (i.e. $n=0.012$).
16. For pipes 12-inch diameter or smaller, the maximum d/D is 0.5. Using the minimum slope, the 8-inch sewer main to the north will need to have a 12-inch diameter. The main sizing shall be reevaluated once sewer profile and slopes have been determined.
17. Include sanitary sewer profile drawings in the subsequent utility plan review. We can complete our review of the sanitary sewer utility plans once profile drawings are submitted.

CANYON CREEK FILINGS 7 & 8

PRELIMINARY UTILITY REPORT

PREPARED FOR:

THE TOWN OF ERIE

ON BEHALF OF:

STRATUS CANYON CREEK, LLC

July 13, 2020

Prepared By:



MSK Consulting, LLC
7157 S. Andes Circle
Centennial, CO 80016
303-903-0918

Job No. 39-001-01



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APPENDICES

Appendix A: Water System and Sanitary Sewer System Exhibits

Appendix B: Water System Calculations, Model Results, and Town Supplied Information

Appendix C: Sanitary Sewer Calculations

SECTION 1: INTRODUCTION

1.1 BACKGROUND

Canyon Creek Filings 7 and 8 (Canyon Creek) is a proposed residential development located in Weld County and the Town of Erie, CO. Canyon Creek will contain approximately 198 single-family residential units and is being developed by Stratus Canyon Creek, LLC. This report is specific to the Preliminary Plat application for Filings 7 and 8.

Canyon Creek will receive water and wastewater service from the Town of Erie (Erie). This Preliminary Utility Report will summarize the major water and sanitary sewer utilities required to provide service in accordance with Erie's 2019 development standards.

1.2 LOCATION

Canyon Creek is located within Erie approximately 0.5 miles west of the County Line Road and Jay Road intersection. The development is bound on the north by future Lafferty development, the west by undeveloped land, the south by the Red Hawk Elementary School, and the east by an existing residential development.



FIGURE 1-1: LOCATION MAP
(NOT TO SCALE)

SECTION 2: DEVELOPMENT SUMMARY

2.1 DEVELOPMENT COMPOSITION

The development boundary for Canyon Creek is shown in Figure 1-1. The proposed development consists of 198 single-family residences. There are no multi-family, commercial, school, or industrial users. Canyon Creek does not have a club house or other community facility. The proposed development composition is provided in Table 2-1:

Table 2-1: Proposed Development Summary

Development Type	Total Units
Single-family Residential	198

SECTION 3: WATER SYSTEM

3.1 WATER SYSTEM DESIGN CRITERIA

The water system within Canyon Creek will be designed in accordance with Erie's *Standards and Specifications for Design and Construction of Public Improvements, Section 600 Water Supply Facilities*, 2019 Edition. Additional information was taken from the *Water Master Plan*. Where criteria is not specifically stated in these standards, the design will conform to general industry practices. Provided below is the water system design criteria that was used to develop the proposed water system:

Table 3-1: Water System Design Criteria

Description	Value
Residential Demand	140 gpd/capita
Capita per Residential Unit ¹	2.79
Average Day Demand (ADD)	390.6 gpd/unit
Maximum Day Demand Factor	2.6 x ADD
Peak Flow Demand Factor	3.9 x ADD
Maximum system pressure	125 psi
Minimum system pressure	43 psi
Fire flow criteria	See section 3.4.3

Note:

1. Based on criteria established by Erie planning values.

3.2 WATER DEMAND

Based on the development composition listed in Section 2-1 and the demand unit values, Canyon Creek will have an average daily water demand of more than 77,339 gallons per day ("gpd") and a maximum day demand of 201,081 gpd. Provided in Table 3-2 is a summary of the water demands for Canyon Creek.

Table 3-2: Summary of Water Demands

Development Type	Number of Units	Average Day Demand (gpd)	Maximum Day Demand (gpd)	Peak Hour Demand (gpm)
Single-family Residential	198	77,339	201,081	209

3.3 EXISTING WATER SYSTEM INFRASTRUCTURE

3.3.1 Existing System Pressures

Canyon Creek is located in two pressure zones: Zone 2 and Zone 3. The information on both pressure zones is listed in Table 3-3 and was provided by Town staff. These values were used in the hydraulic model of the system.

Table 3-3: Pressure Zone Information

Zone	Elevation Range (feet)	HGL Static Elevation (feet)
2	4950 to 5070	5175
3	5070 to 5210	5313

There are 88 homes proposed in Pressure Zone 2 and 110 homes proposed in Pressure Zone 3.

3.3.2 Existing Potable Storage

Erie has ~~2.2~~^{0.3} MG of existing storage in Pressure Zone 2 and ~~1.8~~^{5.5} MG of storage in Pressure Zone 3.

3.3.3 Existing Pipelines

The closest Zone 2 pipeline to Canyon Creek is located to the south at an existing PRV near the intersection of Jasper Road and Telleen Avenue. This water line is 12-inch. There is also an 16-inch line to the north in Jay Road.

The nearest existing Zone 3 pipeline is also located at the existing PRV near the intersection of Jasper Road and Telleen Avenue. This water line is 12-inch. To the south of the Red Hawk Elementary School there is an existing 12-inch line in Tynan Drive.

Third connection to N 119th - shown in MP and recommended in December 2019 review.



Need a third connection at McGregor Cir. & Northup St. to the southeast.

FIGURE 3-3: PROPOSED WATER CONNECTIONS

(NOT TO SCALE)

3.4 WATER MODEL

3.4.1 Methodology

A computer analysis using the Innovyze® software was performed on Canyon Creek. The water lines throughout the proposed water distribution system were evaluated. Demands for each lot in the development were clustered to the nearest junction along the water lines. The following scenarios were evaluated by the model:

- Peak Hour Demand
- Maximum Day Demand plus Fire Flow

Based on the information from Erie's staff, the connection pressures used in the water model listed in Table 3-4A. The final sizing of the proposed water lines were based on the worst-case demand scenario – Maximum Day plus Fire Flow.

The model utilized a Hazen-Williams coefficient of 100 for all pipes 12-inch diameter and smaller, as stated in Erie's standards.

Okay. More conservative than the C=120 used in MP.

Table 3-4A: Water System Connection Point Pressures

No.	Location/Description	Junction Number	Pressure Zone	Maximum Day Pressure (psi)	Peak Hour Pressure (psi)
2A	Telleen Avenue PRV East	J72	2	45.0	42.8
2B	Jasper Road/Jay Road	J70	2	48.0	45.7
3A	Jasper Road/Telleen Avenue	J58	3	99.6	97.0
3B	Tynan Drive/Stanley Drive	J100	3	88.4	86.2

3.4.2 Off-site Demands

Off-site Zone 3 demands from the Lafferty development will be conveyed by the water lines in Canyon Creek or the proposed 8-inch line in Jasper Road. Lafferty's estimated maximum day demand is 44,919 gpd and the peak hour demand is 122 gpm.

3.4.3 Fire Flow

A fire flow scenario was performed by the water model. It applies a fire flow demand at each fire hydrant location and determines the residual pressure at that point. A minimum of 20 psi residual pressure is required to "pass". Fire flows demands are applied during the maximum day demand scenario. The fire flows demand is 1,000 gpm for a residential unit and the fire flow analysis included the Lafferty development.

3.4.4 Summary of Results

The water model demonstrated the following (detailed results are provided in Appendix B):

Table 3-4B: Zone 2 Water System Model Results

Scenario	Lowest Pressure (psi)	Highest Headloss (ft/1,000 lf)	Fire Flow Residual Pressure
Static	44.90 (J10)	n/a	n/a
PHF	43.21 (J26)	0.03 (P30)	n/a
MDD plus FF	38.21 (J10)	n/a	Pass

Table 3-4C: Zone 3 Water System Model Results

Scenario	Lowest Pressure (psi)	Highest Headloss (ft/1,000 lf)	Fire Flow Residual Pressure
Static	95.19 (J52)	n/a	n/a
PHF	81.97 (J56)	0.45 (P24)	n/a
MDD plus FF	74.71 (J56)	n/a	Pass

3.5 PROPOSED WATER SYSTEM INFRASTRUCTURE

Based on the water model analysis, the following infrastructure is required to maintain adequate pressures in the development.

3.5.1 Potable Storage

No additional potable storage is proposed, on or off-site, to serve Canyon Creek.

3.5.2 Booster Pump Station

A booster pump station is not proposed in order to provide pressure to Canyon Creek.

3.5.3 Distribution System

The majority of the water lines within the Canyon Creek will be 8-inch diameter C900 PVC. This includes the two water lines (Zone 2 and Zone 3) in Jasper Road. There is a 12-inch water line that extends south to the connection point in Zone 3 that is southwest of Red Hawk Elementary School. All of the pipelines will be located within the public streets or dedicated easements.

These should be 12-inch per the MP. Could live with 8-inch for Zone 3 but Zone 2 main between Jay and Telleen must be 12-inch.

SECTION 4: SANITARY SEWER SYSTEM

4.1 SANITARY SEWER SYSTEM DESIGN CRITERIA

The sanitary sewer system within Canyon Creek will be designed in accordance with Erie's *Standards and Specifications for Design and Construction of Public Improvements, Section 700 Sanitary Sewer Facilities*, 2019 Edition. Additional information was taken from the *2015 Wastewater Utility Plan*. Where criteria is not specifically stated in these standards, the design will conform to general industry practices for this region. Provided below is a list of criteria that was used to evaluate the proposed sanitary sewer system:

Table 4-1: Sanitary Sewer System Design Criteria

Description	Value
Pipe velocity (maximum)	10 fps
Pipe velocity (minimum)	2 fps
Residential Wastewater Production	90 gpd/capita
Capita per Residential Unit	2.79
Residential Average Daily Flow (ADF)	251.1 gpd/unit
Peak Demand Formula (Min. 2.5, Max. 5.0)	3.8/ADF ^{0.17}
d/D Maximum (10-inch and smaller)	0.8
d/D Maximum (12-inch and larger)	1.0
Inflow/Infiltration	Included in ADF

4.2 SANITARY SEWER LOADING

Based on the development's composition and average sanitary sewer loading from Table 4-1, the anticipated daily wastewater flow from Canyon Creek is 49,718 gpd. Table 4-2 provides a breakdown of the flows.

Table 4-2: Canyon Creek Sanitary Sewer Loading Summary

Basin	Total Units	Average Day Flow (gpd)	Peak Flow (gpm)
North (to West Side Interceptor)	148	37,163	129.0
South (to 21-inch Outfall)	50	12,555	43.6
Totals	198	49,718	172.6

4.3 EXISTING SANITARY SEWER SYSTEM INFRASTRUCTURE

4.3.1 Existing Interceptors

Per the *2015 Wastewater Utility Plan*, wastewater from Canyon Creek will flow into one of two existing basins. The first is to an existing 21-inch outfall located to the southeast of Canyon Creek. This 21-inch outfall is located in Jasper Road and Telleen Avenue. Flow from the south basin of Canyon Creek will discharge to this outfall.

The West Side Interceptor is located to the north of Canyon Creek. Flows from the north basin of Canyon Creek will ultimately discharge into this interceptor.

4.3.2 Existing Lift Stations

The flows from Canyon Creek do not discharge into any existing lift stations.

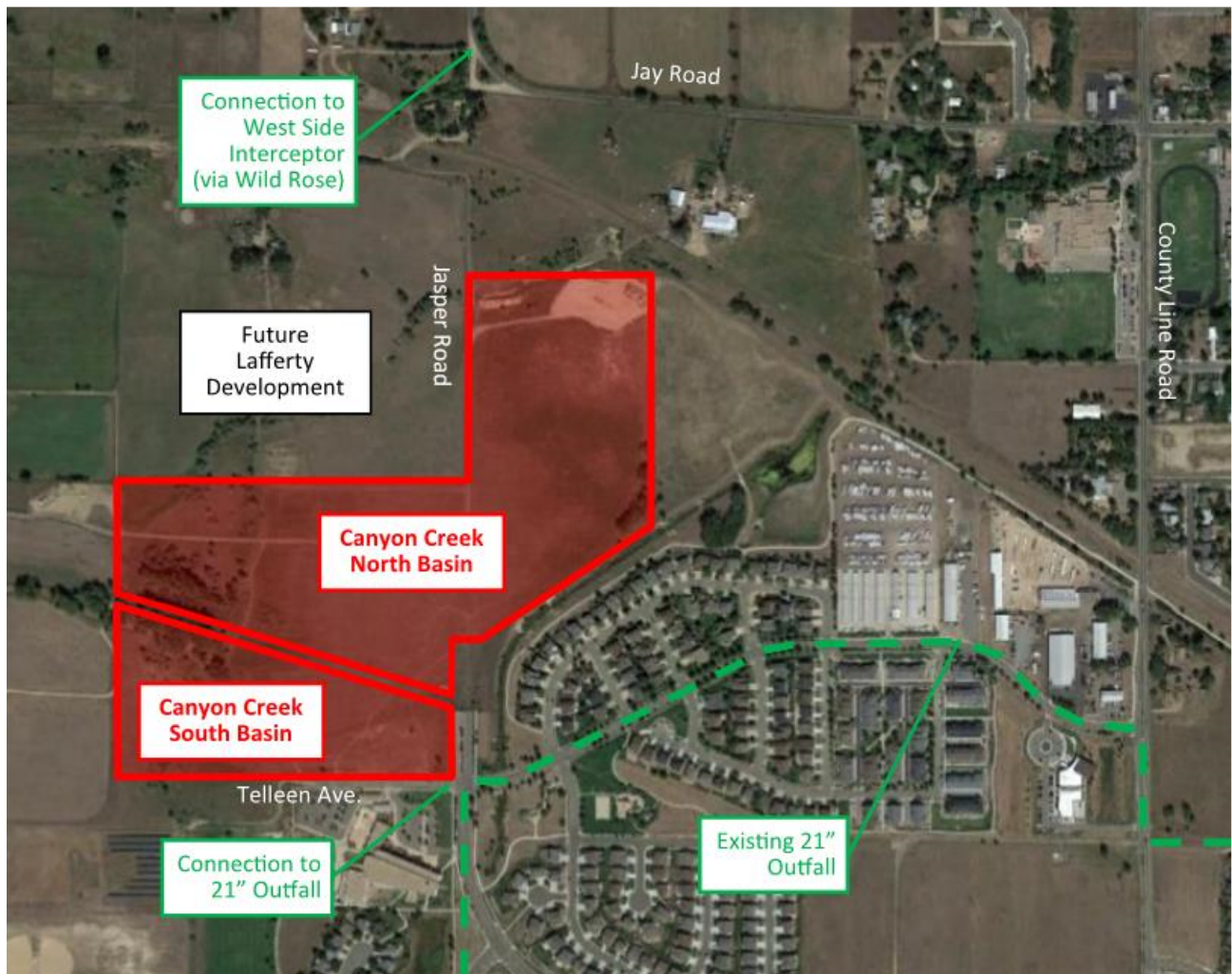


FIGURE 4-3: PROPOSED CONNECTIONS TO EXISTING SEWER LINES
(NOT TO SCALE)

4.4 SANITARY SEWER ANALYSIS

4.4.1 Methodology

Calculations were based on the anticipated development composition of Canyon Creek. The peaking factor was applied to the average day flows and the sum total was used to analyze the pipe's carrying capacity for each basin. The analysis utilized a Manning's coefficient of 0.015.

4.4.2 Off-site Flows

Proposed sanitary sewers in Canyon Creek will not carry any off-site flows. However, to evaluate capacity in the 8-inch line that will ultimately discharge to the West Side Interceptor (via the Wild Rose development), the peak flows (100.3 gpm) from the future Lafferty development's 115 single-family residential units were included.

4.4.3 Summary of Results

For the Preliminary Plat, sanitary sewer plan and profiles were not required. At the Final Plat the evaluation of the sanitary sewer capacities will be performed. This report will provide the calculated d/D assuming the minimum pipe slope. The results shown assume the most downstream portion of the collection system, which will convey all the peak flows from each basin prior to connecting to the existing outfall or interceptor.

Table 4-4: Sanitary Sewer Capacity

Basin	Number of Lots Served	Pipeline Size (inch)	Erie's Min. Slope (%)	d/D	Meets Erie's d/D Criteria?
North ¹	263	8	0.40%	0.66	Yes
South	50	8	0.40%	0.26	Yes

Note:

1. Includes 115 residential units from the Lafferty development.

Max. flow depth for pipe 12-inch and smaller is d/D= 0.5. Provide 12-inch sewer main for northern sewer main.

4.5 PROPOSED SANITARY SEWER SYSTEM INFRASTRUCTURE

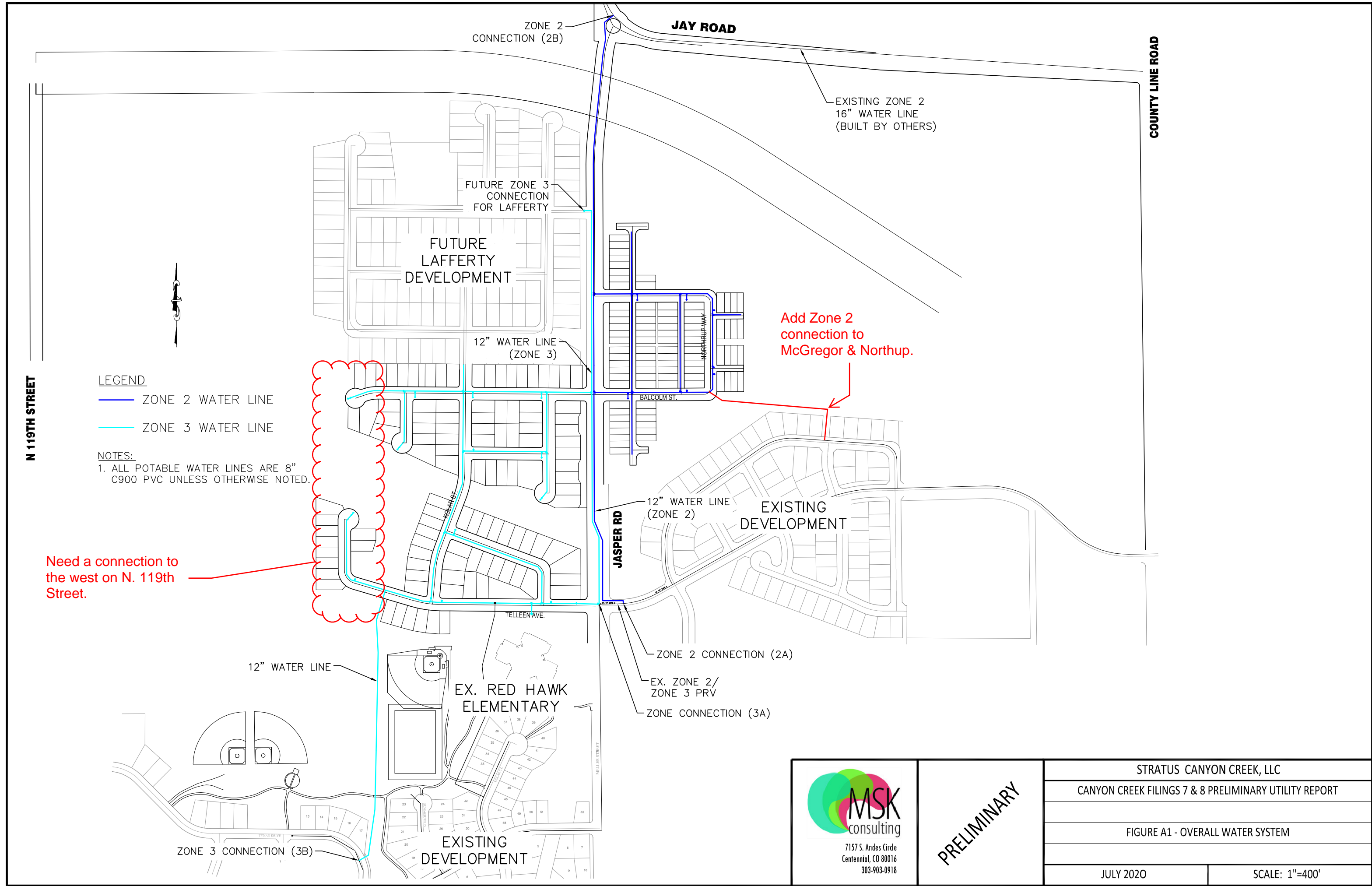
4.5.1 Lift Stations

Canyon Creek will not require a lift station to convey wastewater flows within or out of the development.

4.5.2 Collection Pipelines

Based on preliminary results, the sanitary sewer lines within Canyon Creek will be 8-inch diameter PVC. However, final sizes will be evaluated at the Final Plat submittal. The north basin of Canyon Creek will flow in an 8-inch line in Jasper Road north to the proposed Wild Rose development. The Wild Rose development will construct the sewer line that connects to the West Side Interceptor. The south basin of Canyon Creek will flow to an 8-inch line that connects to the existing 21-inch outfall at the intersection of Jasper Road and Telleen Avenue.

Appendix A
Water System and Sanitary Sewer System Exhibits



NORTH BASIN CONNECTION
TO WEST SIDE INTERCEPTOR
(VIA WILD ROSE)

JAY ROAD

COUNTY LINE ROAD

FUTURE
LAFFERTY
DEVELOPMENT

NORTHUP WAY

BALCOLM ST.

JASPER RD

EXISTING
DEVELOPMENT

TELLEN AVE.

EX. RED HAWK
ELEMENTARY

SOUTH BASIN CONNECTION
TO EXISTING 21-INCH OUTFALL

N 119TH STREET

LEGEND

- NORTH BASIN
- SOUTH BASIN

NOTES:

- 1. ALL SANITARY SEWER LINES ARE 8" PVC UNLESS OTHERWISE NOTED.



MSK
consulting

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303-903-0918

PRELIMINARY

STRATUS CANYON CREEK, LLC
CANYON CREEK FILINGS 7 & 8 PRELIMINARY UTILITY REPORT

FIGURE A2 - OVERALL SANITARY SEWER SYSTEM

JULY 2020

SCALE: 1"=400'

Appendix B
Water System Calculations, Model Results, and Town Supplied Information

Canyon Creek and Lafferty**Preliminary Utility Report**

Water Demands

Date: July 2020

MSK Project #: 39-001-01 and 39-002-01

Calc'd by: DLT

PRELIMINARY**Note:**

1. Information is from Erie's 2019 Standards and Specifications, Section 600-Water Supply Facilities.

Assumptions:

Residential Demand: 140 gpd/capita
 Capita per SF Unit: 2.79 capita/unit
 Average Day Demand: 390.6 gpd (per residential unit)
 Max. Day Demand Factor: 2.60 times ADD
 Peak Hour Demand Factor: 3.90 times ADD

Table B1-1: Buildout Water Demands

A	B	C	D	E	F	G	H
No.	Description	Pressure Zone	Units	Average Day Demand (gpd)	Max. Day Demand (gpd)	Max. Day Demand (gpm)	Peak Hour Demand (gpm)
1	Canyon Creek SF Residential	3	110	42,966	111,712	78	116
2	Canyon Creek SF Residential	2	88	34,373	89,369	62	93
3	Lafferty SF Residential	3	115	44,919	116,789	81	122
Totals			313.0	122,258	317,870	220.7	331.1

STRATUS CANYON CREEK, LLC**Canyon Creek Preliminary Utility Report**

Water Model Junction Report

Model Run Date: 7/13/20

ADD= 390.6 gpd/SFE
 0.271 gpm/SFE
 MDD= 2.60 x ADD
 PHD= 3.90 x ADD

Min. pressure: 42.68

Table B-1: Water Model Junction Report

					MDD Factor: 2.60			PDD Factor: 3.9					
					ADD OUTPUT = 84.9 gpm			MDD OUTPUT = 220.7 gpm			PHD OUTPUT = 331.1 gpm		
ID	Description			Elevation	Demand	Pressure	Demand	Pressure	Demand	Pressure	Demand	Pressure	
(Char)	(Char)	SFEs	Zone (Char)	(ft)	(gpm)	Head (ft)	(psi)	(gpm)	Head (ft)	(psi)	(gpm)	Head (ft)	(psi)
J10	FH	8	Z2-CC	5,071.28	2.17	5,172.00	43.64	5.64	5,171.98	43.63	8.463	5,171.96	43.63
J100	Connection	0	Z3-CC	5,099.50	0.00	5,298.00	86.01	0.00	5,298.00	86.01	0.00	5,298.00	86.01
J102	Connection	0	Z2-CC	5,068.00	0.00	5,172.00	45.06	0.00	5,172.00	45.06	0.00	5,172.00	45.06
J12	FH	18	Z2-CC	5,067.00	4.88	5,172.00	45.5	12.69	5,171.98	45.49	19.04	5,171.96	45.48
J14	FH	18	Z2-CC	5,063.21	4.88	5,172.00	47.14	12.69	5,171.98	47.13	19.04	5,171.96	47.12
J16	FH	4	Z2-CC	5,060.28	1.09	5,172.00	48.41	2.82	5,171.98	48.4	4.23	5,171.96	48.39
J18	FH	8	Z2-CC	5,065.28	2.17	5,172.00	46.24	5.64	5,171.98	46.23	8.46	5,171.96	46.22
J20	FH	12	Z2-CC	5,061.69	3.26	5,172.00	47.8	8.46	5,171.98	47.79	12.69	5,171.96	47.78
J22	FH	12	Z2-CC	5,065.00	3.26	5,172.00	46.36	8.46	5,171.98	46.35	12.69	5,171.96	46.34
J24	FH	8	Z2-CC	5,062.00	2.17	5,172.00	47.66	5.64	5,171.98	47.65	8.46	5,171.96	47.64
J26	Junction	0	Z2-CC	5,072.26	0.00	5,172.00	43.22	0.00	5,171.99	43.21	0.00	5,171.98	43.21
J28	FH	10	Z3-CC	5,088.09	2.71	5,297.98	90.95	7.05	5,297.86	90.9	10.58	5,297.71	90.83
J30	FH	11	Z3-CC	5,083.04	2.98	5,297.97	93.13	7.76	5,297.84	93.07	11.64	5,297.66	93
J32	Junction	0	Z3-Lafferty	5,085.00	0.00	5,297.97	92.28	0.00	5,297.83	92.22	0.00	5,297.63	92.13
J34	Junction	0	Z2-CC	5,065.00	0.00	5,172.00	46.36	0.00	5,171.99	46.36	0.00	5,171.98	46.36
J36	Junction	0	Z2-CC	5,059.82	0.00	5,172.00	48.61	0.00	5,171.98	48.6	0.00	5,171.96	48.59
J38	FH	11	Z3-CC	5,073.91	2.98	5,297.98	97.09	7.76	5,297.85	97.03	11.64	5,297.69	96.96
J39	Junction	0	Z3-CC	5,073.91	0.00	5,297.98	97.09	0.00	5,297.86	97.04	0.00	5,297.70	96.97
J40	FH	8	Z3-CC	5,079.76	2.17	5,297.98	94.55	5.64	5,297.86	94.5	8.46	5,297.69	94.43
J42	Junction	0	Z2-CC	5,070.14	0.00	5,172.00	44.13	0.00	5,171.99	44.13	0.00	5,171.98	44.13
J44	Junction	8	Z3-CC	5,084.00	2.17	5,298.00	92.73	5.64	5,297.99	92.72	8.46	5,297.98	92.72
J46	FH	0	Z3-CC	5,082.50	0.00	5,298.00	93.38	0.00	5,297.99	93.37	0.00	5,297.98	93.37
J48	Junction	0	Z3-CC	5,090.83	0.00	5,298.00	89.77	0.00	5,297.99	89.76	0.00	5,297.98	89.76
J50	FH	17	Z3-CC	5,090.29	4.61	5,297.99	90	11.99	5,297.95	89.98	17.98	5,297.89	89.96
J52	FH	15	Z3-CC	5,093.11	4.07	5,298.00	88.78	10.58	5,297.98	88.77	15.87	5,297.96	88.76
J54	FH	4	Z3-CC	5,105.24	1.09	5,298.00	83.52	2.82	5,297.99	83.52	4.23	5,297.98	83.51
J56	FH	6	Z3-CC	5,108.74	1.63	5,298.00	82	4.23	5,297.99	82	6.35	5,297.98	82.00
J60	FH	3	Z3-CC	5,079.11	0.81	5,297.98	94.83	2.12	5,297.86	94.78	3.17	5,297.69	94.71
J62	FH	5	Z3-CC	5,093.00	1.36	5,297.97	88.81	3.53	5,297.84	88.76	5.29	5,297.66	88.68
J64	FH	7	Z3-CC	5,088.24	1.90	5,297.97	90.88	4.94	5,297.84	90.82	7.41	5,297.66	90.74
J68	FH	5	Z3-CC	5,093.00	1.36	5,297.97	88.81	3.53	5,297.84	88.76	5.29	5,297.66	88.68
J70	Junction	0	Z2-CC	5,057.50	0.00	5,172.00	49.61	0.00	5,172.00	49.61	0.00	5,172.00	49.61
J72	Connection	0	Z2-CC	5,073.50	0.00	5,172.00	42.68	0.00	5,172.00	42.68	0.00	5,172.00	42.68
J74	FH	10	Z3-Lafferty	5,081.39	2.71	5,297.97	93.84	7.05	5,297.80	93.77	10.58	5,297.58	93.68
J78	FH	12	Z3-Lafferty	5,077.50	3.26	5,297.97	95.53	8.46	5,297.80	95.46	12.69	5,297.58	95.36
J80	FH	12	Z3-Lafferty	5,084.93	3.26	5,297.97	92.31	8.46	5,297.80	92.24	12.69	5,297.58	92.14
J82	FH	12	Z3-Lafferty	5,070.38	3.26	5,297.97	98.61	8.46	5,297.80	98.54	12.69	5,297.57	98.44
J84	FH	14	Z3-Lafferty	5,075.59	3.80	5,297.97	96.36	9.87	5,297.80	96.28	14.81	5,297.57	96.19
J86	FH	12	Z3-Lafferty	5,084.37	3.26	5,297.97	92.55	8.46	5,297.81	92.48	12.69	5,297.59	92.39
J88	FH	0	Z3-Lafferty	5,071.96	0.00	5,297.97	97.93	0.00	5,297.81	97.86	0.00	5,297.59	97.76
J90	FH	11	Z3-Lafferty	5,068.57	2.98	5,297.97	99.4	7.76	5,297.80	99.33	11.64	5,297.58	99.23
J92	FH	7	Z3-Lafferty	5,061.68	1.90	5,297.97	102.38	4.94	5,297.80	102.31	7.41	5,297.57	102.21
J94	FH	8	Z3-Lafferty	5,057.50	2.17	5,297.97	104.19	5.64	5,297.80	104.12	8.46	5,297.57	104.02
J96	FH	10	Z3-Lafferty	5,067.36	2.71	5,297.97	99.92	7.05	5,297.80	99.85	10.58	5,297.58	99.76
J98	FH	7	Z3-Lafferty	5,057.77	1.90	5,297.97	104.08	4.94	5,297.80	104.01	7.41	5,297.58	103.91
J99	Connection	0	Z2-CC	5,042.00	0.00	5,172.00	56.33	0.00	5,172.00	56.33	0.00	5,172.00	56.33

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STRATUS CANYON CREEK, LLC
Canyon Creek Preliminary Utility Report
Water Model Pipe Report
Model Run Date: 7/13/20

Max. Velocity: 6.41 ft/sec

Max. Velocity: 1.2 ft/sec

Table B-2: Water Model Pipe Report

ID	Description (Char)	Zone (Char)	From Node	To Node	Length (ft)	Diameter (in)	Roughness	MDD + FF OUTPUT (two 1000 gpm J16 and J92)					PHD OUTPUT				
								Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)	Status	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)	Status
2A	Connection	Z2-CC	2A	J72	1	8	100	555.75	3.55	0.01	9.77	Open	48.91	0.31	0	0	Open
2B	Connection	Z2-CC	2B	J102	1	8	100	0	0	0	0	Open	0	0	0	0	Open
3A	Connection	Z3-CC	3A	J58	1	8	100	962.64	6.14	0.03	27.83	Open	188.54	1.2	0	1.46	Open
3B	Connection	Z3-CC	3B	J100	1	12	100	196.04	0.56	0	0	Open	49.48	0.14	0	0	Open
P1	Pipe	Z2-CC	J14	J16	294.51	8	100	1,002.82	6.4	8.79	29.85	Open	4.23	0.03	0	0	Open
P10	Pipe	Z2-CC	J36	J24	135.29	8	100	0	0	0	0	Open	0	0	0	0	Open
P11	Pipe	Z3-CC	J30	J38	396.48	8	100	-258.68	1.65	0.96	2.43	Open	-39.11	0.25	0.03	0.07	Open
P12	Pipe	Z3-CC	J38	J40	284.02	8	100	-181.87	1.16	0.36	1.26	Open	-18.09	0.12	0	0.02	Open
P13	Pipe	Z3-CC	J40	J28	399.72	8	100	-189.63	1.21	0.55	1.37	Open	-29.72	0.19	0.02	0.05	Open
P14	Pipe	Z2-CC	J26	J42	129.95	12	100	100.39	0.28	0.01	0.06	Open	2.27	0.01	0	0	Open
P15	Pipe	Z2-CC	J42	J34	338.99	12	100	100.39	0.28	0.02	0.06	Open	2.27	0.01	0	0	Open
P16	Pipe	Z3-CC	J44	J46	44.61	12	100	-478.91	1.36	0.05	1.05	Open	-107.61	0.31	0	0.07	Open
P17	Pipe	Z3-CC	J44	J48	392.75	12	100	191.38	0.54	0.08	0.19	Open	45.03	0.13	0.01	0.01	Open
P18	Pipe	Z3-CC	J50	J44	656	8	100	-281.89	1.8	1.87	2.85	Open	-54.12	0.35	0.09	0.13	Open
P19	Pipe	Z3-CC	J52	J50	340.76	8	100	369.78	2.36	1.6	4.7	Open	68.06	0.43	0.07	0.2	Open
P2	Pipe	Z2-CC	J12	J14	468.97	8	100	227.96	1.46	0.9	1.92	Open	-1.78	0.01	0	0	Open
P20	Pipe	Z3-CC	J52	J54	230.48	8	100	-188.99	1.21	0.31	1.36	Open	-38.9	0.25	0.02	0.07	Open
P21	Pipe	Z3-CC	J56	J54	490.65	8	100	-4.23	0.03	0	0	Open	-6.35	0.04	0	0	Open
P22	Pipe	Z3-CC	J46	J58	229.04	12	100	-478.91	1.36	0.24	1.05	Open	-107.61	0.31	0.02	0.07	Open
P23	Pipe	Z3-CC	J40	J60	228.01	8	100	2.12	0.01	0	0	Open	3.17	0.02	0	0	Open
P24	Pipe	Z3-CC	J50	J28	400.53	8	100	639.69	4.08	5.2	12.98	Open	104.2	0.67	0.18	0.45	Open
P25	Pipe	Z3-CC	J62	J64	276.82	8	100	-3.53	0.02	0	0	Open	-5.29	0.03	0	0	Open
P26	Pipe	Z3-CC	J64	J30	279.95	8	100	-12	0.08	0	0.01	Open	-17.99	0.11	0	0.02	Open
P27	Pipe	Z3-CC	J68	J64	262.4	8	100	-3.53	0.02	0	0	Open	-5.29	0.03	0	0	Open
P28	Pipe	Z2-CC	J18	J22	264.22	8	100	92.68	0.59	0.1	0.36	Open	10.66	0.07	0	0.01	Open
P29	Pipe	Z2-CC	J24	J20	242.53	8	100	78.58	0.5	0.06	0.27	Open	-10.49	0.07	0	0.01	Open
P3	Pipe	Z2-CC	J18	J20	468.99	8	100	110.75	0.71	0.24	0.5	Open	1.79	0.01	0	0	Open
P30	Pipe	Z2-CC	J14	J20	230	8	100	-180.87	1.15	0.29	1.25	Open	21.39	0.14	0.01	0.03	Open
P31	Pipe	Z2-CC	J34	J70	1,350.69	12	100	-506.29	1.44	1.58	1.17	Open	-44.17	0.13	0.02	0.01	Open
P32	Pipe	Z2-CC	J26	J72	1,109.98	12	100	-555.75	1.58	1.54	1.39	Open	-48.91	0.14	0.02	0.02	Open
P33	Pipe	Z3-Lafferty	J74	J86	554.84	8	100	-297.61	1.9	1.75	3.15	Open	-22.13	0.14	0.01	0.03	Open
P34	Pipe	Z3-Lafferty	J78	J80	555.05	8	100	-319.32	2.04	1.99	3.58	Open	-16.22	0.1	0.01	0.01	Open
P35	Pipe	Z3-Lafferty	J82	J84	658	8	100	-411.98	2.63	3.78	5.75	Open	-5.02	0.03	0	0	Open
P36	Pipe	Z3-Lafferty	J32	J86	161.98	8	100	681.92	4.35	2.37	14.61	Open	73.39	0.47	0.04	0.24	Open
P37	Pipe	Z3-Lafferty	J88	J90	280	8	100	134.24	0.86	0.2	0.72	Open	14.52	0.09	0	0.01	Open
P38	Pipe	Z3-Lafferty	J92	J82	301.25	8	100	-1,004.94	6.41	9.03	29.97	Open	-7.41	0.05	0	0	Open
P39	Pipe	Z3-Lafferty	J84	J94	455	8	100	5.64	0.04	0	0	Open	8.46	0.05	0	0	Open
P4	Pipe	Z2-CC	J22	J24	250	8	100	84.22	0.54	0.08	0.3	Open	-2.03	0.01	0	0	Open
P40	Pipe	Z3-Lafferty	J82	J78	295	8	100	-601.42	3.84	3.42	11.58	Open	-15.08	0.1	0	0.01	Open
P41	Pipe	Z3-Lafferty	J84	J96	280	8	100	-427.49	2.73	1.72	6.15	Open	-28.29	0.18	0.01	0.04	Open
P42	Pipe	Z3-Lafferty	J96	J98	413.99	8	100	4.94	0.03	0	0	Open	7.41	0.05	0	0	Open
P43	Pipe	Z3-Lafferty	J90	J96	295	8	100	40.31	0.26	0.02	0.08	Open	-1.98	0.01	0	0	Open
P44	Pipe	Z3-Lafferty	J80	J90	382.95	8	100	-86.16	0.55	0.12	0.32	Open	-4.86	0.03	0	0	Open
P45	Pipe	Z3-Lafferty	J78	J74	280	8	100	-290.56	1.85	0.84	3.01	Open	-11.55	0.07	0	0.01	Open
P46	Pipe	Z3-Lafferty	J86	J88	383.07	8	100	134.24	0.86	0.28	0.72	Open	14.52	0.09	0	0.01	Open
P47	Pipe	Z3-Lafferty	J86	J80	280	8	100	241.61	1.54	0.6	2.14	Open	24.05	0.15	0.01	0.03	Open
P48	Pipe	Z3-CC	J100	J54	1,324.07	12	100	196.04	0.56	0.27	0.2	Open	49.48	0.14	0.02	0.02	Open
P49	Pipe	Z3-CC	J48	J52	135.42	8	100	191.38	1.22	0.19	1.39	Open	45.03	0.29	0.01	0.09	Open
P5	Pipe	Z2-CC	J26	J12	180	8	100	455.37	2.91	1.25	6.92	Open	46.63	0.3	0.02	0.1	Open
P50	Pipe	Z2-CC	J102	J22	1	8	100	0	0	0	0	Closed	0	0	0	0	Closed
P51	Pipe	Z2-CC	J10	J12	294.32	8	100	-5.64	0.04	0	0	Open	-8.46	0.05	0	0	Open
P6	Pipe	Z2-CC	J12	J18	230	8	100	209.08	1.33	0.38	1.64	Open	20.91	0.13	0.01	0.02	Open
P7	Pipe	Z3-CC	J28	J30	284	8	100	443	2.83	1.87	6.57	Open	63.9	0.41	0.05	0.18	Open
P8	Pipe	Z3-CC	J30	J32	128.11	8	100	681.92	4.35	1.87	14.61	Open	73.39	0.47	0.03	0.24	Open
P9	Pipe	Z2-CC	J34	J14	180.02	8	100	606.67	3.87	2.12	11.77	Open	46.44	0.3	0.02	0.1	Open
P91	Pipe	Z2-CC	J70	J99	1.00	16	110	-506.29	0.81	0	0	Open	-44.17	0.07	0	0	Open
P93	Redundancy	Z3-CC	J58	J39	1,059.98	8	100	483.73	3.09	8.2	7.74	Open	80.93	0.52	0.3	0.28	Open

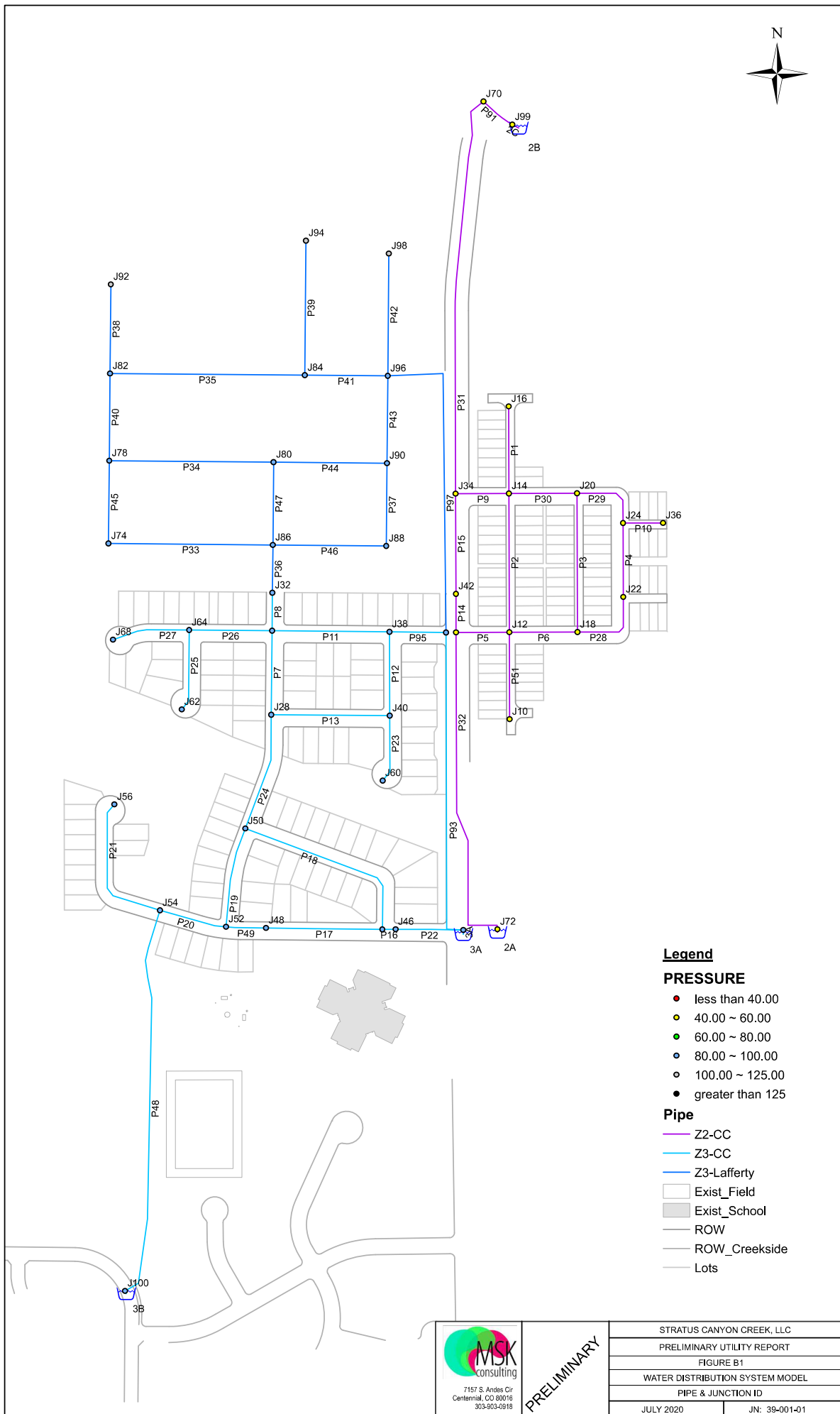
STRATUS CANYON CREEK, LLC**Canyon Creek Preliminary Utility Report**

Water Model Fire Flow Report

Model Run Date: 7/13/20

MDD + FF OUTPUT, MDD = 220.7 gpm**Table B-3: Water Model Fire Flow Report**

ID (Char)	Description (Char)	Zone (Char)	Elevation (ft)	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)	Pass /Fail
J10	FH	Z2-CC	5,071.28	5.64	43.63	5,171.98	1,000.00	38.21	2,242.47	20	Pass
J12	FH	Z2-CC	5,067.00	12.69	45.49	5,171.98	1,000.00	43.89	4,656.22	20	Pass
J14	FH	Z2-CC	5,063.21	12.69	47.13	5,171.98	1,000.00	45.54	4,815.77	20	Pass
J16	FH	Z2-CC	5,060.28	2.82	48.4	5,171.98	1,000.00	43	2,476.24	20	Pass
J18	FH	Z2-CC	5,065.28	5.64	46.23	5,171.98	1,000.00	43.75	3,684.08	20	Pass
J20	FH	Z2-CC	5,061.69	8.46	47.79	5,171.98	1,000.00	45.31	3,804.23	20	Pass
J22	FH	Z2-CC	5,065.00	8.46	46.35	5,171.98	1,000.00	42.82	3,033.03	20	Pass
J24	FH	Z2-CC	5,062.00	5.64	47.65	5,171.98	1,000.00	44.16	3,130.59	20	Pass
J28	FH	Z3-CC	5,088.09	7.05	90.9	5,297.86	1,000.00	87.37	5,497.46	20	Pass
J30	FH	Z3-CC	5,083.04	7.76	93.07	5,297.84	1,000.00	88.76	4,998.47	20	Pass
J38	FH	Z3-CC	5,073.91	7.76	97.03	5,297.85	1,000.00	92.98	5,295.89	20	Pass
J40	FH	Z3-CC	5,079.76	5.64	94.5	5,297.86	1,000.00	89.8	4,737.39	20	Pass
J46	FH	Z3-CC	5,082.50	0	93.37	5,297.99	1,000.00	93.07	20,962.02	20	Pass
J50	FH	Z3-CC	5,090.29	11.99	89.98	5,297.95	1,000.00	88.42	8,490.38	20	Pass
J52	FH	Z3-CC	5,093.11	10.58	88.77	5,297.98	1,000.00	87.99	11,997.94	20	Pass
J54	FH	Z3-CC	5,105.24	2.82	83.52	5,297.99	1,000.00	82.59	10,110.35	20	Pass
J56	FH	Z3-CC	5,108.74	4.23	82	5,297.99	1,000.00	74.71	3,198.93	20	Pass
J60	FH	Z3-CC	5,079.11	2.12	94.78	5,297.86	1,000.00	87.14	3,548.46	20	Pass
J62	FH	Z3-CC	5,093.00	3.53	88.76	5,297.84	1,000.00	77.17	2,686.53	20	Pass
J64	FH	Z3-CC	5,088.24	4.94	90.82	5,297.84	1,000.00	82.82	3,385.83	20	Pass
J68	FH	Z3-CC	5,093.00	3.53	88.76	5,297.84	1,000.00	77.36	2,711.62	20	Pass
J74	FH	Z3-Lafferty	5,081.39	7.05	93.77	5,297.80	1,000.00	85.95	3,545.03	20	Pass
J78	FH	Z3-Lafferty	5,077.50	8.46	95.46	5,297.80	1,000.00	88.09	3,730.11	20	Pass
J80	FH	Z3-Lafferty	5,084.93	8.46	92.24	5,297.80	1,000.00	85.59	3,864.63	20	Pass
J82	FH	Z3-Lafferty	5,070.38	8.46	98.54	5,297.80	1,000.00	90.18	3,536.52	20	Pass
J84	FH	Z3-Lafferty	5,075.59	9.87	96.28	5,297.80	1,000.00	88.32	3,580.99	20	Pass
J86	FH	Z3-Lafferty	5,084.37	8.46	92.48	5,297.81	1,000.00	86.51	4,129.38	20	Pass
J88	FH	Z3-Lafferty	5,071.96	0	97.86	5,297.81	1,000.00	90.64	3,817.52	20	Pass
J90	FH	Z3-Lafferty	5,068.57	7.76	99.33	5,297.80	1,000.00	92.68	4,069.66	20	Pass
J92	FH	Z3-Lafferty	5,061.68	4.94	102.31	5,297.80	1,000.00	90.04	2,891.02	20	Pass
J94	FH	Z3-Lafferty	5,057.50	5.64	104.12	5,297.80	1,000.00	90.24	2,725.05	20	Pass
J96	FH	Z3-Lafferty	5,067.36	7.05	99.85	5,297.80	1,000.00	93.26	4,105.48	20	Pass
J98	FH	Z3-Lafferty	5,057.77	4.94	104.01	5,297.80	1,000.00	92.04	2,960.04	20	Pass



Legend

PRESSURE

- less than 40.00
- 40.00 ~ 60.00
- 60.00 ~ 80.00
- 80.00 ~ 100.00
- 100.00 ~ 125.00
- greater than 125

Pipe

- Z2-CC
- Z3-CC
- Z3-Lafferty
- Exist_Field
- Exist_School
- ROW
- ROW_Creekside
- Lots



PRELIMINARY

STRATUS CANYON CREEK, LLC	
PRELIMINARY UTILITY REPORT	
FIGURE B1	
WATER DISTRIBUTION SYSTEM MODEL	
PIPE & JUNCTION ID	
JULY 2020	JN: 39-001-01

David Takeda

From: Chad Schroeder <cschroeder@erieco.gov> on behalf of Chad Schroeder
Sent: Friday, June 19, 2020 12:57 PM
To: Chris LaRue; Roger Hollard; dave@mskwater.com
Cc: David Pasic; Wendi Palmer; Tyler Burhenn
Subject: RE: Canyon Creek 7&8 Engineering Comments
Attachments: CC F7&8.pdf

Hello,

Here are the pressures for the Canyon Creek 7&8 Water Modeling.

Filing 7 will be served by **Zone 3** with connections at Jasper Rd. & Telleen Ave., at existing 12"x8" tee at Telleen Ave. west, and at Tynan Drive & N. 119th Street. An intermediary connection is also proposed in the Master Plan at Tynan Drive, just north of the intersection with Stanley Dr. Maximum day and peak hour pressures at those junctions are provided below:

Connection Point	Maximum Day pressure (psi)	Peak Hour pressure (psi)
Jasper Rd & Telleen Ave	99.6	97
Telleen Ave 12x8 Tee	98.3	95.8
Tynan Dr & N 119 th St	74.8	72.5
Tynan Dr & Stanley Dr	88.4	86.2

Filing 8 will be served by **Zone 2** with connections at Telleen Ave. east of the existing PRV, at McGregor Cir. & Northrup Dr., and at Jay Rd & N. 123rd St. The existing version of the hydraulic model only has water mains installed prior to the GIS transfer in October 2018, so there is no water main along Jay Rd in this version. The closest connection is at Jay Rd & County Line Rd. Maximum day and peak hour pressures at these junctions are provided below:

Connection Point	Maximum Day pressure (psi)	Peak Hour pressure (psi)
Telleen Ave PRV east	45	42.8
McGregor Cir & Northrup Dr	48	45.7
Jay Rd & County Line Rd	62.9	59.9

Also attached is a screenshot of the model showing approximate connection points for your reference.



Chad Schroeder, P.E. | Development Engineering Supervisor

Town of Erie | Public Works
645 Holbrook Street | P.O. Box 750 | Erie, CO 80516
Phone: 303-926-2876 | Fax: 303-926-2706
www.erieco.gov/public_works | [Facebook](#) | [Twitter](#) | [LinkedIn](#)

Erie, Colorado - the BEST place to raise a family!

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Appendix C Sanitary Sewer Calculations

Canyon Creek and Lafferty**Preliminary Utility Report**

Wastewater Loads

Date: July 2020

MSK Project #: 39-001-01 and 39-002-01

Calc'd by: DLT

PRELIMINARY**Note:**

1. Information is from Erie's 2019 Standards and Specifications, Section 700-Sanitary Sewer Facilities.

Assumptions:

Residential Loading: 90 gpd/capita

Capita per SF Unit: 2.79 capita/unit

Average Day Flow (ADF): 251.1 gpd (per residential unit)

Peaking Factor: $3.8/ADF^{0.17}$ (ADF in mgd, min=2.5, max=5.0)**Table C1-1: Buildout Wastewater Loads**

A	B	C	D	E	F	G
No.	Description	Basin	Units	Average Day Flow (gpd)	Peaking Factor	Peak Hour Demand (gpm)
1	Canyon Creek SF Residential	South	50	12,555	5.00	43.6
2	Canyon Creek SF Residential	North	148	37,163	5.00	129.0
3	Lafferty SF Residential	North	115	28,877	5.00	100.3
Totals			313.0	78,594		272.9

Canyon Creek and Lafferty**Preliminary Utility Report**

Sanitary Sewer Analysis - Pipe Capacity

Date: July 2020

MSK Project #: 39-001-01 and 39-002-01

Calc'd by: DLT

PRELIMINARY**Assumptions**

Buildout Peak Flow: 43.59 gpm

Slope: 0.40% (assumes minimum)

Manning's coeff: 0.0150 (PVC)

Pipe Diameter: 8 in 0.67 ft

Hydraulic Radius R: 0.333 ft

Table C2-1: Peak Flows to 21-inch Outfall

d/D	Depth, ft	Area, ft ²	Wetted Perimeter, ft	Hydraulic Radius, ft	Slope, ft/ft	Slope, %	Velocity, ft/sec	Flow, cfs	Flow, mgd	Flow, gpm
d/D= 0.20	0.13	0.050	0.618	0.080	0.004	0.40%	1.17	0.1	0.0	26
d/D= 0.26	0.17	0.071	0.711	0.101	0.004	0.40%	1.36	0.1	0.1	43.6
d/D= 0.40	0.27	0.130	0.913	0.143	0.004	0.40%	1.72	0.2	0.1	100
d/D= 0.60	0.40	0.219	1.181	0.185	0.004	0.40%	2.04	0.4	0.3	200
d/D= 0.80	0.53	0.299	1.476	0.203	0.004	0.40%	2.17	0.6	0.4	291
d/D= 0.99	0.66	0.348	1.961	0.178	0.004	0.40%	1.99	0.7	0.4	311

Canyon Creek and Lafferty**Preliminary Utility Report**

Sanitary Sewer Analysis - Pipe Capacity

Date: July 2020

MSK Project #: 39-001-01 and 39-002-01

Calc'd by: DLT

PRELIMINARY**Assumptions**

Buildout Peak Flow: 229.30 gpm (includes Lafferty flows)

Slope: 0.40% (assumes minimum)

Manning's coeff: 0.0150 (PVC)

Pipe Diameter: 8 in 0.67 ft

Hydraulic Radius R: 0.333 ft

Table C2-2: Peak Flows to West Side Interceptor

d/D	Depth, ft	Area, ft ²	Wetted Perimeter, ft	Hydraulic Radius, ft	Slope, ft/ft	Slope, %	Velocity, ft/sec	Flow, cfs	Flow, mgd	Flow, gpm
d/D= 0.20	0.13	0.050	0.618	0.080	0.004	0.40%	1.17	0.1	0.0	26
d/D= 0.40	0.27	0.130	0.913	0.143	0.004	0.40%	1.72	0.2	0.1	100
d/D= 0.60	0.40	0.219	1.181	0.185	0.004	0.40%	2.04	0.4	0.3	200
d/D= 0.66	0.44	0.243	1.261	0.193	0.004	0.40%	2.10	0.5	0.3	229.3
d/D= 0.80	0.53	0.299	1.476	0.203	0.004	0.40%	2.17	0.6	0.4	291
d/D= 0.99	0.66	0.348	1.961	0.178	0.004	0.40%	1.99	0.7	0.4	311

Revise sewer main size. Maximum allowable d/D= 0.5 for mains 12" diameter and smaller.

CANYON CREEK FILING NO.7 & NO.8 - PRELIMINARY CONSTRUCTION DOCUMENTS

A PARCEL OF LAND LOCATED IN THE SOUTH HALF OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERDIAN.
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
PP-001108-2019



LOCATION MAP

SCALE: 1" = 2000'

NOTES

1. BASIS OF BEARINGS: ALL BEARINGS ARE BASED ON THE EAST LINE OF SECTION 29, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH PRINCIPAL MERIDIAN, SAID TO BEAR S00°51'06"E, A DISTANCE OF 5317.82', FROM THE NORTHEAST CORNER OF SECTION 29 BEING MONUMENTED BY 0.3" ALUMINUM CAP, 0.3" DOWN IN A RANGE BOX WITH A LID AT THE INTERSECTION OF WELD COUNTY ROADS 5 AND 6, STAMPED "TIN R68W, 2021 - 29J28, 1998, LS13155" TO THE SOUTHEAST CORNER OF SECTION 29 BEING MONUMENTED BY A 2.5" ALUMINUM CAP, 0.3" BELOW GROUND SURFACE, IN A RANGE BOX WITH NO LID AT THE INTERSECTION OF WELD COUNTY ROADS 5 AND 4, STAMPED "GREENHORNE O'MARA INC., TIN R68W, 29J28, -&-, 32J33, PLS 28656, 1993".

TITLE DESCRIPTION

PORTIONS OF W1/2 NE1/4, E1/2 NE1/4 AND S 1/2 OF SECTION 29, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6TH P.M., COUNTY OF WELD, STATE OF COLORADO, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE EAST QUARTER CORNER OF SAID SECTION 29; THENCE S89°53'54"W, ALONG THE NORTH LINE OF THE SOUTH HALF OF SAID SECTION 29, A DISTANCE OF 40.00 FEET TO A POINT ON THE WESTERLY RIGHT-OF-WAY LINE OF COUNTY ROAD 5 (80' WIDE) AS DESCRIBED AT RECEPTION NO. 1973755 IN THE OFFICE OF THE CLERK AND RECORDER OF WELD COUNTY, COLORADO SAID POINT ALSO BEING THE POINT OF BEGINNING;

THENCE S00°33'04"E, ALONG SAID WESTERLY RIGHT-OF-WAY LINE, A DISTANCE OF 2628.75 FEET TO A POINT ON THE NORTHERLY RIGHT-OF-WAY LINE OF A 60' WIDE RIGHT-OF-WAY AS DESCRIBED IN BOOK 86 AT PAGE 273 AS RECORDED IN THE OFFICE OF THE CLERK AND RECORDER OF WELD COUNTY, COLORADO; THENCE N89°52'25"W, ALONG SAID NORTHERLY RIGHT-OF-WAY LINE, A DISTANCE OF 2582.89 FEET TO A POINT; THENCE CONTINUING ALONG SAID NORTHERLY RIGHT-OF-WAY LINE, N89°51'56"W, A DISTANCE OF 2592.85 FEET TO A POINT ON THE EASTERLY LINE OF A 60' WIDE RIGHT-OF-WAY LINE AS DESCRIBED IN SAID BOOK 86 AT PAGE 273; THENCE N00°46'44"W, ALONG SAID EASTERLY RIGHT-OF-WAY LINE, A DISTANCE OF 1011.94 FEET TO A POINT ON THE SOUTH LINE OF A PARCEL OF LAND AS DESCRIBED AT RECEPTION NO. 2360787, RECORDED IN THE OFFICE OF THE CLERK AND RECORDER OF WELD COUNTY, COLORADO; THENCE TRAVELING ALONG THE SOUTH AND EASTERLY PORTION OF SAID PARCEL OF LAND, THE FOLLOWING (3) THREE COURSES:

1. S89°59'07"E, A DISTANCE OF 1264.97 FEET TO A POINT;
2. N45°48'01"E, A DISTANCE OF 1075.96 FEET TO A POINT;
3. N00°40'10"W, A DISTANCE OF 850.48 FEET TO A POINT ON THE NORTH LINE OF THE SOUTH HALF OF SAID SECTION 29;

THENCE N89°55'44"E, ALONG SAID NORTH LINE, A DISTANCE OF 549.46 FEET TO A POINT ON THE WEST HALF OF THE WEST HALF OF THE NORTHEAST QUARTER OF SAID SECTION 29; THENCE CONTINUING ALONG THE NORTH LINE OF THE SOUTH HALF OF SAID SECTION 29, N89°55'15"E, A DISTANCE OF 479.08 FEET TO A POINT; THENCE N48°09'00"E, A DISTANCE OF 1110.81 FEET TO A POINT ON THE WEST LINE OF THE EAST HALF OF THE NORTHEAST QUARTER OF SAID SECTION 29; THENCE N00°36'28"W, ALONG SAID WEST LINE OF THE EAST HALF OF THE NORTHEAST QUARTER, A DISTANCE OF 370.76 FEET TO A POINT ON THE SOUTHERLY LINE OF RIGHT-OF-WAY (60' WIDE) AS DESCRIBED IN BOOK 868 AT PAGE 89 AND AT RECEPTION NO. 1687926 AS RECORDED IN WELD COUNTY COLORADO; THENCE NORTH 68°34'00"E, ALONG SAID SOUTHERLY RIGHT-OF-WAY LINE, A DISTANCE OF 1364.75 FEET TO A POINT ON THE WESTERLY RIGHT-OF-WAY LINE OF SAID COUNTY ROAD 5; THENCE S00°32'52"E, ALONG SAID RIGHT-OF-WAY LINE, A DISTANCE OF 1607.21 FEET TO THE POINT OF BEGINNING.

Sheet List Table	
Sheet Number	Sheet Title
1	COVER SHEET
2	GRADING PLAN
3	GRADING PLAN
4	GRADING PLAN
5	GRADING PLAN
6	GRADING PLAN
7	JASPER ROAD NORTH STA 0+00.00 TO 15+80.00
8	JASPER ROAD SOUTH STA 15+80.00 TO 28+44.98
9	MOFFAT DRIVE
10	BALCOLM STREET STA 0+00.00 TO 12+80.00
11	BALCOLM STREET STA 12+80.00 TO 18+00.00
12	HAMMERHEAD A & ROAD J
13	ROAD J & NORTHROP WAY
14	ALLEY A & ALLEY B
15	ANDERSON DRIVE & JACKSON WAY
16	TELLEN AVENUE
17	KOLAR STREET
18	RED HAWK COURT & SIMMONS DRIVE
19	LINE AND CURVE TABLES
20	SIGNAGE AND STRIPING PLAN
21	SIGNAGE AND STRIPING PLAN
22	SIGNAGE AND STRIPING PLAN
23	SIGNAGE AND STRIPING PLAN
24	SIGNAGE AND STRIPING PLAN
25	SIGNAGE AND STRIPING DETAILS
26	UTILITY PLAN
27	UTILITY PLAN
28	UTILITY PLAN
29	UTILITY PLAN
30	UTILITY PLAN
31	UTILITY PLAN
32	EROSION AND SEDIMENT CONTROL PLAN - INITIAL
33	EROSION AND SEDIMENT CONTROL PLAN - INITIAL
34	EROSION AND SEDIMENT CONTROL PLAN - INITIAL
35	EROSION AND SEDIMENT CONTROL PLAN - INITIAL
36	EROSION AND SEDIMENT CONTROL PLAN - INITIAL
37	EROSION AND SEDIMENT CONTROL PLAN - INITIAL
38	EROSION AND SEDIMENT CONTROL PLAN - INITIAL
39	EROSION AND SEDIMENT CONTROL PLAN - INTERIM
40	EROSION AND SEDIMENT CONTROL PLAN - INTERIM
41	EROSION AND SEDIMENT CONTROL PLAN - INTERIM
42	EROSION AND SEDIMENT CONTROL PLAN - INTERIM
43	EROSION AND SEDIMENT CONTROL PLAN - INTERIM
44	EROSION AND SEDIMENT CONTROL PLAN - INTERIM
45	EROSION AND SEDIMENT CONTROL PLAN - INTERIM
46	EROSION AND SEDIMENT CONTROL PLAN - INTERIM
47	EROSION AND SEDIMENT CONTROL PLAN - INTERIM
48	EROSION AND SEDIMENT CONTROL PLAN - FINAL
49	EROSION AND SEDIMENT CONTROL PLAN - FINAL
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52	EROSION AND SEDIMENT CONTROL PLAN - FINAL
53	EROSION AND SEDIMENT CONTROL PLAN - FINAL
54	EROSION AND SEDIMENT CONTROL PLAN - FINAL
55	EROSION AND SEDIMENT CONTROL PLAN - FINAL
56	EROSION AND SEDIMENT CONTROL DETAILS
57	EROSION AND SEDIMENT CONTROL DETAILS
58	EROSION AND SEDIMENT CONTROL DETAILS

CIVIL ENGINEER



APPLICANT/CLIENT

STRATUS COMPANIES
8480 E ORCHARD RD, STE 1100
GREENWOOD VILLAGE, CO 80111

PHONE: (720) 214-5000

PLANNER / L.A.

PROJECT NAME

CANYON CREEK FILING
NO 7 & NO 8
TOWN OF ERIE, COLORADO

SHEET TITLE

COVER SHEET

SHEET NUMBER

1

PROJECT DATA

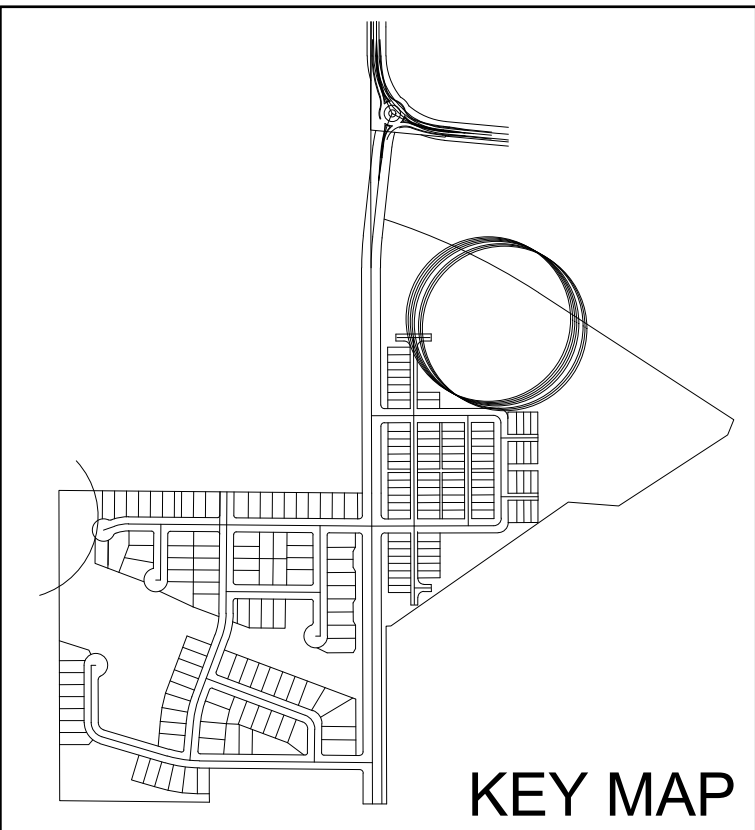
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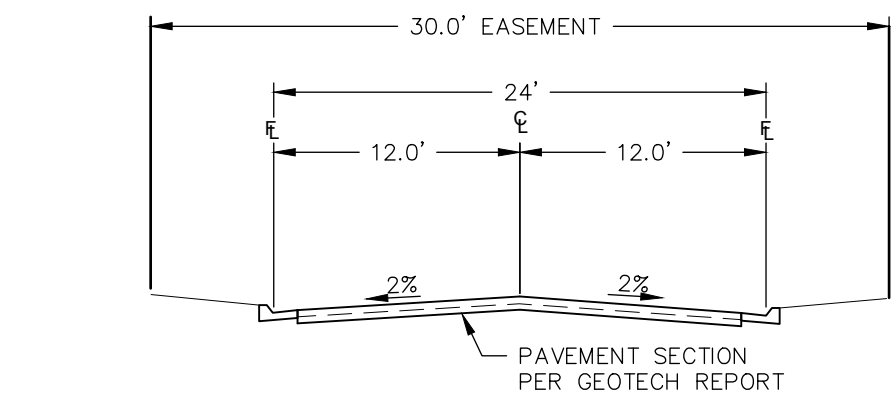
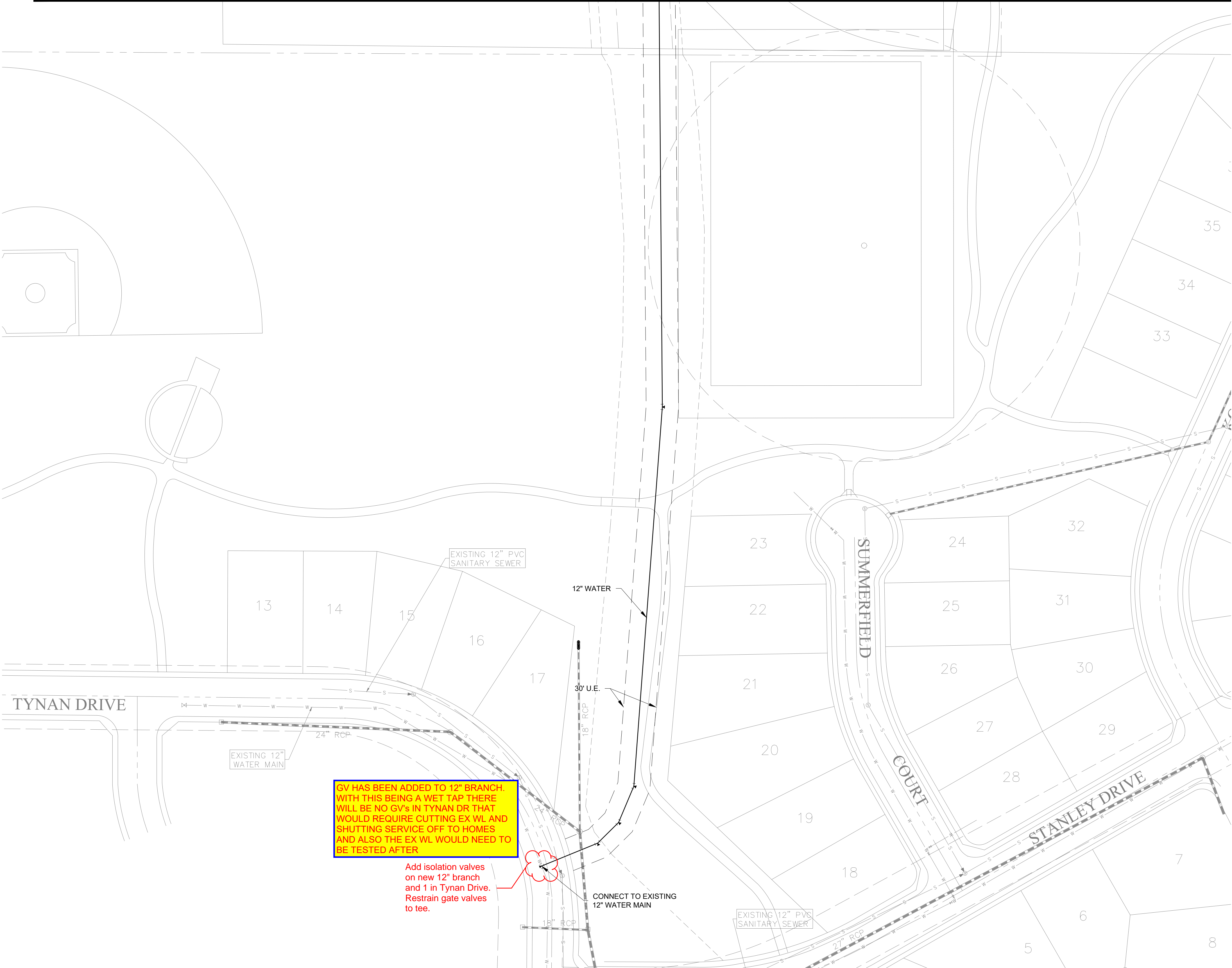
1ST SUBMITTAL 8-21-2019
2ND SUBMITTAL 3-24-2020
3RD SUBMITTAL 7-23-2020

CANYON CREEK FILING NO.7 & NO.8 - PRELIMINARY CONSTRUCTION DOCUMENTS

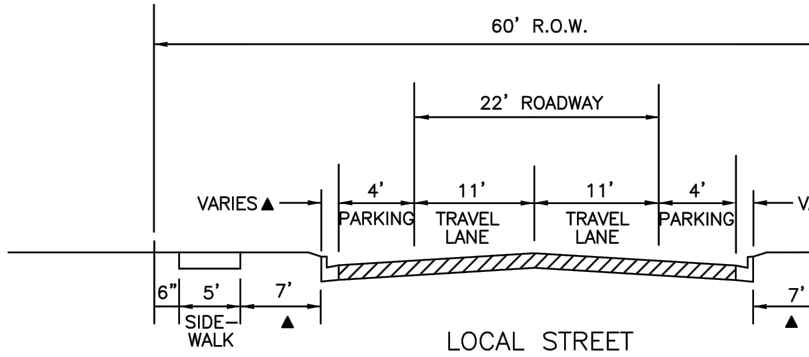
A PARCEL OF LAND LOCATED IN THE SOUTH HALF OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69
WEST OF THE 6TH PRINCIPAL MERIDIAN.
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
PP-001108-2019



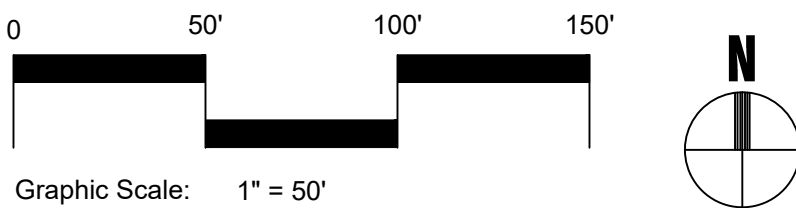
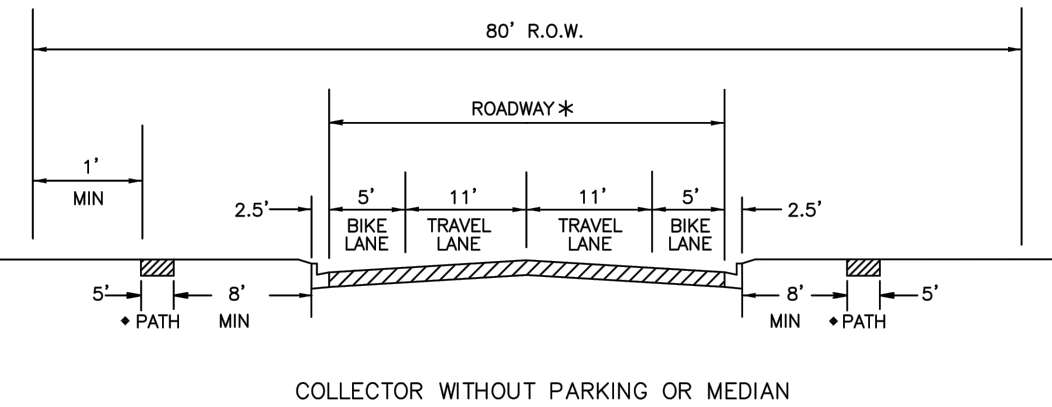
SEE SHEET 27



30' ALLEY PRIVATE (ACCESS, UTILITY AND FIRE LANE EASEMENT)
Scale: NTS



NOTE:
PRIVATE UTILITIES TO BE OUTSIDE OF THE PUBLIC RIGHT-OF-
▲ WIDTH DEPENDS ON VERTICAL OR ROLLOVER CURB



ALL WL AND SS PROFILES AND POT HOLE INFORMATION OF EX UTILITIES WILL BE INCLUDED WITH FUTURE FINAL PLAT DRAWINGS AS DISCUSSED WITH THE TOWN OF ERIE ON OCTOBER 7TH MEETING.

must include
profile drawings and verification of existing underground utilities, per SUE law. Provide profile drawings for all sewer as well as any water line crossings.

CIVIL ENGINEER



CWC CONSULTING GROUP
CIVIL ENGINEERING • LAND SURVEYING • CONSTRUCTION SERVICES
1990 TEDDY LANE SUITE 203 LONG TREE, CO 80124
TEL 303-395-2700 FAX 303-395-2701

APPLICANT/CLIENT

STRATUS COMPANIES
8480 E ORCHARD RD, STE 1100
GREENWOOD VILLAGE, CO 80111
PHONE: (720) 214-5000

PLANNER / L.A.

PROJECT NAME

CANYON CREEK FILING
NO 7 & NO 8
TOWN OF ERIE, COLORADO

SHEET TITLE

UTILITY PLAN

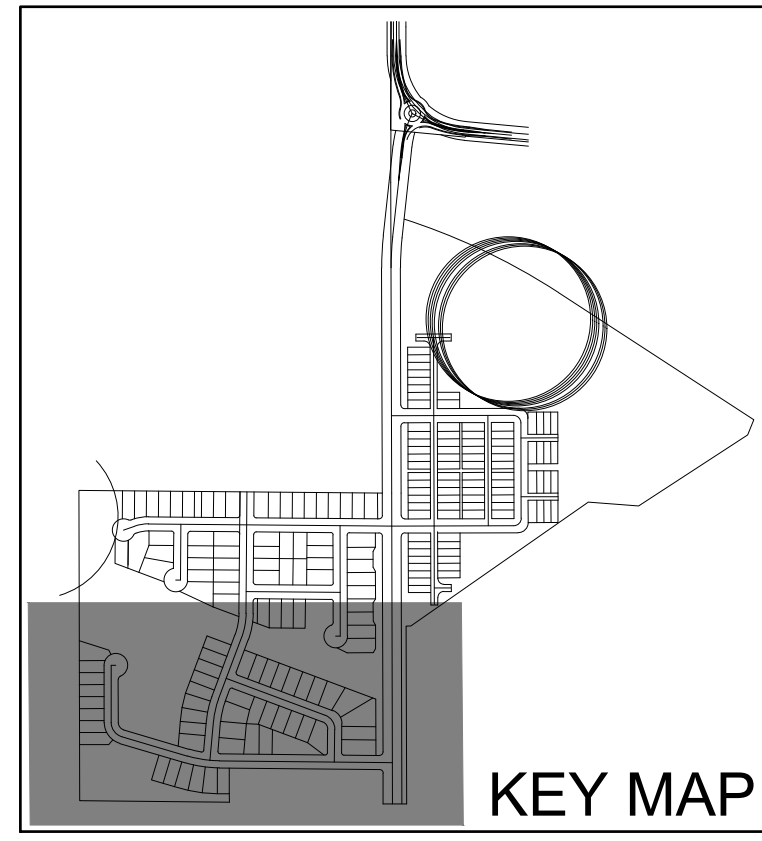
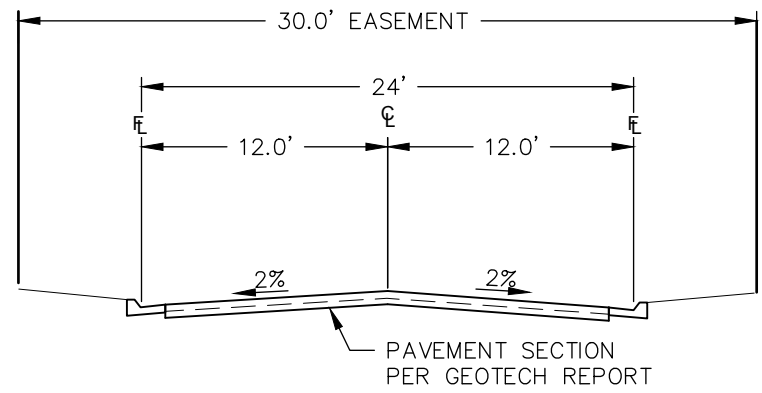
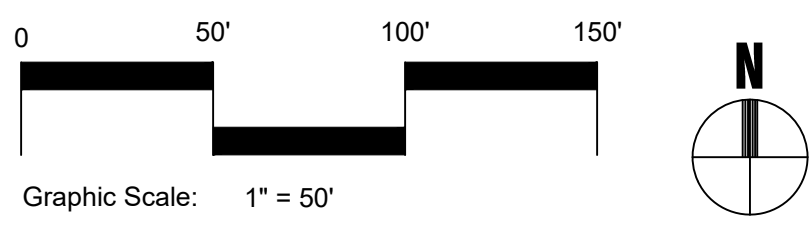
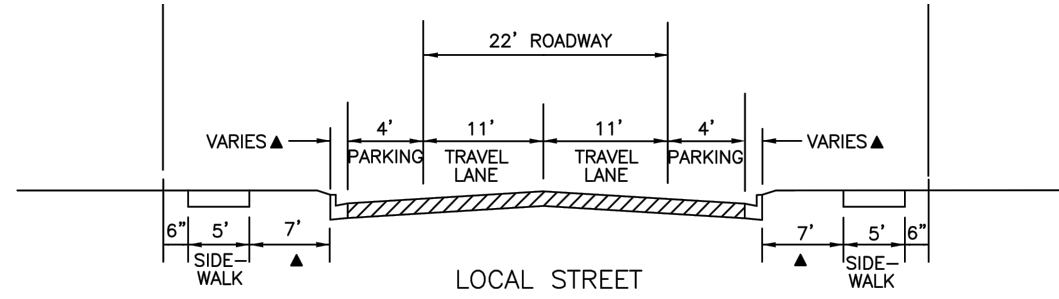
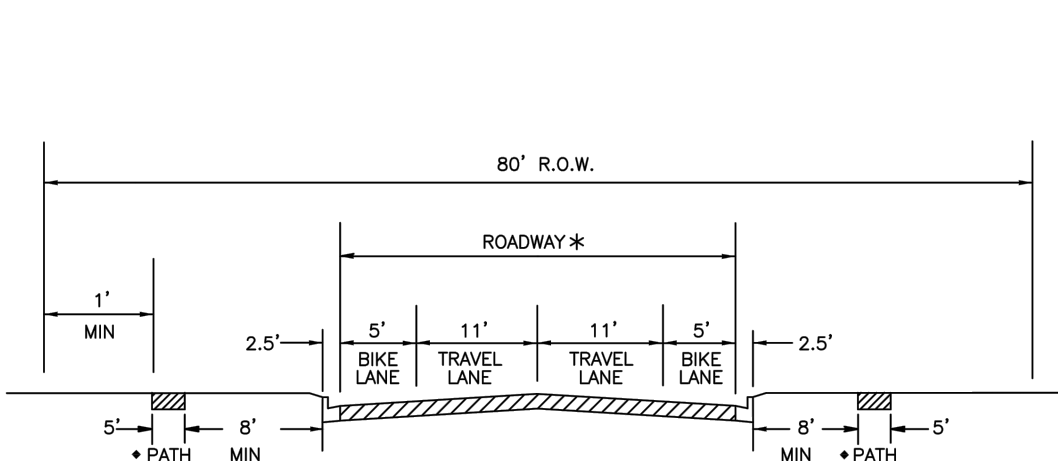
SHEET NUMBER

26

PROJECT DATA	
PROJECT #:	130-00097
DRAWN BY:	TB
CHECKED BY:	BW
ISSUE RECORD	
1ST SUBMITTAL	8-21-2019
2ND SUBMITTAL	3-24-2020
3RD SUBMITTAL	7-23-2020

CANYON CREEK FILING NO.7 & NO.8 - PRELIMINARY CONSTRUCTION DOCUMENTS

A PARCEL OF LAND LOCATED IN THE SOUTH HALF OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69
WEST OF THE 6TH PRINCIPAL MERIDIAN.
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
PP-001108-2019

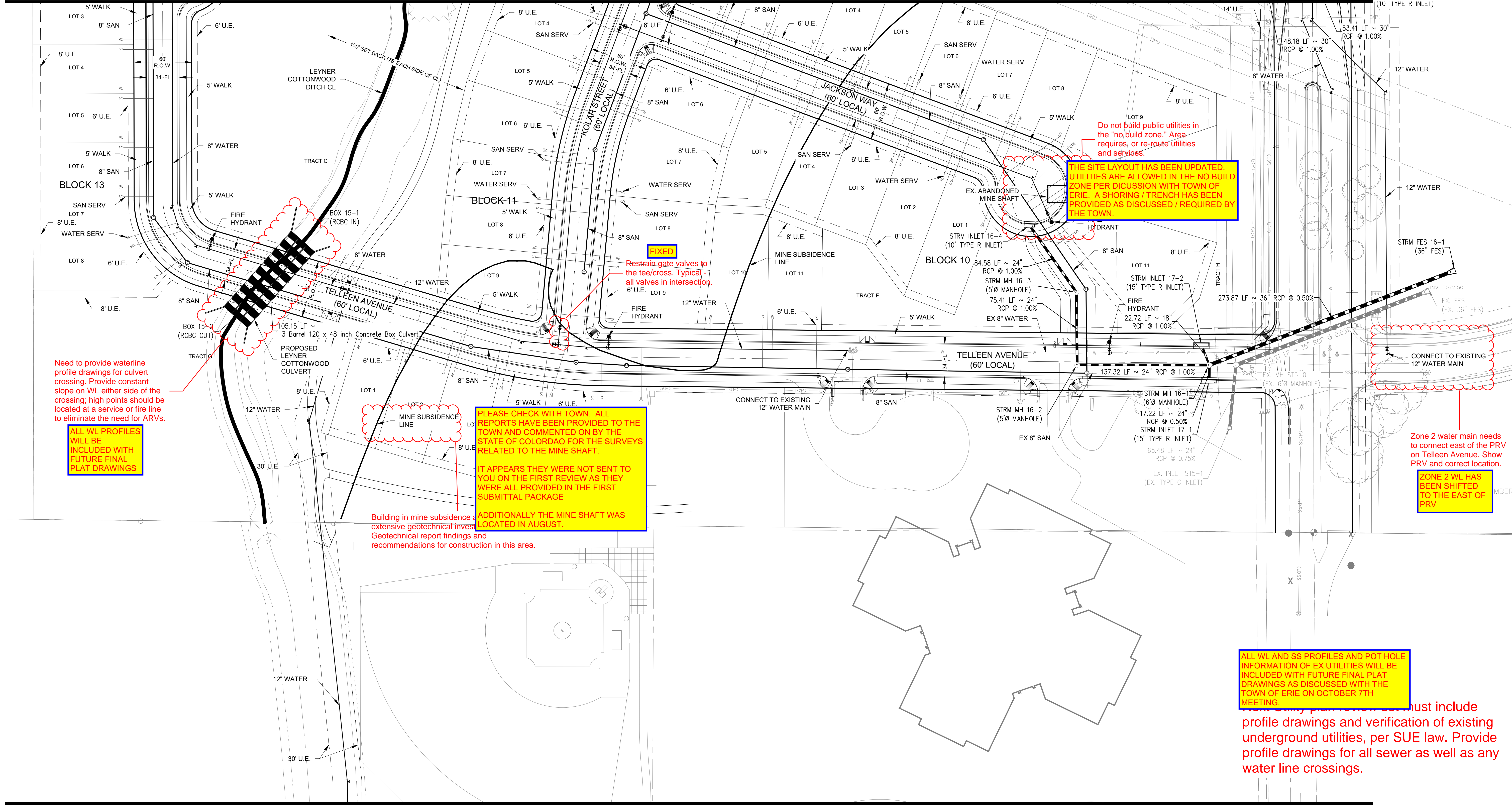


30' ALLEY PRIVATE (ACCESS, UTILITY AND FIRE LANE EASEMENT)
Scale: NTS

NOTE:
PRIVATE UTILITIES TO BE OUTSIDE OF THE PUBLIC RIGHT-OF-WAY
▲ WIDTH DEPENDS ON VERTICAL OR ROLLOVER CURB

SEE SHEET 28

SEE SHEET 29



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PLANNER / L.A.

PROJECT NAME

**CANYON CREEK FILING
NO 7 & NO 8
TOWN OF ERIE, COLORADO**

SHEET TITLE

UTILITY PLAN

SHEET NUMBER

27

PROJECT DATA

PROJECT #: 130-00097
DRAWN BY: TB
CHECKED BY: BW

ISSUE RECORD

1ST SUBMITTAL	8-21-2019
2ND SUBMITTAL	3-24-2020
3RD SUBMITTAL	7-23-2020

t:\boulder\canyon_creek\engineering\plans\set\prelim\plat\main plat - utility plans.dwg - 7/22/2020 5:12 PM

CANYON CREEK FILING NO.7 & NO.8 - PRELIMINARY CONSTRUCTION DOCUMENTS

A PARCEL OF LAND LOCATED IN THE SOUTH HALF OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69
WEST OF THE 6TH PRINCIPAL MERIDIAN.
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
PP-001108-2019

CIVIL ENGINEER

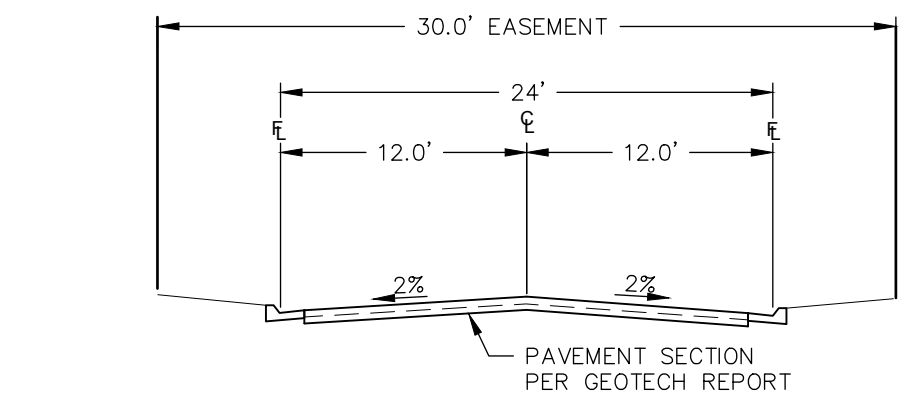
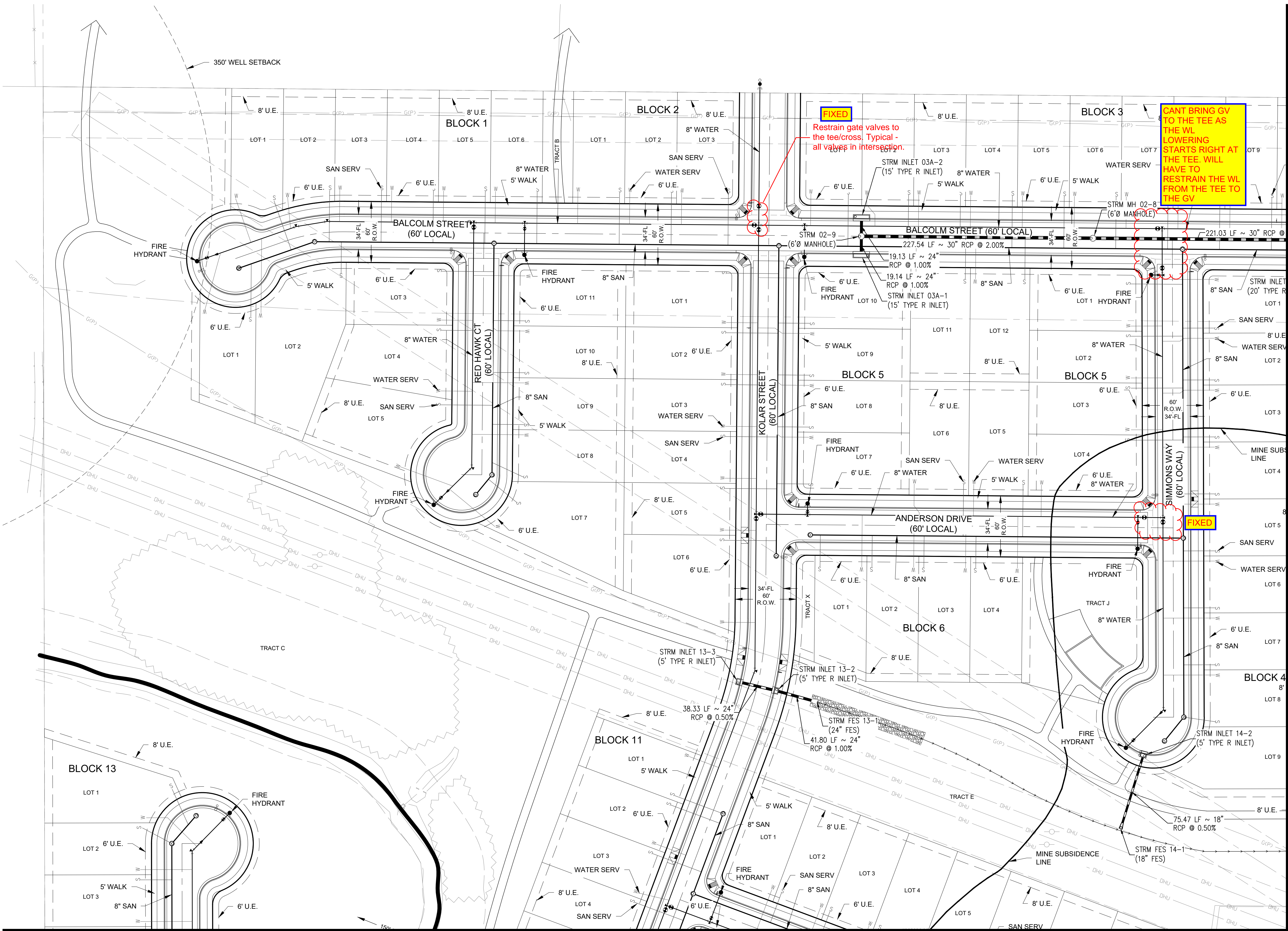
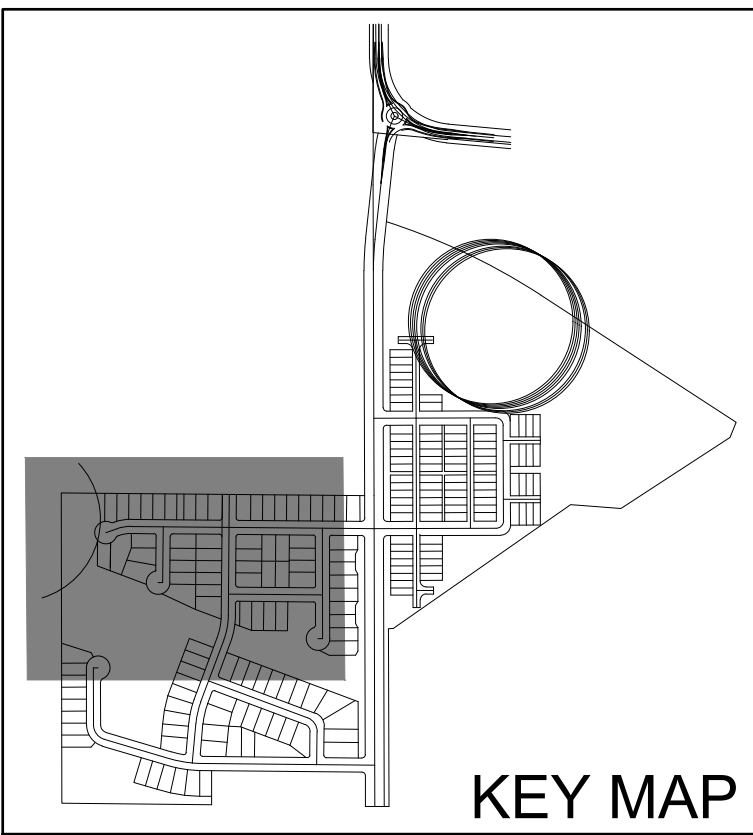


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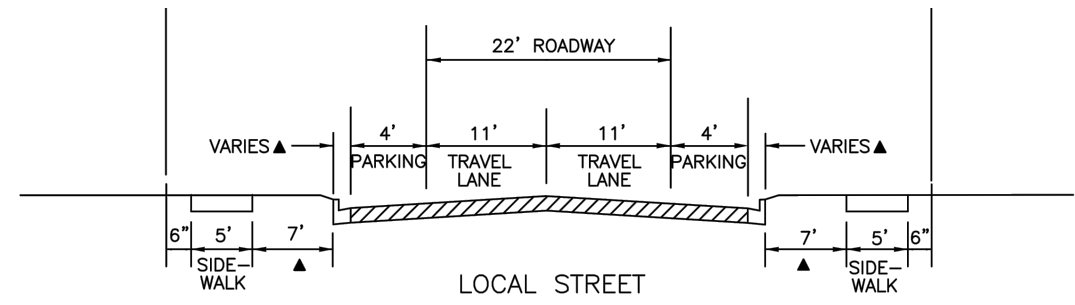
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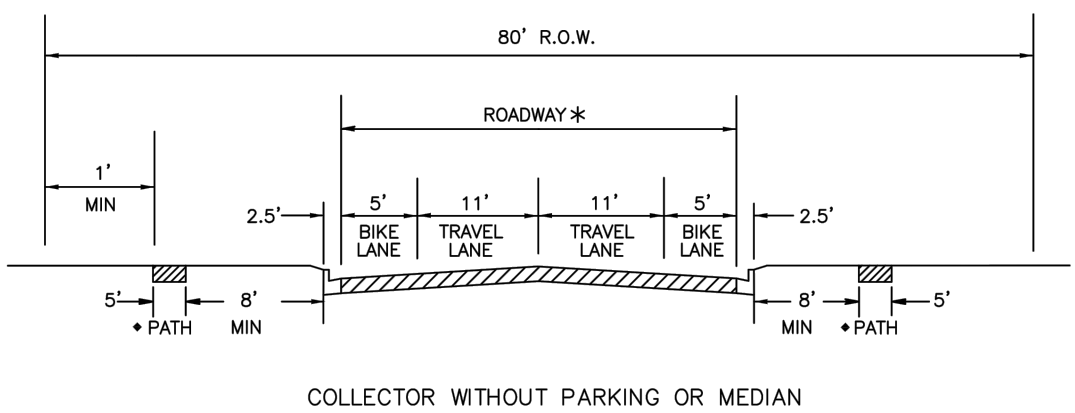
PLANNER / L.A.



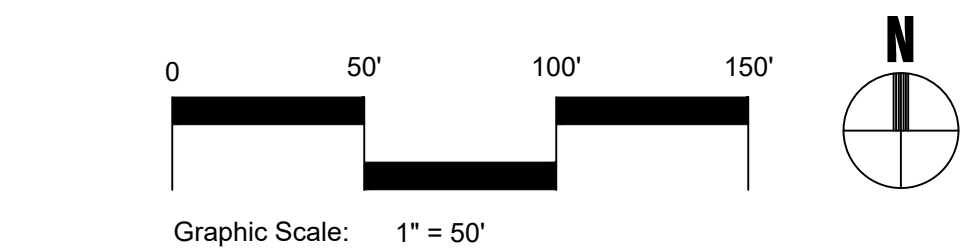
30' ALLEY PRIVATE (ACCESS, UTILITY AND FIRE LANE EASEMENT)
Scale: NTS



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▲ WIDTH DEPENDS ON VERTICAL OR ROLLOVER CURB



SEE SHEET 29



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CANYON CREEK FILING
NO 7 & NO 8
TOWN OF ERIE, COLORADO

SHEET TITLE

UTILITY PLAN

SHEET NUMBER

28

PROJECT DATA

PROJECT #: 130-00097
DRAWN BY: TB
CHECKED BY: BW

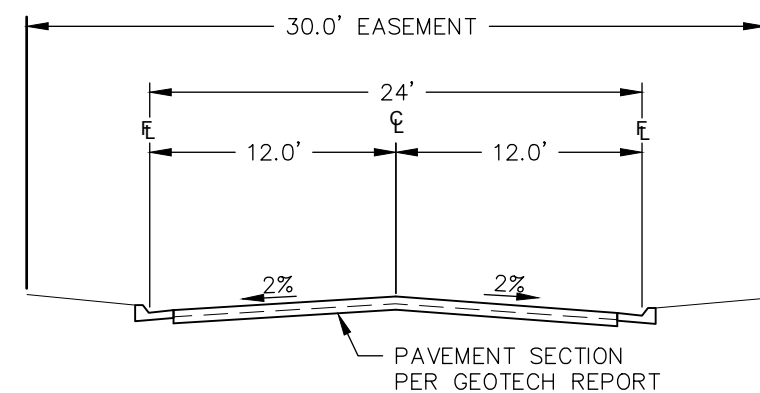
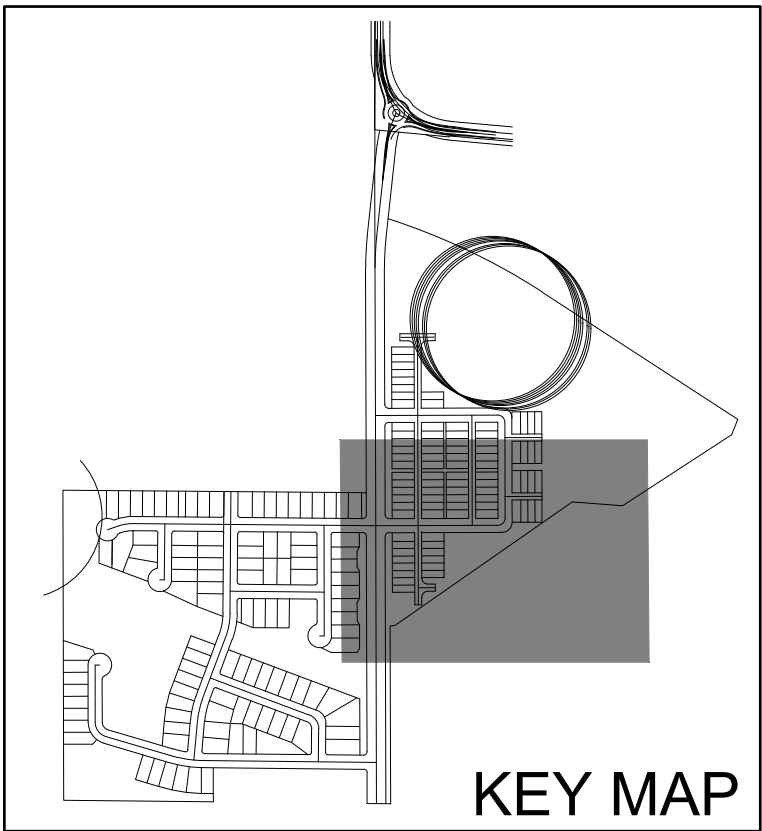
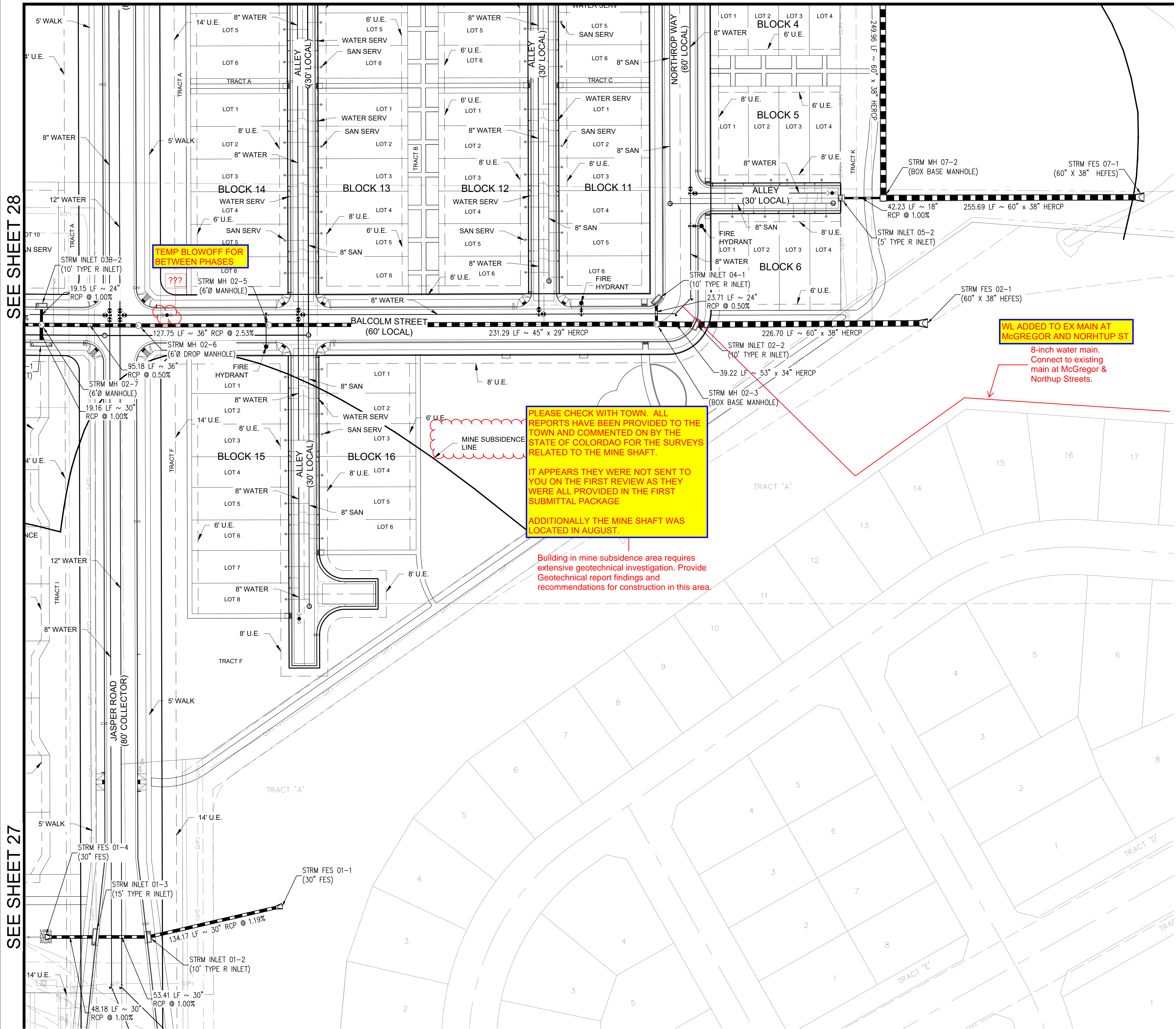
ISSUE RECORD

1ST SUBMITTAL 8-21-2019
2ND SUBMITTAL 3-24-2020
3RD SUBMITTAL 7-23-2020

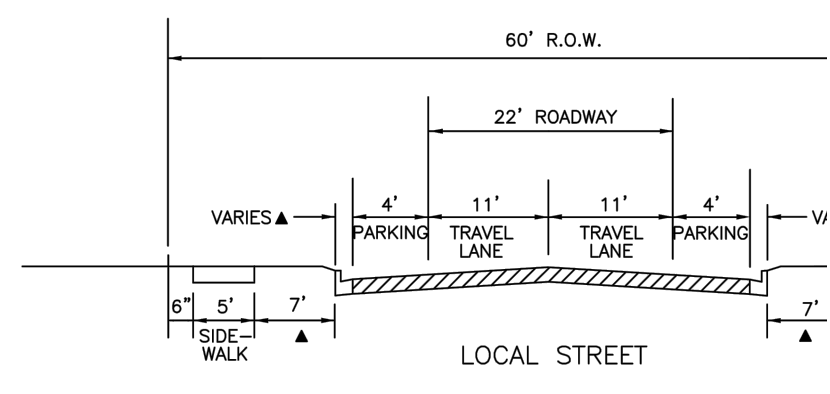
CANYON CREEK FILING NO.7 & NO.8 - PRELIMINARY CONSTRUCTION DOCUMENTS

A PARCEL OF LAND LOCATED IN THE SOUTH HALF OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69
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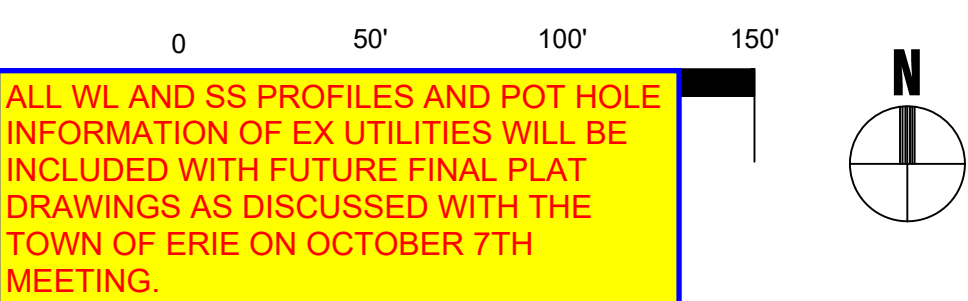
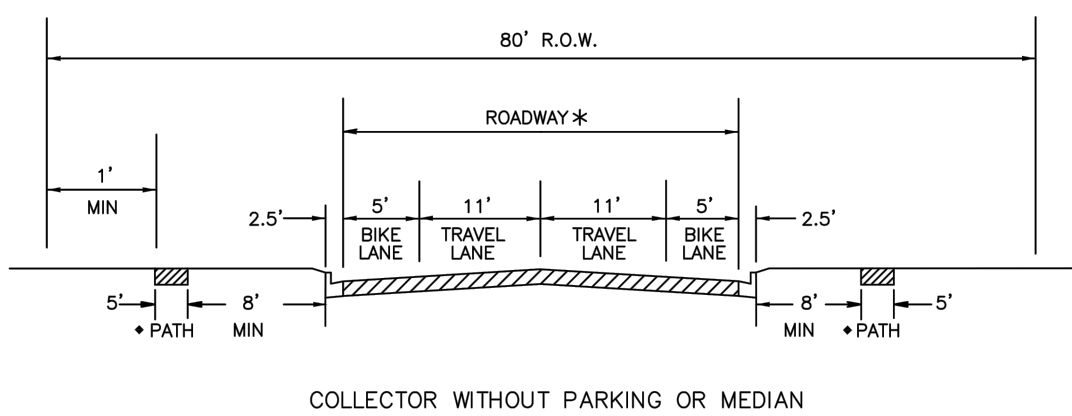
SEE SHEET 30



30' ALLEY PRIVATE (ACCESS, UTILITY AND FIRE LANE EASEMENT)
Scale: NTS



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PLANNER / L.A.

CANYON CREEK FILING
NO 7 & NO 8
TOWN OF ERIE, COLORADO

SHEET TITLE

UTILITY PLAN

SHEET NUMBER

29

PROJECT DATA

PROJECT #: 130-00097
DRAWN BY: TB
CHECKED BY: BW

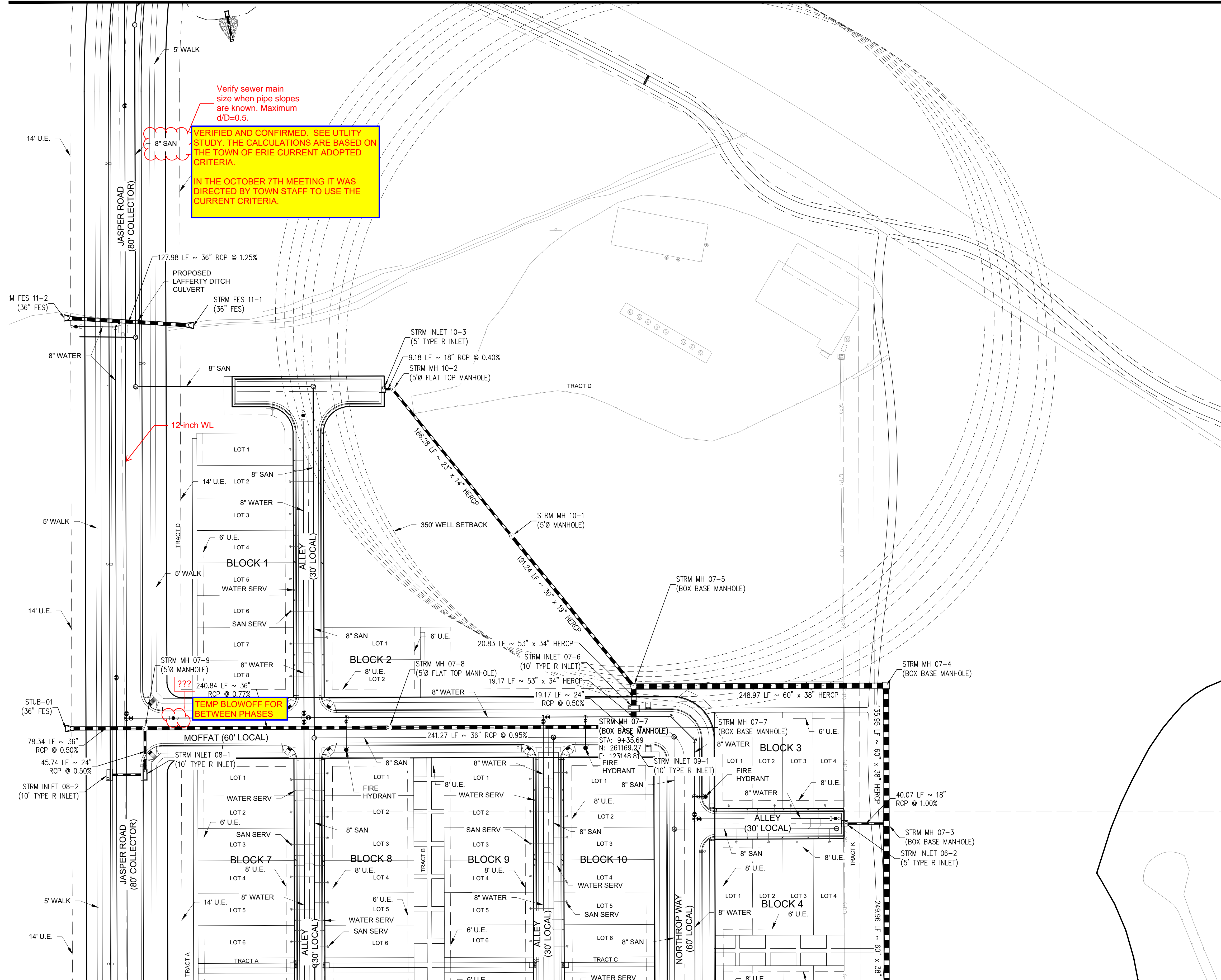
ISSUE RECORD

1ST SUBMITTAL	8-21-2019
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3RD SUBMITTAL	7-23-2020

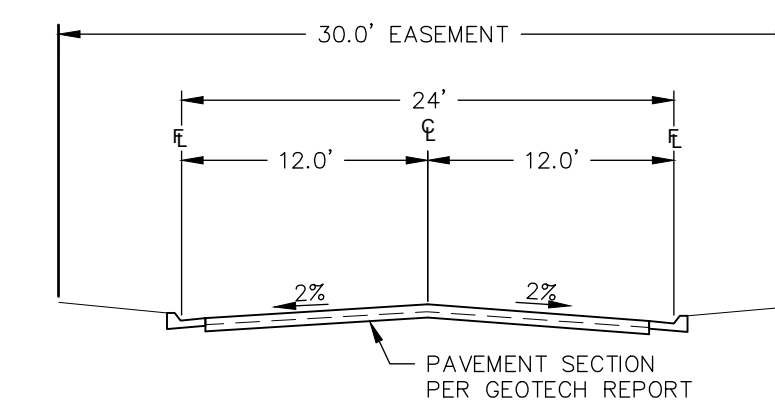
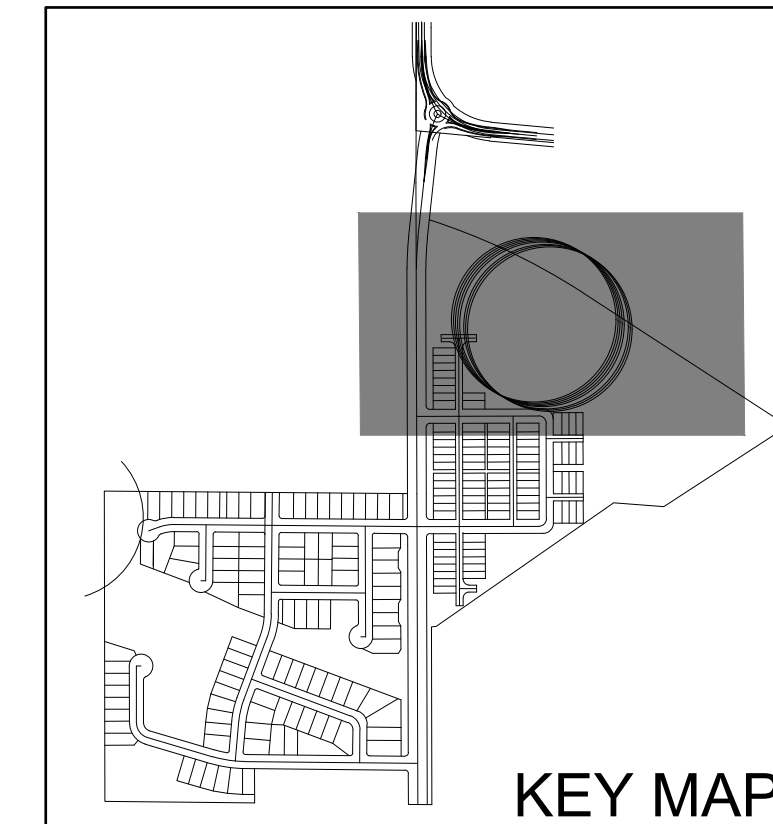
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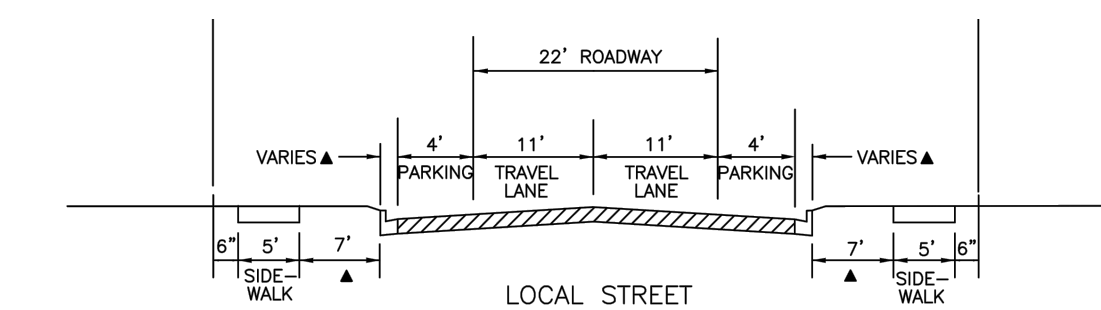
SEE SHEET 3'



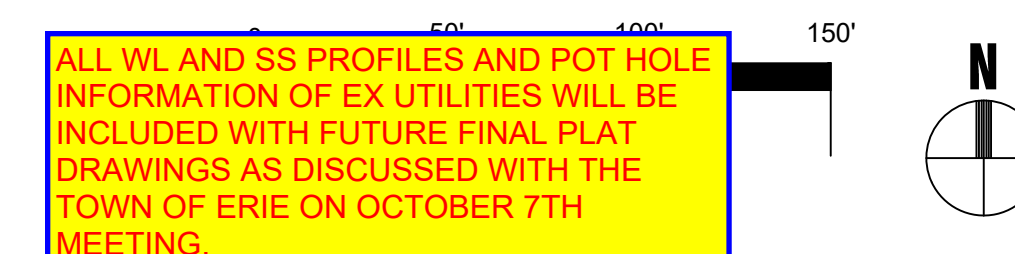
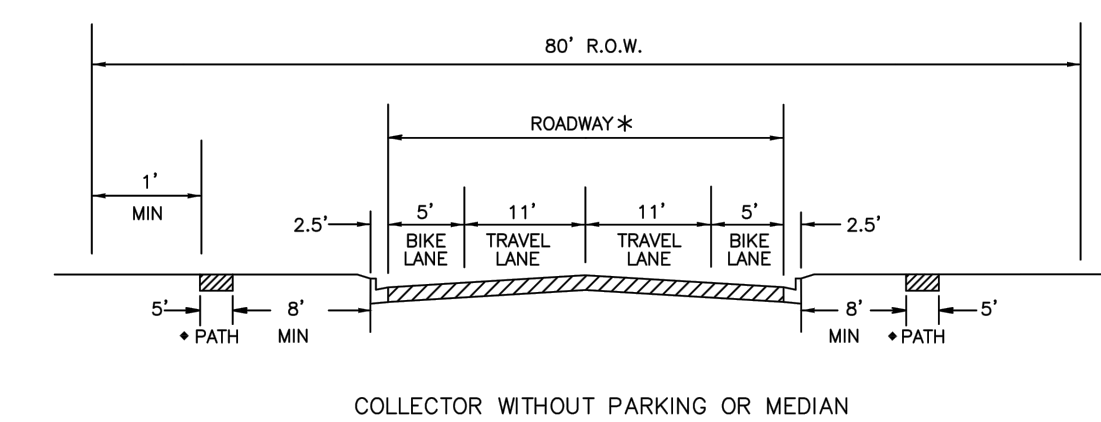
SEE SHEET 29



30' ALLEY PRIVATE (ACCESS, UTILITY AND FIRE LANE EASEMENT)
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MEETING: Next Utility plan review set must include profile drawings and verification of existing underground utilities, per SUE law. Provide profile drawings for all sewer as well as any water line crossings.

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9360 TEDDY LANE SUITE 203 LONE TREE, CO 80124
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PLANNER / L.A.

PROJECT NAME

CANYON CREEK FILING
NO 7 & NO 8
TOWN OF ERIE, COLORADO

SHEET TITLE

UTILITY PLAN

SHEET NUMBER

30

PROJECT DATA

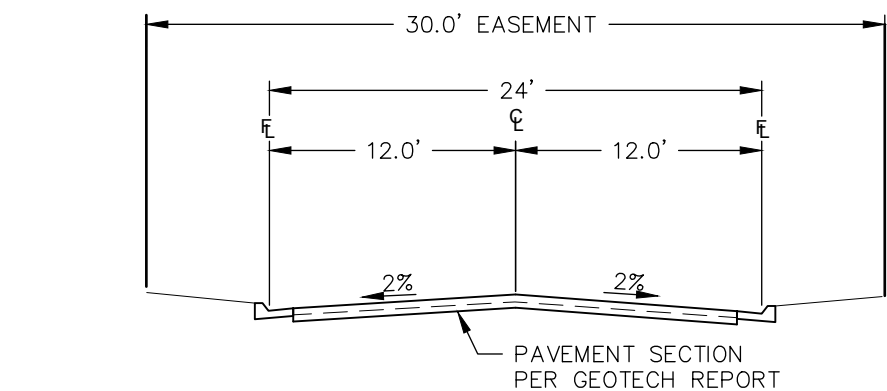
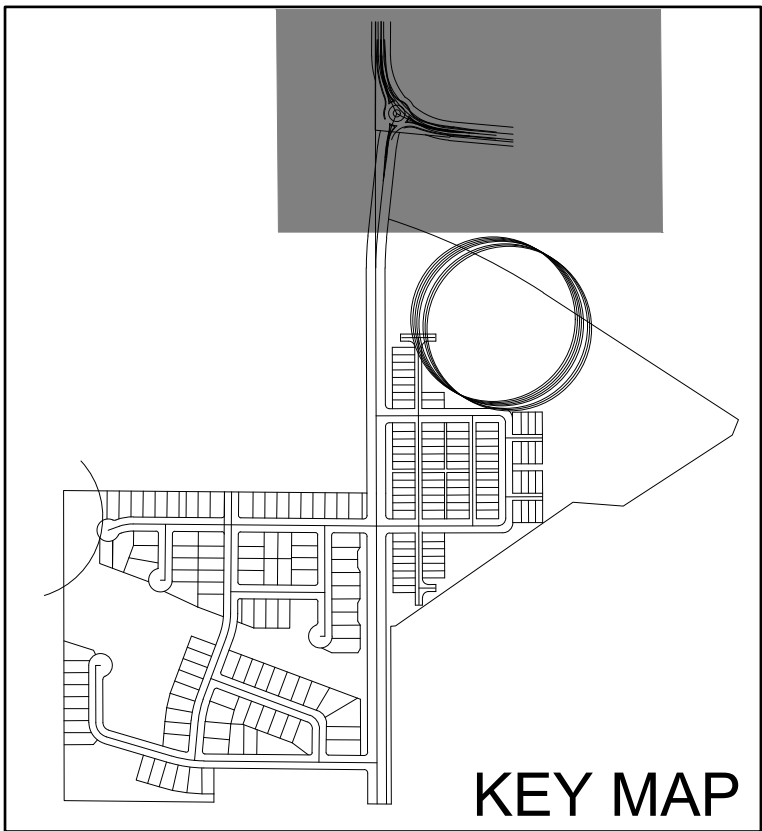
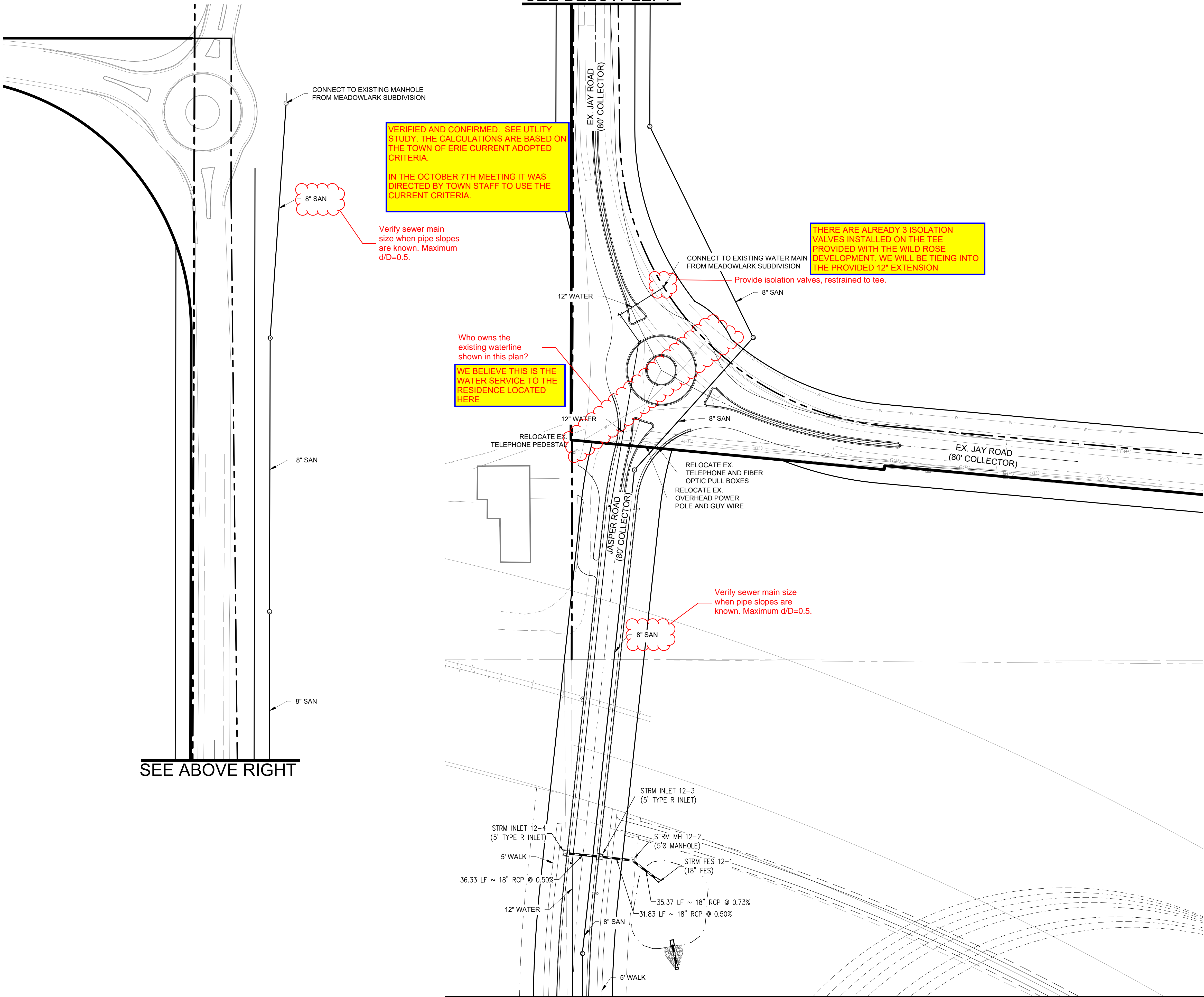
PROJECT #: 130-00097
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CHECKED BY: BW

ISSUE RECORD

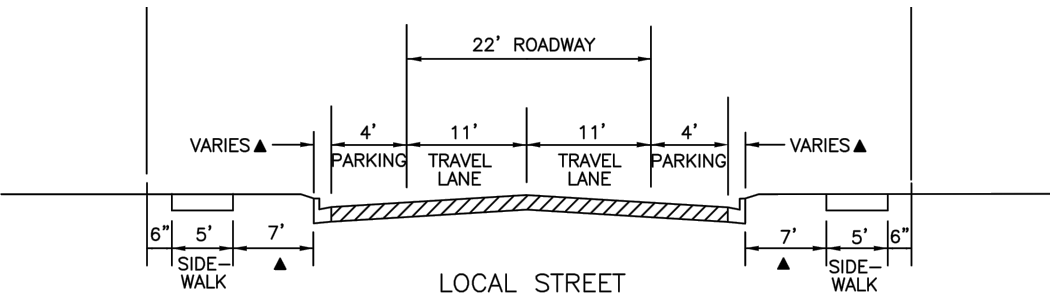
<u>1ST SUBMITTAL</u>	<u>8-21-2019</u>
<u>2ND SUBMITTAL</u>	<u>3-24-2020</u>
<u>3RD SUBMITTAL</u>	<u>7-23-2020</u>

CANYON CREEK FILING NO.7 & NO.8 - PRELIMINARY CONSTRUCTION DOCUMENTS

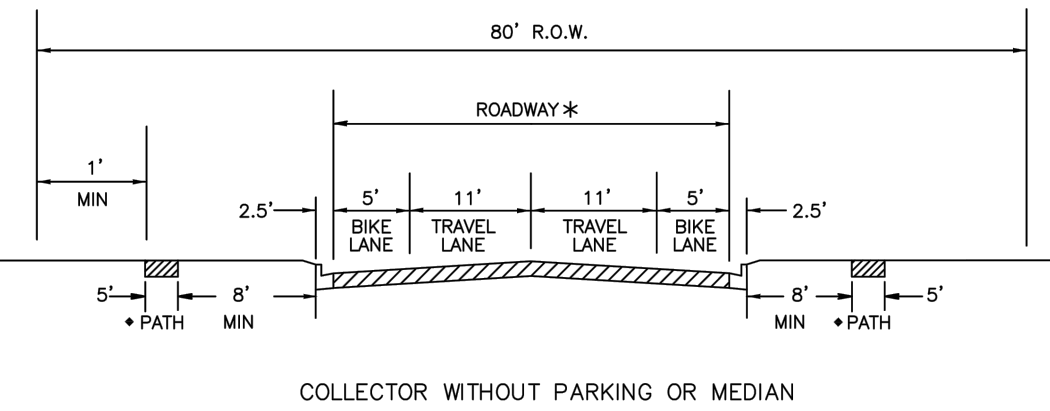
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PP-001108-2019



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CIVIL ENGINEER

CWC

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1590 TEDDY LANE SUITE 203 LONG TREE, CO 80134
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APPLICANT/CLIENT

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PLANNER / L.A.

CANYON CREEK FILING
NO 7 & NO 8
TOWN OF ERIE, COLORADO

SHEET TITLE

UTILITY PLAN

SHEET NUMBER

31

PROJECT DATA	
PROJECT #:	130-00097
DRAWN BY:	TB
CHECKED BY:	BW
ISSUE RECORD	
1ST SUBMITTAL	8-21-2019
2ND SUBMITTAL	3-24-2020
3RD SUBMITTAL	7-23-2020

MEMORANDUM

TO: Chris LaRue
FROM: Charles M. Buck, P.E., PTOE
DATE: November 12, 2019
SUBJECT: Traffic Engineering Review – Canyon Creek Filings 7 and 8
PP-001108-2019
FHU # 95-190

AS DISCUSSED IN OUR OCTOBER 7TH 2020 MEETING FHU COMMENTS ARE THE SAME COMMENTS FROM 2019 AS FHU VIEWS THESE TO BE DONE AT THE TIME OF FINAL PLAT AND FINAL TRAFFIC STUDY APPROVAL.

THE ROUNDABOUT IS FINE IN CONCEPT BUT CWC, TOWN OF ERIE AND FHU WILL DEVELOP CRITERIA FOR THE ROUNDABOUT AT FINAL PLAT GIVEN THE TOWN DOES NOT CURRENTLY HAVE CRITERIA.

ALL ITEMS NOTED BELOW WILL BE HANDLED AT FINAL PLAT AS DISCUSSED.

I have reviewed the materials provided for Canyon Creek Filings 7 and 8, Preliminary Plat. The materials were provided on a flash drive, which included numerous documents and drawings. I have examined these materials specifically from the perspective of traffic engineering and transportation planning but not general civil or utility engineering. My review has focused on the *Preliminary Plat Narrative* (Stratus Companies, LLC, July 23, 2019), the *Canyon Creek PD Amendment No. 9* (PGS Group, Inc., undated), the *Canyon Creek 7 & 8 Traffic Memorandum* (LSC Transportation Consultants Inc., July 16, 2019), the *Canyon Creek Preliminary Construction Documents* (CWC Consulting Group, July 21, 2019), and the *Preliminary Plat* (CWC Consulting Group, July 21, 2019). My comments are as follows:

Narrative

- The written narrative indicates 109 single family homes on Filing No. 7 and 88 duplex residences on Filing No. 8. This land use is consistent with the other documents in this submittal.

PD Amendment No. 9

- This document indicates a maximum of 110 single family homes on Filing No. 7 and a maximum of 275 multifamily residences on Filing No. 8. It can be seen that the land uses indicated in the Narrative (and other documents) fit within these limits.

Traffic Memorandum

- This memorandum provides existing conditions based on some relatively recent traffic counts, a trip generation analysis based on the land uses described in the Narrative, a trip distribution, and a site generated traffic assignment. I concur with the methods and assumptions as far as they go. However, the following additional analyses should be included in future traffic analysis efforts:
 - Canyon Creek Filings 7 and 8 have been the subject of several Traffic Impact Studies dating back to 2005 (all by LSC). A trip generation comparison to the original land use assumptions (110 single family units and 250 multifamily units) would provide some perspective on the current submittal.
 - A traffic count at the Jasper/Telleen intersection is needed to address previous concerns on the potential need for a southbound left-turn lane at this intersection.
 - Near-term and long range future projections and LOS analyses will be needed to identify or confirm intersection geometry and traffic control within the study area, with recommendations provided for each future scenario. It appears that the extension of Jasper

east to County Line Road is not included in the current construction plans; this will affect the near-term trip distribution.

- The construction plans depict a roundabout at the Jasper/Jay intersection. An analysis of traffic operations for this configuration should be included in future traffic updates, along with any recommendations for improvements.

Preliminary Construction Documents

- Sheets 7 through 11 depict roadway cross-sections for Collector Roads and Local Roads that are consistent with Town of Erie Standards. The Private Alley cross-section is acceptable as shown.
- The Collector roadway functional classifications for Jasper and Jay are consistent with the 2017 *Erie Transportation Plan*.
- Jasper is shown as transitioning from the existing 120-foot ROW (which would be a Minor Arterial per Town Standards) to the 80-foot Collector ROW north to Jay (sheets 7, 9, 10, 11, 12, and 14). The Collector status is correct per the *Transportation Plan*.
- Telleen west of Jasper is shown as a Local Roadway, also consistent with the *Transportation Plan*.
- As noted above, a roundabout is shown at Jasper/Jay (sheets 6, 11, and 16). It appears the extension of Jasper north to Jay, and construction of the roundabout, will be concurrent with this development. The final design of the roundabout should be confirmed by future traffic analyses.
- The design of the Jasper/Telleen intersection should also conform to any updated recommendations per future updates to the traffic analysis, such as the potential southbound left-turn lane (which would impact the existing raised median). Note that the existing segment of Telleen east of Jasper is an 80-foot ROW Collector Roadway.

Preliminary Plat

TELLEN AVENUE EAST OF JASPER IS A 60' ROW NOT AN 80' ROW PER RECEPTION NUMBER 2259493

- Sheets 3 and 6 show Telleen east of Jasper as a 60-foot ROW Local Road. This existing roadway is an 80-foot ROW Collector.
- Jasper is shown as a 120-foot ROW Collector, transitioning to a 100-foot ROW north of the existing segment (~~see comment above on the Construction Plans~~). The Plat and Plans should be consistent.

THIS WAS CORRECTED AFTER SECOND REVIEW.

This constitutes my review of the current submittal for Canyon Creek Filings 7 and 8. Please call if you have questions or if I can provide any additional information.



5303 Spine Road, Suite 202 Boulder, Colorado 80301
Telephone: 303.443.6151 www.vrlaw.com

September 15, 2020

The property is within the Northern Colorado Water Conservancy District as indicated on the attached Tax Roles/

Chris LaRue
Community Development Dept.
P.O. Box 750
Erie, CO 80516
developmentreferral@erieco.gov

Re: Canyon Creek Filings 7 & 8 – Preliminary Plat – PP-001108-2019

Dear Chris:

You requested comments regarding the Preliminary Plat for Canyon Creek Filings 7 & 8 by September 1. We apologize that these comments are late. As you know, we previously provided comments in November 2019 and May 2020. Our prior comments stand. In addition, this letter addresses the Applicant's response to our May 2020 comments, which was included in the Applicant's July 23, 2020 submittal to the Town.

In our prior comments, we indicated that the Town should assure that the property has been included into the Northern Colorado Water Conservancy District ("NCWCD") and its Municipal Subdistrict prior to providing any water service, and we identified some ambiguity as to whether the property is included in NCWCD's Municipal Subdistrict. As you know, the property must be included in the Municipal Subdistrict in order for the Town to provide water service. The Applicant's response indicates that the property is included in NCWCD's Municipal Subdistrict, and that they have provided documentation of such inclusion to the Town for the project file. Based on our prior review of the development referral documents, it is unclear which document the Applicant is relying on. The Town should confirm that the property is in fact included in the Municipal Subdistrict.

We have no additional comments at this time. Thank you.

Sincerely,

September 15, 2020

Page 2

VRANESH AND RAISCH, LLP

A handwritten signature in blue ink that reads "Andrea Kehrl". The signature is written in a cursive, flowing style.

By: Andrea Kehrl

cc: Todd Fessenden; Paul J. Zilis

Tax Account

Account Number R0600051

Tax Billed at 2019 Rates

Tax Area 001392 - 001392

Authority	Authority Id	Mill Levy	Amount
BOULDER COUNTY GENERAL OPER	010001	19.1930000*	\$38.96
BOULDER COUNTY ROAD & BRIDG	010002	0.1860000	\$0.38
BOULDER COUNTY PUBLIC WELFA	010003	0.9540000	\$1.94
BOULDER COUNTY DEVEL DISABI	010007	1.0000000	\$2.03
BOULDER COUNTY CAPITAL EXPE	010009	0.3960000	\$0.80
BOULDER COUNTY REFUND ABATE	010011	0.2360000	\$0.48
BOULDER COUNTY HEALTH & HUM	010021	0.6080000	\$1.23
BOULDER CO TEMP HS SAFETY N	010022	0.9000000	\$1.83
ST VRAIN REIJ GENERAL OPERA	020101	24.9950000	\$50.74
ST VRAIN REIJ BOND REDEMPTI	020102	17.5500000	\$35.63
ST VRAIN REIJ OVERRIDES	020104	13.5900000	\$27.59
ST VRAIN REIJ ABATEMENT REF	020106	1.4240000	\$2.89
CITY OF ERIE GENERAL OPERAT	030301	7.2880000	\$14.80
CITY OF ERIE BOND REDEMPTIO	030302	2.8340000	\$5.75
CITY OF ERIE OTHER	030303	4.0000000	\$8.12
NORTHERN COLO WATER CONTRAC	051201	1.0000000	\$2.03
URBAN DRAIN & FLOOD CTRL GE	051801	0.9000000	\$1.83
MOUNTAIN VIEW FIRE DIST GEN	060801	16.2470000	\$32.98
HIGH PLAINS LIBRARY DISTRIC	082001	3.1770000	\$6.45
HIGH PLAINS LIBRARY DISTRIC	082002	0.0400000	\$0.08
Taxes Billed 2019		116.5180000	\$236.54

* Credit Levy

Property Code	Value Type	Actual	Assessed
4127 - farm/ranch land	Standard	\$7,000.00	\$2,030.00
Total	Standard	\$7,000.00	\$2,030.00

The amounts of taxes due on this page are based on **last year's** property value assessments.

For current year values visit the [Boulder County Assessor's site.](#)

Tax Account

Account Number R0121414

Tax Billed at 2019 Rates

Tax Area 001392 - 001392

Authority	Authority Id	Mill Levy	Amount
BOULDER COUNTY GENERAL OPER	010001	19.1930000*	\$25.04
BOULDER COUNTY ROAD & BRIDG	010002	0.1860000	\$0.24
BOULDER COUNTY PUBLIC WELFA	010003	0.9540000	\$1.25
BOULDER COUNTY DEVEL DISABI	010007	1.0000000	\$1.31
BOULDER COUNTY CAPITAL EXPE	010009	0.3960000	\$0.52
BOULDER COUNTY REFUND ABATE	010011	0.2360000	\$0.31
BOULDER COUNTY HEALTH & HUM	010021	0.6080000	\$0.79
BOULDER CO TEMP HS SAFETY N	010022	0.9000000	\$1.17
ST VRAIN REIJ GENERAL OPERA	020101	24.9950000	\$32.62
ST VRAIN REIJ BOND REDEMPTI	020102	17.5500000	\$22.90
ST VRAIN REIJ OVERRIDES	020104	13.5900000	\$17.74
ST VRAIN REIJ ABATEMENT REF	020106	1.4240000	\$1.86
CITY OF ERIE GENERAL OPERAT	030301	7.2880000	\$9.51
CITY OF ERIE BOND REDEMPTIO	030302	2.8340000	\$3.70
CITY OF ERIE OTHER	030303	4.0000000	\$5.22
NORTHERN COLO WATER CONTRAC	051201	1.0000000	\$1.31
URBAN DRAIN & FLOOD CTRL GE	051801	0.9000000	\$1.17
MOUNTAIN VIEW FIRE DIST GEN	060801	16.2470000	\$21.20
HIGH PLAINS LIBRARY DISTRIC	082001	3.1770000	\$4.15
HIGH PLAINS LIBRARY DISTRIC	082002	0.0400000	\$0.05
Taxes Billed 2019		116.5180000	\$152.06

* Credit Levy

Property Code	Value Type	Actual	Assessed
4127 - farm/ranch land	Standard	\$4,500.00	\$1,305.00
Total	Standard	\$4,500.00	\$1,305.00

The amounts of taxes due on this page are based on **last year's** property value assessments.
For current year values visit the [Boulder County Assessor's site](#).

khenry@henrydesigngroup.com

From: Roger Hollard <rgollard@gmail.com>
Sent: Tuesday, November 17, 2020 2:08 PM
To: Karen Henry (khenry@henrydesigngroup.com); Brett Woolard
Subject: Fwd: Boulder County Parcels
Attachments: image001.png

For proof from NCWCD

----- Forwarded message -----

From: Kristen Thompson <kthompson@northernwater.org>
Date: Tue, Nov 17, 2020, 1:34 PM
Subject: RE: Boulder County Parcels
To: Roger Hollard <rgollard@gmail.com>

Roger,

These two Boulder County parcels are within the boundaries of the NCWCD and the Municipal Subdistrict of NCWCD.

However, you will need to check with Erie regarding their boundary.

If I can be of further assistance, please let me know.

Thank you

Kris



Kristen Thompson | Inclusion Specialist
220 Water Ave | Berthoud, CO 80513
Direct: 970-622-2237
Main: 800-369-RAIN (7246)

www.northernwater.org
[Facebook](#) | [Twitter](#) | [Instagram](#) | [LinkedIn](#)

Disclaimer Notice: An allotment of Colorado-Big Thompson water is subject to the Water Conservancy Act, C.R.S 37-45-101 et seq, the authority of the Board of Directors of the Northern Colorado Water Conservancy District, and other relevant laws and regulations. The information provided in this email is not binding on Northern Water because the legal rights to Colorado-Big Thompson Project Allotments are subject to the continuing discretion of the Board of Directors of Northern Water and other legal limitations and requirements. Northern Water staff and counsel cannot provide you with legal advice, and you are advised to seek legal counsel with respect to the subject matter of this email. You also have an independent obligation to review and confirm the accuracy and completeness of any information provided to you by Northern Water, and to supplement or correct the records of Northern Water with respect to any errors or omissions.

From: Roger Hollard <rghollard@gmail.com>
Sent: Monday, November 16, 2020 9:57 AM
To: Kristen Thompson <kthompson@northernwater.org>
Subject:

External Message - Please be cautious when replying or opening links or attachments in this email

Hi Kristen, Can you verify for me that the two BOULDER County property's below are within NCWCD and the Erie subdistrict?

Parcels: 146513000077 and 146513000073

Thanks!

Roger Hollard

Land Perspectives, LLC

303-726-2147



Internal Memo

To: Chris LaRue, Planning & Development – Senior Planner

From: Luke Bolinger, Community Partnership and Special Projects Manager

Date: December 22, 2020

Subject: Canyon Creek Filings 7 & 8 – Preliminary Plat (PP-001108-2019) – 4th Submittal

Cc: Patrick Hammer, Parks & Recreation Director

Parks & Open Space Division staff have reviewed the subject plans and offer the following comments. Addressing these comments will be a condition of approval of the Final Plat as outlined below. A Final Accepted Landscape Plan is required for Final Plat approval.

Responses by Henry Design Group 1-11-2021

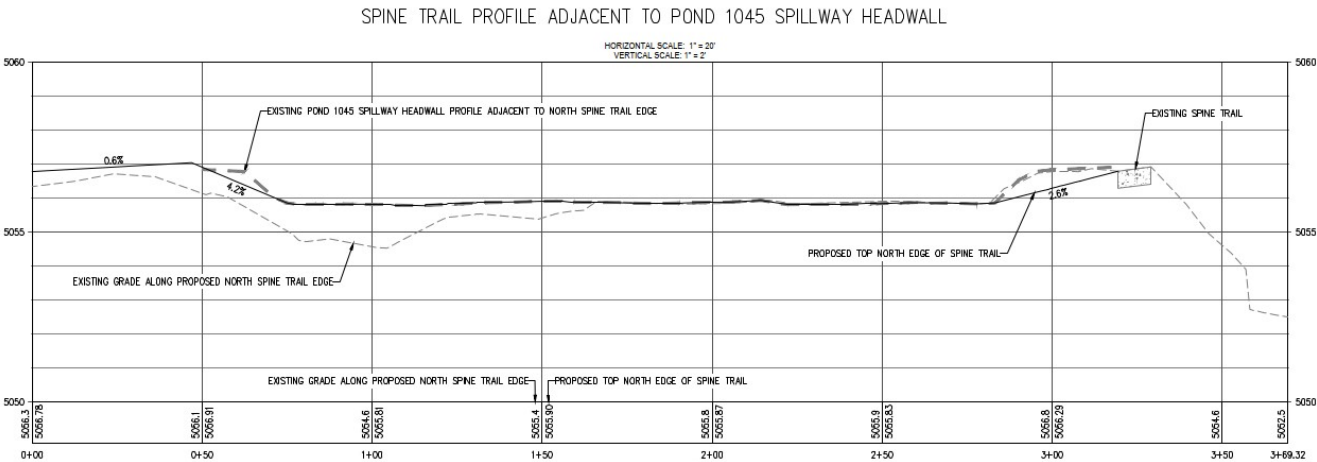
AT THE TIME OF FINAL PLAT, THE FOLLOWING COMMENTS ARE REQUIRED TO BE ADDRESSED:

General Comments:

- Provide 4’ spine trail shoulders at a 5:1 grade with 6’ preferred per attached Detail P25. Please provide more information on the plan set on how the spine trail correlates with the varying height of the headwall.

A mistake was made to this previous comment provided to the applicant – 4’ spine trail shoulders must be at a 6:1 grade. While the headwall is set to grade, it is set at varying heights. Is the spine trail to follow the varying grades of the headwall, or remain at a consistent grade while adjacent to the headwall?

Response: The 4’ spine trail shoulders have been reggraded to be at 6:1 grade. The spine trail grade adjacent to the pond 1045 headwall remains at or below the spillway crest elevation so that the spillway still functions as originally designed by others. See below for a profile of the spine trail and pond 1045 headwall.



- Staff recommends that the grade adjacent to the spine trail should not exceed 5:1. to allow for the maintenance outside of the 4' spine trail shoulders. **Added labels are acknowledged. Correct contours within grading plans to reflect the updated grades within the landscape and civil plans. Grades adjacent to the trails are recommended to not exceed 5:1.**

Response: Grades adjacent to the trails have been corrected to be at 5:1 except in areas where the trails are adjacent to existing channels and detention pond 1045. The grades from the spine trail 4' shoulders at the areas where they are adjacent to existing trails and detention pond 1045 remained at 4:1 to keep them consistent with the existing grades.

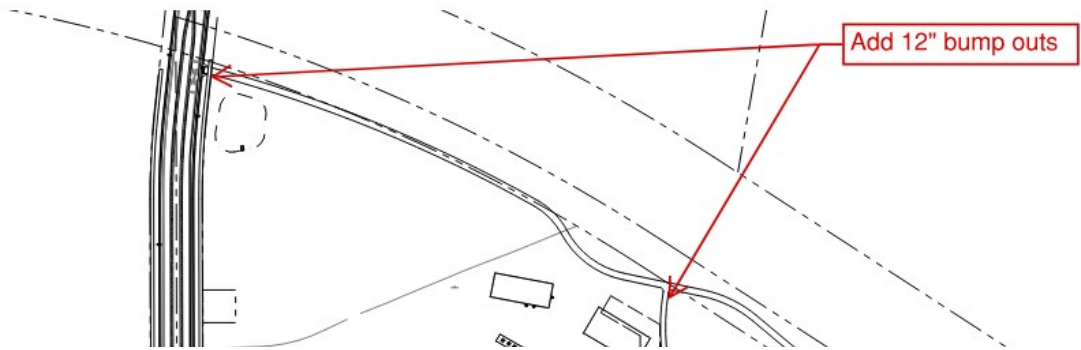
Landscape comments:
Sheet 10 of 19

- Staff request additional detail to be shown where the trail connects to Jasper Road extension. An access point shall be required for maintenance vehicles at Jasper Road. Staff requires a SW10A ramp and a trail stop sign at that access point. Depending on the final configuration of the trail crossing at this location, the ramp may need to be adjusted. This can be discussed prior to the acceptance of the final plat.
Provide stop sign detail within the site detail pages. Add concrete wings per SW10A Detail, correction shown below:



Response: A stop sign detail and concrete wings have been added.

- Please adjust all radii, where local trails or sidewalks connect to the spine trail, to reflect Detail P27 as follows:
 - o Provide 3' radii where the spine trail meets the 5' sidewalk at Jasper Road
 - o Provide 5' radii at the 8' local trail connection
 - o Provide 12" monolithic bump out at the point where the new trail connects to an existing trail or sidewalk**To avoid confusion, please remove the non-monolithic detail from the flared corners detail added to sheet 16. Add note that radii at spine trail connections may exceed Detail P27. Add the 12" monolithic bump outs at the following two locations:**



Response: The non-monolithic detail part has been removed and the requested note has been added. Additional 12" monolithic bump outs have been added where specified.

- Provide a break in the median to allow for pedestrians to cross Jay Road and continue west through the future Lafferty subdivision. Sight distance considerations must be made in regard to the plant material in the median so pedestrians can safely see oncoming traffic from both directions.
Response: A break in the median has been added to allow for pedestrians to cross Jasper Road to the future Lafferty subdivision.

Sheet 11 of 19

- Please increase the radii as discussed, where the new spine trail intersects with the existing spine trail, to allow for maintenance vehicles to navigate the turn from all directions. Applicant has addressed this comment in the plan set.
Response: Comment acknowledged.
- Provide a 12" monolithic bump out at the point where the new section of spine trail connects to the existing spine trail per attached Detail P27. Applicant has addressed this comment in the plan set. Additional bump outs are required to the west per the earlier comment provided above.
Response: The requested additional bump outs have been added.



Memo

To: Chris LaRue
From: Chad Schroeder, P.E., CFM, Development Engineer
Date: December 23, 2020
Subject: **Canyon Creek Filing 7 & 8 Preliminary Plat**
CC: David Pasic
Wendi Palmer
Tyler Burhenn
Zachary Ahinga

Responses by CWC Consultants and Henry Design Group 1-19-2021

Previous Comments for Preliminary Plat:

1. A portion of this extension of Jasper Road to the proposed roundabout with Jay Road will require acquiring the needed ROW, annexation of the ROW from unincorporated Boulder County parcel(s) into the Town of Erie, and approval of RTD for crossing their property. All agreements and approvals will be required for Final Plat approval.

RESPONSE1

Acknowledged.

Please provide the status of negotiations for obtaining the needed ROW from the adjacent property owners. The Town will need assurances that the property owners are willing to provide the needed ROW prior to Preliminary Plat approval. Also provide updates on obtaining the necessary approvals from RTD.

RESPONSE2

Lafferty annexation is being approved. A letter will be provided. We have had discussion with RTD and the crossing and noted it is similar to a crossing in Erie and at this point do not see any issues. RTD noted in conversation they do not review "concepts" per se, but more final documents as to not waste review time if the project does not move forward.

We need to have an official signed acknowledgement from both land owners in unincorporated Boulder County that they will agree to selling the needed sections of their land and have it annexed into the Town of Erie.

RESPONSE3: Comment acknowledged. The requested documents have been provided. Lafferty owners have agreed to selling the needed section and the Blair agreement will not be finalized prior to approval of preliminary plat.

Please provide correspondence from RTD about the status of crossing agreements.

RESPONSE3

Per our meeting with on October 7th and information presented from RTD the crossing agreements will be done at Final Plat. RTD noted this design crossing is similar to Moffat

Drive crossing but will not review preliminary designs should the project not proceed forward.

Staff concurs. Please provide correspondence from RTD about their detailed full review at Final Plat.

RESPONSE4: Correspondence from RTD will be provided at Final Plat.

3. The approved Wild Rose subdivision will be installing water and sanitary lines required for the Canyon Creek Filings 7 and 8.

- a. 16-inch water line in Jasper and Jay Road from the proposed Wild Rose roundabout to the Lost Creek access.
 - b. 12-inch water line in the future Lombardi Street extension from the proposed Wild Rose roundabout to the existing stub end of Lombardi Street in the Kenosha Farms subdivision.
 - c. 8-inch sewer line from the main trunk line just south of the Erie Village subdivision to the south of the of the proposed Wild Rose subdivision residences.
- If Wild Rose does not get built, then Canyon Creek Filings 7 and 8 will need to install these wet utility lines along with obtaining any of the needed easements and agreements from the Lower Boulder Ditch company, RTD, and respective unincorporated Boulder County properties. All agreements and approvals will be required for Final Plat approval.

RESPONSE1

We have requested the required CAD from the Town and the current builder for Wild Rose from multiple emails, but have not received a response at this time.

The Wild Rose subdivision is currently under construction and the utilities are being installed. The Wild Rose subdivision has provided the CAD files now.

RESPONSE2

Acknowledged, we have redesigned the waterline and sanitary sewer layout per the provided Wild Rose Connections.

A utility easement from the St Vrain School District will be required for the water line at Final Plat. Has the school district been contacted about this easement?

RESPONSE3

We have reached out the School, but based on the alignment provided we should not be in the school property. We laid the line in on the Town of Erie property per county records. The final location will be confirmed based on land ownership with Town of Erie at the time of Final Plat.

The area in question is directly to the east of the ditch and directly west of the baseball field on the school property. A 30-foot wide utility easement is shown from Canyon Creek Filing 7 to the connection with the Tynan Drive water line. Is this an existing utility easement? If not, prior to Preliminary Plat approval, the portion of the easement over the school property will need to be acknowledged by the school that they would grant this easement.

RESPONSE4: the easement is a proposed 30' wide utility easement and is proposed to be located within the Town of Erie property not the school's property.

An agreement with the Leyner Cottonwood Ditch will need to be provided for the water line utility easement and water line being within the ditch easement. Has the ditch company been contacted about this water line?

RESPONSE3

Per our October the 7th meeting the final agreement will be provided with Final Plat.

Comment stands, no further response required at this time.

RESPONSE4: Comment acknowledged.

4. Canyon Creek Filings 7 and 8 are roughly bisected by the Town's Zone 2 and Zone 3 Town staff had our utility consultant review the layout against the Town's Water Master Plan. Their findings are listed below. Revise the proposed Canyon Creek Filing 7 and 8 water system layout as needed.

- a. Due to the pressure issues in Filing 8 and Creekside, two zones are needed to provide water service to Canyon Creek, i.e. Filing 7 in Zone 3 and Filing 8 in Zone2.
- b. Water mains need to be installed along Jasper Road for each zone.
- c. Filing 8 (Zone 2) should connect to the 16-inch main on Jay road as well as connect to Creekside in two places, in order to provide lopped connection.
- d. Filing 7 (Zone 3) will need to connect to the west along Telleen Avenue to N. 119th Street and to the south to Tynan Drive; both are shown as 12-inch connections in the Town's Water Master Plan.
- e. The Master Plan also shows a 12-inch main from the north side of Filing 7 between Jasper Road and N. 119th Street; this main size could probably be reduced to 8-inch main, given looping in the neighborhood. These connections are all illustrated in the master plan.

REPSONSE1

The utility study is not complete and multiple requests have been made to the Town for information to verify pressure zones. The final waterline design will be completed once the utility study is complete.

The pressures needed will be provided shortly for incorporation into the model. The additional water line connections per the Water Master Plan that are highlighted in d. and e. above still need to be addressed.

RESPONSE2

The Preliminary Utility Study has been provided per the provided pressure zone information.

Address attached Merrick August 28, 2020 comments on the utility study and on the construction plans.

Primary areas of concern are:

- Provide evaluation of utility installation safety and stability in the mine subsidence areas.

RESPONSE3

The evaluation of the utility installation safety and stability in the mine subsidence areas is still on going.

This is a critical issue that needs to be addressed prior to Preliminary Plat approval.

RESPONSE4: Western has reviewed and there are no concerns of utilities within the subsidence areas. Western provided a detail and requirement for capping the mine shaft.

- Update the water demand calculations for the water and sanitary sewer systems per the latest design criteria as recommended by Merrick.

RESPONSE3

The most recent values for sewer loading were used in the report and calculations based on what is available on the Town of Erie website.

The final utility report will be reviewed during Final Plat.

7. The Town is currently looking at different median designs for to be used town-wide. Staff will provide additional details for later Canyon Creek Filing 7 and 8 reviews to incorporate if necessary.

RESPONSE1

Acknowledged.

Town Board of Trustees is currently reviewing the Town Median policy. Once finalized, staff will provide the policy along with any potential additional median work to be required.

RESPONSE2

Acknowledged.

Attached is the latest draft of the Town Median study which should be adopted by the Board of Trustees sometime this Fall. Please review for potential incorporation of medians in Jasper Road. A continuation of medians in Jasper Road is desirable.

RESPONSE3

Jasper Road has been redesigned to incorporate medians as requested. The new roadway section for Jasper Road reflects the Town of Erie Drawing Number ST4.

There needs to be an opening in the median for the trail crossing just south of the RTD property. The opening needs to be adequately wide enough for pedestrian line of sight. The trail will connect with the future Lafferty trail. Pedestrian warning lights need to be installed for the crossing.

RESPONSE4: A break in the median has been added to allow for pedestrians to cross Jasper Road to the future Lafferty subdivision.

10. There is a possibility that Urban Drainage Flood Control District / Mile High Flood District can assist with water quality / detention pond improvements on the eastern edge of Filing 8. Town staff will provide addition details.

RESPONSE1

Acknowledged.

With Canyon Creek Filings 7&8 using the pond for detention and water quality, the Town would like to see a contribution to the Mile High Flood District project. The details on this will be discussed later on. Please contact Jim Watt with the Mile High Flood District for coordination on the pond project: jwatt@udfcd.org / 303-455-6277.

RESPONSE2

Acknowledged and agree further discussion needs to be had. In discussion with MHFCD it appears the pond "could" be changing but also sounds like a potential issue.

The plans need to assume the MHFD detention pond project will not be happening and that all detention needs for Canyon Creek Filings 7 and 8 and be accommodated without the MHFD pond project. However, there could still be a possibility the MHFD project occurs. At such time

the Canyon Creek Filings 7 and 8 drainage facilities should be able to merge with the MHFD pond project. Please continue to coordinate with MHFD on the status of their pond project.

RESPONSE3

Acknowledged. We have provided an updated phase II drainage study with the analysis of the 100-yr peak inflows from Canyon Creek Filings 7 and 8 to the existing Regional Detention and Water Quality Pond 1045. These 100-yr peak inflows have been compared with the current Town of Erie OSP. The findings from the Canyon Creek Filings 7 and 8 drainage study show that the current configuration of the Regional Detention and Water Quality Pond 1045 is designed to support the developments without modifications to the pond.

The final pond design will be reviewed with the Phase III drainage report at Final Plat. Please continue to coordinate with MHFD on the status of their potential pond project.

RESPONSE4: Comment acknowledged.

11. Provide applicable Town Standard sheets.

RESPONSE1

These be provided with the final construction documents.

Noted, Town recommends that these are provided now, but will be required at Final Plat.

RESPONSE2

No Response

Comment stands, no additional action required at this time.

RESPONSE3

Acknowledged. Town Standard drawings will be provided with the Final Construction documents.

Comment stands, no additional action required at this time.

RESPONSE4: Comment acknowledged.

12. An area grading plan will be required with the final construction plans.

RESPONSE

Acknowledged.

Noted, comment stands for reminder to include with Final Construction documents.

RESPONSE2

Acknowledged

Comment stands, no additional action required at this time.

RESPONSE3

Acknowledged. An area grading plan will be provided with the Final Construction documents.

Comment stands, no additional action required at this time.

RESPONSE4: Comment acknowledged.

13. See attached Drainage Report Comments from Merrick. Provide forebays for culvert outlets where required.

RESPONSE1

Acknowledged.

Please address attached Merrick Drainage review comments.

RESPONSE2

See separate responses for Merrick drainage review comments.

Per Merrick comment #6, we need to have a meeting to discuss water quality options for Sub-basins F-1 and F-2.

RESPONSE3

In the updated drainage study, Basins F-1 and F-2 have been updated to be D-1 and D 2. We have designed a retention and water quality pond per MHFD standards. This pond provides the required water quality volume and releases the WQCV within 12 hours through a single stage outlet structure. The release is discharged to a historical drainage path.

The drainage design for Basins F-1 and F-2 will be reviewed with the Phase III drainage report at Final Plat.

RESPONSE4: Comment acknowledged.

14. See attached Traffic Control comments from FHU.

RESPONSE1

Acknowledged.

The Town will have FHU review the Jay Road roundabout design again.

RESPONSE2

Acknowledged

Address attached FHU November 12, 2019 comments on the roundabout design.

RESPONSE3

Per the FHU comments, the final design of the roundabout should be confirmed by future traffic analyses. Our understanding is that the future traffic study will be completed with the Final Plat.

Staff concurs. The final roundabout design will be reviewed during Final Plat.

RESPONSE4: Comment acknowledged.

New Comments for Preliminary Plat:

1. Provide a new access to the existing structures on the Lafferty property from the new segment on Jasper Road. The Lafferty access needs to be realigned out of the RTD property. The access can be unpaved but constructed of a suitable all-weather road base material.

RESPONSE: Lafferty access will remain as located and the new connection for both users until the development of the Lafferty property.


2. Show the existing trail along the backside of the Creekside subdivision where the water line connection to McGregor Circle will be located. The water line connection to McGregor Circle in the opening between the lots contains a storm sewer line. The water line needs to be shifted at least 10 feet away from the storm line in the opening.

RESPONSE: The existing trail along the backside of the Creekside subdivision has been added to the plans. The existing storm sewer line in the opening between the lots along McGregor Circle has been added to the plans. The waterline has been updated to be at least 10' the existing storm sewer line.

3. Attached is the Post-Construction Design Standards form that needs to be completed with the Phase II Drainage Report.

RESPONSE: The pertinent Post-Construction Design Standards forms have been added to the appendix of the Phase II Drainage Report.

4. All final grades need to be no steeper than 4 to 1. There are various areas along the drainage channels and existing pond embankment that need to be adjusted accordingly.
RESPONSE: Grades adjacent to the trails have been corrected to be at 5:1 except in areas where the trails are adjacent to existing channels and detention pond 1045. The grades from the spine trail 4' shoulders at the areas where they are adjacent to existing trails and detention pond 1045 remained at 4:1 to keep them consistent with the existing grades.



Keith Lafferty and
family
12166 Jay Road
Erie CO 80516

January 12, 2021

Town of Erie
Community Development Dept
645 Holbrook Street
P.O.Box 750
Erie CO 80516

Re: Lafferty / Canyon Creek Property Applications

To whom it may concern:

As you know I and my family are under contract with Stratus Companies to sell them our property, the final intended use of which will be for residential.

We are aware that Stratus intends to remove our Leyner Cottonwood lateral ditch with the construction of the Canyon Creek property to the south. Stratus has agreed to coordinate with us regarding those actions as they move into their final plat stage. Ultimately, once they own our property the lateral ditch will serve no further purpose and can be abandoned.

We therefor do not object to the Town scheduling the Canyon Creek preliminary plat for hearing.

Additionally, we are aware that the success of the Canyon Creek project, and the sale of our property for future residential requires that a portion of our property along its eastern boundary will be required for dedication to the Town for Jasper Right-of-Way. We will be working with Stratus regarding sequence but are hereby giving the Town notice that we agree to the concept.

Please let me know if you have any questions.

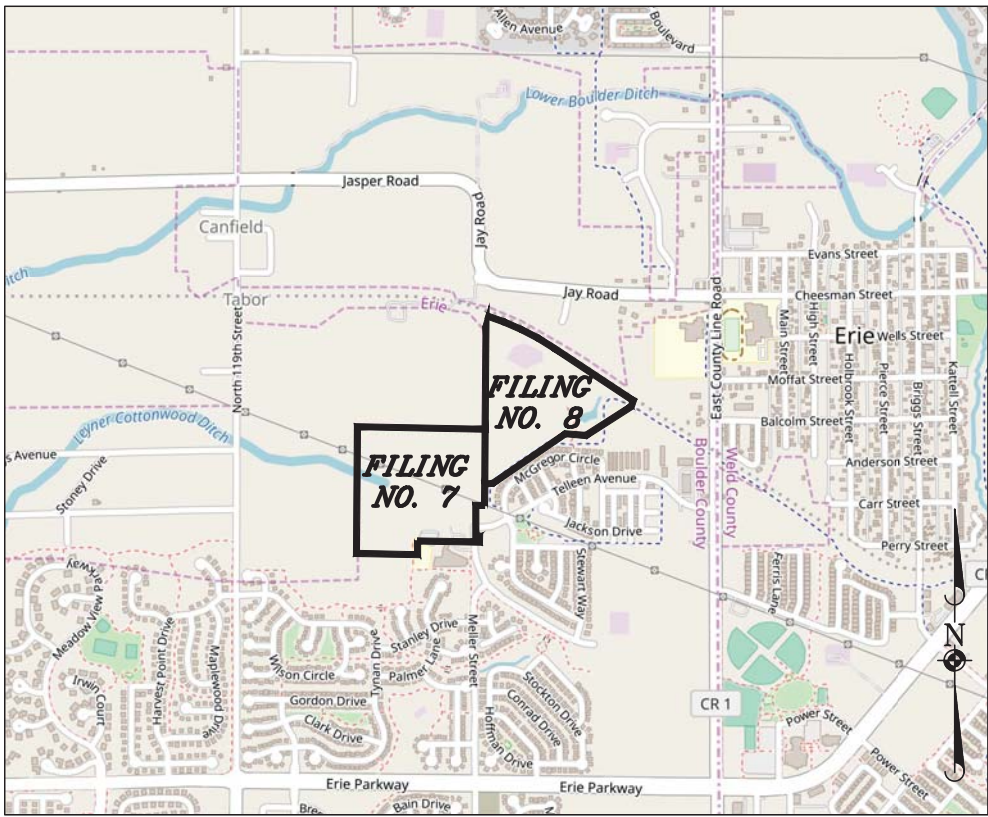
Thank you,

CANYON CREEK SUBDIVISION FILING NOS. 7 & 8

PRELIMINARY PLAT

TRACT "O", CREEKSIDE SUBDIVISION AND A PORTION OF THE SOUTH ONE-HALF OF SECTION 13,
TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN,
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
70.626 ACRES - 194 LOTS / 24 TRACTS / 1 OUTLOT
PP-001108-2019

Should be a tract



LOCATION MAP

SCALE: 1" = 2000'

per conversations with Stratus Companies and as shown on the Tract Summary Chart, Outlot A is designated for future development and does not have any specific use as it pertains to this development.

CERTIFICATE OF DEDICATION AND OWNERSHIP

KNOW ALL MEN THESE PRESENTS THAT THE UNDERSIGNED, BEING ALL THE OWNERS, MORTGAGEES, OR LIEN HOLDERS OF CERTAIN LANDS IN THE TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO, DESCRIBED AS FOLLOWS:

PARCEL A
(FROM RECEPTION NO. 2073245, EXHIBIT A, PARCEL B, PAGE 4 OF 15)

A PARCEL OF LAND WITHIN THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO, SHOWN AS PARCEL NO. 074 ON MAP NO. 1465130, EXCEPT THAT REAL PROPERTY DESCRIBED IN RECEPTION NO. 1895203, RECEPTION NO. 1534041, AND RECEPTION NO. 1826699 FILED IN THE RECORDS OF SAID COUNTY, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHWEST CORNER OF SAID SECTION 13;

THENCE SOUTH 89 DEGREES 44' 23" EAST, ALONG THE SOUTH LINE OF THE SOUTHWEST QUARTER, SECTION 13, A DISTANCE OF 1330.55 FEET TO THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER WHICH IS THE TRUE POINT OF BEGINNING;

THENCE NORTH 00 DEGREES 26' 39" WEST, ALONG THE WEST LINE OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER, A DISTANCE OF 1319.12 FEET TO THE NORTHWEST CORNER OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 13; THENCE SOUTH 89 DEGREES 50' 01" EAST, ALONG THE NORTH LINE OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER, A DISTANCE OF 1329.50 FEET TO THE NORTHEAST CORNER OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 13; THENCE SOUTH 00 DEGREES 29' 19" EAST, ALONG THE EAST LINE OF THE SOUTHWEST QUARTER OF SECTION 13, A DISTANCE OF 795.37 FEET TO THE SOUTHERLY INTERSECTION OF SAID RECEPTION NO. 1895203 AS RECORDED IN THE RECORDS OF SAID COUNTY WITH THE SAID EAST LINE; THENCE ALONG THE NORTHERLY AND EASTERLY LINES OF SAID RECEPTION NO. 1895203 THROUGH THE FOLLOWING FOUR COURSES:

- NORTH 89 DEGREES 42' 44" WEST, 180.00 FEET;
- SOUTH 07 DEGREES 35' 53" WEST, 211.75 FEET;
- SOUTH 00 DEGREES 26' 46" EAST, 110.00 FEET;
- SOUTH 89 DEGREES 42' 46" EAST, 160.06 FEET TO THE WEST LINE OF TRACT G CANYON CREEK FILING NO. 2 AS PLATTED IN SAID RECORDS;

THENCE SOUTH 00 DEGREES 28' 17" EAST, A DISTANCE OF 55.49 FEET TO THE NORTH LINE OF SAID RECEPTION NO. 1826699 IN THE RECORD OF SAID COUNTY; THENCE ALONG THE NORTH AND WEST LINES OF SAID RECEPTION NO. 1826699 THROUGH THE FOLLOWING TWO COURSES:

- SOUTH 89 DEGREES 44' 29" WEST, 500.00 FEET;
- SOUTH 00 DEGREES 28' 28" EAST, 145.00 FEET TO THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SECTION 13;

THENCE NORTH 89 DEGREES 44' 23" WEST, ON THE SOUTH LINE OF THE SOUTHWEST QUARTER, A DISTANCE OF 780.55 FEET TO THE POINT OF BEGINNING.

TOGETHER WITH
(FROM RECEPTION NO. 2282882)

A TRACT OF LAND BEING TRACT O OF THE CREEKSIDE SUBDIVISION AS RECORDED IN THE BOULDER COUNTY CLERK AND RECORDER'S OFFICE AT RECEPTION NO. 2259443, LOCATED IN THE SOUTHWEST QUARTER OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF BOULDER, STATE OF COLORAD, DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF THE SOUTHWEST QUARTER OF SAID SECTION 13 AND CONSIDERING TH EAST LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 13 TO BEAR NORTH 00'31'00" WEST ALONG SAID EAST LINE A DISTANCE OF 206.00 FEET; THENCE NORTH 89'44'19" WEST, A DISTANCE OF 90.00 FEET TO THE SOUTHWESTERN MOST CORNER OF TRACT L, A PART OF SAID CREEKSIDE SUBDIVISION, TO THE POINT OF BEGINNING;

THENCE ALONG THE SOUTHERLY BOUNDARY OF SAID TRACT O, NORTH 89'44'19" WEST, A DISTANCE OF 120.16 FEET TO THE SOUTHWEST CORNER OF SAID TRACT O;

THENCE ALONG THE WESTERLY BOUNDARY OF SAID TRACT O, NORTH 00'31'00" WEST, A DISTANCE OF 110.00 FEET;

THENCE CONTINUING ALONG SAID WESTERLY BOUNDARY OF SAID TRACT O, NORTH 07'40'20" EAST, A DISTANCE OF 211.75 FEET, TO THE NORTHWEST CORNER OF SAID TRACT O;

THENCE ALONG THE NORTHERLY BOUNDARY OF SAID TRACT O, SOUTH 89'44'19" EAST, A DISTANCE OF 89.99 FEET TO THE NORTHWEST CORNER OF SAID TRACT L;

THENCE ALONG THE WESTERLY BOUNDARY OF SAID TRACT L, SOUTH 00'31'00" EAST, A DISTANCE OF 320.00 FEET TO THE POINT OF BEGINNING;

CONTAINING 0.81 ACRES, MORE OR LESS

EXCEPT
(FROM RECEPTION NO. 03064195)

A PARCEL OF LAND LOCATED IN THE SOUTHWEST QUARTER OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

CERTIFICATE OF DEDICATION AND OWNERSHIP (CONTINUED)

COMMENCING AT THE SOUTH QUARTER CORNER OF SAID SECTION 13 THENCE N89'44'23"W ALONG THE SOUTH LINE OF SAID SOUTHEAST QUARTER AND ALONG THE SOUTH LINE OF PARCEL C, TRACT G, CANYON CREEK SUBDIVISION FILING NO. 3 A DISTANCE OF 550.00 FEET TO THE TRUE POINT OF BEGINNING, SAID POINT BEING THE SOUTHWEST CORNER OF SAID PARCEL C, TRACT G; THENCE N89'44'23"W CONTINUING ALONG THE SOUTH LINE OF SAID SOUTHWEST QUARTER AND ALONG THE NORTHERN BOUNDARY OF CANYON CREEK SUBDIVISION FILING NO. 2 A DISTANCE OF 143.72 FEET; THENCE N00'29'19"W A DISTANCE OF 145.00 FEET TO A POINT OF NON-TANGENT CURVATURE. THENCE ALONG A 805.00 FOOT RADIUS CURVE TO THE LEFT (SAID CURVE HAVING A CENTRAL ANGLE OF 00'05'27" AND A CHORD BEARING S89'41'39"E A DISTANCE OF 1.28 FEET) AN ARC LENGTH OF 1.28 FEET; THENCE S89'44'23"E A DISTANCE OF 142.45 FEET TO THE NORTHWEST CORNER OF SAID PARCEL C, TRACT G; THENCE S00'29'19"E ALONG THE WEST LINE OF SAID PARCEL C, TRACT G A DISTANCE OF 145.00 FEET TO THE TRUE POINT OF BEGINNING.

CONTAINS 20,838 SQUARE FEET OR 0.478 ACRE, MORE OR LESS.

CONTAINING AN AREA OF 1,623,186 SQUARE FEET (37.484 ACRES), MORE OR LESS.

PARCEL B
(FROM RECEPTION NO. 2073245, EXHIBIT A, PARCEL C, PAGE 5 OF 15)

A PARCEL OF LAND WITHIN THE SOUTHEAST QUARTER OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO, SHOWN AS PARCEL 073 ON PARCEL MAP NO. 1465130 IN THE RECORDS OF SAID COUNTY, LYING SOUTH OF THE UNION PACIFIC RAILROAD RIGHT OF WAY, AND NORTH OF THAT REAL PROPERTY DESCRIBED IN RECEPTION NO. 1895203, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTH QUARTER CORNER OF SAID SECTION 13;

THENCE NORTH 00 DEGREES 29' 19" WEST, ON THE WEST LINE OF SAID SOUTHEAST QUARTER, A DISTANCE OF 750.95 FEET TO THE NORTH INTERSECTION OF SAID RECEPTION NO. 1895203 AS RECORDED IN THE RECORDS OF SAID COUNTY WITH SAID WEST LINE, WHICH IS THE POINT OF BEGINNING;

THENCE ON THE NORTH LINE OF SAID RECEPTION NO. 1895203 THE FOLLOWING FIVE (5) COURSES:

- NORTH 85 DEGREES 33' 33" EAST, 80.27 FEET;
- NORTH 54 DEGREES 48' 33" EAST, 920.00 FEET;
- SOUTH 85 DEGREES 58' 27" EAST, 214.00 FEET;
- NORTH 56 DEGREES 33' 33" EAST, 560.00 FEET;
- NORTH 18 DEGREES 21' 09" EAST, 64.70 FEET TO THE SOUTH RIGHT OF WAY LINE OF THE UNION PACIFIC RAILROAD;

THENCE NORTH 57 DEGREES 49' 09" WEST, ALONG THE SOUTH RIGHT OF WAY LINE OF SAID RAILROAD, 985.00 FEET TO A NON-TANGENT 2764.93 FOOT RADIUS CURVE WHICH IS CONCAVE SOUTHWESTERLY; THENCE WESTERLY ALONG SAID NON-TANGENT CURVE, WHOSE CENTER BEARS SOUTH 31 DEGREES 58'00" WEST, THROUGH A CENTRAL ANGEL OF 16 DEGREES 14' 03", A DISTANCE OF 783.42 FEET TO THE WEST LINE OF SAID SOUTHEAST QUARTER; THENCE SOUTH 00 DEGREES 29' 19" EAST, NON-TANGENT TO SAID CURVE, 1731.77 FEET TO THE POINT OF BEGINNING.

CONTAINING AN AREA OF 1,453,261 SQUARE FEET (33.362 ACRES), MORE OR LESS

CANYON CREEK SUBDIVISION FILING NO. 7 & 8 CONTAINS A TOTAL AREA OF 3,076,447 SQUARE FEET (70.626 ACRES), MORE OR LESS

HAVE BY THESE PRESENTS LAID OUT, PLATTED AND SUBDIVIDED THE SAME INTO LOTS, BLOCKS, TRACTS, STREETS, AND EASEMENTS AS SHOWN HEREON UNDER THE NAME AND SUBDIVISIONS OF CANYON CREEK SUBDIVISION FILING NO. 7 AND CANYON CREEK SUBDIVISION FILING NO. 8. ALL PUBLIC WAYS AND OTHER PUBLIC RIGHTS-OF-WAY, LANDS, EASEMENTS AND OTHER DESIGNATED PUBLIC IMPROVEMENTS SHOWN HEREON ARE DEDICATED TO THE TOWN OF ERIE AND THE PUBLIC, COLORADO, FOR PUBLIC USES AND PURPOSES SHOWN HEREON.

CERTIFICATE OF DEDICATION AND OWNERSHIP (CONTINUED)

OWNER: JOHNSON DEVELOPMENT COMPANY, A COLORADO CORPORATION

BY: _____

ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 2020,

BY _____

WITNESS MY HAND AND OFFICIAL SEAL:

(SEAL)

MY COMMISSION EXPIRES: _____

OWNER: STRATUS CANYON CREEK, LLC

BY: _____

ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 2020,

BY _____

WITNESS MY HAND AND OFFICIAL SEAL:

(SEAL)

MY COMMISSION EXPIRES: _____

SURVEYOR'S CERTIFICATE

I, ERIC DAVID CARSON, A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THIS PLAT TRULY AND CORRECTLY REPRESENTS THE RESULTS OF A SURVEY MADE ON SEPTEMBER 10, 2018, BY ME OR UNDER MY DIRECT SUPERVISION AND THAT ALL MONUMENTS EXIST AS SHOWN HEREON; THAT MATHEMATICAL CLOSURE ERRORS ARE LESS THAN 1:50,000 (SECOND ORDER); AND THAT SAID PLAT HAS BEEN PREPARED IN FULL COMPLIANCE WITH ALL APPLICABLE LAWS OF THE STATE OF COLORADO DEALING WITH MONUMENTS, SUBDIVISIONS OR SURVEYING OF LAND AND ALL APPLICABLE PROVISIONS OF THE TOWN OF ERIE UNIFIED DEVELOPMENT CODE.

I ATTEST THE ABOVE ON THIS _____ DAY OF _____, 2020.

ERIC DAVID CARSON

COLORADO REGISTERED PROFESSIONAL LAND SURVEYOR #37890

TITLE VERIFICATION CERTIFICATE

WE, FIRST AMERICAN TITLE INSURANCE COMPANY, DO HEREBY CERTIFY THAT WE HAVE EXAMINED THE TITLE OF ALL LAND PLATTED HEREON AND THAT TITLE TO SUCH LAND IS IN THE DEDICATOR(S) FREE AND CLEAR OF ALL LIENS, TAXES AND ENCUMBRANCES, EXCEPT AS FOLLOWS:

FIRST AMERICAN TITLE INSURANCE COMPANY

BY: _____ DATE: _____

TITLE: _____

ATTEST:

SECRETARY/TREASURER
STATE OF COLORADO
COUNTY OF _____ } SS.

ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 2020

BY _____ AS _____

WITNESS MY HAND AND OFFICIAL SEAL

NOTARY PUBLIC

MY COMMISSION EXPIRES: _____

BOARD OF TRUSTEES APPROVAL CERTIFICATE

THESE PLATS ARE TO BE KNOWN AS CANYON CREEK SUBDIVISION FILING NO. 7 AND CANYON CREEK SUBDIVISION FILING NO. 8 ARE APPROVED AND ACCEPTED BY RESOLUTION NO. _____ PASSED AND ADOPTED AT A MEETING OF THE BOARD OF TRUSTEES OF ERIE, COLORADO, HELD ON THE _____ DAY OF _____ 2020.

MAYOR


ATTEST _____
TOWN CLERK

CLERK & RECORDER CERTIFICATE

STATE OF COLORADO
COUNTY OF BOULDER } SS.

I HEREBY CERTIFY THAT THIS PLAT WAS FILED IN MY OFFICE ON THIS _____ DAY OF _____, 2020 A.D. AND WAS RECORDED AT RECEPTION NUMBER _____.

COUNTY CLERK AND RECORDER

 9360 TEDDY LANE, SUITE #203 LOUIS, COLORADO 80124 TELEPHONE: 303-995-2700 FAX: 303-995-2701 CWC CONSULTING GROUP CIVIL ENGINEERING • LAND SURVEYING • CONSTRUCTION SERVICES	DATE	REVISION	BY	DRAFTED: S.L.G.3	CHECKED: E.D.C.	SHEET NO. 1 OF 13 SHEETS
	03/20/20	REVISED LOT/TRACT LINES & ROW	SLG3	DATE:	JOB NO.	
	07/21/20	ADDRESSED TOWN COMMENTS	SLG3	08/27/19	120-00237 130-00091	
	09/04/20	REVISED LINWORK	SLG3	SURVEY PREPARED FOR: STRATUS CANYON CREEK, LLC		
	11/11/20	REVISED STREET NAMES, NOTE, TRACT CHART	EDC			

TRACT "O", CREEKSIDE SUBDIVISION AND A PORTION OF THE SOUTH ONE-HALF OF SECTION 13,
TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN,
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
70.626 ACRES - 194 LOTS / 24 TRACTS / 1 OUTLOT
PP-001108-2019

1. DISTANCES ARE MARKED IN U.S. SURVEY FEET AND DECIMAL PLACES THEREOF. NO DIMENSION SHALL BE ASSUMED BY SCALE MEASUREMENT HEREON. DISTANCES AND/OR BEARINGS SHOWN IN PARENTHESIS (0.00') ARE RECORD OR DEED VALUES, NOT FIELD MEASURED.

3. COMPARE THIS PLAT, LEGAL DESCRIPTION AND ALL SURVEY MONUMENTS BEFORE BUILDING, AND IMMEDIATELY REPORT ANY DISCREPANCIES TO THE SURVEYOR.

5. ALL REFERENCES HEREON TO BOOKS, PAGES, MAPS AND RECEPTION NUMBERS ARE PUBLIC DOCUMENTS FILED IN THE RECORDS OF THE BOULDER COUNTY CLERK AND RECORDER'S OFFICE.

7. BASIS OF BEARINGS: BEARINGS ARE BASED ON THE SOUTH LINE OF THE SOUTHWEST ONE-QUARTER OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, SAID TO BEAR NORTH 89°24'33" WEST, A DISTANCE OF 2,661.09 FEET, FROM THE SOUTH ONE-QUARTER CORNER OF SAID SECTION 13 BEING MONUMENTED BY A 3.25" ALUMINUM CAP, 0.45" DIAMETER, 1.5" RADIUS, WITH "ASPHALT" WITH A LID MARKED "RANGE POINT", STAMPED "AZ 2004, L1N R69W, S13, 1/4" AND "S24, 2004, L3S 36580" TO THE SOUTHWEST CORNER OF SAID SECTION 13 BEING MONUMENTED BY A 3.25" ALUMINUM CAP, 0.85" DOWN IN A RANGE CORNER IN ASPHALT WITH A LID MARKED "RANGE POINT", STAMPED "L.P.I., L1N R69W, 14 | 13, ---, 23 24, 2006, PL35251".

9. DEFINITION: CERTIFY, CERTIFICATION – A PROFESSIONAL'S OPINION BASED ON HIS OR HER OBSERVATION OF CONDITIONS, KNOWLEDGE, INFORMATION AND BELIEFS. IT IS EXPRESSLY UNDERSTOOD THAT THE PROFESSIONAL'S CERTIFICATION OF A CONDITION'S EXISTENCE RELIEVES NO OTHER PARTY OF ANY RESPONSIBILITY OR OBLIGATION HE OR SHE HAS ACCEPTED BY CONTRACT OR CUSTOM.

11. ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

13. THE UNDERSIGNED, AS OWNER OF THE LANDS DESCRIBED HEREIN, ARE RESPONSIBLE FOR THE MAINTENANCE AND OPERATION OF ALL DRAINAGE EASEMENTS SHOWN HEREON AND RELATED DRAINAGE FACILITIES, AS PROVIDED IN THE TOWN OF ERIE INSPECTING STANDARDS AND SPECIFICATIONS, AS APPLICABLE TO THE UNDERSIGNED OWNERS OF THE OWNERSHIP OF ANY PORTION OF INGRESS OR EGRESS RIGHTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

A blanket PAE has been added to the appropriate Tracts and added to this note and Tract Summary Charts

INSPECT, MAINTAIN OPERATE
PROPERTY COVERED BY THE ERIE
REPAIR AND RECONSTRUCT THE
IF FAILS TO ADEQUATELY
INSPECTION, MAINTENANCE,

A blanket PAE has been added to the appropriate Tracts and added to this note and Tract Summary Charts

FROM TOWN OF ERIE'S UNIFIED DEVELOPMENT CODE, OCTOBER, 2017:
10.6.13 ABANDONED MINES:

1. All MINESHAFTS SHALL BE CAPPED AND MONUMENTED IN ACCORDANCE WITH STATE REQUIREMENTS.

4. MINIMUM DIMENSIONS FOR TRACTS/EASEMENTS AND MINIMUM DISTANCES FROM ABANDONED MINESHAFTS TO RESIDENTIAL LOTS AND NON-RESIDENTIAL STRUCTURES SHALL BE DETERMINED BASED ON RECOMMENDATIONS FROM THE GEOLOGICAL AND GEOTECHNICAL HAZARDS REPORTS AND THE COLORADO GEOLOGICAL SURVEY.

changed

List Mine buffer
changed

Reevaluate all tracts in both filings. There are no public access easements in Filing no. 7, and there should be. Any area where the public may go (pocket parks, trails/walks, alleys, etc.) requires a public access easement. See first page of landscaping plans. I've highlighted a lot of areas that need a PAE.

Mine shaft
entrance
shown

An additional note will be required per CGS comments. See Note # 10 on Canyon Creek Subdivision Filing No. 10 as an example.

The Town won't
accept this tract.
Change this to HOA.
changed

per conversations with Stratus Companies and as shown on the Tract Summary Chart, Outlot A is designated for future development and does not have any specific use as it pertains to this development.

SHEET NO.
2 OF 13 SHEETS

CANYON CREEK SUBDIVISION FILING NOS. 7 & 8

PRELIMINARY PLAT

TRACT "O", CREEKSIDE SUBDIVISION AND A PORTION OF THE SOUTH ONE-HALF OF SECTION 13
TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN,
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
70.626 ACRES - 194 LOTS / 24 TRACTS / 1 OUTLOT
PP-001108-2019

J & J ELKE TRUST
(PARCEL NO. 146513000051,
(RECP. NO. 3075455)
RESIDENCE
ZONING: A-AGRICULTURAL

NW 1/4
SW 1/4
SEC.13

NE 1/4
SW 1/4
SEC.13

VICKIE L NEWMAN
ET AL
(PARCEL NO. 14651300004
(REC. NO. 2807661)
HORSE PROPERTY
ZONING: A-AGRICULTURAL

NORTHEAST CORNER OF THE SOUTHEAST
ONE-QUARTER OF THE SOUTHWEST
ONE-QUARTER OF SECTION 13
FOUND 2.5" ALUMINUM CAP 0.1' ABOVE
GROUND SURFACE, STAMPED "JR ENG, T1
R69W, C, S1/16, | S13, C, 2000, LS 19606"

LEGEND

- FOUND MONUMENT AS NOTED;
 NOTE: BEARING AND DISTANCE, IF LISTED, IS FROM THE
 BOUNDARY CORNER TO THE FOUND MONUMENT.
- ⊕ FOUND PLSS MONUMENT AS NOTED
- ⊕ FOUND CHISELED CROSS
- X FOUND CUT "X"
- FOUND RANGE POINT AS NOTED

YPC = YELLOW PLASTIC CAP
RPC = RED PLASTIC CAP
PPC = PINK PLASTIC CAP
ESMT = EASEMENT
R.O.W. = RIGHT OF WAY
BK., PG. = BOOK, PAGE
REC.P. = RECEPTION NUMBER
R1=RECORD PER REC.P. 2073245 (DEED)
R2=RECORD PER CREEKSIDE SUBDIVISION
R3=RECORD PER REC.P. 2282882 (TRACT "O" & "L")
R4=RECORD PER REC.P. 03061195 (EXCEPTION)
R5=RECORD PER CANYON CREEK SUBDIVISION FILING NO.
R6=RECORD PER REC.P. 1826699
R7=RECORD PER REC.P. 1895203

GRAPHIC SCAL

A horizontal number line with three tick marks labeled 0, 50%, and 1. A shaded rectangular region is drawn below the line, spanning from the 0 tick mark to the 50% tick mark.

(IN FEET)
1 inch = 100' ft

Need authorization to remove lateral. Also, need some kind of general approval of the relocation of these laterals. How these be accommodated? Are new easements necessary? If so they should be shown on the preliminary plat. Update all pages as necessary.

Previously provided to Chris Larue by
Roger Hollard & provided separately
with this submittal

LINE DATA

- L=1.28' R=805.00' Δ0°05'27"
 CHORD=S89°21'49"E 1.28'
 (R=805.00' L=1.28' Δ0°05'27" R4)
 (CHORD=S89°41'39"E 1.28' R4)
 SEE DETAIL "A" THIS SHEET
- FOUND 1.25" PPG. FLUSH WITH
 GROUND SURFACE, STAMPED
 "CWC CG INC. PLS 37890"
- C89°24'33"E 642.45'
- L1: R89°22'55"E 90.01' (S0.00'+00.01'-90.01' R2)
 L2: S89°22'55"E 40.00'
 L3: N89°24'33"W 143.72' (N89°44'23"W 143.72' R1)
 L4: S89°22'55"E 40.00'
 L5: S89°22'55"E 90.01' (N89°44'19"W 90.01' R3)

MONUMENTS

- A FOUND 1.25" OPC, 0.2" BELOW GROUND SURFACE, STAMPED "LS 29414, EGA" 5682701"E 0.05"
- B FOUND 1.5" ALUMINUM CAP, 0.2" BELOW GROUND SURFACE, STAMPED "ADP PLS 24305"
- C FOUND 1.25" PLASTIC CAP, 0.1" BELOW GROUND SURFACE, STAMPED "EHRHART LS 29414" N251447"W 0.05"
- D FOUND 1" BRASS TAG & NAIL IN CONCRETE SIDEWALK RAMP, STAMPED "EHRHART LS 29414" N662533"W 0.05"
- E FOUND 1" BRASS TAG & NAIL IN CONCRETE SIDEWALK, STAMPED "EHRHART LS 29414"

DETAIL "A"

SCALE: 1" = .

P.O.C PARCEL A
SOUTHWEST CORNER OF SECTION 13
FOUND 3.25" ALUMINUM CAP 0.85' DOWN IN A RANGE BO
WITH A LID MARKED "RANGE POINT", STAMPED "L.P.I., TIN
R69W, 14 | 13, ---, 23 | 24, 2006, PLS 23521"

P.O.B. PARCEL
SOUTHWEST CORNER OF THE SOUTHEAST ONE-QUARTER OF
THE SOUTHWEST ONE-QUARTER OF SECTION 1
FOUND 2.5" ALUMINUM CAP FLUSH WITH GROUND SURFACE
STAMPED "JR ENG, 1/_, S13, ---, S24, 2000, LS 19606

N89°24'33"W 2661.09' (N89°44'23"W)
BASIS OF BEARINGS

NW 1/4
SEC.24

ST VRAIN VALLEY SCHOOL DISTRICT RE-1
(PARCEL NO. 146624232001)
(REC'D. NO. 3205364)
SCHOOL
ZONING: PLANNED DEVELOPMENT



9360 TEDDY LANE, SUITE
LONE TREE, COLORADO 8
TELEPHONE: 303-395-27
FAX 303-395-2701

MULTILING GRO
SURVEYING • CONSTRUCTION SER

DATE	REVISION	BY
03/20/20	REVISED LOT/TRACT LINES & ROW	SLG
07/21/20	ADDRESSED TOWN COMMENTS	SLG
09/04/20	REVISED LINEWORK	SLG
11/11/20	REVISED STREET NAMES, NOTE, TRACT CHART	EDC

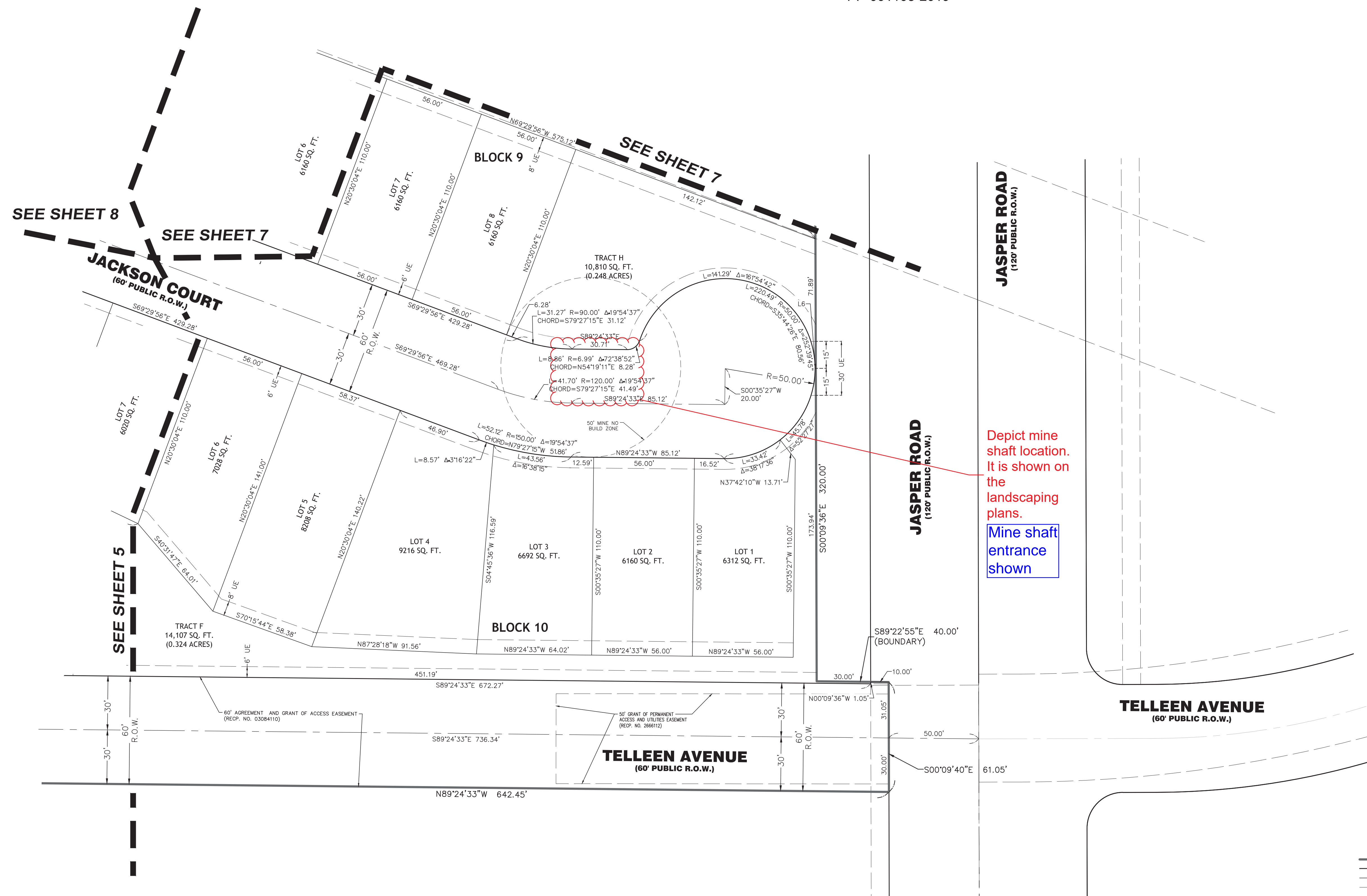
DRAFTED: S.L.G.3	CHECKED: E.D.C.
DATE: 08/27/19	JOB NO. 120-00237 130-00091
SURVEY PREPARED FOR: STRATUS CANYON CREEK, LLC	

SHEET NO.
OF 13 SHEETS

CANYON CREEK SUBDIVISION FILING NOS. 7 & 8

PRELIMINARY PLAT

TRACT "O", CREEKSIDE SUBDIVISION AND A PORTION OF THE SOUTH ONE-HALF OF SECTION 13
TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN,
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
70.626 ACRES - 194 LOTS / 24 TRACTS / 1 OUTLOT
PP-001108-2019



Depict mine shaft location. It is shown on the landscaping plans.

Mine shaft
entrance
shown

LINE DATA:
L6: N89°50'24"E 0.3
L7: DELETED

LEGEND

 BOUNDARY LINE
 RIGHT-OF-WAY LINE
 CENTER LINE
 EASEMENT LINE

ABBREVIATIONS:
LSA = LANDSCAPED AREA
CONC. = CONCRETE
UE = UTILITY EASEMENT
ESMT = EASEMENT

GRAPHIC SCALE



(IN FEET)
1 inch = 30 ft.



DATE	REVISION	BY	DRAFTED:	CHECKED:	SHEET NO. 6 OF 13 SHEETS
03/20/20	REVISED LOT/TRACT LINES & ROW	SLG3	S.L.G.3	E.D.C.	
07/21/20	ADDRESSED TOWN COMMENTS	SLG3	DATE:	JOB NO.	
09/04/20	REVISED LINEWORK	SLG3	08/27/19	120-00237 130-00091	
11/11/20	REVISED STREET NAMES, NOTE, TRACT CHART	EDC	SURVEY PREPARED FOR: STRATUS CANYON CREEK LLC		

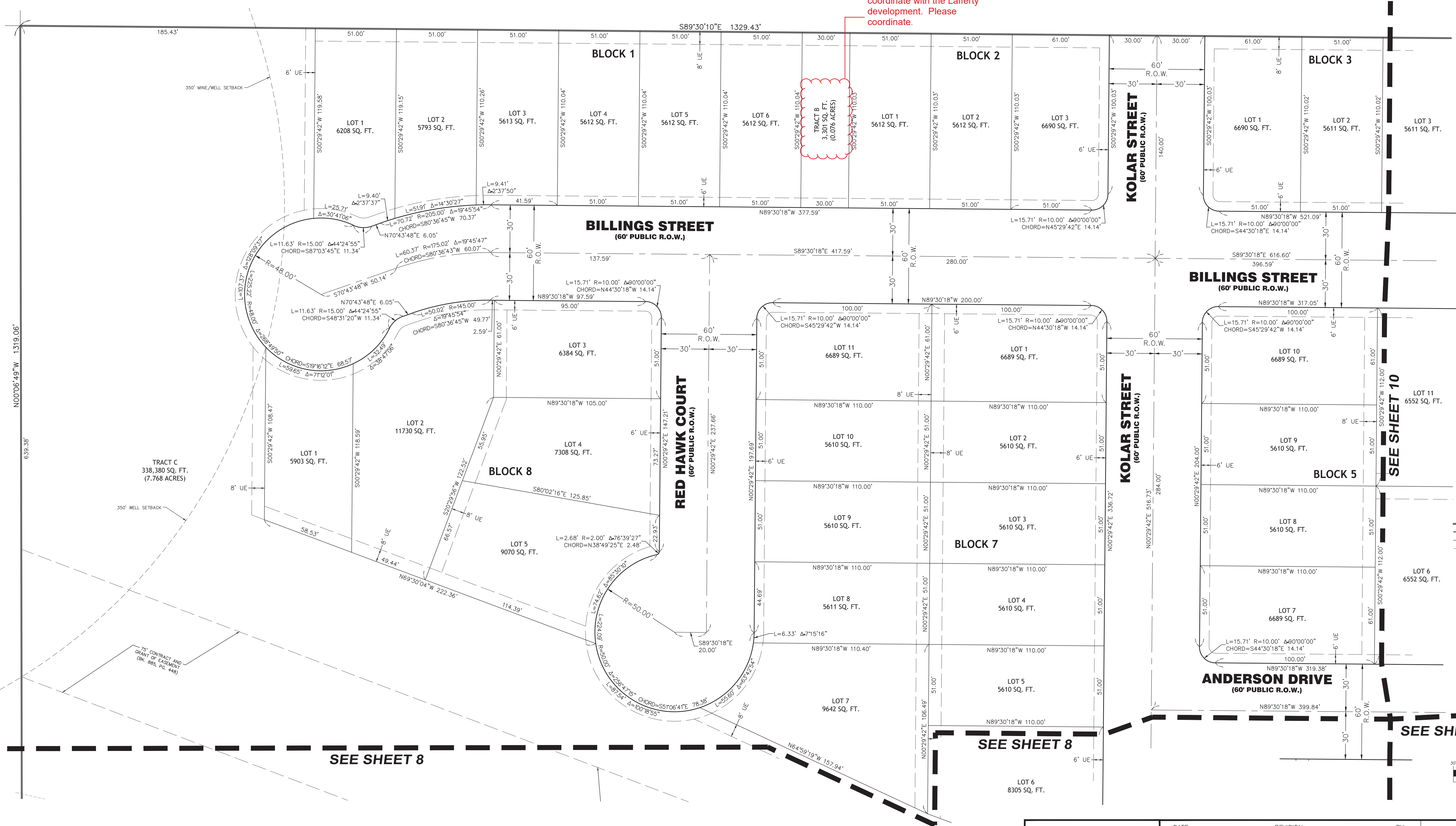
CANYON CREEK SUBDIVISION FILING NOS. 7 & 8

PRELIMINARY PLAT

TRACT "O", CREEKSIDE SUBDIVISION AND A PORTION OF THE SOUTH ONE-HALF OF SECTION 13,
TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN,
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
70.626 ACRES - 194 LOTS / 24 TRACTS / 1 OUTLOT
PP-001108-2019

Currently being reviewed with
both development parcels

This doesn't appear to
coordinate with the Lafferty
development. Please
coordinate.



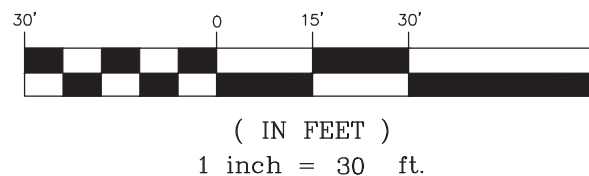
LEGEND

- BOUNDARY LINE
- RIGHT-OF-WAY LINE
- CENTER LINE
- EASEMENT LINE


ABBREVIATIONS:
LSA = LANDSCAPED AREA
CONC. = CONCRETE
UE = UTILITY EASEMENT



GRAPHIC SCALE



(IN FEET)
1 inch = 30 ft.

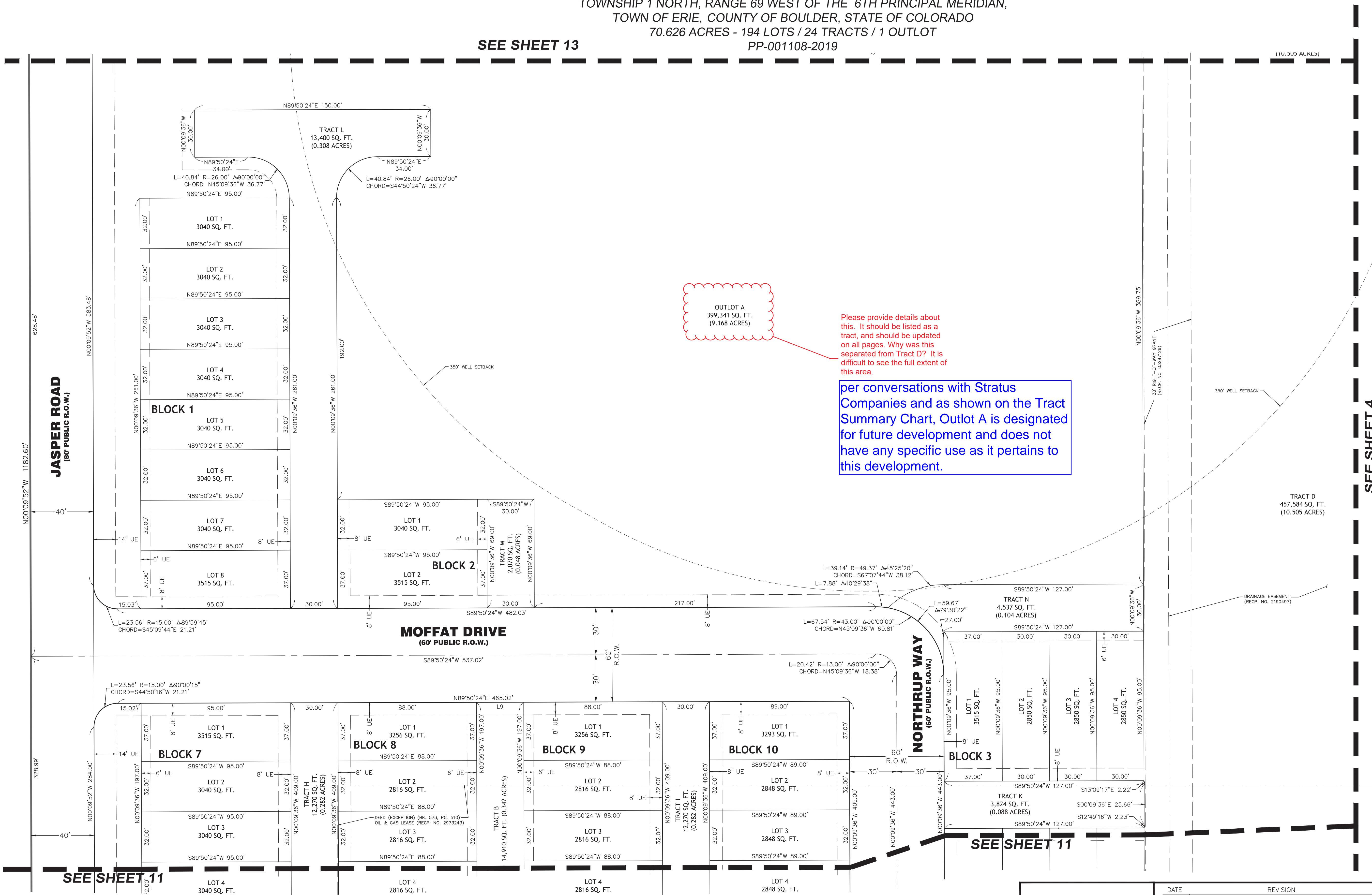
 9360 TEDDY LANE, SUITE #203 LOUISVILLE, COLORADO 80124 TELEPHONE: 303-395-2700 FAX: 303-395-2701 CWC CONSULTING GROUP CIVIL ENGINEERING • LAND SURVEYING • CONSTRUCTION SERVICES	DATE	REVISION	BY	DRAFTED: S.L.G.3	CHECKED: E.D.C.	SHEET NO. 9 OF 13 SHEETS
	03/20/20	REVISED LOT/TRACT LINES & ROW	SLG3			
	07/21/20	ADDRESSED TOWN COMMENTS	SLG3	DATE: 08/27/19	JOB NO. 120-00237 130-00091	
	09/04/20	REVISED LINEWORK	SLG3	SURVEY PREPARED FOR: STRATUS CANYON CREEK, LLC		
	11/11/20	REVISED STREET NAMES, NOTE, TRACT CHART	EDC			

CANYON CREEK SUBDIVISION FILING NOS. 7 & 8

PRELIMINARY PLAT

TRACT "O", CREEKSIDE SUBDIVISION AND A PORTION OF THE SOUTH ONE-HALF OF SECTION 13,
TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN,
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
70.626 ACRES - 194 LOTS / 24 TRACTS / 1 OUTLOT
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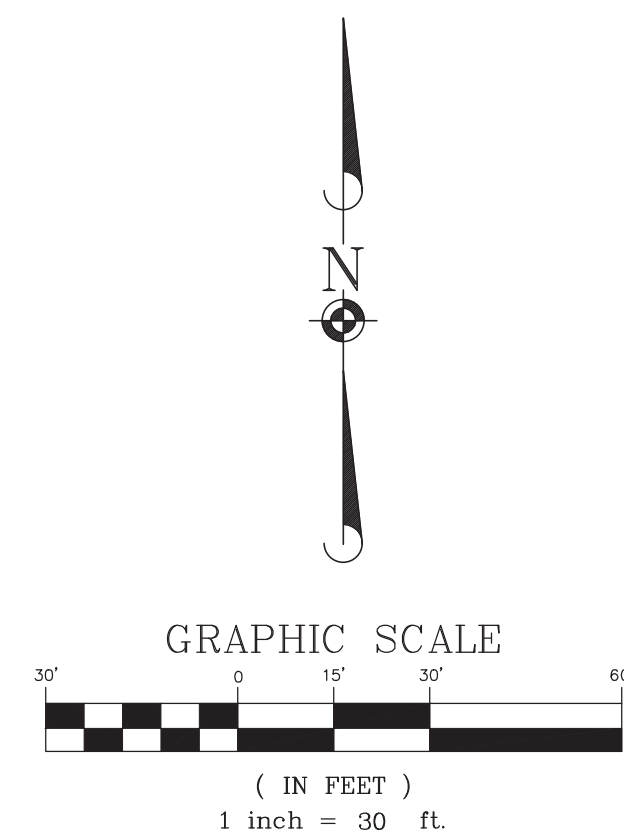
SEE SHEET 13



LEGEND

— BOUNDARY LINE
— RIGHT-OF-WAY LINE
- - - CENTER LINE
- - - EASEMENT LINE

ABBREVIATIONS:
LSA = LANDSCAPED AREA
CONC. = CONCRETE
UE = UTILITY EASEMENT



DATE		REVISION		BY	
03/20/20	07/21/20	REVISED LOT/TRACT LINES & ROW	SLG3	SLG3	
07/21/20	08/27/19	ADDRESSED TOWN COMMENTS	SLG3	SLG3	
09/04/20	11/11/20	REVISED LINEWORK	SLG3	EDC	
11/11/20		REVISED STREET NAMES, NOTE, TRACT CHART	EDC		

DRAFTED: S.L.G.3	CHECKED: E.D.C.
DATE: 08/27/19	JOB NO. 120-00237 130-00091
SURVEY PREPARED FOR: STRATUS CANYON CREEK, LLC	

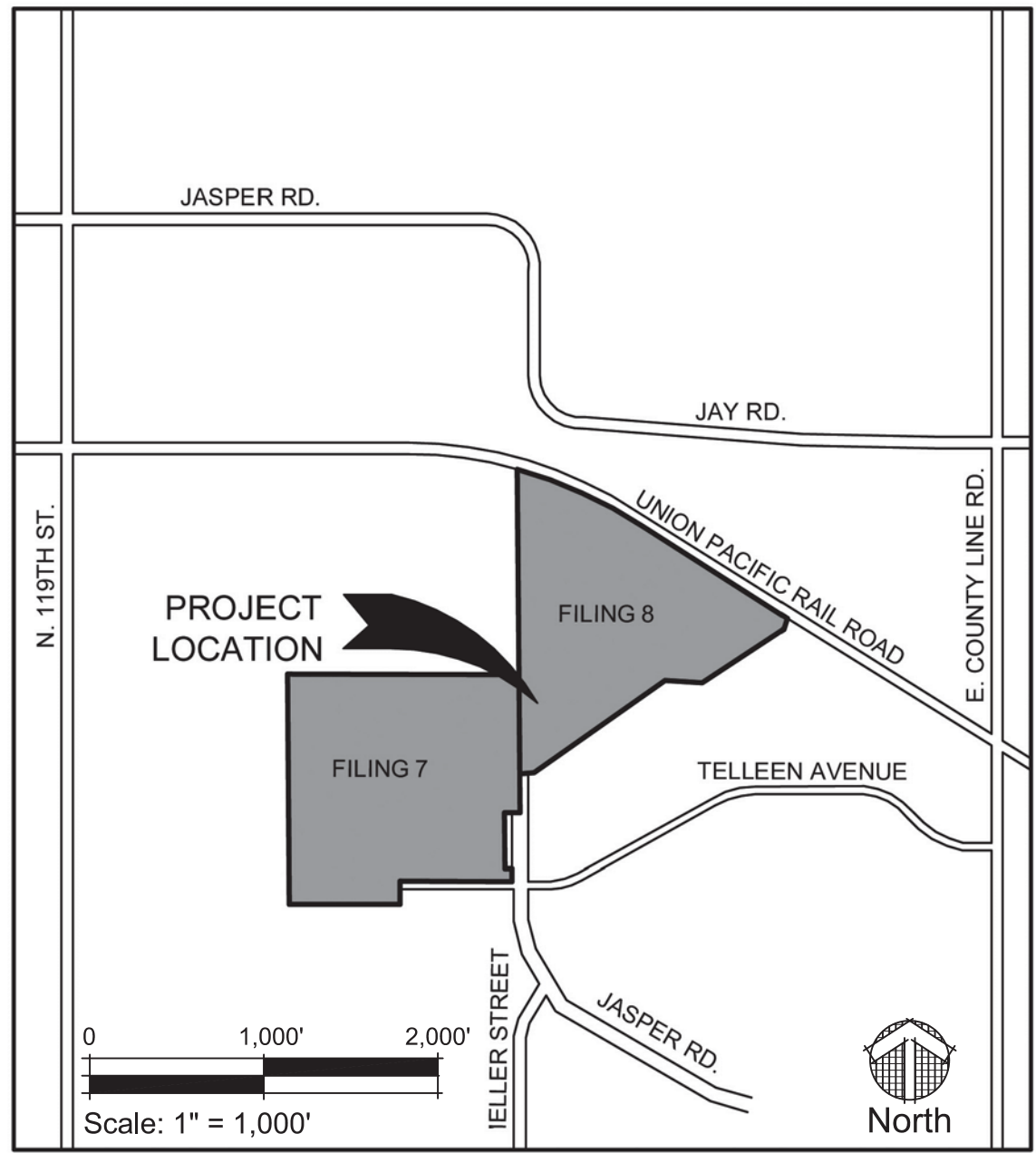
SHEET NO. 12 of 13 SHEETS
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CANYON CREEK - SUBDIVISION FILING NOS. 7 & 8

PRELIMINARY LANDSCAPE PLAN

TRACT "O", CREEKSIDE SUBDIVISION AND A PORTION OF THE SOUTH ONE-HALF OF SECTION 13,
TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN,
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
70.626 ACRES - 194 LOTS / 24 TRACTS / 1 OUTLOT
PP-001108-2019

VICINITY MAP



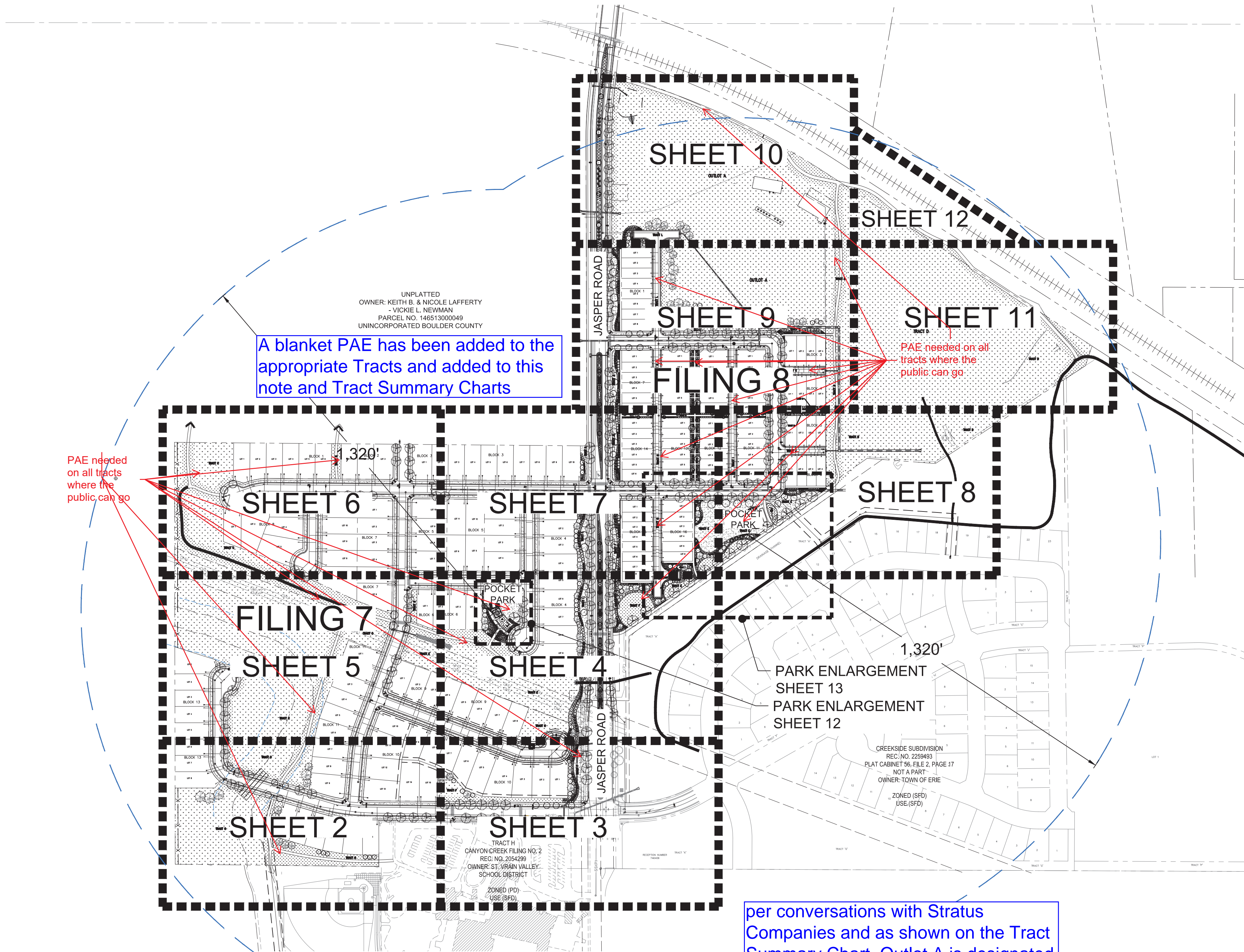
TRACT SUMMARY CHARTS

FILING NO. 7 TRACT SUMMARY					
TRACT	AREA (ACRES)	AREA (SQ. FT.)	USE	OWNERSHIP	MAINTENANCE
A	0.049	2,151	UTILITIES	HOA	HOA
B	0.076	3,301	LANDSCAPING	HOA	HOA
C	7.768	338,380	PRIVATE OPEN AREA, DRAINAGE, OIL & GAS BUFFER	HOA	HOA
D	0.043	1,851	PEDESTRIAN, LANDSCAPING & DRAINAGE	TOWN OF ERIE	TOWN OF ERIE
E	2.064	89,929	PRIVATE OPEN AREA & DRAINAGE	HOA	HOA
F	0.324	14,107	LANDSCAPING	HOA	HOA
G	2.094	91,216	PRIVATE OPEN AREA & DRAINAGE	HOA	HOA
H	0.248	10,810	LANDSCAPING	HOA	HOA
I	0.393	17,098	LANDSCAPING	HOA	HOA
J	0.351	15,271	POCKET PARK	HOA	HOA
TOTAL	13.409	584,114			

FILING NO. 8 TRACT SUMMARY					
TRACT	AREA (ACRES)	AREA (SQ. FT.)	USE	OWNERSHIP	MAINTENANCE
A	0.312	13,602	LANDSCAPING & WALK	HOA	HOA
B	0.342	14,910	LANDSCAPING & WALK	HOA	HOA
C	0.033	1,425	LANDSCAPING & WALK	HOA	HOA
D	10.505	457,584	DRAINAGE, UTILITIES, OIL & GAS	METRO DISTRICT	METRO DISTRICT
E	1.292	56,273	POCKET PARK	HOA	HOA
F	0.537	23,396	LANDSCAPING	HOA	HOA
G	0.257	11,188	ACCESS, UTILITIES, & ALLEY	HOA	HOA
H	0.282	12,270	ACCESS, UTILITIES, & ALLEY	HOA	HOA
I	0.282	12,270	ACCESS, UTILITIES, & ALLEY	HOA	HOA
J	0.088	3,824	ACCESS, UTILITIES, & ALLEY	HOA	HOA
K	0.088	3,824	ACCESS, UTILITIES, & ALLEY	HOA	HOA
L	0.307	13,400	ACCESS, UTILITIES, & ALLEY	HOA	HOA
M	0.048	2,070	LANDSCAPING & WALK	HOA	HOA
N	0.104	4,537	LANDSCAPING & WALK	HOA	HOA
OUTLOT A	9.168	399,341	FUTURE DEVELOPMENT	JOHNSON DEVELOPMENT COMPANY	JOHNSON DEVELOPMENT COMPANY
TOTAL	23.644	1,029,913			

SHEET INDEX

- 1 OVERALL LANDSCAPE PLAN
- 2-11 LANDSCAPE PLAN
- 12-13 PARK PLAN ENLARGEMENTS
- 14 FENCING PLAN
- 15 PLANTING DETAILS & NOTES
- 16-17 SITE DETAILS
- 18-19 TREE MITIGATION



OVERALL LANDSCAPE PLAN

NO	REVISION RECORD	DATE
1	1ST SUBMITTAL	8-28-2019
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3	3RD SUBMITTAL	7-21-2020
4	4TH SUBMITTAL	9-30-2020
5	5TH SUBMITTAL	11-17-2020

LANDSCAPE ARCHITECT / PLANNER:

henry design group

1501 Wazee Street Suite 1-C, Denver, Colorado 80202
303.446.2281 • henydesigngroup.com

ENGINEER:

CONSULTING GROUP

9360 Teddy Lane, Suite 203
Lone Tree, CO 80124
303.395.2700

APPLICANT:

Stratus Canyon Creek, LLC.
1842 Montane Drive East
Golden, CO 80401
Richard Dean
720.214.5000

CANYON CREEK SUBDIVISION
FILING NOS. 7 & 8
PRELIMINARY LANDSCAPE PLAN
ERIE, COLORADO

DRAWN: AY
CHECKED: KH
ISSUE DATE: 11-17-2020

SHEET:

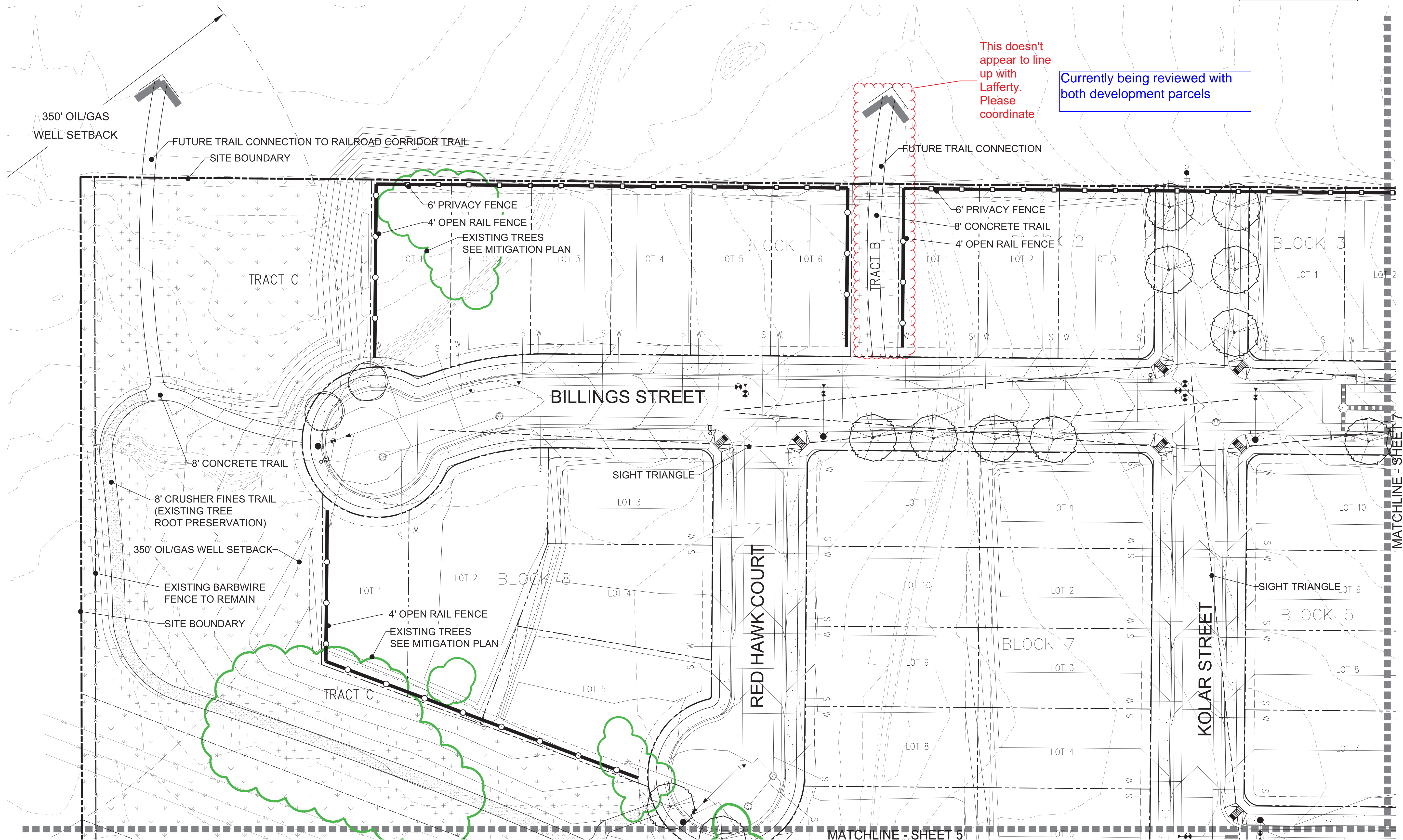
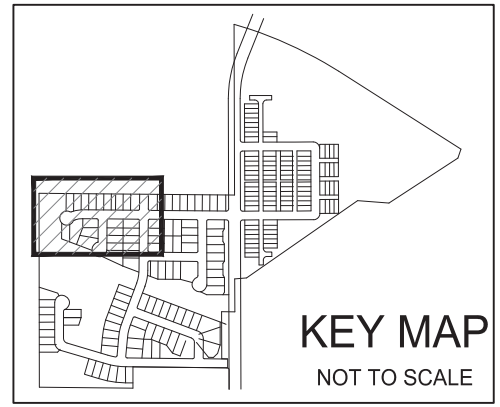
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1 of 19

CANYON CREEK - SUBDIVISION FILING NOS. 7 & 8

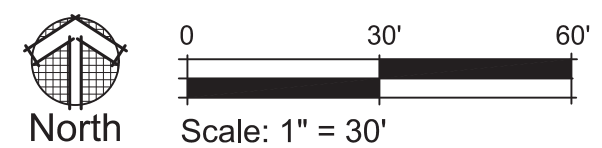
PRELIMINARY LANDSCAPE PLAN

TRACT "O", CREEKSIDE SUBDIVISION AND A PORTION OF THE SOUTH ONE-HALF OF SECTION 13,
TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN,
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
70.626 ACRES - 194 LOTS / 24 TRACTS / 1 OUTLOT
PP-001108-2019



LEGEND

- | | | | | | |
|------------------|--------------------|-------------------|-----------------------------|------------------------------------|--------------|
| DECIDUOUS TREES | EVERGREEN SHRUBS | SOD | 2x2' FENCE COLUMN | EXISTING TREES SEE MITIGATION PLAN | FIRE HYDRANT |
| DECIDUOUS SHRUBS | ORNAMENTAL GRASSES | NATIVE SHORTGRASS | 6' HEIGHT PRIVACY FENCE | EXISTING GAS/OIL WELL | STREET LIGHT |
| EVERGREEN TREES | PLAYGROUND MULCH | NATIVE TALLGRASS | 4' HEIGHT OPEN 3-RAIL FENCE | | |
| ORNAMENTAL TREES | | CRUSHER FINES | 4' HEIGHT FARM FENCE | | |



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5	5TH SUBMITTAL	11-17-2020

LANDSCAPE ARCHITECT / PLANNER:	
ENGINEER:	
APPLICANT:	Stratus Canyon Creek, LLC. 1842 Montane Drive East Golden, CO 80401 Richard Dean 720.214.5000

CANYON CREEK SUBDIVISION FILING NOS. 7 & 8 PRELIMINARY LANDSCAPE PLAN ERIE, COLORADO

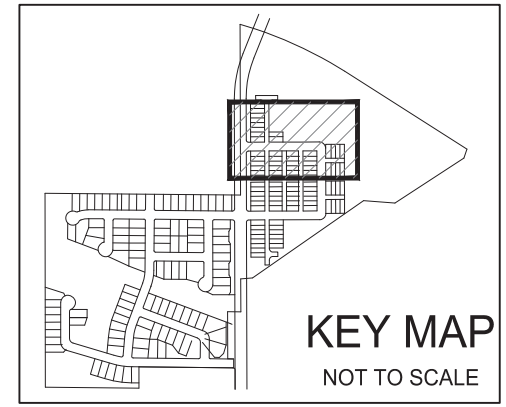
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CHECKED: KH
ISSUE DATE: 11-17-2020

SHEET:
LANDSCAPE PLAN 6 of 19

CANYON CREEK - SUBDIVISION FILING NOS. 7 & 8

PRELIMINARY LANDSCAPE PLAN

TRACT "O", CREEKSIDE SUBDIVISION AND A PORTION OF THE SOUTH ONE-HALF OF SECTION 13,
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TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
70.626 ACRES - 194 LOTS / 24 TRACTS / 1 OUTLOT
PP-001108-2019



MATCHLINE - SHEET 10

per conversations with Stratus Companies and as shown on the Tract Summary Chart, Outlot A is designated for future development and does not have any specific use as it pertains to this development.

Should be a tract

OUTLOT A

350' OIL/GAS WELL SETBACK

ANY DISTURBED AREAS TO BE RESEED WITH NATIVE GRASS AS SPECIFIED

8' CONCRETE TRAIL
350' WELL SETBACK & FUTURE DEVELOPMENT AREA

DRAINAGE EASEMENT
(REC. NO. 03297126)

TRACT D

SIGHT TRIANGLE

MOFFAT WAY

DRAINAGE EASEMENT
(REC. NO. 2190497)

MATCHLINE - SHEET 11

JASPER ROAD

NORTHROP WAY

5' PRIVACY FENCE

LOT 1 LOT 2 LOT 3 LOT 4

BLOCK 3

4' OPEN RAIL FENCE

TRACT K ALLEY

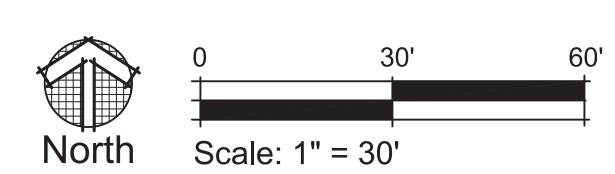
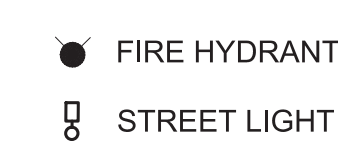
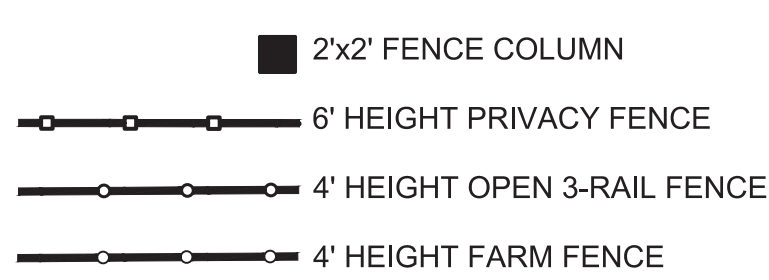
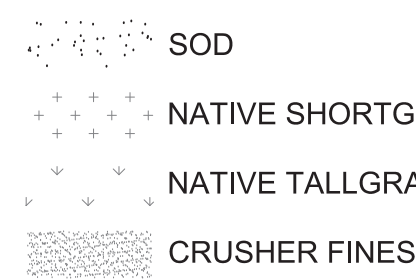
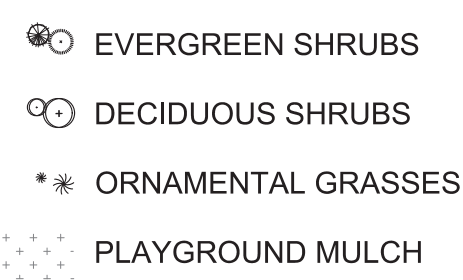
LOT 1 LOT 2 LOT 3 LOT 4

BLOCK 4

TRACT D

TRACT D

LEGEND



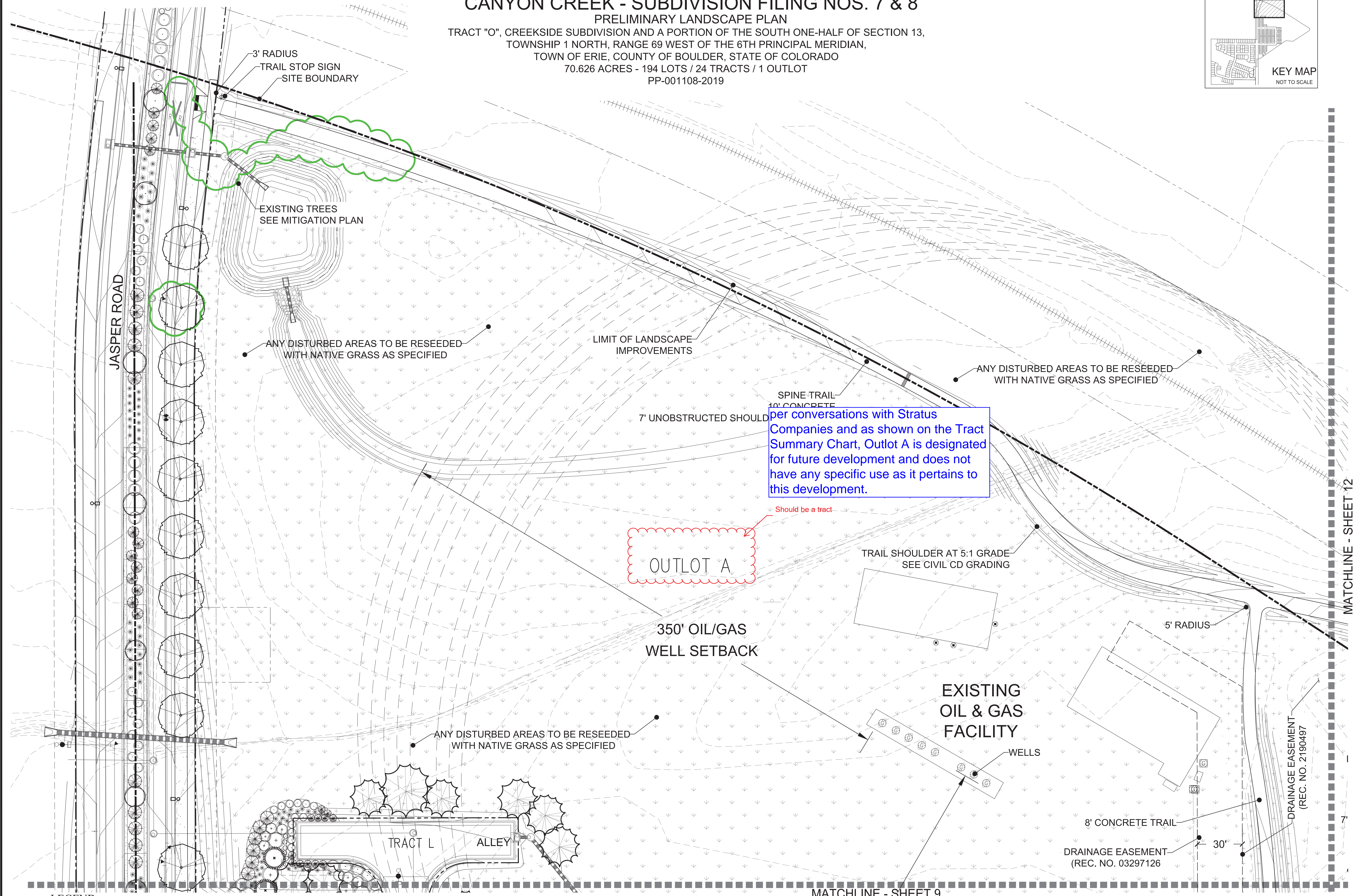
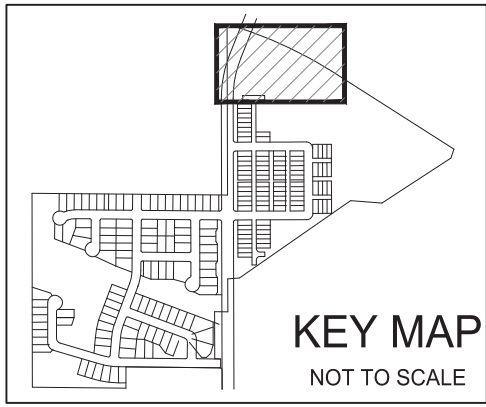
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LANDSCAPE ARCHITECT / PLANNER:	henry design group Landscape Architecture • Planning • Entitlements 1501 Wazee Street Suite 1-C, Denver, Colorado 80202 303.446.2381 • henydesigngroup.com
ENGINEER:	CONSULTING GROUP 9360 Teddy Lane, Suite 203 Lone Tree, CO 80124 303.395.2700
APPLICANT:	Stratus Canyon Creek, LLC. 1842 Montane Drive East Golden, CO 80401 Richard Dean 720.214.5000
SHEET:	CANYON CREEK SUBDIVISION FILING NOS. 7 & 8 PRELIMINARY LANDSCAPE PLAN ERIE, COLORADO
DRAWN:	AY
CHECKED:	KH
ISSUE DATE:	11-17-2020
9 of 19	

CANYON CREEK - SUBDIVISION FILING NOS. 7 & 8

PRELIMINARY LANDSCAPE PLAN

TRACT "O", CREEKSIDE SUBDIVISION AND A PORTION OF THE SOUTH ONE-HALF OF SECTION 13,
TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN,
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
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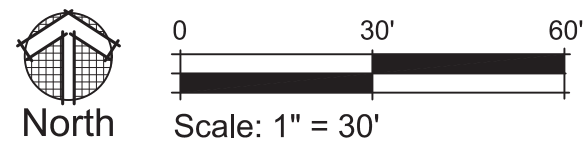


per conversations with Stratus Companies and as shown on the Tract Summary Chart, Outlot A is designated for future development and does not have any specific use as it pertains to this development.

Should be a tract

LEGEND

- | | | | | | |
|------------------|--------------------|------------------|-----------------------------|------------------------------------|--------------|
| DECIDUOUS TREES | EVERGREEN SHRUBS | SOD | 2x2' FENCE COLUMN | EXISTING TREES SEE MITIGATION PLAN | FIRE HYDRANT |
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LANDSCAPE ARCHITECT / PLANNER: henry design group Landscape Architecture • Planning • Entitlements 1501 Wazee Street Suite 1-C, Denver, Colorado 80202 303.446.2388 • henrydesigngroup.com
ENGINEER: CONSULTING GROUP Civil Engineers • Land Surveyors • Construction Engineers 9360 Teddy Lane, Suite 203 Lone Tree, CO 80124 303.395.2700
APPLICANT: Stratus Canyon Creek, LLC. 1842 Montane Drive East Golden, CO 80401 Richard Dean 720.214.5000
CANYON CREEK SUBDIVISION FILING NOS. 7 & 8 PRELIMINARY LANDSCAPE PLAN ERIE, COLORADO
DRAWN: AY CHECKED: KH ISSUE DATE: 11-17-2020
SHEET: LANDSCAPE PLAN 10 of 19



Internal Memo

To: Chris LaRue, Planning & Development - Senior Planner

From: Luke Bolinger, Community Partnership and Special Projects Manager

Date: December 22, 2020

Subject: Canyon Creek Filings 7 & 8 – Preliminary Plat (PP-001108-2019) - 4TH Submittal

Cc: Patrick Hammer, Parks & Recreation Director

Parks & Open Space Division staff have reviewed the subject plans and offer the following comments. Addressing these comments will be a condition of approval of the Final Plat as outlined below. A Final Accepted Landscape Plan is required for Final Plat approval.

AT THE TIME OF FINAL PLAT, THE FOLLOWING COMMENTS ARE REQUIRED TO BE ADDRESSED:

General Comments:

- Provide 4' spine trail shoulders at a 5:1 grade with 6' preferred per attached Detail P25. Please provide more information on the plan set on how the spine trail correlates with the varying height of the headwall.
 - o **Applicant: 4' spine trail shoulders at 5:1 grade have been provided. The existing headwalls are at grade and labels have been added to the landscape plan.**
 - o **Response:** A mistake was made to this previous comment provided to the applicant – 4' spine trail shoulders must be at a 6:1 grade. While the headwall is set to grade, it is set at varying heights. Is the spine trail to follow the varying grades of the headwall, or remain at a consistent grade while adjacent to the headwall?
- Staff recommends that the grade adjacent to the spine trail should not exceed 5:1. to allow for the maintenance outside of the 4' spine trail shoulders.
 - o **Applicant: Grading adjacent to the trail will not exceed 5:1 and labels have been added to the plan.**
 - o **Response:** Added labels are acknowledged. Correct contours within grading plans to reflect the updated grades within the landscape and civil plans. Grades adjacent to the trails are recommended to not exceed 5:1.

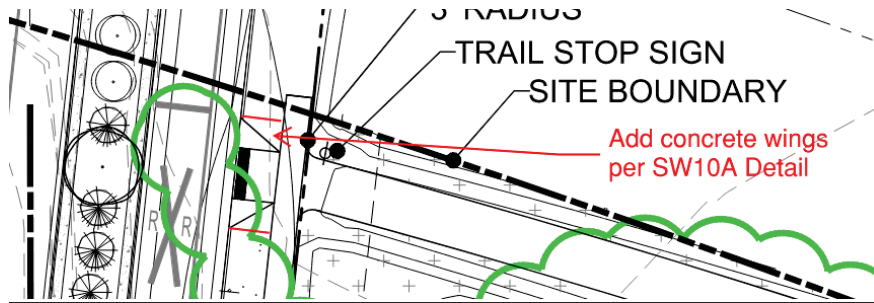
Landscape comments:

Sheet 10 of 19

- Staff request additional detail to be shown where the trail connects to Jasper Road extension. An access point shall be required for maintenance vehicles at Jasper Road. Staff requires a SW10A ramp and a trail stop sign at that access point. Depending on the final configuration of the trail

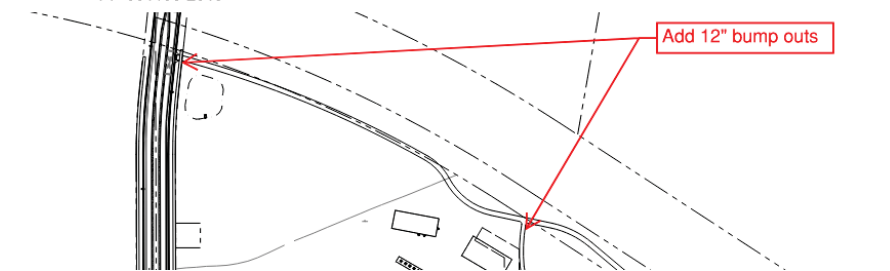
crossing at this location, the ramp may need to be adjusted. This can be discussed prior to the acceptance of the final plat.

- **Applicant:** An SW10A ramp and a trail stop sign have been added to the landscape plan.
- **Response:** Provide stop sign detail within the site detail pages. Add concrete wings per SW10A Detail, correction shown below:



- Please adjust all radii, where local trails or sidewalks connect to the spine trail, to reflect Detail P27 as follows:
 - Provide 3' radii where the spine trail meets the 5' sidewalk at Jasper Road
 - Provide 5' radii at the 8' local trail connection
 - Provide 12" monolithic bump out at the point where the new trail connects to an existing trail or sidewalk
 - **Applicant:** Trail radii have been provided as requested. The town's monolithic bump out detail drawing has been added to the site details sheet of the landscape plan for clarification.
 - **Response:** To avoid confusion, please remove the non-monolithic detail from the flared corners detail added to sheet 16. Add note that radii at spine trail connections may exceed Detail P27. Add the 12" monolithic bump outs at the following two locations:

3 ACRES - 194 LOTS / 24 TRACTS / 1 OUTLOT
PP-001108-2019



- Provide a break in the median to allow for pedestrians to cross Jay Road and continue west through the future Lafferty subdivision. Sight distance considerations must be made in regard to the plant material in the median so pedestrians can safely see oncoming traffic from both directions.

Sheet 11 of 19

- Please increase the radii as discussed, where the new spine trail intersects with the existing spine trail, to allow for maintenance vehicles to navigate the turn from all directions.
 - o **Applicant:**
 - o **Response:** Applicant has addressed this comment in the plan set.
- Provide a 12" monolithic bump out at the point where the new section of spine trail connects to the existing spine trail per attached Detail P27.
 - o **Applicant:**
 - o **Response:** Applicant has addressed this comment in the plan set. Additional bump outs are required to the west per the earlier comment provided above.

COLORADO GEOLOGICAL SURVEY

1801 Moly Road
Golden, Colorado 80401



December 11, 2020

Karen Berry
State Geologist

Chris LaRue
Town of Erie Planning & Development
clarue@erieco.gov

Location:
SE SW and W SE Section 13,
T1N, R69W of the 6th P.M.
40.0465, -105.065

**Subject: Resubmittal – Canyon Creek Filings 7 & 8 – Preliminary Plat PP-001108-2019
Town of Erie, Boulder County, CO; CGS Unique No. BO-20-0004-4**

Dear Chris:

Colorado Geological Survey has reviewed the revised “Mine Subsidence Investigation, Canyon Creek Subdivision, Filings 7 and 8, and Lafferty Property, 109.41 Acres, Section 13, Township 1 North Range 69 West, Boulder County, Colorado” (Western Environment and Ecology, Inc. [WEE], July 8, 2020) and the Canyon Creek Filings 7 & 8 preliminary plat design team’s 11/16/2020 and WEE’s 9/15/2020 responses to our 8/27/2020 and the Town’s 9/4/2020 review comments.

Chase Mine Shaft. Western Environment states (September 15, 2020), “Extensive exploratory excavation performed between August 10th and the 18th 2020 resulted in the identification of the Chase Mine Main Shaft. This required moving an estimated 50,000 to 100,000 yards of stockpiled soil placing the shaft within 40 feet of the mapped location.”

The center point of the “50’ Mine No Build Zone” on sheet 6 of the Canyon Creek Subdivision Filing Nos. 7 & 8 preliminary plat (CWC Consulting Group, November 11, 2020) appears to be about 55 feet from the center point of the 50’ Mine No Build Zone shown on previous versions of the plat, *possibly* indicating that the plat now reflects the correct location of the shaft. **However, Western’s 9/15/2020 statement and preliminary plat note 15 indicate only that the shaft was field located. No documentation was included with the available referral documents indicating that the shaft has been stabilized, structurally capped or otherwise sealed, and monumented.**

- CGS recommends that the town require documentation of the verified Chase Mine shaft location and shaft stabilization, or at least specific stabilization plans prior to preliminary plat approval. The actual shaft location, in addition to the 50 ft. non-buildable shaft setback, should be identified on the plat *and* the construction documents.

Western Environment’s Subsidence Zones A and B.

The “Mine Subsidence Line” on the Preliminary Construction Documents (CWC Consulting Group, November 9, 2020) does not match the Subsidence Zone A and B delineations on Western Environment’s 7/8/2020 Figure 6.

Continued depiction of a “Mine Subsidence Line” implies a poor understanding of the subsidence hazard on this property. The line is not defined, and its meaning would be unclear to most users of the documents.

- Western's Subsidence Zones A and B need to be correctly shown and clearly defined on the plat and/or construction documents.

The maximum foundation length of structures within Western Environment's "Subsidence Zone A" is 77 feet. The maximum foundation length of structures within Western Environment's "Subsidence Zone B" is 67 feet. Structures within both Zones A and B require strain isolation trenches to help isolate below-grade walls from subsidence-related strain.

- Lots subject to the maximum foundation length restriction and requiring strain isolation trenches should be specifically identified on both the plat and the construction documents.

A plat note we have used recently on another Erie project could be adapted by the applicant as follows (FILING, LOT and BLOCK DESIGNATIONS MUST BE VERIFIED BY THE APPLICANT):

Portions of Canyon Creek Subdivision Filing Nos. 7 and 8 are undermined. To reduce risk of subsidence-related damage, no building or building segment within Subsidence Zone A may exceed 77 feet in length or width. No building or building segment within Subsidence Zone B may exceed 67 feet in length or width. All structures within Subsidence Zones A and B must be constructed with strain isolation trenches.

Subsidence Zone A includes the following Filing/Blocks/Lots:

Filing 7, Block 4, Lots 4 through 9
Filing 7, Block 5, Lot 4
Filing 7, Block 9, Lots 5 through 8
Filing 7, Block 10, Lots 1 through 8, 13, 14, and 15
Filing 7, Block 11, Lot 9
Filing 7, Block 12, Lots 2 through 6
Filing 8, Block 15, Lots 1 through 8
Filing 8, Block 16, Lots 1 through 6

Subsidence Zone B includes the following Filing/Blocks/Lots:

Filing 7, Block 1, Lots 1 and 2

The mine subsidence hazard and mitigation recommendations are described in Mine Subsidence Investigation, Canyon Creek Subdivision, Filings 7 and 8, and Lafferty Property, 109.41 Acres, Section 13, Township 1 North Range 69 West, Boulder County, Colorado (Western Environment and Ecology, Inc., July 8, 2020). This report is on file with the Town of Erie Planning and Development Department, File No. PP-001108-2019 (and, for the final plat, FP-00____-20__).

CGS's previous recommendations remain valid:

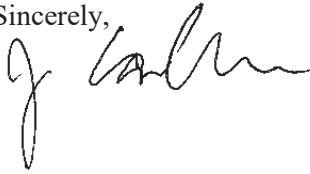
1. Grading activities within the northwestern portion of Filing 7 should be carefully observed by a qualified inspector to identify any unmapped shafts or other mining features. The developer, architect, engineer, builder, earthmoving contractors and field inspection staff should be made aware that portions of Canyon Creek Filings 7 and 8 are undermined, unmapped shafts may be present, and there is a risk of sinkholes and other subsidence-related features developing. If subsidence feature(s) or shaft(s) are observed, mitigation and/or possible development reconfiguration would be required.
2. Western Environment or another qualified consultant should provide input to the architect/engineer of homes within Canyon Creek Filings 7 and 8 regarding the need for, intent, and conceptual design of strain isolation trenches within WEE's Subsidence Zones A and B, and should review the plans

submitted at building permit application and provided to the builder for consistency with WEE's Conceptual Strain Isolation Trench designs.

3. The geotechnical recommendations in Cole Garner Geotechnical's Preliminary Geotechnical Engineering Report, Proposed Residential Development, Canyon Creek Subdivision Filing Nos. 7 & 8, Jasper Road and Telleen Avenue (February 23, 2018) are valid and should be strictly adhered to.

Thank you for the continued opportunity to review and comment on this project. If you have questions or require further review, please call me at 303-384-2643, or e-mail carlson@mines.edu.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jill Carlson', with a stylized, cursive script.

Jill Carlson, C.E.G.
Engineering Geologist



Right of Way & Permits

1123 West 3rd Avenue
Denver, Colorado 80223
Telephone: **303.571.3306**
Facsimile: 303. 571.3284
donna.l.george@xcelenergy.com

December 15, 2020

Town of Erie Community Development Services
645 Holbrook / PO Box 750
Erie, CO 80516

Attn: Chris LaRue

RE: Canyon Creek Filings 7 and 8 – 4th referral, Case # PP-001108-2019

Public Service Company of Colorado's Right of Way & Permits Referral Desk has determined **there is still a possible conflict** with natural gas easements for some of the alley loaded lots: on the sides of the lots where the 6-foot wide utility easements are located, are these areas drivable pavement? This is important as service trucks must be able to drive to the gas lines directly, and, these areas need to be plowed in snowy conditions. Please confirm.

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

THE EASMENTS WITHIN FILING NO. 8 HAVE BEEN
UPDATED. THE 6-FOOT WIDE UTILITY EASMENTS FOR
NATURAL GAS ARE LOCATED ON THE ALLEY SIDE OF THE
LOTS SO THAT SERVICE TRUCKS CAN DRIVE THE GAS
LINES DIRECTLY. THE SIDE LOTS ARE DEDICATED AS 8-
FOOT UTILITY EASMENTS ADJACENT TO THE PUBLIC ROW
FOR BOTH GAS AND ELECTRIC FOR LOOPING.



Memo

To: Chris LaRue
From: Chad Schroeder, P.E., CFM, Development Engineer
Date: March 17, 2021
Subject: **Canyon Creek Filing 7 & 8 Preliminary Plat**
CC: David Pasic
Wendi Palmer
Tyler Burhenn
Zachary Ahinga

RESPONSES BY CWC AND HENRY DESIGN GROUP 4-5-2021

Previous Comments for Preliminary Plat:

1. A portion of this extension of Jasper Road to the proposed roundabout with Jay Road will require acquiring the needed ROW, annexation of the ROW from unincorporated Boulder County parcel(s) into the Town of Erie, and approval of RTD for crossing their property. All agreements and approvals will be required for Final Plat approval.

RESPONSE1

Acknowledged.

Please provide the status of negotiations for obtaining the needed ROW from the adjacent property owners. The Town will need assurances that the property owners are willing to provide the needed ROW prior to Preliminary Plat approval. Also provide updates on obtaining the necessary approvals from RTD.

RESPONSE2

Lafferty annexation is being approved. A letter will be provided. We have had discussion with RTD and the crossing and noted it is similar to a crossing in Erie and at this point do not see any issues. RTD noted in conversation they do not review "concepts" per se, but more final documents as to not waste review time if the project does not move forward.

We need to have an official signed acknowledgement from both land owners in unincorporated Boulder County that they will agree to selling the needed sections of their land and have it annexed into the Town of Erie.

RESPONSE3

Comment acknowledged. The requested documents have been provided. Lafferty owners have agreed to selling the needed section and the Blair agreement will not be finalized prior to approval of preliminary plat.

No further action needed at this time.

Please provide correspondence from RTD about the status of crossing agreements.

RESPONSE3

Per our meeting with on October 7th and information presented from RTD the crossing agreements will be done at Final Plat. RTD noted this design crossing is similar to Moffat Drive crossing but will not review preliminary designs should the project not proceed forward.

Staff concurs. Please provide correspondence from RTD about their detailed full review at Final Plat.

RESPONSE4

Correspondence from RTD will be provided at Final Plat.

No further action needed at this time.

3. The approved Wild Rose subdivision will be installing water and sanitary lines required for the Canyon Creek Filings 7 and 8.

a. 16-inch water line in Jasper and Jay Road from the proposed Wild Rose roundabout to the Lost Creek access.

b. 12-inch water line in the future Lombardi Street extension from the proposed Wild Rose roundabout to the existing stub end of Lombardi Street in the Kenosha Farms subdivision.

c. 8-inch sewer line from the main trunk line just south of the Erie Village subdivision to the south of the of the proposed Wild Rose subdivision residences.

If Wild Rose does not get built, then Canyon Creek Filings 7 and 8 will need to install these wet utility lines along with obtaining any of the needed easements and agreements from the Lower Boulder Ditch company, RTD, and respective unincorporated Boulder County properties. All agreements and approvals will be required for Final Plat approval.

RESPONSE1

We have requested the required CAD from the Town and the current builder for Wild Rose from multiple emails, but have not received a response at this time.

The Wild Rose subdivision is currently under construction and the utilities are being installed. The Wild Rose subdivision has provided the CAD files now.

RESPONSE2

Acknowledged, we have redesigned the waterline and sanitary sewer layout per the provided Wild Rose Connections.

A utility easement from the St Vrain School District will be required for the water line at Final Plat. Has the school district been contacted about this easement?

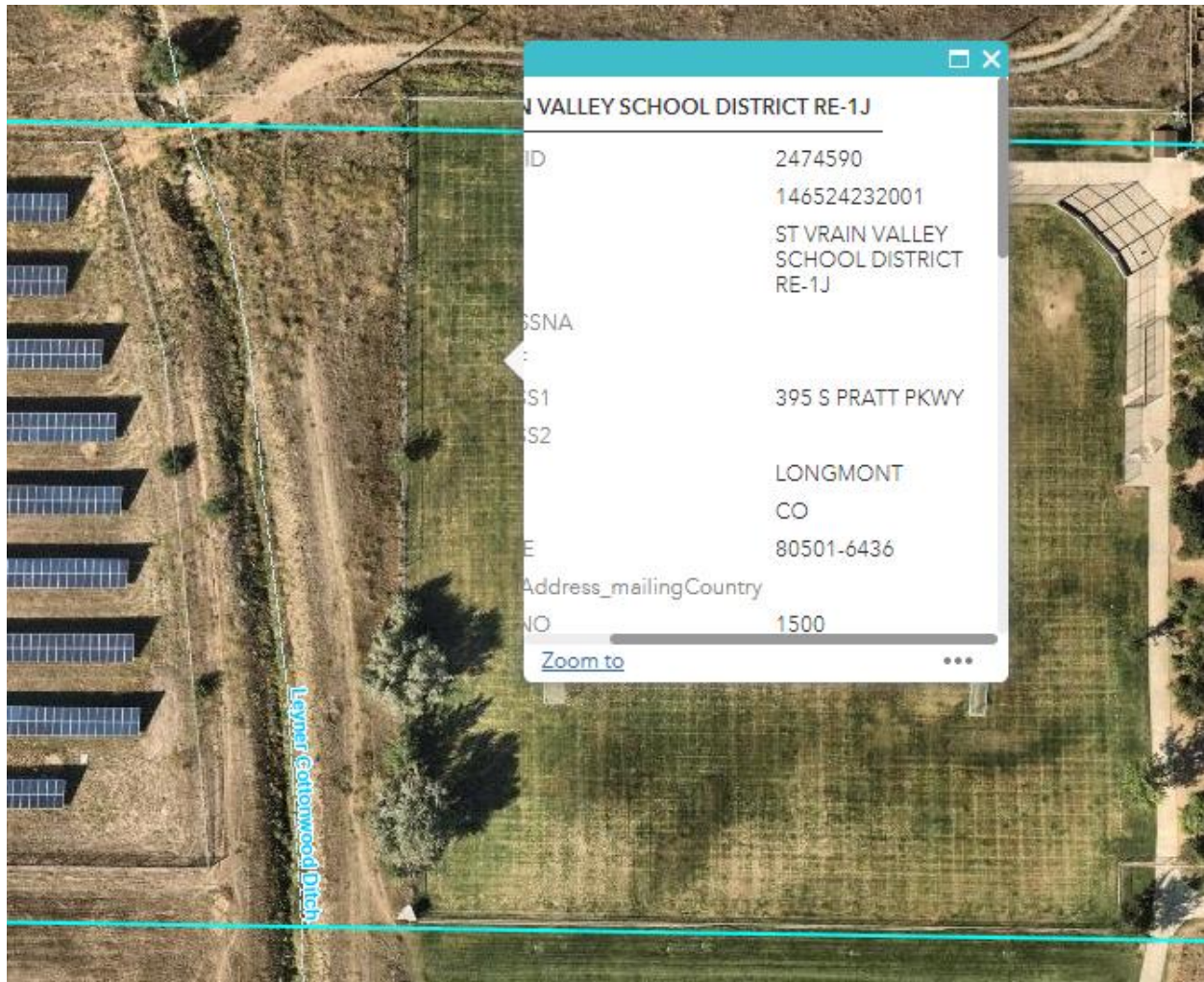
RESPONSE3

We have reached out the School, but based on the alignment provided we should not be in the school property. We laid the line in on the Town of Erie property per county records. The final location will be confirmed based on land ownership with Town of Erie at the time of Final Plat.

The area in question is directly to the east of the ditch and directly west of the baseball field on the school property. A 30-foot wide utility easement is shown from Canyon Creek Filing 7 to the connection with the Tynan Drive water line. Is this an existing utility easement? If not, prior to Preliminary Plat approval, the portion of the easement over the school property will need to be acknowledged by the school that they would grant this easement.

RESPONSE4: the easement is a proposed 30' wide utility easement and is proposed to be located within the Town of Erie property not the school's property.

Is the Town Property referenced the Leyner Cottonwood Ditch easement? The 30-foot proposed utility easement for the water line goes beyond what appears to be the ditch easement boundary. Clarify this on Sheets 26 and 27. Also, the Leyner Cottonwood Ditch agreement shall address having the water line within the ditch easement. See below.



RESPONSE: COORESPONDANCE BETWEEN SVVSD HAS BEEN MADE. ATTACHED IS THE INFORMATION PROVIDED TO THE SCHOOL DISTRICT.

An agreement with the Leyner Cottonwood Ditch will need to be provided for the water line utility easement and water line being within the ditch easement. Has the ditch company been contacted about this water line?

RESPONSE3

Per our October the 7th meeting the final agreement will be provided with Final Plat.
Comment stands, no further response required at this time.

RESPONSE4: Comment acknowledged.

No further action needed at this time.

4. Canyon Creek Filings 7 and 8 are roughly bisected by the Town's Zone 2 and Zone 3. Town staff had our utility consultant review the layout against the Town's Water Master Plan. Their findings are listed below. Revise the proposed Canyon Creek Filing 7 and 8 water system layout as needed.

- a. Due to the pressure issues in Filing 8 and Creekside, two zones are needed to provide water service to Canyon Creek, i.e. Filing 7 in Zone 3 and Filing 8 in Zone 2.
- b. Water mains need to be installed along Jasper Road for each zone.
- c. Filing 8 (Zone 2) should connect to the 16-inch main on Jay road as well as connect to Creekside in two places, in order to provide lapped connection.
- d. Filing 7 (Zone 3) will need to connect to the west along Telleen Avenue to N. 119th Street and to the south to Tynan Drive; both are shown as 12-inch connections in the Town's Water Master Plan.
- e. The Master Plan also shows a 12-inch main from the north side of Filing 7 between Jasper Road and N. 119th Street; this main size could probably be reduced to 8-inch main, given looping in the neighborhood. These connections are all illustrated in the master plan.

RESPONSE1

The utility study is not complete and multiple requests have been made to the Town for information to verify pressure zones. The final waterline design will be completed once the utility study is complete.

The pressures needed will be provided shortly for incorporation into the model. The additional water line connections per the Water Master Plan that are highlighted in d. and e. above still need to be addressed.

RESPONSE2

The Preliminary Utility Study has been provided per the provided pressure zone information.

Address attached Merrick August 28, 2020 comments on the utility study and on the construction plans.

Primary areas of concern are:

- Provide evaluation of utility installation safety and stability in the mine subsidence areas.

RESPONSE3

The evaluation of the utility installation safety and stability in the mine subsidence areas is still on going.

This is a critical issue that needs to be addressed prior to Preliminary Plat approval.

RESPONSE4: Western has reviewed and there are no concerns of utilities within the subsidence areas. Western provided a detail and requirement for capping the mine shaft.

The Town will defer to the Colorado Geological Survey on the adequacy of the mine mitigation measures.

- Update the water demand calculations for the water and sanitary sewer systems per the latest design criteria as recommended by Merrick.

RESPONSE3

The most recent values for sewer loading were used in the report and calculations based on what is available on the Town of Erie website.

The final utility report will be reviewed during Final Plat.

7. The Town is currently looking at different median designs for to be used town-wide. Staff will provide additional details for later Canyon Creek Filing 7 and 8 reviews to incorporate if necessary.

RESPONSE1

Acknowledged.

Town Board of Trustees is currently reviewing the Town Median policy. Once finalized, staff will provide the policy along with any potential additional median work to be required.

RESPONSE2

Acknowledged.

Attached is the latest draft of the Town Median study which should be adopted by the Board of Trustees sometime this Fall. Please review for potential incorporation of medians in Jasper Road. A continuation of medians in Jasper Road is desirable.

RESPONSE3

Jasper Road has been redesigned to incorporate medians as requested. The new roadway section for Jasper Road reflects the Town of Erie Drawing Number ST4.

There needs to be an opening in the median for the trail crossing just south of the RTD property. The opening needs to be adequately wide enough for pedestrian line of sight. The trail will connect with the future Lafferty trail. Pedestrian warning lights need to be installed for the crossing.

RESPONSE4: A break in the median has been added to allow for pedestrians to cross Jasper Road to the future Lafferty subdivision.

The vegetation will need to be modified to adhere to sight triangle requirements. Discuss the need for pedestrian warning lights for the trail crossing of Jasper Road.

RESPONSE: THE VEGETATION IS UNDER 3' HEIGHT AND ADHERES SIGHT TRIANGLE REQUIREMENTS. PEDESTRIAN WARNING LIGHTS HAVE BEEN ADDED TO THE PLANS. A DETAIL HAS BEEN PROVIDED IN THE PLANS.

10. There is a possibility that Urban Drainage Flood Control District / Mile High Flood District can assist with water quality / detention pond improvements on the eastern edge of Filing 8. Town staff will provide addition details.

RESPONSE1

Acknowledged.

With Canyon Creek Filings 7&8 using the pond for detention and water quality, the Town would like to see a contribution to the Mile High Flood District project. The details on this will be discussed later on. Please contact Jim Watt with the Mile High Flood District for coordination on the pond project: jwatt@udfcd.org / 303-455-6277.

RESPONSE2

Acknowledged and agree further discussion needs to be had. In discussion with MHFCD it appears the pond "could" be changing but also sounds like a potential issue.

The plans need to assume the MHFD detention pond project will not be happening and that all detention needs for Canyon Creek Filings 7 and 8 and be accommodated without the MHFD pond project. However, there could still be a possibility the MHFD project occurs. At such time the Canyon Creek Filings 7 and 8 drainage facilities should be able to merge with the MHFD pond project. Please continue to coordinate with MHFD on the status of their pond project.

RESPONSE3

Acknowledged. We have provided an updated phase II drainage study with the analysis of the 100-yr peak inflows from Canyon Creek Filings 7 and 8 to the existing Regional Detention and Water Quality Pond 1045. These 100-yr peak inflows have been compared with the current Town of Erie OSP. The findings from the Canyon Creek Filings 7 and 8 drainage study show that the current configuration of the Regional Detention and Water Quality Pond 1045 is designed to support the developments without modifications to the pond.

The final pond design will be reviewed with the Phase III drainage report at Final Plat. Please continue to coordinate with MHFD on the status of their potential pond project.

RESPONSE4: Comment acknowledged.

No further action needed at this time.

11. Provide applicable Town Standard sheets.

RESPONSE1

These be provided with the final construction documents.

Noted, Town recommends that these are provided now, but will be required at Final Plat.

RESPONSE2

No Response

Comment stands, no additional action required at this time.

RESPONSE3

Acknowledged. Town Standard drawings will be provided with the Final Construction documents.

Comment stands, no additional action required at this time.

12. An area grading plan will be required with the final construction plans.

RESPONSE

Acknowledged.

Noted, comment stands for reminder to include with Final Construction documents.

RESPONSE2

Acknowledged

Comment stands, no additional action required at this time.

RESPONSE3

Acknowledged. An area grading plan will be provided with the Final Construction documents.

Comment stands, no additional action required at this time.

13. See attached Drainage Report Comments from Merrick. Provide forebays for culvert outlets where required.

RESPONSE1

Acknowledged.

Please address attached Merrick Drainage review comments.

RESPONSE2

See separate responses for Merrick drainage review comments.

Per Merrick comment #6, we need to have a meeting to discuss water quality options for Sub-basins F-1 and F-2.

RESPONSE3

In the updated drainage study, Basins F-1 and F-2 have been updated to be D-1 and D 2. We have designed a retention and water quality pond per MHFD standards. This pond provides the required water quality volume and releases the WQCV within 12 hours through a single stage outlet structure. The release is discharged to a historical drainage path.

The drainage design for Basins F-1 and F-2 will be reviewed with the Phase III drainage report at Final Plat.

RESPONSE4: Comment acknowledged.

No further action needed at this time.

14. See attached Traffic Control comments from FHU.

RESPONSE1

Acknowledged.

The Town will have FHU review the Jay Road roundabout design again.

RESPONSE2

Acknowledged

Address attached FHU November 12, 2019 comments on the roundabout design.

RESPONSE3

Per the FHU comments, the final design of the roundabout should be confirmed by future traffic analyses. Our understanding is that the future traffic study will be completed with the Final Plat.

Staff concurs. The final roundabout design will be reviewed during Final Plat.

RESPONSE4: Comment acknowledged.

No further action needed at this time.

New Comments for Preliminary Plat:

1. Provide a new access to the existing structures on the Lafferty property from the new segment on Jasper Road. The Lafferty access needs to be realigned out of the RTD property. The access can be unpaved but constructed of a suitable all-weather road base material.

RESPONSE: Lafferty access will remain as located and the new connection for both users until the development of the Lafferty property.

Comment stands. The existing access through the RTD property needs to be decommissioned and removed. A temporary access to the new segment of Jasper Road needs to be constructed.

RESPONSE: A TEMPORARY ACCESS ROAD SERVING THE EXISTING LAFFERTY HOMES HAS BEEN PROVIDED AT JASPER ROAD.

4. All final grades need to be no steeper than 4 to 1. There are various areas along the drainage channels and existing pond embankment that need to be adjusted accordingly.

RESPONSE: Grades adjacent to the trails have been corrected to be at 5:1 except in areas where the trails are adjacent to existing channels and detention pond 1045. The grades from the spine trail 4' shoulders at the areas where they are adjacent to existing trails and detention pond 1045 remained at 4:1 to keep them consistent with the existing grades.

The spine trail standard cross section needs to adhere to the Standard Drawing P25 in the Town Standards and Specifications.

RESPONSE: THE SPINE TRAIL CROSS-SECTION ADHERES TO THE STANDARD DRAWING P25, EXCEPT THAT THE TRAIL IS 10' CONCRETE INSTEAD OF 8' CONCRETE AND 4' CRUSHER FINES. A DETAIL DRAWING HAS BEEN ADDED TO THE LANDSCAPE PLANS ON SHEET 16. THIS EXCEPTION TO THE TOWN'S STANDARD DRAWING HAS BEEN REQUESTED BY THE TOWN'S PARKS AND RECREATION DEPARTMENT.



Internal Memo

To: Chris LaRue, Planning & Development – Senior Planner
From: Luke Bolinger, Community Partnership and Special Projects Manager
Darren Champion, Parks & Open Space Project Coordinator
Date: March 09, 2021

Subject: Canyon Creek Filings 7 & 8 – Preliminary Plat (PP-001108-2019) – 5th Submittal

Cc: Patrick Hammer, Parks & Recreation Director
Parks & Open Space Division staff have reviewed the subject plans and offer the following comments. Addressing these comments will be a condition of approval of the Final Plat as outlined below. A final accepted landscape & irrigation plan set is required for Final Plat approval.

Responses by Henry Design Group & CWC Consulting Group 3-26-2021

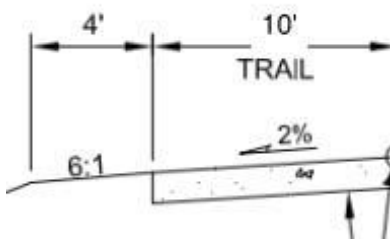
AT THE TIME OF FINAL PLAT, THE FOLLOWING COMMENTS ARE REQUIRED TO BE ADDRESSED:

General Comments:

- Provide 4' spine trail shoulders at a 5:1 grade with 6' preferred per attached Detail P25. Please provide more information on the plan set on how the spine trail correlates with the varying height of the headwall.
 - o **Applicant:** 4' spine trail shoulders at 5:1 grade have been provided. The existing headwalls are at grade and labels have been added to the landscape plan.
 - o **Response:** A mistake was made to this previous comment provided to the applicant – 4' spine trail shoulders must be at a 6:1 grade. While the headwall is set to grade, it is set at varying heights. Is the spine trail to follow the varying grades of the headwall, or remain at a consistent grade while adjacent to the headwall?
 - o **Applicant:** The 4' spine trail shoulders have been regraded to be at 6:1 grade. The spine trail grade adjacent to the pond 1045 headwall remains at or below the spillway crest elevation so that the spillway still functions as originally designed by others. See below for a profile of the spine trail and pond 1045 headwall.
 - o **Response:** Noted.



- Staff recommends that the grade adjacent to the spine trail should not exceed 5:1. to allow for the maintenance outside of the 4' spine trail shoulders.
 - **Applicant:** Grading adjacent to the trail will not exceed 5:1 and labels have been added to the plan.
 - **Response:** Added labels are acknowledged. Correct contours within grading plans to reflect the updated grades within the landscape and civil plans. Grades adjacent to the trails are recommended to not exceed 5:1.
 - **Applicant:** Grades adjacent to the trails have been corrected to be at 5:1 except in areas where the trails are adjacent to existing channels and detention pond 1045. The grades from the spine trail 4' shoulders at the areas where they are adjacent to existing trails and detention pond 1045 remained at 4:1 to keep them consistent with the existing grades.
 - **Response:** Noted.
- Provide a spine trail cross section detail that shows the first 4' of shoulder at a grade not to exceed 6:1. The 4' shoulder must be at a minimum 6:1 grade along the entire length of the trail.
 - A general example of how this detail can be shown is included below for your reference. Identify the adjacent 6:1 grade on both sides of the spine trail detail:



Response: The spine trail cross section detail has been added to Sheet 16 of the landscape plan set.

Preliminary Plat:

- Change the ownership and maintenance responsibility for Filing No. 8, Tract D, back to Metro District owned and maintained.

Response: The ownership and maintenance responsibility for Filing No. 8, Tract D has been changed back to Metro District owned and maintained.

- The Town will accept a conservation easement over the property, Filing No. 8, Tract D. The conservation easement would need to be in a format and with terms acceptable to the Board of Trustees. This will be noted in the project's Development Agreement.

Response: Comment noted.

Landscape comments: Sheet 1 of 19

- Change the ownership and maintenance responsibility for Filing No. 7, Tract D, to Metro District or HOA owned and maintained.

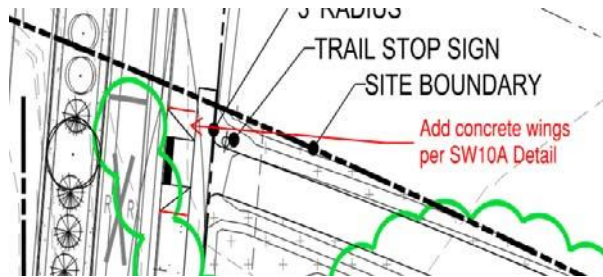
Response: The ownership and maintenance responsibility for Filing No. 7, Tract D has been changed to HOA owned and maintained.

Sheet 10 of 19

- Staff request additional detail to be shown where the trail connects to Jasper Road extension. An access point shall be required for maintenance vehicles at Jasper Road. Staff requires a SW10A ramp and a trail stop sign at that access point. Depending on the final configuration of the trail crossing at this location,

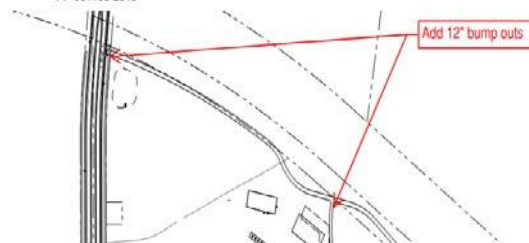
the ramp may need to be adjusted. This can be discussed prior to the acceptance of the final plat.

- **Applicant:** An SW10A ramp and a trail stop sign have been added to the landscape plan.
- **Response:** Provide stop sign detail within the site detail pages. Add concrete wings per SW10A Detail, correction shown below:
- **Applicant:** A stop sign detail and concrete wings have been added.
- **Response:** Noted.



- Please adjust all radii, where local trails or sidewalks connect to the spine trail, to reflect Detail P27 as follows:
 - Provide 3' radii where the spine trail meets the 5' sidewalk at Jasper Road
 - Provide 5' radii at the 8' local trail connection
 - Provide 12" monolithic bump out at the point where the new trail connects to an existing trail or sidewalk
 - **Applicant:** Trail radii have been provided as requested. The town's monolithic bump out detail drawing has been added to the site details sheet of the landscape plan for clarification.
 - **Response:** To avoid confusion, please remove the non-monolithic detail from the flared corners detail added to sheet 16. Add note that radii at spine trail connections may exceed Detail P27. Add the 12" monolithic bump outs at the following two locations:
 - **Applicant:** The non-monolithic detail part has been removed and the requested note has been added. Additional 12" monolithic bump outs have been added where specified.

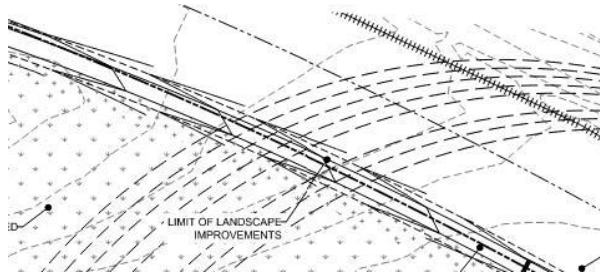
○ 1 ACRES - 194 LOTS / 24 TRACTS / 1 OUTLOT
PP-001108-2019



Response: Noted.

- Provide a break in the median to allow for pedestrians to cross Jay Road and continue west through the future Lafferty subdivision. Sight distance considerations must be made in regard to the plant material in the median so pedestrians can safely see oncoming traffic from both directions.
 - **Applicant:** A break in the median has been added to allow for pedestrians to cross Jasper Road to the future Lafferty subdivision.
 - **Response:** **Noted.** Additional changes and improvements to the median crossing will need to be made during the Final Plat process and coordinated with Civil drawings. These changes may affect the final design of the crossing and plant material placement and quantity located within the median. The crossing should be designed taking account of sight triangles, both for pedestrians, as well as maintenance vehicles that will cross over Jasper Road between adjacent developments.
- Relocate the swales out to the edge of the 7' unobstructed shoulder and to provide the minimum 4' at

6:1 grade. Relocating the culverts allows the Town to provide to maintain a mow strip on either side of the spine trail.



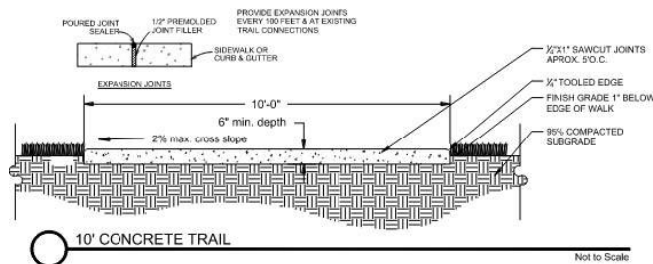
Response: These are not swales but grading of the trail shoulders.

Sheet 11 of 19

- Please increase the radii as discussed, where the new spine trail intersects with the existing spine trail, to allow for maintenance vehicles to navigate the turn from all directions.
 - **Applicant:**
 - **Response:** Applicant has addressed this comment in the plan set.
 - **Applicant:** Comment acknowledged.
- Provide a 12" monolithic bump out at the point where the new section of spine trail connects to the existing spine trail per attached Detail P27.
 - **Applicant:** The requested additional bump outs have been added.
 - **Response:** Applicant has addressed this comment in the plan set. Additional bump outs are required to the west per the earlier comment provided above.
 - **Response:** Applicant has addressed the additional comment.

Sheet 11 of 19

- Is the detail below for the town maintained spine trail?, if so, this needs to be reviewed by Public Works, also included in the civil set, and be identified as a spine trail.



Response: This detail is not for the spine trail and a label has been added for clarification.

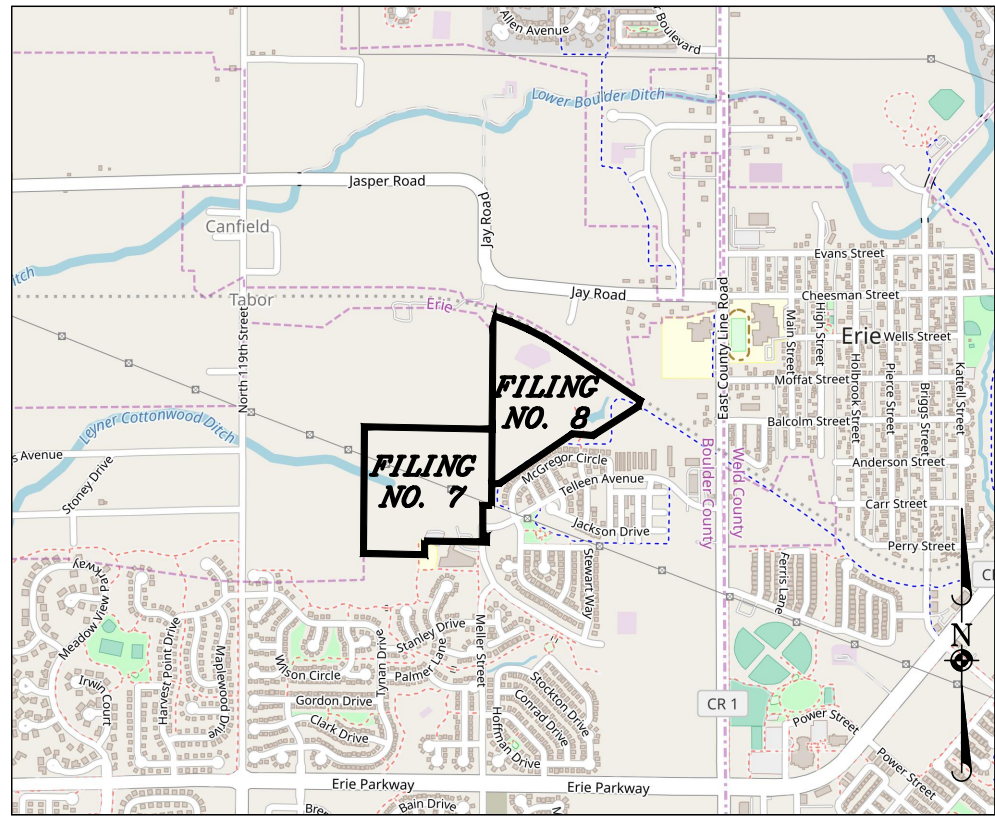
CANYON CREEK SUBDIVISION FILING NOS. 7 & 8

PRELIMINARY PLAT

TRACT "O", CREEKSIDE SUBDIVISION AND A PORTION OF THE SOUTH ONE-HALF OF SECTION 13,
TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN,
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
70.626 ACRES - 194 LOTS / 25 TRACTS / 1 OUTLOT
PP-001108-2019

The Town does not utilize, nor does the UDC allow the use of an outlet. This needs to be changed to a Tract. Update on all pages of the plat, including the tract summary chart. Update all associated plans (landscaping, CDs, etc.) accordingly.

UPDATED



LOCATION MAP

SCALE: 1" = 2000'

CERTIFICATE OF DEDICATION AND OWNERSHIP

KNOW ALL MEN THESE PRESENTS THAT THE UNDERSIGNED, BEING ALL THE OWNERS, MORTGAGEES, OR LIEN HOLDERS OF CERTAIN LANDS IN THE TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO, DESCRIBED AS FOLLOWS:

PARCEL A
(FROM RECEPTION NO. 2073245, EXHIBIT A, PARCEL B, PAGE 4 OF 15)

A PARCEL OF LAND WITHIN THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO, SHOWN AS PARCEL NO. 074 ON MAP NO. 1465130, EXCEPT THAT REAL PROPERTY DESCRIBED IN RECEPTION NO. 1895203, RECEPTION NO. 1534041, AND RECEPTION NO. 1826699 FILED IN THE RECORDS OF SAID COUNTY, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHWEST CORNER OF SAID SECTION 13;

THENCE SOUTH 89 DEGREES 44' 23" EAST, ALONG THE SOUTH LINE OF THE SOUTHWEST QUARTER, SECTION 13, A DISTANCE OF 1330.55 FEET TO THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER WHICH IS THE TRUE POINT OF BEGINNING;

THENCE NORTH 00 DEGREES 26' 39" WEST, ALONG THE WEST LINE OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER, A DISTANCE OF 1319.12 FEET TO THE NORTHWEST CORNER OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 13; THENCE SOUTH 89 DEGREES 50' 01" EAST, ALONG THE NORTH LINE OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER, A DISTANCE OF 1329.50 FEET TO THE NORTHEAST CORNER OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 13; THENCE SOUTH 00 DEGREES 29' 19" EAST, ALONG THE EAST LINE OF THE SOUTHWEST QUARTER OF SECTION 13, A DISTANCE OF 795.37 FEET TO THE SOUTHERLY INTERSECTION OF SAID RECEPTION NO. 1895203 AS RECORDED IN THE RECORDS OF SAID COUNTY WITH THE SAID EAST LINE; THENCE ALONG THE NORTHERLY AND EASTERLY LINES OF SAID RECEPTION NO. 1895203 THROUGH THE FOLLOWING FOUR COURSES:

- NORTH 89 DEGREES 42' 44" WEST, 180.00 FEET;
- SOUTH 07 DEGREES 35' 53" WEST, 211.75 FEET;
- SOUTH 00 DEGREES 26' 46" EAST, 110.00 FEET;
- SOUTH 89 DEGREES 42' 46" EAST, 160.06 FEET TO THE WEST LINE OF TRACT G CANYON CREEK FILING NO. 2 AS PLATTED IN SAID RECORDS;

THENCE SOUTH 00 DEGREES 28' 17" EAST, A DISTANCE OF 55.49 FEET TO THE NORTH LINE OF SAID RECEPTION NO. 1826699 IN THE RECORD OF SAID COUNTY;
THENCE ALONG THE NORTH AND WEST LINES OF SAID RECEPTION NO. 1826699 THROUGH THE FOLLOWING TWO COURSES:

- SOUTH 89 DEGREES 44' 29" WEST, 500.00 FEET;
- SOUTH 00 DEGREES 28' 28" EAST, 145.00 FEET TO THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SECTION 13;

THENCE NORTH 89 DEGREES 44' 23" WEST, ON THE SOUTH LINE OF THE SOUTHWEST QUARTER, A DISTANCE OF 780.55 FEET TO THE POINT OF BEGINNING.

TOGETHER WITH
(FROM RECEPTION NO. 2282882)

A TRACT OF LAND BEING TRACT O OF THE CREEKSIDE SUBDIVISION AS RECORDED IN THE BOULDER COUNTY CLERK AND RECORDER'S OFFICE AT RECEPTION NO. 2259443, LOCATED IN THE SOUTHWEST QUARTER OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF BOULDER, STATE OF COLORAD, DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF THE SOUTHWEST QUARTER OF SAID SECTION 13 AND CONSIDERING TH EAST LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 13 TO BEAR NORTH 00'31'00" WEST ALONG SAID EAST LINE A DISTANCE OF 206.00 FEET; THENCE NORTH 89'44'19" WEST, A DISTANCE OF 90.00 FEET TO THE SOUTHWESTERN MOST CORNER OF TRACT L, A PART OF SAID CREEKSIDE SUBDIVISION, TO THE POINT OF BEGINNING;

THENCE ALONG THE SOUTHERLY BOUNDARY OF SAID TRACT O, NORTH 89'44'19" WEST, A DISTANCE OF 120.16 FEET TO THE SOUTHWEST CORNER OF SAID TRACT O;

THENCE ALONG THE WESTERLY BOUNDARY OF SAID TRACT O, NORTH 00'31'00" WEST, A DISTANCE OF 110.00 FEET;

THENCE CONTINUING ALONG SAID WESTERLY BOUNDARY OF SAID TRACT O, NORTH 07'40'20" EAST, A DISTANCE OF 211.75 FEET, TO THE NORTHWEST CORNER OF SAID TRACT O;

THENCE ALONG THE NORTHERLY BOUNDARY OF SAID TRACT O, SOUTH 89'44'19" EAST, A DISTANCE OF 89.99 FEET TO THE NORTHWEST CORNER OF SAID TRACT L;

THENCE ALONG THE WESTERLY BOUNDARY OF SAID TRACT L, SOUTH 00'31'00" EAST, A DISTANCE OF 320.00 FEET TO THE POINT OF BEGINNING;

CONTAINING 0.81 ACRES, MORE OR LESS

EXCEPT
(FROM RECEPTION NO. 03064195)

A PARCEL OF LAND LOCATED IN THE SOUTHWEST QUARTER OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

CERTIFICATE OF DEDICATION AND OWNERSHIP (CONTINUED)

COMMENCING AT THE SOUTH QUARTER CORNER OF SAID SECTION 13 THENCE N89°44'23"W ALONG THE SOUTH LINE OF SAID SOUTHEAST QUARTER AND ALONG THE SOUTH LINE OF PARCEL C, TRACT G, CANYON CREEK SUBDIVISION FILING NO. 3 A DISTANCE OF 550.00 FEET TO THE TRUE POINT OF BEGINNING, SAID POINT BEING THE SOUTHWEST CORNER OF SAID PARCEL C, TRACT G; THENCE N89°44'23"W CONTINUING ALONG THE SOUTH LINE OF SAID SOUTHWEST QUARTER AND ALONG THE NORTHERN BOUNDARY OF CANYON CREEK SUBDIVISION FILING NO. 2 A DISTANCE OF 143.72 FEET; THENCE N00°29'19"W A DISTANCE OF 145.00 FEET TO A POINT OF NON-TANGENT CURVATURE. THENCE ALONG A 805.00 FOOT RADIUS CURVE TO THE LEFT (SAID CURVE HAVING A CENTRAL ANGLE OF 00°05'27" AND A CHORD BEARING S89°41'39"E A DISTANCE OF 1.28 FEET) AN ARC LENGTH OF 1.28 FEET; THENCE S89°44'23"E A DISTANCE OF 142.45 FEET TO THE NORTHWEST CORNER OF SAID PARCEL C, TRACT G; THENCE S00°29'19"E ALONG THE WEST LINE OF SAID PARCEL C, TRACT G A DISTANCE OF 145.00 FEET TO THE TRUE POINT OF BEGINNING.

CONTAINS 20,838 SQUARE FEET OR 0.478 ACRE, MORE OR LESS.

CONTAINING AN AREA OF 1,623,186 SQUARE FEET (37.484 ACRES), MORE OR LESS.

PARCEL B
(FROM RECEPTION NO. 2073245, EXHIBIT A, PARCEL C, PAGE 5 OF 15)

A PARCEL OF LAND WITHIN THE SOUTHEAST QUARTER OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO, SHOWN AS PARCEL 073 ON PARCEL MAP NO. 1465130 IN THE RECORDS OF SAID COUNTY, LYING SOUTH OF THE UNION PACIFIC RAILROAD RIGHT OF WAY, AND NORTH OF THAT REAL PROPERTY DESCRIBED IN RECEPTION NO. 1895203, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTH QUARTER CORNER OF SAID SECTION 13;

THENCE NORTH 00 DEGREES 29' 19" WEST, ON THE WEST LINE OF SAID SOUTHEAST QUARTER, A DISTANCE OF 750.95 FEET TO THE NORTH INTERSECTION OF SAID RECEPTION NO. 1895203 AS RECORDED IN THE RECORDS OF SAID COUNTY WITH SAID WEST LINE, WHICH IS THE POINT OF BEGINNING;

THENCE ON THE NORTH LINE OF SAID RECEPTION NO. 1895203 THE FOLLOWING FIVE (5) COURSES:

- NORTH 85 DEGREES 33' 33" EAST, 80.27 FEET;
- NORTH 54 DEGREES 48' 33" EAST, 920.00 FEET;
- SOUTH 85 DEGREES 58' 27" EAST, 214.00 FEET;
- NORTH 56 DEGREES 33' 33" EAST, 560.00 FEET;
- NORTH 18 DEGREES 21' 09" EAST, 64.70 FEET TO THE SOUTH RIGHT OF WAY LINE OF THE UNION PACIFIC RAILROAD;

THENCE NORTH 57 DEGREES 49' 09" WEST, ALONG THE SOUTH RIGHT OF WAY LINE OF SAID RAILROAD, 985.00 FEET TO A NON-TANGENT 2764.93 FOOT RADIUS CURVE WHICH IS CONCAVE SOUTHWESTERLY;
THENCE WESTERLY ALONG SAID NON-TANGENT CURVE, WHOSE CENTER BEARS SOUTH 31 DEGREES 58'00" WEST, THROUGH A CENTRAL ANGEL OF 16 DEGREES 14' 03", A DISTANCE OF 783.42 FEET TO THE WEST LINE OF SAID SOUTHEAST QUARTER;
THENCE SOUTH 00 DEGREES 29' 19" EAST, NON-TANGENT TO SAID CURVE, 1731.77 FEET TO THE POINT OF BEGINNING.

CONTAINING AN AREA OF 1,453,261 SQUARE FEET (33.362 ACRES), MORE OR LESS

CANYON CREEK SUBDIVISION FILING NO. 7 & 8 CONTAINS A TOTAL AREA OF 3,076,447 SQUARE FEET (70.626 ACRES), MORE OR LESS

HAVE BY THESE PRESENTS LAID OUT, PLATTED AND SUBDIVIDED THE SAME INTO LOTS, BLOCKS, TRACTS, STREETS, AND EASEMENTS AS SHOWN HEREON UNDER THE NAME AND SUBDIVISIONS OF CANYON CREEK SUBDIVISION FILING NO. 7 AND CANYON CREEK SUBDIVISION FILING NO. 8. ALL PUBLIC WAYS AND OTHER PUBLIC RIGHTS-OF-WAY, LANDS, EASEMENTS AND OTHER DESIGNATED PUBLIC IMPROVEMENTS SHOWN HEREON ARE DEDICATED TO THE TOWN OF ERIE AND THE PUBLIC, COLORADO, FOR PUBLIC USES AND PURPOSES SHOWN HEREON.

CERTIFICATE OF DEDICATION AND OWNERSHIP (CONTINUED)

OWNER: STRATUS CANYON CREEK, LLC

BY: _____

ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 2021,

BY _____

WITNESS MY HAND AND OFFICIAL SEAL:

(SEAL)

MY COMMISSION EXPIRES: _____

LIENHOLDER: FIRSTIER BANK

BY: _____

ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 2021,

BY _____

WITNESS MY HAND AND OFFICIAL SEAL:

(SEAL)

MY COMMISSION EXPIRES: _____

SURVEYOR'S CERTIFICATE

I, ERIC DAVID CARSON, A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THIS PLAT TRULY AND CORRECTLY REPRESENTS THE RESULTS OF A SURVEY MADE ON SEPTEMBER 10, 2018, BY ME OR UNDER MY DIRECT SUPERVISION AND THAT ALL MONUMENTS EXIST AS SHOWN HEREON; THAT MATHEMATICAL CLOSURE ERRORS ARE LESS THAN 1:50,000 (SECOND ORDER); AND THAT SAID PLAT HAS BEEN PREPARED IN FULL COMPLIANCE WITH ALL APPLICABLE LAWS OF THE STATE OF COLORADO DEALING WITH MONUMENTS, SUBDIVISIONS OR SURVEYING OF LAND AND ALL APPLICABLE PROVISIONS OF THE TOWN OF ERIE UNIFIED DEVELOPMENT CODE.

I ATTEST THE ABOVE ON THIS _____ DAY OF _____, 2021.

ERIC DAVID CARSON

COLORADO REGISTERED PROFESSIONAL LAND SURVEYOR #37890

TITLE VERIFICATION CERTIFICATE

WE, FIRST AMERICAN TITLE INSURANCE COMPANY, DO HEREBY CERTIFY THAT WE HAVE EXAMINED THE TITLE OF ALL LAND PLATTED HEREON AND THAT TITLE TO SUCH LAND IS IN THE DEDICATOR(S) FREE AND CLEAR OF ALL LIENS, TAXES AND ENCUMBRANCES, EXCEPT AS FOLLOWS:

FIRST AMERICAN TITLE INSURANCE COMPANY

BY: _____ DATE: _____

TITLE: _____

ATTEST:

SECRETARY/TREASURER
STATE OF COLORADO
COUNTY OF _____ } SS.

ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 2021

BY _____ AS _____

WITNESS MY HAND AND OFFICIAL SEAL

NOTARY PUBLIC

MY COMMISSION EXPIRES: _____

BOARD OF TRUSTEES APPROVAL CERTIFICATE

THESE PLATS ARE TO BE KNOWN AS CANYON CREEK SUBDIVISION FILING NO. 7 AND CANYON CREEK SUBDIVISION FILING NO. 8 ARE APPROVED AND ACCEPTED BY RESOLUTION NO. _____ PASSED AND ADOPTED AT A MEETING OF THE BOARD OF TRUSTEES OF ERIE, COLORADO, HELD ON THE _____ DAY OF _____ 2021.

MAYOR


ATTEST _____
TOWN CLERK

CLERK & RECORDER CERTIFICATE

STATE OF COLORADO
COUNTY OF BOULDER } SS.

I HEREBY CERTIFY THAT THIS PLAT WAS FILED IN MY OFFICE ON THIS _____ DAY OF _____, 2021 A.D. AND WAS RECORDED AT RECEPTION NUMBER _____.

COUNTY CLERK AND RECORDER

 CWC CONSULTING GROUP CIVIL ENGINEERING • LAND SURVEYING • CONSTRUCTION SERVICES	DATE	REVISION	BY	DRAFTED: S.L.G.3	CHECKED: E.D.C.	SHEET NO. 1 of 13 SHEETS
	03/20/20	REVISED LOT/TRACT LINES & ROW	SLG3			
	07/21/20	ADDRESSED TOWN COMMENTS	SLG3			
	11/12/20	REVISED STREET NAMES, NOTE, TRACT CHART, WATER ESMT	SLG3			
	01/29/21	ADDRESSED TOWN COMMENTS, MODIFIED UEs	SLG3			
	03/01/21	CLIENT REVISIONS	SLG3			
				DATE: 08/27/19	JOB NO. 120-00237 130-00091	
				SURVEY PREPARED FOR: STRATUS CANYON CREEK, LLC		

CANYON CREEK SUBDIVISION FILING NOS. 7 & 8

PRELIMINARY PLAT

TRACT "O", CREEKSIDE SUBDIVISION AND A PORTION OF THE SOUTH ONE-HALF OF SECTION 13,
TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN,
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
70.626 ACRES - 194 LOTS / 25 TRACTS / 1 OUTLOT
PP-001108-2019

NOTES

1. DISTANCES ARE MARKED IN U.S. SURVEY FEET AND DECIMAL PLACES THEREOF. NO DIMENSION SHALL BE ASSUMED BY SCALE MEASUREMENT HEREON. DISTANCES AND/OR BEARINGS SHOWN IN PARENTHESIS (0.00') ARE RECORD OR DEED VALUES, NOT FIELD MEASURED.

2. THE LOCATION OF THE PROPERTY LINES SHOWN ON THE FACE OF THIS PLAT ARE BASED ON THE DESCRIPTION AND INFORMATION FURNISHED BY THE CLIENT, TOGETHER WITH THE TITLE COMMITMENT. THE PARCEL WHICH IS DEFINED MAY NOT REFLECT ACTUAL OWNERSHIP, BUT REFLECTS WHAT WAS SURVEYED. FOR OWNERSHIP, CONSULT YOUR TITLE COMPANY.

3. COMPARE THIS PLAT, LEGAL DESCRIPTION AND ALL SURVEY MONUMENTS BEFORE BUILDING, AND IMMEDIATELY REPORT ANY DISCREPANCIES TO THE SURVEYOR.

4. THIS LAND SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY CWC CONSULTING GROUP, INC. TO DETERMINE OWNERSHIP OF THIS TRACT, VERIFY THE DESCRIPTION SHOWN, VERIFY THE COMPATIBILITY OF THIS DESCRIPTION WITH THAT OF ADJACENT TRACTS, OR VERIFY EASEMENTS OF RECORD. REFERENCE IS MADE TO FIRST AMERICAN TITLE INSURANCE COMPANY COMMITMENT NUMBER: NCS-922613-CO, WITH AN EFFECTIVE DATE OF SEPTEMBER 18, 2019 5:00 PM FROM WHICH THIS SURVEY IS BASED. THIS PROPERTY IS SUBJECT TO ALL COVENANTS AND RESTRICTIONS RELATING TO THE USE AND CHARACTER OF THE LAND AND ALL MATTERS APPEARING OF PUBLIC RECORD AND AS MAY BE DISCLOSED BY A MORE RECENT TITLE COMMITMENT OR REPORT.

5. ALL REFERENCES HEREON TO BOOKS, PAGES, MAPS AND RECEPTION NUMBERS ARE PUBLIC DOCUMENTS FILED IN THE RECORDS OF THE BOULDER COUNTY CLERK AND RECORDER'S OFFICE.

6. EASEMENTS AND PUBLIC DOCUMENTS SHOWN OR NOTED HEREON WERE EXAMINED AS TO LOCATION AND PURPOSE AND WERE NOT EXAMINED AS TO RESERVATIONS, RESTRICTIONS, CONDITIONS, OBLIGATIONS, TERMS, OR AS TO THE RIGHT TO GRANT THE SAME.

7. BASIS OF BEARINGS: BEARINGS ARE BASED ON THE SOUTH LINE OF THE SOUTHWEST ONE-QUARTER OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, SAID TO BEAR NORTH 89°24'33" WEST, A DISTANCE OF 2,661.09 FEET, FROM THE SOUTH ONE-QUARTER CORNER OF SAID SECTION 13 BEING MONUMENTED BY A 3.25" ALUMINUM CAP 0.45' DOWN IN A RANGE BOX IN ASPHALT WITH A LID MARKED "RANGE POINT", STAMPED "AZTEC CONSULTANTS INC, T1N R69W, S13, 1/4 --, S24, 2004, LS 36580" TO THE SOUTHWEST CORNER OF SAID SECTION 13 BEING MONUMENTED BY A 3.25" ALUMINUM CAP, 0.85' DOWN IN A RANGE BOX IN ASPHALT WITH A LID MARKED "RANGE POINT", STAMPED "L.P.I., T1N R69W, 14 | 13, ---, 23 | 24, 2006, PLS 23521".

8. ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT OR LAND MONUMENT OR ACCESSORY, COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO STATE STATUTE 18-4-508, C.R.S.

9. DEFINITION: CERTIFY, CERTIFICATION -- A PROFESSIONAL'S OPINION BASED ON HIS OR HER OBSERVATION OF CONDITIONS, KNOWLEDGE, INFORMATION AND BELIEFS. IT IS EXPRESSLY UNDERSTOOD THAT THE PROFESSIONAL'S CERTIFICATION OF A CONDITION'S EXISTENCE RELIEVES NO OTHER PARTY OF ANY RESPONSIBILITY OR OBLIGATION HE OR SHE HAS ACCEPTED BY CONTRACT OR CUSTOM.

10. CWC CONSULTING GROUP, INC. DOES NOT WARRANT THAT THE PARCEL, AS DESCRIBED HEREON, COMPLIES WITH COLORADO SENATE BILL 35. (30-28-101).

11. ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

12. THE PROPERTY IS LOCATED WITHIN "OTHER AREAS -- ZONE X" (AREAS DETERMINED TO BE OUTSIDE THEN 0.2% ANNUAL CHANCE FLOODPLAIN.) AS IDENTIFIED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP -- COMMUNITY PANELS NUMBERED 08013C0437J WITH AN EFFECTIVE DATE OF DECEMBER 18, 2012.

13. THE UNDERSIGNED, AS OWNER OF THE LANDS DESCRIBED HEREIN, ARE RESPONSIBLE FOR THE MAINTENANCE AND OPERATION OF ALL DRAINAGE EASEMENTS SHOWN HEREON AND RELATED DRAINAGE FACILITIES, AS PROVIDED IN THE TOWN OF ERIE ENGINEERING STANDARDS AND SPECIFICATIONS, AS AMENDED; THE UNDERSIGNED GRANTS THE TOWN OF ERIE A PERPETUAL RIGHT OF INGRESS AND EGRESS FROM AND TO ADJACENT PROPERTY TO: INSPECT, MAINTAIN, OPERATE AND RECONSTRUCT THE DRAINAGE EASEMENTS AND RELATED FACILITY COVERED BY THE ERIE MUNICIPAL CODE, AS AMENDED; AND TO INSPECT, MAINTAIN, OPERATE AND RECONSTRUCT THE DRAINAGE EASEMENTS AND RELATED FACILITIES, WHEN THE OWNER FAILS TO ADEQUATELY MAINTAIN SUCH DRAINAGE EASEMENTS AND RELATED FACILITIES, WHICH INSPECTION, MAINTENANCE, OPERATION AND RECONSTRUCTION SHALL BE AT THE COST OF THE OWNER.

14. A BLANKET DRAINAGE EASEMENT IS GRANTED ON TRACTS C, E AND G, CANYON CREEK SUBDIVISION FILING NO. 7. A BLANKET UTILITY EASEMENT IS GRANTED ON TRACT A, CANYON CREEK SUBDIVISION FILING NO. 7. A BLANKET PUBLIC ACCESS EASEMENT IS GRANTED ON TRACTS B, C, E, F, G AND J, CANYON CREEK SUBDIVISION FILING NO. 7. A BLANKET PUBLIC ACCESS EASEMENT IS GRANTED ON TRACTS B, C, D, E, F, G, H, I, J, K, L AND N, CANYON CREEK SUBDIVISION FILING NO. 8. A BLANKET UTILITY EASEMENT IS GRANTED ON TRACTS D, G, H, I, J, K, AND L, CANYON CREEK SUBDIVISION FILING NO. 8. A BLANKET DRAINAGE AND PEDESTRIAN EASEMENT IS GRANTED ON TRACT D, CANYON CREEK SUBDIVISION FILING NO. 8.

15. MINE SHAFT LOCATION DEPICTED HEREON AFTER REVIEW OF CLIENT PROVIDED DOCUMENT ENTITLED "MINE SUBSIDENCE INVESTIGATION, CANYON CREEK SUBDIVISION, FILINGS NO.7 AND 8" AS PREPARED BY WESTERN ENVIRONMENT AND ECOLOGY, INC, DATED JUNE 26,2018. FOLLOWING REVIEW OF THIS DOCUMENT THE MINE SHAFT WAS EXCAVATED BY THE CLIENT'S CONTRACTOR ON AUGUST 18, 2020 AND THE MINE SHAFT ENTRANCE WAS THEN FIELD LOCATED, AS SHOWN AND LABELED HEREON.

FROM TOWN OF ERIE'S UNIFIED DEVELOPMENT CODE, OCTOBER, 2017:

10.6.13 ABANDONED MINES:

A. GENERAL PROVISIONS: ALL DEVELOPMENT WITH UNDERMINING AND/OR MINE SHAFTS SHALL PROVIDE THE TOWN WITH GEOLOGICAL AND GEOTECHNICAL HAZARDS REPORTS PREPARED, SIGNED AND STAMPED BY A PROFESSIONAL IN THE FIELD OF UNDERMINING. THE REPORTS SHALL BE REFERRED TO THE COLORADO GEOLOGICAL SURVEY FOR REVIEW AND COMMENT. RECOMMENDATIONS FROM THE REPORTS AND COLORADO GEOLOGICAL SURVEY SHALL BE EVALUATED BY THE TOWN WHEN CONSIDERING APPROPRIATE LAND USES, RESTRICTIONS APPLICABLE TO LAND DEVELOPMENT, AND FOUNDATION DESIGN DUE TO UNDERMINING CONSTRAINTS. UNDERMINING AND/OR MINE SHAFTS SHALL BE NOTED ON SKETCH PLANS, PRELIMINARY PLATS, FINAL PLATS AND SITE PLANS.

B. MINESHAFTS:

1. ALL MINESHAFTS SHALL BE CAPPED AND MONUMENTED IN ACCORDANCE WITH STATE REQUIREMENTS.

2. MINESHAFTS SHALL NOT BE LOCATED ON A RESIDENTIAL LOT.

3. MINESHAFTS MAY BE LOCATED IN A STREET RIGHT-OF-WAY, TRACT, OR IN A NON-RESIDENTIAL LOT WITH AN EASEMENT RESTRICTED FOR PARKING, OPEN SPACE OR LANDSCAPE USE. ANY MODIFICATIONS TO THIS PROVISION PROPOSED BY THE APPLICANT FOR TOWN CONSIDERATION SHALL BE IN COMPLIANCE WITH RECOMMENDATIONS FROM THE GEOLOGICAL AND GEOTECHNICAL HAZARDS REPORTS AND THE COLORADO GEOLOGICAL SURVEY.

4. MINIMUM DIMENSIONS FOR TRACTS/EASEMENTS AND MINIMUM DISTANCES FROM ABANDONED MINESHAFTS TO RESIDENTIAL LOTS AND NON-RESIDENTIAL STRUCTURES SHALL BE DETERMINED BASED ON RECOMMENDATIONS FROM THE GEOLOGICAL AND GEOTECHNICAL HAZARDS REPORTS AND THE COLORADO GEOLOGICAL SURVEY.

C. MINE TAILINGS: IF MINE TAILINGS ARE LOCATED ON A PROPERTY, THE REMOVAL OF MINE TAILINGS SHALL BE ADDRESSED IN A DEVELOPMENT AGREEMENT. THE TOWN SHALL REQUIRE SUBMITTAL OF A PROFESSIONAL CERTIFICATION THAT THE MINE TAILINGS AND HAZARD ASSOCIATED WITH THE TAILING HAS BEEN REMOVED AND COMPLETED.

THE TYNON / CHASE MINE SHAFT WILL BE MITIGATED USING A CONCRETE CAP AND COMPACTION TECHNIQUES AS SPECIFIED BY WESTERN ENVIRONMENT AND ECOLOGY, INC. THE MITIGATION WILL BE PERFORMED IN CONFORMANCE WITH THE CAPPING DETAIL PROVIDED AND AT THE TIME OF FINAL CONSTRUCTION DEVELOPMENT BASED ON THE SPECIFICATION AND DEPTH.

TRACT SUMMARY CHART – CANYON CREEK SUBDIVISION FILING NO. 7					
NAME	AREA (AC)	AREA (SF)	USE	OWNER	MAINTENANCE
TRACT A	0.049	2,151	UTILITIES	HOA	HOA
TRACT B	0.076	3,301	LANDSCAPING, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT C	7.542	328,543	DEDICATED OPEN SPACE, DRAINAGE, OIL & GAS BUFFER, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT D	0.042	1,851	PEDESTRIAN, LANDSCAPING AND DRAINAGE	HOA	HOA
TRACT E	2.064	89,929	PRIVATE OPEN AREAS, DRAINAGE, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT F	0.324	14,107	LANDSCAPING, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT G	2.037	88,715	DEDICATED OPEN SPACE, DRAINAGE, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT H	0.248	10,810	LANDSCAPING, MINE BUFFER	HOA	HOA
TRACT I	0.393	17,098	LANDSCAPING	HOA	HOA
TRACT J	0.351	15,271	POCKET PARK, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT K	0.303	13,190	PRIVATE CONVEYANCE TO ADJACENT PROPERTY	THOMAS M. & SHELLY JONES	THOMAS M. & SHELLY JONES
TOTAL:	13.429	584,966			

LAND SUMMARY CHART–CANYON CREEK SUBDIVISION FILING NO. 7			
TYPE	AREA (AC)	AREA (SF)	% OF TOTAL AREA
LOTS (106)	17.023	741,527	43.767%
TRACTS (11)	13.429	584,966	34.527%
ROW	8.443	367,761	21.706%
TOTAL:	38.895	1,694,254	100.000%

UPDATED

The Town does not utilize, nor does the UDC allow the use of an outlot. This needs to be changed to a Tract.

As they don't officially own the parcel yet, this should be changed to the Owner.

UPDATED

UPDATED

TRACT SUMMARY CHART – CANYON CREEK SUBDIVISION FILING NO. 8					
NAME	AREA (AC)	AREA (SF)	USE	OWNER	MAINTENANCE
TRACT A	0.312	13,602	LANDSCAPING, PEDESTRIAN WALK	HOA	HOA
TRACT B	0.342	14,910	LANDSCAPING, PEDESTRIAN WALK, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT C	0.033	1,425	LANDSCAPING, PEDESTRIAN WALK, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT D	10.505	457,584	DRAINAGE, UTILITIES, OIL & GAS, PUBLIC ACCESS EASEMENT	TOWN OF ERIE	TOWN OF ERIE
TRACT E	1.292	56,273	POCKET PARK, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT F	0.537	23,396	LANDSCAPING, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT G	0.257	11,188	ACCESS, UTILITIES, ALLEYS, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT H	0.282	12,270	ACCESS, UTILITIES, ALLEYS, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT I	0.282	12,270	ACCESS, UTILITIES, ALLEYS, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT J	0.088	3,824	ACCESS, UTILITIES, ALLEYS, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT K	0.088	3,824	ACCESS, UTILITIES, ALLEYS, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT L	0.307	13,400	ACCESS, UTILITIES, ALLEYS, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT M	0.048	2,070	LANDSCAPING, PEDESTRIAN WALK	HOA	HOA
TRACT N	0.104	4,537	LANDSCAPING, PEDESTRIAN WALK, PUBLIC ACCESS EASEMENT	HOA	HOA
OUTLOT A	9.168	399,341	FUTURE DEVELOPMENT	STRATUS CANYON CREEK, LLC	STRATUS CANYON CREEK, LLC
TOTAL:	23.644	1,029,913			

This needs to state HOA or Metro District and not the Town. Also, a open space / conservation easement will be required to be placed on this tract. this will need to be placed within the DA. Likely it will state "Developer agrees to record a perpetual conservation easement, approved by the town Attorney, on Tract D within 30 days of redecoration of the Plat". This language will be discussed during the DA for the final plat.

UPDATED TO
HOA

This should state oil and gas setback buffer and not future development. If the well is p & a in the future, the tract can be re-platted.

UPDATED TO BE
RETAINED BY OWNER

LAND SUMMARY CHART–CANYON CREEK SUBDIVISION FILING NO. 8			
TYPE	AREA (AC)	AREA (SF)	% OF TOTAL AREA
LOTS (88)	6.050	263,539	19.067%
TRACTS/OUTLOT (15)	23.644	1,029,913	74.513%
ROW	2.037	88,741	6.420%
TOTAL:	31.731	1,382,193	100.000%



DATE	REVISION	BY
03/20/20	REVISED LOT/TRACT LINES & ROW	SLG3
07/21/20	ADDRESSED TOWN COMMENTS	SLG3
11/12/20	REVISED STREET NAMES, NOTE, TRACT CHART, WATER ESMT	SLG3
01/29/21	ADDRESSED TOWN COMMENTS, MODIFIED UEs	SLG3
03/01/21	CLIENT REVISIONS	SLG3

DRAFTED: S.L.G.3	CHECKED: E.D.C.
DATE: 08/27/19	JOB NO. 120-00237 130-00091
SURVEY PREPARED FOR: STRATUS CANYON CREEK, LLC	

CANYON CREEK SUBDIVISION FILING NOS. 7 & 8

PRELIMINARY PLAT

TRACT "O", CREEKSIDE SUBDIVISION AND A PORTION OF THE SOUTH ONE-HALF OF SECTION 13,
TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN,
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
70.626 ACRES - 194 LOTS / 25 TRACTS / 1 OUTLOT
PP-001108-2019

UPDATED

SEE SHEET 13

SEE SHEET 4

SEE SHEET 11

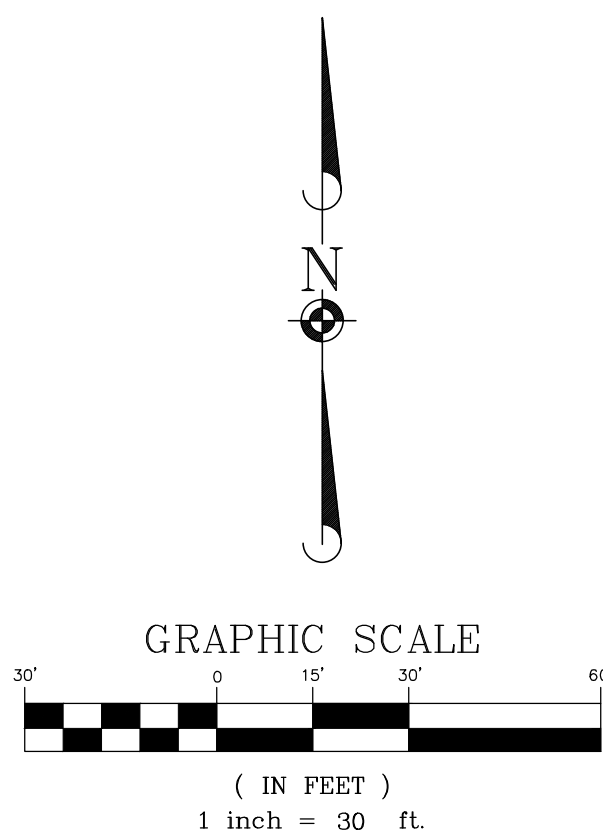
OUTLOT A
399,341 SQ. FT.
(9.168 ACRES)

UPDATED

LEGEND

BOUNDARY LINE
RIGHT-OF-WAY LINE
CENTER LINE
EASEMENT LINE

ABBREVIATIONS:
LSA = LANDSCAPED AREA
CONC. = CONCRETE
UE = UTILITY EASEMENT



DATE	REVISION	BY
03/20/20	REVISED LOT/TRACT LINES & ROW	SLG3
07/21/20	ADDRESSED TOWN COMMENTS	SLG3
11/12/20	REVISED STREET NAMES, NOTE, TRACT CHART, WATER ESMT	SLG3
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DRAFTED: S.L.G.3	CHECKED: E.D.C.
DATE: 08/27/19	JOB NO. 120-00237 130-00091
SURVEY PREPARED FOR: STRATUS CANYON CREEK, LLC	

SHEET NO.
12 of 13 SHEETS

T:\085\1-20 Survey\120-00237 (130-00091)_Canyon Creek Development-Erie\Fig\120-00237-PP.dwg Date: 03/01/21 11:11a S:\dellucd

CANYON CREEK SUBDIVISION FILING NOS. 7 & 8

PRELIMINARY PLAT

TRACT "O", CREEKSIDE SUBDIVISION AND A PORTION OF THE SOUTH ONE-HALF OF SECTION 13,
TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN,
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
70.626 ACRES - 194 LOTS / 25 TRACTS / 1 OUTLOT
PP-001108-2019

UPDATED

UPDATED

OUTLOT A
399,344 SQ. FT.
(9.168 ACRES)

LEGEND

BOUNDARY LINE
RIGHT-OF-WAY LINE
CENTER LINE
EASEMENT LINE

ABBREVIATIONS:
LSA = LANDSCAPED AREA
CONC. = CONCRETE
UE = UTILITY EASEMENT




GRAPHIC SCALE

(IN FEET)
1 inch = 30 ft.

SEE SHEET 4

SEE SHEET 12

 CWC CONSULTING GROUP CIVIL ENGINEERING • LAND SURVEYING • CONSTRUCTION SERVICES	DATE	REVISION	BY	DRAFTED: S.L.G.3	CHECKED: E.D.C.	SURVEY PREPARED FOR: STRATUS CANYON CREEK, LLC
	03/20/20	REVISED LOT/TRACT LINES & ROW	SLG3			
	07/21/20	ADDRESSED TOWN COMMENTS	SLG3			
	11/12/20	REVISED STREET NAMES, NOTE, TRACT CHART, WATER ESMT	SLG3			
	01/29/21	ADDRESSED TOWN COMMENTS, MODIFIED UEs	SLG3			
	03/01/21	CLIENT REVISIONS	SLG3			
				DATE: 08/27/19	JOB NO. 120-00237 130-00091	SHEET NO. 13 OF 13 SHEETS

T:_085\1-20 Survey\120-00237 (130-00091)_Canyon Creek Development-Erie.dwg Date: 03/01/21 11:11a S:\clicl\cl

WESTERN ENVIRONMENT AND ECOLOGY, INC

March 19th, 2021

Jill Carlson
Colorado Geological Survey
1801 Moly Road
Golden, Colorado 80401

Subject: Colorado Geological Survey Review Canyon Creek Filings 7&8 Preliminary Plat PP-0011108-2019. Western Environment and Ecology, Inc. Project Number 780-002-01.

Dear Ms. Carlson:

At the request of Roger Hollard of Land Perspectives LLC, we have prepared the following response to the Colorado Geological Survey (CGS) review dated March 2nd, 2021 regarding the plat application, specifically, as it relates to Western Environment and Ecology, Inc's (Western Environment) Mine Subsidence Investigation dated February 19th, 2020 (revised July 8th, 2020). Listed below are the CGS comments pertaining to undermining in italics, our response follows.

Chase Mine Shaft Location

- *CGS continues to recommend that the Town request documentation of the Chase Mine main shaft field verified location.*

Western Environment provided observation and oversight of the excavation of approximately 100,000 cubic yards of soil in the effort to locate the Chase Mine main shaft. These activities occurred from August 10th to the 17th 2020 when the outline of the shaft was identified. Immediately following the field location of the shaft it was surveyed and the location included on the Preliminary Plat.

Photographic documentation of the excavation and the shaft is attached to this letter.

Chase Mine Shaft Stabilization

- *CGS recommends that the Town require stabilization of the mine shaft through grouting or other means prior to capping.*

Western Environment has never been required to grout stabilize a shaft prior to capping. We have strongly advised that all open shafts be backfilled and compacted (stabilized) prior to capping. However, shafts that are backfilled and show no indication of settlement, as is the Chase Mine main shaft, Western Environment has recommend and the CGS allowed for a robust structural cap, after extending the excavation into competent bedrock. The applicant is willing to perform the grouting if following excavation site specific conditions require grouting.

2217 WEST POWERS AVENUE * LITTLETON, COLORADO 80120
PHONE (303)730-3452 * FAX (303)730-3461
WWW.WESTERNENVIRONMENT.COM

Western Environment's Subsidence Zones A and B.

- *The "Mine Subsidence Line" on the Preliminary Construction document (CWC Consulting Group 1/29/2021) STILL does not match the Subsidence Zone A and B delineation on Western's 7/8/2020 Figure 6.*

Western Environment provided a copy of the Mine Subsidence Map prepared by CWC Consulting Group to Ms. Carlson of the CGS on March 17th, 2021. In an email the following day, Ms. Carlson stated "**Yes that's close.... Clearly delineate, through shading or whatever, the lots where your recommended foundation length restrictions apply and where strain isolation trenches are required**". The attached map has been corrected to include these additions.

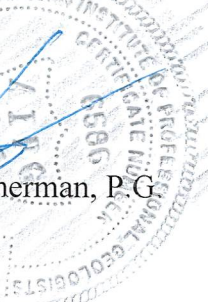
- *Lots subject to the maximum foundation length restrictions and requiring isolation trenches should be specifically identified on both the plat and the construction documents.*

The applicant is in agreement that the specific lots requiring length restrictions and isolation trenches will be identified by plat note (see attached) on the Preliminary and Final Plats and the construction documents. However, due to State Statutes, the lines delineating the Subsidence Zones will not be included on the Final Plat. This is an issue regarding the metes and bounds nomenclature required on the Final recorded Plat.

Should you have any questions or if we could be of further service, do not hesitate to contact me.

Sincerely,

Greg D. Sherman, P.G.
President





Excavation for Chase Mine Shaft



First indication of shaft location



Base of excavation showing shaft outline



Outline of backfill material

NOTES:

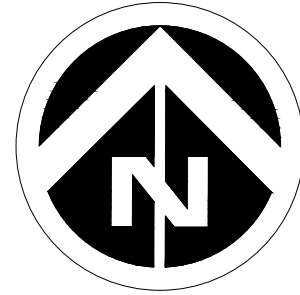
1. ALL LOTS IN SUBSIDENCE ZONE A AND SUBSIDENCE ZONE B MUST INCORPORATE STRAIN ISOLATION TRENCHES.
2. LOTS IN SUBSIDENCE ZONE A SHALL HAVE FOUNDATION LENGTHS RESTRICTED TO 77- FEET.
3. LOTS IN SUBSIDENCE ZONE B SHALL HAVE FOUNDATION LENGTHS RESTRICTED TO 67- FEET.
4. FOR SPECIFIC LOT AND BLOCK NUMBERS, REFER TO THE PRELIMINARY PLAT AND FINAL PLAT.

LEGEND:

 LOTS WITHIN SUBSIDENCE ZONE A AND SUBSIDENCE ZONE B

SUBSIDENCE ZONE B
BOUNDARY

SUBSIDENCE ZONE A
BOUNDARY



100 0 100 200
SCALE: 1"= 100'

PROJECT NAME

CANYON CREEK FILING
NO 7 & NO 8
TOWN OF ERIE, COLORADO

SHEET TITLE

MINE SUBSIDENCE MAP

SHEET NUMBER

1

PROJECT DATA

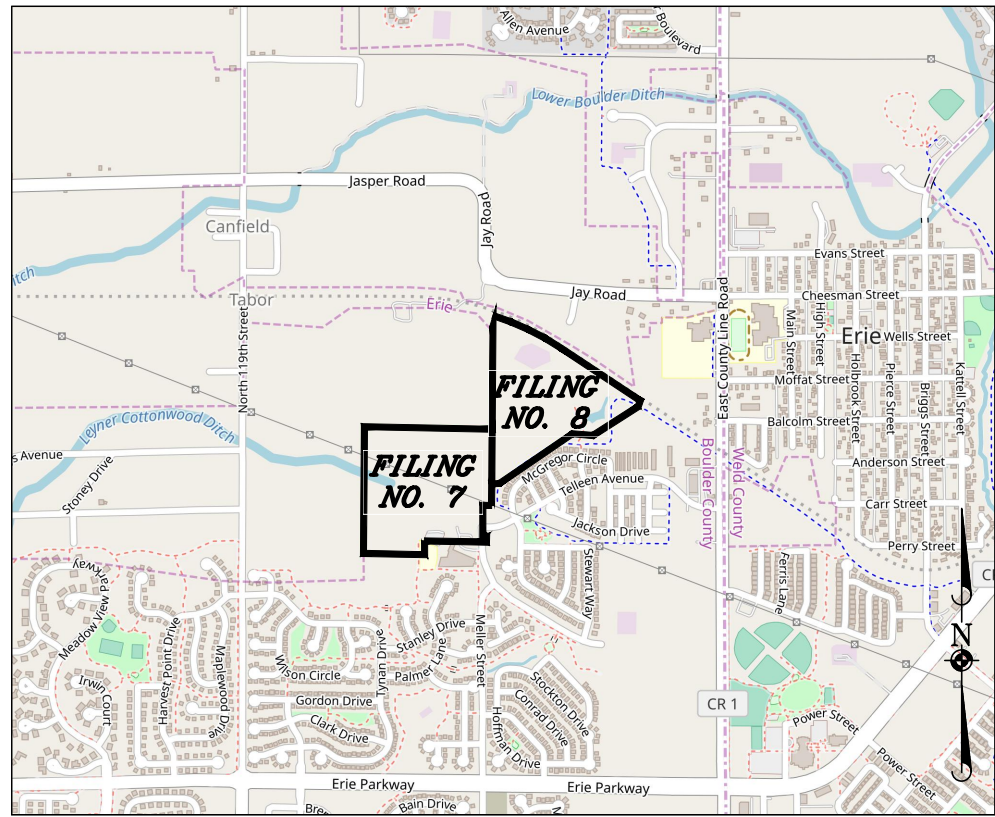
PROJECT #: 130-00097
DRAWN BY: TB
CHECKED BY: BW

ISSUE RECORD

CANYON CREEK SUBDIVISION FILING NOS. 7 & 8

PRELIMINARY PLAT

TRACT "O", CREEKSIDE SUBDIVISION AND A PORTION OF THE SOUTH ONE-HALF OF SECTION 13,
TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN,
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
70.626 ACRES - 194 LOTS / 25 TRACTS / 1 OUTLOT
PP-001108-2019



LOCATION MAP

SCALE: 1" = 2000'

CERTIFICATE OF DEDICATION AND OWNERSHIP

KNOW ALL MEN THESE PRESENTS THAT THE UNDERSIGNED, BEING ALL THE OWNERS, MORTGAGEES, OR LIEN HOLDERS OF CERTAIN LANDS IN THE TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO, DESCRIBED AS FOLLOWS:

PARCEL A
(QUIT CLAIM DEED RECEPTION NO. 03755747 - RECORDED 12/19/2019)

A PORTION OF THE SOUTHEAST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST, OF THE SIXTH PRINCIPAL MERIDIAN, IN THE COUNTY OF BOULDER, STATE OF COLORADO, AND TRACT O OF THE CREEKSIDE SUBDIVISION (RECEPTION NO. 2259493) SAID PARCEL BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: BEARINGS ARE BASED UPON THE WEST LINE OF SAID SOUTHEAST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER OF SECTION 13, SAID TO BEAR NORTH 00°06'49" WEST A DISTANCE OF 1,319.06 FEET FROM THE SOUTHWEST CORNER OF SAID SOUTHEAST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER OF SECTION 13 MONUMENTED BY A 2.5" ALUMINUM CAP, FLUSH WITH GROUND SURFACE, STAMPED 'JR ENG, 1/16, S13, ---, S24, 2000, LS 19606' TO THE NORTHWEST CORNER OF SAID SOUTHEAST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER OF SECTION 13 MONUMENTED BY A 2.5" ALUMINUM CAP 0.4' ABOVE GROUND SURFACE, STAMPED 'JR ENG, TIN R69W, S1/16, + S13, 2000, LS 19606'.

BEGINNING (P.O.B.) AT SAID SOUTHWEST CORNER OF THE SOUTHEAST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER OF SECTION 13;

THENCE NORTH 00°06'49" WEST ALONG SAID WEST LINE, A DISTANCE OF 1319.06 FEET TO SAID NORTHWEST CORNER OF THE SOUTHEAST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER OF SECTION 13;

THENCE SOUTH 89°30'10" EAST ALONG THE NORTH LINE OF SAID SOUTHEAST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER OF SECTION 13, A DISTANCE OF 1329.43 FEET TO THE NORTHEAST CORNER OF SAID SOUTHEAST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER OF SECTION 13, MONUMENTED BY A 2.5" ALUMINUM CAP, 0.1' ABOVE GROUND SURFACE, STAMPED 'JR ENG, TIN R69W, C, S1/16, | S13, C, 2000, LS 19606';

THENCE SOUTH 00°09'36" EAST ALONG THE EAST LINE OF SAID SOUTHEAST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER OF SECTION 13, A DISTANCE OF 570.22 FEET TO THE NORTHWEST CORNER OF SAID CREEKSIDE SUBDIVISION;

THENCE CONTINUING ALONG SAID EAST LINE AND ALSO THE WEST LINE OF SAID CREEKSIDE SUBDIVISION SOUTH 00°09'36" EAST, A DISTANCE OF 225.00 FEET;

THENCE NORTH 89°22'55" WEST ALONG THE NORTH LINE OF SAID CREEKSIDE SUBDIVISION, A DISTANCE OF 90.01 FEET TO THE NORTHEAST CORNER OF SAID TRACT O;

THENCE SOUTH 00°09'36" EAST ALONG THE EAST LINE OF SAID TRACT O, A DISTANCE OF 320.00 FEET TO THE SOUTH LINE OF SAID CREEKSIDE SUBDIVISION;

THENCE SOUTH 89°22'55" EAST ALONG SAID SOUTH LINE OF CREEKSIDE SUBDIVISION, A DISTANCE OF 40.00 FEET TO THE WEST LINE OF TRACT G OF CANYON CREEK FILING NO. 2 (RECEPTION NO. 01843225);

THENCE SOUTH 00°09'40" EAST ALONG SAID WEST LINE OF TRACT G, A DISTANCE OF 61.05 FEET;

THENCE ALONG THE NORTH LINE OF PARCEL C TRACT G OF CANYON CREEK FILING NO. 3 (RECEPTION NO. 1826699) AND THE NORTH AND WEST LINES OF A PARCEL OF LAND DESCRIBED IN THE DOCUMENT RECORDED UNDER RECEPTION NO. 03064195) THE FOLLOWING THREE (3) COURSES:

- 1) NORTH 89°24'33" WEST, A DISTANCE OF 642.45 FEET TO A POINT OF TANGENT CURVE;
- 2) WESTERLY 1.28 FEET ALONG THE ARC OF A CURVE TO THE RIGHT, HAVING A RADIUS OF 805.00 FEET AND CENTRAL ANGLE OF 0°05'27", SUBTENDED BY A CHORD WHICH BEARS NORTH 89°21'49" WEST, A DISTANCE OF 1.28 FEET;
- 3) SOUTH 00°09'29" EAST, A DISTANCE OF 145.00 FEET TO THE SOUTH LINE OF SAID SOUTHEAST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER OF SECTION 13;

THENCE NORTH 89°24'33" WEST ALONG SAID SOUTH LINE, A DISTANCE OF 636.80 FEET TO THE POINT OF BEGINNING (P.O.B.).

CONTAINING AN AREA OF 1,623,217 SQUARE FEET (37.264 ACRES), MORE OR LESS.

CERTIFICATE OF DEDICATION AND OWNERSHIP (CONTINUED)

PARCEL B
(QUIT CLAIM DEED RECEPTION NO. 03841704 - RECORDED 12/14/2020)

A PORTION OF THE SOUTHEAST ONE-QUARTER OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST, OF THE SIXTH PRINCIPAL MERIDIAN, IN THE COUNTY OF BOULDER, STATE OF COLORADO, SAID PARCEL BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: BEARINGS ARE BASED UPON THE WEST LINE OF THE SOUTHEAST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER OF SAID SECTION 13, SAID TO BEAR NORTH 00°06'49" WEST A DISTANCE OF 1,319.06 FEET FROM THE SOUTHWEST CORNER OF SAID SOUTHEAST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER OF SECTION 13 MONUMENTED BY A 2.5" ALUMINUM CAP, FLUSH WITH GROUND SURFACE, STAMPED 'JR ENG, 1/16, S13, ---, S24, 2000, LS 19606' TO THE NORTHWEST CORNER OF SAID SOUTHEAST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER OF SECTION 13 MONUMENTED BY A 2.5" ALUMINUM CAP 0.4' ABOVE GROUND SURFACE, STAMPED 'JR ENG, TIN R69W, S1/16, + S13, 2000, LS 19606'.

BEGINNING (P.O.B.) AT THE NORTHWEST CORNER OF CREEKSIDE SUBDIVISION (RECEPTION NO. 2259493), BEING A POINT ON THE WEST LINE OF THE SOUTHWEST ONE-QUARTER OF THE SOUTHEAST ONE-QUARTER OF SECTION 13;

THENCE NORTH 00°09'36" WEST ALONG THE WEST LINE OF SAID SOUTHWEST ONE-QUARTER OF THE SOUTHEAST ONE-QUARTER OF SECTION 13, A DISTANCE OF 570.22 FEET TO THE SOUTHWEST CORNER OF THE NORTHWEST ONE-QUARTER OF SAID SOUTHEAST ONE-QUARTER OF SECTION 13, MONUMENTED BY A 2.5" ALUMINUM CAP, 0.1' ABOVE GROUND SURFACE, STAMPED 'JR ENG, TIN R69W, C, S1/16, | S13, C, 2000, LS 19606';

THENCE NORTH 00°09'52" WEST ALONG THE WEST LINE OF THE NORTHWEST ONE-QUARTER OF THE SOUTHEAST ONE-QUARTER OF SECTION 13, A DISTANCE OF 1182.60 FEET TO THE SOUTHERLY RIGHT-OF-WAY LINE OF UNION PACIFIC RAILROAD AS DETERMINED FROM RTD MAP LS-17-0051, TO A POINT OF NON-TANGENT CURVE;

THENCE ALONG SAID SOUTHERLY RIGHT-OF-WAY LINE, SOUTHEASTERLY 788.42 FEET ALONG THE ARC OF A CURVE TO THE RIGHT, HAVING A RADIUS OF 2764.79 FEET AND A CENTRAL ANGLE OF 16°20'19", SUBTENDED BY A CHORD WHICH BEARS SOUTH 65°08'32" EAST, A DISTANCE OF 785.75 FEET;

THENCE SOUTH 56°58'24" EAST ALONG SAID SOUTHERLY RIGHT-OF-WAY LINE, A DISTANCE OF 990.25 FEET;

THENCE SOUTH 18°41'00" WEST, A DISTANCE OF 64.98 FEET TO THE EASTERLY EXTENSION OF THE NORTH LINE OF SAID CREEKSIDE SUBDIVISION;

THENCE SOUTH 56°53'24" WEST ALONG SAID EASTERLY EXTENSION OF THE NORTH LINE AND THE NORTH LINE OF SAID CREEKSIDE SUBDIVISION, A DISTANCE 560.00 FEET;

THENCE THE FOLLOWING THREE (3) COURSES ALONG SAID NORTH LINE:

- 1) NORTH 85°38'36" WEST, A DISTANCE OF 214.00 FEET;
- 2) SOUTH 55°08'24" WEST, A DISTANCE OF 920.00 FEET;
- 3) SOUTH 85°53'24" WEST, A DISTANCE OF 80.24 FEET TO THE POINT OF BEGINNING (P.O.B.).

CONTAINING AN AREA OF 1,453,261 SQUARE FEET (33.362 ACRES), MORE OR LESS

CANYON CREEK SUBDIVISION FILING NOS. 7 & 8 CONTAINS A TOTAL AREA OF 3,076,447 SQUARE FEET (70.626 ACRES), MORE OR LESS

HAVE BY THESE PRESENTS LAID OUT, PLATTED AND SUBDIVIDED THE SAME INTO LOTS, BLOCKS, TRACTS, STREETS, AND EASEMENTS AS SHOWN HEREON UNDER THE NAME AND SUBDIVISIONS OF CANYON CREEK SUBDIVISION FILING NO. 7 AND CANYON CREEK SUBDIVISION FILING NO. 8. ALL PUBLIC WAYS AND OTHER PUBLIC RIGHTS-OF-WAY, LANDS, EASEMENTS AND OTHER DESIGNATED PUBLIC IMPROVEMENTS SHOWN HEREON ARE DEDICATED TO THE TOWN OF ERIE AND THE PUBLIC, COLORADO, FOR PUBLIC USES AND PURPOSES SHOWN HEREON.

CERTIFICATE OF DEDICATION AND OWNERSHIP (CONTINUED)

OWNER: STRATUS CANYON CREEK, LLC

BY: _____

ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 2021,

BY _____

WITNESS MY HAND AND OFFICIAL SEAL:

(SEAL)

NOTARY PUBLIC

MY COMMISSION EXPIRES: _____

LIENHOLDER: FIRSTIER BANK

BY: _____

ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 2021,

BY _____

WITNESS MY HAND AND OFFICIAL SEAL:

(SEAL)

NOTARY PUBLIC

MY COMMISSION EXPIRES: _____

SURVEYOR'S CERTIFICATE

I, ERIC DAVID CARSON, A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THIS PLAT TRULY AND CORRECTLY REPRESENTS THE RESULTS OF A SURVEY MADE ON SEPTEMBER 10, 2018, BY ME OR UNDER MY DIRECT SUPERVISION AND THAT ALL MONUMENTS EXIST AS SHOWN HEREON; THAT MATHEMATICAL CLOSURE ERRORS ARE LESS THAN 1:50,000 (SECOND ORDER); AND THAT SAID PLAT HAS BEEN PREPARED IN FULL COMPLIANCE WITH ALL APPLICABLE LAWS OF THE STATE OF COLORADO DEALING WITH MONUMENTS, SUBDIVISIONS OR SURVEYING OF LAND AND ALL APPLICABLE PROVISIONS OF THE TOWN OF ERIE UNIFIED DEVELOPMENT CODE.

I ATTEST THE ABOVE ON THIS _____ DAY OF _____, 2021.

ERIC DAVID CARSON

COLORADO REGISTERED PROFESSIONAL LAND SURVEYOR #37890

TITLE VERIFICATION CERTIFICATE

WE, FIRST AMERICAN TITLE INSURANCE COMPANY, DO HEREBY CERTIFY THAT WE HAVE EXAMINED THE TITLE OF ALL LAND PLATTED HEREON AND THAT TITLE TO SUCH LAND IS IN THE DEDICATOR(S) FREE AND CLEAR OF ALL LIENS, TAXES AND ENCUMBRANCES, EXCEPT AS FOLLOWS:

FIRST AMERICAN TITLE INSURANCE COMPANY

BY: _____ DATE: _____

TITLE: _____

ATTEST:

SECRETARY/TREASURER
STATE OF COLORADO
COUNTY OF _____ } SS.

ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 2021

BY _____ AS _____

WITNESS MY HAND AND OFFICIAL SEAL

NOTARY PUBLIC

MY COMMISSION EXPIRES: _____

BOARD OF TRUSTEES APPROVAL CERTIFICATE

THESE PLATS ARE TO BE KNOWN AS CANYON CREEK SUBDIVISION FILING NO. 7 AND CANYON CREEK SUBDIVISION FILING NO. 8 ARE APPROVED AND ACCEPTED BY RESOLUTION NO. _____ PASSED AND ADOPTED AT A MEETING OF THE BOARD OF TRUSTEES OF ERIE, COLORADO, HELD ON THE _____ DAY OF _____, 2021.

MAYOR


ATTEST _____
TOWN CLERK

CLERK & RECORDER CERTIFICATE

STATE OF COLORADO
COUNTY OF BOULDER } SS.

I HEREBY CERTIFY THAT THIS PLAT WAS FILED IN MY OFFICE ON THIS _____ DAY OF _____, 2021 A.D. AND WAS RECORDED AT RECEPTION NUMBER _____.

COUNTY CLERK AND RECORDER

 9360 TEDDY LANE, SUITE #203 LOVE, COLORADO 80124 TELEPHONE 303-995-2700 FAX 303-995-2701 CWC CONSULTING GROUP CIVIL ENGINEERING • LAND SURVEYING • CONSTRUCTION SERVICES	DATE	REVISION	BY	DRAFTED: S.L.G.3	CHECKED: E.D.C.	SHEET NO. 1 of 13 SHEETS
	03/20/20	REVISED LOT/TRACT LINES & ROW	SLG3			
	07/21/20	ADDRESSED TOWN COMMENTS	SLG3	DATE: 08/27/19	JOB NO. 120-00237 130-00091	
	11/12/20	REVISED STREET NAMES, NOTE, TRACT CHART, WATER ESMT	SLG3	SURVEY PREPARED FOR: STRATUS CANYON CREEK, LLC		
	01/29/21	ADDRESSED TOWN COMMENTS, MODIFIED UEs	SLG3			
	03/19/21	CLIENT REVISIONS	SLG3			

CANYON CREEK SUBDIVISION FILING NOS. 7 & 8

NOTES

1. DISTANCES ARE MARKED IN U.S. SURVEY FEET AND DECIMAL PLACES THEREOF. NO DIMENSION SHALL BE ASSUMED BY SCALE MEASUREMENT HEREON. DISTANCES AND/OR BEARINGS SHOWN IN PARENTHESIS (0.00') ARE RECORD OR DEED VALUES, NOT FIELD MEASURED.

2. THE LOCATION OF THE PROPERTY LINES SHOWN ON THE FACE OF THIS PLAT ARE BASED ON THE DESCRIPTION AND INFORMATION FURNISHED BY THE CLIENT, TOGETHER WITH THE TITLE COMMITMENT. THE PARCEL WHICH IS DEFINED MAY NOT REFLECT ACTUAL OWNERSHIP, BUT REFLECTS WHAT WAS SURVEYED. FOR OWNERSHIP, CONSULT YOUR TITLE COMPANY.

3. COMPARE THIS PLAT, LEGAL DESCRIPTION AND ALL SURVEY MONUMENTS BEFORE BUILDING, AND IMMEDIATELY REPORT ANY DISCREPANCIES TO THE SURVEYOR.

4. THIS LAND SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY CWC CONSULTING GROUP, INC. TO DETERMINE OWNERSHIP OF THIS TRACT, VERIFY THE DESCRIPTION SHOWN, VERIFY THE COMPATIBILITY OF THIS DESCRIPTION WITH THAT OF ADJACENT TRACTS, OR VERIFY EASEMENTS OF RECORD. REFERENCE IS MADE TO FIRST AMERICAN TITLE INSURANCE COMPANY COMMITMENT NUMBER: NCS-922613-CO, WITH AN EFFECTIVE DATE OF SEPTEMBER 18, 2019 5:00 PM FROM WHICH THIS SURVEY IS BASED. THIS PROPERTY IS SUBJECT TO ALL COVENANTS AND RESTRICTIONS RELATING TO THE USE AND CHARACTER OF THE LAND AND ALL MATTERS APPEARING OF PUBLIC RECORD AND AS MAY BE DISCLOSED BY A MORE RECENT TITLE COMMITMENT OR REPORT.

5. ALL REFERENCES HEREON TO BOOKS, PAGES, MAPS AND RECEPTION NUMBERS ARE PUBLIC DOCUMENTS FILED IN THE RECORDS OF THE BOULDER COUNTY CLERK AND RECORDER'S OFFICE.

6. EASEMENTS AND PUBLIC DOCUMENTS SHOWN OR NOTED HEREON WERE EXAMINED AS TO LOCATION AND PURPOSE AND WERE NOT EXAMINED AS TO RESERVATIONS, RESTRICTIONS, CONDITIONS, OBLIGATIONS, TERMS, OR AS TO THE RIGHT TO GRANT THE SAME.

7. BASIS OF BEARINGS: BEARINGS ARE BASED ON THE SOUTH LINE OF THE SOUTHWEST ONE-QUARTER OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, SAID TO BEAR NORTH 89°24'33" WEST, A DISTANCE OF 2,661.09 FEET, FROM THE SOUTH ONE-QUARTER CORNER OF SAID SECTION 13 BEING MONUMENTED BY A 3.25" ALUMINUM CAP 0.45' DOWN IN A RANGE BOX IN ASPHALT WITH A LID MARKED "RANGE POINT", STAMPED "AZTEC CONSULTANTS INC, T1N R69W, S13, 1/4 --, S24, 2004, LS 36580" TO THE SOUTHWEST CORNER OF SAID SECTION 13 BEING MONUMENTED BY A 3.25" ALUMINUM CAP, 0.85' DOWN IN A RANGE BOX IN ASPHALT WITH A LID MARKED "RANGE POINT", STAMPED "L.P.I., T1N R69W, 14 | 13, ---, 23 | 24, 2006, PLS 23521".

8. ANY PERSON WHO KNOWINGLY REMOVES, ALTERS OR DEFACES ANY PUBLIC LAND SURVEY MONUMENT OR LAND MONUMENT OR ACCESSORY, COMMITS A CLASS TWO (2) MISDEMEANOR PURSUANT TO STATE STATUTE 18-4-508, C.R.S.

9. DEFINITION: CERTIFY, CERTIFICATION -- A PROFESSIONAL'S OPINION BASED ON HIS OR HER OBSERVATION OF CONDITIONS, KNOWLEDGE, INFORMATION AND BELIEFS. IT IS EXPRESSLY UNDERSTOOD THAT THE PROFESSIONAL'S CERTIFICATION OF A CONDITION'S EXISTENCE RELIEVES NO OTHER PARTY OF ANY RESPONSIBILITY OR OBLIGATION HE OR SHE HAS ACCEPTED BY CONTRACT OR CUSTOM.

10. CWC CONSULTING GROUP, INC. DOES NOT WARRANT THAT THE PARCEL, AS DESCRIBED HEREON, COMPLIES WITH COLORADO SENATE BILL 35. (30-28-101).

11. ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

12. THE PROPERTY IS LOCATED WITHIN "OTHER AREAS -- ZONE X" (AREAS DETERMINED TO BE OUTSIDE THEN 0.2% ANNUAL CHANCE FLOODPLAIN.) AS IDENTIFIED ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP COMMUNITY PANELS NUMBERED 08013C0437J WITH AN EFFECTIVE DATE OF DECEMBER 18, 2012.

13. THE UNDERSIGNED, AS OWNER OF THE LANDS DESCRIBED HEREIN, ARE RESPONSIBLE FOR THE MAINTENANCE AND OPERATION OF ALL DRAINAGE EASEMENTS SHOWN HEREON AND RELATED DRAINAGE FACILITIES, AS PROVIDED IN THE TOWN OF ERIE ENGINEERING STANDARDS AND SPECIFICATIONS, AS AMENDED. THE UNDERSIGNED GRANTS THE TOWN OF ERIE A PERPETUAL RIGHT OF INGRESS AND EGRESS FROM AND TO ADJACENT PROPERTY TO: INSPECT, MAINTAIN OPERATE AND RECONSTRUCT THE DRAINAGE EASEMENTS AND RELATED FACILITY COVERED BY THE ERIE MUNICIPAL CODE, AS AMENDED; AND TO INSPECT, MAINTAIN, OPERATE AND RECONSTRUCT THE DRAINAGE EASEMENTS AND RELATED FACILITIES, WHEN THE OWNER FAILS TO ADEQUATELY MAINTAIN SUCH DRAINAGE EASEMENTS AND RELATED FACILITIES, WHICH INSPECTION, MAINTENANCE, OPERATION AND RECONSTRUCTION SHALL BE AT THE COST OF THE OWNER.

14. A BLANKET DRAINAGE EASEMENT IS GRANTED ON TRACTS C, E AND G, CANYON CREEK SUBDIVISION FILING NO. 7. A BLANKET UTILITY EASEMENT IS GRANTED ON TRACT A, CANYON CREEK SUBDIVISION FILING NO. 7. A BLANKET PUBLIC ACCESS EASEMENT IS GRANTED ON TRACTS B, C, E, F, G AND J, CANYON CREEK SUBDIVISION FILING NO. 7. A BLANKET PUBLIC ACCESS EASEMENT IS GRANTED ON TRACTS B, C, D, E, F, G, H, I, J, K, L AND N, CANYON CREEK SUBDIVISION FILING NO. 8. A BLANKET UTILITY EASEMENT IS GRANTED ON TRACTS D, G, H, I, J, K, AND L, CANYON CREEK SUBDIVISION FILING NO. 8. A BLANKET DRAINAGE AND PEDESTRIAN EASEMENT IS GRANTED ON TRACT D, CANYON CREEK SUBDIVISION FILING NO. 8.

15. MINE SHAFT LOCATION DEPICTED HEREON AFTER REVIEW OF CLIENT PROVIDED DOCUMENT ENTITLED "MINE SUBSIDENCE INVESTIGATION, CANYON CREEK SUBDIVISION, FILINGS NO.7 AND 8" AS PREPARED BY WESTERN ENVIRONMENT AND ECOLOGY, INC, DATED JUNE 26,2018. FOLLOWING REVIEW OF THIS DOCUMENT THE MINE SHAFT WAS EXCAVATED BY THE CLIENT'S CONTRACTOR ON AUGUST 18, 2020 AND THE MINE SHAFT ENTRANCE WAS THEN FIELD LOCATED, AS SHOWN AND LABELED HEREON.

FROM TOWN OF ERIE'S UNIFIED DEVELOPMENT CODE, OCTOBER, 2017:
10.6.13 ABANDONED MINES:

A. GENERAL PROVISIONS: ALL DEVELOPMENT WITH UNDERMINING AND/OR MINE SHAFTS SHALL PROVIDE THE TOWN WITH GEOLOGICAL AND GEOTECHNICAL HAZARDS REPORTS PREPARED, SIGNED AND STAMPED BY A PROFESSIONAL IN THE FIELD OF UNDERMINING. THE REPORTS SHALL BE REFERRED TO THE COLORADO GEOLOGICAL SURVEY FOR REVIEW AND COMMENT. RECOMMENDATIONS FROM THE REPORTS AND COLORADO GEOLOGICAL SURVEY SHALL BE EVALUATED BY THE TOWN WHEN CONSIDERING APPROPRIATE LAND USES, RESTRICTIONS APPLICABLE TO LAND DEVELOPMENT, AND FOUNDATION DESIGN DUE TO UNDERMINING CONSTRAINTS. UNDERMINING AND/OR MINE SHAFTS SHALL BE NOTED ON SKETCH PLANS, PRELIMINARY PLATS, FINAL PLATS AND SITE PLANS.

B. MINESHAFTS:
1. ALL MINESHAFTS SHALL BE CAPPED AND MONUMENTED IN ACCORDANCE WITH STATE REQUIREMENTS.

2. MINESHAFTS SHALL NOT BE LOCATED ON A RESIDENTIAL LOT.

3. MINESHAFTS MAY BE LOCATED IN A STREET RIGHT-OF-WAY, TRACT, OR IN A NON-RESIDENTIAL LOT WITH AN EASEMENT RESTRICTED FOR PARKING, OPEN SPACE OR LANDSCAPE USE. ANY MODIFICATIONS TO THIS PROVISION PROPOSED BY THE APPLICANT FOR TOWN CONSIDERATION SHALL BE IN COMPLIANCE WITH RECOMMENDATIONS FROM THE GEOLOGICAL AND GEOTECHNICAL HAZARDS REPORTS AND THE COLORADO GEOLOGICAL SURVEY.

4. MINIMUM DIMENSIONS FOR TRACTS/EASEMENTS AND MINIMUM DISTANCES FROM ABANDONED MINESHAFTS TO RESIDENTIAL LOTS AND NON-RESIDENTIAL STRUCTURES SHALL BE DETERMINED BASED ON RECOMMENDATIONS FROM THE GEOLOGICAL AND GEOTECHNICAL HAZARDS REPORTS AND THE COLORADO GEOLOGICAL SURVEY.

C. MINE TAILINGS: IF MINE TAILINGS ARE LOCATED ON A PROPERTY, THE REMOVAL OF MINE TAILINGS SHALL BE ADDRESSED IN A DEVELOPMENT AGREEMENT. THE TOWN SHALL REQUIRE SUBMITTAL OF A PROFESSIONAL CERTIFICATION THAT THE MINE TAILINGS AND HAZARD ASSOCIATED WITH THE TAILING HAS BEEN REMOVED AND COMPLETED.

THE TYNON / CHASE MINE SHAFT WILL BE MITGATED USING A CONCRETE CAP AND COMPACTION TECHNIQUES AS SPECIFIED BY WESTERN ENVIRONMENT AND ECOLOGY, INC. THE MITIGATION WILL BE PERFORMED IN CONFORMANCE WITH THE CAPPING DETAIL PROVIDED AND AT THE TIME OF FINAL CONSTRUCTION DEVELOPMENT BASED ON THE SPECIFICATION AND DEPTH.

PRELIMINARY PLAT

TRACT "O", CREEKSIDE SUBDIVISION AND A PORTION OF THE SOUTH ONE-HALF OF SECTION 13,
TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN,
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
70.626 ACRES - 194 LOTS / 25 TRACTS / 1 OUTLOT
PP-001108-2019

TRACT SUMMARY CHART -- CANYON CREEK SUBDIVISION FILING NO. 7

NAME	AREA (AC)	AREA (SF)	USE	OWNER	MAINTENANCE
TRACT A	0.049	2,151	UTILITIES	HOA	HOA
TRACT B	0.076	3,301	LANDSCAPING, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT C	7.542	328,543	DEDICATED OPEN SPACE, DRAINAGE, OIL & GAS BUFFER, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT D	0.042	1,851	PEDESTRIAN, LANDSCAPING AND DRAINAGE	HOA	HOA
TRACT E	2.064	89,929	PRIVATE OPEN AREAS, DRAINAGE, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT F	0.324	14,107	LANDSCAPING, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT G	2.037	88,715	DEDICATED OPEN SPACE, DRAINAGE, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT H	0.248	10,810	LANDSCAPING, MINE BUFFER	HOA	HOA
TRACT I	0.393	17,098	LANDSCAPING	HOA	HOA
TRACT J	0.351	15,271	POCKET PARK, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT K	0.303	13,190	PRIVATE CONVEYANCE TO ADJACENT PROPERTY	THOMAS M. & SHELLY JONES	THOMAS M. & SHELLY JONES
TOTAL:	13.429	584,966			

LAND SUMMARY CHART--CANYON CREEK SUBDIVISION FILING NO. 7

TYPE	AREA (AC)	AREA (SF)	% OF TOTAL AREA
LOTS (106)	17.023	741,527	43.767%
TRACTS (11)	13.429	584,966	34.527%
ROW	8.443	367,761	21.706%
TOTAL:	38.895	1,694,254	100.000%

NOTES

16. ALL LOTS IN SUBSIDENCE ZONE A AND SUBSIDENCE ZONE B MUST INCORPORATE STRAIN ISOLATION TRENCHES PER THE MINE SUBSIDENCE INVESTIGATION REPORT, DATED FEBRUARY 19TH, 2020, REVISED JULY 8TH, 2020, BY WESTERN ENVIRONMENT AND ECOLOGY, INC. MORE SPECIFICALLY:

SUBSIDENCE ZONE A (FOUNDATION LENGTHS SHALL BE RESTRICTED TO 77--FEET):
CANYON CREEK FILING NO. 7:

BLOCK 4, LOTS 4 THROUGH 9, INCLUSIVE;
BLOCK 5, LOT 4;
BLOCK 9, LOTS 6, 7 AND 8;
BLOCK 10, LOTS 1 THROUGH 7, INCLUSIVE, AND LOTS 13, 14 AND 15;
BLOCK 11, LOT 9
ALL OF BLOCK 12;
CANYON CREEK FILING NO. 8:
ALL OF BLOCKS 15 AND 16;


SUBSIDENCE ZONE B (FOUNDATION LENGTHS SHALL BE RESTRICTED TO 67--FEET):
CANYON CREEK FILING NO. 7:
BLOCK 1, LOTS 1 AND 2.

TRACT SUMMARY CHART -- CANYON CREEK SUBDIVISION FILING NO. 8

NAME	AREA (AC)	AREA (SF)	USE	OWNER	MAINTENANCE
TRACT A	0.312	13,602	LANDSCAPING, PEDESTRIAN WALK	HOA	HOA
TRACT B	0.342	14,910	LANDSCAPING, PEDESTRIAN WALK, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT C	0.033	1,425	LANDSCAPING, PEDESTRIAN WALK, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT D	10.505	457,584	DRAINAGE, UTILITIES, OIL & GAS, PUBLIC ACCESS EASEMENT	TOWN OF ERIE	TOWN OF ERIE
TRACT E	1.292	56,273	POCKET PARK, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT F	0.537	23,396	LANDSCAPING, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT G	0.257	11,188	ACCESS, UTILITIES, ALLEYS, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT H	0.282	12,270	ACCESS, UTILITIES, ALLEYS, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT I	0.282	12,270	ACCESS, UTILITIES, ALLEYS, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT J	0.088	3,824	ACCESS, UTILITIES, ALLEYS, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT K	0.088	3,824	ACCESS, UTILITIES, ALLEYS, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT L	0.307	13,400	ACCESS, UTILITIES, ALLEYS, PUBLIC ACCESS EASEMENT	HOA	HOA
TRACT M	0.048	2,070	LANDSCAPING, PEDESTRIAN WALK	HOA	HOA
TRACT N	0.104	4,537	LANDSCAPING, PEDESTRIAN WALK, PUBLIC ACCESS EASEMENT	HOA	HOA
OUTLOT A	9.168	399,341	FUTURE DEVELOPMENT	STRATUS CANYON CREEK, LLC	STRATUS CANYON CREEK, LLC
TOTAL:	23.644	1,029,913			

LAND SUMMARY CHART--CANYON CREEK SUBDIVISION FILING NO. 8

TYPE	AREA (AC)	AREA (SF)	% OF TOTAL AREA
LOTS (88)	6.050	263,539	19.067%
TRACTS/OUTLOT (15)	23.644	1,029,913	74.513%
ROW	2.037	88,741	6.420%
TOTAL:	31.731	1,382,193	100.000%

 <div>0960 TEDDY LANE, SUITE 1003 LOUISVILLE, COLORADO 80124 TELEPHONE: 303-596-0700 FAX: 303-595-2701</div> CWC CONSULTING GROUP CIVIL ENGINEERING • LAND SURVEYING • CONSTRUCTION SERVICES	DATE	REVISION	BY	DRAFTED: S.L.G.3	CHECKED: E.D.C.	SHEET NO. 2 OF 13 SHEETS
	07/21/20	REVISED LOT/TRACT LINES & ROW	SLG3			
	07/21/20	ADDRESSED TOWN COMMENTS	SLG3			
	11/12/20	REVISED STREET NAMES, NOTE, TRACT CHART, WATER ESWT	SLG3			
	01/29/21	ADDRESSED TOWN COMMENTS, MODIFIED UES	SLG3			
	03/19/21	CLIENT REVISIONS	SLG3			
SURVEY PREPARED FOR: STRATUS CANYON CREEK, LLC				DATE: 08/27/19	JOB NO. 120-00237 130-00091	

Harvey Blair
12446 Jay Road
Erie, Co. 80516

Stratus Canyon Creek LLC
1842 Montane Drive East
Golden, Co. 80401

January 28, 2021

RE: Jasper Road ROW 0.443 acre acquisition, Counter offer

Mr. Richard Dean,

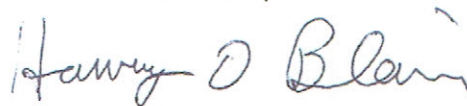
In response to your counter offer letter dated December 28, 2020, I would be willing to pursue a possible sale of the 0.443-acre parcel from the west end of my property (the parcel) on the following terms, subject to reaching mutual agreement on the specific terms of a formal contract. This letter is my response to your counter offer.

1. The purchase price will be \$170,000.00
2. An earnest money deposit of \$10,000.00 to be deposited with First American Title as you proposed, with the earnest money to become non-refundable, and released to me, upon mutual signing a formal contract. The deposit would be applicable to the purchase price at closing of the sale and purchase.
3. The proposed relocation of the Brannon Box Lateral ditch serving my property and the property lying to the east of my property, is a major concern to me. I understand there are a number of approvals as outlined in your recent letter, that would need to be obtained in order to accomplish the relocation. In the event the ditch relocation cannot be accomplished to deliver irrigation water to a point on the western portion of my property, the sale price of the Parcel would need to be increased by \$30,000.00.
4. I understand if the lateral ditch can be relocated, that you will undertake to abandon and remove the current ditch lateral which crosses the Johnson Development property lying to the south of my property.
5. You have offered to pay for all of my legal and other fees as well as costs related to the division of the parcel from my property and the relocation and approvals of the various entities and people which need to approve the relocation.

6. I will agree to execute applications as are reasonably necessary for you to obtain approval from the Town of Erie, RTD and other entities to accomplish your development plan for the Parcel, providing that nothing becomes binding on the Parcel, my other property or me personally, unless I choose to give my consent for something to become binding.


7. You shall replace any/all cattle fences that are removed/damaged during your construction. A sketch shall be provided to me to determine if your new fence meets with my approval.

Thank You,



Harvey Blair

Accepted *



Roger G. Holland
authorized agent for
Stratus Canyon Creek LLC

* Accepted, provided Conditions 1. through 5. stated in the email dated 1/29/2021 from RGHolland@gmail.com are agreeable to the Seller



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Page: 1 of 2
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Boulder County Clerk, CO AG

R 11.00

D 0.00

MEMORANDUM OF
COMPATIBLE DEVELOPMENT AND SURFACE USE AGREEMENT

Pursuant to the terms of that certain unrecorded Compatible Development and Surface Use Agreement ("Agreement") dated effective the 27th day of October, 2008, between the undersigned, and subject to the conditions set forth therein, EnCana Oil & Gas (USA) Inc. ("EnCana") with an address at 370 17th Street, Suite 1700, Denver, Colorado 80202, and Johnson Development Company ("Owner") with an address of 4380 South Syracuse Street, Suite 510, Denver, Colorado 80237, agreed to the compatible use of the surface for development and for oil and gas operations including construction and maintenance of pipelines and flowlines, surface use and accommodation for directional drilling purposes, and other operations located on the following lands:

Township 1North, Range 69 West, 6th P.M.,
Section 13: SE/4SW/4, SW/4SW/4

Boulder County, Colorado

This Memorandum of Compatible Development and Surface Use Agreement is executed by EnCana and Owner and placed of record in Boulder County, Colorado for the purpose of placing all persons on notice of the existence of the Agreement. A true and complete copy of the Agreement is available at the offices of EnCana.

In witness whereof this instrument is executed effective the 27th day of October, 2008.

ENCANA OIL & GAS (USA) INC.

By: 

Ricardo D. Gallegos, Attorney-in-Fact

JOHNSON DEVELOPMENT COMPANY

By: 

C. Howard Johnson, President



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Page: 2 of 2
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Boulder County Clerk, CO AG

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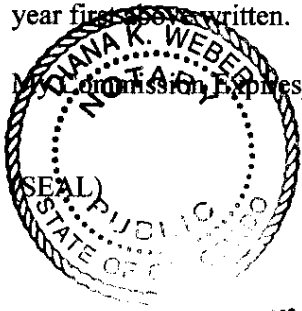
ACKNOWLEDGMENTS

STATE OF COLORADO)
)ss
CITY AND COUNTY OF DENVER)

On this 12th day of November, 2008, before me personally appeared Ricardo D. Gallegos, who executed the within and foregoing instrument as Attorney-in-Fact of EnCana Oil & Gas (USA) Inc. on behalf of the corporation, and acknowledged the instrument to be the free and voluntary act and deed of the corporation for the uses and purposes therein set forth

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

My Commission Expires 6/23/09

Notary Public: Diana K. Weber

My Commission Expires 2009

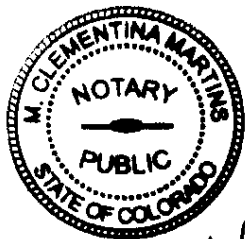
STATE OF COLORADO)
)ss
COUNTY OF ARAPAHOE)

On this 27th day of October, 2008, before me personally appeared C. Howard Johnson who executed the within and foregoing instrument as President on behalf of the corporation, and acknowledged the instrument to be the free and voluntary act and deed of the corporation for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

My Commission Expires: 4/30/2012

(SEAL)

Notary Public: M. Clementina Martins

My Commission Expires 4/30/2012

COMPATIBLE SURFACE USE AGREEMENT

THIS COMPATIBLE SURFACE USE AGREEMENT ("Agreement") is effective this 10th day of May, 2011, by and among ENCANA OIL & GAS (USA) INC. ("EnCana") with an address of 370 17th Street, Suite 1700, Denver, Colorado 80202, ANADARKO E&P COMPANY LP ("Anadarko E&P"), formerly known as Union Pacific Resources Company, ANADARKO LAND CORP. ("Anadarko Land"), formerly known as Union Pacific Land Resources Corporation (together the "Anadarko Entities"), both with an address of Post Office Box 1330, Houston, Texas 77251-1330 (the Anadarko Entities and EnCana are referred to hereinafter together as the "Oil Companies"); KERR-McGEE GATHERING LLC ("KMGG"), an affiliate of the Anadarko Entities, for the limited purposes described herein, with an address of 1099 18th Street, Suite 1800, Denver, Colorado 80202 and JOHNSON DEVELOPMENT COMPANY, INC. ("Surface Owner"), a Colorado corporation, with an address of 4380 South Syracuse Street, Suite 510, Denver, Colorado 80237 and the TOWN OF ERIE ("Town"), a municipal corporation of the State of Colorado, with an address of 645 Holbrook, Erie, Colorado 80516. A reference herein to an "Oil Company" or "Oil Companies" shall be a reference to whichever of them has the right at the time to drill and operate wells on the applicable portion of the Property as hereinafter described.

A. Surface Owner owns the surface estate for approximately 33.35 acres in the W/2SE/4 of Section 13, Township 1 North, Range 69 West, Boulder County, Colorado, which is hereinafter referred to as the "SE/4 Property" and more specifically depicted as "Tract C," "Tract D," and "Tract E," in the attached Exhibit 1.

B. Surface Owner also owns the surface estate for approximately 37.75 acres in the SE/4SW/4 of Section 13, Township 1 North, Range 69 West, Boulder County, Colorado, which is hereinafter referred to as the "SW/4 Property" and more specifically depicted in the attached Exhibit 1 as "Canyon Creek Filing 7."

C. The Town owns or will acquire from Surface Owner a parcel of property in the NW/4SE/4 of Section 13, Township 1 North, Range 69 West, Boulder County, Colorado, consisting of approximately 10.10 acres, and more specifically depicted as the "Town of Erie Detention Pond Easement" and Tract A in the attached Exhibit 1 and hereinafter referred to as the "Town Property."

D. The SE/4 Property, the SW/4 Property, and the Town Property are referred to hereinafter together as the "Property."

E. Surface Owner has filed an application with the Town for the approval of a preliminary plat for a residential subdivision to be constructed on portions of the Property.

F. The Anadarko Entities own certain minerals that underlie the SE/4 Property and the Town Property, such that Anadarko Land owns the coal rights under a certain portion of the property and the Anadarko Entities together own all of the minerals under another portion of such property.

G. Surface Owner and the Town own the oil and gas interests and other mineral interests, except for the coal, for 20.00 acres in the SE/4 of Section 13 as more specifically depicted as Tract E and Tract F in Exhibit 1 and described as the "JDC Mineral Ownership" and the "Erie Mineral Ownership" areas.

H. EnCana owns oil and gas leasehold interests in the SE/4 Property, the SW/4 Property and the Town Property, and EnCana also owns pipelines and easements that cross the SW/4 Property, as depicted on Exhibit 2.

I. KMGG owns pipelines and easements that cross the SW/4 Property and may install additional pipelines on the Property in the future, and Surface Owner and KMGG expect that certain of such pipelines and easements may be the subject of a separate pipeline relocation agreement that includes the abandonment of certain pipelines and easements and proposed locations for additional pipelines and easements on both the SW/4 Property and the SE/4 Property.

J. Current Colorado Oil and Gas Conservation Commission ("COGCC") rules and regulations allow the owners and/or lessees of the oil and gas for the Property to locate oil and/or gas wells in five drilling windows in a quarter section, one in approximately the center of each quarter quarter section in a 400 foot by 400 foot window and one in the center of the quarter section in an 800 foot by 800 foot window.

K. The parties enter into this Agreement to provide for the coexistence and joint development of the surface estate and the oil and gas estate for the Property and to delineate the process with which they shall comply with respect to the development of the two estates.

L. This Agreement is limited to the compatible development of the surface estate and the oil and gas estate for the Property; it does not in any respect apply to the minerals other than the oil, gas and associated liquid hydrocarbons or the coal owned by Anadarko Land in a portion of the SE/4 Property which are addressed in a separate Agreement Concerning Certain Mineral Rights between Anadarko Land and Surface Owner.

NOW THEREFORE, in consideration of the covenants and mutual promises set forth in this Agreement, including in the recitals, the parties agree as follows:

1. **Oil and Gas Operations Area.**

a. The Oil Companies agree that they shall drill and/or operate oil and/or gas wells only within "Tract C" as identified on Exhibits 1 and 2A and hereinafter referred to as the "Oil and Gas Operations Area." Operations and uses within the Oil and Gas Operations Area include, but are not limited to, drilling, completion, and maintenance of wells and equipment, production operations, workovers, well recompletions and deepenings, fracturing, refracturing, twinning, and drilling of replacement wells and the location of associated oil and gas production and drilling equipment and facilities.

b. The Oil and Gas Operations Area shall include the area within Tract C which is in the shape of an oval that is approximately 390 feet by 400 feet, consisting of 3.48 acres, and labeled “Oil and Gas Operations Area” as depicted on Exhibit 2A, and also the exterior fifty (50) foot buffer zone around the Oil and Gas Operations Area depicted on the Exhibit.

c. The Oil Companies shall continue to have the right to drill more than one well with attendant facilities within the Oil and Gas Operations Area and to deepen, recomplate or twin any well that is drilled or has been drilled, as well as to drill directional and horizontal wells that produce from and drain the Property or lands other than the Property. The depiction of specific wells and production facilities on exhibits to this Agreement does not in any way limit the number of wells and production facilities to be located within the Oil and Gas Operations Area, so long as such wells are drilled and facilities located within the Oil and Gas Operation Area, and the wells are drilled in accordance with COGCC orders or rules and regulations.

d. Except for: i) the creation of a lot line by the Town in the future where the detention pond easement intersects the buffer area and which is depicted on Exhibit 2A as Tract A; ii) the portion of the detention pond that is operated by the Town that encroaches within the northeast corner of the buffer area of the Oil and Gas Operations Area as depicted on Exhibit 2A; and iii) soft or hard surface trails, roads and parking lots, which shall be specifically allowed in the buffer area of the Oil and Gas Operations Area only, Surface Owner and the Town shall not plat any property lines within the Oil and Gas Operations Area or buffer area, and no temporary or permanent building or other structure or improvement shall be located by Surface Owner or the Town within the Oil and Gas Operations Area or buffer area; provided, however, the Oil Companies shall in no event be liable for damages to the detention pond or trails, roads and parking lots that are caused in whole or in part from their oil and gas operations; provided further, upon fifteen days advance notice from the Oil Companies, Surface Owner and the Town shall restrict public access to the Oil and Gas Operations Area, including the buffer area, during oil and gas operations using heavy equipment. Except as provided herein, the Oil and Gas Operations Area and buffer area shall be for the exclusive use of oil and gas operations and production and for the location of oil and gas wells and associated oil field drilling and production equipment.

e. The Oil Companies shall also have the right to locate, build, repair and maintain tanks, separators, dehydrators, compressors and all other associated oil and gas drilling and production equipment and facilities within the Oil and Gas Operations Area and also flowlines and portions of pipeline easements.

f. The Oil Companies shall not interfere with, modify or grade within the existing detention pond easement as depicted on Exhibits 1 and 2A, and the Town shall not re-grade or modify the detention pond area in any way that interferes with the oil and gas operations contemplated herein.

g. All parties recognize the prior existence of an irrigation ditch across a portion of Tract C for use of downstream property owners.

2. **Access to Oil and Gas Operations Area.**

a. Temporary and permanent access roads to the Oil and Gas Operations Area shall be at the locations depicted on Exhibit 2. Temporary access shall be north and south between the half section line as depicted on the Exhibit as Jasper Road, and permanent access shall be from the north on Jasper Road at such time as the north portion of Jasper Road is constructed and available for use by the Oil Companies.

b. Access to the Oil and Gas Operations Area over and through the Property may be relocated by mutual agreement of Surface Owner and/or the Town, as applicable, and the Oil Companies; provided however, all costs and expenses of such relocations shall be borne by the party which requests them.

c. Surface Owner shall provide access to the Oil and Gas Operations Area at all times both before and following the construction of the permanent access road. No party shall unreasonably interfere with the use by the other of an access road consistent with this Agreement.

d. Surface Owner shall keep the portion of the access road located in the future Jasper Road right-of-way that may be jointly used by the Surface Owner and the Oil Companies in good condition and repair until the public road in that location is constructed and dedicated to the Town; provided, however, if one of the Oil Companies causes damage to a portion of a road that is jointly used by both the Oil Companies and Surface Owner or its subdivision occupants and which is constructed to the specifications in Section 2.e.(1), the Oil Companies agree to promptly repair any damage that they cause which is a direct result of their use of the road. Surface Owner has no obligation to construct or maintain any portion of Jasper Road until the Town and Surface Owner agree that it is necessary.

e. **Construction and Width of Access Roads.**

(1) The portion of Jasper Road that is jointly used by the Oil Companies and Surface Owner shall be thirty (30) feet or more in width. At the time Surface Owner constructs or improves Jasper Road in connection with its surface development, the road shall be constructed so as to withstand the weight of oilfield equipment; specifically, Surface Owner shall construct such portion of Jasper Road so that it can be used to withstand the weight of 104,000 pounds and 26,000 pounds per axle.

(2) Access roads or portions of access roads that are used exclusively by the Oil Companies shall be generally thirty (30) feet or more in width, and the Oil Companies shall install and maintain them to those state and local standards that apply to oil and gas operations.

f. If Surface Owner proposes to construct roads that will cross over pipelines that are then installed on the Property, Surface Owner shall pay the applicable Oil Company the reasonable costs to have the Oil Company sleeve the portions of the pipelines that are to be crossed by such roads, if the Oil Company desires to sleeve the pipelines and requests, in

writing, that the costs be paid, such payment to be made in advance of the work. Surface Owner shall not install the portion of the road that crosses a pipeline until the pipeline has been sleeved.

g. Surface Owner shall obtain and pay the costs to obtain from the local jurisdiction, as necessary, permits for two curb cuts. One of the two locations for a curb cut is shown on Exhibit 2 and is agreed upon by the Town, Surface Owner and the Oil Companies. The location for the second curb cut shall be at the location agreed to among the parties at the time Surface Owner begins construction of Jasper Road in the south portion of the Property. Said curb cuts shall be forty (40) feet in width.

3. **Pipelines, Flowlines and Pipeline Easements.**

a. Flowlines and pipeline easements shall be at the locations depicted on Exhibit 2.

b. **Pipeline Relocations.**

(1) Locations of pipelines, flowlines and such easements may be relocated pursuant to a separate relocation agreement to be entered into among the appropriate parties and by mutual agreement of Surface Owner and/or the Town, as applicable, and the Oil Companies; provided, however, all costs and expenses of such relocations shall be borne by the party which requests the relocation. In the event that Surface Owner or the Town, as applicable, requests the relocation of a pipeline or flowline, the applicable Oil Company shall provide Surface Owner or the Town, as applicable, with a written estimate of the relocation costs which Surface Owner or the Town shall thereafter promptly remit to the Oil Company. The payment shall be adjusted up or down upon completion of the work, after an itemized statement is provided to the party requesting the relocation.

(2) At the present time the parties anticipate the relocation of certain pipelines owned by EnCana and KMGG as depicted on the attached Exhibit 2. Surface Owner and KMGG agree that with respect to the relocation of any KMGG pipeline, they will enter into a pipeline relocation agreement generally in the form attached as Exhibit 4.

c. Pipeline easements shall be fifty (50) feet in width during construction activities and thirty (30) feet in width for all operations, maintenance and transportation activities. Flowline easements shall be thirty (30) feet in width for all operations. For those portions of the pipeline easements that are adjacent to the access road, the pipeline easement and access road together shall be seventy (70) feet during pipeline construction activities and may be reduced to fifty (50) feet following such construction, such that twenty (20) feet shall at all times be available for use for access.

d. Pipeline and flowline easements shall be for the exclusive use of oil and gas production operations; provided, however, the easements may be shared by the Oil Companies and their lessees, assignees of lessees and successors and assigns. The Oil Companies understand

that a portion of the pipeline easement may be shared by them in the area depicted and identified on Exhibit 2 as the “Proposed 30 foot Gas Pipeline Easement.”

e. Surface Owner reserves the right to cross the pipeline easements at approximately right angles, and Surface Owner shall also have the right to install and maintain easements that are adjacent to, but not within the easements identified herein, for utility lines, including those for water, gas, sewer, electric, telephone, cable, television, and fiber optic and other pipelines; provided, however; i) any new underground facilities which travel along a pipeline easement identified herein shall be located a distance horizontally of at least ten (10) feet from parallel existing pipelines; ii) any new underground facilities shall have at least twenty-four (24) inches of vertical clearance between such new facility and a pipeline provided for herein; and iii) any overhead power lines shall be at least twenty (20) feet above the ground. Surface Owner may install non-permanent soft surface trails that meander over and across pipeline easements, and it also may install paved surface trails, but only that cross the pipeline easement at generally right angles; provided, however, the Oil Companies shall in no event be liable for damages to the trails (both hard and soft surface) that are caused in whole or in part by their oil and gas operations.

f. Surface Owner shall grant the pipeline easements (for production from the Property and/or other lands) to the Oil Companies at the time the Oil Companies request them and at no cost to the Oil Companies, and, with respect to pipelines to be operated by KMGG, in the form attached hereto as Exhibit 3.

g. Surface Owner acknowledges that it has received a copy of a document from the Anadarko Entities titled “General Guidelines for Design and Construction Activities On or Near Kerr-McGee Gathering LLC and Kerr-McGee Rocky Mountain Corporation Pipelines and Related Facilities” (Revision 5/2010) with which Surface Owner agrees to comply and which is attached to this Agreement as Exhibit 5.

h. The Oil Companies shall use the area that is thirty (30) feet by thirty (30) feet and depicted on Exhibit 2 as a surface easement to locate receiver equipment connected to their oil and gas operations on the Property.

4. **Subdivision Plat.** Surface Owner shall identify the Oil and Gas Operations Area and all access routes and pipeline easements on its subdivision plats and in all applications for development it files with the Town or other local jurisdiction. The plat shall include restrictions that, except as otherwise provided herein, no property lines or temporary or permanent building, structure or other improvement related to the surface development shall be located, constructed or installed within the Oil and Gas Operations Area. Surface Owner shall record the subdivision plat in the Office of the Clerk and Recorder of Boulder County and provide written evidence to the Oil Companies of the recording.

5. **Waiver of Surface Damage Payments.** Surface Owner and the Town each waive all surface damage payments pursuant to any current or future COGCC or local regulation, state statute, common law or prior agreement for each and every well and related well site that is drilled and located within the Oil and Gas Operations Area and for associated oil and gas equipment and facilities, flowlines, and pipeline easements and access routes. The Oil

Companies or their lessees or their assignees may provide a copy of this Agreement to the COGCC or any local jurisdiction, person or entity or court of law as evidence of this waiver.

6. **Waiver of Setback Requirements.** Surface Owner and the Town each understands and acknowledges that the COGCC has rules and regulations that apply to the distance between a wellhead and public roads, production facilities, building units and surface property lines, among other things. Surface Owner and the Town each hereby waives all setback requirements in COGCC Rule 603, or any successor rule or amendment to the COGCC setback rules, and to any other state or local setback requirements that are or become inconsistent with this Agreement or that would prohibit or interfere with the rights of the Oil Companies to explore for and produce the oil and gas in accordance with this Agreement. Surface Owner and the Town understand that the Oil Companies may cite the waiver in this Section 6 in order to obtain a location exception or variance consistent with this Agreement under COGCC rules or from a local jurisdiction.

7. **Governmental Proceedings.**

a. **Surface Owner Will Not Object.** Surface Owner agrees that it will not object in any forum to the use by the Oil Companies of the surface of the Property consistent with this Agreement and hereby waives any such right to object. Surface Owner further agrees that it will provide such other written approvals and waivers which are reasonably requested by an Oil Company and consistent with this Agreement, including, but not limited to, all approvals and waivers to drill a well or to conduct oil and gas operations on the Property because of any law or regulation, including any local ordinance and regulations of the COGCC, and including, for example, waivers to state and local setback requirements and to any setback requirements from a surface property line or for an exception location for a well drilled within the Oil and Gas Operations Area. Surface Owner further waives any rights it has to require or request a surface inspection for wells proposed to be drilled on the Property for the purpose of requesting that conditions be attached to a permit to drill the well and hereby waives any rights it has to request a state or local jurisdiction to attach conditions to such permits; provided that, such use of the Property by the Oil Companies is consistent with this Agreement. Surface Owner further consents to the location of multiple wells within the Oil and Gas Operations Area that are greater or less than fifty (50) feet apart so long as all such wells are located within the Oil and Gas Operations Area.

b. **Town Will Not Object.** Subject to the exception set forth below, the Town agrees that: i) it will not object in any forum to the use by the Oil Companies of the surface of the Property consistent with this Agreement and hereby waives any such right to object; ii) it will provide such other written approvals and waivers which are reasonably requested by an Oil Company and consistent with this Agreement, including, but not limited to, all approvals and waivers to drill a well or to conduct oil and gas operations on the Property because of any law or regulation, including any local ordinance and regulations of the COGCC, and including, for example, waivers to state and local setback requirements and to any setback requirements from a surface property line or for an exception location for a well drilled within the Oil and Gas Operations Area; iii) it waives any rights it has to require or request a surface inspection for wells proposed to be drilled on the Property for the purpose of requesting that conditions be

attached to a permit to drill the well and hereby waives any rights it has to request a state or local jurisdiction to attach conditions to such permits; provided that, such use of the Property by the Oil Companies is consistent with this Agreement; and iv) it consents to the location of multiple wells within the Oil and Gas Operations Area that are greater or less than fifty (50) feet apart so long as all such wells are located within the Oil and Gas Operations Area and are consistent with the locations depicted on Exhibit 2. Notwithstanding anything to the contrary contained herein, the Oil Companies understand and acknowledge that they will be required to apply to the Town for approval of a use by special review, site plan review approval, and other approvals that may be required pursuant to Title 10 of the Erie Municipal Code and the Town's Standards and Specifications for Design and Construction of Public Improvements for wells that are drilled pursuant to the Agreement and that such requirements are subject to public hearings and the decision of the Town; provided, however, the parties understand that the Oil Companies are not by law required to comply with any such Town rules and regulations that are in operational conflict with rules and regulations of the COGCC or other state law regulating oil and gas operations.

c. **Oil Companies Will Not Object.** The Oil Companies agree that they will not object to the use by Surface Owner of the surface of the Property or to the sale or development by Surface Owner of all or portions of the Property consistent with this Agreement, and they will not object in any forum to a request by Surface Owner to annex, zone, rezone, plat or re-plat all or any portion of the Property to extent such request is consistent with this Agreement. The Oil Companies further agree that they will provide such other written approvals or waivers which are reasonably requested by Surface Owner in connection with the development of the surface estate in any state or local jurisdiction to the extent such request is consistent with this Agreement.

8. **Notices of Hearings.** Surface Owner shall provide the Oil Companies with written notice not less than thirty (30) days before each hearing for consideration of a plat application or other land use application for the Property or portions of the Property to be held before the Town or other local jurisdiction.

9. **Notice to Homeowners and Builders.** Surface Owner shall furnish all builders and developers which purchase all or any portion of the Property and each person or entity who proposes to enter into a contract to purchase a lot which is adjacent to, or any part of which is within, 350 feet from the Oil and Gas Operations Area or a flowline or pipeline easement, with a plat that shows the locations of the Oil and Gas Operations Area and the flowlines and pipeline easements. In addition, Surface Owner shall provide written notice to all such purchasers that includes the following:

- i. they are not purchasing and will not own any rights in the oil, gas and mineral estate in and to the Property;
- ii. there may be ongoing oil and gas operations and production within the Oil and Gas Operations Area, pipeline and flowline easements and access routes;
- iii. there are likely to be wells drilled and additional oil and gas production facilities constructed and installed within the Oil and Gas Operations Area and additional

flowlines and pipelines constructed and maintained on the Property consistent with this Agreement;

iv. heavy equipment will be used by the Oil Companies from time to time for oil and gas drilling and production operations and such operations may be conducted on a 24-hour basis; and

v. homeowner associations and buyers of individual lots or homes will be subject to and burdened by all of the covenants and waivers made by Surface Owner in this Agreement, including, but not limited to those covenants and waivers: a) prohibiting the location of any temporary or permanent building, structure, or other improvement within the Oil and Gas Operations Area; b) waiving objections to the drilling of wells, the construction of facilities, and the conduct of oil and gas operations on the Property consistent with this Agreement; c) waiving surface damages payments as provided herein; d) granting the easements for pipelines described herein; and e) waiving objections to the setback requirements under the rules of the COGCC or any local jurisdiction consistent with this Agreement, among other things.

10. **Notice of Oil and Gas Operations.** The Oil Companies shall provide the Town or Surface Owner, as applicable, with notice of drilling operations and subsequent well operations in accordance with COGCC rules and regulations.

11. **Impact Mitigation.** Surface Owner shall bear costs to install such noise and visual impact mitigation measures it desires or the Town or other local jurisdiction requires at or around the Oil and Gas Operations Area which are in excess of or in addition to those measures that are required by COGCC regulations for areas that are not high density; provided, however, the operator of the well within the Oil and Gas Operations Area shall have reasonable discretion to veto or protest the types and locations of impact mitigation measures in order to allow for safe oil and gas operations.

12. **Individual Liability of Oil Companies.** Nothing in this Agreement is intended to create a cause of action by any Oil Company against any other Oil Company or to enlarge or diminish any right or interest created by any agreement or lease or assignment of lease between or among the Oil Companies. Nothing in this Agreement creates any leasehold rights or gives any mineral rights to any of the Oil Companies where none exists. The liability of the Oil Companies to perform any obligation hereunder or to comply with any agreement included herein or with any state or local rule or regulation is individual and several and not joint or collective. This Agreement does not create a joint venture or partnership between or among the Oil Companies. The Anadarko Entities shall in no event be liable for the acts or omissions of their lessees or farmoutees or the assignees or contractors and subcontractors of any of them.

13. **Compliance with Common Law and Statutory and Regulatory Requirements.** Surface Owner and the Town each expressly acknowledges that this Agreement satisfies the obligations and requirements of the Oil Companies pursuant to COGCC rules and regulations and Colorado statutes to consult in good faith with Surface Owner and the Town regarding existing and proposed oil and gas operations on the Property. Surface Owner and the Town, on

the one hand, and the Oil Companies, on the other hand, each further expressly acknowledges that this Agreement shall be deemed to be specifically applicable to, and to fully satisfy, the obligations of the Oil Companies and Surface Owner and the Town, as the case may be, to accommodate the use of the surface of the Property by the other, existing and future, and Surface Owner and the Town and the Oil Companies all waive any statutory and common law claims to the contrary, including, but not limited to, any claims pursuant to C.R.S. 34-60-127. Surface Owner assumes no obligations or liability by entering into this Agreement for the reclamation or remediation of existing and future flowlines, pipelines, well sites or productions facilities that the Oil Companies construct or install on the Property, except with respect to any liability it may have as an owner of the oil and gas estate for portions of the Property and in its participation in a well or wells or pursuant to a separate pipeline relocation agreement.

14. **Authority to Execute Agreement.** Each party represents that it has the full right and authority to enter into this Agreement with respect to the surface rights, oil and gas interests, or oil and gas leasehold interests it owns in the Property, as applicable.

15. **No Waiver of Rights.** The Oil Companies do not waive the rights they have pursuant to each of their respective oil and gas interests to explore for, drill and produce the oil and gas for the Property or for ingress and egress to the Oil and Gas Operations Area, except as specifically provided in this Agreement. Surface Owner and the Town do not waive any of their rights to the Property, except as specifically provided in this Agreement. Without limiting the foregoing, Surface Owner and the Town, by entering into this Agreement, do not waive or assign any mineral rights it owns in Tract E and Tract F, as applicable

16. **Successors and Assigns.** This Agreement and all of the covenants in it shall be binding upon the subsequent lessees and assignees of lessees and also the personal representatives, heirs, successors and assigns of all of the parties, and the benefits of this Agreement shall inure to all of them. This Agreement and all of the covenants in it shall be covenants running with the land.

17. **Recording.** The Oil Companies shall record this Agreement with the Clerk and Recorder of Boulder County and provide evidence to Surface Owner and the Town of the recording.

18. **Construction.** The parties have participated jointly in the negotiating and drafting of this Agreement. In the event ambiguity or question of intent or interpretation arises, this Agreement shall be construed as if drafted jointly by the parties, and no presumption or burden of proof shall arise favoring or disfavoring any party by virtue of the authorship of any of the provisions of this Agreement. Any reference to any federal, state, local or foreign statute or law shall be deemed also to refer to all rules and regulations promulgated thereunder, unless the context requires otherwise. The word "including" shall mean including, without limitation.

19. **Governing Law.** The validity, interpretation and performance of this Agreement shall be governed and construed in accordance with the laws of the State of Colorado.

20. Severability. If any part of this Agreement is found to be in conflict with applicable laws, such part shall be inoperative, null and void insofar as it conflicts with such laws; however, the remainder of this Agreement shall be in full force and effect. In the event that any part of this Agreement would otherwise be unenforceable or in conflict with applicable laws due to the term or period for which such part is in effect, the term or period for which such part of this Agreement shall be in effect shall be limited to the longest period allowable which does not cause such part to be unenforceable or in conflict with applicable laws.

21. Notices. Any notice or communication required or permitted by this Agreement shall be given in writing either by: i) personal delivery; ii) expedited delivery service with proof of delivery; iii) United States mail, postage prepaid, and registered or certified mail with return receipt requested; or iv) prepaid telecopy or fax, the receipt of which shall be acknowledged, addressed as follows:

Anadarko E&P, Anadarko Land, or KMGG:	Anadarko Petroleum Corporation 1099 18 th Street, Suite 1800 Denver, Colorado 80202
EnCana:	EnCana Oil & Gas (USA) Inc. Attention: DJ Land Group Lead 370 17 th Street, Suite 1700 Denver, Colorado 80202
Surface Owner:	Johnson Development Company, Inc. 4380 South Syracuse Street, Suite 510 Denver, Colorado 80237
Town:	Town of Erie 645 Holbrook Post Office Box 750 Erie, Colorado 80516 Attn: Town Administrator

Any party may, by written notice as provided in this Section, change the address of the individual to whom delivery of notices shall be made thereafter.

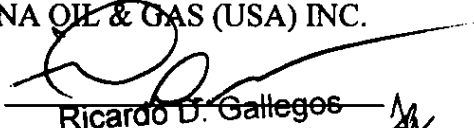
22. Incorporation by Reference. Exhibits 1, 2, 3, 4 and 5 are incorporated into this Agreement by this reference.

23. Entire Agreement. This Agreement sets forth the entire understanding among the parties and supersedes any previous communications, representations or agreements, whether oral or written. No change of any of the terms or conditions herein shall be valid or binding on any party unless in writing and signed by an authorized representative of each party.

24. **Counterpart Executions.** This Agreement may be executed in counterparts, each of which shall be deemed an original, and together of which shall constitute one and the same instrument.

IN WITNESS WHEREOF, the undersigned parties have caused this Agreement to be executed by a duly authorized representative on the date set forth in the acknowledgement, but to be effective on the date written above.

ENCANA OIL & GAS (USA) INC.

By: 
Name: Ricardo D. Gallegos
Its: Attorney In Fact

ANADARKO E&P COMPANY LP

By: _____
Name: _____
Its: _____

JOHNSON DEVELOPMENT COMPANY,
INC.

By: _____
Name: _____
Its: _____

ANADARKO LAND CORP.

By: _____
Name: _____
Its: _____

TOWN OF ERIE

By: _____
Name: _____
Title: _____

Kerr-McGee Gathering LLC signs this Agreement as the entity which gathers and may in the future gather gas from wells drilled on the Property or on lands near the Property and in no other capacity. KMGG is not otherwise bound by the obligations in this Agreement, but shall have the right to enforce the provisions in Section 3.

KERR-McGEE GATHERING LLC

By: _____
Name: _____
Title: _____

24. **Counterpart Executions.** This Agreement may be executed in counterparts, each of which shall be deemed an original, and together of which shall constitute one and the same instrument.

IN WITNESS WHEREOF, the undersigned parties have caused this Agreement to be executed by a duly authorized representative on the date set forth in the acknowledgement, but to be effective on the date written above.

ENCANA OIL & GAS (USA) INC.

By: _____
Name: _____
Its: _____

ANADARKO E&P COMPANY LP

By: _____
Name: _____
Its: _____

JOHNSON DEVELOPMENT COMPANY,
INC.

By: *C. Howard Johnson*
Name: *C. Howard Johnson*
Its: *President*

ANADARKO LAND CORP.

By: _____
Name: _____
Its: _____

TOWN OF ERIE

By: _____
Name: _____
Title: _____

Kerr-McGee Gathering LLC signs this Agreement as the entity which gathers and may in the future gather gas from wells drilled on the Property or on lands near the Property and in no other capacity. KMGG is not otherwise bound by the obligations in this Agreement, but shall have the right to enforce the provisions in Section 3.

KERR-McGEE GATHERING LLC

By: _____
Name: _____
Title: _____

24. **Counterpart Executions.** This Agreement may be executed in counterparts, each of which shall be deemed an original, and together of which shall constitute one and the same instrument.

IN WITNESS WHEREOF, the undersigned parties have caused this Agreement to be executed by a duly authorized representative on the date set forth in the acknowledgement, but to be effective on the date written above.

ENCANA OIL & GAS (USA) INC.

ANADARKO E&P COMPANY LP

By: _____
Name: _____
Its: _____

By: _____
Name: _____
Its: _____

JOHNSON DEVELOPMENT COMPANY,
INC.

ANADARKO LAND CORP.

By: _____
Name: _____
Its: _____

By: _____
Name: _____
Its: _____

TOWN OF ERIE

By: *[Signature]*
Name: Joseph A. Wilson
Title: Mayor



Kerr-McGee Gathering LLC signs this Agreement as the entity which gathers and may in the future gather gas from wells drilled on the Property or on lands near the Property and in no other capacity. KMGG is not otherwise bound by the obligations in this Agreement, but shall have the right to enforce the provisions in Section 3.

KERR-McGEE GATHERING LLC

By: _____
Name: _____
Title: _____


24. **Counterpart Executions.** This Agreement may be executed in counterparts, each of which shall be deemed an original, and together of which shall constitute one and the same instrument.

IN WITNESS WHEREOF, the undersigned parties have caused this Agreement to be executed by a duly authorized representative on the date set forth in the acknowledgement, but to be effective on the date written above.

ENCANA OIL & GAS (USA) INC.

By: _____
Name: _____
Its: _____


ANADARKO E&P COMPANY LP

By: 
Name: David Bell
Its: Agent + Attorney-in-Fact *DE mm*

JOHNSON DEVELOPMENT COMPANY,
INC.

By: _____
Name: _____
Its: _____

ANADARKO LAND CORP.

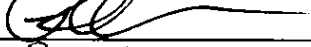
By: 
Name: David Bell
Its: Agent + Attorney-in-Fact *DE mm*

TOWN OF ERIE

By: _____
Name: _____
Title: _____

Kerr-McGee Gathering LLC signs this Agreement as the entity which gathers and may in the future gather gas from wells drilled on the Property or on lands near the Property and in no other capacity. KMGG is not otherwise bound by the obligations in this Agreement, but shall have the right to enforce the provisions in Section 3.

KERR-McGEE GATHERING LLC

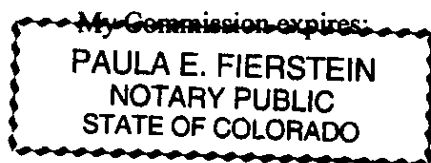
By: 
Name: Ronald H. Olsen
Title: Agent + Attorney-in-Fact *ms*

ACKNOWLEDGMENTS

STATE OF COLORADO)
CITY AND) SS.
COUNTY OF DENVER)

The foregoing instrument was acknowledged before me this 23rd day of May, 2011
by ~~Richard S. Gallegos~~, as Attorney-in -Fact for ENCANA OIL & GAS (USA) INC.
Ricardo D.

Witness my hand and official seal.



My Commission Expires 04/26/2015

Paula E. Fierstein
Notary Public

STATE OF _____)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this _____ day of _____, 2011
by _____, as _____ for
ANADARKO E&P COMPANY LP.

Witness my hand and official seal.

My Commission expires:

Notary Public

STATE OF _____)
) ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this _____ day of _____, 2011
by _____, as _____ for
ANADARKO LAND CORP.

Witness my hand and official seal.

My Commission expires:

Notary Public

ACKNOWLEDGMENTS

STATE OF COLORADO)
CITY AND) SS.
COUNTY OF DENVER)

The foregoing instrument was acknowledged before me this _____ day of _____, 2011
by Richard S. Gallegos, as Attorney-in -Fact for ENCANA OIL & GAS (USA) INC.

Witness my hand and official seal.

My Commission expires:

Notary Public

STATE OF Colorado)
COUNTY OF Adams) ss.

The foregoing instrument was acknowledged before me this 20th day of May, 2011
by David Bell, as Agent + Attorney-in-Fact for
ANADARKO E&P COMPANY LP.

Witness my hand and official seal.

My Commission expires:

[Signature]
Notary Public



My Commission Expires 9-27-2011

STATE OF Colorado)
COUNTY OF Adams) ss.

The foregoing instrument was acknowledged before me this 20th day of May, 2011
by David Bell, as Agent + Attorney-in-Fact for
ANADARKO LAND CORP.

Witness my hand and official seal.

My Commission expires:

[Signature]
Notary Public



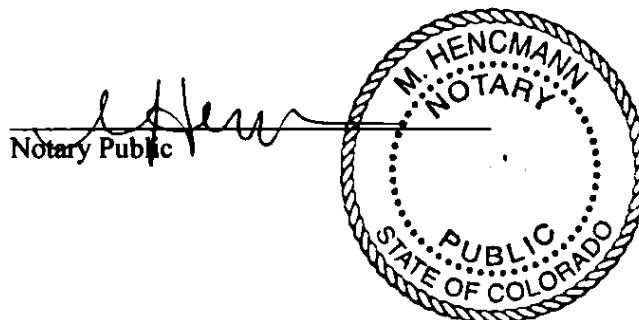
My Commission Expires 9-27-2011

STATE OF Colorado)
COUNTY OF Denver) ss.

The foregoing instrument was acknowledged before me this 23rd day of May, 2011
by Ronald W. Olsen, as Agent + Attorney-in-Fact for
KERR-McGEE GATHERING LLC.

Witness my hand and official seal.

My Commission expires:



STATE OF COLORADO)
COUNTY OF _____) ss.

My Commission Expires 9-27-2011

The foregoing instrument was acknowledged before me this _____ day of _____, 2011
by _____, as _____ for
JOHNSON DEVELOPMENT COMPANY, INC.

Witness my hand and official seal.

My Commission expires:

Notary Public

STATE OF COLORADO)
COUNTY OF BOULDER) ss.

The foregoing instrument was acknowledged before me this _____ day of _____, 2011
by _____ as _____ for the TOWN
OF ERIE.

Witness my hand and official seal.

My Commission expires:

Notary Public

STATE OF _____)
) ss.
 COUNTY OF _____)

The foregoing instrument was acknowledged before me this _____ day of _____, 2011
 by _____, as _____ for
 KERR-McGEE GATHERING LLC.

Witness my hand and official seal.

My Commission expires:

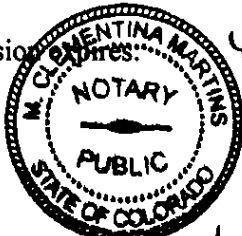
 Notary Public

STATE OF COLORADO)
) ss.
 COUNTY OF Arapahoe)

The foregoing instrument was acknowledged before me this 24 day of May, 2011
 by C. Howard Johnson, as President for
 JOHNSON DEVELOPMENT COMPANY, INC.

Witness my hand and official seal.

My Commission Expires:



4/30/2012
M. Clementina Martins
 Notary Public

My Commission Expires 4/30/2012
 STATE OF COLORADO)
) ss.
 COUNTY OF BOULDER)

The foregoing instrument was acknowledged before me this _____ day of _____, 2011
 by _____ as _____ for the TOWN
 OF ERIE.

Witness my hand and official seal.

My Commission expires:

 Notary Public

STATE OF _____)

)

ss.

COUNTY OF _____)

)

The foregoing instrument was acknowledged before me this _____ day of _____, 2011
by _____, as _____ for
KERR-McGEE GATHERING LLC.

Witness my hand and official seal.

My Commission expires:

Notary Public

STATE OF COLORADO)

)

ss.

COUNTY OF _____)

)

The foregoing instrument was acknowledged before me this _____ day of _____, 2011
by _____, as _____ for
JOHNSON DEVELOPMENT COMPANY, INC.

Witness my hand and official seal.

My Commission expires:

Notary Public

STATE OF COLORADO)

)

ss.

COUNTY OF BOULDER)

)

The foregoing instrument was acknowledged before me this 2nd day of June, 2011
by Joseph A. Wilson as Mayor for the TOWN
OF ERIE.

Witness my hand and official seal.

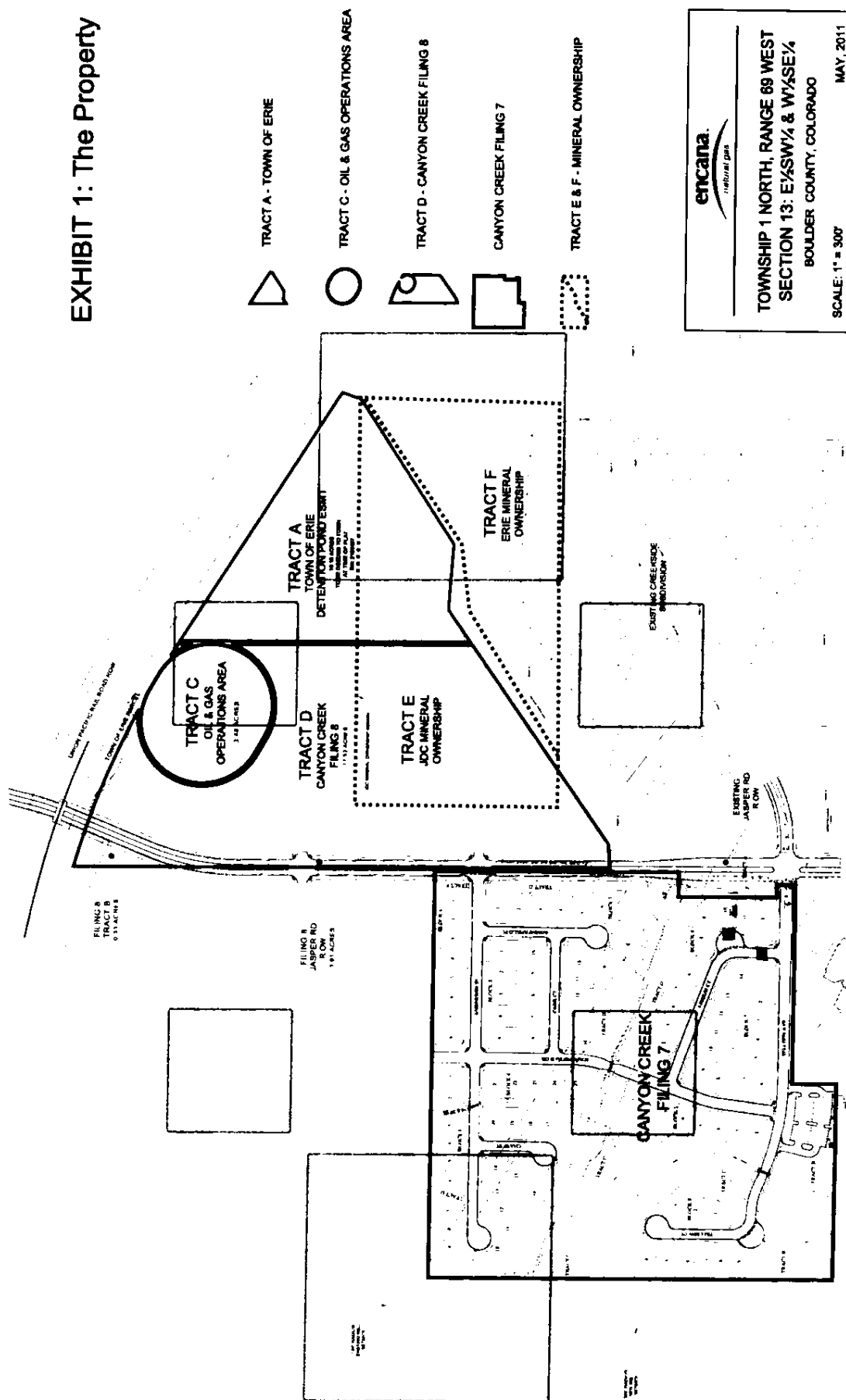
My Commission expires: 06/16/2014_____
Notary Public

EXHIBIT 1

to

Compatible Surface Use Agreement**effective May 10, 2011 among****Encana Oil & Gas (USA) Inc., Anadarko E&P Company LP, Anadarko Land Corp., Kerr-****McGee Gathering LLC (for the limited purposes described)****Johnson Development Company, Inc. and the Town of Erie****See attached Map labeled Exhibit 1 —The Property****Tracts A, C, D, and E—SE/4 Property****Portion of the SE/4SW/4—SW/4 Property****With certain portions of the SE/4 Property more specifically described as follows:****Tract A—Town Property****Tract E—JDC Mineral Ownership Region****Tract F—Town of Erie Mineral Ownership Region****Tract C—Oil and Gas Operations Area**

EXHIBIT 1: The Property



Canyon Creek Filings 7 & 8

LEGAL DESCRIPTION OF FILING NO. 7 (CANYON CREEK)

A PART OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH P.M., BOULDER COUNTY, COLORADO, TOGETHER WITH TRACT "O" OF CREEKSIDE SUBDIVISION, AS RECORDED IN PLAT CABINET 56, FILE 2, PAGE 17, IN THE OFFICE OF THE RECORDER OF BOULDER COUNTY, COLORADO MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTH QUARTER CORNER OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH P.M., SAID POINT BEING MONUMENTED BY A 3-1/4" ALUMINUM CAP MARKED PLS 36580;
THENCE, NORTH 89°D 44'23" WEST, ALONG THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SECTION 13, 550.00 FEET TO THE SOUTHWEST CORNER OF PARCEL "C" TRACT "G" OF CANYON CREEK FILING 3, AS RECORDED IN PLAT CABINET 49, FILE 3, PAGE 10, IN THE OFFICE OF THE RECORDER OF BOULDER COUNTY, COLORADO, AND THE POINT OF BEGINNING OF THE HEREIN DESCRIBED TRACT;
THENCE CONTINUING NORTH 89°D 44'23" WEST, ALONG THE SOUTH LINE OF SAID SOUTHWEST QUARTER OF SECTION 13, 780.54 FEET TO THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF SAID SOUTHWEST QUARTER, THIS AND THE FOLLOWING TWO (2) COURSES BEING MONUMENTED BY A 3-1/4" ALUMINUM CAP STAMPED J.R. ENGINEERING PLS NO. 19606, AND BEING ALONG THE PERIMETER OF SAID QUARTER QUARTER SECTION;
THENCE NORTH 00°D 26'39" WEST 1319.12 FEET TO THE NORTHWEST CORNER THEREOF;
THENCE SOUTH 89°D 50'01" EAST 1329.50 FEET TO THE NORTHEAST CORNER THEREOF;
THENCE SOUTH 00°D 29'19" EAST, ALONG THE EAST LINE OF SAID QUARTER QUARTER, 795.29 FEET TO A 2" ALUMINUM CAPPED REBAR MARKED LS 24305, PER THE PLAT OF CREEKSIDE SUBDIVISION, AS RECORDED IN PLAT CABINET 56, FILE 2, PAGE 17, IN THE OFFICE OF THE RECORDER OF BOULDER COUNTY, COLORADO;
THENCE NORTH 89°D 42'38" WEST, ALONG THE NORTHERLY LINE OF SAID CREEKSIDE PLAT, 90.01 FEET TO THE NORTHWEST CORNER OF TRACT "L" OF SAID CREEKSIDE SUBDIVISION;
THENCE SOUTH 00°D 29'19" EAST, ALONG THE WEST LINE OF SAID TRACT "L", 320.00 FEET TO THE SOUTHWEST CORNER THEREOF; THENCE SOUTH 89°42'38" EAST, ALONG THE SOUTH LINE OF TRACT "L" OF SAID CREEKSIDE PLAT EXTENDED, 40.00 FEET TO THE WESTERLY RIGHT-OF-WAY OF TRACT "G", PER THE PLAT OF CANYON CREEK FILING NO. 2, AS RECORDED IN THE OFFICE OF THE RECORDER OF BOULDER COUNTY, COLORADO;
THENCE SOUTH 00°D 29'28" EAST, ALONG THE WEST LINE OF SAID TRACT "G", 61.05 FEET TO THE NORTHEAST CORNER OF SAID PARCEL "C" TRACT "G" OF CANYON CREEK FILING 3;
THENCE NORTH 89°44'23" WEST, THIS AND THE FOLLOWING COURSE BEING ALONG THE PERIMETER OF PARCEL "C" TRACT "G", 500.00 FEET TO THE NORTHWEST CORNER THEREOF;
THENCE SOUTH 00°D 29'19" EAST, 145.00 FEET TO THE POINT OF BEGINNING.

CONTAINING 1,644,200 SQUARE FEET AND 37.75 ACRES, MORE OR LESS.
SUBJECT TO ALL EASEMENTS, RESTRICTIONS, AND RIGHTS-OF-WAY OF RECORD.

Canyon Creek Filings 7 & 8

PROPOSED CANYON CREEK FILING NO. 8

A PART OF THE SOUTHEAST QUARTER OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH P.M., COUNTY OF BOULDER, STATE OF COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTH QUARTER CORNER OF SAID SECTION 13, THENCE NORTH 00°29'19" WEST, ALONG THE WEST LINE OF SAID SOUTHEAST QUARTER SECTION, A DISTANCE OF 751.00 FEET TO THE NORTHWEST CORNER OF CREEKSIDE SUBDIVISION, AS RECORDED IN THE BOULDER COUNTY CLERK AND RECORDER'S OFFICE AT P-56 F-2 #17 AND THE POINT OF BEGINNING; THENCE NORTH 00°29'19" WEST, CONTINUING ALONG SAID LINE, A DISTANCE OF 1,752.35 FEET TO A POINT OF NON-TANGENT CURVATURE, SAID POINT BEING ON THE SOUTH LINE OF A PARCEL OF LAND DESCRIBED AT RECEPTION NO. 2799485 OF THE WELD COUNTY CLERK AND RECORDER'S OFFICE; THENCE ALONG SAID SOUTH LINE THE FOLLOWING TWO (2) COURSES:

1. ALONG THE ARC OF SAID NON-TANGENT CURVE TO THE RIGHT HAVING A CENTRAL ANGLE OF 16°18'53", A RADIUS OF 2,764.93 FEET AND AN ARC A LENGTH OF 787.30 FEET (CHORD BEARS SOUTH 65°28'30" EAST, 784.64 FEET);
2. THENCE SOUTH 57°19'03" EAST A DISTANCE OF 991.06 FEET TO THE NORTHWEST CORNER OF ERIE INDUSTRIAL EMPIRE VENTURE SUBDIVISION-BLOCK 2, AS RECORDED IN THE BOULDER COUNTY CLERK AND RECORDER'S OFFICE AT P-31 F-1 #36;

THENCE ALONG THE WESTERLY LINE OF SAID SUBDIVISION AND THE NORTHERLY OF SAID CREEKSIDE SUBDIVISION THE FOLLOWING FIVE (5) COURSES:

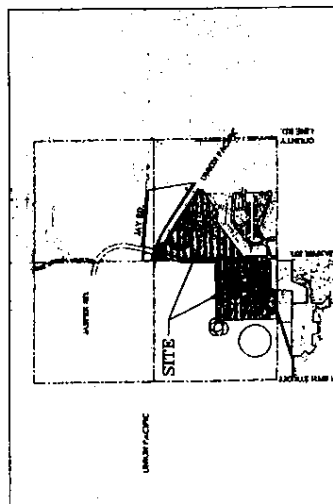
1. SOUTH 18°21'17" WEST A DISTANCE OF 64.80 FEET;
2. SOUTH 56°33'41" WEST A DISTANCE OF 560.00 FEET;
3. NORTH 85°58'19" WEST A DISTANCE OF 214.00 FEET;
4. SOUTH 54°48'41" WEST A DISTANCE OF 920.00 FEET;
5. SOUTH 85°33'41" WEST A DISTANCE OF 80.24 FEET TO THE POINT OF BEGINNING.

CONTAINING 1,452,554 SQUARE FEET OR 33.35 ACRES, MORE OR LESS.

CANYON CREEK FILING 7 & 8

PRELIMINARY PLAT

A PART OF THE SOUTH 1/2 OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, AND TRACT 0, CREEKSIDE SUBDIVISION, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
PROJECT NO. PP07-001 (FILING 7), PP07-002 (FILING 8)



VICINITY MAP

APRIL 22, 2009
B.C.E. PROJECT NO. C055136

CONVEYANCE
FROM: JAMES
TO: THE COUNTY OF BOULDER
FOR: THE COUNTY OF BOULDER
BY: JAMES
(S&B) 999-2775
JAMES
JAMES DEVELOPMENT CO.
4300 10TH AVENUE, SUITE 310
DENVER, CO 80202
TEL: 303-733-1111
FAX: 303-733-1112

CONVEYANCE
FROM: JAMES
TO: THE COUNTY OF BOULDER
FOR: THE COUNTY OF BOULDER
BY: JAMES
(S&B) 999-2775
JAMES
JAMES DEVELOPMENT CO.
4300 10TH AVENUE, SUITE 310
DENVER, CO 80202
TEL: 303-733-1111
FAX: 303-733-1112

TRACT USE SUMMARY (FILING NO. 7)

TRACT	AREA (A.C.)	OWNER	PROPOSED USE	PERMITTED USE
1	48.00	James	Residential	Residential
2	48.00	James	Residential	Residential
3	48.00	James	Residential	Residential
4	48.00	James	Residential	Residential
5	48.00	James	Residential	Residential
6	48.00	James	Residential	Residential
7	48.00	James	Residential	Residential
8	48.00	James	Residential	Residential
9	48.00	James	Residential	Residential
10	48.00	James	Residential	Residential

LAND USE SUMMARY (FILING NO. 8)

TRACT	AREA (A.C.)	OWNER	PROPOSED USE	PERMITTED USE
1	48.00	James	Residential	Residential
2	48.00	James	Residential	Residential
3	48.00	James	Residential	Residential
4	48.00	James	Residential	Residential
5	48.00	James	Residential	Residential
6	48.00	James	Residential	Residential
7	48.00	James	Residential	Residential
8	48.00	James	Residential	Residential
9	48.00	James	Residential	Residential
10	48.00	James	Residential	Residential

NOT FOR
CONSTRUCTION



INDEX OF DRAWINGS

NO.	TITLE
C0.0	COVER SHEET
C1.0	MINE SUBSIDENCE AND MITIGATION PLAN
C2.0	OVERALL UTILITY PLAN
C3.0	OVERALL UTILITY PLAN
C3.1	FILING 7 SITE PLAN
C3.2	JASPER ROAD SITE PLAN
C3.3	JASPER ROAD SITE PLAN
C3.4	FILING 8 SITE PLAN
C4.0	GRADING AND UTILITY PLAN
C4.1	GRADING AND UTILITY PLAN
C4.2	GRADING AND UTILITY PLAN
C4.3	GRADING AND UTILITY PLAN
C4.4	GRADING AND UTILITY PLAN
C4.5	GRADING AND UTILITY PLAN
C4.6	GRADING AND UTILITY PLAN
C4.7	GRADING AND UTILITY PLAN
C4.8	GRADING AND UTILITY PLAN
C4.9	GRADING AND UTILITY PLAN
C5.0	DETAIL SHEET

NOTES

1. THE PROJECT IS A PART OF THE SOUTH 1/2 OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, AND TRACT 0, CREEKSIDE SUBDIVISION, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
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REFERENCE BOOKS FAMILY

BOOK	DATE
1	2009
2	2009
3	2009
4	2009
5	2009
6	2009
7	2009
8	2009
9	2009
10	2009

LAND USE SUMMARY (FILING NO. 7)

TRACT	AREA (A.C.)	OWNER	PROPOSED USE	PERMITTED USE
1	48.00	James	Residential	Residential
2	48.00	James	Residential	Residential
3	48.00	James	Residential	Residential
4	48.00	James	Residential	Residential
5	48.00	James	Residential	Residential
6	48.00	James	Residential	Residential
7	48.00	James	Residential	Residential
8	48.00	James	Residential	Residential
9	48.00	James	Residential	Residential
10	48.00	James	Residential	Residential

LAND USE SUMMARY (FILING NO. 8)

TRACT	AREA (A.C.)	OWNER	PROPOSED USE	PERMITTED USE
1	48.00	James	Residential	Residential
2	48.00	James	Residential	Residential
3	48.00	James	Residential	Residential
4	48.00	James	Residential	Residential
5	48.00	James	Residential	Residential
6	48.00	James	Residential	Residential
7	48.00	James	Residential	Residential
8	48.00	James	Residential	Residential
9	48.00	James	Residential	Residential
10	48.00	James	Residential	Residential

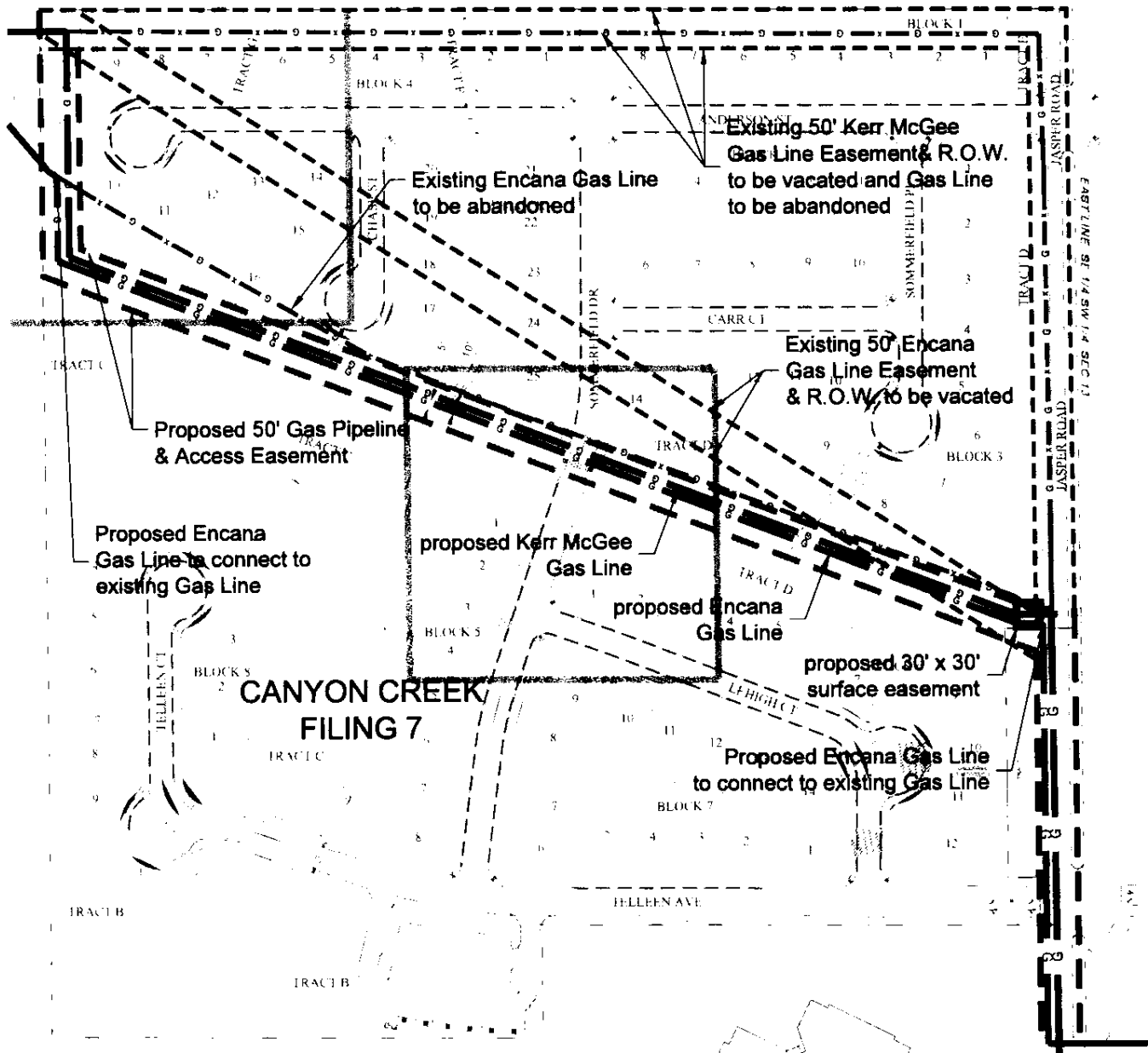
PROPOSED CANYON CREEK FILING NO. 1









A PART OF THE SOUTH 1/2 OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, AND TRACT 0, CREEKSIDE SUBDIVISION, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

APRIL 22, 2009

EXHIBIT 2**to****Compatible Surface Use Agreement****effective May 10, 2011 among****Encana Oil & Gas (USA) Inc., Anadarko E&P Company LP, Anadarko Land Corp., Kerr-McGee Gathering LLC (for the limited purposes described) Johnson Development Company, Inc. and the Town of Erie****See attached Map labeled Exhibit 2 and Subparts 2A and 2B - consisting of two (2) pages.**

EXHIBIT 2B: Access and Pipeline Easements



-  EXISTING EASEMENT
-  PROPOSED 50' ACCESS & PIPELINE EASEMENT
-  EXISTING ENCANA GAS LINE TO REMAIN
-  PORTION OF EXISTING ENCANA GAS LINE TO BE ABANDONED
-  PROPOSED GAS LINE - ENCANA
-  EXISTING KERR MCGEE GAS LINE TO REMAIN
-  PORTION OF EXISTING KERR MCGEE GAS LINE TO BE ABANDONED
-  PROPOSED GAS LINE - KERR MCGEE

encana.
natural gas

TOWNSHIP 1 NORTH, RANGE 69 WEST
SECTION 13: Part of the E $\frac{1}{2}$ SW $\frac{1}{4}$
BOULDER COUNTY, COLORADO

SCALE: 1" = 200'

MAY, 2011

EXHIBIT 3

to

Compatible Surface Use Agreement**effective May 10, 2011 among****EnCana Oil & Gas (USA) Inc., Anadarko E&P Company LP, Anadarko Land Corp.,****Kerr-McGee Gathering LLC (for the limited purposes described)****Johnson Development Company, Inc. and the Town of Erie****RIGHT-OF-WAY GRANT**

THIS RIGHT-OF-WAY GRANT ("Grant) is made this ____ day of _____, 20__, from JOHNSON DEVELOPMENT COMPANY, INC. with an address of 4380 South Syracuse Street, Suite 510, Denver, Colorado 80237 ("Grantor"), to KERR-McGEE _____, a Colorado limited liability company, with an address of 1099 18th Street, Suite 1800, Denver, Colorado 80202 ("Grantee"). The parties agree as follows:

For and in consideration of Ten Dollars (\$10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Grantor hereby grants, conveys and warrants unto Grantee, its successors and assigns, a perpetual right-of-way(s) and easement(s) to survey, construct, maintain, inspect, operate, repair, replace, modify, change the size of, reconstruct, mark, monitor, abandon or remove, at Grantee's election, pipelines and all appurtenances, below and/or above ground, including but not limited to, launchers and receivers, convenient for the transportation or transmission of oil, gas, petroleum products, water, hydrocarbons and any other substances, whether fluid, solid or gaseous, and any products, derivatives, combinations or mixtures of any of the foregoing, in, on, over, under, or through the lands situated in Boulder County, State of Colorado, being generally described as follows and more specifically described on Exhibit "A" attached hereto and made a part hereof:

TOWNSHIP 1 NORTH, RANGE 69 WEST, 6TH PM**Section 13: S/2 (portion)**

The specific route and course of the right-of-way(s) and easement(s) conveyed hereby ("Right-of-Way Lands") is more particularly described on Exhibit "B" attached hereto and made a part hereof. The width of the Right-of-Way Lands during construction shall be fifty feet (50') and subsequent to construction shall be thirty feet (30').

Grantor represents and warrants to Grantee that Grantor is the sole owner in fee simple of the Right-of-Way Lands and has full right, power and authority to make this Grant.

Grantee shall lay all pipe at a depth of not less than 36 inches. Grantee shall repair and/or restore any fence on or adjacent to the Right-of-Way Lands removed or severed by Grantee in the course of the operations provided for in this Grant. If necessary to prevent the escape of Grantor's livestock, Grantee shall construct temporary gates or fences.

Grantee shall have all rights, privileges and benefits necessary or convenient for the full use and enjoyment of this Grant, including but not limited to, the right of ingress and egress over

and across Grantor's lands lying adjacent to the Right-of-Way Lands for any and all purposes necessary and incidental to exercising Grantee's rights hereunder. Grantor agrees not to build, create, construct or permit to be built, created or constructed, any obstruction, building, fence, landscaping, reservoir, engineering works or other structures or improvements over, under, on or across the Right-of-Way Lands without prior written consent of Grantee.

Grantee shall be obligated to pay for, repair, replace or otherwise compensate Grantor for any damages resulting from Grantee's activities and operations on the Right-of-Way Lands, and, Grantor shall pay for, reimburse, indemnify and hold Grantee harmless from any and all claims or damages resulting from Grantor's activities on the Right-of-Way Lands. Grantor shall have the right to use and enjoy the Right-of Way Lands, subject to the rights herein granted.

This Grant cannot be modified, except in writing signed by Grantor and Grantee.

The rights granted herein may be assigned in whole or in part, and the terms, conditions, and provisions of this Grant are a covenant running with the land and shall extend to and be binding upon the successors and assigns of Grantor and Grantee.

Grantee agrees to level and restore any lands that may have excessive settling and sufficiently compact the soil within a reasonable period of time after completion of construction.

This Grant may be executed in counterparts each of which shall be considered one and the same agreement.

IN WITNESS WHEREOF, the parties have executed this Grant as of the date first above written.

Grantor:
Johnson Development Company, Inc.

Grantee:
Kerr-McGee _____
By its Manager, Kerr-McGee Oil & Gas
Onshore LP

By: _____
Name: _____
Its: _____

By: _____
Name: _____
Agent & Attorney-in-Fact

STATE OF COLORADO)
) ss.
 COUNTY OF _____)

The foregoing instrument was acknowledged before me this _____ day of _____, 20____, by _____ as _____ of Johnson Development Company, Inc.

Witness my hand and official Seal.

My Commission Expires: _____

 Notary Public

STATE OF _____)
) ss.
 COUNTY OF _____)

The foregoing instrument was acknowledged before me this _____ day of _____, 201____, by _____, as Agent and Attorney-in-Fact of Kerr-McGee Gathering LLC, a Colorado limited liability company, on behalf of such company.

Witness my hand and official Seal.

My Commission Expires: _____

 Notary Public

EXHIBIT 4

to

Compatible Surface Use Agreement**effective May 10, 2011 among**

**EnCana Oil & Gas (USA) Inc., Anadarko E&P Company LP, Anadarko Land Corp.,
Kerr-McGee Gathering LLC (for the limited purposes described)
Johnson Development Company, Inc. and the Town of Erie**

AGREEMENT FOR RELOCATION OF PIPELINE AND RIGHT-OF-WAY

THIS AGREEMENT ("Agreement") is entered into this ____ day of _____, 20__, by and between JOHNSON DEVELOPMENT COMPANY, INC. ("Surface Owner") with an address of 4380 South Syracuse Street, Suite 510, Denver, Colorado 80237 and **Kerr-McGee Gathering LLC** ("KMGG"), a Colorado limited liability company, with an address of 1099 18th Street, Denver, Colorado 80202.

A. KMGG is the successor in interest to a Right-of-Way Grant ("Easement") across a portion of the S/2 of Section 13, Township 1 North, Range 69 West of the 6th P.M. in Boulder County, Colorado. The Easement was originally conveyed to _____ for natural gas pipeline purposes by instrument recorded on _____ at Reception No. _____, in the records of the Boulder County Clerk and Recorder.

B. Surface Owner is the current owner of a portion of the S/2 of Section 13, Township 1 North, Range 69 West, 6th P.M., Boulder County, Colorado (the "Property").

C. Surface Owner plans to develop the surface of the Property as a residential development known as Canyon Creek.

D. In order to accommodate the proposed development of the Property by Surface Owner, KMGG agrees to release a portion of the Easement lying within and across the Property and in consideration therefore, Surface Owner agrees to provide a Right-of-Way so that KMGG's pipeline(s) can be physically relocated and operated.

NOW, THEREFORE, in consideration of the covenants contained herein and the mutual benefits to be derived, KMGG and Surface Owner agree as follows:

1. **Partial Release.** KMGG shall execute and deliver a Partial Release of Easement (Exhibit "D") relinquishing and quitclaiming unto Surface Owner, the Easement, insofar, and only insofar, as it crosses or lies within the portion of the Property described in Exhibit "C." Said Partial Release of Easement will be provided after delivery of the new Right-of-Way, as provided below, and after the physical relocation of the pipeline(s) and the tie-in of the relocated pipeline(s).

2. **Amendment of Right-of-Way.** Upon removal and rerouting of the existing pipelines from their current locations, KMGG shall execute and deliver an Amendment of Right-of-Way on the form attached hereto as Exhibit "A" and incorporated herein by this reference, amending permanently KMGG's pipeline Right-of-Way to the route(s) set forth and described in Exhibit "B" attached hereto which shall be attached to the Amendment as Exhibit "A." The Amendment will be provided after the physical relocation of the pipeline(s) and the tie-in of the relocated pipeline(s).

3. Conveyance of Right-of-Way. Surface Owner hereby agrees to provide and deliver to KMGG, prior to the actual placement and operation of new pipeline, an executed and recordable new Right-of-Way conveying unto KMGG, its successors and assigns, a perpetual right-of-way and easement for pipeline purposes on the form attached hereto as Exhibit "E". The new Right-of-Way shall be for the purposes of, and convey rights to survey, construct, install, maintain, inspect, operate, repair, replace, modify, change the size of, reconstruct, mark, monitor, abandon or remove, at KMGG's election, pipelines and all appurtenances, above or below ground, reasonably necessary or convenient for the transportation or transmission of oil, gas, petroleum products, water, hydrocarbons, and any other substances, whether fluid or gaseous, and any products, derivatives, combinations or mixtures of any of the foregoing. The width of the New Right-of-Way shall be fifty feet (50') during construction of the relocated portion of the pipeline(s) and any maintenance thereto and subsequent to construction shall be thirty feet (30').

4. Title and Authority. Surface Owner represents and warrants to KMGG that Surface Owner is the sole owner in fee simple or the contract purchaser of the lands described in Exhibit "B" and Exhibit "C", being the route(s) of the Amended Right-of-Way and new Right-of-Way, respectively, and that Surface Owner has full power, right and authority to execute and deliver the Amendment of the Right-of-Way and new Rights-of-Way.

5. Senior Rights. KMGG acknowledges that all routes are non-exclusive and agrees that it will not object to the concurrent use of the routes by Surface Owner, utilities providers and other operators as Surface Owner may grant from time to time; provided, however, that such concurrent use does not in any way interfere with the use of the routes by KMGG. All pipes shall be placed with a minimum horizontal clearance of ten (10) feet from all other pipelines and utilities; and a minimum vertical clearance of eighteen (18) inches from all other pipelines and utilities. KMGG's "General Guidelines for Design and Construction Activities On or Near Kerr- McGee Gathering LLC and Kerr- McGee Oil & Gas Onshore LP Pipelines and Related Facilities" shall be strictly adhered to at all times. Said General Guidelines are attached hereto as Exhibit "F". Surface Owner further represents and warrants that it has full power, right and authority to enter into this Agreement and to make the covenants set forth herein.

6. Title Insurance. Surface Owner must deliver to KMGG a title commitment from an insurer acceptable to KMGG with any request for the relocation of any pipeline. If any of the exceptions contained in Schedule B-2 of said title commitment are (i) senior liens or encumbrances on the land upon which the right(s)-of-way to be granted to KMGG pursuant to this Agreement are to be located or (ii) deemed by KMGG to infringe on its right of free use and enjoyment of new right(s)-of-way granted under this Agreement, the liens or encumbrances must be released or subordinated and any infringements must be cured by Surface Owner prior to the relocation of any pipelines. Prior to commencing any relocation activities, Surface Owner must furnish KMGG with a policy of title insurance insuring KMGG's title to its right(s)-of-way against any senior lien or encumbrance and against any interest that may interfere with KMGG's quiet enjoyment of the right(s)-of-way to be granted pursuant to this Agreement. KMGG will not be required to relocate any pipeline unless and until it has been furnished with a policy of title insurance that is satisfactory to it.

7. Pipeline Relocation Expense. KMGG has prepared a good faith estimate of the costs and expenses to be incurred in the pipeline relocation project and a summary of those costs and expenses is set forth on Exhibit "G" hereto. Costs include KMGG's corporate overhead of fifteen percent (15%) for the legal, engineering, and other administrative costs necessary to process and complete the relocation. Upon execution of this Agreement, Surface Owner will pay KMGG the total estimated cost of pipeline relocation, which is \$ _____. It is understood that this amount is only an estimate and that Surface Owner shall be obligated to pay or reimburse KMGG for all actual costs and expenses related to the pipeline relocation. Upon conclusion of the relocation, the parties shall reconcile the costs incurred and payments made, with appropriate adjustments and reimbursements to Surface Owner or supplemental

payments to KMGG being made within one-hundred twenty (120) days after the pipeline relocation is completed.

8. Amendments. This Agreement cannot be modified, except by a written agreement signed by both parties hereto.

9. Binding Effect. The rights granted herein may be assigned in whole or in part, and the terms, conditions, and provisions of this Agreement shall be a covenant running with the Property and shall extend to and be binding upon the heirs, executors, administrators, personal representatives, successors, and assigns of Surface Owner and KMGG.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first above written.

JOHNSON DEVELOPMENT COMPANY, INC.

By: _____

Name: _____

Title: _____

KERR-MCGEE GATHERING LLC

a Colorado limited liability company

By: _____

Name: _____

Its: Agent and Attorney-in-Fact

STATE OF COLORADO)

)ss.

COUNTY OF)

The foregoing instrument was acknowledged before me this _____ day of _____, 201_, by _____, as _____, on behalf of **JOHNSON DEVELOPMENT COMPANY, INC.**

Witness my hand and official Seal.

My Commission Expires: _____

Notary Public

(SEAL)

STATE OF _____)
)ss.
COUNTY OF _____)

The foregoing instrument was acknowledged before me this _____ day of _____, 201_, by _____ as Agent and Attorney-in-Fact for Kerr-McGee Oil & Gas Onshore LP, a Delaware Limited Partnership, in its capacity as Manager of Kerr-McGee Gathering LLC, a Colorado limited liability company, on behalf of such company.

WITNESS my hand and official seal.

My commission expires: _____

(SEAL)

Notary Public

EXHIBIT 5
to
Compatible Surface Use Agreement
effective May 10, 2011 among
EnCana Oil & Gas (USA) Inc., Anadarko E&P Company LP, Anadarko Land Corp.,
Kerr-McGee Gathering LLC (for the limited purposes described)
Johnson Development Company, Inc. and the Town of Erie

See attached Guidelines consisting of four (4) pages.



General Guidelines for Design and Construction Activities On or Near Kerr- McGee Gathering LLC Pipelines and Related Facilities

This list of design, construction and contractor requirements, including but not limited to the following, is for the design and installation of foreign utilities or improvements on Kerr McGee Gathering LLC (KMGG) right-of-way (ROW). These are not intended to, nor do they waive or modify any rights KMGG may have under existing easements or ROW agreements. For information regarding KMGG's rights and requirements as they pertain to the existing easements, please reference existing easements and amendments documents. This list of requirements is applicable for KMGG facilities on easements and in road rights of ways only. Encroachments on fee property should be referred to the Land & ROW Department. Any reference to KMGG in the below requirements is meant to include and apply to any Kerr McGee entity.

Design

- KMGG shall be provided sufficient prior notice of planned activities involving excavation, blasting, or any type of construction on KMGG's ROW or near its facilities. This is to determine and resolve any location, grade or encroachment problems and allow for the protection of KMGG's facilities and the general public. This prior notification is to be made **before** the actual work is to take place.
- The encroaching entity shall provide KMGG with a set of drawings for review and a set of final construction drawings showing all aspects of the proposed facilities in the vicinity of KMGG's ROW. The encroaching entity shall also provide a set of "as-built drawings" and submit to KMGG, showing the facilities in the vicinity of KMGG's ROW upon completion of the work.
- Only facilities shown on drawings reviewed by KMGG will be approved for installation on KMGG's ROW. All drawing revisions that affect facilities proposed to be placed on KMGG's ROW must be approved by KMGG in writing.
- KMGG shall approve the design of all permanent road crossings.
- Any repair to surface facilities following future pipeline maintenance or repair work by KMGG on its "prior rights" ROW will be at the expense of the developer or landowner. In addition, any repair to surface facilities following future pipeline maintenance or repair work by KMGG on replacement ROW granted to relocate KMGG facilities will also be done at the expense of the developer or landowner unless expressly addressed in surface use agreements and approved in writing by KMGG.
- The depth of cover over the KMGG pipelines shall not be increased or reduced nor surface modified for drainage without KMGG's written approval.
- Construction of any permanent structure within KMGG pipeline easement is **not** permitted without written approval by KMGG.
- Planting of shrubs and trees is not permitted on KMGG pipeline easement without written approval by KMGG.
- Irrigation equipment i.e. backflow prevent devices, meters, valves, valve boxes, etc. shall not be located on KMGG easement without written approval by KMGG.
- Foreign utility installations, IE, distribution gas, oil and gas gathering, water, electric, telephone, cable and sewer lines, etc., may cross perpendicular to KMGG's pipeline within the ROW, provided that a minimum of eighteen inches (18") of vertical clearance is maintained between KMGG pipeline(s) and the foreign utility. Any installation by a foreign utility with less than 18" of vertical separation is not allowed without written approval by KMGG. In no case will vertical separation be less than 12". Constant line elevations must be maintained across KMGG's entire ROW width, gravity drain lines are the only exception and must be approved in writing. Foreign line crossings below the KMGG pipeline must be evaluated by KMGG to ensure that a significant length of the KMGG line is not exposed and unsupported during construction. Foreign line crossings above the KMGG pipeline with less than 18" of clearance must be evaluated by KMGG to ensure that additional support is not necessary to prevent settling on top of the KMGG natural gas pipeline. A KMGG representative must be on site during any crossing activities to verify clearance depths and to assure the integrity and support of the KMGG facility. All installations of foreign crossings done by boring and or jacking require the KMGG facility to be exposed to verify clearances.



General Guidelines for Design and Construction Activities On or Near Kerr- McGee Gathering LLC Pipelines and Related Facilities

- Foreign utilities shall not run parallel to KMGG pipelines within the KMGG easement without written permission by KMGG. A minimum of 10 feet of horizontal separation must be maintained in parallel installations whether the foreign utility is placed within the KMGG easement or adjacent to the KMGG easement. Any deviation from the 10' horizontal requirement must be approved in writing by KMGG and an "as built survey" provided to KMGG after installation. In the instance that high voltage electric lines, greater than 20kV, are installed parallel to a KMGG pipeline a minimum horizontal distance of 15' must be maintained.
- The foreign utility should be advised that KMGG maintains cathodic protection on its pipelines and facilities. The foreign utility must coordinate their cathodic protection system with KMGG's. At the request of KMGG, foreign utilities shall install (or allow to be installed) cathodic protection test leads at all crossings for the purposes of monitoring cathodic protection interference. The KMGG CP technician and the foreign utility CP technician shall perform post construction CP interference testing. Interference issues shall be resolved by mutual agreement between foreign utility and KMGG. All costs associated with the correction of cathodic protection interference issues on KMGG pipelines as a result of the foreign utility crossing shall be borne by the foreign utility for a period of one year from date the foreign utility is put in service.
- The developer shall understand that KMGG, whether specifically required per federal law or by company standard, will mark the routing of its underground facilities with aboveground pipeline markers and test leads and maintain those markers and test leads. Markers will be installed at every point the pipeline route changes direction and adequate markers will be installed on straight sections of pipeline to insure, in the sole opinion of KMGG, the safety of the public, contractor, KMGG personnel and KMGG facilities.
- On all foreign utility crossings and / or encroachments, metallic foreign lines shall be coated with a suitable pipe coating for a distance of at least 10 feet on either side of the crossing.
- AC Electrical lines must be installed in conduit and properly insulated.
- On all foreign pipelines, DOT approved pipeline markers shall be installed so as to indicate the route of the foreign pipeline across the KMGG ROW.
- No power poles, light standards, etc. shall be installed in the KMGG easement without written approval by KMGG.
- KMGG installs above ground appurtenances at various locations that are used in the operation of its facilities. Kerr McGee will install protective enclosures at the above ground appurtenances to protect them from outside damage. The design and placement of these above ground appurtenances and protective enclosures is done at KMGG's sole discretion, and may exceed any regulatory requirements.

Construction

- If KMGG will be relocating KMGG facilities for any entity, grading in the new KMGG ROW shall be +/- 6 inches before KMGG will mobilize to complete the relocation. Final cover after the completion of the project will not be manipulated by the requesting entity to be less than 48" nor more than 72". All cover that exceeds 72" or less than 48" will be approved in writing by KMGG. This does not preclude KMGG from installing the pipeline at a minimum cover of 36" as provided for in CFR 49 Part 192. Cover during all construction activities will NEVER be less than 36" unless approved in writing and a KMGG representative is on site during the time cover is reduced.
- The entity requesting relocation shall survey top of pipe after installation but before backfill to determine proper final elevation of KMGG facilities. The entity requesting relocation is solely responsible for the final depth of cover over the relocated KMGG facility. Any deviation from cover requirements as outlined above will be corrected at the sole expense of the entity requesting relocation.
- Contractors shall be advised of KMGG's requirements and be contractually obligated to comply.
- The continued integrity of KMGG's pipelines and the safety of all individuals in the area of proposed work near KMGG's facilities are of the utmost importance. Therefore, contractor must meet with KMGG representatives prior to construction to provide and receive notification listings for appropriate area operations and emergency personnel. **KMGG's on-site representative will require discontinuation of any work that, in his or her opinion, endangers the operations or safety of personnel, pipelines or facilities.**



General Guidelines for Design and Construction Activities On or Near Kerr- McGee Gathering LLC Pipelines and Related Facilities

- **The Contractor must expose all KMGG pipelines prior to crossing to determine the exact alignment and depth of the lines. A KMGG representative must be present.**
- **The use of probing rods for pipeline locating shall be performed by KMGG representatives only, to prevent unnecessary damage to the pipeline coating. A KMGG representative shall do all line locating.**
- **Notification shall be given to KMGG at least 72 hours before start of construction. A schedule of activities for the duration of the project must be made available at that time to facilitate the scheduling of KMGG's work site representative. Any Contractor schedule changes shall be provided to KMGG immediately.**
- **Heavy equipment will not be allowed to operate directly over KMGG pipelines or in KMGG ROW unless written approval is obtained from KMGG. Heavy equipment shall only be allowed to cross KMGG pipelines at locations designated by KMGG. Haul roads will be constructed at all crossings. The haul roads will be constructed using lightweight equipment. The existing depth of cover over the pipeline must be verified. Cover will be added such that a total of 8' of fill exists over the pipeline and extends a minimum of 10' on each side of the pipeline. Depth of cover will then taper as required for equipment access. Steel plates may be used for load dissipation only if approved in writing by KMGG.**
- **Contractor shall comply with all precautionary measures required by KMGG, at its sole discretion to protect its pipelines. When inclement weather exists, provisions must be made to compensate for soil displacement due to subsidence of tires.**
- **Excavating or grading which might result in erosion or which could render the KMGG ROW inaccessible shall not be permitted unless the contractor agrees to restore the area to its original condition and provide protection to KMGG's facility. At no time will cover be reduced to less than 36" without written approval by KMGG and a KMGG representative on site.**
- **A KMGG representative shall be notified prior to construction activities within twenty-five (25) feet of a KMGG pipeline or above ground appurtenance. The contractor shall not be allowed to work within twenty-five (25) feet of KMGG facilities without approval from the KMGG representative. The KMGG representative may or may not remain on site during the entire construction activity. Contractor shall use extreme caution and take appropriate measures to protect KMGG facilities. The contractor shall call the KMGG representative prior to backfilling around the KMGG facility to allow for a final inspection of the KMGG facility.**
- **Ripping is only allowed when the position of the pipe is known and not within ten (10) feet of KMGG facility. KMGG personnel must be present.**
- **Temporary support of any exposed KMGG pipeline by Contractor may be necessary if required by KMGG's on-site representative. Backfill below the exposed lines and 12" above the lines shall be replaced with sand or other selected material as approved by KMGG's on-site representative and thoroughly compacted in 12" lifts to 95% of standard proctor dry density minimum or as approved by KMGG's on-site representative. This is to adequately protect against stresses that may be caused by the settling of the pipeline.**
- **No blasting shall be allowed within 1000 feet of KMGG's facilities unless blasting notification is given to KMGG Including complete Blasting Plan Data. A pre-blast meeting shall be conducted by the organization responsible for blasting.**
- **KMGG shall be indemnified and held harmless from any loss, cost of liability for personal injuries received, death caused or property damage suffered or sustained by any person resulting from any blasting operations undertaken within 500 feet of its facilities. The organization responsible for blasting shall be liable for any and all damages caused to KMGG's facilities as a result of their activities whether or not KMGG representatives are present. KMGG shall have a signed and executed Blasting Indemnification Agreement before authorized permission to blast can be given.**
- **No blasting shall be allowed within 200 feet of KMGG's facilities unless blasting notification is given to KMGG a minimum of one week before blasting. The organization responsible for blasting must complete Blasting Plan Data. KMGG shall review and analyze the blasting methods. A written blasting plan shall be provided by the organization responsible for blasting and agreed to in writing by KMGG. A written emergency plan shall be provided by the organization responsible for blasting.**
- **KMGG shall have a signed and executed Blasting Indemnification Agreement before authorized permission to blast can be given. A pre-blast meeting shall be conducted by the organization responsible for blasting.**



General Guidelines for Design and Construction Activities On or Near Kerr- McGee Gathering LLC Pipelines and Related Facilities

- Any contact with any KMGG facility, pipeline, valve set, etc. shall be reported immediately to KMGG. If repairs to the pipe are necessary, they will be made and inspected before the section is re-coated and the line is back-filled.
- KMGG personnel shall install all test leads on KMGG facilities.

Local Kerr-McGee Gathering LLC Representation:

Manager of Construction & Facilities Engineering:	Kevin R. Osif, P.E.	Phone: (303) 655-4307
Staff Engineer:	Joseph E. Sanchez, P.E.	Phone: (303) 655-4319
Operations Engineer:	Erik Smith	Phone: (303) 655-4359
Pipeline Foreman:	James Phillips	Phone: (303) 655-4343
Pipeline Foreman:	Rick Noffsinger	Phone: (303) 655-4326
Construction Foreman:	Jim McQuiston	Phone: (303) 655-4326

Emergency Contacts:

On call supervisor	Phone: (303) 559-4001
Kerr McGee 24 hour emergency number	Phone: (303) 659-5922
One Call Emergency	Phone: 811



**Threatened and Endangered Species, Habitat & Wetlands Report
Canyon Creek Filing No. 7 & 8
Erie, Colorado**

July 23, 2019

Prepared for:

Stratus Canyon Creek, LLC
1842 Montane Drive East
Golden, CO 80401

Prepared by:



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Erie, Colorado 80516
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Project Number: 2019-5-1



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LIST OF ACROYNMS AND ABBREVIATIONS

AMSL	above mean sea level
BGEPA	Bald and Golden Eagle Protection Act
CDA	Colorado Department of Agriculture
CNHP	Colorado Natural Heritage Program
COGCC	Colorado Oil and Gas Conservation Commission
CPW	Colorado Parks and Wildlife
CWA	Clean Water Act
Ecos or ecos	Ecosystem Services, LLC
JD	jurisdictional under the Clean Water Act
MBTA	Migratory Bird Treaty Act
Non-JD	non- jurisdictional under the Clean Water Act
OHWM	Ordinary High Water Mark
PMJM	Preble's meadow jumping mouse
Report	Threatened and Endangered Species, Habitat & Wetlands Report
Site	Canyon Creek Filing No. 7 & 8
NRCS	Natural Resource Conservation Service
NWI	National Wetland Inventory
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1.0 INTRODUCTION

Ecosystem Services, LLC (Ecos or ecos) was retained by Richard Dean of Stratus Canyon Creek, LLC to provide environmental support services for Canyon Creek Filing No. 7 & 8 (Project) (Site). This Threatened & Endangered Species, Habitat & Wetlands Report (Report) has been prepared for the Preliminary Plat review process per Town of Erie (Erie) requirements.

The contact information for the Stratus Canyon Creek, LLC and ecos representatives for this Report is provided below:

Client

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1.1 Purpose

The purpose of this Report is to identify and document the natural resources, ecological characteristics and existing conditions of the Site; identify potential ecological impacts associated with Site development; and provide current regulatory guidance related to potential development-related impacts to natural resources. This Report and associated mapping do not represent a formal presence/absence survey for threatened and endangered species and therefore is not suitable for regulatory submission to the United States Fish and Wildlife Service (USFWS). However, the wetland and waters boundary delineation are suitable for regulatory submission to the US Army Corps of Engineers (USACE) to support a 404 Permit application. The specific resources addressed in this Report are per the Town of Erie Development Design Standards, Chapter 6, Section 10.6.2 Natural and Scenic Resource Protection.

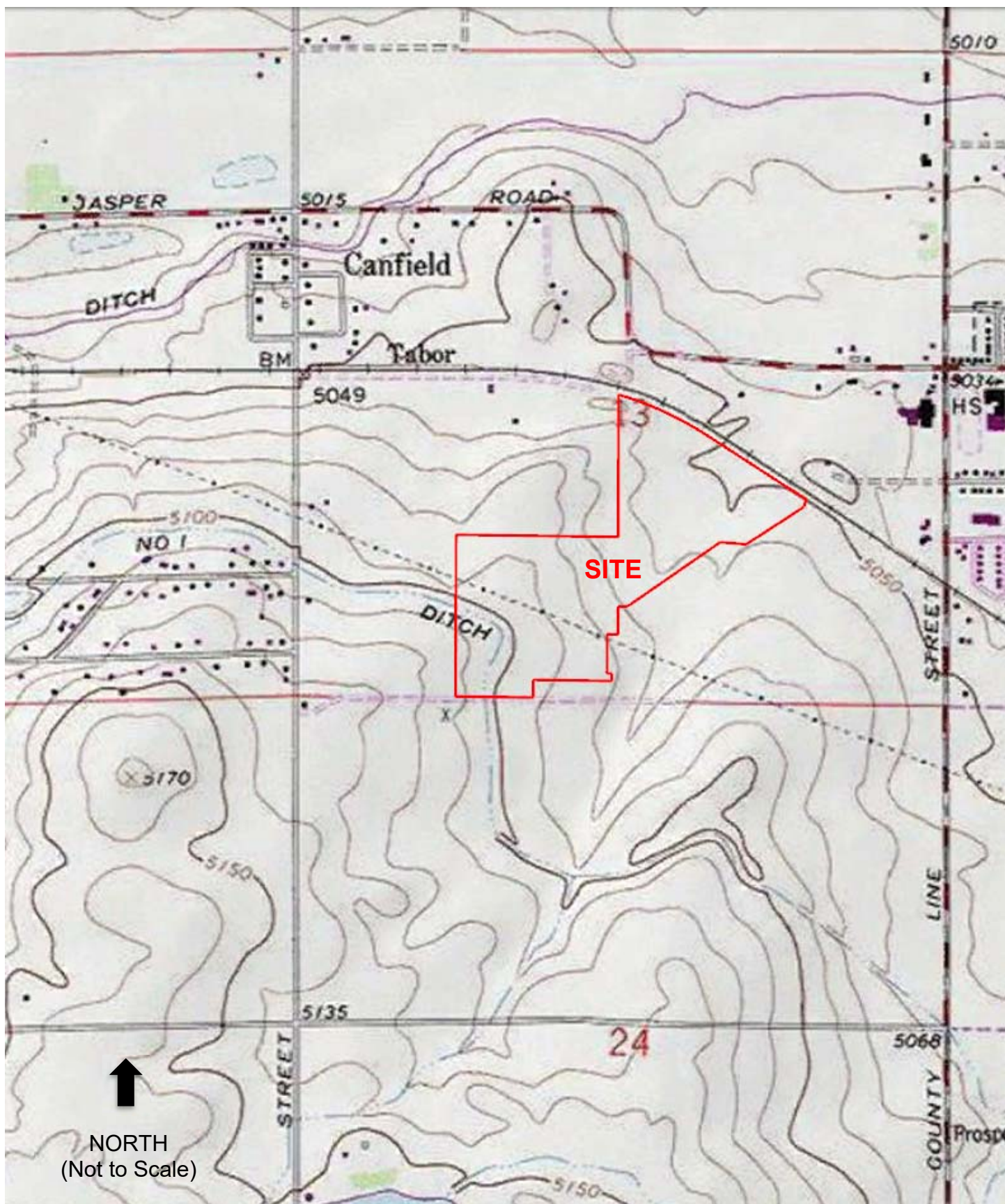
1.2 Project Description and Site Location

The Applicant proposes to develop the Canyon Creek Filing No. 7 & 8 as a planned residential community with associated infrastructure including roads, trails, stormwater management, and open space. The southwest portion of this Site consists of the square-shaped Filing No. 7 parcel. The northeast portion of the Site consists of the triangular shaped Filing No. 8 parcel.

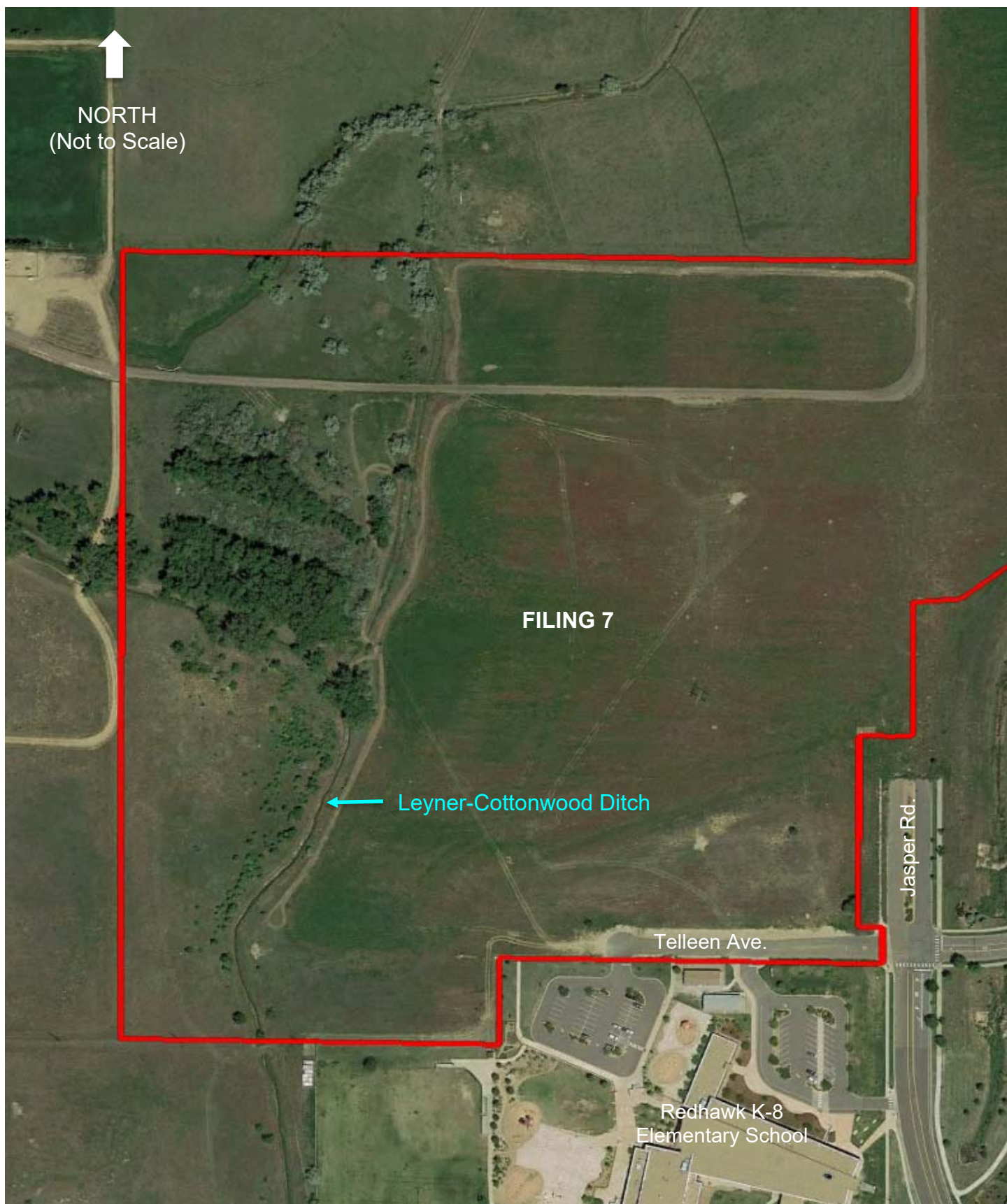
The 70.6-acre Site is in the Town of Erie, Boulder County, Colorado (Figure 1). The Site is specifically located within the South ½ of Section 13, Township 1 North, Range 69 West (refer to Figures 1 and 2). The longitude and latitude of the approximate Site center are 105.065400° west and 40.047142° north.

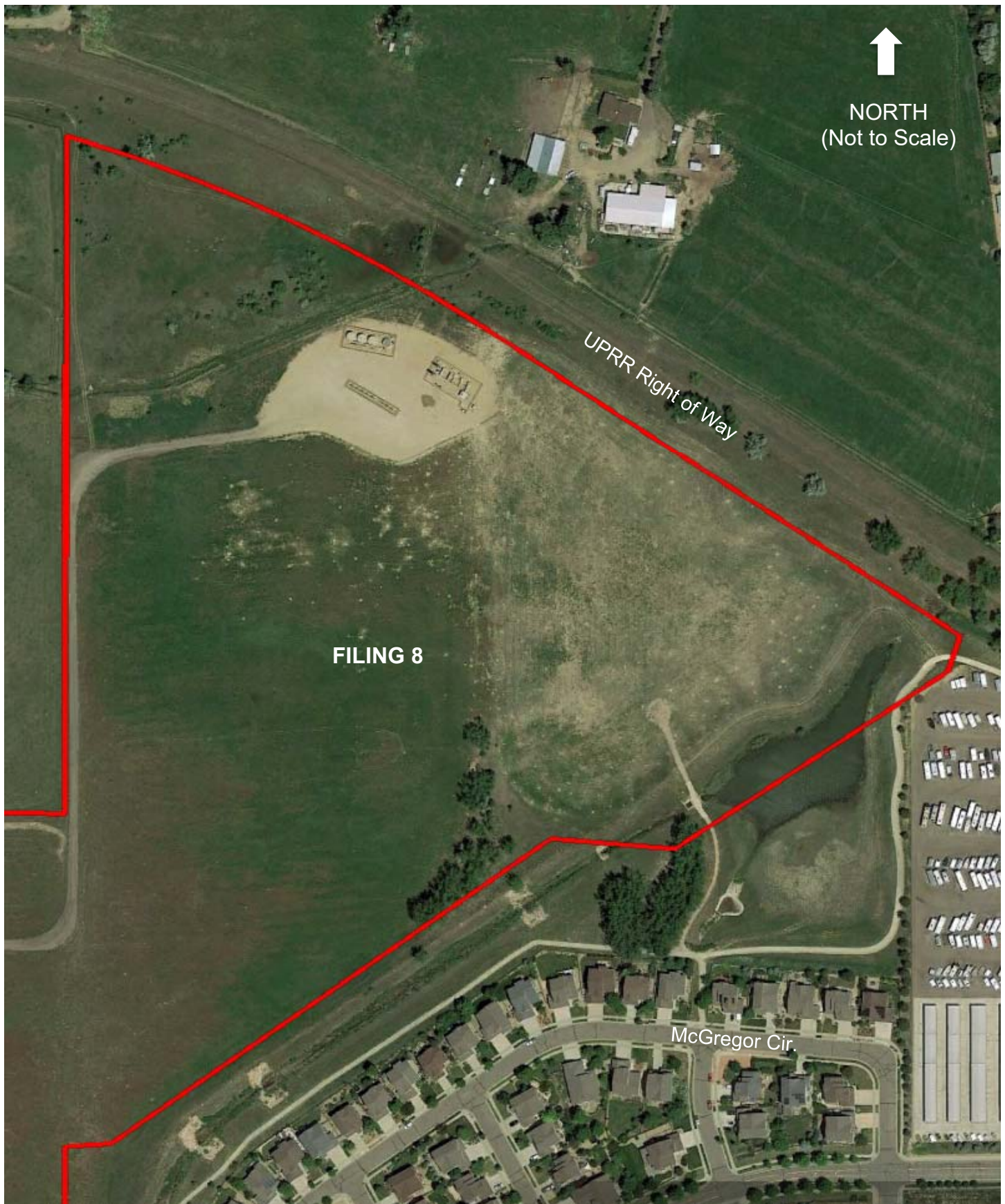
The Site is located on the west side of Erie, northwest of the intersection of Telleen Avenue and Jasper Road (Figure 2, East and West). The Site is bordered to the east by a stormwater drainage ditch; and a residential subdivision on the east side of the ditch.

Redhawk Elementary School is south of the Site. The Union Pacific Railroad tracks parallel the northeast Site boundary. There is agricultural land to the north and west.



USGS 7.5 min. Quads: Erie, Colorado
Latitude: 40.046890°N & Longitude: -105.064937° W





SOURCE: Google Earth, Aerial Image 5/31/18

2.0 METHODOLOGY

Ecos performed an office assessment in which available databases, resources, literature and field guides on local flora and fauna were reviewed to gather background information on the environmental setting of the Site. We consulted several organizations, agencies, and their databases, including:

- Town of Erie UDC, Chapter 6, Section 10.6.2 Natural and Scenic Resource Protection;
- Town of Erie Planning & Development Department;
- USFWS Information for Planning and Consultation (IPaC);
- Colorado Parks Division of and Wildlife (CPW) wildlife corridors and habitat mapping;
- U.S. Geological Survey (USGS) Topographic Quadrangles;
- Natural Resource Conservation Service (NRCS) soil maps;
- USFWS National Wetland Inventory (NWI) maps;
- Colorado Natural Heritage Program (CNHP) wetland and riparian habitat mapping; and
- Colorado Oil and Gas Conservation Commission (COGCC) raptor data.

The above data was used to create a preliminary natural resources map including vegetation communities, trees, prairie dogs, known raptor nests, wetlands, and ditches. The preliminary mapping was printed on aerial photographs and downloaded to a GPS phone application for field proofing.

The Site was visited on June 21, July 1, and July 11. Field reconnaissance concentrated on verifying and updating the preliminary mapping. More detailed vegetation information was collected, including species composition and habitat suitability for nesting birds and threatened and endangered species. Open water and wetland features were verified. Open water areas were mapped based on the presence of open waters or an ordinary high water mark (OHWM). Wetland mapping was based on the three field indicators of wetland habitat (i.e., wetland hydrology, hydric soils, and dominance of hydrophytic vegetation). Sampling points were completed per the 1987 USACE Wetland Delineation Manual and the 2010 Great Plains Supplement. Representative photographs were taken to assist in describing and documenting Site conditions.

Per the Town of Erie requirements for “Native and Specimen Tree and Vegetation Protection”, all trees within potentially impacted areas were assessed to determine the species and condition. All native trees over 4-inches diameter at breast height (DBH) were mapped. Stands of trees outside of impact areas were described, but individual trees were not mapped. These results will be submitted in a separate “Native Tree and Vegetation Survey and Protection Plan.”

3.0 EXISTING HABITAT

3.1 Uplands

Almost the entire Site has been historically used for agriculture such as row crops, hay, and/or pasture. The Site is crossed by the Leyner Cottonwood Ditch No. 1 (Cottonwood Ditch) and several lateral ditches. Some areas of the Site have been altered by natural vegetative succession and development. Most developed areas have been re-vegetated so that the overall character is still open agricultural land.

Currently, approximately half of the Site is vegetated with cultivated species; predominantly triticale (*Secale × Triticum*) that may have been planted as a cover crop this spring (refer to AG-CC on Figure 3 - East and West). Alfalfa (*Medicago sativa*) is common in some areas and likely persists from previous hay cultivation. Weed cover is high (5 – 40%) and includes field sowthistle (*Sonchus arvensis*), cheatgrass (*Bromus tectorum*), common mullein (*Verbascum thapsus*), field bindweed (*Convolvulus arvensis*), musk thistle (*Carduus nutans*) and Canada thistle (*Cirsium arvense*).

Vegetation in most other areas is non-native grassland (refer to GRASS-NN on Figure 3 – East and West). The recent land use history of these areas is varied, but habitat is similar. The dominant species is typically smooth brome (*Bromus inermis*) with 50-90% cover. Other common native species include slender wheatgrass (*Elymus trachycaulus*) and annual sunflower (*Helianthus annuus*). Non-native herbaceous cover is typically 10-20% and consists of the same species listed in the agricultural cover crop areas. Non-native grassland includes former pastures in the northwest corner of Filing No. 7 and the north corner of Filing No. 8. There are scattered trees in these areas, mostly non-native Siberian elms (*Ulmus pumila*) and Russian olives (*Elaeagnus angustifolia*). There is another large non-native grassland area located on the south side of the Site at Telleen Avenue where there is a large dirt mound that appears to have been re-vegetated with smooth brome and native western wheatgrass (*Pascopyrum smithii*).

Two large areas of Filing No. 8 have been developed (Figure 3 - East). There is an oil and gas pad on the north side with a large, gravel access road. There are also large dirt piles deposited along a ditch north of the well-pad. The second developed area is a large regional stormwater detention basin southeast of the pad. The basin appears to have been re-vegetated with native short-grass prairie species including buffalo grass (*Bouteloua dactyloides*), blue grama (*Bouteloua gracilis*), and slender wheatgrass. Weed cover is high, particularly cheatgrass and field bindweed. Since this area is re-vegetated and weedy, it is mapped as non-native grassland rather than shortgrass prairie. A prairie dog colony occupies much of the basin and the area south of the well pad.

3.2 Riparian

Riparian habitat typically consists of trees and shrubs associated with natural waterways. Within short grass prairie ecosystems, riparian habitat increases the overall diversity of vegetation and provides valuable wildlife habitat. High bird diversity is correlated with the structural diversity provided by varied sizes of trees and shrubs.

Some of the shrubs species provide berries for birds and mammals. Dead trees provide nesting sites for birds and dens for mammals such as raccoons. Multiple patches of trees and shrubs occur on the Site and were numbered and mapped as native (N) or non-native (NN) riparian forest (RIP-FO) and riparian scrub shrub (RIP-SS) on Figure 3 - East and West. Although these areas are associated with irrigation ditches and stormwater runoff instead of natural waterways, they still increase biodiversity.

The largest area of, and highest quality, riparian habitat is located on the west side of the Site and mostly north of Cottonwood Ditch (refer to Native RIP-FO on Figure 3 - East and West, #1 and 2). This area has a dense canopy of large plains cottonwood trees (*Populus deltoides*). The mid-story consists of a diverse mix of smaller trees and shrubs. Native cover includes Rocky mountain juniper (*Juniperus scopulorum*), American plum (*Prunus americana*), golden current (*Ribes aureum*), and red osier dogwood (*Cornus sericea*). Non-native cover mainly consisted of Russian olive; and honeysuckle (*Lonicera tatarica*) was also present. There were signs of people camping here including boards used to create temporary structures and the remains of old campfires.

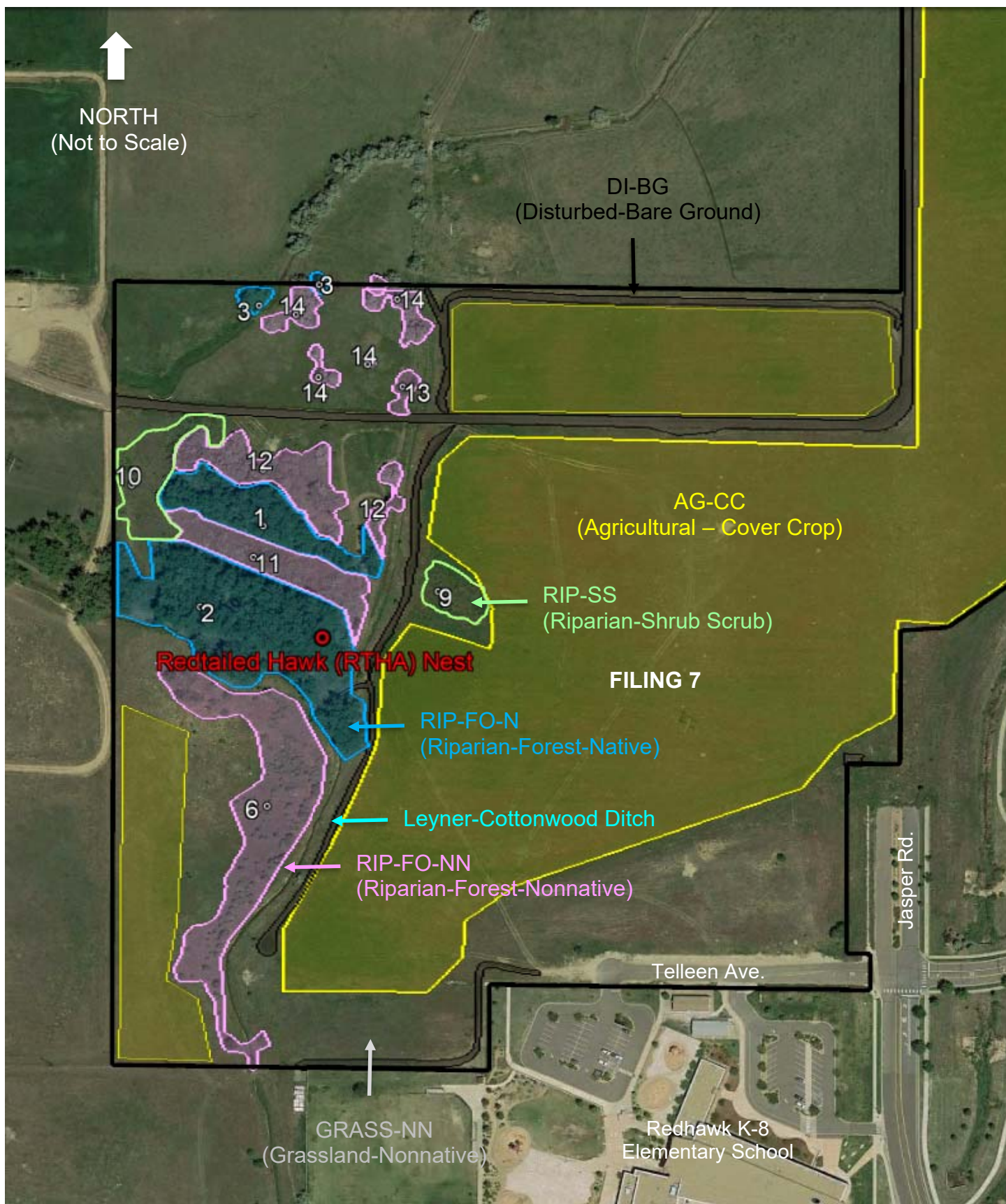
The dense cottonwood forest is bisected by a power line. Under the power line, vegetation is predominantly dense, non-native Russian olive trees that are 10 to 20 feet tall (~60% cover) (refer to Non-native RIP-FO on Figure 3 – West, #11). Some native shrubs are also present, including sandbar willow (10%), American plum (5%), and small peach-leaf willow (*Salix amygdaloides*) (1%). There are additional dense Russian olives trees north of the cottonwood forest; and Russian olives are scattered in the field north of the access road.

Two areas were mapped as native riparian shrub scrub (refer to Native RIP-SS on Figure 3 - East and West, #9 and 10). East of the large cottonwoods, there is a patch of cottonwood saplings growing in a weedy area of the field (#9). West of the large cottonwoods there is a patch of riparian scrub shrub with 50% cover of sandbar willow (*Salix exigua*) mixed with lesser amounts of Russian olive and an understory dominated by smooth brome (#10). These habitats are lower quality than the mature cottonwood forest, but they serve to buffer the forested area and increase the overall structural diversity of the area. The cottonwood saplings will likely grow quickly, especially if the nearby lateral irrigation ditch continues to be used.

Two additional patches of plains cottonwood trees are located on the east side of Filing No. 8 (refer to Native RIP-FO on Figure 3 – East, #4 and #5). These are stands of dense, young trees. The diameter at breast height ranges from two to 14 inches with an average of approximately eight inches. Average height is approximately 40 to 50 feet. Other woody species include peachleaf willows (3%) and some Russian olives. Herbaceous cover is mostly sparse non-native grasses. Due to the density of the cottonwood trees, overall species diversity is low.

There are two areas where Siberian elms are the dominant tree species (refer to Non-native RIP-FO on Figure 3 - East and West). There is a large patch of small elms in Filing No. 7 along the west side of Cottonwood Ditch (#6). There are some larger and more

scattered elms in the northern portion of Filing No. 8 (#8). The herbaceous vegetation in both areas is non-native grassland.



Note: Vegetation communities not designated with a color consist of Non-native Grassland (GRASS-NN)



SOURCE: Google Earth, Aerial Image 5/31/18

4.0 POTENTIAL WATERS OF THE US INCLUDING WETLANDS

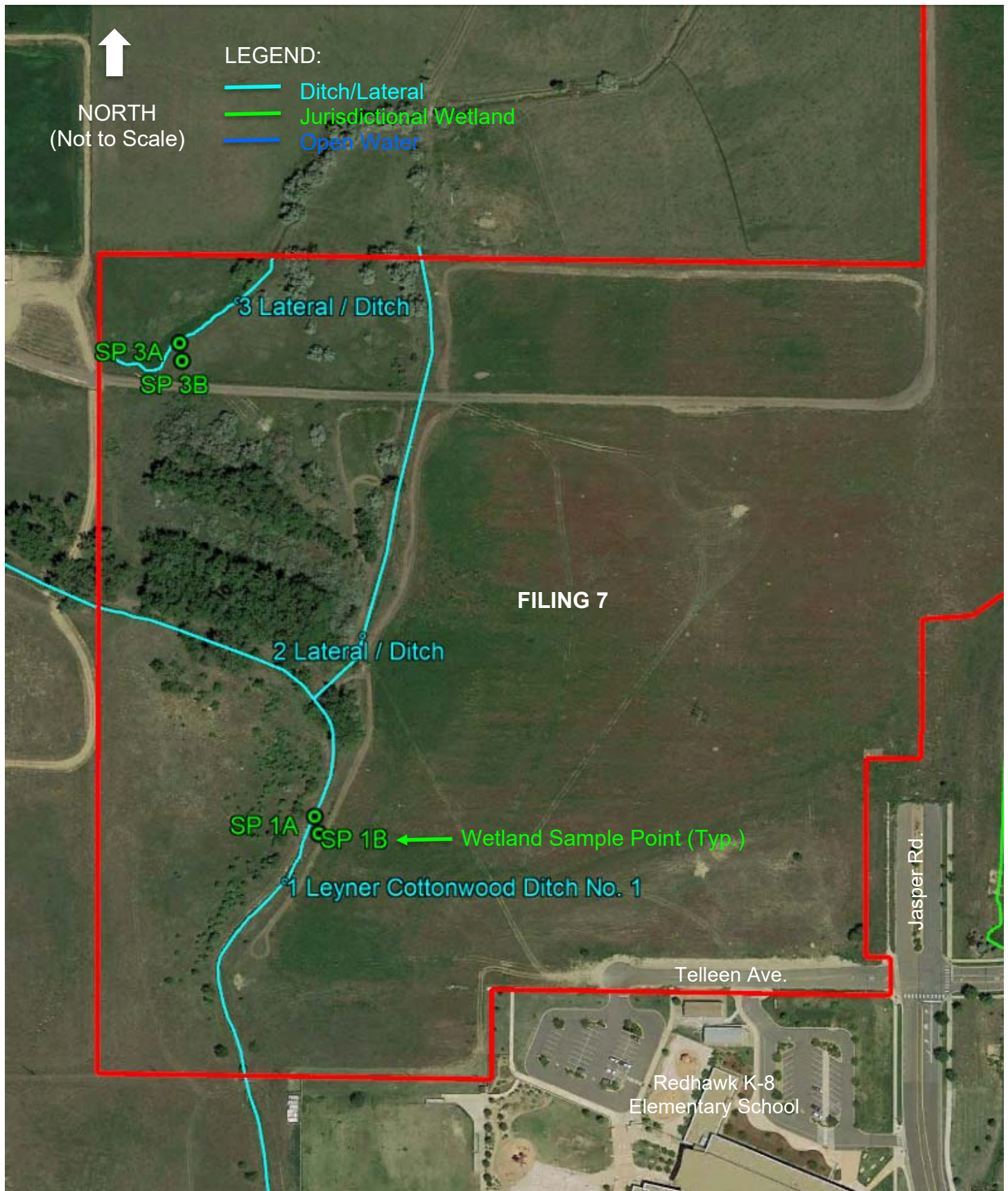
The Cottonwood Ditch crosses the southwest portion of the Site; flowing to the east and then south (Figure 4 – West, #1). The ditch appeared to be full during the Site visit. There are small, discontinuous patches of hydrophytic (i.e. wetland) vegetation along the ditch, including reed canarygrass (*Phalaris arundinacea*) and Emory's sedge (*Carex emoryii*), each with 5-20% cover. However, the dominant species overall is smooth brome (50-90% cover), an upland species. Sampling Point SP 1A was completed along the ditch and the criteria for hydrophytic soils were not met. Therefore, Cottonwood Ditch was mapped as open waters, but the adjacent vegetation was not mapped as wetland habitat.

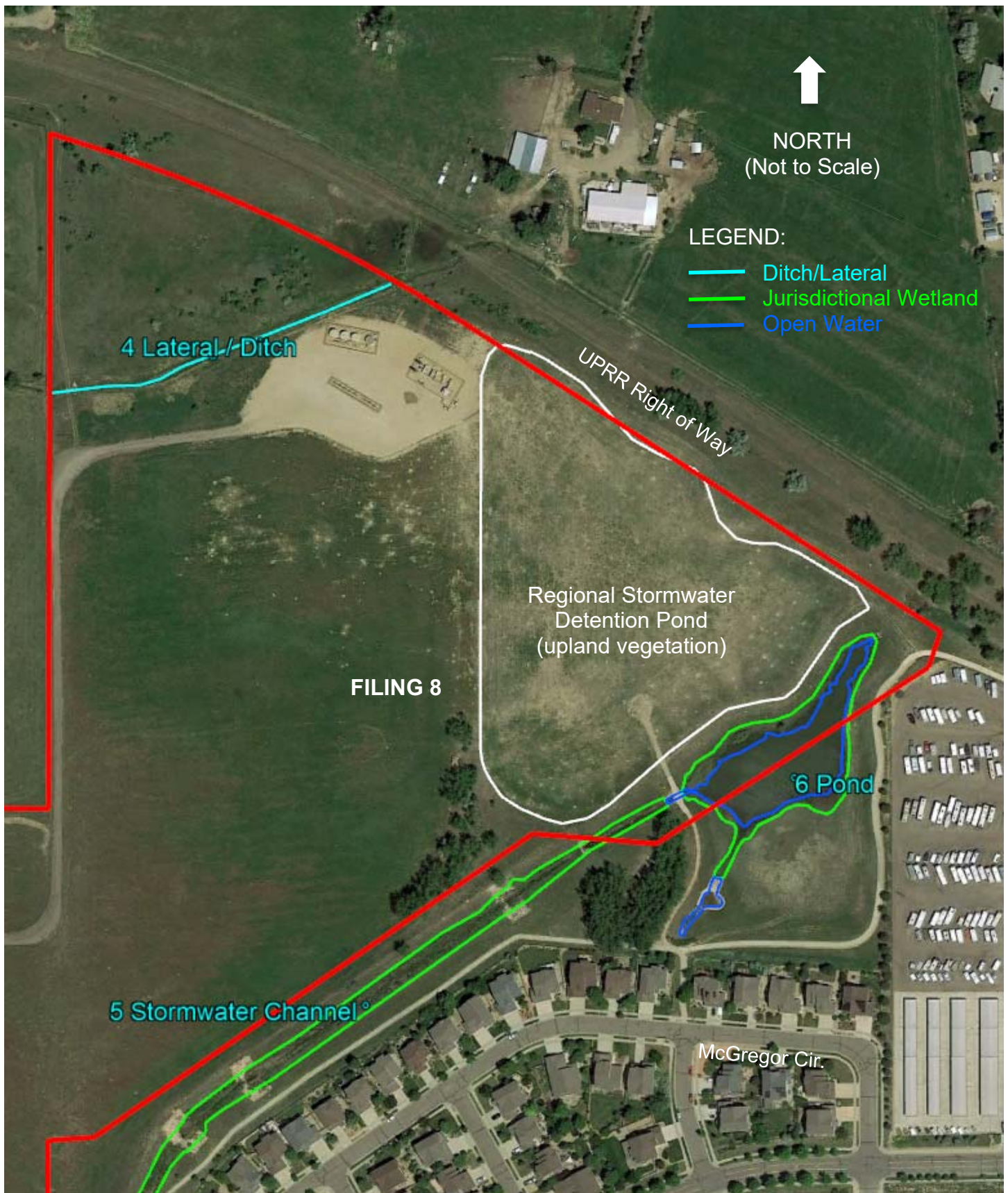
There are three irrigation laterals on Site, these are labeled as 2, 3, and 4 on Figure 4, East and West Halves.

- Lateral #2 flows directly off of Cottonwood Ditch via a headgate and flows north. This ditch had some water in it during the Site visits but was not full and flow only continued along part of the ditch. There was less hydrophytic vegetation than along Cottonwood Ditch. Therefore, this lateral was also mapped as open waters and the adjacent vegetation was not mapped as wetland habitat.
- Lateral #3 begins at a culvert on the west edge of the Site and Cottonwood Ditch is likely the water source. There is dense wetland vegetation along the entire ditch, including reed canarygrass and Emory's sedge. The ditch was not flowing during the Site visits, but recent flows and wetland hydrology were evidenced by water stained leave and drift deposits. Sampling Point SP 3A was completed along the ditch and hydrophytic soils were observed. Ecos followed the path of this private lateral to its termination to the northeast of the Site and determined that it terminates in an upland area west of Jay Road and south of Jasper Road. Given that this lateral does not have a downstream connection to other waters of the U.S., it is not jurisdictional wetland habitat under the Clean Water Act.
- Lateral #4 is located in the northernmost portion of the Site. The water source appears to be flow from laterals number 2 and/or 3. The ditch was not flowing during the Site visit and a plastic pipe had been placed in the eastern portion of the ditch to convey flows. There were large piles of recently placed dirt along both sides of the ditch; there was no obvious source for this since the nearby oil and gas facility appears to have been completed in 2013. Upland vegetation was dominant (smooth brome – 60% cover). Hydrophytic vegetation was limited to approximately 20% cover of reed canarygrass and 5% cover of curly dock (*Rumex crispus*). The lateral was mapped as open waters, but the adjacent vegetation was not mapped as wetland habitat.

A wide stormwater channel (#5 on Figure 4, East) flows along the southwest border of the Site. The channel is densely vegetated with hydrophytic species including sandbar willow, reed canary grass, and narrowleaf cattail (*Typha angustifolia*). The channel flows

to the northeast and into a small pond (#6) located within the regional stormwater detention basin. There is a well-developed fringe of palustrine emergent wetland vegetation around the pond and a few patches of sandbar willow. The dominant species are narrowleaf cattail and hard-stem bulrush (*Schoenoplectus acutus*). The pond drains to the northeast via an outfall and then into another channel that appears to flow directly east and eventually into Coal Creek. The pond was mapped as open water. The stormwater channel and the hydrophytic vegetation around the pond were mapped as wetland habitat. (Note: The regional stormwater detention basin is vegetated with upland species. Thus, it is neither wetland habitat nor open water.)





SOURCE: Google Earth, Aerial Image 5/31/18

5.0 STATE AND FEDERAL LISTED SPECIES

A number of species that occur in Boulder County are listed as candidate, threatened or endangered by the USFWS (USFWS 2019a) and the CPW (CPW, 2019). Ecos compiled the special status species for the Site in Table 1 based on the data sources listed above, as well as our onsite assessment. Table 1 includes all species listed by the USFWS Information for Planning on Consultation (IPAC) database. The results of the IPAC database search cover all of Boulder County; thus, some species are included which are not expected to occur on the Site. Additional state-listed animal species are included if there is potential for them to be impacted by the Project. Ecos has provided our professional opinion regarding the probability that these species may occur within the Site and their probability of being impacted by the Project.

The likelihood that the Project would impact any federally-listed species is none to very low. Most are not expected occur in the Project area and no downstream impacts to the North Platte River basin would occur. There is low to moderate potential for impacts to some State-listed species. However, there are no state-level protections for these species.

TABLE 1 - STATE AND FEDERAL PROTECTED SPECIES POTENTIALLY IMPACTED BY THE PROJECT			
Species	Status	Habitat Requirements and Potential Presence	Probability of Impact by Project
FISH			
Greenback cutthroat trout (<i>Oncorhynchus clarki stomias</i>)	Federal: Threatened State: Threatened	Cold, clear, gravely headwater streams and mountain lakes that provide an abundant food supply of insects.	None. Suitable habitat does not exist on Site.
Pallid sturgeon (<i>Scaphirhynchus albus</i>)	Federal: Endangered	Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska.	None. The Site is not within species range; and the proposed project will not alter or deplete flows to the relevant river basins.
REPTILES AND AMPHIBIANS			

TABLE 1 - STATE AND FEDERAL PROTECTED SPECIES POTENTIALLY IMPACTED BY THE PROJECT			
Species	Status	Habitat Requirements and Potential Presence	Probability of Impact by Project
Red-sided garter snake (<i>Thamnophis sirtalis parietalis</i>)	State: Special Concern	Occupy most wetland habitats during the summer. Hibernate during the winter in a variety of habitats. Moderate potential to occur in the pond and incoming stormwater channel. Low potential to occur in irrigation ditches and laterals.	Moderate. The best summer habitat will not be directly impacted. Lower quality habitat and upland buffer areas will be impacted. Development could reduce water quality and increase disturbance.
Northern leopard frog (<i>Rana pipiens</i>)	State: Special concern State: Special Concern	Wet meadows and the banks and shallows of marshes, ponds, glacial kettle ponds, beaver ponds, lakes, reservoirs, streams, and irrigation ditches. Low potential to occur in the pond and incoming stormwater channel.	Low. The best habitat on Site will not be directly impacted. However, development could reduce water quality and increase disturbance.
BIRDS			
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Federal: Delisted State: Threatened	Reservoirs and rivers are the typical habitat but may nest in large trees in uplands. In winter, they may also occur locally in semi-deserts and grasslands, especially near prairie dog towns.	Very Low. No nests or winter roost areas are mapped within one mile of the Site on the COGCC database (2019).
Least tern (<i>Sternula antillarum</i>)	Federal: Endangered State: Endangered	Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska.	None. Does not occur on Site; and the proposed project will not alter or deplete flows to the relevant river basins.

TABLE 1 - STATE AND FEDERAL PROTECTED SPECIES POTENTIALLY IMPACTED BY THE PROJECT			
Species	Status	Habitat Requirements and Potential Presence	Probability of Impact by Project
Mexican spotted owl (<i>Strix occidentalis lucida</i>)	Federal: Threatened State: Threatened	Mature, old-growth forests of white pine, Douglas fir, and ponderosa pine; steep slopes and canyons with rocky cliffs.	None. Suitable, montane habitat is not present on Site.
Piping plover (<i>Charadrius melodus</i>)	Federal: Threatened State: Threatened	Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska.	None. Does not occur on Site; and the proposed project will not alter or deplete flows to the relevant river basins.
Western burrowing owl (<i>Athene cunicularia</i>)	State: Threatened	Occurs in grasslands in, or near, prairie dog towns. Typically found farther east in areas with minimal human presence. Not expected to occur on Site.	Very Low. Not expected to occur on Site.
Whooping crane (<i>Grus americana</i>)	Federal: Endangered State: Endangered	Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska.	None. Does not occur on Site; and the proposed project will not alter or deplete flows to the relevant river basins.
MAMMALS			
Black-tailed prairie dog (<i>Cynomys ludovicianus</i>)	State: Special Concern	Form large colonies or "towns" in shortgrass or mixed prairie. This species occurs on Site. Most of the burrows are currently outside the planned construction limits.	Moderate. The existing burrows are adjacent to the proposed limits of disturbance. Development will reduce the options for natural dispersal.

TABLE 1 - STATE AND FEDERAL PROTECTED SPECIES POTENTIALLY IMPACTED BY THE PROJECT			
Species	Status	Habitat Requirements and Potential Presence	Probability of Impact by Project
Canada lynx (<i>Lynx canadensis</i>)	Federal: Threatened State: Endangered	Restricted to much higher elevation habitats (i.e., it is an obligate montane species).	None. Suitable montane habitat is not present on the Site.
North American Wolverine (<i>Gulo gulo luscus</i>)	Federal: Proposed Threatened State: Endangered	Restricted to much higher elevation habitats (i.e., it is an obligate montane species).	None. Suitable montane habitat is not present on the Site.
Preble's meadow jumping mouse (<i>Zapus hudsonius preblei</i>)	Federal: Threatened State: Threatened	Inhabits well-developed riparian habitat with adjacent, relatively undisturbed grassland communities, and a nearby water source. Well-developed riparian habitat includes a dense combination of grasses, forbs and shrubs; a taller shrub and tree canopy may be present. Has been found to regularly use uplands at least as far out as 100 meters beyond the 100-year floodplain.	Very low. The closest occupied habitat and the closest USFWS designated critical habitat are both over 8 miles southwest of the Site, therefore it is not expected to occur.
PLANTS			
Colorado butterfly plant (<i>Gaura neomexicana</i> var. <i>coloradensis</i>)	Federal: Threatened	Typically occur in flat, sunny areas within the transitional hydrologic zone between wetlands and uplands.	None. Only known from one location in Colorado, therefore not expected to occur on Site.
Ute ladies'-tresses orchid (<i>Spiranthes diluvialis</i>)	Federal: Threatened	Primarily occurs along seasonally flooded river terraces, sub-irrigated or spring-fed abandoned stream channels or valleys, and lakeshores. May also occur along irrigation canals, berms, levees, irrigated meadows, excavated gravel pits, roadside borrow pits, reservoirs, and other human-modified wetlands. Prefers open habitats with generally low vegetation.	None. Suitable habitat does not occur on Site.

TABLE 1 - STATE AND FEDERAL PROTECTED SPECIES POTENTIALLY IMPACTED BY THE PROJECT			
Species	Status	Habitat Requirements and Potential Presence	Probability of Impact by Project
Western prairie fringed orchid (<i>Platanthera praeclara</i>)	Federal: Threatened	Occurs in tallgrass prairie in Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and Oklahoma. Upstream depletions to the Platte River system in Colorado and Wyoming may affect the species in Nebraska. Site is not within species range.	None. Site is not within species range; and the proposed project will not alter or deplete flows to the relevant river basins.

6.0 RAPTORS AND MIGRATORY BIRDS

Raptors and most birds are protected by the Colorado Nongame Wildlife Regulations, as well as by the federal Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). There is a large raptor nest in the cottonwood forest near the power line (Figure 3 – West). This nest likely belongs to the pair of red-tailed hawks that were observed exhibiting territorial behavior during each Site visit. The COGCC GIS database did not show any active raptor nests within one mile of the Site, but the database is not up-to-date for most areas. There is suitable habitat for nesting birds within the Study Area, including trees, brush, and un-mown grassland areas. A killdeer nest was found in the prairie dog colony. The riparian habitat is valuable nesting habitat for birds, and the pond could be used by resident and migrating waterfowl.

7.0 SIGNIFICANT WILDLIFE HABITAT AND CORRIDORS

The Town of Erie Development and Design Standards state that applicants should give priority to the preservation of significant natural features including wetlands, natural drainage ways, bodies of water, significant wildlife corridors and habitat, and sites with federally- or state-recognized endangered species. The Site is on the edge of a rapidly urbanizing area and is not positioned to be a useful wildlife corridor. Most of the Site is weedy, fallow cropland and non-native grassland. However, there are some areas of wetland and riparian habitat.

The limited wetland habitat and waterways on Site are all associated with irrigation ditches or stormwater management. Although the waters and wetlands are of fairly low quality, they still provide good habitat to many species of wildlife and enhance the environment for people. The preliminary plat would preserve the Cottonwood Ditch and a wide buffer area. The existing regional detention pond would not be impacted, thus well-developed wetland habitat associated with the pond and the inflowing stormwater channel would also be preserved.

The highest quality wildlife habitat is the mature, cottonwood forest on the west side of the Site where there is a red-tailed hawk nest. Most of this area would be preserved and a trail would be placed beneath the power line in habitat that is currently dominated by non-native Russian olive trees. On the east side of the Site, there is an approximate 0.52-acre dense stand of young cottonwood trees that is good wildlife habitat. Most of this stand would be impacted.

Birds were the most common wildlife observed during the Site visit and much of their habitat would be preserved. The Site also provides habitat for mammals including rodents, deer, and carnivores. The Site likely provides foraging and breeding habitat for predators such as coyote and red fox. The moderately-sized prairie dog colony would be almost entirely preserved. As noted in Table 1, there is potential habitat for the State-listed red-sided garter snake and northern leopard frog.

8.0 REGULATORY RECOMMENDATIONS

8.1 Clean Water Act

Section 404 of the Clean Water Act prohibits the discharge of dredged or fill material into waters of the U.S. (including wetland habitat) protected by the Act without a valid permit. Ecos did not identify potential jurisdictional Waters of the US, including wetlands, on Site (i.e., areas 5 and 6 on Figure 4). If these areas would be impacted, then a Section 404 permit would be required, and the developer must coordinate with the U.S. Army Corps of Engineers prior to implementation of said impacts.

Clarification of Jurisdictional vs. Non-Jurisdictional Waters of the U.S.

The Corps and U.S. Environmental Protection Agency (EPA) prepared a guidance memorandum, *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States*. This memorandum provides guidance to EPA regions and Corps districts implementing the Supreme Court's decision in the consolidated Rapanos and Carabell cases which address the jurisdiction over waters of the United States under the Clean Water Act. The key points of the memorandum, which apply to the determinations made in the field by ecos for the Project are summarized below:

The agencies will assert jurisdiction over the following waters:

- Traditional navigable waters;
- Wetlands adjacent to traditional navigable waters;
- Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months); and
- Wetlands that directly abut such tributaries.

The agencies generally will not assert jurisdiction over the following features:

- Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow); and
- Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

8.2 Endangered Species Act

The Site is not located within any officially designated occupied or critical habitat for federally designated threatened or endangered species, including the Preble's meadow jumping mouse; nor are any federally-listed species expected to occur on Site. However, if a Section 404 permit is required then the USACE must comply with the Endangered Species Act. This would likely be limited to including a written summary of federally-listed species, similar to the information summarized in Table 1.

8.3 Migratory Bird Treaty Act & Bald and Golden Eagle Protection Act

There is good habitat for nesting birds, including a likely red-tailed hawk nest, and very low potential for burrowing owls to nest in the prairie dog colonies. Impacts to native birds, including their eggs, are prohibited by the MBTA and BGEPA. In Colorado, most species of birds nest between April and August and a 50 to 100-foot buffer is usually sufficient to prevent nest abandonment. Raptors may nest much earlier and have larger CPW recommended buffers to avoid impacting nests. Red-tailed hawks begin laying eggs in mid-February and have a recommended buffer zone of 1/3 mile. Burrowing owls nesting restrictions begin in mid-March, have a CPW recommended buffer zone of 150 feet, and recommended series of three surveys prior to construction, prairie dog poisoning, or other disturbance. If possible, initial clearing should be completed between September and January, which is outside of the nesting season for all species except eagles. If construction would occur in any vegetated areas between April and August, vegetation should be mowed beginning in April and kept below six inches in height to keep birds from nesting. Ecos recommends a nesting bird inventory within one week prior to construction to identify any new nests within the Site or within the CPW recommended buffers of the Site.

9.0 REFERENCES

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Appendix A
USFWS IPaC Trust Resources Report

IPaC Information for Planning and Consultation

U.S. Fish & Wildlife Service

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

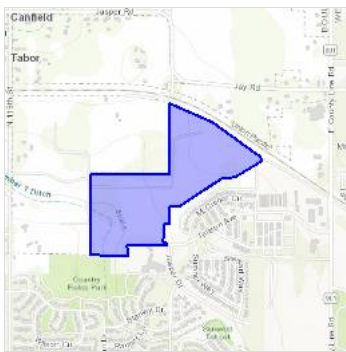
Project information

NAME

Erie Canyon Creek

LOCATION

Boulder County, Colorado



flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Canada Lynx <i>Lynx canadensis</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/3652	Threatened
North American Wolverine <i>Gulo gulo luscus</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5123	Proposed Threatened
Preble's Meadow Jumping Mouse <i>Zapus hudsonius preblei</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/4090	Threatened

Birds

NAME	STATUS
Least Tern <i>Sterna antillarum</i> This species only needs to be considered if the following condition applies: <ul style="list-style-type: none"> • Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska. No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8505	Endangered
Mexican Spotted Owl <i>Strix occidentalis lucida</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8196	Threatened

Piping Plover *Charadrius melodus*

Threatened

This species only needs to be considered if the following condition applies:

- Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska.

There is **final** critical habitat for this species. Your location is outside the critical habitat.

<https://ecos.fws.gov/ecp/species/6039>

Whooping Crane *Grus americana*

Endangered

This species only needs to be considered if the following condition applies:

- Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska.

There is **final** critical habitat for this species. Your location is outside the critical habitat.

<https://ecos.fws.gov/ecp/species/758>

Fishes

NAME	STATUS
Greenback Cutthroat Trout <i>Oncorhynchus clarkii stomias</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2775	Threatened
Pallid Sturgeon <i>Scaphirhynchus albus</i> This species only needs to be considered if the following condition applies: <ul style="list-style-type: none"> • Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska. No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7162	Endangered

Flowering Plants

NAME	STATUS
Colorado Butterfly Plant <i>Gaura neomexicana</i> var. <i>coloradensis</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/6110	Threatened
Ute Ladies'-tresses <i>Spiranthes diluvialis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2159	Threatened
Western Prairie Fringed Orchid <i>Platanthera praeclara</i> This species only needs to be considered if the following condition applies: <ul style="list-style-type: none"> • Water-related activities/use in the N. Platte, S. Platte and Laramie River Basins may affect listed species in Nebraska. No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1669	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Jul 31
Burrowing Owl <i>Athene cunicularia</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9737	Breeds Mar 15 to Aug 31
Golden Eagle <i>Aquila chrysaetos</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Lark Bunting <i>Calamospiza melanocorys</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 10 to Aug 15
Lesser Yellowlegs <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere

Long-billed Curlew *Numenius americanus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/5511>

Breeds Apr 1 to Jul 31

Mccown's Longspur *Calcarius mccownii*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9292>

Breeds May 1 to Aug 15

Semipalmated Sandpiper *Calidris pusilla*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds elsewhere

Willet *Tringa semipalmata*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds Apr 20 to Aug 5

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ “Proper Interpretation and Use of Your Migratory Bird Report” before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (l)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

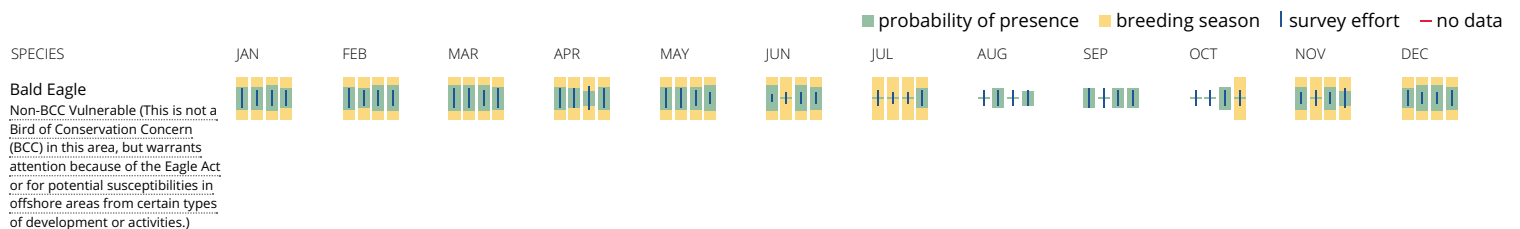
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Burrowing Owl BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++
Golden Eagle BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++
Lark Bunting BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++
Lesser Yellowlegs BCC Rangwide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++
Long-billed Curlew BCC Rangwide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++
Mccown's Longspur BCC Rangwide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++
Semipalmated Sandpiper BCC Rangwide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++
Willet BCC Rangwide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++	++++

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) and/or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some

point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

RIVERINE

[R5UBFx](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Appendix B
Site Photographs



Photo 1 – Typical agricultural area with cover crop. Taken near southeast Site corner, facing northwest along power lines towards stand of large cottonwood trees (see Photo 5).



Photo 2 – Taken from southern Site boundary, facing north along Leyner Cottonwood Ditch No. 1 (Cottonwood Ditch). Note lack of wetland vegetation along ditch and scattered, small, non-native Siberian elms.



Photo 3 – Taken from near western Site boundary, facing east along Cottonwood Ditch. Note lack of wetland vegetation along ditch and large plains cottonwoods on both sides. There is dense riparian forest to the north (left) and a narrow strip of large trees to the south (right).



Photo 4 – Photo of irrigation lateral #2. Taken near power lines, facing south. Note

dominance of upland vegetation (smooth brome) along lateral. Photos 4-6 taken from same point.



Photo 5 – Facing west along power lines. Under the power lines, there is a dense stand of non-native Russian olive trees mixed with lesser amounts of native shrubs such as sandbar willow. There are stands of large plains cottonwoods along both sides of the power lines.



Photo 6 – Taken near intersection of power lines and irrigation lateral #2, facing east across access road and towards a small patch of plains cottonwood saplings growing in the fallow field. Typical non-native grassland with smooth brome in the foreground.



Photo 7 – Taken from north edge of Filing No. 7, facing southwest along irrigation lateral #3. A large peachleaf willow is on the right and Russian olives are on the left. Sampling Points 3A and 3B were completed in the open area visible beyond the peachleaf willow tree.



Photo 8 – Taken from in Filing No. 8 between the pond and the regional stormwater detention basin facing southwest. The southeast edge of the prairie dog colony is in the detention basin. Two patches of dense young cottonwood trees are in the distance (#4 – center, #5 - right).



Photo 9 – Photo taken near the northeast end of the stormwater drainage ditch (ditch

#5), facing west across the stormwater drainage ditch and towards tree patch #4.
Typical non-native grassland habitat in uplands.



Photo 10– Dense patch of young plains cottonwood trees (#4) with average diameter at breast height of 8.” Taken from east edge of Filing No. 8 facing south.



Photo 11 – Photo taken near the west end of prairie dog colony facing northwest towards Site boundary. This was the weediest area of the prairie dog colony.



Photo 12 – Photo taken on the west side of Filing No. 8, at west end of irrigation lateral #4, facing east. Oil and gas pad is visible in the distance. Note lack of wetland vegetation in the ditch and piles on new fill dirt along each side of the ditch.

Appendix C
Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Canyon Creek City/County: Erie, Boulder Sampling Date: July 11, 2019

Applicant/Owner: Stratus Canyon Creek, LLC State: Colorado Sampling Point: SP 1A

Investigator(s): Julia Auckland Section, Township, Range: S13 T1N R69W

Landform(hillslope, terrace, etc.): irrigation ditch Local relief(concave, convex, none): Concave Slope(%): 20

Subregion (LRR): G Western Great Plains Lat: 40.045191 Long: -105.068507 Datum: WGS84

Soil Map Unit Name: Manter Sandy Loam 3-9% slopes NWI classification: riverine

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐ , Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks: <u>Leyner Cottonwood Ditch. OHWM 4' wide x 2' deep. 2-3' wetland fringe along both sides. Flowing. Point on east bank at junction of wetland (PHAR) & UPL (BRIN) vegetation.</u>	

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: <u>30.0</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
_____ = Total Cover			

Sapling/Shrub Stratum (Plot size: <u>15.0</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
_____ = Total Cover			

Herb Stratum (Plot size: <u>5.0</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Phalaris arundinacea</u>	<u>48</u>	<u>YES</u>	<u>FACW</u>
2. <u>Bromus inermis</u>	<u>50</u>	<u>YES</u>	<u>UPL</u>
3. <u>Sonchus arvensis</u>	<u>2</u>	<u>NO</u>	<u>FAC</u>
4. _____	_____	<u>NO</u>	_____
5. _____	_____	<u>NO</u>	_____
6. _____	_____	<u>NO</u>	_____
7. _____	_____	<u>NO</u>	_____
8. _____	_____	<u>NO</u>	_____
9. _____	_____	<u>NO</u>	_____
10. _____	_____	<u>NO</u>	_____
_____ = Total Cover			

Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
_____ = Total Cover			

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	X 1 = <u>0</u>
FACW species <u>48</u>	X 2 = <u>96</u>
FAC species <u>2</u>	X 3 = <u>6</u>
FACU species <u>0</u>	X 4 = <u>0</u>
UPL species <u>50</u>	X 5 = <u>250</u>
Column Totals: <u>100</u> (A)	<u>352</u> (B)

Prevalence Index = B/A = 3.52

Hydrophytic Vegetation Indicators:

_____ 1. Rapid Test for Hydrophytic Vegetation

_____ 2. Dominance Test is > 50%

_____ 3. Prevalence index is <= 3.0¹

_____ 4. Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks: Example of mixed patches of UPL & WET veg along ditch. Within whole project area ditch veg is ~60% Bromus inermis, 20% Phalaris, 10% Carex emoryii, and 10% other. Thus, upland species are domin... Does not meet wetland criteria due to overall dominance of upland vegetation - wetland vegetation is limited to small patches.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-8	10YR 4/1	100					loam	
8-20	10YR 4/1	100					sa loam	sandy loam

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered, Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (B5)	<input type="checkbox"/> Coast Prairie Redox (A16)(LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16) (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> Stratified Layers (A5)(LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> 1 cm Muck (A9)(LRR F, G, H)	<input type="checkbox"/> Depleted Mtrix (F3)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2)(LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16) (MLRA 72 & 73 of LRR H)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)(LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks: Does not meet criteria for depleted matrix due to absence of 2% redox concentrations.

HYDROLOGY

Wetland Hydrology Indicators:

Primary indicator (minimum of one required; check all that apply)

Secondary indicators (minimum of two required)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where tilled)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizosphere on Living Roots(C 3) (where not tilled)	<input type="checkbox"/> Saturation Visible on Aerial Imagery(C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (Inches): _____
Water Table Present? Yes ☒ No ☐ Depth (Inches) 8"
Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (Inches) 4"

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Date (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Ditch is flowing at OHWM level. "Water table" is from ditch water and hydrology appears to be totally dependent on ditch flow.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Canyon Creek City/County: Erie, Boulder Sampling Date: July 11, 2019

Applicant/Owner: Stratus Canyon Creek, LLC State: Colorado Sampling Point: SP 1B

Investigator(s): Julia Auckland Section, Township, Range: S13 T1N R69W

Landform(hillslope, terrace, etc.): flat upland field Local relief(concave, convex, none): None Slope(%): 1

Subregion (LRR): G Western Great Plains Lat: 40.045115 Long: -105.068483 Datum: WGS84

Soil Map Unit Name: Manter Sandy Loam 3-9% slopes NWI classification: none

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐ , Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks: <u>Upland field east of Leyner Cottonwood Ditch & SP 1A.</u>	

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: <u>30.0</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
_____ = Total Cover			

Sapling/Shrub Stratum (Plot size: <u>15.0</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
_____ = Total Cover			

Herb Stratum (Plot size: <u>5.0</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Bromus inermis</u>	<u>88</u>	<u>YES</u>	<u>UPL</u>
2. <u>Sonchus arvensis</u>	<u>1</u>	<u>NO</u>	<u>FAC</u>
3. <u>Convolvulus arvensis</u>	<u>1</u>	<u>NO</u>	<u>UPL</u>
4. <u>Ambrosia psilostachya</u>	<u>3</u>	<u>NO</u>	<u>FACU</u>
5. <u>Helianthus annuus</u>	<u>2</u>	<u>NO</u>	<u>FACU</u>
6. _____	_____	<u>NO</u>	_____
7. _____	_____	<u>NO</u>	_____
8. _____	_____	<u>NO</u>	_____
9. _____	_____	<u>NO</u>	_____
10. _____	_____	<u>NO</u>	_____
_____ = Total Cover			

Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
_____ = Total Cover			

% Bare Ground in Herb Stratum 5

Remarks: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	X 1 = <u>0</u>
FACW species <u>0</u>	X 2 = <u>0</u>
FAC species <u>1</u>	X 3 = <u>3</u>
FACU species <u>5</u>	X 4 = <u>20</u>
UPL species <u>89</u>	X 5 = <u>445</u>
Column Totals: <u>95</u> (A)	<u>468</u> (B)
Prevalence Index = B/A = <u>4.93</u>	

Hydrophytic Vegetation Indicators:

1. Rapid Test for Hydrophytic Vegetation _____

2. Dominance Test is > 50% _____

3. Prevalence index is <= 3.0¹ _____

4. Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet) _____

Problematic Hydrophytic Vegetation¹ (Explain) _____

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-20	2.5Y 3/3	100						loamy sand

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered, Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (B5)	<input type="checkbox"/> Coast Prairie Redox (A16)(LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16) (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> Stratified Layers (A5)(LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> 1 cm Muck (A9)(LRR F, G, H)	<input type="checkbox"/> Depleted Mtrix (F3)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2)(LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16) (MLRA 72 & 73 of LRR H)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)(LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary indicator (minimum of one required; check all that apply)

Secondary indicators (minimum of two required)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where tilled)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizosphere on Living Roots(C 3) (where not tilled)	<input type="checkbox"/> Saturation Visible on Aerial Imagery(C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

Field Observations:

Surface Water Present? Yes ☐ No ☒
Water Table Present? Yes ☐ No ☒
Saturation Present? (includes capillary fringe) Yes ☐ No ☒
Depth (Inches): _____
Depth (Inches): _____
Depth (Inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Date (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Canyon Creek City/County: Erie, Boulder Sampling Date: July 11, 2019

Applicant/Owner: Stratus Canyon Creek, LLC State: Colorado Sampling Point: SP 3A

Investigator(s): Julia Auckland Section, Township, Range: S13 T1N R69W

Landform(hillslope, terrace, etc.): irrigation lateral Local relief(concave, convex, none): Concave Slope(%): 2

Subregion (LRR): G Western Great Plains Lat: 40.047284 Long: -105.069287 Datum: WGS84

Soil Map Unit Name: Manter Sandy Loam 3-9% slopes NWI classification: none

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐ , Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks: Typical irrigation lateral. OHWM 3' wide x 2' deep. 2-3' wetland fringe along both sides. No flow on 7/1 or 7/11. Does not flow to downstream WOUS, rather it terminates in an upland. Therefore it is NOT jurisdictional.	

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: <u>30.0</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
_____ = Total Cover			

Sapling/Shrub Stratum (Plot size: <u>15.0</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
_____ = Total Cover			

Herb Stratum (Plot size: <u>5.0</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Phalaris arundinacea</u>	<u>50</u>	<u>YES</u>	<u>FACW</u>
2. <u>Carex emoryi</u>	<u>30</u>	<u>YES</u>	<u>OBL</u>
3. <u>Glycyrrhiza lepidota</u>	<u>20</u>	<u>YES</u>	<u>FACU</u>
4. _____	_____	<u>NO</u>	_____
5. _____	_____	<u>NO</u>	_____
6. _____	_____	<u>NO</u>	_____
7. _____	_____	<u>NO</u>	_____
8. _____	_____	<u>NO</u>	_____
9. _____	_____	<u>NO</u>	_____
10. _____	_____	<u>NO</u>	_____
_____ = Total Cover			

Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
_____ = Total Cover			

% Bare Ground in Herb Stratum _____

Remarks: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>30</u>	X 1 = <u>30</u>
FACW species <u>50</u>	X 2 = <u>100</u>
FAC species <u>0</u>	X 3 = <u>0</u>
FACU species <u>20</u>	X 4 = <u>80</u>
UPL species <u>0</u>	X 5 = <u>0</u>
Column Totals: <u>100</u> (A)	<u>210</u> (B)
Prevalence Index = B/A = <u>2.10</u>	

Hydrophytic Vegetation Indicators:

☒ 1. Rapid Test for Hydrophytic Vegetation

☒ 2. Dominance Test is > 50%

☒ 3. Prevalence index is <= 3.0¹

_____ 4. Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)

_____ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-4	10YR 2/1	100					loam	
4-20	2.5Y 4/2	80	Gley 1 3/N	19	D	M	loam	
			5YR 4/6	1	C	PL		concentration in matrix too

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered, Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (B5)	<input type="checkbox"/> Coast Prairie Redox (A16)(LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16) (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> Stratified Layers (A5)(LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> 1 cm Muck (A9)(LRR F, G, H)	<input checked="" type="checkbox"/> Depleted Mtrix (F3)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2)(LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16) (MLRA 72 & 73 of LRR H)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)(LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary indicator (minimum of one required; check all that apply)

Secondary indicators (minimum of two required)

<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where tilled)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input checked="" type="checkbox"/> Oxidized Rhizosphere on Living Roots(C 3) (where not tilled)	<input type="checkbox"/> Saturation Visible on Aerial Imagery(C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (Inches): _____
Water Table Present? Yes ☐ No ☒ Depth (Inches): _____
Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (Inches): _____

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Date (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Not flowing, but looks like it has this summer. Well maintained. Moist from 8-20". May be some groundwater contributing to hydrology in addition to ditch water.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Canyon Creek City/County: Erie, Boulder Sampling Date: July 11, 2019

Applicant/Owner: Stratus Canyon Creek, LLC State: Colorado Sampling Point: SP 3B

Investigator(s): Julia Auckland Section, Township, Range: S13 T1N R69W

Landform(hillslope, terrace, etc.): flat upland field Local relief(concave, convex, none): None Slope(%): 1

Subregion (LRR): G Western Great Plains Lat: 40.047205 Long: -105.069273 Datum: WGS84

Soil Map Unit Name: Manter Sandy Loam 3-9% slopes NWI classification: none

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐ , Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks: <u>Upland field east of irrigation lateral & SP 3A.</u>	

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: <u>30.0</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
_____ = Total Cover			

Sapling/Shrub Stratum (Plot size: <u>15.0</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
_____ = Total Cover			

Herb Stratum (Plot size: <u>5.0</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Bromus inermis</u>	<u>65</u>	<u>YES</u>	<u>UPL</u>
2. <u>Bromus tectorum</u>	<u>10</u>	<u>NO</u>	<u>UPL</u>
3. <u>Convolvulus arvensis</u>	<u>2</u>	<u>NO</u>	<u>UPL</u>
4. <u>Ambrosia psilostachya</u>	<u>5</u>	<u>NO</u>	<u>FACU</u>
5. <u>Conyza canadensis</u>	<u>3</u>	<u>NO</u>	<u>FACU</u>
6. <u>Berteroa incana</u>	<u>5</u>	<u>NO</u>	<u>UPL</u>
7. _____	_____	<u>NO</u>	_____
8. _____	_____	<u>NO</u>	_____
9. _____	_____	<u>NO</u>	_____
10. _____	_____	<u>NO</u>	_____
_____ = Total Cover			

Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
_____ = Total Cover			

% Bare Ground in Herb Stratum 10

Remarks: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>0</u>	X 1 = <u>0</u>
FACW species <u>0</u>	X 2 = <u>0</u>
FAC species <u>0</u>	X 3 = <u>0</u>
FACU species <u>8</u>	X 4 = <u>32</u>
UPL species <u>82</u>	X 5 = <u>410</u>
Column Totals: <u>90</u> (A)	<u>442</u> (B)
Prevalence Index = B/A = <u>4.91</u>	

Hydrophytic Vegetation Indicators:

1. Rapid Test for Hydrophytic Vegetation _____

2. Dominance Test is > 50% _____

3. Prevalence index is <= 3.0¹ _____

4. Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet) _____

Problematic Hydrophytic Vegetation¹ (Explain) _____

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-16	2.5Y 3/2	100					sandy lo	sandy loam

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered, Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR I, J)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (B5)	<input type="checkbox"/> Coast Prairie Redox (A16)(LRR F, G, H)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16) (LRR H outside MLRA 72 & 73)
<input type="checkbox"/> Stratified Layers (A5)(LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> 1 cm Muck (A9)(LRR F, G, H)	<input type="checkbox"/> Depleted Mtrix (F3)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2)(LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16) (MLRA 72 & 73 of LRR H)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)(LRR F)		

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary indicator (minimum of one required; check all that apply)

Secondary indicators (minimum of two required)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where tilled)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Dry-Season Water Table (C2)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizosphere on Living Roots(C 3) (where not tilled)	<input type="checkbox"/> Saturation Visible on Aerial Imagery(C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (Inches): _____
Water Table Present? Yes ☐ No ☒ Depth (Inches): _____
Saturation Present?
(includes capillary fringe) Yes ☐ No ☒ Depth (Inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Date (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix D
Professional Qualifications



RESUME

**Grant E. Gurnée, P.W.S.**

*Owner/Managing Partner
Senior Restoration Ecologist
Fisheries and Wildlife Biologist
Wetland Ecologist*

AREAS OF EXPERTISE:

- Project Management for Complex, Environmental Regulatory and Restoration Projects
- Habitat Assessment, Surveys, Planning, Permitting, Restoration Design, Construction Oversight & Monitoring for:
 - Aquatic, Wetland and Riparian Habitat, and Wildlife Habitat
 - Threatened & Endangered Species, Special Status Species, and Species of Concern
 - Nesting Birds & Raptors
 - Natural Areas, Open Space, Trails and Environmental Education Facilities
 - Conservation and Resource Mitigation Banks
- Natural Resources/Environmental Regulatory Compliance
- Construction Oversight & Best Management Practices
- Grant Funding Support for Conservation and Restoration Projects
- Expert Witness Testimony

EDUCATION:

- MCRP, Environmental Planning and Law Program, Rutgers University, 1994
- Bachelor of Science, Biology, Richard Stockton College of N.J., 1984

EMPLOYMENT HISTORY:

- 2008-Present: Owner, Managing Partner and Senior Restoration Ecologist
Ecosystem Services, LLC, Erie, Colorado
- 1999-2011: Ecological Restoration Group Manager
Walsh Environmental Scientists and Engineers, LLC, Boulder, Colorado
- 1994-1999: Vice President and Consulting Division Manager
Aquatic and Wetland Company, Boulder, Colorado
- 1987-1994: Ecological Assessment Group Manager
Killam Associates, Millburn, New Jersey
- 1989 – 1994: Owner and Ecologist, Westhill Environmental, Colonia, NJ
- 1986-1987: Project Manager, Connolly Environmental, Denville, New Jersey
- 1985-1986: Biological Technician/Team Lead, EA Engineering Science and Technology, Forked River Field Station, New Jersey

CONTINUING EDUCATION:

- Stream Functions Pyramid Workshop, Denver, CO - 2014
- Colorado Natural Heritage Program, Wetland Plant Identification - 2014
- Colorado Natural Heritage Program, Ecological Integrity Assessment for Colorado Wetlands - 2013
- FACWet – Functional Assessment of Colorado Wetlands - 2010, 2012 and 2013
- Natural Treatment System Design and Implementation, Southwest Wetlands, Phoenix, AZ - 1995
- Continuing Education in Coastal and Wetland Ecology, Rutgers University, 1985 – 1994

CERTIFICATIONS:

- Professional Wetland Scientist, Certification (#559), Society of Wetland Scientists Certification Program, 1995
- Certified Wetland Delineator, Army Corps of Engineers Wetland Delineator Certification Program, 1993
- Wetland Mitigation Planning and Design Certification, Environmental Concern, Sparks, MD, 1992
- Certified Ornithologist, Marine Biologist, Aquatic Biologist and Ecologist for the preparation and certification of Environmentally Sensitive Areas Protection Plans, N.J. Dept. of Environmental Protection and Energy, 1988
- Wetland Delineation and Regulatory Certification, National Wetland Science Training Institute, 1988

PROTECTED SPECIES SURVEYS AND HABITAT ASSESSMENTS:

- Ute-ladies' tresses orchid and Colorado butterfly plant
- Preble's meadow jumping mouse
- Nesting birds and raptors, including burrowing owls
- Swift fox and bobcat
- Boreal toad
- Pine Barrens and grey tree frogs
- Freshwater, estuarine and marine surveys for native fish
- Western Tiger Salamander
- Terrestrial and sea turtles

EXPERIENCE SUMMARY:

Mr. Gurnée is a founder and managing partner of Ecosystem Services, LLC (ecos), a design-build, ecological planning and design firm that is the culmination of his life's work and passion for restoring and conserving the natural world. Grant is a certified Professional Wetland Scientist with over 35 years of experience in wetland ecology, restoration ecology, wildlife and fisheries biology, environmental planning, and regulatory compliance. Prior to ecos Grant established the Ecological Restoration Group at Walsh Environmental and was the Vice President in charge of the Consulting & Design Division for Aquatic and Wetland Company, the first design-build-grow firm in Colorado. Mr. Gurnée utilizes his diverse field assessment and hands-on experience to bring a unique and pragmatic, big-picture perspective to projects from conceptual planning through implementation. Grant's environmental planning and law education combined with his regulatory compliance experience make him one of the leading experts in the Intermountain West in Clean Water Act and Endangered Species Act issues. He enjoys teaching and furthering the science and art that comprise the field of restoration ecology. As such, Grant has published and presented papers and technical manuals, and lectured nationally and internationally at educational programs that further the understanding of aquatic, wetland, riparian and T&E species habitat assessment and restoration. Mr. Gurnée has also been called upon to provide expert reports, expert witness testimony and liaison representation in complex regulatory compliance matters.

RELEVANT PROJECT EXPERIENCE:

The following is a sampling of select projects and clientele that Grant has successfully completed or is currently involved in:

Habitat Assessment and Regulatory Compliance

- **Banning Lewis Ranch, Colorado Springs, CO** – ecos was hired by Norwood Homes to perform a Preliminary Habitat Assessment (PHA) for the Banning Lewis Ranch (BLR), an 18,000-acre property within El Paso County, Colorado that will double the size of Colorado Springs once it is developed. The PHA included an assessment and mapping of vegetation, noxious weeds, Federal and State Listed Candidate, Threatened and Endangered (T&E) Species, Wildlife Species of Concern (including Raptors), Waters of the U.S. and Wetland Habitat, Floodplains, and Cultural, Archeological and Paleontological Resources. The PHA Report summarizes ecos' Site assessment findings and includes the mapping of all ecological constraints and cultural resources, a preliminary jurisdictional status determination of all potential wetland habitat and waters of the U.S. (WOUS) under the Clean Water Act (CWA), a summary of ecological opportunities and constraints, and provides regulatory guidance to assist in planning and implementing the future development of the BLR. Norwood and their planning team, in association with ecos, are currently uploading and interpreting all of the ecos Site assessment mapping into their base GIS layers to inform

future site planning and recommend proactive measures to conserve wildlife and wetland habitat, pristine prairie and ephemeral creeks, floodplains, and significant cultural resources.

- **Clean Water Act Jurisdictional Assessment of El Guique Mine in Estaca, New Mexico** – Ecos assisted Espanola Transit Mix, LLC (ETM) in their assessment at the El Guique Mine in Estaca, New Mexico (Site) by determining the potential jurisdictional status of onsite drainages and other waters under the CWA. We reviewed available background information and base mapping to gain a better understanding of the Site and the adjacent offsite area and prepared an overlay of potential WOUS on Google Earth aerial Imagery for mark-up and notation in the field. Ecos then conducted a field assessment to review Site conditions, and potential offsite, downstream connections to WOUS, and particularly the presence of a Significant Nexus to the Rio Grande, a TNW. We drafted a Technical Memorandum summarizing the methodology employed, the results of the field assessment, the rationale under the CWA for all areas deemed to be excluded or non-jurisdictional and illustrated the locations of potential jurisdictional and non-jurisdictional features identified in the field on Google Earth aerial imagery.
- **Bellvue Pipeline Project, BMP Facilitator, Larimer County, CO** – ecos was retained by the City of Greeley as Best Management Practices (BMP) Facilitators to provide pre-construction documentation post-construction oversight of pipeline reclamation processes. Essential responsibilities include meeting with landowners prior to construction to facilitate project understanding and post-construction outcomes; to document landowner needs and wants relative to project goals and land use; to document and monitor pre- and post-construction reclamation and maintenance requirements; and to ensure the contractors maintain compliance with all state and federal laws, county regulations, and Greeley construction and restoration specifications.
- **Encana Oil and Gas (USA), Denver Julesburg Basin, CO** – Encana hired ecos to assess their ecological constraints, recommend means and methods to avoid, minimize and permit unavoidable impacts; and to mitigate, restore and prepare ecological management plans for their drilling and pipeline operations in the Denver Julesburg basin. Grant's role on the team is to perform site assessments, research background data, and prepare assessment reports and mapping data that can be utilized by Encana's project managers to proactively track ecological resources before issues arise. In addition to client consultation, Ecos is responsible for tracking drill site schedules, constraints, restoration and management efforts in a data base and reporting said information to Encana's project manager on a regular basis.
- **Georgetown Lake, Georgetown, CO** –ecos was hired to perform an onsite assessment of ecological resources and prepare a summary report to describe the physical/ecological characteristics of the Project area and evaluate the potential effects of the construction of a loop trail project on environmental issues and species of concern to support a GOCO grant application. Items evaluated and documented, include site location/ownership, general site characteristics, current land use, proposed impacts, possible effects on Federal– and State-listed T&E animal and plant species, unique or important wildlife, water quality, water bodies, wetlands, and floodplains, stormwater runoff, sedimentation, soil erosion, and invasive species. The assessment report also included mitigation measures, project benefits, and environmental compliance recommendations under applicable regulatory programs.
- **Site Assessments for General Vegetation Cover and T&E Species Presence/Absence** – ecos was retained by JADE Consulting, LLC to perform the assessment of two future development sites located in Lafayette and Yuma, Colorado. We performed a desk-top assessment to identify existing site characteristics and screen the potential presence/absence of federally-listed threatened and endangered (T&E) species and followed up with onsite assessments to verify our preliminary findings. Our findings and recommendations were summarized in a Technical Memorandum in which we determined that no further assessment or regulatory compliance actions are required.
- **The Cove Assessment & Regulatory Compliance Report, El Paso County, CO** - ecos was retained by Lake Woodmoor Development, Inc. to perform a natural resource assessment for The Cove development, and to prepare a Natural Features Wetland, Wildfire, Noxious Weeds & Wildlife Report (Report) pursuant to El Paso County environmental review regulations. The purpose of the project was to identify and document the natural resources, ecological characteristics and existing conditions of the Site; identify potential ecological impacts associated with Site development; and provide current regulatory guidance related to potential development-related impacts to natural resources, including: Mineral and Natural Resource Extraction; Vegetation; Wetland Habitat and Waters of the U.S.; Noxious Weeds; Wildfire Hazard; Wildlife; Federal and State Listed Candidate, Threatened and Endangered Species; and Raptors and Migratory Birds.

- **Jurisdictional Determination Request for Banning Lewis Ranch, Villages 1 and 2 Residential Development, El Paso County, CO** - ecos was retained by Oakwood Homes, LLC to review a 2014 Jurisdictional Boundary Delineation and determine if a portion of the wetlands and waters within the site could be deemed non-jurisdictional under the Clean Water Act (CWA) based on their “isolated” status. Following data review, ecos arranged a field assessment with the U.S. Army Corps of Engineers (Corps) to review site conditions, and potential offsite, downstream connections to waters of the U.S. (WOUS), and particularly the presence of a Significant Nexus to Traditional Navigable Waters TNW). Ecos and the Corps agreed that several of the intermittent drainages on the suite are not jurisdictional under the CWA, as they are not: 1) a TNW or wetland adjacent to a TNW; 2) a Relatively Permanent Water (RPW) or a wetland directly abutting an RPW with perennial or seasonal flow; 3) a tributary to a TNW; or 4) a direct tributary to a downstream WOUS as the feature loses its bed and banks. The Corps submitted ecos’ findings to the U.S. Environmental Protection Agency (EPA) and they concurred and issued an Approved Jurisdictional Determination stating that the drainages were indeed “isolated” features exempt from the CWA.
- **Bellvue Pipeline Project, CWA and ESA Regulatory Negotiation, Larimer County, CO** – ecos assisted the City of Greeley from 2011 through 2014 in their negotiations with the Corps to facilitate review and verification of the Project under CWA, Nationwide Permit 12 (NP12) in 2014. Grant aided the City during Corps meetings, field visits and teleconferences; in coordinating with the Corps and the technical experts on the Corps Common Technical Platform (CTP) team; and in utilizing the CTP Poudre watershed data to assess the probability of Project-specific impacts. Grant also provided regulatory and technical support to the City for the CWA, Pre-Construction Notification (PCN) Supplement for the Project from 2014 through the USACE’s 2017 issuance of the “removal of capacity conditions for the Northern and Fort Collins segments” placed on the 2014 NP12. His tasks included performing Impact Avoidance Evaluations, providing historical context and data from the initial work performed for the City on this Project, assisting a Team of multi-disciplinary professionals in the preparation of Impact Assessment Reports, meeting with the City to discuss overall regulatory strategy, assisting with the preparation of the cover letter to transmit the PCN Supplement to the USACE, and assisting with discussions and presentations to the USACE during their review and processing of a Minimal Effects Determination for the Project.
Mr. Gurnée also assisted Greeley in their negotiations with the FWS to facilitate review and consultation for the Northern Segment of the Project under Section 7 of the ESA. Grant led the field assessment with FWS, identification and prioritization of potential PMJM habitat mitigation sites, development of a conceptual design for the selected PMJM habitat mitigation sites, and preparation of the Biological Assessment Addendum and Habitat Mitigation Plan. Grant also aided the City during agency review and approval of the FWS Biological Opinion by utilizing his relationships with the FWS, and extensive experience of ESA regulations, policies and precedents.
- **Appraisal Support Documentation Report for the 1st Bank Parcel, Colorado Springs, CO** - ecos was retained by 1st Bank Holding Company to perform a Preble’s meadow jumping mouse (PMJM) habitat assessment, mitigation cost analysis and conceptual lot layout for the approximate 9.4-acre 1st Bank Parcel (Site) situated south of the Gleneagle residential development and north of the current Northgate Open Space along Smith Creek in Colorado Springs, Colorado.
- **South Boulder Canon Ditch Maintenance, Clean Water Act (CWA) Exemption Determination, Erie, CO** – ecos assisted the Town of Erie in exempting their proposed ditch maintenance project by performing an assessment of site conditions, submitting the assessment report to the Corps, and verifying that said project is exempt pursuant to Section 404(f) of the CWA.
- **Endangered Species Act (ESA) Compliance Documentation for the Pinon Lake tributary CLOMR Application, Forest Lakes Filing 2B in El Paso County, Colorado** – ecos performed an assessment to document the absence of federally-listed T&E species and their habitat and prepared a report for FEMA that documents that the proposed CLOMR action will not result in a “take” of T&E species.
- **Gleneagle Infill Development Assessment & Regulatory Compliance Report, El Paso County, CO** - ecos was retained by G & S Development, Inc. to perform a natural resource assessment for the proposed Gleneagle Infill Development at the former Gleneagle Golf Course, and to prepare a Natural Features and Wetland Report (Report) pursuant to El Paso County environmental review regulations. The purpose of the project was to identify and document the natural resources, ecological characteristics and existing conditions of the Site; identify potential ecological impacts associated with Site development; and provide current regulatory guidance related to potential development-related impacts to natural resources, including: Mineral and Natural Resource Extraction; Vegetation; Wetland Habitat and Waters of the U.S.;

Weeds; Wildfire Hazard; Wildlife; Federal and State Listed Candidate, Threatened and Endangered Species; and Raptors and Migratory Birds. As part of the Project, ecos obtained an Approved Jurisdictional Determination from the Corps.

- **North Fork at Briargate Habitat Evaluation and ESA Compliance, Colorado Springs, CO** - ecos performed a habitat evaluation on behalf of High Valley Land Co., Inc. and La Plata Communities to support informal consultation with the U.S. Fish and Wildlife Service (FWS) under the ESA for potential effects to the Federally-listed, threatened PMJM from the proposed North Fork development, Filings 3 through 7 at Briargate.
- **C Lazy U Preserves Natural Resource Inventory and Conservation Easement Documentation, Grand County, CO** – ecos is assisting the C Lazy U Preserves in assessing and documenting the conservation values of the 980-acre site known as C Lazy U Preserves near Granby, CO such that the site may be protected under Conservation Easements (CE's) held by The Nature Conservancy. The purpose of the CE's is the long-term preservation of the scenic, open space, agricultural, significant natural habitat, native vegetation, rare plant communities, riparian, and wetland values of the Property. ecos staff completed the Easement Documentation Reports Phase 1 of the CE's in 2006, Phase 2 in 2007, and Phase 3 in 2015.
- **Seaman Water Management Project, Riparian-Wetland Technical Support** - Mr. Gurnée supported Greeley in the NEPA EIS process by reviewing riparian and wetland technical reports prepared by the Corps CTP team, and providing comments to assist the City in their formal review and response to the Corps. He also provided technical and regulatory support for CWA and ESA (PMJM habitat) assessment, consultation, and compensatory mitigation planning and design.
- **City of Louisville, City of Westminster, Jefferson County and Town of Monument** – ecos performed numerous wetland habitat, wildlife, MBTA and T&E species habitat ecological assessments, wetland delineations, and Clean Water Act Section 404 and Endangered Species Act Section 7 Permits and mitigation plans for counties, municipalities and quasi- municipalities, including Highway 42 and 96th Street realignment, Jim Baker Reservoir, Standley Lake Protection Project, Triview Metro District Preble's and wetland habitat mitigation planning.
- **ARCO Clark Fork River Basin Anaconda Smelter Superfund Site, Anaconda, MT** – Grant and his Team performed wetland delineation, functional assessments, and impact analysis over a 200 square mile area affected by historic mining practices and current remedial actions required by an EPA consent decree.
- **ARCO Clark Fork River Basin Milltown Reservoir Superfund Site, Missoula, MT** – Mr. Gurnée and his Team performed wetland delineation, functional assessments, and impact analysis of proposed remedial actions that will remove metal laden sediments from the site prior to dam removal.
- **C-Lazy-U and Horn Ranch Environmental Assessments, Granby, CO** – Mr. Gurnée and his Team performed an assessment of ecological opportunities and constraints in the aquatic, riparian, wetland and threatened and endangered species habitat along the Colorado River for the development and enhancement of fishing/resort ranch amenities.
- **Village at Avon, Avon, CO** – Grant and his Team performed a wetland delineation and prepared CWA Section 404 permitting for the town center expansion and low-density ranchette development.

Protected Species Surveys and Habitat Assessments

- **Golden Eagle Monitoring at Meadow Park in Lyons, CO** - ecos was retained by the Town of Lyons (Town) to perform the monthly monitoring of the Golden Eagle (*Aquila chrysaetos*) nest sites at Meadow Park, to prepare monthly Monitoring Summary Memorandum following each event, and to prepare and submit annual reporting to the U.S. Fish and Wildlife Service (USFWS) associated with the *Lyons Federal Fish and Wildlife Permit #MB82833B-0, Eagle Take Associated With But Not The Purpose Of An Activity* (Take Permit).
- **Nesting Birds, Raptors and Burrowing Owls** – Grant has completed over 100 pre-construction nesting surveys and numerous monitoring surveys for raptors and burrowing owls. His projects include pipeline rights-of-way, housing and commercial development projects, stream and river restoration projects, wind and solar farm projects, and oil and gas projects along the Front Range of Colorado, as well as projects in the Pine Barrens of southern New Jersey. His avian experience includes golden eagle nest monitoring; barred owl roost and nest monitoring, and call playback inventory; and multi-species raptor surveys.
- **Native Plants** - Grant has completed numerous pre-construction and monitoring surveys for Ute ladies' tresses orchid and Colorado butterfly plant since 1994. His projects include pipeline rights-of way, mined

land reclamation projects, housing and commercial development projects, stream and river restoration projects, wind and solar farm projects, and oil and gas projects along the Front Range of Colorado.

- **Threatened, Endangered and Candidate Species** – Grant trained with the leading expert, Robert Stoecker, PhD, in 1994 and 1995 to gain an understanding of the soon to be listed, Preble's meadow jumping mouse, a threatened species; and since that time, he has completed numerous surveys, habitat assessments, and ESA consultations. He has also performed night-time Swift fox surveys at windfarm sites in southern CO and Boreal toad surveys in northern CO. Prior to relocating to CO Grant performed numerous surveys in N.J., including bobcat surveys to assist in protecting the Pyramid Rock Natural Area; Pine Barrens and gray tree frog surveys, and native Pine Barrens fish surveys with his mentor, Dr. Rudy Arndt; and Eastern box turtle surveys. He also assessed migration routes and alternative mitigation measures for sea turtles that were being impacted by the Garden State Parkway.

Wetland Mitigation and Habitat Restoration

- **Park Creek Mitigation Bank, Fort Collins, CO** – ecos was retained by Burns and McDonnell to assess, map, and prepare preliminary mitigation design of aquatic, wetland, riparian and terrestrial habitat in support of a mitigation banking prospectus. Upon completion and acceptance of the prospectus by the USACE, ecos has been tasked to manage the baseline assessment of the site, including groundwater testing, topographic surveys, and hydrology; prepare a detailed habitat design for inclusion in mitigation banking instrument; as well as coordinate design-build process with a selected nursery and contractor.
- **Front Range Mitigation and Habitat Conservation Bank** – ecos is assisting Restoration Systems, LLC (RS), the Bank Sponsor, with the assessment, planning and design of the Front Range Umbrella Bank for Aquatic Resource Mitigation & Habitat Conservation (Bank). This “umbrella” Bank is intended to provide habitat mitigation for projects along the entire Front Range of Colorado. The ecos/RS Team is in the process of securing viable sites in the major watersheds along the Front Range; and recently submitted the Draft Prospectus for the establishment of the Bank to the U.S. Army Corps of Engineers, Albuquerque District, Southern Colorado Regulatory Office and Omaha District, Denver Regulatory Office.
- **Lions Park Poudre River CWA and ESA Mitigation Site** - ecos assisted Greeley in developing and constructing an advance river and wetland mitigation site at Lions Park in LaPorte, Colorado that may be used for future CWA impacts in the Poudre River watershed. We also prepared a conceptual design for Preble's meadow jumping mouse habitat that will be used to support ESA consultation. ecos assessed the site, prepared the designs, and coordinated review with Greeley, Colorado Department of Parks and Wildlife, Larimer County Parks and Open Lands and Larimer County Engineering Department. The mitigation site provides compensatory mitigation for impacts to wetland and waters of the U.S. under the CWA and will also provide compensation for PMJM habitat under the ESA. This mitigation project entails development of mitigation measures including bioengineered streambank stabilization, fishery habitat enhancement, riparian and wetland habitat restoration and PMJM habitat enhancement.
- **Bellvue Transmission Line Project, Preliminary Compensatory Mitigation Plan (PCMP)** - Mr. Gurnée was the Project Manager for the preparation of the Preliminary Compensatory Mitigation Plan (PCMP) for the Bellvue Transmission Line Project. Built upon preferred strategies in the 2008 Corps Compensatory Mitigation Rules, the PCMP leverages a broad strategy to ensure mitigation success and employs a watershed approach to select and prioritize compensatory mitigation (CM) measures that will best mitigate adverse environmental effects. It is intended to support a Corps determination of minimal adverse effect and allow verification of the Northern Segment of the Project under Nationwide Permit 12. Grant led the Team during the watershed assessment of the Poudre River, identification and prioritization of potential CM and preservation sites, development of a Pilot Watershed Plan, and conceptual design of priority CM sites. The PCMP has been submitted to the Corps for review and approval.
- **Flatirons Parcel Riparian and Wetland Habitat Restoration Project** – Grant assisted Greeley in developing a multiple use project at the Flatirons Parcel, a gravel quarry site in Greeley, Colorado. The site is being decommissioned over the next decade and offers great potential to create a system of ponds connected via a naturalized stream that discharges into the Poudre. The concept design incorporates recreation opportunities that are tied into the Poudre River Trail, a passive park, and the development of wetland, riparian and wildlife habitat.
- **Ruby Pipeline Wetland, Riparian and Waterbody Mitigation and Restoration Plan, WY, UT, NV AND OR** - Mr. Gurnée was the lead restoration ecologist and wetland scientist for the 675-mile, Ruby Pipeline; a natural gas pipeline traversing four states. He was the lead for the preparation of Wetland Mitigation,

Riparian and Waterbody Restoration Plans under the CWA, BLM regulations and state equivalent programs. The plans included regulatory guidelines, requirements, and processes; and ecoregion specific restoration plans. The plans detailed specifications for the basis of design, construction, and revegetation; outlined performance criteria, maintenance and monitoring methods for the restoration of approximately 460 acres of temporary wetland impacts.

- **River Point, Sheridan, CO** - Mr. Gurnée was the project manager and lead restoration ecologist for the team that assessed, permitted and designed the natural and aesthetic features of this Brownfields project. The project included a naturalized water quality swale and riverfront improvements which complement the aesthetics and ecology of the South Platte River corridor. The swale was designed to mimic the form and function of a tributary stream, providing passive water treatment with native wetland and riparian vegetation, as well as flood attenuation with instream structures and grade control. The project utilized natural, “bio-engineering” and “bio-technical” techniques to repair and maintain channel and stream bank stability, and native vegetation to enhance and restore habitat. This project also addressed the interface of proposed restaurants, a regional greenway trail, and the river through planning and design of nature trails, interpretive nodes and overlooks/access features that will function to both stabilize banks and help connect people with the river.
- **Caribou Peat Bog Restoration, Nederland, CO** – Grant performed the impact assessment, prepared native plant community design, planting cost estimate, and on-the-ground oversight of restoration volunteers to restore a high-altitude peat bog disturbed by an illegal off-road-vehicle “mudfest”.
- **Opportunity Ponds Operational Unit, Anaconda, MT** - Mr. Gurnée was the project manager and lead restoration ecologist providing technical support to Atlantic Richfield/British Petroleum at a Superfund site in the Upper Clark Fork River basin in Montana between 1995 and 2008. Services included wetland delineation and functional assessment of over 3,000 acres of wetland, stream and pond habitat; design of stream and wetland habitat mitigation projects; and permitting/compliance services. The largest project within the Superfund site was the Opportunity Ponds, a 908-acre wetland, stream and wildlife habitat creation project. The project will result in the largest freshwater mitigation project in the U.S; and is intended to mitigate for historic wetland/waters impacts from Anaconda Mining Company operations and current impacts resulting from remedial actions associated with the Superfund cleanup process.
- **The Club at Flying Horse Golf Course, Colorado Springs, CO** – On behalf of Classic Communities, Grant and his Team assessed wetland habitat, recommended impact avoidance and minimization measures, and prepared the Section 404, CWA permit for a 1500-acre mixed use development and Weiskopf golf course. The project aesthetic and mitigation measures included the design of native prairie roughs, meandering stream channels and native wetland meadows within the golf course. Extra wetland mitigation was created to serve as a private mitigation bank for the client.
- **Maloit Park, Minturn, CO** - Grant was the project manager and restoration ecologist for the Maloit Park Restoration Project, which was necessitated by the accidental release of mine slurry that contaminated the soils and vegetation of critical wetland habitat at the confluence of Cross Creek and the Eagle River. The project included the assessment of the site, the collection of native wetland seed (that was adapted to site conditions); the selection of appropriate replacement soil; the design of the restoration grading and planting plans; and oversight during the soil replacement, grading and planting phases. Mr. Gurnée also provided follow-up monitoring and reporting to ensure the successful establishment of the wetland habitat.
- **Department of Energy, Private Mitigation Bank, Westminster, CO** - Mr. Gurnée provided the project assessment, design, permitting, mitigation banking instrument negotiation with the Corps and EPA, and construction supervision of a 12-acre wetland mitigation bank for the Department of Energy in Westminster, CO. The project provides compensatory mitigation for impacts associated with the Rocky Flats clean-up and remediation project. It should be noted that this was the first private mitigation bank negotiated in Colorado, and as such it assisted in setting the precedent for future negotiations.
- **Saudi Arabia Coastal Wetland Restoration** - Mr. Gurnée assisted in the restoration planning for 67 square kilometers (41 square miles) of high salt marsh (sabhka) impacted by Gulf War oil spills.

Aquatic, Wetland, and Riparian Habitat Design

- **Big Thompson River Flood Recovery and Restoration, Loveland, CO** - ecos is currently part of a multi-disciplinary team assisting the Big Thompson Watershed Coalition (BTWC) with assessment, design, and construction of the Big Thompson between Rossum and Wilson Drives which are majority-owned by the City of Loveland and Loveland Ready-mix. As with all the flood recovery projects ecos has worked on, we

produced 30%, 60% and 100% design plans, construction cost estimates, and specifications guiding soil development/enrichment; upland, riparian, and wetland seeding and planting; and numerous bioengineering techniques aimed at restoring the river and making it more resilient to future flood events. This project is aimed at completion in the summer of 2019.

- **Saint Vrain Creek Reach 3 Flood Recovery and Restoration, Boulder County, CO** - ecos is part of the Design Team assisting Boulder County Parks & Open Space (BCPOS) with the restoration, repair and enhancement of the reach of the Saint Vrain Creek from Highway 36 downstream to Hygiene Road in rural Boulder County, which was damaged by the 2013 floods. Our role on the project includes: 1) desktop and field assessment to inventory and document the characteristics of the stream reach and riparian corridor (e.g. stream/in-stream features, vegetation, wildlife habitat); identify and locate significant habitat features within the areas of proposed construction; identify potential sources of native plant materials for restoration; and identify areas of opportunity within the breach repair work areas for native vegetation, wetland, PMJM, leopard frog and fishery habitat restoration; and delineate wetland habitat and waters of the U.S. in all areas of proposed/potential construction-related impact; 2) vegetation community and wildlife habitat restoration design and fish passage design parameters; 3) permitting and compliance under the CWA, ESA and NHPA; 4) construction oversight for restoration construction; and 5) monitoring and reporting project success/establishment to BCPOS, stakeholders, the Corps, FWS and the State of Colorado Department of Local Affairs (DOLA) under the (the Grant funding agency under the Community Development Block Grant Disaster Recovery (CDBGDR) Resilience Planning Program grant.
- **Bohn Park Flood Recovery Design, Town of Lyons, CO** – ecos is part of the Design Team assisting the Town with the restoration, repair and enhancement of Bohn Park in Lyons, which was damaged by the 2013 floods. Ecos roles is to assess and design the natural restoration of the vegetation communities and habitat along St. Vrain Creek and riparian corridor; and to support the project design by acquiring permits/approvals and maintaining regulatory compliance under the CWA, ESA and National Historic Preservation Act (NHPA). The final design will address goals and priorities associated with the Parks Flood Recovery Planning Process, FEMA Project Worksheets and Project Scopes, the Lyons Recovery Action Plan (LRAP), associated Program Development Guides (PDG's), existing Town master plans, comprehensive plans and other relevant documentation and studies.
- **James Creek Post-Flood Restoration, Lefthand Watershed Oversight Group (LWOG), Jamestown, CO** – ecos was part of the LWOG and Boulder County Department of Transportation Team responsible for preparing the 30-60% design package for James Creek Reach 16 as identified in the Left Hand Creek Watershed Master Plan. ecos performed pre- and post-flood plant community assessment; developed revegetation goals and objectives, the basis of design, monitoring protocols, and revegetation plans in accordance with Colorado Department of Local Affairs (DOLA), Community Development Block Grant – Disaster Recovery (CDBG-DR) 30% Guidelines. Specific resources and issues of concern addressed by ecos, included federal and state listed candidate, threatened and endangered species, wildlife species of concern (including raptors), fisheries and fish passage, native plant communities, and management of noxious weeds, all in concert with geomorphic, hydrology and hydraulic analysis and design prepared by other team members.
- **Saint Vrain Creek Restoration and Floodplain Resiliency Plan, Lyons, CO** – ecos is part of the design-build team intent on restoring the St. Vrain Creek corridor in the Town of Lyons that was damaged during the September 2013 flood event. The goal of the project is to create a more resilient floodplain and natural channel condition that will alleviate future threats to the community, reestablish floodplain connectivity, stabilize banks, and restore aquatic, wetland and riparian habitat that was wiped out during the flood. Grant is responsible for CWA, ESA, Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act permitting; as well as developing the plant communities and revegetation strategies needed to restore aquatic and riparian structure and functions within the corridor that support fish, wildlife, recreation, and help the town regain the ecological benefits and economic value they receive from outdoor enthusiasts.
- **Bellvue Raw Water Ponds Riverbank Restoration, Bellvue, CO** – The 2013 flood on the Poudre River altered the course of the river and severely eroded a bank nearly causing a breach of the City of Greeley's raw water ponds – their main municipal water supply. The goal of the project was to stabilize the bank to protect the ponds and to create riparian habitat for the Preble's meadow jumping mouse, a federally listed threatened and endangered species. Jon was responsible for preparing bioengineering design plans and specifications that include soil/cobble encapsulated lifts, stream barbs to deflect flows away from the bank, and harder, biotechnical design of soil/riprap and stream bed scour protection measures to prevent erosion

and further undermining and sloughing of the bank. Design plans included specification of native plant materials and various techniques to restore cottonwood forest and willow habitat to further stabilize the bank.

- **Poudre River Pipeline Crossing at Kodak, Windsor, CO** – ecos role on the project was to assess restoration potential, techniques, and prepare design plans and performance specifications to reclaim a pipeline corridor across the lower Poudre River where the City of Greeley had to replace 3 major water supply lines. ecos also provided oversight during the construction of site and riverbank stabilization and restoration measures following installation of the pipelines.
- **Lions Park Poudre River Restoration Plan, Laporte, CO** – ecos role on the project was to assess habitat conditions; gather, compile and analyze field survey data; and to prepare the mapping and mitigation design plans for the Lions Park PMJM habitat and the Poudre River Bank Stabilization Plans. We designed and executed the technical drawings for the structural components of the habitat, ensuring that the proposed riparian plant community, habitat structures (brush piles), and bioengineered streambank stabilization measures will create the conditions that alleviate the current habitat fragmentation; support the life requisites of the PMJM; and enhance the overall health of the Poudre River fishery.
- **C Lazy U Ranch, Willow Creek Fishery Enhancement Plan, Granby, CO** - Mr. Gurnée was the lead fisheries biologist and wetland ecologist for the assessment and design of this project. The project entailed 2 miles of instream and riparian cover habitat aimed at enhancing water quality through increased bank stability, improving aquatic habitat and angling opportunities, and providing long-term stability to the reach given existing land-use constraints, and ongoing ranching activities. Bank-side improvements included wetland mitigation design to support ranch impacts, detailed seeding and planting plans indicating site-specific plant and seed locations, life zones, and species palettes according to hydrologic, soil, and aspect conditions. Grant was the regulatory lead, consulting with the Corps under Section 404 of the CWA.
- **Edwards Eagle River Restoration Project, Edwards, CO** – Grant was the senior wetland ecologist and fisheries biologist for the Edwards Eagle River Restoration Project (Project); which is roughly 1.5 miles long covering an area of 168 acres of floodplain along the Eagle River in the heart of the Edwards community. The project utilized indigenous materials and methods to naturally integrate habitat structure in the landscape context. He provided grant funding support; stream, riparian, wetland and fisheries habitat assessment, planning and design; and construction oversight services to the Eagle River Watershed Council for the Project. He assisted the ERWC in facilitating the public process associated with developing stakeholder support and gaining funding through the Eagle Mine Natural Resources Damage Fund. The Project was awarded over \$2,000,000 in grant funding; \$1,400,000 of which was from the Eagle Mine NRDF. The total project cost is projected at \$4,300,000.
- **Gypsum Creek Fisheries Enhancement, Gypsum, CO** - Mr. Gurnée was the lead fisheries biologist and restoration ecologist for the instream and riparian habitat assessment, design, permitting and implementation of habitat improvements along Gypsum Creek. Project treatments included both instream and bankside treatments. Instream treatments served to improve deep-water habitat, create flow separation or concentration zones, increase low flow sinuosity, provide instream cover, improve adult fish habitat, create nursery areas, and enhance spawning opportunities. Bankside treatments for aquatic habitat improvements included creation or enhancement of overhead cover; provision of protective cover; and enhancing shading, cooling, and nutrient cycling functions. Bank protection treatments served to correct localized bank instabilities and reduce bank erosion and the potential for sediment deposition downstream. The Colorado Division of Wildlife (CDOW) commented that, “The Gypsum Creek project was implemented in such a low impact manner that you cannot tell that construction had occurred in the area.”
- **Cache La Poudre River Removal Action, Fort Collins, CO** - On behalf of the City of Fort Collins, Mr. Gurnée led negotiations between the EPA, stakeholders and the City regarding riverine, riparian and wetland regulatory and restoration design standards during the removal and remediation of a contaminated reach of the Poudre River. He also provided design review and revision, as well as construction oversight to ensure successful implementation of the instream and streambank restoration along the 0.50 mile, highly visible reach of the river near downtown Fort Collins.
- **TZ Ranch, Elk Hollow Creek Fishery Habitat Enhancement Plan, Saratoga, WY** - ecos performed the assessment and design of the Elk Hollow Creek Project, which included instream and riparian habitat improvements aimed at increasing bank stability, improving aquatic habitat and angling opportunities, and providing long-term stability to the reach. Instream improvements included drop structures, plunge pools, deep pools, riffles and spawning habitat. Bank improvements included seeding and planting plans for

native wetland and riparian species. Grant was the regulatory lead, consulting with the Corps under Section 404 of the CWA and the Wyoming Department of Fish and Game. ecos also provided construction oversight and native plant installation services to ensure the successful implementation of the Project.

- **Brush Creek Fishery Enhancement Plans, Saratoga, WY** – Grant assisted in the preparation of access and staging plans, design plans and details, and performed on-site construction oversight of instream and riparian habitat enhancements and bioengineered bank stabilization for a 3-mile reach of Brush Creek. The purpose of the project is to enhance fish, bird and wildlife habitat and use these resources to facilitate education and improve the recreational experience of Ranch guests.
- **Brush Creek Ranch Pond Creation Plans, Saratoga, WY** – ecos provided design-build services including site optimization selection; excavation, grading, drainage and revegetation plans; and construction oversight for a 0.30-acre fishing pond. The pond design included an innovative undercut bank design incorporating a framework of trees supporting transplanted, native sod; which provided excellent fish habitat.
- **Boulder Creek Fishery Enhancement and Pond Creation Project, Boulder, CO** - Grant was the lead fisheries biologist and restoration ecologist for this project along a private reach of South Boulder Creek adjacent to City of Boulder, Eldorado Canyon Open Space. His tasks included instream and riparian habitat assessment, design of instream and pond fishery habitat and riparian enhancement measures and permitting and consultation. Grant was also the regulatory lead, consulting with the FWS regarding PMJM habitat and with the Corps under Section 404 of the CWA.
- **Stream and Floodplain Restoration at A.T. Massey Coal Mining Facility, KY** - Grant was the Project Manager, fisheries biologist and restoration ecologist for the technical team tasked with assessment and restoration of 26 miles of stream corridor following the accidental release of 250 million gallons of coal slurry into two separate drainages in eastern Kentucky. He was the first ecologist to respond after the spill to ensure that fisheries, stream and riparian habitat restoration objectives were incorporated into the selected cleanup measures. As such, Grant devised a “triage” categorization and remediation system for all affected reaches that minimized impacts to sensitive aquatic and riparian habitat based on the site-specific level of cleanup and remediation required. In addition to instream and bank restoration and stabilization, comprehensive riparian corridor restoration was a major component of the project. Grant was the regulatory and permitting lead and coordinated permits and approval with EPA, Corps and State agencies.
- **Roaring Fork Golf and Fishing Club, Basalt, CO** - Mr. Gurnée was the lead fisheries biologist and restoration ecologist for the assessment, design, permitting and construction supervision of a native trout stream (1 mile) with associated wetland complexes (3 acres). The trout stream was created as an amenity and functional fly-fishing challenge for this fishing component of the Roaring Fork Club; and the associated wetland and riparian habitat were created to naturalize the stream and provide compensatory mitigation for impacts associated with the development of the club facilities. Grant was the regulatory and permitting lead and coordinated permits and approval with Corps and CDOW.
- **Spring Creek Wetland Mitigation, Colorado Springs, CO** – Grant and his team generated wetland and creek creation plans that integrated required mitigation into a high density, “new urban” development. The design emphasized re-utilization of urban storm water to sustain wetlands, use of indigenous plants, construction materials, and natural geomorphic relationships.
- **Tobacco Island Project, Kansas City, MO** - Grant was the lead fisheries biologist and restoration ecologist on a multi-disciplinary Team for the Corps, Tobacco Island Project - a portion of the Missouri River Bank Stabilization and Navigation, Fish and Wildlife Mitigation Project. Project tasks included assessment and conceptual design of measures aimed at reconnecting floodplain and riparian habitat to a reach of the Missouri River near Kansas City. He prepared preliminary designs of channel and backwater wetlands; provided regulatory analysis under Section 404 of the CWA; and assisted in the preparation of an Environmental Impact Statement.
- **San Miguel River Corridor Restoration Plan** - Mr. Gurnée was the lead restoration ecologist, planner and designer for phase 1 of the San Miguel River Corridor Restoration Plan, which included a 1-mile reach through Town. He and his team assisted the Town of Telluride in applying for and winning approximately \$500,000 in Natural Resource Damage Assessment Fund money from the State of Colorado. The money, along with other funding, was utilized for final design and construction of the project which included instream habitat, streambank restoration, riparian and wetland restoration, trails and parks. Grant was

responsible for leading all public meetings, regulatory negotiation and permitting; assisted the Town with grant funding; and provided construction oversight services.

- **High Altitude Stream Restoration at Copper Mountain Resort, CO** - Grant was the lead ecologist for the restoration of an alpine stream and enhancement of associated wetland and riparian habitat situated within tundra habitat atop Union Peak at Copper Mountain Resort. Grant performed the assessment, design, permitting, and construction oversight for one of the highest altitude stream restoration and wetland mitigation projects in Colorado (approximately 11,500 feet above sea level). Innovative bioengineering and construction techniques were designed and adapted to this sensitive environment to minimize construction-related impacts and maximize environmental benefits.

Threatened & Endangered Species Consultation & Habitat Restoration

- **Jackson Creek Land Company PMJM and Wetland Mitigation, Colorado Springs, CO** – ecos has been performing PMJM habitat biological assessments, conservation, mitigation planning and design throughout its range since 1994. Among numerous other private land developers in the Colorado Springs areas, ecos is currently assisting the Jackson Creek Land Company and Triview Metropolitan District with the implementation of physical habitat preservation and mitigation measures, including shortgrass prairie, upland hibernaculum, and riparian habitat restoration. We are also assisting the client with construction oversight and maintaining regulatory compliance during the implementation of the phased mitigation plans.
- **The Farm (formerly Allison Valley Ranch), Colorado Springs, CO** – Mr. Gurnée performed the habitat assessment and mapping; and prepared ESA, Section 7 and CWA, Section 404 consultation documents as required by the FWS and Corps, including mitigation construction documents, specifications, on-site layout of plant communities and construction supervision aimed at restoring wetland and riparian habitat occupied by Preble's meadow jumping mouse. Ecos is currently assisting the owner with construction oversight for habitat restoration and native planting.
- **Advance Mitigation for PMJM Habitat** – ecos is assisting a private client in identifying, assessing, prioritizing and designing advance mitigation sites for PMJM habitat in the North Fork and main stem of the Cache la Poudre River.
- **TriView Metropolitan District ESA and CWA Permit Resolution, Monument, CO** - Mr. Gurnée represented the TriView Metropolitan District (TriView) and Phoenix Bell as the lead consultant to resolve outstanding compliance issues related to a joint ESA, Section 7 Consultation and CWA, Section 404 Permit. Grant lead negotiations amongst the various landowners, TriView and the Town to resolve compliance issues related to PMJM and wetland habitat, such that development may proceed in this core area of the town. Upon resolution and agreement of the stakeholders, he led the negotiations with the FWS and Corps to formally amend the Biological Opinion and 404 Permit. Once the approvals were amended, Grant lead the planning and design of PMJM and wetland habitat to meet mitigation requirements under the ESA and CWA.
- **Bernardi Residential Property, Eldorado Canyon, Boulder, CO** – ecos consulted with the Corps and FWS to document and fulfill regulatory requirements for a residential home construction project in PMJM, wetland and riparian habitat. Mr. Gurnée coordinated with the FWS and Corps and obtained approvals under ESA, Section 7 and CWA, Section 404. He prepared all consultation documents, including the Biological Assessment, mitigation plan, and construction documents and specifications. Grant is leading the on-site layout of plant communities and construction supervision, aimed at restoring wetland and riparian habitat occupied by the PMJM.
- **Northgate Boulevard Realignment, Colorado Springs, CO** – Mr. Gurnée performed the habitat assessment and mapping; and coordinated and prepared ESA, Section 7 and CWA, Section 404 consultation documents as required by the FWS and Corps, including mitigation construction documents, specifications, on-site layout of plant communities and construction supervision aimed at restoring wetland and riparian habitat occupied by Preble's meadow jumping mouse.
- **Jefferson County Highways and Transportation Department Gunbarrel Bridge Replacement, Oxyoke, CO** - ecos staff consulted with the Corps, FWS, CDOT, and the FHWA to document regulatory requirements for a bridge replacement project in PMJM, wetland and riparian habitat. He and his Team produced a CDOT Wetland Finding Report, Biological Assessment, acquired a Section 404 Permit and Biological Opinion (Section 7 of the ESA), and then implemented habitat mitigation improvements at the site.

- **Northgate Project, Colorado Springs, CO** - As project manager, Mr. Gurnée led the team in the assessment, permitting and regulatory negotiation (Section 404 of the CWA and Section 7 of the ESA) for the project which included the planning, design and construction supervision of a precedent setting, “joint” mitigation plan for 60 acres of wetland, riparian and PMJM habitat.

Ecological Master Planning

- **Sundance Trail Guest Ranch, Larimer County, CO** – ecos is currently assisting a local guest ranch in the assessment of natural resources and site features, and the development of site plans to balance natural habitat and aesthetic values with the expansion of guest facilities and services.
- **Sand Creek Channel Improvements Stability Analysis at Indigo Ranch, Colorado Springs, CO** - ecos was retained to perform an analysis of channel stability under proposed development conditions for a 1.17-mile reach of Sand Creek. Ecos utilized existing vegetation composition data, density and height within the Project reach as a basis; and compared the 10-year and 100-year storm event modelling data (specifically flow velocity, flow depth and shear stress) to reference literature to provide a professional opinion regarding the future stability of the channel under developed conditions. The analysis of channel stability for the proposed Project assumes a bioengineering and biotechnical approach that preserves and enhances the existing vegetation, as well as substrate cohesion and stability, within the channel and its streambanks. The Stability Analysis will likely serve as a benchmark study for the City of Colorado Springs to use to preserve other naturally stable channels.
- **Uncompahgre River Corridor Master Plan, Montrose, CO** – Grant and his Team assessed the character, condition and quality of aquatic, wetland and riparian habitat along a 10-mile rural and urban corridor of the Uncompahgre River through the City of Montrose. Habitats were then rated, ranked, prioritized and master planned for their preservation potential and integration in to the parks, recreation and trail system. The master plans form the foundation for the City to focus environmental stewardship, tourism and generate riverfront economic development with a focus on the river – the major asset of the Community.
- **Brush Creek Stewardship and Enhancement Plan, Saratoga, WY** – Mr. Gurnée managed the assessment of a 12,000-acre, private ranch near Saratoga, Wyoming and the preparation of the Ranch Stewardship Plan (Plan). The Plan includes land and resource stewardship goals, objectives, and implementation action items; including ranch-wide master planning of the trail and recreational systems, design of the Brush Creek riparian corridor trail, and restoration/fisheries habitat enhancement of Brush Creek. Trail and recreation planning and design focused on universal access, habitat sensitivity, environmental education, and wildlife observation opportunities and unique landscape experiences.

Environmental Assessment and Impact Studies

- **NEPA EA for Eagle County Airport Runway Expansion, Eagle County, CO** - Grant was project manager and senior ecologist for an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) for a proposed 1000-foot runway expansion and ILS installation at the Eagle County Airport, west of Vail, Colorado. Critical issues addressed included noise, ecological, and public opinion considerations. Grant conducted the work under FAA guidance requirements for EAs.
- **NEPA EA for the Avon Interstate 70 Interchange** - Mr. Gurnée was project manager and senior ecologist for this NEPA EA. He performed environmental assessment and data compilation work for construction of a new CDOT interchange and associated development on Interstate 70. This included evaluating T&E Species; a wetlands inventory; a cultural/archeological resources survey; noise and air pollution modeling and studies; and reviewing soils, meteorology, geologic hazards, and other impacts.
- **Raritan River Wetland Inundation Impact Study, N.J.** - Grant’s work on the preparation and processing of the first Individual Permit under the New Jersey Freshwater Wetlands Protection Act of 1987 included a precedent setting wetland inundation study. This study shaped the N.J. Department of Environmental Protection’s policy regarding the need to assess hydrologic impacts during wetland permit reviews.

Construction Oversight and Plant Installation

- **St. Vrain Creek Reach 3 Flood Recovery and Restoration, Lyons, CO** – Ecos performed construction lay-out and observation during the implementation of the restoration and enhancement of 0.60-acre of riparian Preble’s Meadow Jumping Mouse Habitat (PMJM) along the St. Vrain River.

- **2013 Flood and 2014 Runoff Events, Damage Restoration, Cache la Poudre River, CO** - ecos performed the construction oversight of 3 flood and runoff damage restoration projects along the Cache la Poudre River for the City of Greeley, including the Bellvue Treatment Plant Raw Water Ponds Restoration, the Kodak Pipeline Crossing Restoration and the Watson Lake Pipeline Crossing Restoration.
- **Lions Park CWA and ESA Mitigation Site** - ecos performed the construction oversight for an advance river and wetland mitigation site at Lions Park in LaPorte, Colorado.
- **TZ Ranch, Elk Hollow Creek Fishery Habitat Enhancement Plan, Saratoga, WY** - ecos performed the construction oversight for the Elk Hollow Creek Project.
- **Brush Creek Ranch Fishery Enhancement Plans, Saratoga, WY** – Mr. Gurnée assisted in the construction oversight for a 3-mile reach of Brush Creek to improve fisheries and outdoor recreation experiences for guests of the Ranch.
- **C Lazy U Ranch, Willow Creek Fishery Enhancement Plan, Granby, CO** - Grant assisted in the construction oversight for this fishery habitat, channel stabilization and streambank restoration project.
- **Standley Lake Protection Project, Westminster, CO** – Mr. Gurnée performed construction oversight of a 12-acre created emergent wetland that he and his Team designed to fulfill CWA mitigation requirements and bring closure to the City's drinking water protection project.
- **Caribou Peat Bog Restoration, Nederland, CO** – Grant prepared native plant community design, planting cost estimate, and on-the-ground oversight of volunteers to restore a high-altitude peat bog disturbed by an illegal four-wheel drive “mudfest”.
- **Department of Energy Wetland Mitigation Bank, Westminster, CO** – Mr. Gurnée provided construction supervision of the grading and planting of a 12-acre wetland mitigation bank that he and his Team designed for the Department of Energy.
- **ARCO Lower Area One and Butte Reduction Works, Butte, MT** – Grant performed construction observation and supervision of temporary labor crews to plant a passive treatment wetland designed to absorb heavy metals from groundwater.

Natural Treatment System Design

- **Natural Treatment Wetlands, Butte, MT** - Mr. Gurnée and his Team performed the assessment and design of the ARCO Lower Area One and Butte Reduction Works passive treatment wetlands. These natural treatment systems were situated within two units of a reclaimed superfund site to treat heavy metals in surface and groundwater.
- **Natural Treatment Wetlands, Avondale, AZ** – Grant and his Team performed the assessment and design of a constructed wetland system to treat surface water and inject/recharge the municipal well system for the City of Avondale, AZ. This system successfully alleviated a well moratorium necessitated by a contaminated groundwater aquifer.

PUBLICATIONS:

Giordanengo, John H., Randy Mandel, William Spitz, Matthew Bossler, Michael Blazewicz, Steven Yochum, Katie Yagt, William LaBarre, Grant Gurnée, Robert Humphries and Kelly Uhing. 2016. Living Streambanks, A Manual of Bioengineering Treatments for Colorado Streams. Submitted to the State of Colorado, Colorado Water Conservation Board Denver, Colorado. Submitted by AloTerra Restoration Services, LLC, and Golder Associates, Inc.

Gurnée, Grant E. 1998. Wetland Revegetation Techniques chapter in Native Plant Revegetation Guide for Colorado, Caring for the Land Series, Volume III. A joint publication of the Colorado Natural Areas Program, Colorado State Parks, and Colorado Department of Natural Resources. Denver, Colorado.

Gurnée, Grant E. 1995. Optimizing Water Reclamation, Remediation and Reuse with Constructed Wetlands. Environmental Concern Wetland Journal, Summer 1995 Issue. Environmental Concern, Inc. St. Michaels, Maryland.

PRESENTATIONS & INSTRUCTION:

Gurnée, Grant E., 2016. Clean Water Act, Section 404 Permits for Flood Recovery Projects. Presented at the Colorado Stream Restoration Network (CSRN) conference in Longmont, CO on March 23, 2016.

Gurnée, Grant E., 2016. Endangered Species Act Consultation for Flood Recovery Projects. Presented at the Colorado Stream Restoration Network (CSRN) conference in Longmont, CO on March 23, 2016

- Gurnée, Grant E., 2010. Stream Corridor/Bioengineering Round Table. Presented at the Colorado Riparian Association (CRA) Sustaining Colorado Watersheds Conference. October 5 - 7, 2010. Vail, Colorado.
- Gurnée, Grant E. and Greg A. Fentchel, 2009. Stream Corridor/Bioengineering Workshop. Presented at the Colorado Riparian Association (CRA) Sustaining Colorado Watersheds Conference. October 7 - 9, 2009. Vail, Colorado.
- Gurnée, Grant E. and Scott J. Franklin, 2008. Section 404 Individual Permits: Negotiating the Application and Follow-up Process. Presented at the CLE International, Colorado Wetlands Conference. May 8 – 9, 2008. Denver, Colorado.
- Gurnée, Grant E. and Julie, E. Ash, P.E., 2007. Edwards Eagle River Restoration Project. Presented at the Colorado Riparian Association (CRA) Sustaining Colorado Watersheds Conference. October 5 - 7, 2009. Breckenridge, Colorado.
- Gurnée, Grant E. 2000. Natural Treatment Alternatives for Surface Discharges, Surface Runoff, and Mined Land Reclamation. Presented at the International Mining Technology Seminar. September 13 – 15, 2000. Belo Horizonte, Minas Gerais, Brazil.
- Gurnée, Grant E. 1999. Wetland Mitigation: Considering Mitigation Requirements in the Project Planning Process. Presented at the Continuing Legal Education (CLE) Wetlands & Mitigation Banking Conference. October 21 & 22, 1999. Denver, Colorado.
- Hoag, Chris, Hollis Allen, Craig Fischenich and Grant Gurnée. Assistant instructor for a Bioengineering Workshop sponsored by the U.S. Army Corps of Engineers Waterways Experiment Station and the U.S. Department of Agriculture – Aberdeen Plant Materials Center. September 1998. Carson City, Nevada.
- Hoag, Chris and Grant Gurnée. 1998 Glancy Riparian Demonstration Project. Assistant instructor for a hands-on bioengineering workshop on the Carson River. September 1998 near Dayton, Nevada.
- Gurnée, Grant E. 1998. Stream and Wetland Restoration Successes and Failures: The Good, the Bad, and the Ugly. Presented at the Colorado Riparian Association (CRA) Restoring the Greenline Conference. October 16, 1998. Salida, Colorado.
- Gurnée, Grant E. 1998. Save Our Streams, Wetland Conservation and Sustainability Workshop. Lead Instructor of wetland assessment and restoration course presented with the Izaak Walton League. April 21 & 22, 1998. Boulder, Colorado.
- Windell, Jay, and Grant Gurnée. 1998. Creation of a Stream, Riparian and Wetland Ecosystem: Tributary to the Roaring Fork River, Basalt, Colorado. Presented at the American Society of Civil Engineers, Wetlands Engineering & River Restoration Conference. March 23 – 27, 1998. Denver, Colorado.
- Gurnée, Grant E. 1998. A Case Study: Department of Energy's Wetland Mitigation Bank at Standley Lake. Presented at the Continuing Legal Education (CLE) International, Colorado Wetlands Conference. January 27 – 29, 1998. Denver, Colorado.
- Gurnée, Grant E. 1997. Wetland Mitigation: Design and Implementation via the Design/Build/Grow Process. Presented at the International Erosion Control Association, Erosion & Sediment Control Workshop. November 19, 1997. Northglenn, Colorado.
- Gurnée, Grant E. and Gary Bentrup. 1996. Wetland and Riparian Protection Strategies. Presented at the Sierra Club, Regional Growth Strategies Conference, "New Perspectives and Strategies to Preserve Mountain Communities." February 16 – 17, 1996. Glenwood Springs, Colorado.
- Gurnée, Grant E. 1994. How to Recognize and Deal with Wetland Regulation Issues. Presented at the Continuing Legal Education (CLE) International, 3rd Annual Western Agricultural and Rural Law Roundup. June 23-25, 1994. Fort Collins, Colorado.

AWARDS:

- Colorado Landscape Contractors Award, Sand Creek Enhancement Project – 2000

PROFESSIONAL ASSOCIATIONS:

- Association of State Wetland Managers (ASWM)

- Society of Wetland Scientists (SWS)
- Environmental Concern (EC)

**RESUME - Sub Consultant****Julia Auckland**

*Wildlife Biologist
Plant Ecologist
Wetland Ecologist*

AREAS OF EXPERTISE:

- Field Ornithology
- Butterfly Surveys
- Threatened and Endangered Species
- Habitat Mapping and Wetland Delineation
- Noxious Weed Surveys
- Environmental Permitting and Consultation

EDUCATION:

- Bachelor of Science, Fisheries and Wildlife Science, North Carolina State University
- Master of Science, Ecology and Evolutionary Biology, Iowa State University

CONTINUING EDUCATION:

- 38 Hour U.S. Army Corps Wetland Delineation Training
- FACWet - Functional Assessment of Colorado Wetlands, CDOT
- Stormwater Management and Erosion Control, CETC #150
- ACEC Future Leaders Supervisory Skills Workshop

PROTECTED SPECIES SURVEYS:

- Ute-ladies' tresses orchid and Colorado butterfly plant
- Preble's meadow jumping mouse habitat assessment
- Nesting raptors including burrowing owls

EXPERIENCE SUMMARY:

Julia Auckland is a wildlife biologist and environmental consultant who has worked on, and managed, projects throughout the United States for over 20 years. Her areas of expertise include field ornithology, butterfly surveys, threatened and endangered species surveys, habitat mapping, noxious weed surveys, wetland assessment and delineation, Clean Water Act Section 404 permitting and Endangered Species Act consultation. She has worked on a wide variety of infrastructure and development projects. Ms. Auckland customizes each project approach based on the client's goals, resource constraints, regulations, budget, and schedule.

Raptor & Nesting Bird Surveys:

Ms. Auckland has completed pre-construction surveys for nesting birds (raptors, burrowing owls and/or songbirds) on three pipelines, ten transportation projects, and almost 100 oil and gas drilling sites. Her avian experience also includes bald eagle nest monitoring, multi-species surveys, long-term population

monitoring, trapping, banding, and behavioral studies in 12 states, Mexico, and Australia for university research projects, endangered species management on military bases, agricultural operations, and environmental impact studies.

Threatened and Endangered Species Surveys:

Ms. Auckland has substantial experience surveying for threatened and endangered species. She has completed multiple Preble's mouse habitat assessments and surveys for Ute ladies'-tresses orchid and Colorado butterfly plant.

Wetlands Delineation and Permitting:

Ms. Auckland has been completing wetlands delineations, permitting, and mitigation since 1993. She has completed more than 50 wetlands projects including delineations, permitting, mitigation monitoring, and mitigation design.

Noxious Weed Surveys:

Ms. Auckland has completed noxious weed surveys on projects ranging from small transportation improvements to a 1,000+ acre wind farm. She has also completed noxious weed management plans for multiple sites in Colorado.

NEPA:

Ms. Auckland has been the environmental manager on more than 40 transportation projects requiring National Environmental Policy Act (NEPA) compliance (Categorical Exclusion, EA, EIS, and PEL). She has been the technical lead for sections on wetlands, wildlife, vegetation, water quality, and air quality. She has managed staff and sub-consultants in the areas of hazardous materials, archaeology, paleontology, history, Section 4(f), stormwater management, socioeconomics, and land use.

Wildfire Hazard Assessment and Mitigation:

Ms. Auckland has worked with Ecosystem Services, LLC (Ecos) to complete Natural Features, Wetland, Wildfire, Noxious Weeds & Wildlife Reports per El Paso County land development code for three new residential development projects;

- Gleneagle Infill Development at the former Gleneagle golf course for G&S Development, Inc. (2016),
- North Bay at Lake Woodmoor in Monument for Woodmoor Lake Development, Inc. (2016), and
- The Beach and South Beach at Woodmoor in Monument for Woodmoor Lake Development, Inc. (2017)

RELEVANT PROJECT EXPERIENCE:

Wetlands

Environmental Permitting for Transportation Projects: Environmental compliance project manager on more than 40 Colorado transportation projects requiring wetlands delineations and permitting. Completed the majority of the wetland delineations for these projects. Wrote or reviewed all of the delineation reports and permit applications. Prepared on-site mitigation plans and monitored wetland mitigation sites.

Metro Wastewater Reclamation District: Wetland delineation and biological constraints assessment for an effluent pump back force-main (11 miles) and interceptor (6.8 miles) to serve the Northern Treatment Plant. Adams County, Colorado

Xcel Energy: Project manager for an environmental constraints analysis of two 2,500+ parcels. Mapped habitat types and completed a wetland delineation in conformance with Army Corps of Engineers requirements. Assessed each site for the potential occurrence of species listed as endangered, threatened, candidate, and/or rare by the USFWS and the Colorado Division of Wildlife. Prepared summary reports. Brush and Las Animas, CO.

McGonigle Canyon: Coordination and monitoring of a 29-acre wetland restoration project including grading, erosion control, gabion construction, native plant salvage, non-native plant removal, irrigation installation, and planting, San Diego County, CA.

Threatened and Endangered Species

SWCA Environmental Consultants: Completed surveys for the federally-threatened Dakota skipper (*Hesperia dacotae*) on multiple sites in western North Dakota in 2017 and 2018.

Denver Water: Monitored riparian habitat restoration completed as mitigation for impacts to Preble's meadow jumping mouse habitat (*Zapus hudsonius preblei*), Littleton, CO.

Colorado Springs Utilities Preble's Mouse Surveys: Conducted surveys for Preble's mouse habitat for a sewer line rehabilitation project in Colorado Springs along Sand Creek. Survey area included over 30 stream crossings, Colorado Springs, CO.

US Army Corps of Engineers: Surveyed Chatfield State Park for the federally threatened Ute ladies'-tresses orchid (*Spiranthes diluvialis*), Littleton, CO.

Clark County Butterfly Surveys: Contracted with Clark County to complete multiple surveys over two summers for the Mt. Charleston blue and the Spring Mountains acastus checkerspot as required by the USFWS and USFS, Mt Charleston, NV.

Whooping Crane Surveys for the Platte River Endangered Species Partnership: Assistant project manager and field crew coordinator for fall Whooping Crane migration surveys. Coordinated a 10-person field crew to fly survey routes over an eighty-mile section of the central Platte River in Nebraska for 30 consecutive days. Conducted aerial whooping crane surveys and surveyed river cross-sections (topography, water depth, substrate, and vegetation).

Additional Avian and Wildlife Experience

Buckley Air Force Base: Conducted a survey of prairie dogs and burrowing owls at Buckley Air Force Base. Assisted with mapping approximately 600 acres of prairie dogs at the 3,500-acre base. Prairie dog population estimates and burrowing owl nest mapping was also performed. Helped establish permanent and temporary transects, sampled for various vegetation and wildlife, identified species of concern, and monitored site conditions. Summarized findings in a report to help guide in future development plans at the base. Aurora, CO.

Preconstruction Bird Surveys (2005 - present): Completed multiple surveys for nesting songbirds, nesting raptors and burrowing owls. Projects have primarily been for residential development, transportation projects, pipeline work, and oil & gas.

Nesting Bird Monitoring on CDOT Region 6 Bridges: Worked with CDOT Region 6 environmental staff to develop standard protocols for bridge construction project that would prevent violations of the Migratory Bird Treaty Act. Twice a week, bridges scheduled for construction during the nesting season were surveyed for nests so that nests could be removed prior to egg-laying. Evaluated the cost and effectiveness of different nest exclusion and removal methods. Prepared a detailed summary report. Denver, CO.

Biodiversity Surveys of the Greater Yellowstone Ecosystem for Iowa State University (1998-2001): Two years as the project manager and one year as the assistant project manager for a study of the efficacy of using satellite imagery to predict biodiversity in the Greater Yellowstone Ecosystem. Managed a complex research project in a remote area that required moving between a northern and southern study area every two weeks. Conducted point counts for birds and surveyed butterflies for three field seasons. Hired trained, and supervised field assistants for two field seasons. Coordinated with botany and GIS field crews. Designed and implemented a mark-recapture study of *Parnassius clodius* butterflies to estimate populations, mobility, and survival rates.

Red-cockaded woodpecker research, monitoring, and management (1991-1996): Worked on multiple red-cockaded woodpeckers (RCW) (federally endangered species) projects over six years beginning as a university field research assistant and culminating as the project manager on the 250,000 acre Eglin Air Force Base in Florida.

**RESUME****Jon Dauzvardis, M.L.A, P.W.S.**

*Owner/Managing Partner
Senior Restoration Ecologist
Landscape Architect
Wetland Ecologist*

AREAS OF EXPERTISE:

- Vegetation Inventories and Mapping
- Habitat Assessment, Functional Assessment and Wetland Delineation
- Aquatic, Wetland, and Riparian Restoration Ecology, Planning and Design
- Landscape Ecology, Planning and Landscape Architecture
- Conservation and Resource Mitigation Bank Support Services
- Grant Funding Support for Conservation and Restoration Projects
- Open Space and Trail Planning, Design and Habitat Management
- Construction Oversight & Best Management Practices
- AutoCAD, Mapping, Presentation Graphics

EDUCATION:

- Master of Landscape Architecture, Texas A&M University, College Station, Texas, 1995
- Bachelor of Science, Environmental Design, University of Missouri, Columbia, 1991
- Architecture Study, Harvard University Graduate School of Design, Cambridge, Massachusetts, 1989

EMPLOYMENT HISTORY:

- 2008-Present, Owner/Manager and Senior Restoration Ecologist, Ecosystem Services, LLC, Erie Colorado
- 2000 – 2011, Senior Restoration Ecologist, Walsh Environmental Scientists and Engineers, LLC, Boulder, Colorado
- 1997 – 2000, Restoration Ecologist, Construction Supervisor, Aquatic and Wetland Company, Boulder, Colorado
- 1996-1997, Landscape Architect, Design Studios West, Denver, Colorado
- 1995-1996, Landscape Architect, Wenk Associates, Denver, Colorado
- 1994-1995, Graduate Researcher, ALCOA – Texas A&M University, College Station, Texas
- 1994, Johnson County Parks and Recreation Department, Shawnee Mission, Kansas
- 1992-1994, Grounds Maintenance Superintendent, Brazos County, Texas

CONTINUING EDUCATION:

- Stream Functions Pyramid Workshop, Denver, CO - 2014
- Colorado Natural Heritage Program, Wetland Plant Identification - 2014
- Colorado Natural Heritage Program, Ecological Integrity Assessment for Colorado Wetlands - 2013
- FACWet – Functional Assessment of Colorado Wetlands - 2010, 2012 and 2013
- ESRI, ARC View Geographic Information System (GIS) Training, 1996
- Bicycle Planning and Facilities Training, 1994
- AutoCAD Drafting and Design, Self-taught, 1991

CERTIFICATIONS:

- Professional Wetland Scientist Certification (# 1699), Society of Wetland Scientists Certification Program, 2004

EXPERIENCE SUMMARY:

Mr. Dauzvardis is a founder and managing partner of Ecosystem Services, LLC (**ecos**), an ecological planning and design business dedicated to the restoration, enhancement and creation of aquatic, wetland and riparian habitat. Jon is a certified Professional Wetland Scientist with over 25 years of experience working in the fields of landscape architecture and ecological restoration in Colorado, Wyoming, Texas, Kansas and the Intermountain West. Jon's academic and professional work history in housing design and construction, community planning, architecture, landscape architecture, ecological planning and restoration is unique and makes him a valuable and multi-faceted asset to his company, clients and their projects. His diverse knowledge and skills in landscape planning, habitat design, bioengineering, and hands-on experience demonstrate that he can easily negotiate between art and science, man-made and natural systems, generalities and detail, and from concept to construction. Jon takes a practical and realistic approach to problem solving, concentrating on broad scale ecological master planning simultaneously with fine scale design of aquatic, wetland, riparian and terrestrial habitats. As a restoration ecologist, Jon specializes in restoring and enriching habitat structure, stability and health and how to manage landscapes and natural systems so that they function, change, and respond positively over time. Jon's strengths are rooted in his understanding of natural and landscape processes; finding design solutions that integrate the needs of people, wildlife, and visual quality; sustaining ecosystem goods and services; and integration of nature-based recreation and environmental education programs and facilities.

RELEVANT PROJECT EXPERIENCE:

Mr. Dauzvardis has been an essential team lead and player in hundreds of habitat assessments; permitting efforts; master plans; and aquatic, wetland, and riparian habitat design and mitigation projects. The following is a sampling of select projects and clientele that Jon has successfully completed or is currently involved with:

Habitat Assessment and Regulatory Compliance

Mr. Dauzvardis routinely performs ecological site and resource impacts assessments, jurisdictional wetland determinations and functional assessments to assist clients in site planning, design, and permitting processes. Assessment methods established by the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and Colorado Department of Transportation among others are used to assess habitat elements and screen sites for threatened and endangered plants and animals, wetlands, migratory birds and other wildlife. Jon stresses habitat impact avoidance and minimization to preserve a site's ecological benefits and to minimize regulatory constraints, timing and permitting costs. Jon has performed a multitude of site assessments, delineations and prepared permits, including but not limited to the following notable projects as well as others listed throughout this resume:

- **Banning Lewis Ranch, Colorado Springs, CO** – ecos was hired by Norwood Homes to perform and ecological assessment of wetlands, Sand Creek, Jimmy Camp Creek and its tributaries; and provide regulatory guidance for the Banning Lewis Ranch (BLR), an 18,000-acre site that will double the size of Colorado Springs. Part of Jon's work on the project included mapping and buffer recommendations on how to best conserve pristine prairie and sandy creeks that are highly susceptible to degradation caused by urbanization.
- **Bellvue Pipeline Project, Larimer County, CO** – ecos was retained by the City of Greeley as Best Management Practices (BMP) Facilitators to provide pre-construction documentation post-construction oversight of pipeline reclamation processes. Essential responsibilities include meeting with landowners prior to construction to facilitate project understanding and post-construction outcomes; to document landowner needs and wants relative to project goals and land use; and to document and monitor pre- and post-construction reclamation and maintenance requirements.
- **Georgetown Lake, Georgetown, CO** –ecos was hired to prepare an office level assessment report of ecological resources to describe the physical/ecological characteristics of the Project area and evaluate the potential effects of the construction of a loop trail project on environmental issues and species of concern to support a GOCO grant application. Items evaluated and documented, include site location/ownership, general site characteristics, current land use, proposed impacts, possible effects on Federal– and State-listed T&E animal and plant species, unique or important wildlife, water quality, water bodies, wetlands, and floodplains, stormwater runoff, sedimentation, soil erosion, and invasive species. The assessment report also included mitigation measures, project benefits, and environmental compliance recommendations under applicable regulatory programs.

- **Appraisal Support Documentation Report for the 1st Bank Parcel, Colorado Springs, CO** - ecos was retained by 1st Bank Holding Company to perform a Preble's meadow jumping mouse (PMJM) habitat assessment, mitigation cost analysis, and conceptual lot layout for the approximate 9.4-acre Parcel located adjacent to the Northgate Open Space along Smith Creek. Jon was responsible for preparing the lot layout, existing habitat aerial photo interpretation/delineation, proposed conceptual mitigation, and quantification of impacts and associated mitigation to ascertain appraisal value of the site if it were to be developed.
- **Encana Oil and Gas (USA), Denver Julesburg Basin, CO** – Encana hired ecos to assess their ecological constraints, recommend means and methods to avoid, minimize and permit impacts; and to mitigate, restore and prepare ecological management plans for their drilling and pipeline operations in the Denver Julesburg basin. Jon's role on the team is to perform site assessments, research background data, and prepare assessment reports and mapping data that can be utilized by Encana's project managers and geographic information systems (GIS) department to proactively track ecological resources before issues arise. In addition to client consultation, Jon is responsible for tracking drill site schedules, constraints, restoration and management efforts in a data base and reporting said information to Encana's project manager on a regular basis.
- **Tollgate Creek Riparian and Wetland Habitat Assessment, Aurora, CO** – Jon performed high level aerial photo interpretation and delineation of riparian and wetland habitat along Toll Gate Creek and East Toll Gate Creek from confluence with Sand Creek upstream to East Hampden Avenue. The delineation was performed in Google Earth and imported into AutoCAD by digitizing riparian and wetland habitat zones. Once complete, the data was turned over to the project engineer to incorporate into a Drainage Master Plan for the Urban Drainage and Flood Control District (UDFCD).
- **Eagle River Meadows Ecological Inventory and Strategic Wetland Action Plan, Edwards, CO** – Mr. Dausvardis delineated, assessed, and provided an analysis of potential adverse effects to wetlands within a complex site adjacent to the Eagle River. Jon also developed a strategic process and decision making tool to determine avoidance, minimization, low impact development (LID), and mitigation measures in support of a County Sketch Plan application for a Multi-use Health Care Community.
- **Mesa County Colorado Riverfront Trail, Grand Junction, CO** – Jon performed wetland delineation, jurisdictional determination, Section 404 Permitting; and prepared wetland mitigation plans to construct approximately two miles of regional trail along the north side of the Colorado River between the James M. Robb and the Colorado River State Park at Corn Lake.
- **ARCO Upper Clark Fork River Basin Superfund Site Functional Wetland Assessment, MT** – Between 2000 and 2008, Jon managed the assessment team and performed extensive wetland delineation, GPS surveying, functional assessments, and impact mapping and analysis covering a 200 square mile Superfund Site affected by historic mining practices. Assessments were done in preparation for soil remediation of heavy metals, capping of tailings ponds, sediment and dam removal, and implementation of compensatory wetland mitigation plans required under a consent decree. Assessment areas included the Anaconda Smelter, Old Works, Opportunity Ponds, and Milltown Reservoir.
- **Jefferson County Highways & Transportation Department Gunbarrel Bridge Replacement, Oxyoke, CO** – Jon consulted with the USACE, USFWS, CDOT, and the FHWA to document regulatory requirements. Produced a CDOT Wetland Finding Report, Biological Assessment, Preble's meadow jumping mouse and wetland mitigation plans, and helped acquire a Section 404 Permit and Biological Opinion.
- **Pole Canyon Wind Farm, Babcock and Brown, Huerfano County, CO** – Assessed and prepared critical issues analysis and County 1041 Permit application for a 125-megawatt wind farm and associated transmission lines located on a 5,800-acre site. The project included detailed site assessments to document the presence or absence of potential development constraints and site-specific ecological conditions as well as preparation of permit maps, plot plans, and environmental analyses, alternatives analysis, and mitigation measures.
- **Dalton Property Wetland Assessment, Longmont, CO** – Provided site assessment, regulatory analyses, and developed a restoration plan for critical riparian and wetland habitat along Left Hand Creek in Boulder County, CO.
- **Colowyo Coal Mine Wetland Delineation, Meeker, CO** – Delineated 1.5 miles of jurisdictional waters and wetlands in preparation for wetland mitigation design along West New Goodspring Creek.
- **Lafarge Northbank Resources Gravel Pit Wetland Assessment, Rifle, CO** – Delineated and acquired a jurisdictional determination from the USACE for complex tailwater and riparian wetlands along the

Colorado River. Prepared gravel pit reclamation plans aimed at providing suitable shallow-water lake edge wetlands to serve as compensatory wetland mitigation.

- **Jefferson County Highways & Transportation Department Highway 73 Expansion, Conifer, CO** – Performed presence/absence study, habitat assessment and documentation of wetlands, Migratory Birds, State Species of Concern, and federally listed T&E Species including Bald eagle, Preble's meadow jumping mouse, the Pawnee montane skipper butterfly and Colorado butterfly plant along a one-mile corridor of highway.
- **Flying Horse Ranch and the Club at Flying Horse Golf Course, Colorado Springs, CO** – Conducted an assessment of wetland habitat, impact avoidance and minimization and Section 404 of the Clean Water Act permitting for a 1500-acre mixed use development and Weiskopf golf course design being implemented by Neiber Golf.
- **C-Lazy-U and Horn Ranch Environmental Assessments, Granby, CO** – Performed site assessment of ecological opportunities and constraints of aquatic, riparian, wetland and threatened and endangered species habitat along the Colorado River for the development and enhancement of fishing/resort ranch amenities.
- **Village at Avon, Avon, CO** – Delineated wetlands and prepared a Section 404 Permit for the town center expansion and low-density ranchette development.
- **Residential Developers and Realtors** – Performed numerous wetland and T&E species habitat ecological assessments, wetland delineations, and prepared Clean Water Act Section 404 Permits and mitigation plans for residential developers and realtors, including: 4 Site Investments, Nor'wood, Proterra Properties, Denver Transit Oriented Development Fund, La Plata Communities, Windsor Ridge Homes, Clearwater Communities, Schuck Corporation, Equinox Land Group, DR Horton, Melody Homes, Standard Pacific Homes, Gateway American Properties, Zephyr Real Estate Company, Lowell Development Partners, and Palmer-McAlister, Classic Communities, Stoll Properties, Karen Bernardi, Colorado Commercial Builders, Terra Visions, Smith Creek Holdings, Picolan, Realty Development Services, Northgate Properties.
- **Commercial and Industrial Developers** – Performed numerous wetland and T&E species habitat ecological assessments, wetland delineations, and prepared Clean Water Act Section 404 Permits and mitigation plans for commercial and industrial developers, including: Atira Group, Leadership Circle, Ridgeway Valley Enterprises, Morley Companies, HF Holdings, Regency Centers, Miller-Weingarten, Gulf Coast Commercial Development, Traer Creek, Mountain Property Associates, Morley Golf, Executive Consulting, Inc.
- **Architectural and Engineering Companies** – Jon has performed numerous wetland and T&E species habitat ecological assessments, wetland delineations, and prepared Clean Water Act Section 404 Permits and mitigation plans for A&E firms, including: William Guman and Associates, JVA, Beyers Group, Engineering Analytics, Classic Consulting Engineers, J3 Engineering, DHM Design, Del-Mont Consultants, JW Nakai and Associates, Nolte and Associates, JR Engineering, Hyrdosphere, Executive Consulting Engineers, Muller Engineering, Farnsworth Group.
- **Counties, Municipalities, Metro Districts and Quasi-Public Institutions** – Mr. Dauzvardis has performed numerous wetland and T&E species habitat ecological assessments, wetland delineations, and prepared Clean Water Act Section 404 Permits and mitigation plans for counties, municipalities, and quasi-public institutions, including: City of Louisville Highway 42 and 96th Street realignment, City of Westminster Jim Baker Reservoir and Standley Lake Protection Projects, Jefferson County Highway 73 and 67 Improvement Projects, Todd Creek Village Metro District, Town of Monument/Triview Metro District, Boulder Community Hospital, and City of Fort Collins Regulatory Fact Sheets Preparation Project, Todd Creek Village Metro District on-call consultant, Three-lakes Water and Sanitation District, City of Greeley,
- **Educational Institutions** – Performed numerous wetland and T&E species habitat ecological assessments, wetland delineations, and prepared Clean Water Act Section 404 Permits and mitigation plans for educational institutions, including: Colorado Mountain College - Steamboat Springs, The Classical Academy – Colorado Springs, and Coal Ridge High School – Rifle.
- **Wind Energy Developers** – Performed numerous wetland and T&E species habitat ecological assessments, wetland delineations, and critical issues analyses for wind development projects, including: Cedar Creek Windfarm – Weld County, CO, Wheatland Windfarm – Platte County, WY, Silver Mountain Windfarm – Huerfano County, CO, Pole Canyon Windfarm, Huerfano Count, CO.

- **Mining Companies** – Performed wetland and T&E species habitat ecological assessments, wetland delineations, and critical issues analyses for mining companies, including: Brannan Sand and Gravel Company, Lafarge and Kennecott Coal.

Ecological Master Planning

- **Jackson Creek Land Company PMJM and Wetland Mitigation, Colorado Springs, CO** – ecos has been performing Preble's meadow jumping mouse (PMJM) habitat biological assessments, conservation, mitigation planning and design throughout its range since 1994. Among numerous other private land developers in the Colorado Springs areas, ecos is currently assisting the Jackson Creek Land Company and Triview Metropolitan District with the implementation of physical habitat conservation and mitigation measures, including shortgrass prairie, upland hibernaculum, and riparian habitat restoration. Jon is responsible for mapping, design assessment and restoration plan preparation.
- **Park Creek Mitigation Bank, Fort Collins, CO** – ecos was retained by Burns and McDonnell to assess, map, and prepare preliminary mitigation design of aquatic, wetland, riparian and terrestrial habitat in support of a mitigation banking prospectus. Upon completion and acceptance of the prospectus by the USACE, ecos has been tasked to manage the baseline assessment of the site, including groundwater testing, topographic surveys, and hydrology; prepare a detailed habitat design for inclusion in mitigation banking instrument; as well as coordinate design-build process with a selected nursery and contractor. Jon has been responsible for the mapping and preparation of design documents and will co-manage construction and long-term monitoring to help our client meet their performance criteria and sell bank credits.
- **Front Range Umbrella Mitigation Bank, CO** – ecos was retained by Restoration Systems, a nationally renowned wetland mitigation banking firm, to help identify and prepare conceptual design plans for mitigation banking sites to establish the Front Range Umbrella Mitigation Bank (Bank). The purpose of the Bank is to provide compensatory mitigation credits for unavoidable, permitted impacts to aquatic, wetland, riparian, upland, wildlife, and threatened and endangered (T&E) species habitat regulated under the Clean Water and Endangered Species Acts; and to restore, enhance and preserve valuable natural resource functions at degraded mitigation sites within multiple watersheds along Colorado's Front Range. Currently, the Bank is developing banks sites that serve the Cache la Poudre, St. Vrain, Upper South Platte, Fountain and Upper Arkansas watersheds. Jon's primary role on the team is to perform functional habitat assessments; prepare mapping and graphics of baseline and future conditions; grading and plant community design based on hydrologic, hydraulic, and geomorphic modelling and engineering; and communicate with landowners and stakeholders regarding the process, technicalities, and outcomes.
- **Sand Creek Channel Improvements Stability Analysis at Indigo Ranch, Colorado Springs, CO** - ecos was retained to perform an analysis of channel stability under proposed development conditions for a 1.17 mile reach of Sand Creek. Ecos utilized existing vegetation composition data, density and height within the Project reach as a basis; and compared the 10-year and 100-year storm event modelling data (specifically flow velocity, flow depth and shear stress) to reference literature to provide a professional opinion regarding the future stability of the channel under developed conditions. The analysis of channel stability for the proposed Project assumes a bioengineering and biotechnical approach that preserves and enhances the existing vegetation, as well as substrate cohesion and stability, within the channel and its streambanks. The Stability Analysis will likely serve as a benchmark study for the City of Colorado Springs to use to preserve other naturally stable channels.
- **Brush Creek Ranch Stewardship Plan, Saratoga, WY** – Brush Creek Ranch Stewardship Plan, Fishery Enhancement and Bank Stabilization, Saratoga, WY – Mr. Dauzvardis managed the organization, generation and graphic design of the Ranch Stewardship Plan. Jon assessed and prepared stewardship goals, objectives, and implementation action items, including ranch-wide master planning of the trail and recreational systems and design of the Brush Creek riparian corridor trail. Trail and recreation planning and design focused on universal access, habitat sensitivity, environmental education, wildlife observation opportunities and unique landscape experiences. Simultaneously with the master plan, Jon developed revegetation plans to support geomorphic stream alterations and bank stabilization to enhance the creek fishery. Jon was responsible for the design and supervised construction of a cold-water pond to be used by novice anglers to learn the art and experience the pleasure of catching trout.
- **Town of Erie, Comprehensive Plan, Parks Recreation Open Space and Trails Master Plan, and Natural Areas Inventory, Erie, CO** - As a former 8-year Member, Chair, and Vice Chair of the Town Erie

Open Space and Trails Advisory Board (OSTAB) and an Erie resident and small business owner, Jon has an intimate knowledge of Erie's political and physical landscape and public processes. During his tenure on OSTAB, Jon actively participated in the writing and development of the Town's guiding documents. Jon authored the Open Space Chapter of the Comprehensive Plan which eventually was codified in the Town's Unified Development Code (UDC). Jon was the key commenter on the content, analysis and synthesis of the of the Open Space and Trail Chapters and Mapping that was adopted with the Town's first Parks Recreation Open Space and Trails Master Plan (PROST). Jon guided the process used in the development of the Erie Natural Areas Inventory (ENAI) to identify and design a habitat condition, quality and restoration rating and ranking system of significant natural areas throughout the Town's 49-square mile planning area.

- **Uncompahgre River Corridor Master Plan, Montrose, CO** – Jon was responsible for the development of an ecological master plan focusing on the Uncompahgre River as a natural asset for eco-tourism and the generation of riverfront economic development. Mr. Dauzvardis was responsible for assessing the character, condition and quality of aquatic, wetland and riparian habitat; and developing a rating, ranking, land acquisition prioritization system, and associated mapping aimed at the preservation and integration of open space and habitat within the City's parks, recreation and trail system.
- **Ruby Pipeline Wetland, Riparian and Waterbody Mitigation and Restoration Plan, WY, UT, NV and OR** – Jon was responsible for assisting with the generation of a Comprehensive Wetland Mitigation Plan outlining Clean Water Act regulatory guidelines, requirements, and processes. Jon developed an eco-region specific restoration plan for a 675-mile natural gas pipeline specifying the basis of design, construction, revegetation, maintenance, performance criteria, and monitoring means and methods for restoring approximately 460 acres of temporarily impacted riparian and wetland habitat.
- **Dry Creek Regional Urbanization Area, Weld County, CO** – Mr. Dauzvardis performed an ecological inventory and prepared the assessment report for a 6,000-acre Regional Urbanization Area (RUA); and a 1000-acre multi-use site development in un-incorporated Weld County. Subsequent phases included establishing ecological policy, goals, and objectives for the study area that will assist the County in the refining their first ever Comprehensive Plan.
- **City of Broomfield I-25 Subarea Environmental Guidelines, Broomfield, CO** – Jon drafted development sensitivity design and ecological sustainability standards.
- **McStain Development Corporation, Mountain Village III Master Plan, Loveland, CO** – Conducted concept planning for recreational and environmental interpretation facilities focusing on lake and wetland habitat features of the community.
- **Estes Park Comprehensive Land Use Plan, Estes Park, Larimer County, CO** – Teamed with town planning staff in producing a county-wide land use plan using GIS as a public involvement/participation tool.
- **San Miguel River Park Corridor Master Plan, Telluride, CO** – Prepared park, trail, wetland and riparian corridor master plan and design for the San Miguel River Park Corridor. Jon prepared illustrative plan graphics that assisted the Town in applying for and winning approximately \$500,000 in Natural Resource Damage Assessment Fund money from the State of Colorado, which was used for final design and implementation.
- **South Platte River Wildlife and Recreation Corridor Plan, Denver, CO** – Designed the Zuni Riverfront Park and planned the wildlife and recreation corridor between I-25 and 8th Street near Mile High Stadium. Prepared, steered and presented graphics that the City and County of Denver Mayor's Commission (Wellington Webb) and the Urban Drainage and Flood Control District used to help sell the project to the public and federal funding sources in Washington D.C.
- **Historic Arkansas River Walk, Pueblo, CO** – Coordinated and steered the design and presentation of riparian, aquatic, and palustrine wetlands in the HARP Natural Area. Designed environmental Education Park to include outdoor classroom, access, and multi-thematic interpretive nodes.
- **Pueblo Natural Resources and Environmental Education Council Plan, Pueblo, CO** – Designed the identity and jointly produced strategic natural resource based environmental education plan for Pueblo County (PNREEC). The plan helped build consensus among multiple private and governmental agencies and stakeholders on funding, conservation, restoration, and enhancement priorities throughout the County.
- **Aluminum Company of America (ALCOA) Huisache Cove Master and Design Plan Master of Landscape Architecture Thesis, Port Lavaca, TX** – Served as environmental consultant in researching and generating wildlife habitat restoration plan and multi-functional landfill cap redesign incorporating

coastal prairie, lacustrine, palustrine, estuarine wetlands, passive recreation, bird watching and ecological interpretation facilities on an industrial superfund clean-up site.

Aquatic, Wetland, and Riparian Habitat and Mitigation Design:

- **Big Thompson River Flood Recovery and Restoration, Loveland, CO** - ecos is currently part of a multi-disciplinary team assisting the Big Thompson Watershed Coalition (BTWC) with assessment, design, and construction of the Big Thompson between Rossum and Wilson Drives which are majority-owned by the City of Loveland and Loveland Ready-mix. As with all the flood recovery projects ecos has worked on, Jon produced 30%, 60% and 100% design plans, construction cost estimates, and specifications guiding soil development/enrichment; upland, riparian, and wetland seeding and planting; and numerous bioengineering techniques aimed at restoring the river and making it more resilient to future flood events. This project is aimed at completion in the summer of 2019.
- **Saint Vrain Creek Reach 3 Flood Recovery and Restoration, Boulder County, CO** - ecos is part of the multi-disciplinary team assisting Boulder County Parks & Open Space (BCPOS) with resilient design for the restoration of Reach 3 of the Saint Vrain Creek (from Highway 36 downstream to Hygiene Road) that was damaged by the 2013 floods. Jon's role in the project includes: 1) desktop and field assessment to inventory and document the characteristics of the stream reach and riparian corridor (e.g. in-stream features, vegetation, wildlife habitat); identify and locate significant habitat features within the areas of proposed construction; identify potential sources of native plant materials for restoration; and identify areas of opportunity within the reach that require native vegetation, wetland, PMJM, leopard frog and fishery habitat restoration; and delineate wetland habitat and waters of the U.S. in all areas of proposed/potential construction-related impact; 2) vegetation community and wildlife habitat restoration design; 3) permitting and compliance under the CWA, ESA and NHPA; and 4) construction oversight of restoration construction activities. This project was completed in the summer of 2018.
- **Bohn Park Flood Recovery and Restoration, Town of Lyons, CO** – ecos is part of the Design Team assisting the Town with the restoration, enhancement and stabilization of Bohn Park which was damaged by the 2013 floods. Ecos role is to assess, design, and prepare design-bid-build specifications for the natural restoration of the vegetation communities and habitat along South St. Vrain Creek that have been incorporated in to the landscape architecture of Bohn Park, the Towns largest and most used recreational asset. This project was completed in the spring of 2018.
- **Fourmile Creek Flood Recovery and Restoration, Boulder County, CO** – ecos was part of the Fourmile Watershed Coalition design-build team tasked with restoring flood-damaged properties that were prioritized in the watershed master plan. Jon generated seeding and planting plans, performance notes, cost estimates, and co-managed construction oversight in collaboration with the executive director of the Watershed Coalition. This project was completed in the summer of 2017.
- **James Creek Post-flood Restoration, Lefthand Watershed Oversight Group (LWOG), Jamestown, CO** – ecos was part of the LWOG Team responsible for preparing the 30-60% design package for James Creek Reach 16 as identified in the Lefthand Creek Watershed Master Plan. ecos performed pre- and post-flood plant community assessment; developed revegetation goals and objectives, the basis of design, monitoring protocols, and revegetation plans according to Colorado Department of Local Affairs, Community Development Block Grant – Disaster Recovery 30% Guidelines. Specific resources and issues of concern addressed by ecos, included federal and state listed candidate, threatened and endangered species, wildlife species of concern (including raptors), fisheries and fish passage, native plant communities, and management of noxious weeds.
- **Saint Vrain Creek Flood Recovery and Restoration, Town of Lyons, CO** – ecos is part of a design-build team tasked with restoring the St. Vrain Creek corridor in the Town of Lyons that was damaged during the September 2013 flood event. The goal of the project is to work with the Town and affected land-owners to create a more resilient floodplain and natural channel condition that will help alleviate future threats to the community, reestablish floodplain connectivity, stabilize banks, and restore aquatic, wetland and riparian habitat that was wiped out during the flood. Mr. Dauzvardis is responsible for developing the plant communities and revegetation strategies needed to restore aquatic and riparian structure and functions within the corridor that support fish, wildlife, recreation, and help the Town regain the ecological benefits and economic value they receive from outdoor enthusiasts. This project was completed in the summer of 2016.

- **Plum Creek Mitigation Bank, Sedalia, CO** – ecos was retained by Restoration Systems to prepare conceptual design plans for the Plum Creek Mitigation Bank Site that is currently under consideration by the Chatfield Reservoir Mitigation Company (CRMC). The purpose of the Site is to provide compensatory mitigation credits for unavoidable, permitted impacts to wetland, PMJM and bird (target resources) habitat regulated under the CWA and ESA; and to restore, enhance and preserve natural resource functions. Jon has guided agency and CRMC staff on tours of the Site; performed plant community mapping, baseline EFU assessment for PMJM, and FACWet assessment of wetlands. Jon was responsible for mapping, interpretation, and quantification of historic and existing habitat on the site. Jon prepared Conceptual Design Plans for resource mitigation including channel geomorphology, PMJM and wetland habitat setting the stage for post-mitigation calculations of EFU's.
- **Bellvue Raw Water Ponds Riverbank Restoration, Bellvue, CO** – The 2013 flood on the Poudre River altered the course of the river and severely eroded a bank nearly causing a breach of the City of Greeley's raw water ponds – their main municipal water supply. The goal of the project was to stabilize the bank to protect the ponds and to create riparian habitat for the Preble's meadow jumping mouse, a federally listed threatened and endangered species. Jon was responsible for preparing bioengineering design plans and specifications that include soil/cobble encapsulated lifts, stream barbs to deflect flows away from the bank, and harder, biotechnical design of soil/riprap and stream bed scour protection measures to prevent erosion and further undermining and sloughing of the bank. Design plans included specification of native plant materials and various techniques to restore cottonwood forest and willow habitat to further stabilize the bank.
- **Poudre River Pipeline Crossing at Kodak, Windsor, CO** – Jon's role on the ecos team was to assess restoration potential, techniques, and prepare design plans and performance specifications to reclaim a pipeline corridor across the lower Poudre River where the City of Greeley had to replace 3 major water supply lines. Flooding on the Poudre River in 2013 and 2014 temporarily suspended construction of the pipeline. Jon will oversee site stabilization and restoration measures once all 3 pipelines have been installed.
- **Lions Park Poudre River Restoration Plan, Laporte, CO** – Jon's role on the ecos team was to assess habitat conditions; gather, compile and analyze field survey data; and to prepare the mapping and mitigation design plans for the Lions Park PMJM habitat and the Poudre River Bank Stabilization Plans. Jon simultaneously designed and executed the technical drawings for the structural components of the habitat, ensuring that the proposed riparian plant community, habitat structures (brush piles), and bioengineered streambank stabilization measures will create the conditions that alleviate the current habitat fragmentation; support the life requisites of the PMJM; and enhance the overall health of the Poudre River fishery.
- **St. Vrain River Riparian Corridor Enhancement, Lyons, CO** – Jon designed, managed and led the construction of the Preble's Meadow Jumping Mouse Habitat (PMJM) enhancement project along the St. Vrain River. Jon worked in coordination with the project sponsor and Director of the Town of Lyons, Parks, Recreation and Cultural Events Department to implement required mitigation within a passive greenway park along the St. Vrain. Jon's role included riparian/PMJM mitigation site identification and habitat assessment; and design; and implementation of riverbank stabilization and riparian habitat enhancement measures.
- **Brush Creek Fishery Enhancement Plan, Saratoga, WY** – Prepared access, staging and design plans, details and performed on-site construction oversight of instream and riparian habitat enhancements and bioengineered bank stabilization along a 3-mile reach of Brush Creek. The purpose of the project is to enhance fish, bird and wildlife habitat and use these resources to facilitate education and improve the recreational experience of Ranch guests. Access routes were planned so that they can be easily converted to trails to avoid repetitive impacts to high quality habitat and productive pastures.
- **St. Vrain River Riparian Corridor Enhancement, Lyons, CO** – Jon is the lead Landscape Architect for the restoration and enhancement of Preble's Meadow Jumping Mouse Habitat (PMJM) along the St. Vrain River. Jon and ecos are working in coordination with the Town of Lyons, Parks, Recreation and Cultural Events team to implement this restoration project within a passive park area along the St. Vrain. Jon's tasks include riparian/PMJM habitat assessment; PMJM site location and habitat design; and implementation of riverbank stabilization and riparian habitat enhancement measures.
- **TZ Ranch, Elk Hollow Creek Fishery Habitat Enhancement Plan, Saratoga, WY** - ecos performed the assessment and design of the Elk Hollow Creek Project, which included instream and riparian habitat

improvements aimed at increasing bank stability, improving aquatic habitat and angling opportunities, and providing long-term stability to the reach. Instream improvements included drop structures, plunge pools, deep pools, riffles and spawning habitat. Bank improvements included seeding and planting plans for native wetland and riparian species. Jon was the lead on the generation of design-build plans and provided construction oversight of instream structure and native plant installation.

- **Brush Creek Ranch Pond Creation Plan, Saratoga, WY** – Prepared below grade pond excavation, grading, drainage and revegetation plan for a 0.30-acre fishing pond, followed by on-site field layout and surveying, wetland sod transplanting, submerged aquatic habitat and construction support of heavy equipment operators. The pond was designed to be a self-sustaining, cold water fishery that supports all components of the aquatic food-chain and incorporates all necessary life requisites for trout; and provide fishing opportunities during high water in Brush Creek.
- **Edwards Eagle River Restoration Project, Edwards, CO** – Assessment, planning, native plant community design and construction oversight of aquatic, wetland, riparian habitat along 1.5 mile reach and 168-acres of floodplain along the Eagle River utilizing indigenous materials and methods that naturally integrate habitat structure in the landscape context. Planning and design included trails, boat launch, boardwalks, overlooks, and interpretive sign systems and thematic content.
- **Boone Property, Boulder Creek Fishery Enhancement Project, Boulder, CO** – Performed site assessment and identified instream and overhead cover habitat to enhance fish habitat along a short reach of Boulder Creek adjacent to City of Boulder, Eldorado Canyon Open Space.
- **C-Lazy-U Ranch Willow Creek Fishery Enhancement Plan, Granby, CO** – Assessed and prepared design plans for 2 miles of instream and overhead cover habitat aimed at enhancing water quality through increased bank stability, improving aquatic habitat and angling opportunities, and providing long-term stability to the reach influenced ongoing ranching activities. Bank-side improvements include detailed seeding and planting plans indicating site-specific plant and seed locations, life zones, and species palettes according to hydrologic, soil, and aspect conditions.
- **Colowyo Coal Mine Wetland Creation Plan, Meeker, CO** – Performed wetland mitigation site feasibility assessment and design of 2.2-acres of created wetland benches along a 1.5-mile reach of the West New Goodspring Creek.
- **Uncompahgre River Wetland Creation and Streambank Stabilization, Montrose, CO** – Mr. Dauzvardis developed a Clean Water Act Individual Section 404, alternatives analysis and mitigation plans that successfully defrayed public descent and offset unavoidable impacts related to the River Landing Retail Development Project. Once approved by the USACE, the project turned a degraded, gravel-mined portion of the floodplain into functional and aesthetic riparian habitat that is now enjoyed by the public via a segment of trail that Mr. Dauzvardis designed. Two acres of riparian and “backwater” wetland habitat were strategically created along the Uncompahgre River to ensure reliable hydrologic connectivity and support of the designed wetland plant community. Nearly 350 lineal feet of severely degraded stream bank was stabilized using a naturalized bio-engineering approach that incorporated soil, native seed, erosion control blanket, shrubs, trees, and strategically located river boulders and logs to restore the riparian habitat, create fish habitat and redirect scouring flows away from the once barren bank.
- **River Point at Sheridan Brownfield Redevelopment, Sheridan, CO** – Designed and oversaw the construction of a “bio-engineered” and “bio-technical” vegetative landfill cap system and water quality swale that drains to the South Platte River. Jon was responsible for integrating the swale in to the River Point at Sheridan commercial redevelopment and the City of Englewood Golf Course renewal – renamed to the Broken Tee Golf Course.
- **Broken Tee Golf Course Flood Protection, City of Englewood, CO** – Oversaw the construction of a biotechnical subsurface stabilization and flood protection system (under-armor) designed to ensure that the woodland golf course tees, fairways and greens in the South Platte River floodplain are not compromised by flood scour. Designed and implemented bioengineered bank stabilization and under-armor on Bear Creek that was essential for protecting tees and greens. Jon was responsible for disproving the jurisdictional status of artificially supported wetlands via a groundwater monitoring system.
- **Lafarge Northbank Resources Gravel Pit Wetland Design, Rifle, CO** – Jon asses DMG requirements and prepared gravel pit reclamation plans aimed at providing suitable shallow-water wetlands and islands within the pit closure area to serve as compensatory mitigation for wetland impacts associated with mine operations adjacent to the Colorado River.

- **Leach Creek Stream Enhancement, Grand Junction, CO** – Designed stream corridor enhancements for a ½-mile section of Leach Creek that was channelized and used as an irrigation canal. Enhancements were designed to restore natural channel form and function, improve the aquatic environment, and provide mitigation for jurisdictional impacts permitted under the Nationwide Permit program. This project is being used as a model and replicated along other reaches of Leach Creek
- **Castro Property Wetlands and Wildlife Ponds, Beulah, CO** – Performed the site assessment, feasibility analysis, water resource and minor dam design, native plant design, landscape architecture, and supported the water rights application needed to create shallow water wetland habitat for amphibians, waterfowl, migrating bird and ungulates, and deep water habitat for trout at a sub-alpine elevation of 9000 feet. Project included development of a spring, creation of a creek and a mechanical water circulation and aeration system to support the aquatic, wetland, and riparian ecosystem. Organized, supervised and participated in a volunteer planting effort.
- **Jefferson County Gunbarrel Bridge Replacement, Oxyoke, CO** – Developed construction plans and specifications and oversaw construction of wetland and Preble's mouse habitat mitigation to enhance weedy and degraded wetland and Preble's mouse habitat along Gunbarrel Creek, a tributary to the upper South Platte River near Deckers, CO.
- **Coal Creek Bank Stabilization, Erie, CO** – Assessed, permitted, designed and performed construction oversight of bio-engineered/bio-technical bank stabilization and wetland creation associated with the Vista Parkway bridge crossing over Coal Creek in Erie, CO. The project involved pulling back vertical banks and restoring native wetland, riparian, and short grass prairie habitat.
- **Spring Creek Wetland Mitigation, Colorado Springs, CO** – Generated wetland and creek creation plans that integrated required mitigation into a high density, "new urban" development. The design emphasized re-utilization of urban storm water to sustain wetlands, use of indigenous plants, construction materials, and natural geomorphic relationships.
- **Sulphur Gulch, Parker, CO** – Developed a naturalized sculpted concrete drop structure design, planting and bio-engineering plans for a highly visible, urbanizing reach of a sandy creek through the center of the Town of Parker.
- **Skylark Creek Restoration Plan, Kremmling, CO** – Designed and performed construction oversight of aquatic, wetland and riparian plant community, and trail system along a historic side channel of the Upper Colorado River on a private fishing ranch.
- **ARCO Opportunity Ponds Wetland Mitigation Design, Anaconda, MT** – Jon generated the design of a 908-acre complex of wetlands and terrestrial habitat required to meet the Consent Decree and the functional assessment criteria established during the wetland assessment process mentioned previously. The design is currently being implemented. Once complete, the grading, drainage, hydrology, and revegetation strategy used to create wetlands from massive soil borrow pits will potentially be the largest inland, freshwater wetland mitigation project in the United States.
- **Northgate Boulevard Realignment, Colorado Springs, CO** – Coordinated and prepared ESA Section 7 and CWA Section 404 consultation documents as required by the USFWS and USACE, including mitigation construction documents, specifications, on-site layout of plant communities and construction supervision aimed at restoring wetland and riparian habitat occupied by Preble's meadow jumping mouse.
- **Northgate PMJM and Wetland Mitigation Plan, Colorado Springs, CO** – Mr. Dauzvardis was an instrumental member of multidisciplinary team responsible for delineating wetlands, preparing ESA Section 7 and CWA Section 404 assessment, impact analysis and consultation documents as required by the USFWS and USACE. As the lead designer, Jon was responsible for the design of over 80 acres of wetland, riparian, and grassland habitat utilized as primary and secondary habitat for Preble's Meadow Jumping Mouse, a Federally-listed threatened species. Jon prepared mitigation construction documents, specifications, on-site layout of plant communities and supervised construction for this precedent setting mitigation plan designed to offset impacts to critical habitat over a 1200-acre site.
- **Martin County Coal Corporation, Inez, KY** – Mr. Dauzvardis bioengineered and performed on-the-ground triage of two stream corridors, consisting of 26 miles, impacted by a coal slurry spill that originated from a mountaintop mine reservoir used to hold liquefied coal dust. Jon identified and documented critically imperiled stream banks and human settlements, and then designed, coordinated, led and supervised local crews during the implementation of specified floodplain, bioengineered bank stabilization, and reforestation efforts.

- **Uncompahgre River Restoration and Park Corridor, Ouray, CO** – Jon designed and performed construction oversight of the restoration and reclamation of one mile of upland, riparian and wetland habitat left barren by historic placer mining. The major challenge presented by this project was a lack of soil, organic matter and nutrients to sustain vegetation. This constraint was addressed by amending the soil with humate and planting and seeding riparian vegetation to initiate natural succession and bioaccumulation of matter, assisted by an irrigation system that injected organic fertilizer and microbes (mycorrhizea) in to the substrate.
- **Burlington Mine Remediation, Jamestown, CO** – Preparation and management of specification package, best management practices (BMPs), and revegetation design for mine waste capping and closure.
- **Powder River Coal Company – Porcupine Creek Restoration, Douglas, WY** – Designed and supervised the construction of this post mine wetland/creek restoration project. Following the pit closure, reclamation specialists reestablished the original location and geomorphic relationships of the creek using historic aerial photography using a trapezoidal channel cross-section design. Jon adapted the design creating grading and wetland planting plans that mimic the landform, natural lateral and longitudinal channel tilt, and plant communities that are indigenous to ephemeral creeks in the shortgrass prairie landscapes of eastern Wyoming.
- **Sand Creek Corridor Habitat Enhancement at Bluff Lake, Denver, CO** – Prepared plant community, bioengineering and bank stabilization design. Prepared visualization graphics to present and receive design approval.
- **Intrawest Resort Development, West Ten Mile Creek, Copper Mountain Village, CO** – Prepared vegetation community and concept design of village base streamside recreational amenities.

Construction and Plant Installation:

- **St. Vrain River Riparian Corridor Enhancement, Lyons, CO** – Jon managed construction and implementation of the restoration and enhancement of 0.60-acre of riparian Preble's Meadow Jumping Mouse Habitat (PMJM) along the St. Vrain River.
- **Standley Lake Protection Project, Westminster, CO** – Designed and supervised construction of a 0.50-acre created emergent wetland to fulfill final mitigation requirements of the USACE and bring closure to the City's drinking water protection project.
- **Caribou Peat Bog Restoration, Nederland, CO** – Prepared native plant community design, planting cost estimate, and on-the-ground oversight of volunteers to restore a high-altitude peat bog disturbed by an illegal four-wheel drive "mudfest".
- **Department of Energy (DOE) Wetland Mitigation Bank, Westminster, CO** – Construction supervision of grading and planting plans of a 12-acre wetland mitigation bank design for the Department of Energy.
- **ARCO Lower Area One and Butte Reduction Works, Butte, MT** – Performed construction observation and supervision of temporary labor crews to plant a passive treatment wetland designed to absorb heavy metals from groundwater.
- **Colorado Department of Transportation Mitigation Bank, Limon, CO** – Performed in-field planting design and supervised local labor to complete a 10-acre wetland mitigation bank designed by CDOT to offset future wetland impacts in the transportation region.
- **Irvine Ranch Water District – San Joaquin Wetland Treatment System, Irvine, CA** – Planting superintendent of a wetland designed to be used as tertiary wastewater treatment facility and waterfowl refuge.

PRESENTATIONS & INSTRUCTION:

- Dauzvardis, Jonathan B. 2008. Preserving the Ecological Services of Willow Cuttings. Research presented at the Colorado Riparian Association (CRA) Sustaining Colorado Watersheds Conference. October 2, 2008. Vail, Colorado.
- Dauzvardis, Jonathan B. 2006. Water Pollution and Wetland Plant Tolerance to Various Ph Levels. Classroom instruction with Elementary Students. Flagstaff Academy Charter School. February 2, 2006. Longmont, Colorado.
- Dauzvardis, Jonathan B. 2006. Soil Erosion and Habitat Destruction. Classroom instruction with Elementary Students. Flagstaff Academy Charter School. January 26, 2006. Longmont, Colorado.

Dauzvardis, Jonathan B. 2004. Wetland and Wildlife Habitat Restoration, Opportunity Ponds, Anaconda, Montana. Poster Presentation at Ecological Restoration Conference. October, 2003. Orlando, Florida.

Dauzvardis, Jonathan B. 2003. Application of Landscape Ecology Principles to Mine Remediation and Wetland Creation: An Ecological Restoration Seminar using a Case Study of the Opportunity Ponds Wetlands Plan, Anaconda, Montana. Presented at the University of Colorado, Denver. November, 2003. Denver, Colorado.

Dauzvardis, Jonathan B. 2000. Endangered Species Act Issues: Incorporating the ESA into Mitigation Projects. Presented at the Continuing Legal Education (CLE, International) Colorado Wetlands Conference. September 18, 2000. Denver, Colorado.

AWARDS:

- Colorado Landscape Contractors Award, Sand Creek Enhancement Project – 2000
- Colorado Landscape Contractors Award, Skylark Creek Restoration Project – 1998
- Colorado American Society of Landscape Architects, Research, and Communications – 1997
- Texas American Society of Landscape Architects Honor Award – 1995
- Texas A&M Landscape Architecture Faculty Award – 1995

PROFESSIONAL ASSOCIATIONS:

- Town of Erie, Colorado Open Space and Trails Advisory Board (OSTAB) - As a former member and chair of the Town of Erie Open Space and Trails Advisory Board (OSTAB), Mr. Dauzvardis routinely collaborated with Town Administrator, Community Planning, Public Works, and Parks and Recreation Directors and Staff, and advised the Board of Trustees on all matters related to the goals, objectives, prioritization, acquisition, conservation, and the management of open space and trails throughout a 49-square mile planning area. Jon's 8-year experience on the OSTAB translates to an intimate knowledge of public processes.
- Society of Wetland Scientists (SWS)

MEMORANDUM

DATE: April 28, 2021

TO: Board of Education

FROM: Dr. Don Haddad, Superintendent of Schools

SUBJECT: Approval of Easement Agreement with the Town of Erie at Red Hawk Elementary School
Strategic Priority – Outstanding Communication and Collaboration with Community and Corporate Partners

RECOMMENDATION

That the Board of Education approve the Permanent Utility and Access Easement for the Town of Erie Canyon Creek Development Water Loop. Further, to authorize Brian Lamer, Assistant Superintendent of Operations, to sign contract documents in accordance with Board of Education Policy.

BACKGROUND

The Permanent Utility and Access Easement for the Town of Erie is necessary to allow construction of a water line across St. Vrain Valley School District property for the Canyon Creek housing development adjacent to Red Hawk Elementary School.

Permanent Easement Agreement

This Permanent Easement Agreement (the "Agreement") is made and entered into this twenty-eighth day of April, 2021 (the "Effective Date"), by and between Saint Vrain Valley School District RE-1J, a public school district of the State of Colorado with an address of 395 South Pratt Parkway, Longmont, CO 80501 ("Grantor"), and the Town of Erie, a Colorado municipal corporation with an address of P.O. Box 750, 645 Holbrook Street, Erie, CO 80516 (the "Town") (each a "Party" and collectively the "Parties").

WHEREAS, Grantor is the owner of the real property more particularly described in **Exhibit A**, attached hereto and incorporated herein by this reference (the "Easement Property");

WHEREAS, the Town wishes to construct and install, and thereafter use, operate, inspect, maintain and repair one underground water pipeline and related appurtenances and facilities on, over, across and under the Easement Property, as depicted in **Exhibit B**, attached hereto and incorporated herein by this reference (collectively the "Facilities");

WHEREAS, for this purpose, Grantor is willing to convey this permanent easement to the Town, which allows the Town to install, operate, use, repair and maintain the Facilities upon and beneath the surface of the Easement Property; and

NOW, THEREFORE, for and in consideration of the mutual promises and covenants contained here, Grantor and the Town mutually agree as follows:

1. **Grant of Easement.** Grantor hereby grants to the Town, its successors and assigns, lessees, licensees and agents, a permanent, perpetual, non-exclusive easement (the "Easement") to enter, re-enter, occupy and use the Easement Property to construct, reconstruct, use, operate, maintain, repair, patrol, replace, enlarge and remove the Facilities in, through, over, across, under and above the Easement Property.
2. **Town's Rights.** The Town and its employees, agents, contractors, representatives, successors and assigns shall have and exercise the right of ingress and egress in, to, through, over, under, above and across the Easement Property for access to perform construction, reconstruction, operation, installation, use, maintenance, repair, replacement, upkeep, monitoring and removal of the Facilities.
3. **Non-exclusive Use.** The Town agrees, following written request to and approval by the Town, which shall not be unreasonably withheld, that other utilities and facilities may be installed in the Easement Property if such utilities do not interfere with the Town's rights as herein granted or the Town's use of the Easement and Easement Property. All surface and subsurface uses of the Easement Property must be approved in writing by the Town prior to installation, which approval shall not be unreasonably withheld.
4. **Maintenance.** The Town shall be solely responsible for maintaining the Facilities,

and the Facilities shall remain the Town's property.

5. No Interference. Grantor shall not construct or place any structure or building, shrub, tree, woody plant or nursery stock, whether temporary or permanent, of any kind or nature on the Easement Property that will interfere with or obstruct the Easement granted herein. Any such prohibited structure or item placed on the Easement Property may be removed by the Town at Grantor's expense and without liability to the Town for damages arising therefrom. Grantor shall retain the right to the use and occupancy of the Easement Property to the extent that it does not interfere with the Town's rights or its use of the Easement.

6. Maintenance of Grantor's Improvements. Grantor shall be solely responsible for the maintenance of all Grantor's improvements located within the Easement Property.

7. Retained Rights. Grantor shall have all rights to the Easement Property not granted hereby.

8. Warranty. Grantor warrants that it has the full right and legal authority to make the grant of Easement contained in this Agreement.

9. Recordation. Except as otherwise expressly provided herein, all provisions of this Agreement, including the benefits, burdens and covenants, are intended to run with the land and shall be binding upon and inure to the benefit of the respective successors and assigns of the Parties. The Town shall record this Agreement in timely fashion in the official records of Boulder County and may re-record it at any time as may be required to preserve its rights in this Agreement.

10. No Merger. It is the express intent of the Parties that the doctrine of merger shall not apply to this Agreement and there will be no merger of estate between the Easement and the Easement Property.

11. Miscellaneous.

a. *Governing Law and Venue*. This Agreement shall be governed by the laws of the State of Colorado, and any legal action concerning the provisions hereof shall be brought in Boulder County, Colorado.

b. *Integration*. This Agreement constitutes the entire agreement between the Parties, superseding all prior oral or written communications.

c. *No Waiver*. Delays in enforcement or the waiver of any one or more defaults or breaches of this Agreement by the Town shall not constitute a waiver of any of the other terms or obligation of this Agreement.

d. *Third Parties*. There are no intended third-party beneficiaries to this Agreement.

e. *Notice.* Any notice under this Agreement shall be in writing, and shall be deemed sufficient when directly presented or sent prepaid, first-class United States Mail to the Party at the address set forth on the first page of this Agreement.

f. *Severability.* If any provision of this Agreement is found by a court of competent jurisdiction to be unlawful or unenforceable for any reason, the remaining provisions hereof shall remain in full force and effect.

g. *Modification.* This Agreement may only be modified upon written agreement of the Parties.

h. *Governmental Immunity.* The Town and Grantor and each of their respective officers, attorneys and employees are relying on, and do not waive or intend to waive by any provision of this Agreement, the monetary limitations or any other rights, immunities, and protections provided by the Colorado Governmental Immunity Act, C.R.S. § 24-10-101, *et seq.*, as amended, or otherwise available to the Town and Grantor, and their respective officers, attorneys or employees by applicable law.

i. *Subject to Annual Appropriation.* Consistent with Article X, § 20 of the Colorado Constitution, any financial obligation of the Town or Grantor not performed during the current fiscal year is subject to annual appropriation, shall extend only to monies currently appropriated, and shall not constitute a mandatory charge, requirement, debt or liability beyond the current fiscal year.

j. *Force Majeure.* No Party shall be in breach of this Agreement if such Party's failure to perform any of the duties under this Agreement is due to Force Majeure, which shall be defined as the inability to undertake or perform any of the duties under this Agreement due to acts of God, floods, storms, fires, sabotage, terrorist attack, strikes, riots, war, labor disputes, forces of nature, the authority and orders of government or pandemics.

In Witness Whereof, the Parties have executed this Agreement as of the Effective Date.

Town of Erie, Colorado

Jennifer Carroll, Mayor

Attest:

Heidi Leatherwood, Town Clerk

Grantor

Saint Vrain Valley School District RE-1J

By: Brian Lamer

Brian Lamer

Assistant Superintendent of Operations

State of Colorado)
) ss.
County of Boulder)

The foregoing instrument was subscribed, sworn to, and acknowledged before me this 29th day of April, 2021, by Brian Lamer as the Asst Sup of St Vrain Valley Schools

My commission expires: 6/19/23

(Seal)

Helene Pronk

Notary Public

HELENE PRONK
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20044004542
MY COMMISSION EXPIRES JUNE 19, 2023

Exhibit A
Legal Description of Easement Property

Exhibit B
Depiction of Facilities

WATERLINE EASEMENT

A Waterline Easement in the Northwest One-Quarter of Section 24, Township 1 North, Range 69 West of the Sixth Principal Meridian, more particularly described as follows:

Basis of Bearings: Bearings are based upon the South Line of the Southeast One-Quarter of the Southwest One-Quarter of Section 13 Township 1 North, Range 69 West of the Sixth Principal Meridian, said to bear South 89°24'33" East, a distance of 1330.53 Feet, from the Southwest Corner of said Southeast One-Quarter of the Southwest One-Quarter of Section 13 monumented by a 2.5-Inch Aluminum Cap flush with ground surface, stamped "JR ENG, 1/2, S13, —, S24, 2000, LS 19606" to the South One-Quarter Corner of said Section 13 monumented by a 3.25" Aluminum Cap, 0.45' down in a range box with a lid marked "RANGE POINT", stamped "AZTEC CONSULTANTS INC, T1N R69W, S13, 1/4 -*, S24, 2004, LS 36580";

Commencing (P.O.C.) at said Southwest Corner of the Southeast One-Quarter of the Southwest One-Quarter of Section 13;

Thence South 89°24'33" East along said South Line, a distance of 259.43 Feet to the **POINT OF BEGINNING (P.O.B.)**;

Thence continuing South 89°24'33" East along said South Line, a distance of 30.28 Feet, whence said South One-Quarter Corner of Section 13 bears South 89°24'33" East, a distance of 1040.83 Feet;

Thence South 19°40'49" East, a distance of 72.72 Feet;

Thence South 06°52'43" East, a distance of 93.58 Feet;

Thence South 04°42'16" East, a distance of 160.25 Feet to the South Line of Tract H, Canyon Creek Subdivision Filing No. 2;

Thence North 89°24'32" West along said South Line of Tract H, a distance of 30.13 Feet;

Thence North 04°42'16" West, a distance of 156.90 Feet;

Thence North 06°52'43" West, a distance of 89.65 Feet;

Thence North 19°40'49" West, a distance of 72.64 Feet;

Thence North 07°10'36" West, a distance of 7.38 Feet to the **POINT OF BEGINNING (P.O.B.)**;

The above-described Easement description contains 9,797 Square Feet (0.225 Acres), more or less;

I hereby certify that the above Easement description was prepared under my direct supervision.



Eric D. Carson, PLS

Prepared for and on behalf of
CWC Consulting Group Inc.
9360 Teddy Lane, Suite #203
Lone Tree, Colorado 80124
Phone: (303) 395-2700

**SE 1/4
SW 1/4
SECTION 13**

**SW 1/4
SW 1/4
SECTION 13**

STRATUS CANYON CREEK, LLC

SOUTH ONE-QUARTER CORNER OF SECTION 13
3.25" ALUMINUM CAP, 0.45' DOWN IN A RANGE
BOX WITH A LID MARKED "RANGE POINT",
STAMPED "AZTEC CONSULTANTS INC, T1N
R69W, S13, 1/4 --, S24, 2004, LS 36580"

BASIS OF BEARINGS

SOUTH LINE OF THE SOUTHEAST ONE-QUARTER OF
THE SOUTHWEST ONE-QUARTER OF SECTION 13

S89°24'33"E 1330.53'
259.43' (TIE)

N07°10'36"W 7.38'

POINT OF COMMENCEMENT (P.O.C.)
SOUTHWEST CORNER OF THE SOUTHEAST
ONE-QUARTER OF THE SOUTHWEST
ONE-QUARTER OF SECTION 13
2.5" ALUMINUM CAP FLUSH WITH
GROUND SURFACE, STAMPED "JR ENG,
1/4, S13, ---, S24, 2000, LS 19606"

POINT OF BEGINNING
(P.O.B.)

S89°24'33"E
30.28'

1040.83' (TIE)

N18°40'49"W
72.64'

S19°40'49"E
72.72'

N06°52'43"W
89.65'

S06°52'43"E
93.58'

N04°42'16"W 156.90'

S04°42'16"E 160.25'

N89°24'32"W 30.13'

ST VRAIN VALLEY SCHOOL
DISTRICT RE-1J

TRACT H
CANYON CREEK
SUBDIVISION FILING NO. 2

**NW 1/4
SECTION 24**

SOUTH LINE OF TRACT H, CANYON CREEK
SUBDIVISION FILING NO. 2



9380 TEDDY LANE, SUITE #203
LONE TREE, COLORADO 80124
TELEPHONE: 303-395-2700
FAX 303-395-2701

CWC CONSULTING GROUP
CIVIL ENGINEERING • LAND SURVEYING • CONSTRUCTION SERVICES

**Exhibit
WATERLINE EASEMENT**

NOTE: THIS EXHIBIT DOES NOT REPRESENT A
MONUMENTED SURVEY. IT IS INTENDED ONLY TO
DEPICT THE ATTACHED DESCRIPTION.

DRAFTED: SLG3

DATE: 04/02/2021

PAGE: 2 OF 2

PREPARED FOR:

CHECKED: EDC

JOB NO. CWC#120-00237

SCALE: 1"=60'

STRATUS CANYON CREEK, LLC

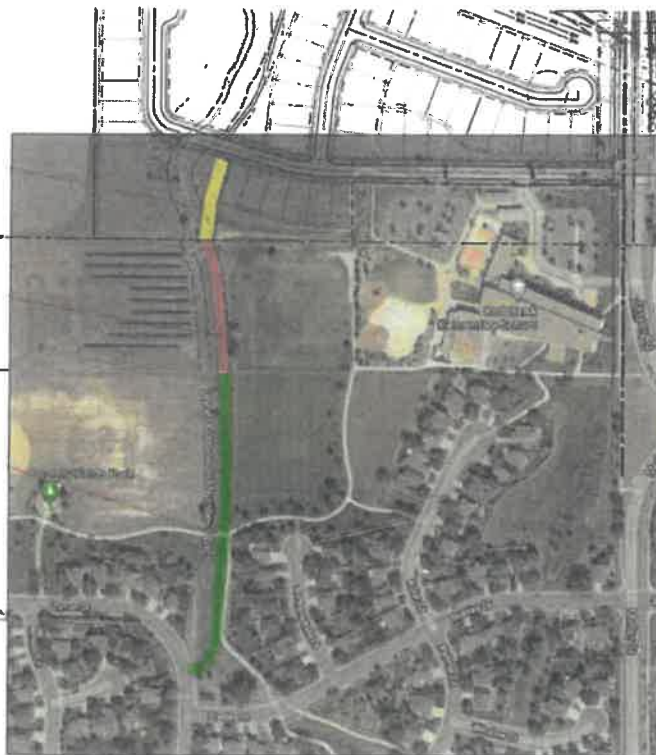
CANYON CREEK FILING NO.7 & NO.8 - PRELIMINARY CONSTRUCTION DOCUMENTS

A PARCEL OF LAND LOCATED IN THE SOUTH HALF OF SECTION 15, TOWNSHIP 1 NORTH, RANGE 68
WEST OF THE 6TH PRINCIPAL MERIDIAN
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO
PP-001100-2019

TO BE LOCATED
AREA IS PORTION OF
HATCHER AND HATCHER
LOCATED ON THE CANYON
NORTH HALF

BEFORE
AREA IS PORTION OF
HATCHER AND HATCHER
LOCATED ON THE CANYON
NORTH HALF

BEFORE
AREA IS PORTION OF
HATCHER AND HATCHER
LOCATED ON THE CANYON
NORTH HALF



NOTES:

1. AN ACCESS PATH FROM THE PROPERTY TO THE
EXISTING ROAD ON THE ADJACENT OWNER'S PROPERTY
PROPOSED LOCATION FOR A DRIVEWAY WILL BE
REQUIRED.

2. THE SCHOOL SITE WILL BE ADJACENT THE
PROPOSED PROPERTY AND THE SCHOOL SITE
A THE PROPOSED PROPERTY WILL BE ADJACENT THE
SCHOOL PROPERTY IN THE YEAR 2020. THE SCHOOL
PROPERTY WILL BE ADJACENT THE SCHOOL
PROPERTY IN THE YEAR 2020.

PROJECT NO.
CANYON CREEK FILING
NO. 7 & NO. 8
TOWN OF ERIE, COLORADO

CANYON CREEK FILING
NO. 7 & NO. 8
TOWN OF ERIE, COLORADO

PROJECT NO.

PROJECT NO.

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PROJECT NO.

PROJECT NO.

PROJECT NO.



LSC TRANSPORTATION CONSULTANTS, INC.

1889 York Street
Denver, CO 80206
(303) 333-1105
FAX (303) 333-1107
E-mail: lsc@lscdenver.com

July 16, 2019

Mr. Richard Dean
Stratus Companies, LLC
8480 E. Orchard Road, Suite 1100
Greenwood Village, CO 80111

Re: Canyon Creek 7 & 8
Erie, CO
LSC #190770

Dear Mr. Dean:

In response to your request, LSC Transportation Consultants, Inc. has prepared this Traffic Memorandum for the proposed Canyon Creek 7 & 8 residential development in Erie, Colorado. A full traffic impact study will be developed later in the review process if appropriate.

IMPACT AREA

Figure 1 shows the vicinity map.

Area Roadways

The major roadways in the site's vicinity are shown on Figure 1 and are described below.

- **Jasper Road** is an east-west, two-lane collector roadway west of the site at 119th Street. In the vicinity of the site, it turns southward for a quarter mile and then turns eastward again and changes names to Jay Road as it approaches County Line Road. The posted speed limit in the vicinity of the site is 35 mph. In the future Jasper Road is expected to continue south from Jay Road and connect to the existing Jasper Road alignment just north of Telleen Avenue. This will be a collector with on-street bike lanes.
- **Jay Road** is an east-west, two-lane collector roadway north of the site. The intersection with County Line Road is all-way stop-sign controlled, but planned to be signalized by 2040. The posted speed limit in the vicinity of the site is 30 mph.
- **County Line Road** is a north-south, two-lane minor arterial roadway east of the site. The intersection with Jay Road/Cheesman Street is all-way stop-sign controlled, but planned to be signalized by 2040. The posted speed limit in the vicinity of the site varies from 25 mph to 35 mph.

- **Meller Street** is a north-south, two-lane collector roadway south of the site with on-street bike lanes. It connects south to Erie Parkway at a signalized intersection. The posted speed limit is 25 mph.

PROPOSED LAND USE AND ACCESS

The site is proposed to include 109 single-family dwelling units and 88 townhome dwelling units. Full movement access is proposed to future Jasper Road and cross access is proposed to the adjacent Lafferty development to the north as shown in the conceptual site plan in Figure 2.

EXISTING TRAFFIC CONDITIONS

Figure 3 shows the existing lane geometries, traffic controls, posted speed limits, and traffic volumes in the site's vicinity on a typical weekday. The weekday peak-hour traffic volumes and daily traffic counts are from the attached traffic counts conducted by Counter Measures in February, 2019.

TRIP GENERATION

Table 1 shows the estimated typical weekday, morning peak-hour, and afternoon peak-hour trip generation expected to be generated by the site based on the rates from *Trip Generation, 10th Edition*, 2017, by the Institute of Transportation Engineers (ITE).

The site is projected to generate about 1,673 vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 29 vehicles would enter and about 91 vehicles would exit the site. During the afternoon peak-hour, which generally occurs for one hour between 4:00 and 6:00 p.m., about 99 vehicles would enter and about 58 vehicles would exit.

TRIP DISTRIBUTION

Figure 4 shows the estimated distribution of site-generated traffic once the area roadway connections are complete.

TRIP ASSIGNMENT

Figure 5 shows the assignment of site-generated traffic once the area roadway connections are complete.

SUMMARY

This traffic memorandum summarizes the existing conditions in the study area and estimates the directional distribution and assignment of site-generated trips. A full traffic impact study will be developed later in the review process if appropriate.

We trust this information will assist you in planning for the proposed Lafferty residential development.

Respectfully submitted,

LSC Transportation Consultants, Inc.

By:



Christopher S. McGranahan, P.E., PTOE
Principal



CSM/wc

7-16-19

Enclosure: Table 1
Figures 1 - 5
Traffic Counts

Table 1
ESTIMATED TRAFFIC GENERATION
Canyon Creek 7 & 8
Erie, CO
LSC #190770; July, 2019

Trip Generating Category	Quantity	Trip Generation Rates ⁽¹⁾					Vehicle-Trips Generated				
		Average	AM Peak-Hour		PM Peak-Hour		Average	AM Peak-Hour		PM Peak-Hour	
		Weekday	In	Out	In	Out	Weekday	In	Out	In	Out
PROPOSED LAND USE											
Single Family Housing ⁽²⁾	109 DU ⁽³⁾	9.44	0.185	0.555	0.624	0.366	1,029	20	60	68	40
Multifamily Housing ⁽⁴⁾	88 DU	7.32	0.106	0.354	0.353	0.207	644	9	31	31	18
Total =							1,673	29	91	99	58

Notes:

- (1) Source: *Trip Generation*, Institute of Transportation Engineers, 10th Edition, 2017.
- (2) ITE Land Use No. 210 - Single-Family Detached Housing
- (3) DU = Dwelling Units
- (4) ITE Land Use No. 220 - Multifamily Housing (Low-Rise)

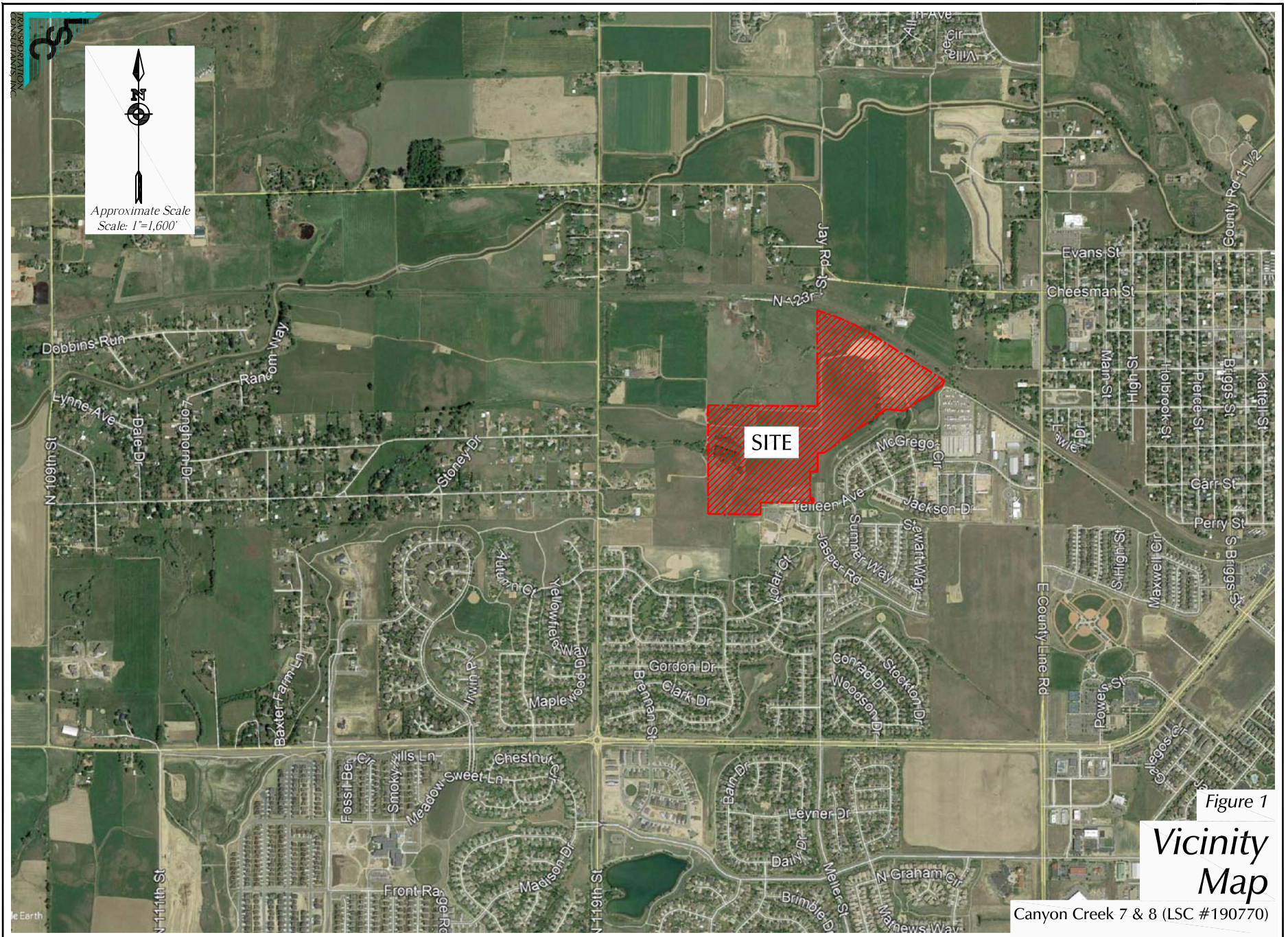


Figure 1

Vicinity Map

Canyon Creek 7 & 8 (LSC #190770)



Approximate Scale
Scale: 1"=600'

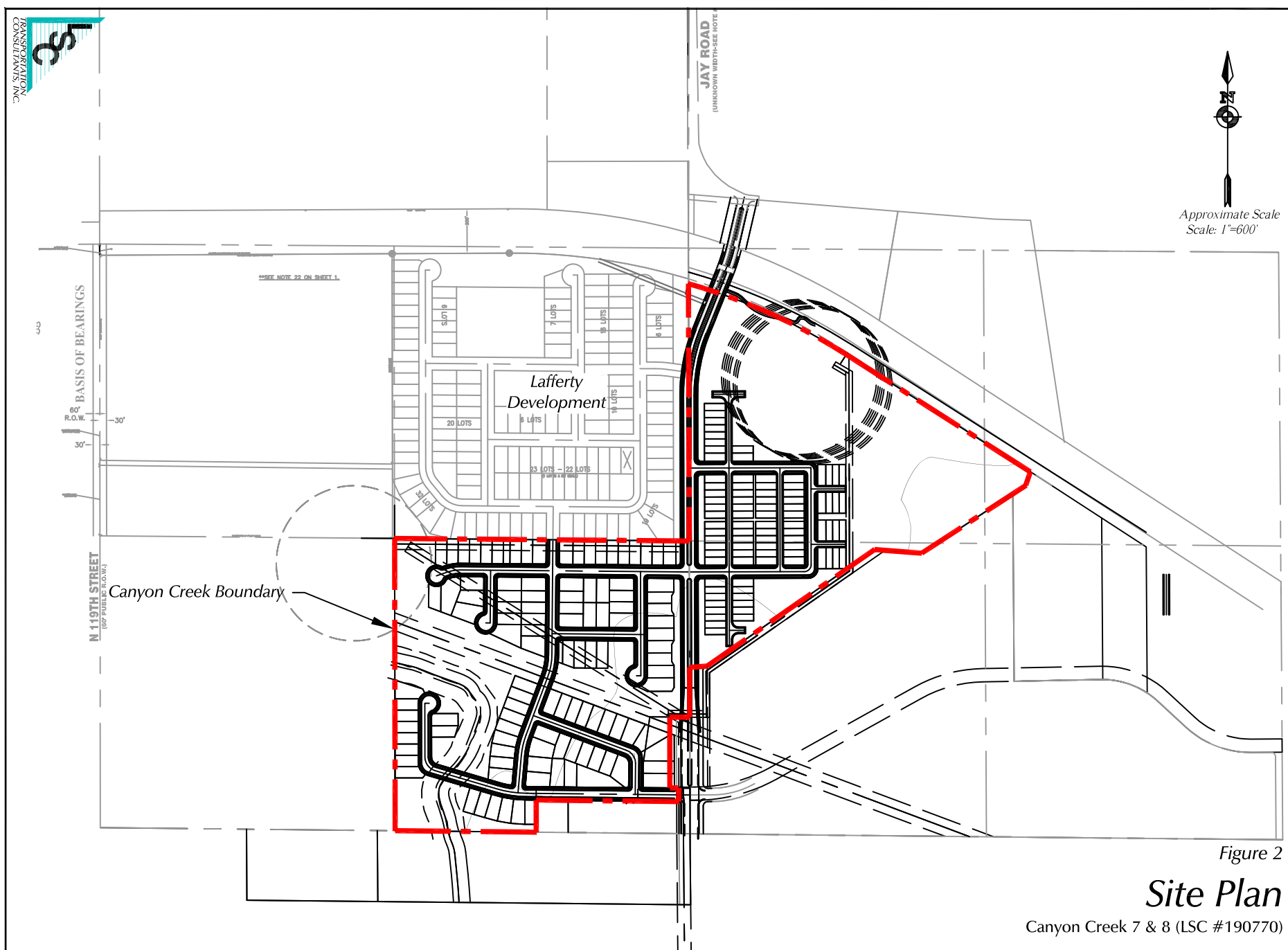
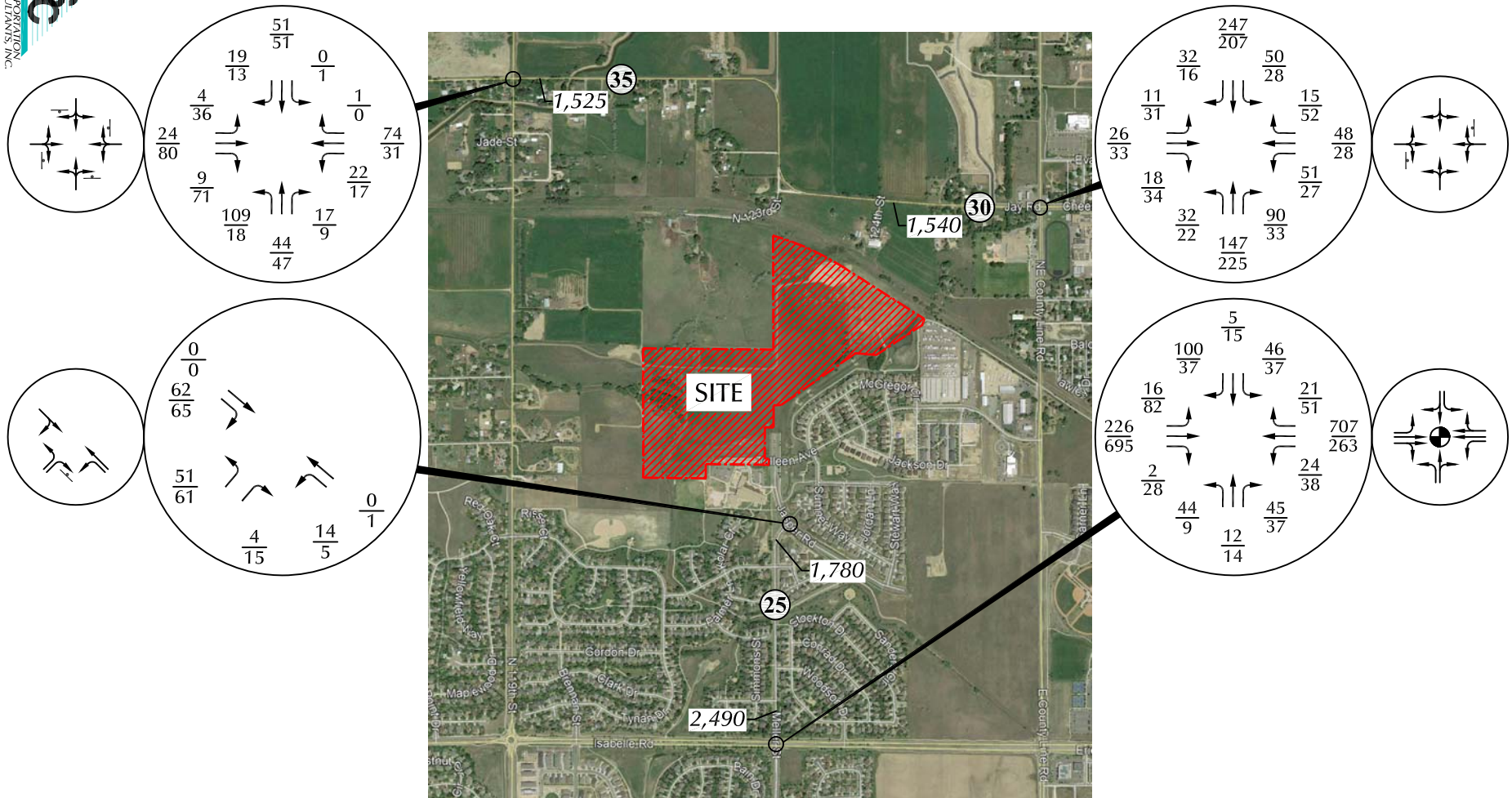


Figure 2

Site Plan

Canyon Creek 7 & 8 (LSC #190770)



LEGEND:

⊥ = Stop Sign

● = Traffic Signal

Ⓟ = Speed Limit

$\frac{26}{35}$ = AM Peak Hour Traffic
PM Peak Hour Traffic

2,500 = Average Daily Traffic

Figure 3

Existing Traffic, Lane Geometry and Traffic Control

Canyon Creek 7 & 8 (LSC #190770)



LEGEND:

65% = Percent Directional Distribution

Figure 4

Directional Distribution of Site-Generated Traffic

Canyon Creek 7 & 8 (LSC #190770)

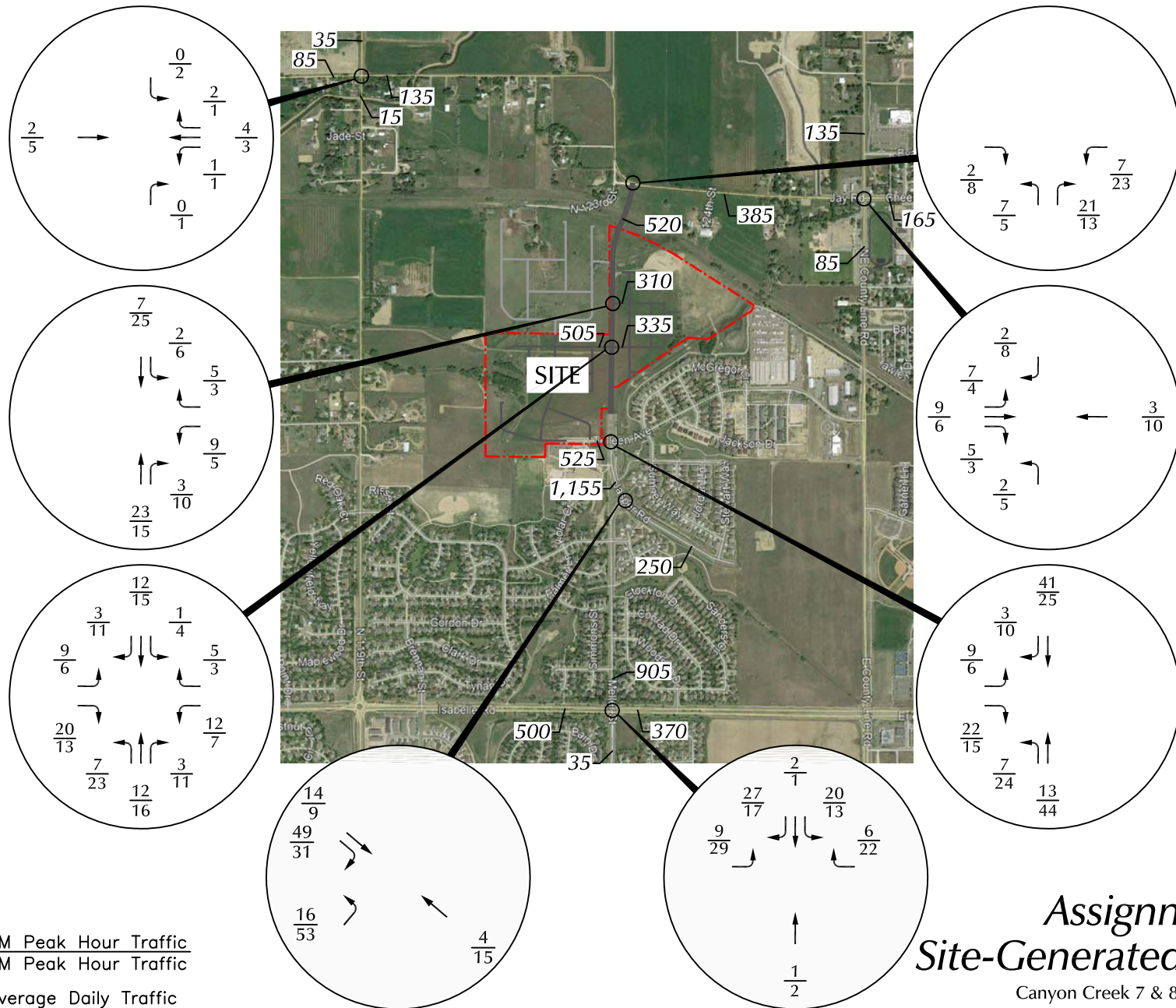


Figure 5

Assignment of Site-Generated Traffic

Canyon Creek 7 & 8 (LSC #190770)

Location: MELLER ST N/O ERIE PKWY
City: ERIE
County: WELD
Direction: NORTHBOUND-SOUTHBOUND

COUNTER MEASURES INC.
1889 YORK STREET
DENVER, COLORADO 80206
303-333-7409

Site Code: 192018
Station ID: 192018

Start Time	21-Feb-19 Thu	Direction 1	Direction 2	Total
12:00 AM		8	4	12
01:00		0	0	0
02:00		4	0	4
03:00		1	0	1
04:00		0	2	2
05:00		2	2	4
06:00		1	19	20
07:00		6	38	44
08:00		56	177	233
09:00		91	123	214
10:00		87	154	241
11:00		34	50	84
12:00 PM		52	63	115
01:00		52	55	107
02:00		62	55	117
03:00		51	55	106
04:00		149	66	215
05:00		100	168	268
06:00		135	96	231
07:00		113	76	189
08:00		95	37	132
09:00		53	22	75
10:00		44	15	59
11:00		14	5	19
Total		1210	1282	2492
Percent		48.6%	51.4%	
AM Peak	-	09:00	08:00	10:00
Vol.	-	91	177	241
PM Peak	-	16:00	17:00	17:00
Vol.	-	149	168	268

Location: MELLER ST S/O JASPER RD
City: ERIE
County: WELD
Direction: NORTHBOUND-SOUTHBOUND

COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

Site Code: 192011
Station ID: 192011

Start Time	21-Feb-19 Thu	NB	SB	Total
12:00 AM		1	3	4
01:00		0	1	1
02:00		2	0	2
03:00		1	0	1
04:00		0	0	0
05:00		1	1	2
06:00		1	5	6
07:00		3	13	16
08:00		63	100	163
09:00		111	80	191
10:00		100	143	243
11:00		17	21	38
12:00 PM		54	48	102
01:00		31	47	78
02:00		40	46	86
03:00		29	25	54
04:00		129	44	173
05:00		63	154	217
06:00		80	72	152
07:00		57	36	93
08:00		46	24	70
09:00		25	20	45
10:00		13	17	30
11:00		7	5	12
Total		874	905	1779
Percent		49.1%	50.9%	
AM Peak	-	09:00	10:00	-
Vol.	-	111	143	-
PM Peak	-	16:00	17:00	-
Vol.	-	129	154	-

Location: JAY RD E/O 119TH ST
City: ERIE
County: WELD
Direction: EASTBOUND-WESTBOUND

COUNTER MEASURES INC.
1889 YORK STREET
DENVER, COLORADO 80206
303-333-7409

Site Code: 192007
Station ID: 192007

Start Time	21-Feb-19	EB	WB							Total
12:00 AM		1	6							7
01:00		0	3							3
02:00		0	1							1
03:00		2	4							6
04:00		1	0							1
05:00		1	1							2
06:00		12	7							19
07:00		22	6							28
08:00		91	38							129
09:00		94	44							138
10:00		56	52							108
11:00		30	21							51
12:00 PM		40	40							80
01:00		39	56							95
02:00		33	41							74
03:00		40	51							91
04:00		54	68							122
05:00		47	105							152
06:00		32	100							132
07:00		31	74							105
08:00		24	44							68
09:00		19	30							49
10:00		20	22							42
11:00		10	13							23
Total		699	827							1526
Percent		45.8%	54.2%							
AM Peak	-	09:00	10:00	-	-	-	-	-	-	09:00
Vol.	-	94	52	-	-	-	-	-	-	138
PM Peak	-	16:00	17:00	-	-	-	-	-	-	17:00
Vol.	-	54	105	-	-	-	-	-	-	152

Location: JAY RD W/O COUNTY LINE RD
City: ERIE
County: WELD
Direction: EASTBOUND-WESTBOUND

COUNTER MEASURES INC.
1889 YORK STREET
DENVER, COLORADO 80206
303-333-7409

Site Code: 192001
Station ID: 192001

Start Time	21-Feb-19 Thu	EB	WB							Total
12:00 AM		6	1							7
01:00		3	0							3
02:00		1	0							1
03:00		3	1							4
04:00		0	1							1
05:00		2	1							3
06:00		5	11							16
07:00		5	19							24
08:00		34	85							119
09:00		46	96							142
10:00		55	59							114
11:00		24	35							59
12:00 PM		37	41							78
01:00		53	38							91
02:00		48	36							84
03:00		45	38							83
04:00		66	54							120
05:00		106	51							157
06:00		102	33							135
07:00		80	32							112
08:00		48	25							73
09:00		29	19							48
10:00		20	23							43
11:00		13	10							23
Total		831	709							1540
Percent		54.0%	46.0%							
AM Peak	-	10:00	09:00	-	-	-	-	-	-	09:00
Vol.	-	55	96	-	-	-	-	-	-	142
PM Peak	-	17:00	16:00	-	-	-	-	-	-	17:00
Vol.	-	106	54	-	-	-	-	-	-	157

COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: 119TH ST
E/W STREET: JASPER RD / JAY RD
CITY: ERIE
COUNTY: WELD

File Name : JASP119TH
Site Code : 00000022
Start Date : 2/20/2019
Page No : 1

Groups Printed- VEHICLES

	119TH ST Southbound				JAY RD Westbound				119TH ST Northbound				JASPER RD Eastbound				Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	4	4	0	0	11	0	0	7	6	1	0	0	0	0	0	33
06:45 AM	1	2	1	0	0	11	0	0	10	7	2	0	0	6	2	0	42
Total	1	6	5	0	0	22	0	0	17	13	3	0	0	6	2	0	75
07:00 AM	1	9	2	0	1	16	1	0	22	5	2	0	2	2	0	0	63
07:15 AM	0	14	2	0	3	24	1	0	24	7	4	0	0	3	2	0	84
07:30 AM	0	24	7	0	8	17	0	0	38	13	4	0	0	4	1	0	116
07:45 AM	0	6	6	0	7	20	0	0	24	7	7	0	3	10	4	0	94
Total	1	53	17	0	19	77	2	0	108	32	17	0	5	19	7	0	357
08:00 AM	0	7	4	0	4	13	0	0	23	17	2	0	1	7	2	0	80
08:15 AM	0	4	6	0	2	9	0	0	14	10	3	0	1	3	4	0	56
Total	0	11	10	0	6	22	0	0	37	27	5	0	2	10	6	0	136
04:00 PM	3	8	1	0	6	6	2	0	3	8	4	0	4	9	11	0	65
04:15 PM	0	14	2	0	6	2	0	0	6	8	5	0	4	24	11	0	82
04:30 PM	2	6	0	0	7	5	1	0	4	12	5	0	8	20	9	0	79
04:45 PM	1	13	3	0	4	9	0	0	8	12	2	0	6	19	17	0	94
Total	6	41	6	0	23	22	3	0	21	40	16	0	22	72	48	0	320
05:00 PM	0	12	1	0	5	4	0	0	3	15	3	0	10	15	18	0	86
05:15 PM	0	8	4	0	6	10	0	0	3	10	2	0	8	25	22	0	98
05:30 PM	0	18	5	0	2	8	0	0	4	10	2	0	12	21	14	0	96
05:45 PM	0	7	2	0	3	13	0	0	2	15	4	0	8	29	10	0	93
Total	0	45	12	0	16	35	0	0	12	50	11	0	38	90	64	0	373
Grand Total	8	156	50	0	64	178	5	0	195	162	52	0	67	197	127	0	1261
Apprch %	3.7	72.9	23.4	0.0	25.9	72.1	2.0	0.0	47.7	39.6	12.7	0.0	17.1	50.4	32.5	0.0	
Total %	0.6	12.4	4.0	0.0	5.1	14.1	0.4	0.0	15.5	12.8	4.1	0.0	5.3	15.6	10.1	0.0	

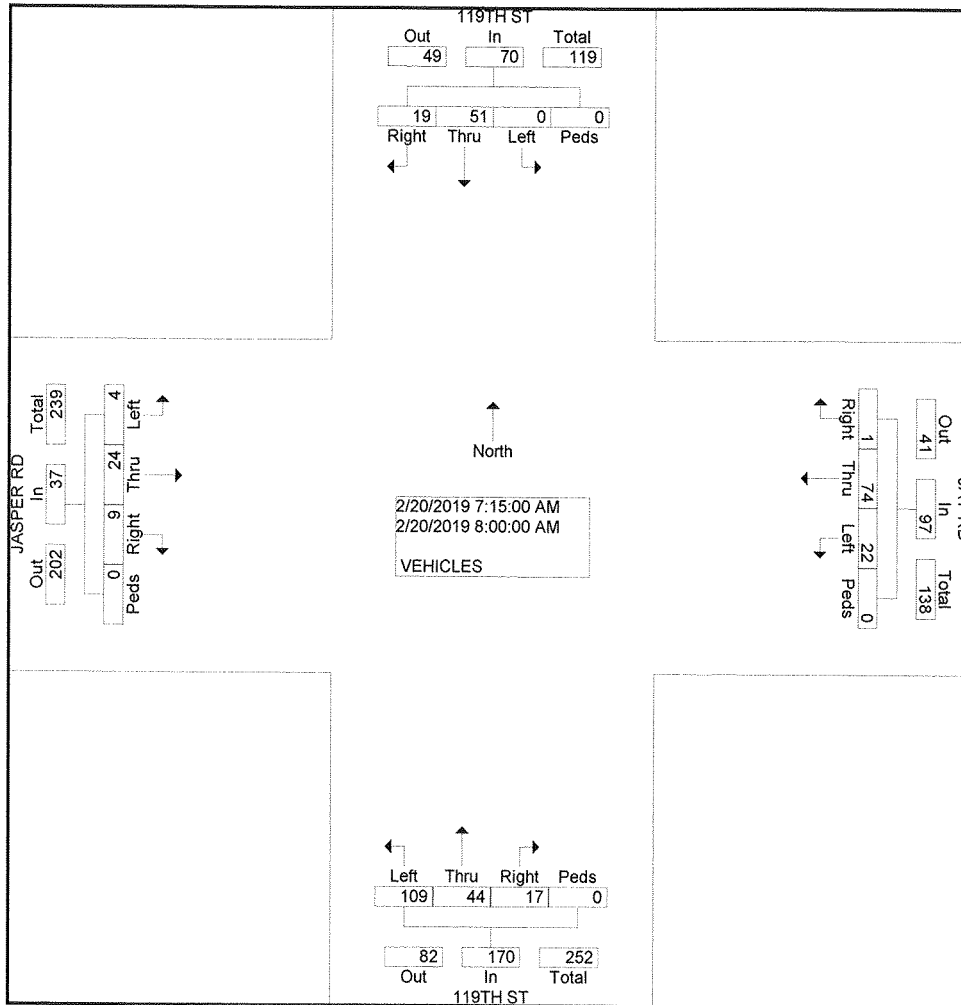
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: 119TH ST
E/W STREET: JASPER RD / JAY RD
CITY: ERIE
COUNTY: WELD

File Name : JASP119TH
Site Code : 00000022
Start Date : 2/20/2019
Page No : 2

	119TH ST Southbound					JAY RD Westbound					119TH ST Northbound					JASPER RD Eastbound					
Start Time	Left	Thr u	Rig ht	Ped s	App. Total	Left	Thr u	Rig ht	Ped s	App. Total	Left	Thr u	Rig ht	Ped s	App. Total	Left	Thr u	Rig ht	Ped s	App. Total	Int. Total
Peak Hour From 06:30 AM to 08:30 AM - Peak 1 of 1																					
Intersection	07:15 AM																				
Volume	0	51	19	0	70	22	74	1	0	97	109	44	17	0	170	4	24	9	0	37	374
Percent	0.0	72.9	27.1	0.0		22.7	76.3	1.0	0.0		64.1	25.9	10.0	0.0		10.8	64.9	24.3	0.0		
07:30 Volume	0	24	7	0	31	8	17	0	0	25	38	13	4	0	55	0	4	1	0	5	116
Peak Factor																					0.806
High Int. Volume	07:30 AM					07:15 AM					07:30 AM					07:45 AM					
Peak Factor	0	24	7	0	31	3	24	1	0	28	38	13	4	0	55	3	10	4	0	17	
	0.56					0.86					0.77					0.54					4
	5					6					3										



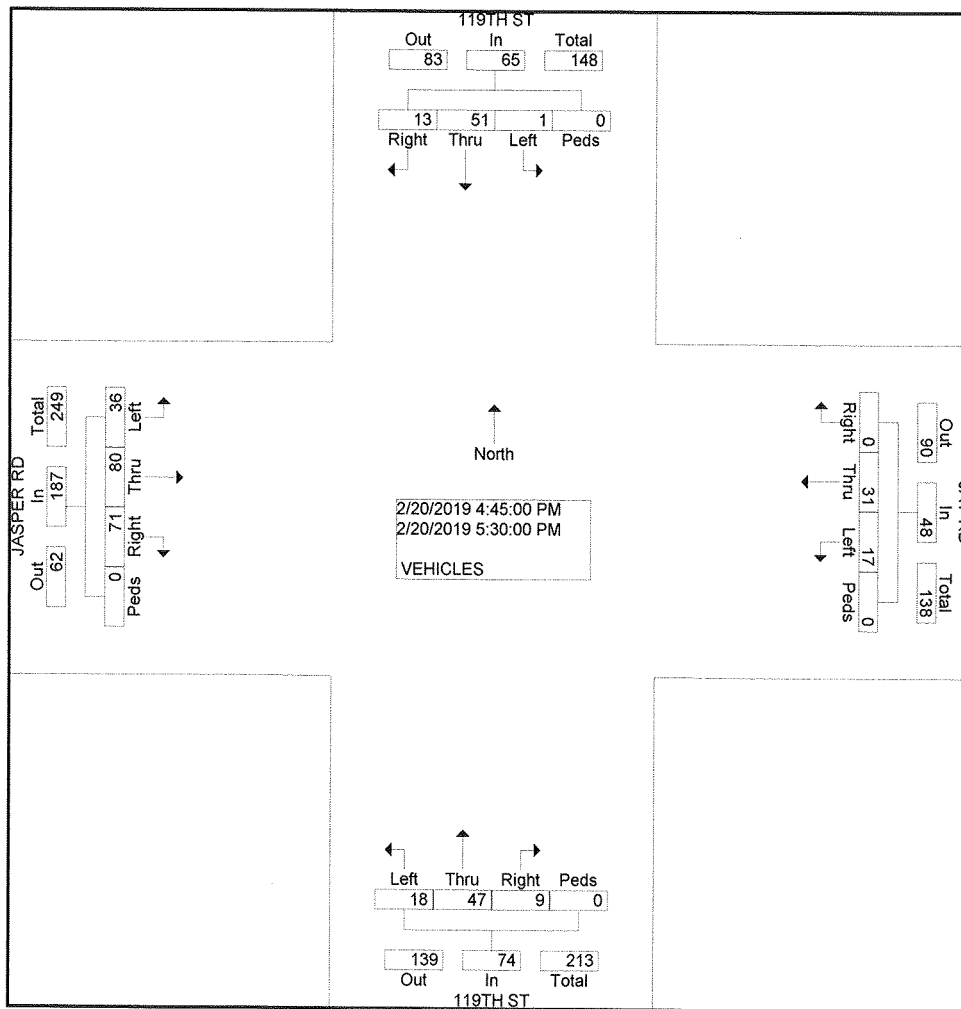
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: 119TH ST
E/W STREET: JASPER RD / JAY RD
CITY: ERIE
COUNTY: WELD

File Name : JASP119TH
Site Code : 00000022
Start Date : 2/20/2019
Page No : 2

	119TH ST Southbound					JAY RD Westbound					119TH ST Northbound					JASPER RD Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:45 PM																				
Volume	1	51	13	0	65	17	31	0	0	48	18	47	9	0	74	36	80	71	0	187	374
Percent	1.5	78.5	20.0	0.0		35.4	64.6	0.0	0.0		24.3	63.5	12.2	0.0		19.3	42.8	38.0	0.0		
05:15 Volume	0	8	4	0	12	6	10	0	0	16	3	10	2	0	15	8	25	22	0	55	98
Peak Factor																					0.954
High Int. Volume	05:30 PM					05:15 PM					04:45 PM					05:15 PM					
Peak Factor	0	18	5	0	23.7	6	10	0	0	16.75	8	12	2	0	22.84	8	25	22	0	55.85	0



COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: MELLER ST
E/W STREET: JASPER RD
CITY: ERIE
COUNTY: WELD

File Name : MELLJASP
Site Code : 00000011
Start Date : 2/20/2019
Page No : 1

Groups Printed- VEHICLES

	Southbound				JASPER RD Westbound				MELLER ST Northbound				JASPER RD Eastbound				Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	0	0	0	0	1	0	0	0	3	0	0	1	0	0	4	1	10
06:45 AM	0	0	0	0	2	0	0	0	6	0	0	0	0	0	5	0	13
Total	0	0	0	0	3	0	0	0	9	0	0	1	0	0	9	1	23
07:00 AM	0	0	0	0	2	0	0	0	11	0	0	0	0	0	14	0	27
07:15 AM	0	0	0	0	5	0	0	0	12	0	1	0	0	0	10	0	28
07:30 AM	0	0	0	0	2	0	0	0	14	0	0	0	0	0	21	0	37
07:45 AM	0	0	0	1	4	0	0	0	16	0	1	0	0	0	13	0	35
Total	0	0	0	1	13	0	0	0	53	0	2	0	0	0	58	0	127
08:00 AM	0	0	0	0	3	0	0	0	9	0	2	0	0	0	18	1	33
08:15 AM	0	0	0	0	3	0	0	0	20	0	2	0	0	0	9	0	34
Total	0	0	0	0	6	0	0	0	29	0	4	0	0	0	27	1	67
04:00 PM	0	0	0	0	2	0	0	0	14	0	6	0	0	0	23	0	45
04:15 PM	0	0	0	0	0	0	0	0	11	0	1	0	0	0	12	2	26
04:30 PM	0	0	0	0	6	0	0	0	11	0	3	1	0	1	10	0	32
04:45 PM	0	0	0	0	3	1	0	0	15	0	4	3	0	0	11	0	37
Total	0	0	0	0	11	1	0	0	51	0	14	4	0	1	56	2	140
05:00 PM	0	0	0	0	0	0	0	0	13	0	2	0	0	0	19	1	35
05:15 PM	0	0	0	0	1	0	0	0	16	0	3	0	0	0	19	1	40
05:30 PM	0	0	0	0	1	0	0	0	17	0	6	0	0	0	16	0	40
05:45 PM	0	0	0	0	1	0	0	0	18	0	4	0	0	0	10	0	33
Total	0	0	0	0	3	0	0	0	64	0	15	0	0	0	64	2	148
Grand Total	0	0	0	1	36	1	0	0	206	0	35	5	0	1	214	6	505
Apprch %	0.0	0.0	0.0	100.0	97.3	2.7	0.0	0.0	83.7	0.0	14.2	2.0	0.0	0.5	96.8	2.7	
Total %	0.0	0.0	0.0	0.2	7.1	0.2	0.0	0.0	40.8	0.0	6.9	1.0	0.0	0.2	42.4	1.2	

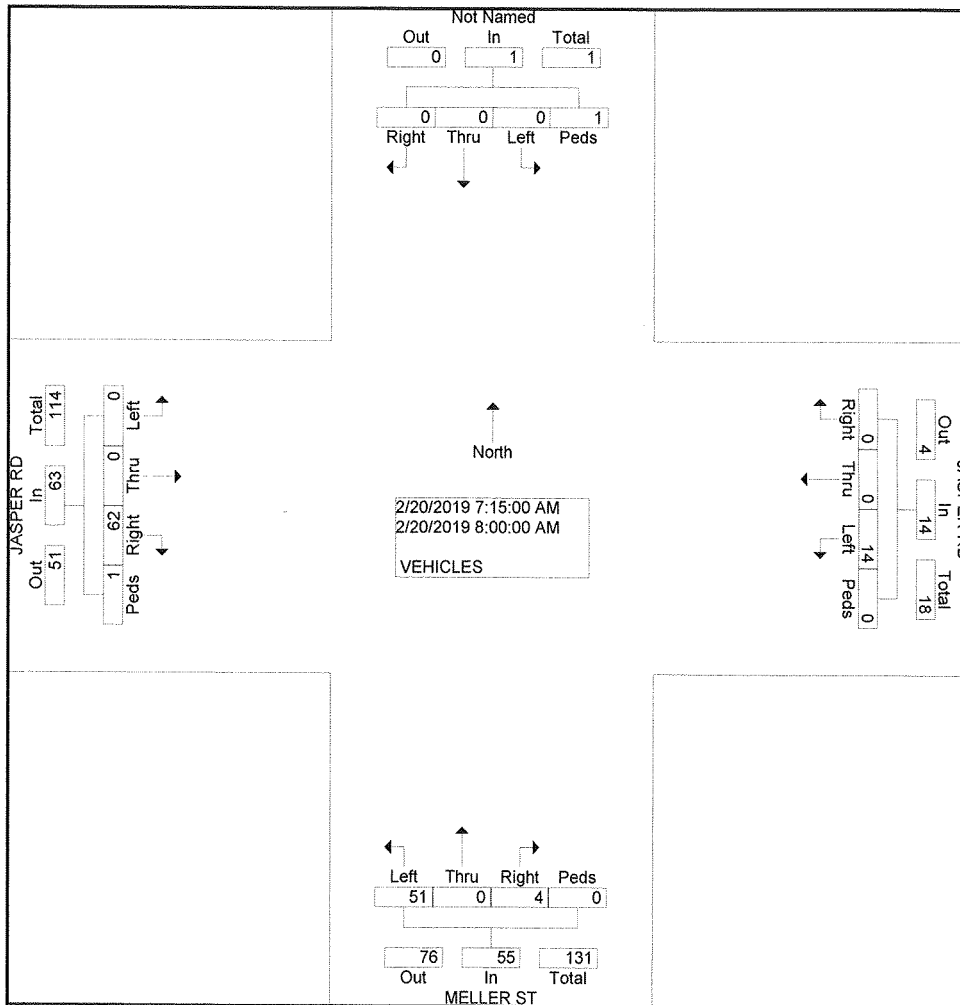
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: MELLER ST
E/W STREET: JASPER RD
CITY: ERIE
COUNTY: WELD

File Name : MELLJASP
Site Code : 00000011
Start Date : 2/20/2019
Page No : 2

Start Time	Southbound					JASPER RD Westbound					MELLER ST Northbound					JASPER RD Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 07:15 AM to 08:00 AM - Peak 1 of 1																					
Intersection	07:15 AM																				
Volume	0	0	0	1	1	14	0	0	0	14	51	0	4	0	55	0	0	62	1	63	133
Percent	0.0	0.0	0.0	100.0		100.0	0.0	0.0	0.0		92.7	0.0	7.3	0.0		0.0	0.0	98.4	1.6		
07:30 Volume	0	0	0	0	0	2	0	0	0	2	14	0	0	0	14	0	0	21	0	21	37
Peak Factor																					0.899
High Int.	07:45 AM					07:15 AM					07:45 AM					07:30 AM					
Volume	0	0	0	1	1	5	0	0	0	5	16	0	1	0	17	0	0	21	0	21	
Peak Factor					0.25					0.70					0.80					0.75	
					0					0					9					0	



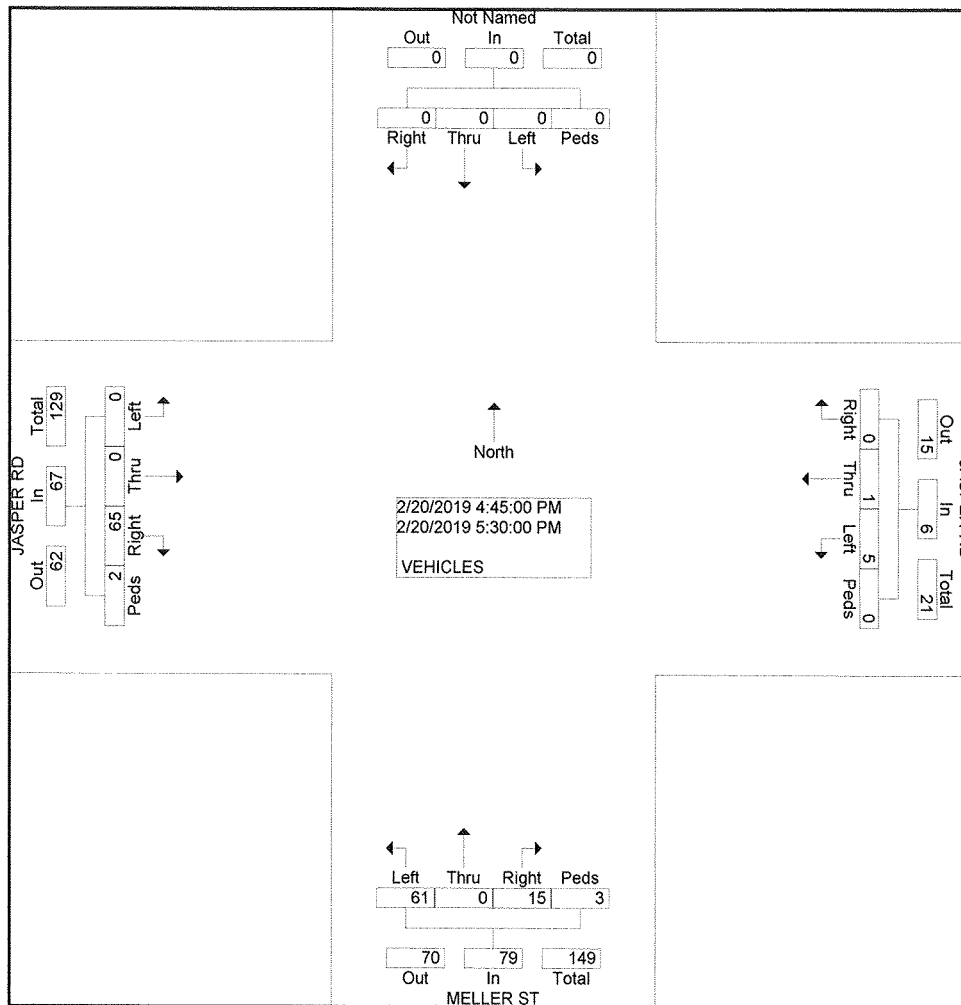
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: MELLER ST
E/W STREET: JASPER RD
CITY: ERIE
COUNTY: WELD

File Name : MELLJASP
Site Code : 00000011
Start Date : 2/20/2019
Page No : 2

Start Time	Southbound					JASPER RD Westbound					MELLER ST Northbound					JASPER RD Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 04:45 PM to 05:30 PM - Peak 1 of 1																					
Intersection	04:45 PM																				
Volume	0	0	0	0	0	5	1	0	0	6	61	0	15	3	79	0	0	65	2	67	152
Percent	0.0	0.0	0.0	0.0		83.3	16.7	0.0	0.0		77.2	0.0	19.0	3.8		0.0	0.0	97.0	3.0		
05:30 Volume	0	0	0	0	0	1	0	0	0	1	17	0	6	0	23	0	0	16	0	16	40
Peak Factor																					0.950
High Int. Volume	0	0	0	0	0	04:45 PM					05:30 PM					05:00 PM					
Peak Factor						3	1	0	0	4	17	0	6	0	23	0	0	19	1	20	
										0.37					0.85					0.83	
										5					9					8	



COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: COUNTY LINE RD
E/W STREET: CHEESMAN ST
CITY: ERIE
COUNTY: WELD

File Name : COUNCHEE
Site Code : 00000010
Start Date : 2/20/2019
Page No : 1

Groups Printed- VEHICLES

	COUNTY LINE RD Southbound				CHEESMAN ST Westbound				COUNTY LINE RD Northbound				CHEESMAN ST Eastbound				Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	2	21	4	0	6	5	5	0	2	15	5	0	1	0	0	0	66
06:45 AM	13	34	4	0	11	7	3	0	2	35	10	0	2	4	2	0	127
Total	15	55	8	0	17	12	8	0	4	50	15	0	3	4	2	0	193
07:00 AM	9	40	5	0	6	8	1	0	11	27	12	0	2	9	2	0	132
07:15 AM	12	65	10	0	12	7	3	0	15	31	9	0	2	2	6	0	174
07:30 AM	13	50	8	0	11	15	4	0	5	29	25	0	4	4	2	0	170
07:45 AM	19	79	6	0	19	17	2	0	7	43	50	0	2	16	6	0	266
Total	53	234	29	0	48	47	10	0	38	130	96	0	10	31	16	0	742
08:00 AM	6	53	8	0	9	9	6	0	5	44	6	0	3	4	4	0	157
08:15 AM	13	27	3	0	12	6	4	0	2	33	3	0	3	5	3	0	114
Total	19	80	11	0	21	15	10	0	7	77	9	0	6	9	7	0	271
04:00 PM	16	41	8	0	10	5	12	0	6	55	13	0	6	7	7	0	186
04:15 PM	10	56	4	0	5	5	17	0	3	51	11	0	8	15	7	0	192
04:30 PM	12	56	2	0	6	8	17	0	6	58	2	0	10	12	9	0	198
04:45 PM	7	42	2	0	9	9	8	0	5	57	6	0	5	12	5	0	167
Total	45	195	16	0	30	27	54	0	20	221	32	0	29	46	28	0	743
05:00 PM	5	53	5	0	6	6	15	0	7	62	9	0	9	6	3	0	186
05:15 PM	12	62	4	0	8	7	17	0	6	60	12	0	9	8	12	0	217
05:30 PM	4	50	5	0	4	6	12	0	4	46	6	0	8	7	14	0	166
05:45 PM	6	51	1	0	16	6	10	0	3	41	11	0	9	13	10	0	177
Total	27	216	15	0	34	25	54	0	20	209	38	0	35	34	39	0	746
Grand Total	159	780	79	0	150	126	136	0	89	687	190	0	83	124	92	0	2695
Apprch %	15.6	76.6	7.8	0.0	36.4	30.6	33.0	0.0	9.2	71.1	19.7	0.0	27.8	41.5	30.8	0.0	
Total %	5.9	28.9	2.9	0.0	5.6	4.7	5.0	0.0	3.3	25.5	7.1	0.0	3.1	4.6	3.4	0.0	

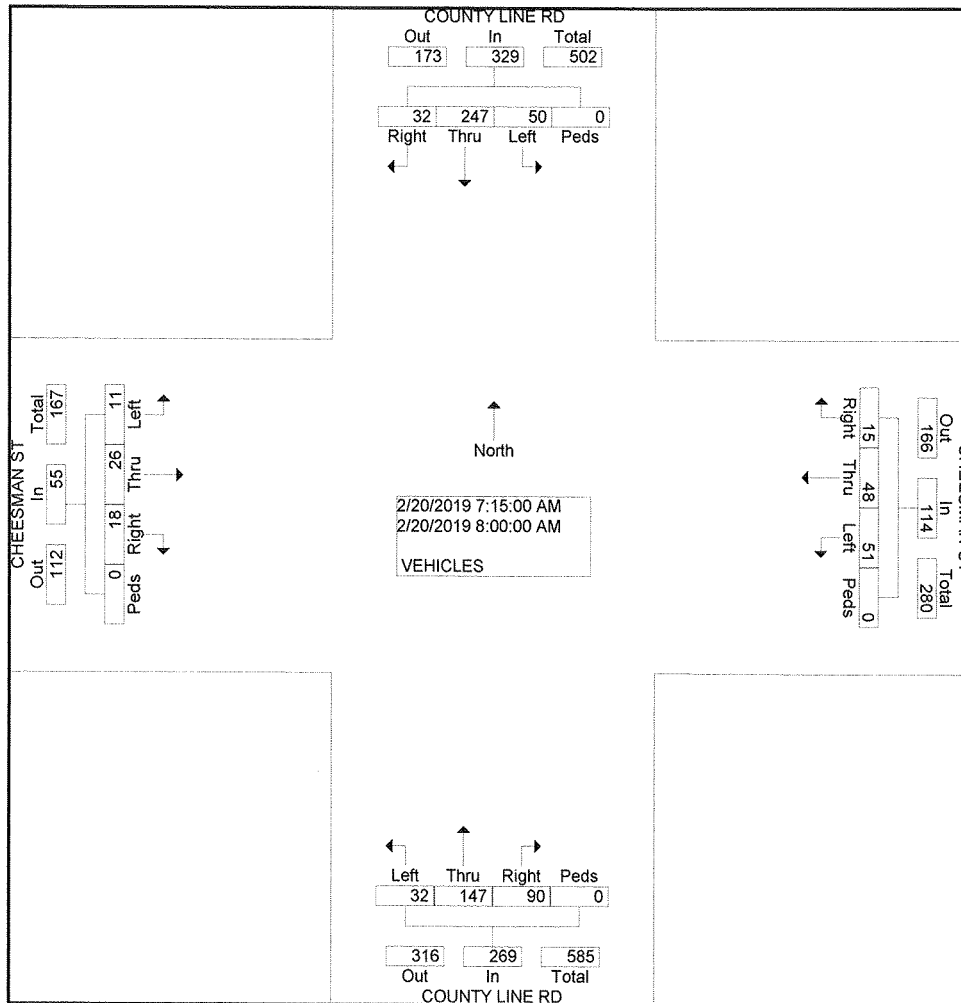
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: COUNTY LINE RD
E/W STREET: CHEESMAN ST
CITY: ERIE
COUNTY: WELD

File Name : COUNCHEE
Site Code : 00000010
Start Date : 2/20/2019
Page No : 2

	COUNTY LINE RD Southbound					CHEESMAN ST Westbound					COUNTY LINE RD Northbound					CHEESMAN ST Eastbound					
Start Time	Left	Thr u	Rig ht	Ped s	App. Total	Left	Thr u	Rig ht	Ped s	App. Total	Left	Thr u	Rig ht	Ped s	App. Total	Left	Thr u	Rig ht	Ped s	App. Total	Int. Total
Peak Hour From 06:30 AM to 08:30 AM - Peak 1 of 1																					
Intersection	07:15 AM																				
Volume	50	247	32	0	329	51	48	15	0	114	32	147	90	0	269	11	26	18	0	55	767
Percent	15.2	75.1	9.7	0.0		44.7	42.1	13.2	0.0		11.9	54.6	33.5	0.0		20.0	47.3	32.7	0.0		
07:45 Volume	19	79	6	0	104	19	17	2	0	38	7	43	50	0	100	2	16	6	0	24	266
Peak Factor																					0.721
High Int.	07:45 AM					07:45 AM					07:45 AM					07:45 AM					
Volume	19	79	6	0	104	19	17	2	0	38	7	43	50	0	100	2	16	6	0	24	
Peak Factor																					0.573
	0.791										0.750					0.673					



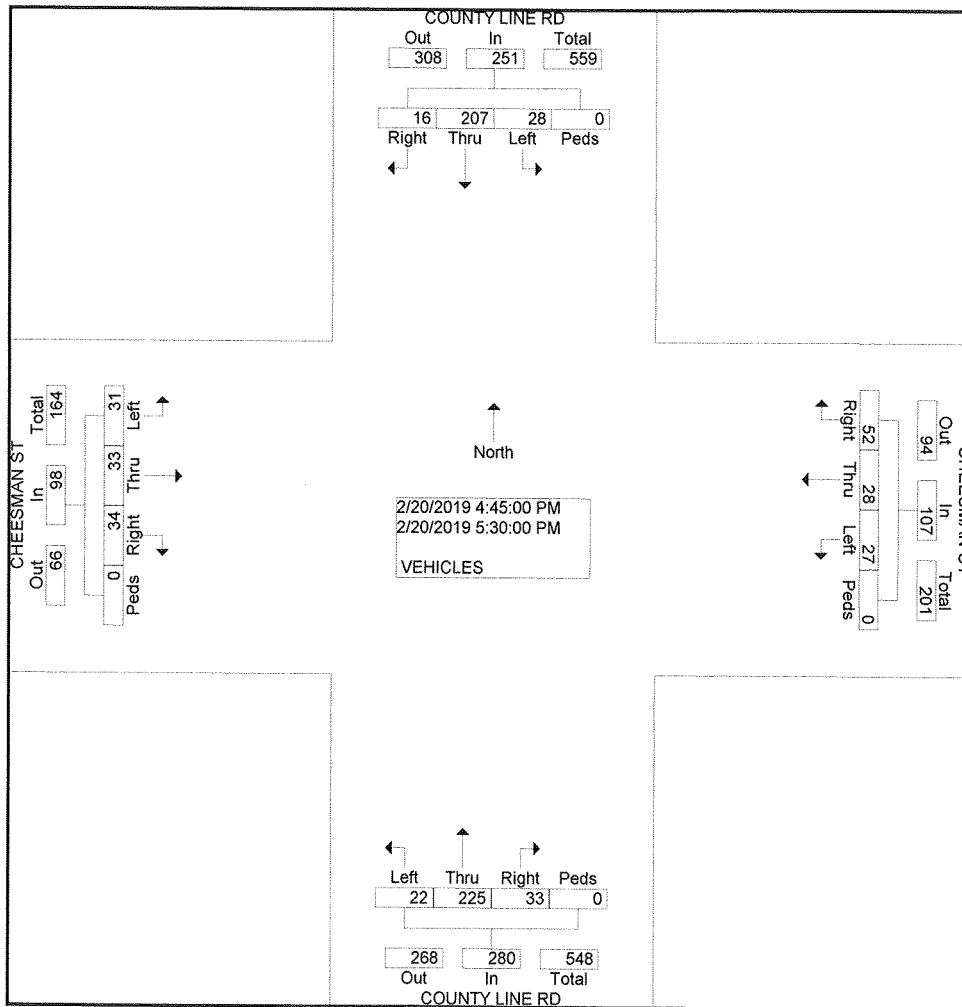
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N/S STREET: COUNTY LINE RD
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Start Date : 2/20/2019
Page No : 2

	COUNTY LINE RD Southbound					CHEESMAN ST Westbound					COUNTY LINE RD Northbound					CHEESMAN ST Eastbound					
Start Time	Left	Thr u	Rig ht	Ped s	App. Total	Left	Thr u	Rig ht	Ped s	App. Total	Left	Thr u	Rig ht	Ped s	App. Total	Left	Thr u	Rig ht	Ped s	App. Total	Int. Total
Peak Hour From 04:45 PM to 05:30 PM - Peak 1 of 1																					
Intersection	04:45 PM																				
Volume	28	207	16	0	251	27	28	52	0	107	22	225	33	0	280	31	33	34	0	98	736
Percent	11.	82.	6.4	0.0		25.	26.	48.	0.0		7.9	80.	11.	0.0		31.	33.	34.	0.0		
	2	5				2	2	6				4	8			6	7	7			
05:15 Volume	12	62	4	0	78	8	7	17	0	32	6	60	12	0	78	9	8	12	0	29	217
Peak Factor																					0.848
High Int.	05:15 PM					05:15 PM					05:00 PM					05:15 PM					
Volume	12	62	4	0	78	8	7	17	0	32	7	62	9	0	78	9	8	12	0	29	
Peak Factor	0.80					0.83					0.89					0.84					5
	4					6					7										



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1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: MELLER ST
E/W STREET: ERIE PKWY
CITY: ERIE
COUNTY: WELD

File Name : MELLERIE
Site Code : 00000026
Start Date : 2/20/2019
Page No : 1

Groups Printed- VEHICLES

	MELLER ST Southbound				ERIE PKWY Westbound				MELLER ST Northbound				ERIE PKWY Eastbound				Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	5	0	11	0	2	84	2	0	9	1	10	0	1	28	1	0	154
06:45 AM	10	0	15	0	4	93	2	2	4	3	8	0	1	42	0	0	184
Total	15	0	26	0	6	177	4	2	13	4	18	0	2	70	1	0	338
07:00 AM	12	2	22	0	2	155	3	0	7	2	12	0	3	43	1	0	264
07:15 AM	12	2	30	0	4	156	5	0	15	5	10	0	2	62	0	0	303
07:30 AM	18	1	28	0	3	198	5	0	9	4	13	0	3	42	1	0	325
07:45 AM	8	0	26	1	8	166	5	0	12	3	15	0	4	65	0	0	313
Total	50	5	106	1	17	675	18	0	43	14	50	0	12	212	2	0	1205
08:00 AM	8	2	16	1	9	187	6	0	8	0	7	0	7	57	1	0	309
08:15 AM	4	3	21	0	3	150	4	0	10	2	7	0	13	47	2	0	266
Total	12	5	37	1	12	337	10	0	18	2	14	0	20	104	3	0	575
04:00 PM	7	2	11	4	14	83	10	0	4	3	6	0	17	123	6	1	291
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04:30 PM	13	3	9	1	12	76	15	0	1	1	7	0	22	141	8	0	309
04:45 PM	10	3	4	0	14	58	13	0	3	4	12	0	25	191	9	0	346
Total	42	8	31	7	50	278	49	0	9	10	36	0	75	612	27	2	1236
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05:30 PM	10	4	9	0	10	67	12	0	3	1	10	2	27	168	7	0	330
05:45 PM	12	1	6	0	10	70	14	0	0	2	3	0	21	150	8	0	297
Total	39	13	39	1	34	275	52	0	6	12	28	2	78	654	27	0	1260
Grand Total	158	31	239	10	119	1742	133	2	89	42	146	2	187	1652	60	2	4614
Apprch %	36.1	7.1	54.6	2.3	6.0	87.3	6.7	0.1	31.9	15.1	52.3	0.7	9.8	86.9	3.2	0.1	
Total %	3.4	0.7	5.2	0.2	2.6	37.8	2.9	0.0	1.9	0.9	3.2	0.0	4.1	35.8	1.3	0.0	

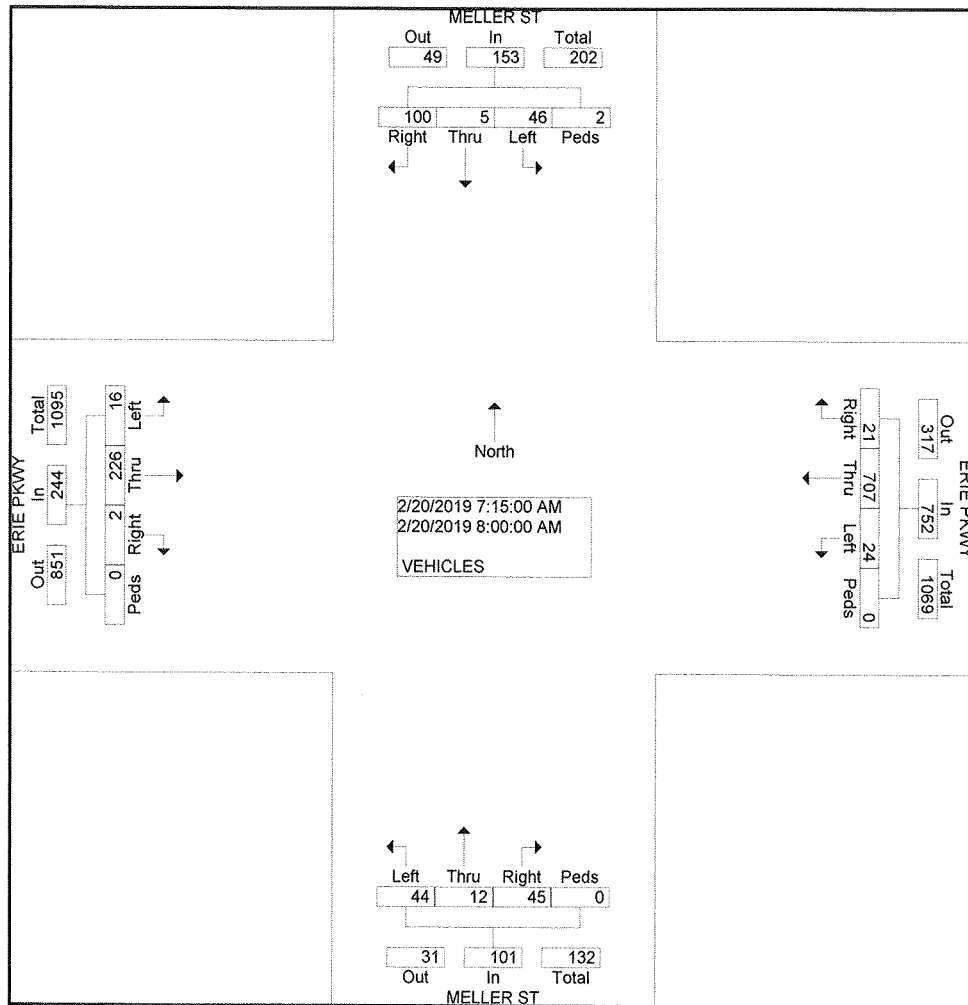
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

N/S STREET: MELLER ST
E/W STREET: ERIE PKWY
CITY: ERIE
COUNTY: WELD

File Name : MELLERIE
Site Code : 00000026
Start Date : 2/20/2019
Page No : 2

	MELLER ST Southbound					ERIE PKWY Westbound					MELLER ST Northbound					ERIE PKWY Eastbound					
Start Time	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Left	Thru	Rig ht	Ped s	App. Total	Int. Total
Peak Hour From 06:30 AM to 08:30 AM - Peak 1 of 1																					
Intersection	07:15 AM																				
Volume	46	5	100	2	153	24	707	21	0	752	44	12	45	0	101	16	226	2	0	244	1250
Percent	30.1	3.3	65.4	1.3		3.2	94.0	2.8	0.0		43.6	11.9	44.6	0.0		6.6	92.6	0.8	0.0		
07:30 Volume	18	1	28	0	47	3	198	5	0	206	9	4	13	0	26	3	42	1	0	46	325
Peak Factor																					0.962
High Int. Volume	07:30 AM					07:30 AM					07:15 AM					07:45 AM					
Peak Factor	18	1	28	0	47	3	198	5	0	206	15	5	10	0	30	4	65	0	0	69	
	0.81					0.91					0.84					0.88					
	4					3					2					4					



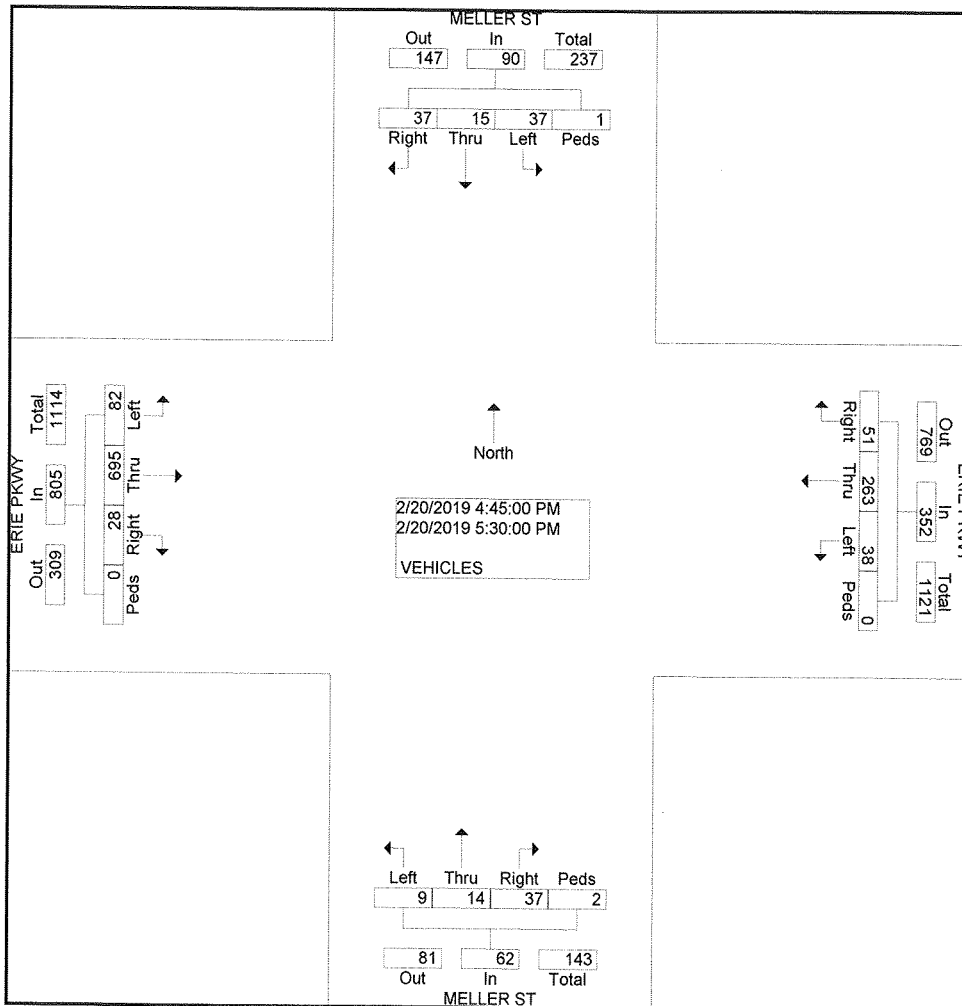
COUNTER MEASURES INC.

1889 YORK STREET
DENVER, COLORADO
303-333-7409

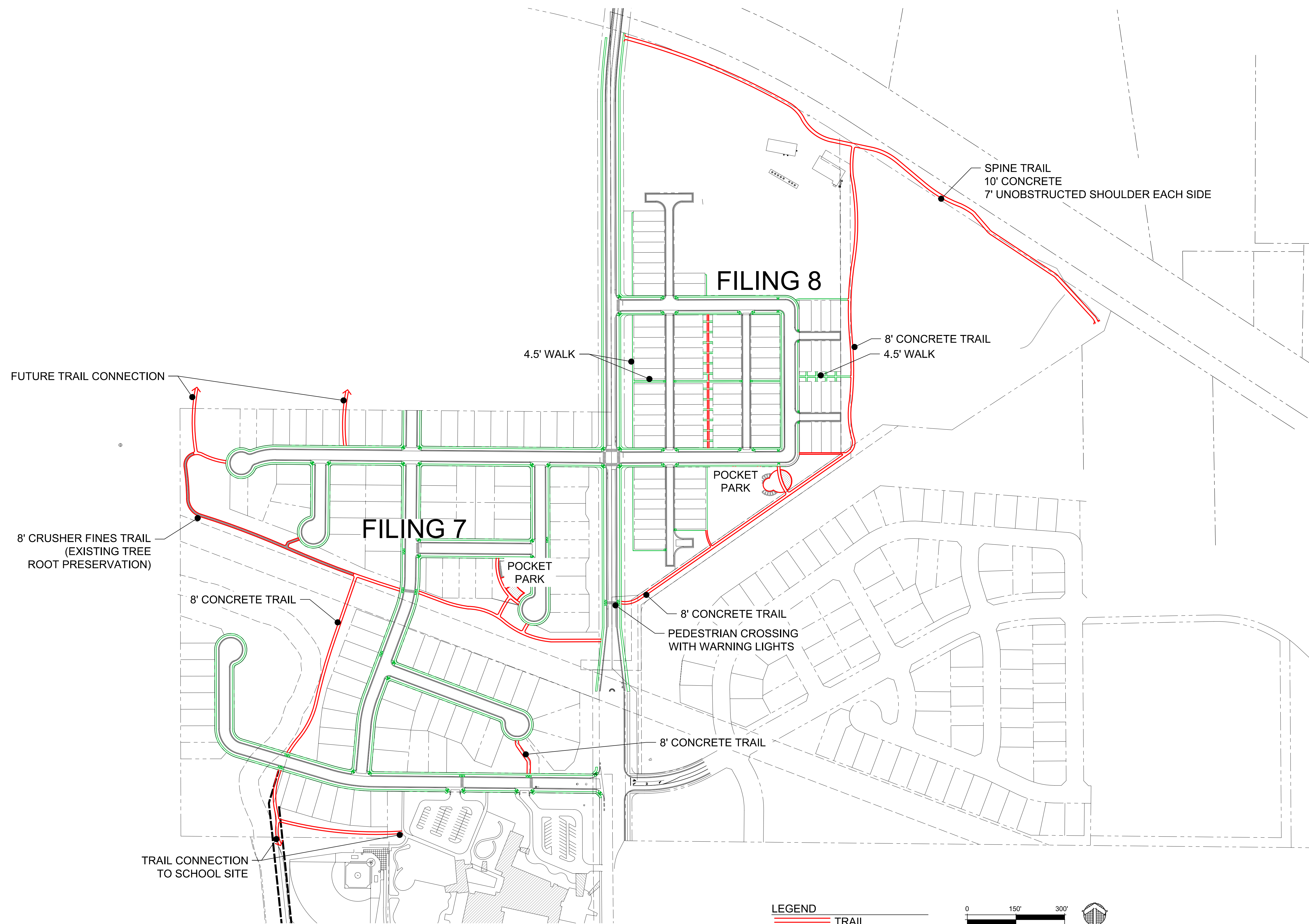
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E/W STREET: ERIE PKWY
CITY: ERIE
COUNTY: WELD

File Name : MELLERIE
Site Code : 00000026
Start Date : 2/20/2019
Page No : 2

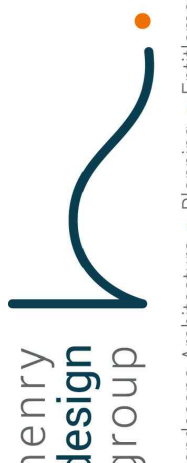

	MELLER ST Southbound					ERIE PKWY Westbound					MELLER ST Northbound					ERIE PKWY Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour	From 04:00 PM to 05:45 PM - Peak 1 of 1																				
Intersection	04:45 PM																				
Volume	37	15	37	1	90	38	263	51	0	352	9	14	37	2	62	82	695	28	0	805	1309
Percent	41.	16.	41.	1.1		10.	74.	14.	0.0		14.	22.	59.	3.2		10.	86.	3.5	0.0		
	1	7	1			8	7	5			5	6	7			2	3				
04:45 Volume	10	3	4	0	17	14	58	13	0	85	3	4	12	0	19	25	191	9	0	225	346
Peak Factor																					0.946
High Int.	05:00 PM					05:00 PM					04:45 PM					04:45 PM					
Volume	11	4	14	0	29	9	74	14	0	97	3	4	12	0	19	25	191	9	0	225	
Peak																					
Factor	0.77					0.90					0.81					0.89					
	6					7					6					4					

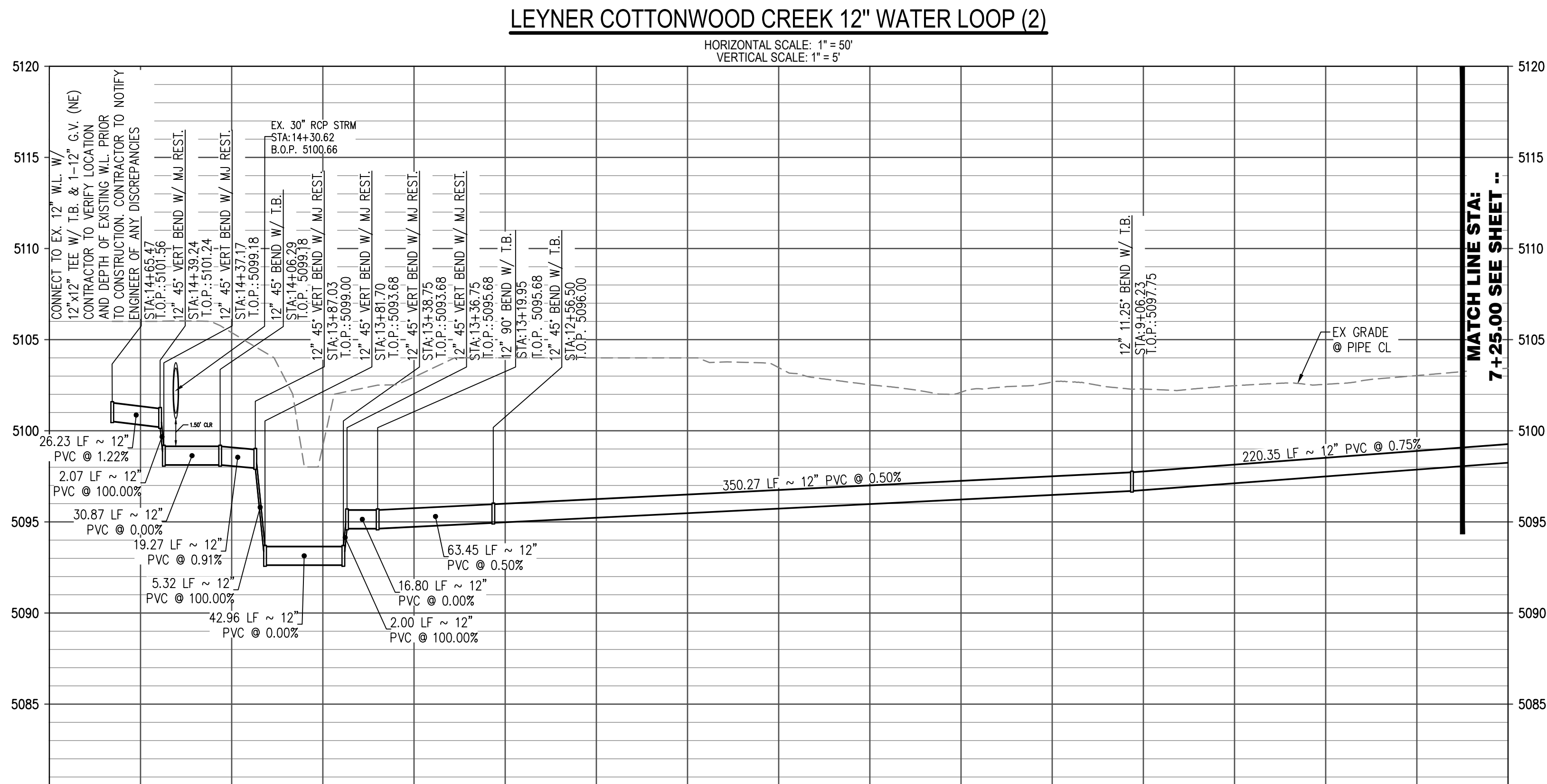


CANYON CREEK - SUBDIVISION FILING NOS. 7 & 8
TRAIL & CONNECTIVITY EXHIBIT

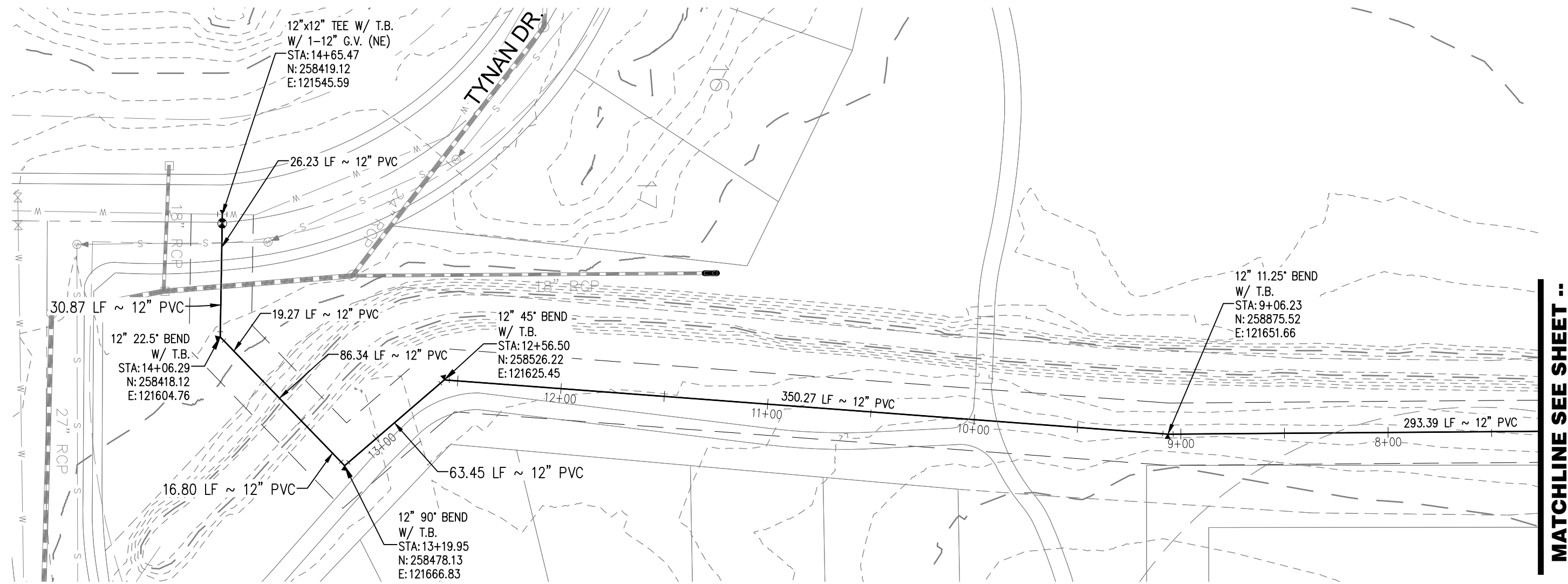


NO	REVISION RECORD	DATE
1	1ST SUBMITTAL	8-28-2019
2	2ND SUBMITTAL	3-26-2020
3	2ND SUBMITTAL	7-21-2020
4		

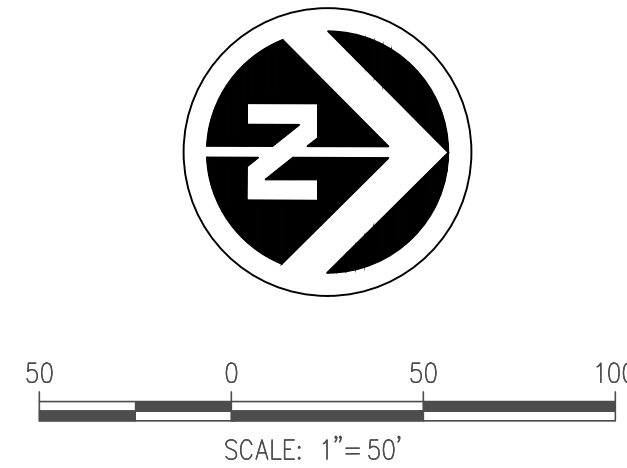
LANDSCAPE ARCHITECT / PLANNER:	 henry design group Landscape Architecture • Planning • Entitlements 1501 Wazee Street Suite 1-C, Denver, Colorado 80202 303.446.2288 • henydesigngroup.com
ENGINEER:	 CONSULTING GROUP 9360 Teddy Lane, Suite 203 Lone Tree, CO 80124 303.395.2700
APPLICANT:	Stratus Canyon Creek, LLC. 1842 Montane Drive East Golden, CO 80401 Richard Dean 720.214.5000
CANYON CREEK SUBDIVISION FILING NOS. 7 & 8 TRAIL & CONNECTIVITY EXHIBIT ERIE, COLORADO	
DRAWN: AY CHECKED: KH ISSUE DATE: 7-21-2020	
SHEET:	TRAIL & CONNECTIVITY EXHIBIT 1 of 1



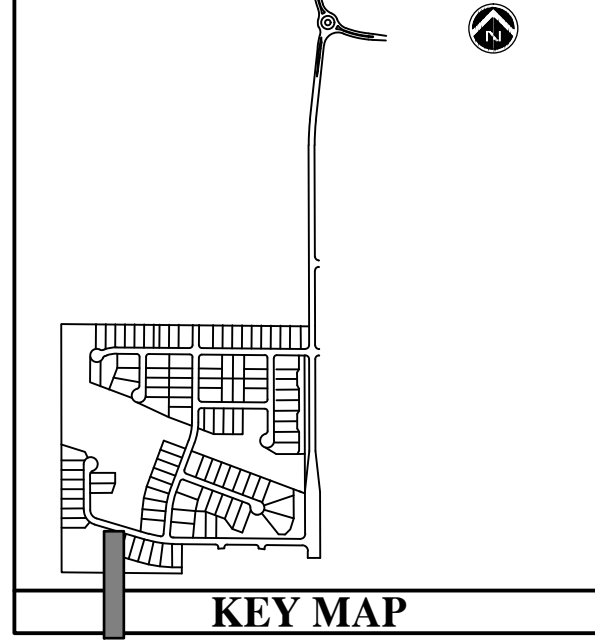
LEYNER COTTONWOOD CREEK
12" WATER LOOP



MATCHLINE SEE SHEET ..

**UTILITY CROSSING NOTE:**

1. AT ALL CROSSING WHERE A NON-POTABLE UTILITY CROSSES OVER A WATER UTILITY WITHOUT A CASING, THE JOINTS OF THE NON-POTABLE UTILITY SHALL BE WRAPPED 10- FEET EITHER WAY OF THE CROSSING, AT A MINIMUM.

[illegible]

CANYON CREEK FILINGS 7 & 8

PRELIMINARY UTILITY REPORT

PREPARED FOR:

THE TOWN OF ERIE

ON BEHALF OF:

STRATUS CANYON CREEK, LLC

November 3, 2020

Prepared By:



MSK Consulting, LLC
7157 S. Andes Circle
Centennial, CO 80016
303-903-0918

Job No. 39-001-01



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APPENDICES

Appendix A: Water System and Sanitary Sewer System Exhibits

Appendix B: Water System Calculations, Model Results, and Town Supplied Information

Appendix C: Sanitary Sewer Calculations

SECTION 1: INTRODUCTION

1.1 BACKGROUND

Canyon Creek Filings 7 and 8 (Canyon Creek) is a proposed residential development located in Weld County and the Town of Erie, CO. Canyon Creek will contain approximately 198 single-family residential units and is being developed by Stratus Canyon Creek, LLC. This report is specific to the Preliminary Plat application for Filings 7 and 8.

Canyon Creek will receive water and wastewater service from the Town of Erie (Erie). This Preliminary Utility Report will summarize the major water and sanitary sewer utilities required to provide service in accordance with Erie's 2019 development standards.

1.2 LOCATION

Canyon Creek is located within Erie approximately 0.5 miles west of the County Line Road and Jay Road intersection. The development is bound on the north by future Lafferty development, the west by undeveloped land, the south by the Red Hawk Elementary School, and the east by an existing residential development.



FIGURE 1-1: LOCATION MAP
(NOT TO SCALE)

SECTION 2: DEVELOPMENT SUMMARY

2.1 DEVELOPMENT COMPOSITION

The development boundary for Canyon Creek is shown in Figure 1-1. The proposed development consists of 198 single-family residences. There are no multi-family, commercial, school, or industrial users. Canyon Creek does not have a club house or other community facility. The proposed development composition is provided in Table 2-1:

Table 2-1: Proposed Development Summary

Development Type	Total Units
Single-family Residential	198

SECTION 3: WATER SYSTEM

3.1 WATER SYSTEM DESIGN CRITERIA

The water system within Canyon Creek will be designed in accordance with Erie's *Standards and Specifications for Design and Construction of Public Improvements, Section 600 Water Supply Facilities*, 2019 Edition. Additional information was taken from the *Water Master Plan*. Where criteria is not specifically stated in these standards, the design will conform to general industry practices. Provided below is the water system design criteria that was used to develop the proposed water system:

Table 3-1: Water System Design Criteria

Description	Value
Residential Demand	140 gpd/capita
Capita per Residential Unit ¹	2.79
Average Day Demand (ADD)	390.6 gpd/unit
Maximum Day Demand Factor	2.6 x ADD
Peak Flow Demand Factor	3.9 x ADD
Maximum system pressure	125 psi
Minimum system pressure	43 psi
Fire flow criteria	See section 3.4.3

Note:

1. Based on criteria established by Erie planning values.

3.2 WATER DEMAND

Based on the development composition listed in Section 2-1 and the demand unit values, Canyon Creek will have an average daily water demand of more than 77,339 gallons per day ("gpd") and a maximum day demand of 201,081 gpd. Provided in Table 3-2 is a summary of the water demands for Canyon Creek.

Table 3-2: Summary of Water Demands

Development Type	Number of Units	Average Day Demand (gpd)	Maximum Day Demand (gpd)	Peak Hour Demand (gpm)
Single-family Residential	198	77,339	201,081	209

3.3 EXISTING WATER SYSTEM INFRASTRUCTURE

3.3.1 Existing System Pressures

Canyon Creek is located in two pressure zones: Zone 2 and Zone 3. The information on both pressure zones is listed in Table 3-3 and was provided by Town staff. These values were used in the hydraulic model of the system.

Table 3-3: Pressure Zone Information

Zone	Elevation Range (feet)	HGL Static Elevation (feet)
2	4950 to 5070	5175
3	5070 to 5210	5313

There are 88 homes proposed in Pressure Zone 2 and 110 homes proposed in Pressure Zone 3.

3.3.2 Existing Potable Storage

Erie has 0.3 MG of existing storage in Pressure Zone 2 and 5.5 MG of storage in Pressure Zone 3.

3.3.3 Existing Pipelines

The closest Zone 2 pipelines to Canyon Creek include a 12-inch line located to the south at an existing PRV near the intersection of Jasper Road and Telleen Avenue. There is also a 16-inch line to the north in Jay Road. To the southwest is an 8-inch line in McGregor Circle.

The nearest existing Zone 3 pipeline is also located at the existing PRV near the intersection of Jasper Road and Telleen Avenue. This water line is 12-inch. To the south of the Red Hawk Elementary School there is an existing 12-inch line in Tynan Drive.

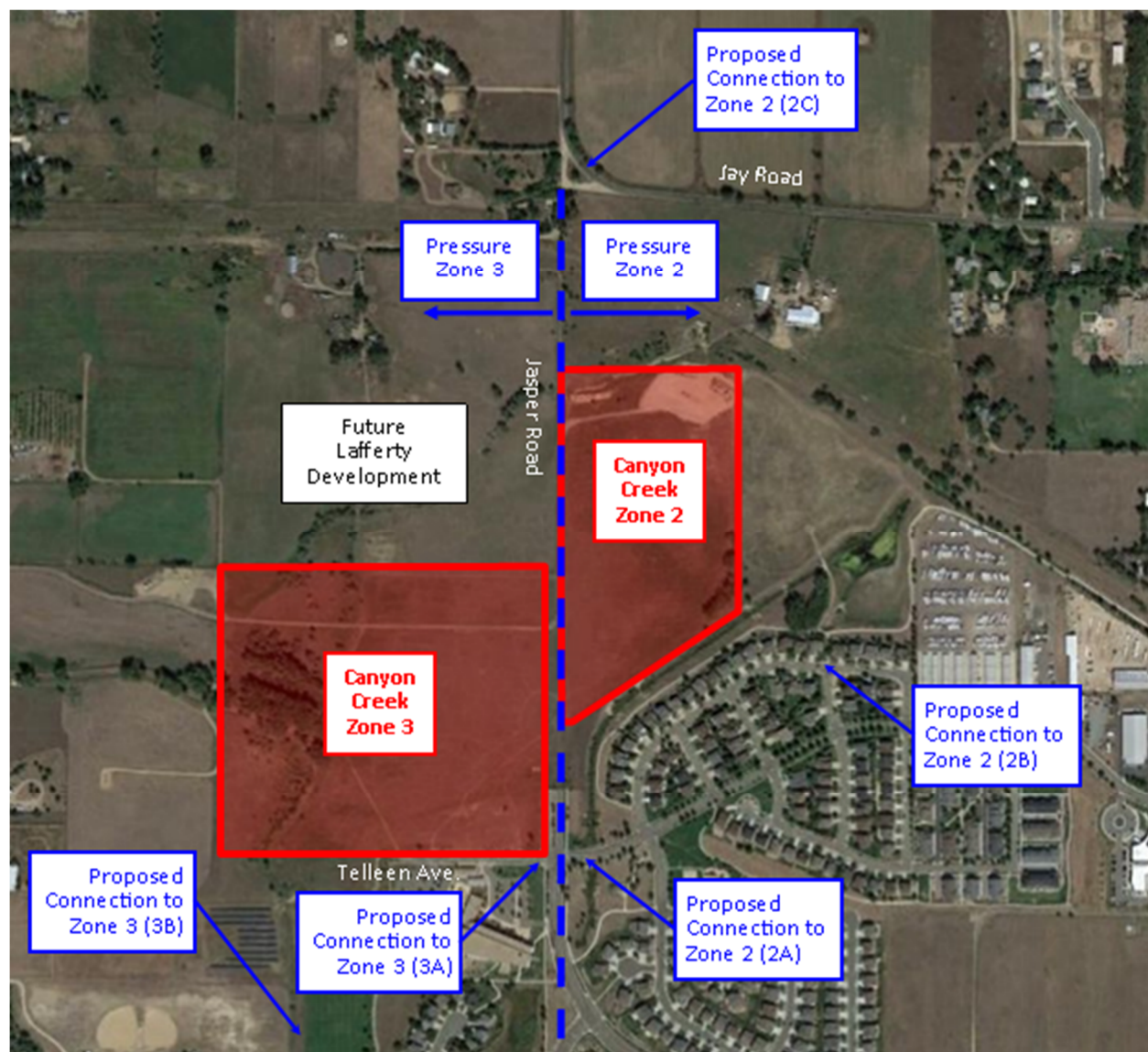


FIGURE 3-3: PROPOSED WATER CONNECTIONS
(NOT TO SCALE)

3.4 WATER MODEL

3.4.1 Methodology

A computer analysis using the Innovyze® software was performed on Canyon Creek. The water lines throughout the proposed water distribution system were evaluated. Demands for each lot in the development were clustered to the nearest junction along the water lines. The following scenarios were evaluated by the model:

- Peak Hour Demand
- Maximum Day Demand plus Fire Flow

Based on the information from Erie's staff, the connection pressures used in the water model listed

in Table 3-4A. Per an October 15, 2020 email from Erie's staff, a third Zone 3 connection to the west to 119th Street is not required. The final sizing of the proposed water lines were based on the worst-case demand scenario – Maximum Day plus Fire Flow.

The model utilized a Hazen-Williams coefficient of 100 for all pipes 12-inch diameter and smaller, as stated in Erie's standards.

Table 3-4A: Water System Connection Point Pressures

No.	Location/Description	Junction Number	Pressure Zone	Maximum Day Pressure (psi)	Peak Hour Pressure (psi)
2A	Telleen Avenue PRV East	J72	2	45.0	42.8
2B	McGregor Circle/Northrup Drive	J102	2	48.0	45.7
2C	Jasper Road/Jay Road	J70	2	62.9	59.9
3A	Jasper Road/Telleen Avenue	J58	3	99.6	97.0
3B	Tynan Drive/Stanley Drive	J100	3	88.4	86.2

3.4.2 Off-site Demands

Off-site Zone 3 demands from the Lafferty development will be conveyed by the water lines in Canyon Creek or the proposed 8-inch line in Jasper Road. Lafferty's estimated maximum day demand is 44,919 gpd and the peak hour demand is 122 gpm.

3.4.3 Fire Flow

A fire flow scenario was performed by the water model. It applies a fire flow demand at each fire hydrant location and determines the residual pressure at that point. A minimum of 20 psi residual pressure is required to "pass". Fire flows demands are applied during the maximum day demand scenario. The fire flows demand is 1,000 gpm for a residential unit and the fire flow analysis included the Lafferty development.

3.4.4 Summary of Results

The water model demonstrated the following (detailed results are provided in Appendix B):

Table 3-4B: Zone 2 Water System Model Results

Scenario	Lowest Pressure (psi)	Highest Headloss (ft/1,000 lf)	Fire Flow Residual Pressure
Static	44.90 (J10)	n/a	n/a
PHF	43.21 (J26)	0.06 (P5 & P9)	n/a
MDD plus FF	38.70 (J10)	n/a	Pass

Table 3-4C: Zone 3 Water System Model Results

Scenario	Lowest Pressure (psi)	Highest Headloss (ft/1,000 lf)	Fire Flow Residual Pressure
Static	95.19 (J52)	n/a	n/a
PHF	82.00 (J56)	0.45 (P24)	n/a
MDD plus FF	74.71 (J56)	n/a	Pass

3.5 PROPOSED WATER SYSTEM INFRASTRUCTURE

Based on the water model analysis, the following infrastructure is required to maintain adequate pressures in the development.

3.5.1 Potable Storage

No additional potable storage is proposed, on or off-site, to serve Canyon Creek.

3.5.2 Booster Pump Station

A booster pump station is not proposed in order to provide pressure to Canyon Creek.

3.5.3 Distribution System

The majority of the water lines within the Canyon Creek will be 8-inch diameter C900 PVC. This includes the two water lines (Zone 2 and Zone 3) in Jasper Road. There is a 12-inch water line that extends south to the connection point in Zone 3 that is southwest of Red Hawk Elementary School. All of the pipelines will be located within the public streets or dedicated easements.

SECTION 4: SANITARY SEWER SYSTEM

4.1 SANITARY SEWER SYSTEM DESIGN CRITERIA

The sanitary sewer system within Canyon Creek will be designed in accordance with Erie's *Standards and Specifications for Design and Construction of Public Improvements, Section 700 Sanitary Sewer Facilities*, 2019 Edition. Additional information was taken from the *2015 Wastewater Utility Plan*. Where criteria is not specifically stated in these standards, the design will conform to general industry practices for this region. Provided below is a list of criteria that was used to evaluate the proposed sanitary sewer system:

Table 4-1: Sanitary Sewer System Design Criteria

Description	Value
Pipe velocity (maximum)	10 fps
Pipe velocity (minimum)	2 fps
Residential Wastewater Production	90 gpd/capita
Capita per Residential Unit	2.79
Residential Average Daily Flow (ADF)	251.1 gpd/unit
Peak Demand Formula (Min. 2.5, Max. 5.0)	3.8/ADF ^{0.17}
d/D Maximum (10-inch and smaller)	0.8
d/D Maximum (12-inch and larger)	1.0
Inflow/Infiltration	Included in ADF

4.2 SANITARY SEWER LOADING

Based on the development's composition and average sanitary sewer loading from Table 4-1, the anticipated daily wastewater flow from Canyon Creek is 49,718 gpd. Table 4-2 provides a breakdown of the flows.

Table 4-2: Canyon Creek Sanitary Sewer Loading Summary

Basin	Total Units	Average Day Flow (gpd)	Peak Flow (gpm)
North (to West Side Interceptor)	148	37,163	129.0
South (to 21-inch Outfall)	50	12,555	43.6
Totals	198	49,718	172.6

4.3 EXISTING SANITARY SEWER SYSTEM INFRASTRUCTURE

4.3.1 Existing Interceptors

Per the *2015 Wastewater Utility Plan*, wastewater from Canyon Creek will flow into one of two existing basins. The first is to an existing 21-inch outfall located to the southeast of Canyon Creek. This 21-inch outfall is located in Jasper Road and Telleen Avenue. Flow from the south basin of Canyon Creek will discharge to this outfall.

The West Side Interceptor is located to the north of Canyon Creek. Flows from the north basin of Canyon Creek will ultimately discharge into this interceptor.

4.3.2 Existing Lift Stations

The flows from Canyon Creek do not discharge into any existing lift stations.



FIGURE 4-3: PROPOSED CONNECTIONS TO EXISTING SEWER LINES
(NOT TO SCALE)

4.4 SANITARY SEWER ANALYSIS

4.4.1 Methodology

Calculations were based on the anticipated development composition of Canyon Creek. The peaking factor was applied to the average day flows and the sum total was used to analyze the pipe's carrying capacity for each basin. The analysis utilized a Manning's coefficient of 0.015.

4.4.2 Off-site Flows

Proposed sanitary sewers in Canyon Creek will not carry any off-site flows. However, to evaluate capacity in the 8-inch line that will ultimately discharge to the West Side Interceptor (via the Wild Rose development), the peak flows (100.3 gpm) from the future Lafferty development's 115 single-family residential units were included.

4.4.3 Summary of Results

For the Preliminary Plat, sanitary sewer plan and profiles were not required. At the Final Plat the evaluation of the sanitary sewer capacities will be performed. This report will provide the calculated d/D assuming the minimum pipe slope. The results shown assume the most downstream portion of the collection system, which will convey all the peak flows from each basin prior to connecting to the existing outfall or interceptor.

Table 4-4: Sanitary Sewer Capacity

Basin	Number of Lots Served	Pipeline Size (inch)	Erie's Min. Slope (%)	d/D	Meets Erie's d/D Criteria?
North ¹	263	8	0.40%	0.66	Yes
South	50	8	0.40%	0.26	Yes

Note:

1. Includes 115 residential units from the Lafferty development.

4.5 PROPOSED SANITARY SEWER SYSTEM INFRASTRUCTURE

4.5.1 Lift Stations

Canyon Creek will not require a lift station to convey wastewater flows within or out of the development.

4.5.2 Collection Pipelines

Based on preliminary results, the sanitary sewer lines within Canyon Creek will be 8-inch diameter PVC. However, final sizes will be evaluated at the Final Plat submittal. The north basin of Canyon Creek will flow in an 8-inch line in Jasper Road north to the proposed Wild Rose development. The Wild Rose development will construct the sewer line that connects to the West Side Interceptor. The south basin of Canyon Creek will flow to an 8-inch line that connects to the existing 21-inch outfall at the intersection of Jasper Road and Telleen Avenue.

Appendix A
Water System and Sanitary Sewer System Exhibits

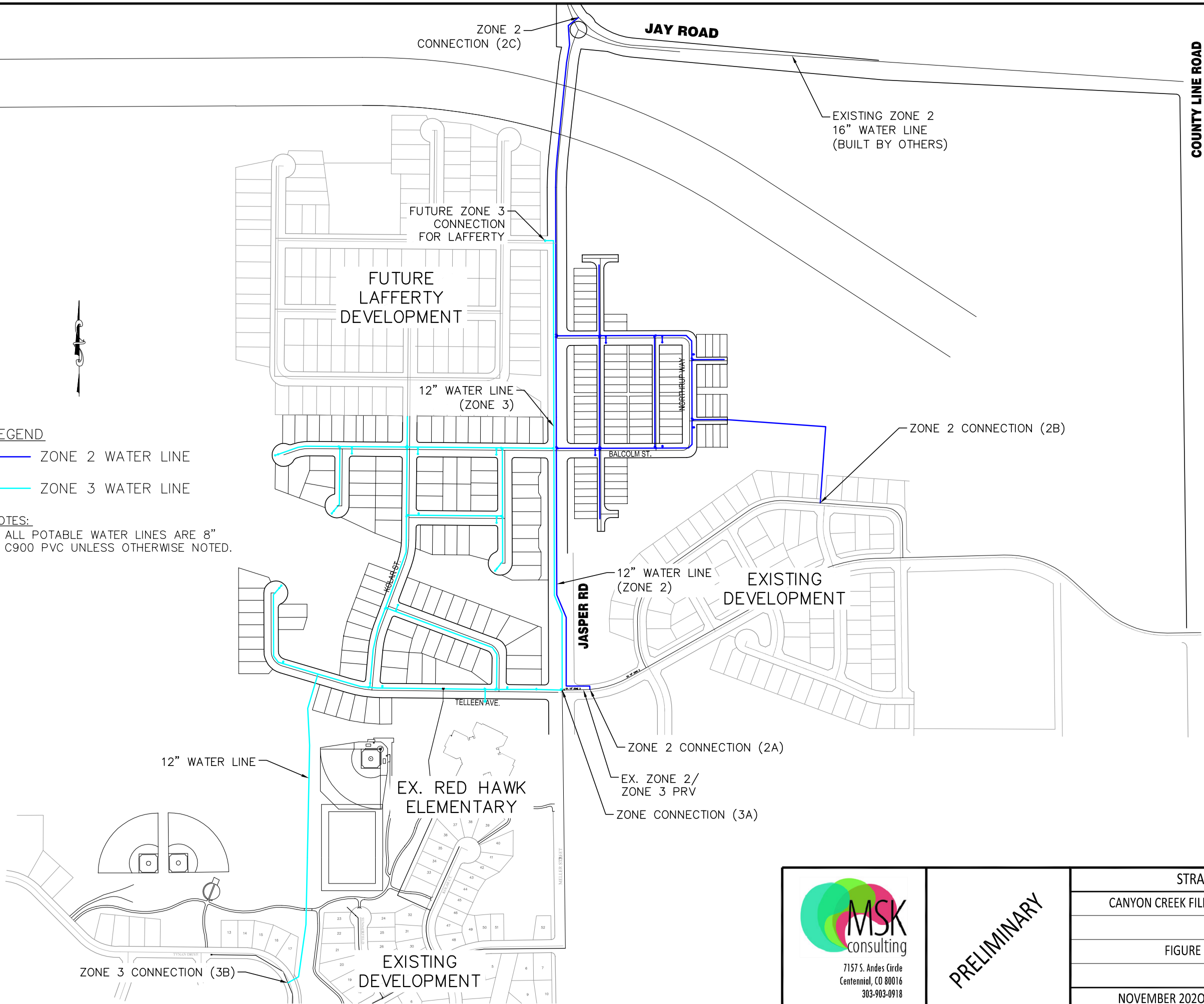
N 119TH STREET

LEGEND

- ZONE 2 WATER LINE
- ZONE 3 WATER LINE

NOTES:

1. ALL POTABLE WATER LINES ARE 8" C900 PVC UNLESS OTHERWISE NOTED.



PRELIMINARY

STRATUS CANYON CREEK, LLC	
CANYON CREEK FILINGS 7 & 8 PRELIMINARY UTILITY REPORT	
FIGURE A1 - OVERALL WATER SYSTEM	
NOVEMBER 2020	
SCALE: 1"=400'	

NORTH BASIN CONNECTION
TO WEST SIDE INTERCEPTOR
(VIA WILD ROSE)

JAY ROAD

COUNTY LINE ROAD

FUTURE
LAFFERTY
DEVELOPMENT

NORTHUP WAY

BALCOLM ST.

JASPER RD

EXISTING
DEVELOPMENT

TELLEEN AVE.

EX. RED HAWK
ELEMENTARY

SOUTH BASIN CONNECTION
TO EXISTING 21-INCH OUTFALL

N 119TH STREET

LEGEND

- NORTH BASIN
- SOUTH BASIN

NOTES:

- 1. ALL SANITARY SEWER LINES ARE 8" PVC UNLESS OTHERWISE NOTED.



MSK
consulting

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PRELIMINARY

STRATUS CANYON CREEK, LLC	
CANYON CREEK FILINGS 7 & 8 PRELIMINARY UTILITY REPORT	
FIGURE A2 - OVERALL SANITARY SEWER SYSTEM	
NOVEMBER 2020	SCALE: 1"=400'

Appendix B
Water System Calculations, Model Results, and Town Supplied Information

Canyon Creek and Lafferty**Preliminary Utility Report**

Water Demands

Date: July 2020

MSK Project #: 39-001-01 and 39-002-01

Calc'd by: DLT

PRELIMINARY**Note:**

1. Information is from Erie's 2019 Standards and Specifications, Section 600-Water Supply Facilities.

Assumptions:

Residential Demand: 140 gpd/capita
 Capita per SF Unit: 2.79 capita/unit
 Average Day Demand: 390.6 gpd (per residential unit)
 Max. Day Demand Factor: 2.60 times ADD
 Peak Hour Demand Factor: 3.90 times ADD

Table B1-1: Buildout Water Demands

A	B	C	D	E	F	G	H
No.	Description	Pressure Zone	Units	Average Day Demand (gpd)	Max. Day Demand (gpd)	Max. Day Demand (gpm)	Peak Hour Demand (gpm)
1	Canyon Creek SF Residential	3	110	42,966	111,712	78	116
2	Canyon Creek SF Residential	2	88	34,373	89,369	62	93
3	Lafferty SF Residential	3	115	44,919	116,789	81	122
Totals			313.0	122,258	317,870	220.7	331.1

STRATUS CANYON CREEK, LLC**Canyon Creek Preliminary Utility Report**

Water Model Junction Report

Model Run Date: Sept 26, 2020

ADD= 390.6 gpd/SFE
 0.271 gpm/SFE
 MDD= 2.60 x ADD
 PHD= 3.90 x ADD

Table B-1: Water Model Junction Report

					MDD Factor: 2.60			PDD Factor: 3.9					
					ADD OUTPUT = 84.9 gpm			MDD OUTPUT = 220.7 gpm			PHD OUTPUT = 331.1 gpm		
ID	Description			Elevation	Demand	Pressure	Demand	Pressure	Demand	Pressure	Demand	Pressure	
(Char)	(Char)	SFEs	Zone (Char)	(ft)	(gpm)	Head (ft)	(psi)	(gpm)	Head (ft)	(psi)	(gpm)	Head (ft)	(psi)
J10	FH	8	Z2-CC	5,071.28	2.17	5,172.00	43.64	5.64	5,171.99	43.64	8.463	5,171.98	43.63
J100	Connection	0	Z3-CC	5,099.50	0.00	5,298.00	86.01	0.00	5,298.00	86.01	0.00	5,298.00	86.01
J102	Connection	0	Z2-CC	5,068.00	0.00	5,172.00	45.06	0.00	5,172.00	45.06	0.00	5,172.00	45.06
J12	FH	18	Z2-CC	5,067.00	4.88	5,172.00	45.5	12.69	5,171.99	45.49	19.04	5,171.98	45.49
J14	FH	18	Z2-CC	5,063.21	4.88	5,172.00	47.14	12.69	5,171.99	47.13	19.04	5,171.98	47.13
J16	FH	4	Z2-CC	5,060.28	1.09	5,172.00	48.41	2.82	5,171.99	48.41	4.23	5,171.98	48.4
J18	FH	8	Z2-CC	5,065.28	2.17	5,172.00	46.24	5.64	5,171.99	46.24	8.46	5,171.98	46.23
J20	FH	12	Z2-CC	5,061.69	3.26	5,172.00	47.8	8.46	5,171.99	47.79	12.69	5,171.98	47.79
J22	FH	12	Z2-CC	5,065.00	3.26	5,172.00	46.36	8.46	5,171.99	46.36	12.69	5,171.98	46.35
J24	FH	8	Z2-CC	5,062.00	2.17	5,172.00	47.66	5.64	5,171.99	47.66	8.46	5,171.98	47.65
J26	Junction	0	Z2-CC	5,072.26	0.00	5,172.00	43.22	0.00	5,172.00	43.22	0.00	5,171.99	43.21
J28	FH	10	Z3-CC	5,088.09	2.71	5,297.98	90.95	7.05	5,297.86	90.9	10.58	5,297.71	90.83
J30	FH	11	Z3-CC	5,083.04	2.98	5,297.97	93.13	7.76	5,297.84	93.07	11.64	5,297.66	93.00
J32	Junction	0	Z3-Lafferty	5,085.00	0.00	5,297.97	92.28	0.00	5,297.83	92.22	0.00	5,297.63	92.13
J34	Junction	0	Z2-CC	5,065.00	0.00	5,172.00	46.36	0.00	5,172.00	46.36	0.00	5,171.99	46.36
J36	Junction	0	Z2-CC	5,059.82	0.00	5,172.00	48.61	0.00	5,171.99	48.6	0.00	5,171.98	48.6
J38	FH	11	Z3-CC	5,073.91	2.98	5,297.98	97.09	7.76	5,297.85	97.03	11.64	5,297.69	96.96
J39	Junction	0	Z3-CC	5,073.91	0.00	5,297.98	97.09	0.00	5,297.86	97.04	0.00	5,297.70	96.97
J40	FH	8	Z3-CC	5,079.76	2.17	5,297.98	94.55	5.64	5,297.86	94.5	8.46	5,297.69	94.43
J42	Junction	0	Z2-CC	5,070.14	0.00	5,172.00	44.13	0.00	5,172.00	44.13	0.00	5,171.99	44.13
J44	Junction	8	Z3-CC	5,084.00	2.17	5,298.00	92.73	5.64	5,297.99	92.72	8.46	5,297.98	92.72
J46	FH	0	Z3-CC	5,082.50	0.00	5,298.00	93.38	0.00	5,297.99	93.37	0.00	5,297.98	93.37
J48	Junction	0	Z3-CC	5,090.83	0.00	5,298.00	89.77	0.00	5,297.99	89.76	0.00	5,297.98	89.76
J50	FH	17	Z3-CC	5,090.29	4.61	5,297.99	90	11.99	5,297.95	89.98	17.98	5,297.89	89.96
J52	FH	15	Z3-CC	5,093.11	4.07	5,298.00	88.78	10.58	5,297.98	88.77	15.87	5,297.96	88.76
J54	FH	4	Z3-CC	5,105.24	1.09	5,298.00	83.52	2.82	5,297.99	83.52	4.23	5,297.98	83.51
J56	FH	6	Z3-CC	5,108.74	1.63	5,298.00	82	4.23	5,297.99	82	6.35	5,297.98	82.00
J58	Connection	0	Z3-CC	5,082.00	0.00	5,298.00	93.59	0.00	5,298.00	93.59	0.00	5,298.00	93.59
J60	FH	3	Z3-CC	5,079.11	0.81	5,297.98	94.83	2.12	5,297.86	94.78	3.17	5,297.69	94.71
J62	FH	5	Z3-CC	5,093.00	1.36	5,297.97	88.81	3.53	5,297.84	88.76	5.29	5,297.66	88.68
J64	FH	7	Z3-CC	5,088.24	1.90	5,297.97	90.88	4.94	5,297.84	90.82	7.41	5,297.66	90.74
J68	FH	5	Z3-CC	5,093.00	1.36	5,297.97	88.81	3.53	5,297.84	88.76	5.29	5,297.66	88.68
J70	Junction	0	Z2-CC	5,057.50	0.00	5,172.00	49.61	0.00	5,172.00	49.61	0.00	5,172.00	49.61
J72	Connection	0	Z2-CC	5,073.50	0.00	5,172.00	42.68	0.00	5,172.00	42.68	0.00	5,172.00	42.68
J74	FH	10	Z3-Lafferty	5,081.39	2.71	5,297.97	93.84	7.05	5,297.80	93.77	10.58	5,297.58	93.68
J78	FH	12	Z3-Lafferty	5,077.50	3.26	5,297.97	95.53	8.46	5,297.80	95.46	12.69	5,297.58	95.36
J80	FH	12	Z3-Lafferty	5,084.93	3.26	5,297.97	92.31	8.46	5,297.80	92.24	12.69	5,297.58	92.14
J82	FH	12	Z3-Lafferty	5,070.38	3.26	5,297.97	98.61	8.46	5,297.80	98.54	12.69	5,297.57	98.44
J84	FH	14	Z3-Lafferty	5,075.59	3.80	5,297.97	96.36	9.87	5,297.80	96.28	14.81	5,297.57	96.19
J86	FH	12	Z3-Lafferty	5,084.37	3.26	5,297.97	92.55	8.46	5,297.81	92.48	12.69	5,297.59	92.39
J88	FH	0	Z3-Lafferty	5,071.96	0.00	5,297.97	97.93	0.00	5,297.81	97.86	0.00	5,297.59	97.76
J90	FH	11	Z3-Lafferty	5,068.57	2.98	5,297.97	99.4	7.76	5,297.80	99.33	11.64	5,297.58	99.23
J92	FH	7	Z3-Lafferty	5,061.68	1.90	5,297.97	102.38	4.94	5,297.80	102.31	7.41	5,297.57	102.21
J94	FH	8	Z3-Lafferty	5,057.50	2.17	5,297.97	104.19	5.64	5,297.80	104.12	8.46	5,297.57	104.02
J96	FH	10	Z3-Lafferty	5,067.36	2.71	5,297.97	99.92	7.05	5,297.80	99.85	10.58	5,297.58	99.76
J98	FH	7	Z3-Lafferty	5,057.77	1.90	5,297.97	104.08	4.94	5,297.80	104.01	7.41	5,297.58	103.91
J99	Connection	0	Z2-CC	5,042.00	0.00	5,172.00	56.33	0.00	5,172.00	56.33	0.00	5,172.00	56.33

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STRATUS CANYON CREEK, LLC
Canyon Creek Preliminary Utility Report
 Water Model Pipe Report
 Model Run Date: Sept 26, 2020

Max. Velocity: 6.41 ft/sec

Max. Velocity: 1.2 ft/sec

Table B-2: Water Model Junction Report

ID	Description (Char)	Zone (Char)	From Node	To Node	Length (ft)	Diameter (in)	Roughness (Double)	MDD + FF OUTPUT (two 1000 gpm J16 and J92)					PHD OUTPUT				
								Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)	Status	Flow (gpm)	Velocity (ft/s)	Headloss (ft)	HL/1000 (ft/k-ft)	Status
2A	Connection	Z2-CC	2A	J72	1	8	100	436.54	2.79	0.01	6.35	Open	37.28	0.24	0	0	Open
2B	Connection	Z2-CC	2B	J102	1	8	100	224.04	1.43	0	1.95	Open	22.14	0.14	0	0	Open
2C	Connection	Z2-CC	2C	J99	1	16	100	401.46	0.64	0	0	Open	33.66	0.05	0	0	Open
3A	Connection	Z3-CC	3A	J58	1	8	100	962.64	6.14	0.03	27.83	Open	188.54	1.2	0	1.46	Open
3B	Connection	Z3-CC	3B	J100	1	12	100	196.04	0.56	0	0	Open	49.48	0.14	0	0	Open
P1	Pipe	Z2-CC	J14	J16	294.51	8	100	1,002.82	6.4	8.79	29.85	Open	4.23	0.03	0	0	Open
P10	Pipe	Z2-CC	J36	J24	135.29	8	100	0	0	0	0	Open	0	0	0	0	Open
P11	Pipe	Z3-CC	J30	J38	396.48	8	100	-258.67	1.65	0.96	2.43	Open	-39.11	0.25	0.03	0.07	Open
P12	Pipe	Z3-CC	J38	J40	284.02	8	100	-181.86	1.16	0.36	1.26	Open	-18.09	0.12	0	0.02	Open
P13	Pipe	Z3-CC	J40	J28	399.72	8	100	-189.62	1.21	0.55	1.37	Open	-29.72	0.19	0.02	0.05	Open
P14	Pipe	Z2-CC	J26	J42	129.95	12	100	115.23	0.33	0.01	0.08	Open	1.75	0	0	0	Open
P15	Pipe	Z2-CC	J42	J34	338.99	12	100	115.23	0.33	0.03	0.07	Open	1.75	0	0	0	Open
P16	Pipe	Z3-CC	J44	J46	44.61	12	100	-478.91	1.36	0.05	1.05	Open	-107.61	0.31	0	0.07	Open
P17	Pipe	Z3-CC	J44	J48	392.75	12	100	191.37	0.54	0.08	0.19	Open	45.03	0.13	0.01	0.01	Open
P18	Pipe	Z3-CC	J50	J44	656	8	100	-281.89	1.8	1.87	2.85	Open	-54.12	0.35	0.09	0.13	Open
P19	Pipe	Z3-CC	J52	J50	340.76	8	100	369.78	2.36	1.6	4.7	Open	68.06	0.43	0.07	0.2	Open
P2	Pipe	Z2-CC	J12	J14	468.97	8	100	235.45	1.5	0.96	2.04	Open	-1.12	0.01	0	0	Open
P20	Pipe	Z3-CC	J52	J54	230.48	8	100	-188.99	1.21	0.31	1.36	Open	-38.9	0.25	0.02	0.07	Open
P21	Pipe	Z3-CC	J56	J54	490.65	8	100	-4.23	0.03	0	0	Open	-6.35	0.04	0	0	Open
P22	Pipe	Z3-CC	J46	J58	229.04	12	100	-478.91	1.36	0.24	1.05	Open	-107.61	0.31	0.02	0.07	Open
P23	Pipe	Z3-CC	J40	J60	228.01	8	100	2.12	0.01	0	0	Open	3.17	0.02	0	0	Open
P24	Pipe	Z3-CC	J50	J28	400.53	8	100	639.68	4.08	5.2	12.98	Open	104.2	0.67	0.18	0.45	Open
P25	Pipe	Z3-CC	J62	J64	276.82	8	100	-3.53	0.02	0	0	Open	-5.29	0.03	0	0	Open
P26	Pipe	Z3-CC	J64	J30	279.95	8	100	-12	0.08	0	0.01	Open	-17.99	0.11	0	0.02	Open
P27	Pipe	Z3-CC	J68	J64	262.4	8	100	-3.53	0.02	0	0	Open	-5.29	0.03	0	0	Open
P28	Pipe	Z2-CC	J18	J22	264.22	8	100	-71.25	0.45	0.06	0.22	Open	-2.96	0.02	0	0	Open
P29	Pipe	Z2-CC	J24	J20	242.53	8	100	138.7	0.89	0.19	0.77	Open	-1.98	0.01	0	0	Open
P3	Pipe	Z2-CC	J18	J20	468.99	8	100	133.13	0.85	0.33	0.71	Open	3.65	0.02	0	0	Open
P30	Pipe	Z2-CC	J14	J20	230	8	100	-263.37	1.68	0.58	2.51	Open	11.02	0.07	0	0.01	Open
P31	Pipe	Z2-CC	J34	J70	1,350.69	12	100	-401.46	1.14	1.03	0.76	Open	-33.66	0.1	0.01	0.01	Open
P32	Pipe	Z2-CC	J26	J72	1,109.98	12	100	-436.54	1.24	0.99	0.89	Open	-37.28	0.11	0.01	0.01	Open
P33	Pipe	Z3-Lafferty	J74	J86	554.84	8	100	-297.61	1.9	1.75	3.15	Open	-22.13	0.14	0.01	0.03	Open
P34	Pipe	Z3-Lafferty	J78	J80	555.05	8	100	-319.32	2.04	1.99	3.58	Open	-16.22	0.1	0.01	0.01	Open
P35	Pipe	Z3-Lafferty	J82	J84	658	8	100	-411.98	2.63	3.78	5.75	Open	-5.02	0.03	0	0	Open
P36	Pipe	Z3-Lafferty	J32	J86	161.98	8	100	681.92	4.35	2.37	14.61	Open	73.39	0.47	0.04	0.24	Open
P37	Pipe	Z3-Lafferty	J88	J90	280	8	100	134.24	0.86	0.2	0.72	Open	14.52	0.09	0	0.01	Open
P38	Pipe	Z3-Lafferty	J92	J82	301.25	8	100	-1,004.9	6.41	9.03	29.97	Open	-7.41	0.05	0	0	Open
P39	Pipe	Z3-Lafferty	J84	J94	455	8	100	5.64	0.04	0	0	Open	8.46	0.05	0	0	Open
P4	Pipe	Z2-CC	J22	J24	250	8	100	144.34	0.92	0.21	0.82	Open	6.49	0.04	0	0	Open
P40	Pipe	Z3-Lafferty	J82	J78	295	8	100	-601.42	3.84	3.42	11.58	Open	-15.08	0.1	0	0.01	Open
P41	Pipe	Z3-Lafferty	J84	J96	280	8	100	-427.49	2.73	1.72	6.15	Open	-28.29	0.18	0.01	0.04	Open
P42	Pipe	Z3-Lafferty	J96	J98	413.99	8	100	4.94	0.03	0	0	Open	7.41	0.05	0	0	Open
P43	Pipe	Z3-Lafferty	J90	J96	295	8	100	40.31	0.26	0.02	0.08	Open	-1.98	0.01	0	0	Open
P44	Pipe	Z3-Lafferty	J80	J90	382.95	8	100	-86.16	0.55	0.12	0.32	Open	-4.86	0.03	0	0	Open
P45	Pipe	Z3-Lafferty	J78	J74	280	8	100	-290.56	1.85	0.84	3.01	Open	-11.55	0.07	0	0.01	Open
P46	Pipe	Z3-Lafferty	J86	J88	383.07	8	100	134.24	0.86	0.28	0.72	Open	14.52	0.09	0	0.01	Open
P47	Pipe	Z3-Lafferty	J86	J80	280	8	100	241.61	1.54	0.6	2.14	Open	24.05	0.15	0.01	0.03	Open
P48	Pipe	Z3-CC	J100	J54	1,324.07	12	100	196.04	0.56	0.27	0.2	Open	49.48	0.14	0.02	0.02	Open
P49	Pipe	Z3-CC	J48	J52	135.42	8	100	191.37	1.22	0.19	1.39	Open	45.03	0.29	0.01	0.09	Open
P5	Pipe	Z2-CC	J26	J12	180	8	100	321.3	2.05	0.65	3.63	Open	35.53	0.23	0.01	0.06	Open
P50	Pipe	Z2-CC	J102	J22	1	8	100	224.04	1.43	1.63	1.86	Open	22.14	0.14	0.02	0.03	Open
P51	Pipe	Z2-CC	J10	J12	294.32	8	100	-5.64	0.04	0	0	Open	-8.46	0.05	0	0	Open
P6	Pipe	Z2-CC	J12	J18	230	8	100	67.53	0.43	0.05	0.2	Open	9.15	0.06	0	0	Open
P7	Pipe	Z3-CC	J28	J30	284	8	100	443.02	2.83	1.87	6.57	Open	63.9	0.41	0.05	0.18	Open
P8	Pipe	Z3-CC	J30	J32	128.11	8	100	681.92	4.35	1.87	14.61	Open	73.39	0.47	0.03	0.24	Open
P9	Pipe	Z2-CC	J34	J14	180.02	8	100	516.69	3.3	1.57	8.74	Open	35.41	0.23	0.01	0.06	Open
P91	Pipe	Z2-CC	J70	J99	1.00	16	110	-401.46	0.64	0	0.49	Open	-33.66	0.05	0	0	Open
P93	Redundancy	Z3-CC	J58	J39	1,059.98	8	100	483.74	3.09	8.2	7.74	Open	80.93	0.52	0.3	0.28	Open

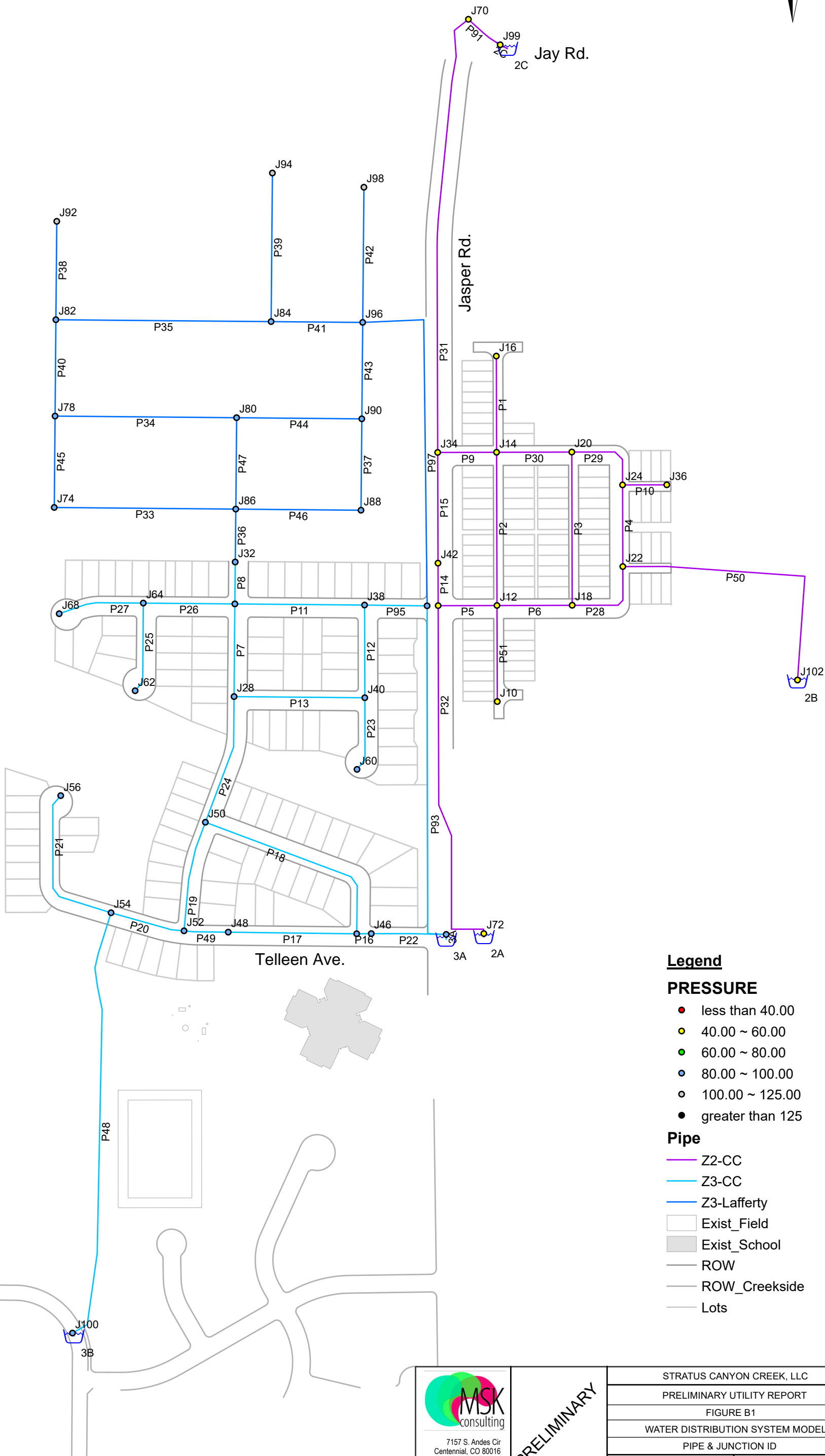
CLIENT**REPORT TITLE**

Water Model Fire Flow Report

Model Run Date: Sept 26, 2020

MDD + FF OUTPUT, MDD = 220.7 gpm**Table B-3: Water Model Fire Flow Report**

ID (Char)	Description (Char)	Zone (Char)	Elevation (ft)	Static Demand (gpm)	Static Pressure (psi)	Static Head (ft)	Fire-Flow Demand (gpm)	Residual Pressure (psi)	Available Flow at Hydrant (gpm)	Available Flow Pressure (psi)	Pass /Fail
J10	FH	Z2-CC	5,071.28	5.64	43.64	5,171.99	1,000.00	38.70	2,353.84	20	Pass
J12	FH	Z2-CC	5,067.00	12.69	45.49	5,171.99	1,000.00	44.38	5,641.39	20	Pass
J14	FH	Z2-CC	5,063.21	12.69	47.13	5,171.99	1,000.00	46.01	5,794.04	20	Pass
J16	FH	Z2-CC	5,060.28	2.82	48.41	5,171.99	1,000.00	43.47	2,594.95	20	Pass
J18	FH	Z2-CC	5,065.28	5.64	46.24	5,171.99	1,000.00	44.75	4,856.46	20	Pass
J20	FH	Z2-CC	5,061.69	8.46	47.79	5,171.99	1,000.00	46.22	4,857.51	20	Pass
J22	FH	Z2-CC	5,065.00	8.46	46.36	5,171.99	1,000.00	44.73	4,613.81	20	Pass
J24	FH	Z2-CC	5,062.00	5.64	47.66	5,171.99	1,000.00	45.51	4,060.06	20	Pass
J28	FH	Z3-CC	5,088.09	7.05	90.9	5,297.86	1,000.00	87.37	5,497.46	20	Pass
J30	FH	Z3-CC	5,083.04	7.76	93.07	5,297.84	1,000.00	88.76	4,998.47	20	Pass
J38	FH	Z3-CC	5,073.91	7.76	97.03	5,297.85	1,000.00	92.98	5,295.89	20	Pass
J40	FH	Z3-CC	5,079.76	5.64	94.5	5,297.86	1,000.00	89.8	4,737.39	20	Pass
J46	FH	Z3-CC	5,082.50	0	93.37	5,297.99	1,000.00	93.07	20,962.02	20	Pass
J50	FH	Z3-CC	5,090.29	11.99	89.98	5,297.95	1,000.00	88.42	8,490.38	20	Pass
J52	FH	Z3-CC	5,093.11	10.58	88.77	5,297.98	1,000.00	87.99	11,997.94	20	Pass
J54	FH	Z3-CC	5,105.24	2.82	83.52	5,297.99	1,000.00	82.59	10,110.35	20	Pass
J56	FH	Z3-CC	5,108.74	4.23	82	5,297.99	1,000.00	74.71	3,198.93	20	Pass
J60	FH	Z3-CC	5,079.11	2.12	94.78	5,297.86	1,000.00	87.14	3,548.46	20	Pass
J62	FH	Z3-CC	5,093.00	3.53	88.76	5,297.84	1,000.00	77.17	2,686.53	20	Pass
J64	FH	Z3-CC	5,088.24	4.94	90.82	5,297.84	1,000.00	82.82	3,385.83	20	Pass
J68	FH	Z3-CC	5,093.00	3.53	88.76	5,297.84	1,000.00	77.36	2,711.62	20	Pass
J74	FH	Z3-Lafferty	5,081.39	7.05	93.77	5,297.80	1,000.00	85.95	3,545.03	20	Pass
J78	FH	Z3-Lafferty	5,077.50	8.46	95.46	5,297.80	1,000.00	88.09	3,730.11	20	Pass
J80	FH	Z3-Lafferty	5,084.93	8.46	92.24	5,297.80	1,000.00	85.59	3,864.63	20	Pass
J82	FH	Z3-Lafferty	5,070.38	8.46	98.54	5,297.80	1,000.00	90.18	3,536.52	20	Pass
J84	FH	Z3-Lafferty	5,075.59	9.87	96.28	5,297.80	1,000.00	88.32	3,580.99	20	Pass
J86	FH	Z3-Lafferty	5,084.37	8.46	92.48	5,297.81	1,000.00	86.51	4,129.38	20	Pass
J88	FH	Z3-Lafferty	5,071.96	0	97.86	5,297.81	1,000.00	90.64	3,817.52	20	Pass
J90	FH	Z3-Lafferty	5,068.57	7.76	99.33	5,297.80	1,000.00	92.68	4,069.66	20	Pass
J92	FH	Z3-Lafferty	5,061.68	4.94	102.31	5,297.80	1,000.00	90.04	2,891.02	20	Pass
J94	FH	Z3-Lafferty	5,057.50	5.64	104.12	5,297.80	1,000.00	90.24	2,725.05	20	Pass
J96	FH	Z3-Lafferty	5,067.36	7.05	99.85	5,297.80	1,000.00	93.26	4,105.48	20	Pass
J98	FH	Z3-Lafferty	5,057.77	4.94	104.01	5,297.80	1,000.00	92.04	2,960.04	20	Pass



Legend

PRESSURE

- less than 40.00
- 40.00 ~ 60.00
- 60.00 ~ 80.00
- 80.00 ~ 100.00
- 100.00 ~ 125.00
- greater than 125

Pipe

- Z2-CC
- Z3-CC
- Z3-Lafferty
- Exist_Field
- Exist_School
- ROW
- ROW_Creekside
- Lots



7157 S. Andes Cir
Centennial, CO 80016
303-903-0918

PRELIMINARY

STRATUS CANYON CREEK, LLC	
PRELIMINARY UTILITY REPORT	
FIGURE B1	
WATER DISTRIBUTION SYSTEM MODEL	
PIPE & JUNCTION ID	
SEPTEMBER 2020	JN: 39-001-01

David Takeda

From: Chad Schroeder <cschroeder@erieco.gov> on behalf of Chad Schroeder
Sent: Friday, June 19, 2020 12:57 PM
To: Chris LaRue; Roger Hollard; dave@mskwater.com
Cc: David Pasic; Wendi Palmer; Tyler Burhenn
Subject: RE: Canyon Creek 7&8 Engineering Comments
Attachments: CC F7&8.pdf

Hello,

Here are the pressures for the Canyon Creek 7&8 Water Modeling.

Filing 7 will be served by **Zone 3** with connections at Jasper Rd. & Telleen Ave., at existing 12"x8" tee at Telleen Ave. west, and at Tynan Drive & N. 119th Street. An intermediary connection is also proposed in the Master Plan at Tynan Drive, just north of the intersection with Stanley Dr. Maximum day and peak hour pressures at those junctions are provided below:

Connection Point	Maximum Day pressure (psi)	Peak Hour pressure (psi)
Jasper Rd & Telleen Ave	99.6	97
Telleen Ave 12x8 Tee	98.3	95.8
Tynan Dr & N 119 th St	74.8	72.5
Tynan Dr & Stanley Dr	88.4	86.2

Filing 8 will be served by **Zone 2** with connections at Telleen Ave. east of the existing PRV, at McGregor Cir. & Northrup Dr., and at Jay Rd & N. 123rd St. The existing version of the hydraulic model only has water mains installed prior to the GIS transfer in October 2018, so there is no water main along Jay Rd in this version. The closest connection is at Jay Rd & County Line Rd. Maximum day and peak hour pressures at these junctions are provided below:

Connection Point	Maximum Day pressure (psi)	Peak Hour pressure (psi)
Telleen Ave PRV east	45	42.8
McGregor Cir & Northrup Dr	48	45.7
Jay Rd & County Line Rd	62.9	59.9

Also attached is a screenshot of the model showing approximate connection points for your reference.



Chad Schroeder, P.E. | Development Engineering Supervisor

Town of Erie | Public Works
645 Holbrook Street | P.O. Box 750 | Erie, CO 80516
Phone: 303-926-2876 | Fax: 303-926-2706
www.erieco.gov/public_works | [Facebook](#) | [Twitter](#) | [LinkedIn](#)

Erie, Colorado - the BEST place to raise a family!

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From: Chad Schroeder
Sent: Thursday, October 15, 2020 5:26 PM
To: Chris LaRue <clarue@erieco.gov>; Roger Hollard <rghollard@gmail.com>
Cc: David Pasic <dpasic@erieco.gov>; Fred Starr <fstarr@erieco.gov>
Subject: RE: Canyon Creek

Hello,

Here are Engineering comments below in red:



Chad Schroeder, P.E. | Development Engineering Supervisor

Town of Erie | Public Works

645 Holbrook Street | P.O. Box 750 | Erie, CO 80516

Phone: 303-926-2876 | Fax: 303-926-2706

www.erieco.gov/public_works | [Facebook](#) | [Twitter](#) | [LinkedIn](#)

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Canyon Creek 7 & 8

Meeting Agenda October 6, 2020

Discussion Items:

1. Gas Line relocation
 - a. Timing issues FP/Dev
2. Mine Shaft capping
 - a. Current status
 - b. Timing Issues FP/Dev
 - c. Strain trench understanding / subsidence issues
3. Utility Comments
 - a. Water Line looping discussion
 - i. Disturbance into existing residential community to the SE of F8 issues

Regarding not having
a third Zone 3
connection

The connection needs to be made from Filing 8 to the Zone 2 lines in the Creekside neighborhood - preferably through the trail spur corridor near the Northrup Drive and McGregor Circle intersection.

b. NO development will occur west of CC / Lafferty (all properties are in Boulder County with conservation easements)

The Town is fine with not providing the Zone 3 connection to 119th Street. However, it needs to be demonstrated that the minimum fire flows and pressures can be realized given water main break analysis in Filing 7.

4. Jasper Road
 - a. Road section – ROW and median (maintenance?)

The Metro District/HOA would be responsible for median maintenance. The Town wants you to provide median options in Jasper Road per the proposed Town median policy.
 - b. Timing of annexation of ROW dedication FP/PP
 - i. Blair discussion (need Round about geometry)

Appendix C Sanitary Sewer Calculations

Canyon Creek and Lafferty**Preliminary Utility Report**

Wastewater Loads

Date: July 2020

MSK Project #: 39-001-01 and 39-002-01

Calc'd by: DLT

PRELIMINARY**Note:**

1. Information is from Erie's 2019 Standards and Specifications, Section 700-Sanitary Sewer Facilities.

Assumptions:

Residential Loading: 90 gpd/capita

Capita per SF Unit: 2.79 capita/unit

Average Day Flow (ADF): 251.1 gpd (per residential unit)

Peaking Factor: $3.8/ADF^{0.17}$ (ADF in mgd, min=2.5, max=5.0)**Table C1-1: Buildout Wastewater Loads**

A	B	C	D	E	F	G
No.	Description	Basin	Units	Average Day Flow (gpd)	Peaking Factor	Peak Hour Demand (gpm)
1	Canyon Creek SF Residential	South	50	12,555	5.00	43.6
2	Canyon Creek SF Residential	North	148	37,163	5.00	129.0
3	Lafferty SF Residential	North	115	28,877	5.00	100.3
Totals			313.0	78,594		272.9

Canyon Creek and Lafferty**Preliminary Utility Report**

Sanitary Sewer Analysis - Pipe Capacity

Date: July 2020

MSK Project #: 39-001-01 and 39-002-01

Calc'd by: DLT

PRELIMINARY**Assumptions**

Buildout Peak Flow: 43.59 gpm

Slope: 0.40% (assumes minimum)

Manning's coeff: 0.0150 (PVC)

Pipe Diameter: 8 in 0.67 ft

Hydraulic Radius R: 0.333 ft

Table C2-1: Peak Flows to 21-inch Outfall

d/D	Depth, ft	Area, ft ²	Wetted Perimeter, ft	Hydraulic Radius, ft	Slope, ft/ft	Slope, %	Velocity, ft/sec	Flow, cfs	Flow, mgd	Flow, gpm
d/D= 0.20	0.13	0.050	0.618	0.080	0.004	0.40%	1.17	0.1	0.0	26
d/D= 0.26	0.17	0.071	0.711	0.101	0.004	0.40%	1.36	0.1	0.1	43.6
d/D= 0.40	0.27	0.130	0.913	0.143	0.004	0.40%	1.72	0.2	0.1	100
d/D= 0.60	0.40	0.219	1.181	0.185	0.004	0.40%	2.04	0.4	0.3	200
d/D= 0.80	0.53	0.299	1.476	0.203	0.004	0.40%	2.17	0.6	0.4	291
d/D= 0.99	0.66	0.348	1.961	0.178	0.004	0.40%	1.99	0.7	0.4	311

Canyon Creek and Lafferty**Preliminary Utility Report**

Sanitary Sewer Analysis - Pipe Capacity

Date: July 2020

MSK Project #: 39-001-01 and 39-002-01

Calc'd by: DLT

PRELIMINARY**Assumptions**

Buildout Peak Flow: 229.30 gpm (includes Lafferty flows)

Slope: 0.40% (assumes minimum)

Manning's coeff: 0.0150 (PVC)

Pipe Diameter: 8 in 0.67 ft

Hydraulic Radius R: 0.333 ft

Table C2-2: Peak Flows to West Side Interceptor

d/D	Depth, ft	Area, ft ²	Wetted Perimeter, ft	Hydraulic Radius, ft	Slope, ft/ft	Slope, %	Velocity, ft/sec	Flow, cfs	Flow, mgd	Flow, gpm
d/D= 0.20	0.13	0.050	0.618	0.080	0.004	0.40%	1.17	0.1	0.0	26
d/D= 0.40	0.27	0.130	0.913	0.143	0.004	0.40%	1.72	0.2	0.1	100
d/D= 0.60	0.40	0.219	1.181	0.185	0.004	0.40%	2.04	0.4	0.3	200
d/D= 0.66	0.44	0.243	1.261	0.193	0.004	0.40%	2.10	0.5	0.3	229.3
d/D= 0.80	0.53	0.299	1.476	0.203	0.004	0.40%	2.17	0.6	0.4	291
d/D= 0.99	0.66	0.348	1.961	0.178	0.004	0.40%	1.99	0.7	0.4	311

Filed for record the _____ day of _____, A.D. _____, at _____ o'clock _____ M. _____
Reception No. _____ By _____ DEPUTY.

SPECIAL WARRANTY DEED

THIS DEED, Made on this day of August 14, 2000, between
ERIE EIGHT, LTD., A COLORADO LIMITED PARTNERSHIP

whose legal address is: 7720 E. BELLEVIEW #200, ENGLEWOOD CO 80111

Grantor(s),
and

JOHNSON DEVELOPMENT COMPANY, A COLORADO CORPORATION

whose legal address is: 1660 ALBION STREET #911, DENVER CO 80222
of the Grantee(s):

WITNESS, That the Grantor, for and in consideration of the sum of (\$10.00)

*** Ten and 00/100 ***

DOLLARS

the receipt and sufficiency of which is hereby acknowledged, has granted, bargained, sold and conveyed, and by these presents does grant, bargain, sell, convey and confirm unto the Grantee(s), their heirs and assigns forever, all the real property, together with improvements, if any, situate, lying and being in the _____ County of BOULDER and State of Colorado, described as follows:

SEE EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF

RESERVING UNTO THE GRANTOR, ITS SUCCESSORS AND ASSIGNS, ANY AND ALL OIL AND GAS MINERAL INTEREST, AND ROYALTIES RELATING THERETO.

also known as street number PROPOSED CANYON CREEK FLGS 5 - 8 AND] THOMAS DESER

TOGETHER with all and singular and hereditaments and appurtenances thereunto belonging, or in anywise appertaining and the reversion and reversions, remainder and remainders, rents, issues and profits thereof; and all the estate, right title interest, claim and demand whatsoever of the Grantor(s), either in law or equity, of, in and to the above bargained premises, with the hereditaments and appurtenances;

TO HAVE AND TO HOLD the said premises above bargained and described with appurtenances, unto the Grantee(s), their heirs, successors and assigns forever. The Grantor, for itself, its successors and assigns, does covenant, and agree that it shall and will WARRANT AND FOREVER DEFEND the above-bargained premises in the quiet and peaceable possession of the Grantee(s), their heirs, successors and assigns, against all and every person or persons claiming the whole or any part thereof, by, through or under the Grantor(s).
EXCEPT GENERAL TAXES AND ASSESSMENTS FOR THE YEAR 2000 AND SUBSEQUENT YEARS. EXCEPTIONS AS LISTED ON EXHIBIT "B" ATTACHED AND MADE A PART HEREOF AS IF FULLY SET FORTH HEREIN.

IN WITNESS WHEREOF the Grantor(s) have executed this deed on the date set forth above.

ERIE EIGHT, LTD., A COLORADO LIMITED PARTNERSHIP

BY: A.L. OVERTON, G.P.

BY: J.B. TELLEN, G.P.

BY: STANLEY R. MEDSKER, G.P.

STATE OF Colorado)
city & County of Denver) ss.

The foregoing instrument was acknowledged before me on this day of August 14, 2000
by A.L. OVERTON, J.B. TELLEN AND STANLEY R. MEDSKER ALL AS GENERAL PARTNERS OF ERIE EIGHT, LTD., A
COLORADO LIMITED PARTNERSHIP

My commission expires
Witness my hand and official seal.

LINDA R. HULL
NOTARY PUBLIC
STATE OF COLORADO

My Commission Expires 2-6-2001

Notary Public

Escrow# AC20244
Title# W337628
Form No. COMM.SWD

When Recorded Return to: JOHNSON DEVELOPMENT COMPANY, A COLORADO CORPORATION
✓ 1660 ALBION STREET #911, DENVER CO 80222

Exhibit A

LEGAL DESCRIPTION

Our Order No. W337628-3

PARCEL A:

(PROPOSED CANYON CREEK SUBDIVISION FILINGS NO. 5 AND 6)

A PORTION OF THE SOUTHEAST QUARTER OF SECTION 24, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTION 24, MONUMENTED AT THE WEST END BY A 3 1/4" ALUMINUM CAP, STAMPED LS 19874, AND AT THE EAST END BY A 2" ALUMINUM CAP, IN A RANGE BOX STAMPED LS 14083, ASSUMED TO BEAR SOUTH 89 DEGREES 51'18" EAST.

COMMENCING AT THE SOUTH QUARTER CORNER OF SECTION 24, THENCE SOUTH 89 DEGREES 51'18" EAST ON THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTION 24 A DISTANCE OF 392.29 FEET TO THE POINT OF BEGINNING.

THENCE ON THE EASTERLY LINE OF THAT PARCEL OF LAND RECORDED AT RECEPTION NO. 1961903 BOULDER COUNTY RECORDS THE FOLLOWING (17) COURSES:

1. NORTH 00 DEGREES 08'38" EAST A DISTANCE OF 131.95 FEET;
2. ON THE ARC OF A CURVE TO THE LEFT, HAVING A DELTA OF 21 DEGREES 29'25", A RADIUS OF 1740.00 FEET, A DISTANCE OF 652.63 FEET;
3. NORTH 21 DEGREES 20'47" WEST A DISTANCE OF 291.79 FEET;
4. NORTH 23 DEGREES 39'13" EAST, A DISTANCE OF 42.43 FEET;
5. NORTH 68 DEGREES 39'13" EAST, A DISTANCE OF 25.00 FEET;
6. NORTH 54 DEGREES 37'03" EAST, A DISTANCE OF 41.23 FEET;
7. NORTH 68 DEGREES 39'13" EAST, A DISTANCE OF 25.00 FEET;
8. NORTH 66 DEGREES 58'27" EAST A DISTANCE OF 94.60 FEET;
9. ON THE ARC OF A CURVE TO THE RIGHT, HAVING A DELTA OF 7 DEGREES 59'16", A RADIUS OF 573.00 FEET, A DISTANCE OF 79.88 FEET;
10. NORTH 14 DEGREES 01'05" WEST, A DISTANCE OF 54.04 FEET;
11. NORTH 11 DEGREES 56'23" WEST A DISTANCE OF 114.09 FEET;
12. SOUTH 67 DEGREES 50'19" WEST, A DISTANCE OF 25.42 FEET;
13. ON THE ARC OF A NON-TANGENT CURVE TO THE RIGHT, HAVING A DELTA OF 23 DEGREES 00'21", A RADIUS OF 1221.00 FEET, A DISTANCE OF 490.27 FEET, A CHORD OF NORTH 10 DEGREES 39'30" WEST, A DISTANCE OF 486.98 FEET;
14. SOUTH 89 DEGREES 11'06" EAST, A DISTANCE OF 10.09 FEET;
15. ON THE ARC OF A NON-TANGENT CURVE TO THE LEFT, HAVING A DELTA OF 11 DEGREES 18'46", A RADIUS OF 400.00 FEET, A DISTANCE OF 78.98 FEET, A CHORD OF NORTH 85 DEGREES 09'31" EAST, A DISTANCE OF 78.85 FEET;
16. NORTH 01 DEGREES 02'34" WEST, A DISTANCE OF 192.33 FEET;
17. NORTH 89 DEGREES 11'06" WEST, A DISTANCE OF 363.78 FEET TO THE EASTERLY RIGHT OF WAY OF MELLER ROAD.

THENCE ON THE ARC OF A CURVE TO THE LEFT, BEING THE EASTERLY RIGHT OF WAY OF MELLER ROAD, HAVING A DELTA OF 6 DEGREES 09'58", A RADIUS OF 512.00 FEET, A DISTANCE OF 55.10 FEET, A CHORD OF NORTH 04 DEGREES 52'13" EAST, A DISTANCE OF 55.07 FEET TO THE SOUTH LINE OF PARCEL B AS RECORDED AT RECEPTION NO. 1826699 BOULDER COUNTY RECORDS;

THENCE ON THE SOUTHERLY AND EASTERLY LINES OF SAID PARCEL B THE FOLLOWING (2)

Exhibit A

EXHIBIT

Our Order No. W337628-3

COURSES:

1. SOUTH 89 DEGREES 50'16" EAST, A DISTANCE OF 340.64 FEET;
2. NORTH 00 DEGREES 50'44" WEST, A DISTANCE OF 581.09 FEET TO THE NORTHERLY LINE OF THE SOUTHEAST QUARTER OF SECTION 24;

THENCE SOUTH 89 DEGREES 50'09" EAST ON THE NORTHERLY LINE OF THE SOUTHEAST QUARTER OF SECTION 24 A DISTANCE OF 602.04 FEET TO THE NORTHWEST CORNER OF THAT PARCEL RECORDED AT RECEPTION NO. 1846729 BOULDER COUNTY RECORDS;
THENCE ON THE WESTERLY AND SOUTHERLY LINES OF SAID PARCEL RECORDED AT RECEPTION NO. 1846729 THE FOLLOWING (2) COURSES:

1. SOUTH 00 DEGREES 54'34" EAST, A DISTANCE OF 1327.96 FEET;
2. SOUTH 89 DEGREES 52'58" EAST, A DISTANCE OF 949.13 FEET TO THE NORTHWEST CORNER OF PARCEL C AS RECORDED AT RECEPTION NO. 1826699 BOULDER COUTNY RECORDS;

THENCE SOUTH 15 DEGREES 07'16" WEST ON THE WESTERLY LINE OF SAID PARCEL C, A DISTANCE OF 303.83 FEET TO THE NORTHWEST CORNER OF PARCEL B AS RECORDED AT RECEPTION NO. 1961903 BOULDER COUNTY RECORDS;
THENCE ON THE WESTERLY AND SOUTHERLY LINES OF SAID PARCEL B THE FOLLOWING (2) COURSES:

1. SOUTH 00 DEGREES 59'06" EAST, A DISTANCE OF 234.94 FEET;
 2. SOUTH 89 DEGREES 53'01" EAST, A DISTANCE OF 834.47 FEET TO THE EASTERLY LINE OF THE SOUTHEAST QUARTER OF SECTION 24;
- THENCE SOUTH 00 DEGREES 59'06" EAST, ON THE EASTERLY LINE OF THE SOUTHEAST QUARTER A DISTANCE OF 797.67 FEET TO THE SOUTHEAST CORNER OF SECTION 24;

THENCE NORTH 89 DEGREES 51'18" WEST ON THE SOUTHERLY LINE OF THE SOUTHEAST QUARTER OF SECTION 24, A DISTANCE OF 2288.91 FEET TO THE POINT OF BEGINNING.

**2073245**

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Boulder County Clerk, CO WD

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Exhibit A

Our Order No. W337628-3

LEGAL DESCRIPTION

PARCEL B:
(PROPOSED CANYON CREEK SUBDIVISION FILING NO. 7)

A PARCEL OF LAND WITHIN THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO, SHOWN AS PARCEL NO. 074 ON MAP NO. 1465130, EXCEPT THAT REAL PROPERTY DESCRIBED IN RECEPTION NO. 1895203, RECEPTION NO. 1534041, AND RECEPTION NO. 1826699 FILED IN THE RECORDS OF SAID COUNTY, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHWEST CORNER OF SAID SECTION 13;

THENCE SOUTH 89 DEGREES 44' 23" EAST, ALONG THE SOUTH LINE OF THE SOUTHWEST QUARTER, SECTION 13, A DISTANCE OF 1330.55 FEET TO THE SOUTHWEST CORNER OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER WHICH IS THE TRUE POINT OF BEGINNING;

THENCE NORTH 00 DEGREES 26' 39" WEST, ALONG THE WEST LINE OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER, A DISTANCE OF 1319.12 FEET TO THE NORTHWEST CORNER OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 13; THENCE SOUTH 89 DEGREES 50' 01" EAST, ALONG THE NORTH LINE OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER, A DISTANCE OF 1329.50 FEET TO THE NORTHEAST CORNER OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 13; THENCE SOUTH 00 DEGREES 29' 19" EAST, ALONG THE EAST LINE OF THE SOUTHWEST QUARTER OF SECTION 13, A DISTANCE OF 795.37 FEET TO THE SOUTHERLY INTERSECTION OF SAID RECEPTION NO. 1895203 AS RECORDED IN THE RECORDS OF SAID COUNTY WITH THE SAID EAST LINE; THENCE ALONG THE NORTHERLY AND EASTERLY LINES OF SAID RECEPTION NO. 1895203 THROUGH THE FOLLOWING FOUR COURSES:

1. NORTH 89 DEGREES 42' 44" WEST, 180.00 FEET;
2. SOUTH 07 DEGREES 35' 53" WEST, 211.75 FEET;
3. SOUTH 00 DEGREES 26' 46" EAST, 110.00 FEET;
4. SOUTH 89 DEGREES 42' 46" EAST, 160.06 FEET TO THE WEST LINE OF TRACT G, CANYON CREEK FILING NO. 2 AS PLATTED IN SAID RECORDS;

THENCE SOUTH 00 DEGREES 28' 17" EAST, A DISTANCE OF 55.49 FEET TO THE NORTH LINE OF SAID RECEPTION NO. 1826699 IN THE RECORDS OF SAID COUNTY; THENCE ALONG THE NORTH AND WEST LINES OF SAID RECEPTION NO. 1826699 THROUGH THE FOLLOWING TWO COURSES:

1. SOUTH 89 DEGREES 44' 29" WEST, 500.00 FEET;
2. SOUTH 00 DEGREES 28' 28" EAST, 145.00 FEET TO THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SECTION 13;

THENCE NORTH 89 DEGREES 44' 23" WEST, ON THE SOUTH LINE OF THE SOUTHWEST QUARTER, A DISTANCE OF 780.55 FEET TO THE POINT OF BEGINNING.

Exhibit A



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Boulder County Clerk, CO MD

Our Order No. W337628-3

LEGAL DESCRIPTION

PARCEL C:
(PROPOSED CANYON CREEK SUBDIVISION FILING NO. 8)

A PARCEL OF LAND WITHIN THE SOUTHEAST QUARTER OF SECTION 13, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO, SHOWN AS PARCEL 073 ON PARCEL MAP NO. 1465130 IN THE RECORDS OF SAID COUNTY, LYING SOUTH OF THE UNION PACIFIC RAILROAD RIGHT OF WAY, AND NORTH OF THAT REAL PROPERTY DESCRIBED IN RECEPTION NO. 1895203, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTH QUARTER CORNER OF SAID SECTION 13;

THENCE NORTH 00 DEGREES 29' 19" WEST, ON THE WEST LINE OF SAID SOUTHEAST QUARTER, A DISTANCE OF 750.95 FEET TO THE NORTH INTERSECTION OF SAID RECEPTION NO. 1895203 AS RECORDED IN THE RECORDS OF SAID COUNTY WITH SAID WEST LINE, WHICH IS THE POINT OF BEGINNING;
THENCE ON THE NORTH LINE OF SAID RECEPTION NO. 1895203 THE FOLLOWING FIVE (5) COURSES;

1. NORTH 85 DEGREES 33' 33" EAST, 80.27 FEET;
2. NORTH 54 DEGREES 48' 33" EAST, 920.00 FEET;
3. SOUTH 85 DEGREES 58' 27" EAST, 214.00 FEET;
4. NORTH 56 DEGREES 33' 33" EAST, 560.00 FEET;
5. NORTH 18 DEGREES 21' 09" EAST, 64.70 FEET TO THE SOUTH RIGHT OF WAY LINE OF THE UNION PACIFIC RAILROAD;

THENCE NORTH 57 DEGREES 49' 09" WEST, ALONG THE SOUTH RIGHT OF WAY LINE OF SAID RAILROAD, 985.00 FEET TO A NON-TANGENT 2764.93 FOOT RADIUS CURVE WHICH IS CONCAVE SOUTHWESTERLY;

THENCE WESTERLY ALONG SAID NON-TANGENT CURVE, WHOSE CENTER BEARS SOUTH 31 DEGREES 58' 00" WEST, THROUGH A CENTRAL ANGLE OF 16 DEGREES 14' 03", A DISTANCE OF 783.42 FEET TO THE WEST LINE OF SAID SOUTHEAST QUARTER;
THENCE SOUTH 00 DEGREES 29' 19" EAST, NON-TANGENT TO SAID CURVE, 1731.77 FEET TO THE POINT OF BEGINNING.

Exhibit A

PARCEL E W337628



LEGAL DESCRIPTION

A TRACT OF LAND, BEING A GAP BETWEEN RECEPTION NO. 1875717 DATED 11/30/98, RECEPTION NO. 1961903 PARCEL A DATED 7/19/99 AND THOMAS RESERVOIR AS SHOWN ON THE MAP LOCATED AT FILE E-147, BOULDER COUNTY RECORDS. BEING A PORTION OF THE SOUTHWEST QUARTER OF SECTION 24 TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

BASIS OF BEARINGS: THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SECTION 24, MONUMENTED AT THE WEST END BY A 2 1/2" ALUMINUM CAP, IN A RANGE BOX, STAMPED LS 23501, AND AT THE EAST END BY A 3 1/4" ALUMINUM CAP, STAMPED LS 19874, ASSUMED TO BEAR N89°57'19"E.

COMMENCING AT THE SOUTHWEST CORNER OF SECTION 24, THENCE N89°57'19"E ON THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SECTION 24 A DISTANCE OF 1396.12 FEET TO THE SOUTHWEST CORNER OF THAT PARCEL RECORDED AT RECEPTION NO. 1961903, SAID CORNER ALSO BEING THE SOUTHEAST CORNER OF THAT PARCEL RECORDED AT RECEPTION NO. 1875717. THENCE N00°39'10"W ON THE WESTERLY LINE OF RECEPTION NO. 1961903 AND THE EASTERLY LINE OF RECEPTION NO. 1875717 A DISTANCE OF 606.61 FEET TO THE POINT OF BEGINNING.

THENCE N00°39'10"W, LEAVING THE WESTERLY LINE OF RECEPTION NO. 1961903 AND CONTINUING ON THE EASTERLY LINE OF RECEPTION NO. 1875717 A DISTANCE OF 141.47 FEET TO THE SOUTHEASTERLY LINE OF THOMAS RESERVOIR AS SHOWN ON THE MAP LOCATED AT FILE E-147 BOULDER COUNTY RECORDS.

THENCE ALONG THE SOUTHEASTERLY LINE OF THOMAS RESERVOIR THE FOLLOWING (3) THREE COURSES:

1. N56°41'15"E A DISTANCE OF 0.45 FEET.
2. N38°15'15"E A DISTANCE OF 113.00 FEET.
3. N50°57'15"E A DISTANCE OF 128.01 FEET TO THE WESTERLY LINE OF THAT PARCEL RECORDED AT RECEPTION NO. 1961903.

THENCE ON THE WESTERLY LINE OF THAT PARCEL RECORDED AT RECEPTION NO. 1961903 THE FOLLOWING (5) COURSES:

1. S49°55'01"W A DISTANCE OF 63.96 FEET.
2. S39°33'43"W A DISTANCE OF 75.47 FEET.
3. S29°39'18"W A DISTANCE OF 75.47 FEET.
4. S19°44'52"W A DISTANCE OF 75.47 FEET.
5. S06°34'58"W A DISTANCE OF 75.22 FEET TO THE POINT OF BEGINNING.

CONTAINING A CALCULATED AREA OF 0.101 ACRES OR 4,407 SQUARE FEET.

FOR AND ON BEHALF OF J-R ENGINEERING



Exhibit A

GARY K. HAMMER
PROFESSIONAL LAND SURVEYOR
COLORADO REGISTRATION NO. 24307



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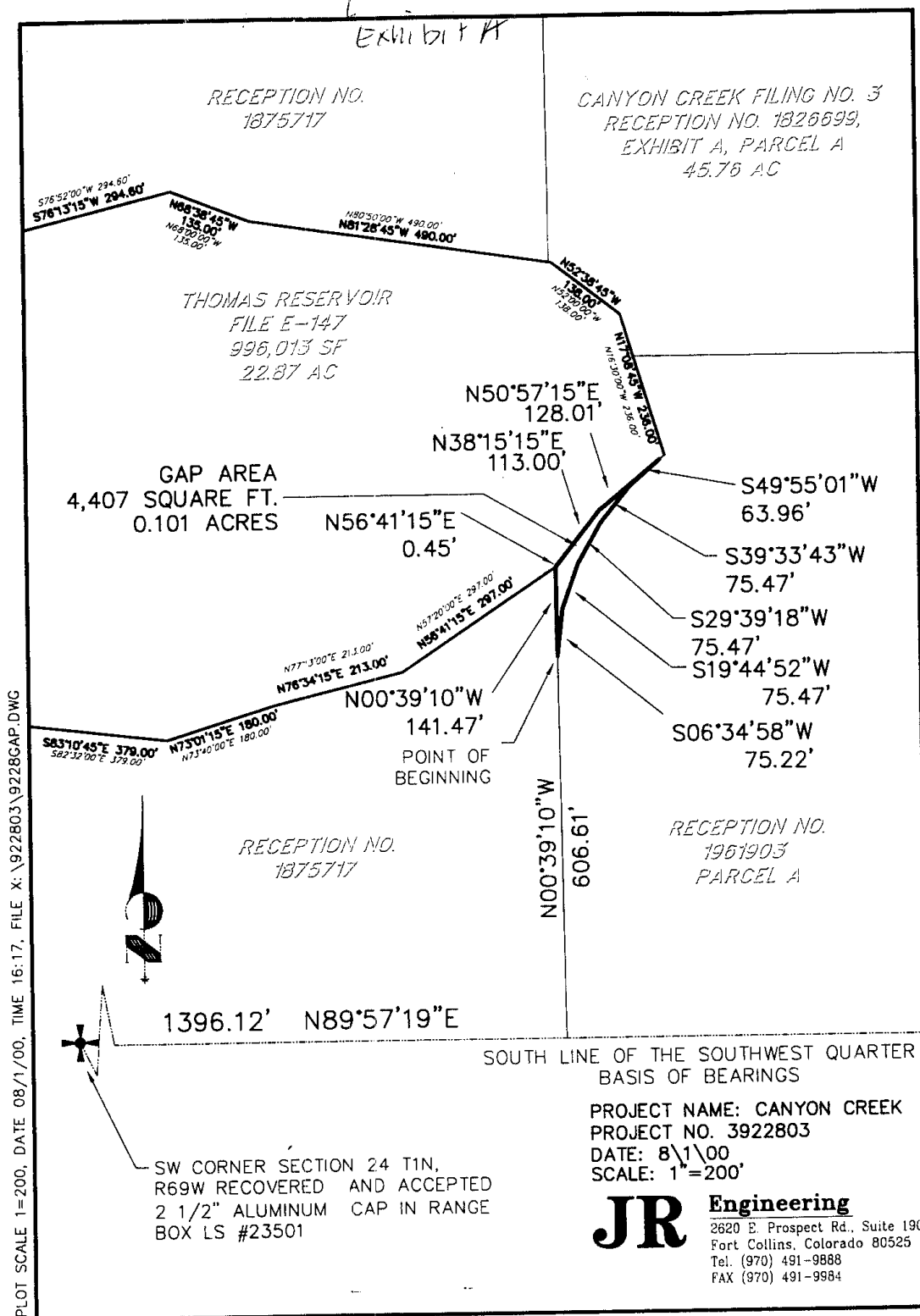
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EXHIBIT **B**

Our Order No. W337628-3

AN UNDIVIDED 1/2 INTEREST IN ALL COAL, OIL, GAS AND OTHER MINERALS AS RESERVED IN DEED RECORDED JUNE 2, 1958 IN BOOK 1076 AT PAGE 265.

AN UNDIVIDED 1/2 INTEREST IN ALL COAL, OIL, GAS AND OTHER MINERALS AS RESERVED IN DEED RECORDED DECEMBER 30, 1969 UNDER RECEPTION NO. 932667.

NOTE: OIL AND GAS LEASES RECORDED SEPTEMBER 30, 1981, UNDER RECEPTION NOS. 466151 THROUGH 466154.

NOTE: PRODUCTION AFFIDAVIT IN CONJUNCTION WITH THE ABOVE LEASES RECORDED DECEMBER 12, 1985, UNDER RECEPTION NO. 730940.

NOTE: DECLARATION OF UNITIZATION RECORDED APRIL 27, 1998, UNDER RECEPTION NOS. 1795309 AND 1795310.

NOTE: NOTICE OF RIGHT TO USE SURFACE OF LANDS RECORDED DECEMBER 24, 1996, UNDER RECEPTION NO. 1666159, AND RECORDED JULY 12, 1999, UNDER RECEPTION NO. 1959112.

EASEMENTS AND RIGHTS OF WAY FOR COUNTY ROAD 901 A/K/A EAST COUNTY LINE ROAD AND COUNTY ROAD 52 A/K/A ISABELLE ROAD.

ANY TAX, LIEN, FEE, OR ASSESSMENT BY REASON OF INCLUSION OF SUBJECT PROPERTY IN THE ERIE WATER & SANITATION DISTRICT, AS EVIDENCED BY ORDER RECORDED August 20, 1976, UNDER RECEPTION NO. 188837.

EASEMENT AND RIGHT OF WAY FOR PIPELINE PURPOSES AS GRANTED TO PANHANDLE EASTERN PIPE LINE CO. BY INSTRUMENT RECORDED OCTOBER 30, 1981 UNDER RECEPTION NO. 470726.

EASEMENT AND RIGHT OF WAY FOR PIPELINE PURPOSES AS GRANTED TO

EXHIBIT B

Our Order No. W337628-3

PANHANDLE EASTERN PIPE LINE CO. BY INSTRUMENT RECORDED MAY 26, 1982
UNDER RECEPTION NO. 496103.

EASEMENT AND RIGHT OF WAY FOR PIPELINE PURPOSES AS GRANTED TO
PANHANDLE EASTERN PIPE LINE CO. BY INSTRUMENT RECORDED SEPTEMBER 9,
1982 UNDER RECEPTION NO. 510735.

EASEMENT AND RIGHT OF WAY FOR PIPELINE PURPOSES AS GRANTED TO WESTERN
GAS SUPPLY CO. BY INSTRUMENT RECORDED SEPTEMBER 28, 1984 UNDER
RECEPTION NO. 649217.

TERMS, CONDITIONS AND PROVISIONS OF NONPARTICIPATING ROYALTY INTEREST
CONVEYANCE AGREEMENT RECORDED December 03, 1984 AT RECEPTION NO.
560015.

EASEMENT AND RIGHT OF WAY FOR PIPELINE PURPOSES AS GRANTED TO VESSELS
OIL & GAS CO. BY INSTRUMENT RECORDED APRIL 25, 1985 UNDER RECEPTION
NO. 684895.

EASEMENT AND RIGHT OF WAY FOR PIPELINE PURPOSES AS GRANTED TO VESSELS
OIL & GAS CO. BY INSTRUMENT RECORDED APRIL 22, 1988, UNDER RECEPTION
NO. 914407.

EASEMENT AND RIGHT OF WAY FOR PIPELINE PURPOSES AS GRANTED TO PUBLIC
SERVICE COMPANY OF COLORADO BY INSTRUMENT RECORDED AUGUST 17, 1995,
UNDER RECEPTION NO. 1540524.

TERMS, CONDITIONS AND PROVISIONS OF INTERGOVERNMENTAL AGREEMENT
AMENDMENT TO EAST CENTRAL BOULDER COUNTY COMPREHENSIVE DEVELOPMENT
PLAN RECORDED April 03, 1998 AT RECEPTION NO. 1787992.

TERMS, CONDITIONS AND PROVISIONS OF EASEMENT AGREEMENT RECORDED
December 28, 1998 AT RECEPTION NO. 1886645.

EXHIBIT 8

Our Order No. W337628-3

ALL OIL, GAS, AND OTHER MINERALS AS RESERVED BY THE UNION PACIFIC RAILROAD CO., AND THE TERMS WITHIN, BY INSTRUMENT RECORDED APRIL 1, 1931 IN BOOK 573 AT PAGE 510. (AFFECTS PARCEL C - PROPOSED FLG 8)

EASEMENT AND RIGHT OF WAY FOR ELECTRIC TRANSMISSION LINE PURPOSES AS GRANTED TO THE UNITED STATES OF AMERICA BY INSTRUMENT RECORDED APRIL 14, 1951 IN BOOK 885 AT PAGE 448. (AFFECTS PARCEL B - PROPOSED FLG 7)

OIL AND GAS LEASE BY AND BETWEEN ERIE EIGHT, LTD. AND CENTENNIAL PETROLEUM INC. RECORDED JULY 21, 1980 UNDER RECEPTION NO. 404110. (AFFECTS PARCEL B - PROPOSED FLG 7)

NOTE: DECLARATION OF UNITIZATION RECORDED OCTOBER 15, 1991 UNDER RECEPTION NO. 1136109.

NOTE: DECLARATION OF UNITIZATION RECORDED APRIL 16, 1982 UNDER RECEPTION NO. 490989 AND AMENDED BY INSTRUMENT RECORDED SEPTEMBER 14, 1992 UNDER RECEPTION NO. 1219237.

NOTE: NOTICE OF RIGHT TO USE SURFACE OF LANDS RECORDED DECEMBER 24, 1996, UNDER RECEPTION NO. 1666160.

EASEMENT AND RIGHT OF WAY FOR PIPELINE PURPOSES AS GRANTED TO PANHANDLE EASTERN PIPELINE CO. BY INSTRUMENT RECORDED MAY 26, 1982, UNDER RECEPTION NO. 496103. (AFFECTS PARCEL B - PROPOSED FLG 7)

EASEMENT AND RIGHT OF WAY FOR PIPELINE PURPOSES AS GRANTED TO VESSELS OIL & GAS CO. BY INSTRUMENT RECORDED APRIL 25, 1985, UNDER RECEPTION NO. 684896. (AFFECTS PARCEL B - PROPOSED FLG 7)

ANY TAX, LIEN, FEE OR ASSESSMENT BY REASON OF INCLUSION OF SUBJECT PROPERTY IN THE NORTHERN COLORADO WATER CONSERVANCY DISTRICT, AS EVIDENCED BY INSTRUMENTS RECORDED FEBRUARY 07, 1992, UNDER RECEPTION NOS. 1159956 AND 1159957 AND RECORDED JULY 15, 1994, UNDER RECEPTION NO. 1446208.

EXHIBIT B

Our Order No. W337628-3

EASEMENT AND RIGHT OF WAY FOR SEWER LINE PURPOSES AS GRANTED TO THE ERIE WATER AND SANITATION DISTRICT BY INSTRUMENT RECORDED NOVEMBER 21, 1994, UNDER RECEPTION NO. 1479810. (AFFECTS PARCEL B - PROPOSED FLG 7)

TERMS, CONDITIONS AND PROVISIONS OF AGREEMENT RECORDED JANUARY 16, 1996 UNDER RECEPTION NO. 1576745.

TERMS, CONDITIONS AND PROVISIONS OF AGREEMENT RECORDED JULY 23, 1998 UNDER RECEPTION NO. 1826698. (AFFECTS PARCEL B - PROPOSED FLG 7)

EASEMENTS AND RIGHTS OF WAY FOR THE THOMAS RESERVOIR, THOMAS RESERVOIR OUTLOT DITCH, SOUTH BOULDER CANON DITCH AND LEYNER COTTONWOOD DITCH, AN AS SET FORTH IN INSTRUMENT RECORDED JULY 23, 1998, UNDER RECEPTION NO. 1826698. (AFFECTS PARCEL B - PROPOSED FLG 7)

EXISTENCE OF GAS LINE LOCATE MARKERS ALONG THE NORTHERLY BOUNDARY OF PARCEL B (PROPOSED FLG 7) AND EXISTENCE OF GAS LINE, IF ANY, AS EVIDENCED ON ALTA SURVEY DATED JUNE 13, 2000 BY J.R. ENGINEERING, GARY K. HAMMER, PLS #24307, JOB NO. 922803.

CLAIMS OF RIGHT, TITLE AND/OR INTEREST IN THE PROPERTY BETWEEN THE THE WESTERLY BOUNDARY OF PARCEL B (PROPOSED FLG 7) AND THE FENCE (AS DEPICTED ON THE SURVEY PREPARED BY J.R. ENGINEERING, GARY K. HAMMER PLS #24307, JOB NUMBER 922803) WHETHER SAID CLAIMS ARISE BY ABANDONMENT, ADVERSE POSSESSION OR OTHER MEANS.

EXISTENCE OF IRRIGATION DITCH ACROSS PARCEL C AND ALONG THE NORTHERLY PORTION OF THE WESTERLY BOUNDARY LINE OF PARCEL C (PROPOSED FLG 8) AS EVIDENCED ON ALTA SURVEY DATED JUNE 12, 2000, BY J.R. ENGINEERING, GARY K. HAMMER PLS #24307, JOB NO. 922803.

CLAIMS OF RIGHT, TITLE AND/OR INTEREST IN THE PROPERTY BETWEEN THE NORTHERLY PORTION OF THE WESTERLY BOUNDARY LINE OF PARCEL C (PROPOSED FLG 8) AND THE FENCE (AS DEPICTED ON THE SURVEY PREPARED BY J.R. ENGINEERING, GARY K. HAMMER PLS 24307, JOB NUMBER 922803) WHETHER SAID CLAIMS ARISE BY ABANDONMENT, ADVERSE POSSESSION OR OTHER MEANS.

EXHIBIT *B*

Our Order No. W337628-3

LACK OF ACCESS TO AND FROM PUBLIC ROAD, HIGHWAY, OR STREET AS TO
PARCEL C (PROPOSED FLG 8) AS IT CURRENTLY EXISTS AS SHOWN ON THE
ALTA SURVEY BY J.R. ENGINEERING, GARY K. HAMMER PLS 24307, JOB NO.
922803.

NOTE: UPON FILING OF A FINAL PLAT AND DEDICATION OF ROADWAYS, THE
ABOVE EXCEPTION WILL BE DELETED.

EXHIBIT B

Our Order No. W337628-3

AN UNDIVIDED 1/2 INTEREST IN ALL COAL, OIL, GAS AND OTHER MINERALS AS RESERVED IN DEED RECORDED JUNE 2, 1958 IN BOOK 1076 AT PAGE 265.

AN UNDIVIDED 1/2 INTEREST IN ALL COAL, OIL, GAS AND OTHER MINERALS AS RESERVED IN DEED RECORDED DECEMBER 30, 1969 UNDER RECEPTION NO. 932667.

NOTE: OIL AND GAS LEASES RECORDED SEPTEMBER 30, 1981, UNDER RECEPTION NOS. 466151 THROUGH 466154.

NOTE: PRODUCTION AFFIDAVIT IN CONJUNCTION WITH THE ABOVE LEASES RECORDED DECEMBER 12, 1985, UNDER RECEPTION NO. 730940.

NOTE: DECLARATION OF UNITIZATION RECORDED APRIL 27, 1998, UNDER RECEPTION NOS. 1795309 AND 1795310.

NOTE: NOTICE OF RIGHT TO USE SURFACE OF LANDS RECORDED DECEMBER 24, 1996, UNDER RECEPTION NO. 1666159, AND RECORDED JULY 12, 1999, UNDER RECEPTION NO. 1959112.

EASEMENT AND RIGHT OF WAY FOR PIPELINE PURPOSES AS GRANTED TO PANHANDLE EASTERN PIPE LINE CO. BY INSTRUMENT RECORDED OCTOBER 30, 1981 UNDER RECEPTION NO. 470726.

EXHIBIT 8

Our Order No. W337628-3

EASEMENT AND RIGHT OF WAY FOR PIPELINE PURPOSES AS GRANTED TO
PANHANDLE EASTERN PIPE LINE CO. BY INSTRUMENT RECORDED SEPTEMBER 9,
1982 UNDER RECEPTION NO. 510735.

ANY TAX OR ASSESSMENTS BY REASON OF THE INCLUSION OF THE SUBJECT
PROPERTY WITHIN THE ERIE WATER & SANITATION DISTRICT AS EVIDENCED BY
ORDER RECORDED AUGUST 20, 1976 UNDER RECEPTION NO. 188837.

TERMS, CONDITIONS AND PROVISIONS OF NONPARTICIPATING ROYALTY INTEREST
CONVEYANCE AGREEMENT RECORDED DECEMBER 03, 1984 UNDER RECEPTION NO.
660015.

TERMS, CONDITIONS AND PROVISIONS OF INTERGOVERNMENTAL AGREEMENT
AMENDMENT TO EAST CENTRAL BOULDER COUNTY COMPREHENSIVE DEVELOPMENT
PLAN RECORDED APRIL 03, 1998 UNDER RECEPTION NO. 1787992.

EASEMENT AND RIGHT OF WAY FOR PIPELINE PURPOSES AS GRANTED TO VESSELS
OIL & GAS CO. BY INSTRUMENT RECORDED APRIL 22, 1988 UNDER RECEPTION
NO. 914407.

ANY AND ALL DECREES, APPROPRIATIONS, FRANCHISES AND RIGHTS OF WAY FOR
INLET AND OUTLET DITCHES INSOFAR AS MAY BE APPLICABLE WITH REGARD TO
THE THOMAS RESERVOIR, AND ANY AND ALL REGULATIONS INCLUDING
MUNICIPAL, COUNTY, STATE, FEDERAL STATUTORY AND REGULATORY PROVISIONS
(INCLUDING WETLANDS PROVISIONS) WITH REGARD TO THE THOMAS RESERVOIR,
THE MAP OF WHICH IS FILED IN DITCH PLAT BOOK E AT PAGE 147, AND AS
SHOWN ON THE ALTA SURVEY DATED JULY 13, 2000 BY J.R. ENGINEERING,
GARY K. HAMMER PLS 24307, JOB NO. 9228.03.

GENERAL WARRANTY DEED

THIS DEED, made this 26th day of April, 2002, between COALTON ROAD INVESTMENTS, LLC and CLEAR CREEK 48 LLC of the N/A* County of Adams and State of Colorado, grantor(s), and JOHNSON DEVELOPMENT COMPANY whose legal address is 4380 S. Syracuse #510, Denver, Colorado, of the City and County of Denver and State of Colorado, grantee(s), 80237

WITNESSETH, That the grantor(s), for and in consideration of the sum of Ten (\$10.00) DOLLARS, the receipt and sufficiency of which is hereby acknowledged, have granted, bargained, sold and conveyed, and by these presents do grant, bargain, sell, convey and confirm, unto the grantee(s), their heirs, and assigns forever, all the real property, together with improvements, if any, situate, lying and being in the n/a County of Boulder and State of Colorado, described as follows:

A TRACT OF LAND being Tract O of the Creekside Subdivision as recorded in the Boulder County Clerk and Recorder's Office at Reception No. 2259443, located in the Southwest Quarter of Section 13, Township 1 North, Range 69 West of the 6th Principal Meridian, County of Boulder, State of Colorado, described as follows:

COMMENCING at the Southeast corner of the Southwest Quarter of said Section 13 and considering the East line of the Southwest Quarter of said Section 13 to bear North 00°31'00" West, with all bearings contained herein relative thereto; thence North 00°31'00" West along said East line a distance of 206.00 feet; thence North 89°44'19" West, a distance of 90.00 feet to the Southwestern most corner of Tract L, a part of said Creekside Subdivision, to the POINT OF BEGINNING;

Thence along the Southerly boundary of said Tract O, North 89°44'19" West, a distance of 120.16 feet to the Southwest corner of said Tract O;

Thence along the westerly boundary of said Tract O, North 00°31'00" West a distance of 110.00 feet;

Thence continuing along said Westerly boundary, North 07°40'20" East, a distance of 211.75 feet, to the Northwest corner of said Tract O;

Thence along the Northerly boundary of said Tract O, South 89°44'19" East, a distance of 89.99 feet to the Northwest corner of said Tract L;

Thence along the Westerly boundary of said Tract L, South 00°31'00" East, a distance of 320.00 feet to the POINT OF BEGINNING;

Containing 0.81 acres, more or less

also known by street and number as:

TOGETHER with all and singular the hereditaments and appurtenances thereto belonging, or in anywise appertaining, and the reversion and reversions, remainders, rents, issues, and profits thereof; and all the estate, right, title, interest, claim and demand whatsoever of the grantor(s), either in law or equity, of, in and to the above bargained premises, with the hereditaments and appurtenances; and except those title exceptions attached as Exhibit "A" hereto.

TO HAVE AND TO HOLD the said premises above bargained and described with the appurtenances, unto the grantee(s), their heirs and assigns forever. The grantor(s) for themselves, their heirs and personal representative or successors, do covenant and agree that they shall and will WARRANT AND FOREVER DEFEND the above-bargained premises in the quiet and peaceable possession of the grantee(s), their heirs and assigns, against all and every person or persons claiming the whole or any part thereof, by, through or under the grantor(s).

IN WITNESS WHEREOF, The grantor(s) have executed this deed on the date set forth above.

COALTON ROAD INVESTMENTS, LLC

CLEAR CREEK 48, LLC

Clay Carlson, Manager

Kent D. Carlson, Manager

STATE OF COLORADO)

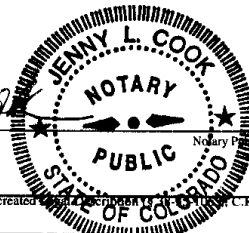
)ss.

County of ADAMS)

The foregoing instrument was acknowledged before me this 26th day of April, 2002 by Clay Carlson as Manager of Coalton Road Investments, LLC and Kent D. Carlson as Manager of Clear Creek 48, LLC.

My commission expires 02/09/2004. Witness my hand and official seal.

Jenny L. Cook



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Boulder County Clerk, CO WD

Exhibit A

ALTA COMMITMENT

Schedule B - Section 2

(Exceptions)

Our Order No. ABB846408

The policy or policies to be issued will contain exceptions to the following unless the same are disposed of to the satisfaction of the Company:

1. Rights or claims of parties in possession not shown by the public records.
2. Easements, or claims of easements, not shown by the public records.
3. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, and any facts which a correct survey and inspection of the premises would disclose and which are not shown by the public records.
4. Any lien, or right to a lien, for services, labor or material theretofore or hereafter furnished, imposed by law and not shown by the public records.
5. Defects, liens, encumbrances, adverse claims or other matters, if any, created, first appearing in the public records or attaching subsequent to the effective date hereof but prior to the date the proposed insured acquires of record for value the estate or interest or mortgage thereon covered by this Commitment.
6. Taxes or special assessments which are not shown as existing liens by the public records.
7. Liens for unpaid water and sewer charges, if any.
8. In addition, the owner's policy will be subject to the mortgage, if any, noted in Section 1 of Schedule B hereof.
9. EXISTING LEASES AND TENANCIES, IF ANY.
10. EASEMENT GRANTED TO THE UNITED STATES OF AMERICA, FOR ELECTRIC LINES AND INCIDENTAL PURPOSES, BY INSTRUMENT RECORDED DECEMBER 31, 1950 IN BOOK 865 AT PAGE 300.
11. A RESERVATION OF ALL COAL, OIL AND OTHER MINERALS IN THE SOUTHEAST QUARTER OF SECTION 13, AS RESERVED IN DEED RECORDED APRIL 1, 1931 IN BOOK 573 AT PAGE 510.
12. AN OIL AND GAS LEASE BETWEEN J.B. TELLEEN, AN ATTORNEY-IN-FACT FOR J. BARRY TELLEEN, TRUSTEE, LESSOR AND CENTENNIAL PETROLEUM, INC., LESSEE, RECORDED JANUARY 6, 1982, UNDER RECEPTION NO. 478713.

NOTE: AMENDED PRODUCTION AFFIDAVIT IN CONNECTION WITH SAID LEASE WAS RECORDED SEPTEMBER 2, 1982 UNDER RECEPTION NO. 509991.
13. A RIGHT OF WAY FOR GAS PIPELINE AS GRANTED TO PANHANDLE EASTERN PIPELINE COMPANY IN DOCUMENT RECORDED MAY 26, 1982, UNDER RECEPTION NO. 496103.

Exhibit A

ALTA COMMITMENT

Schedule B - Section 2

(Exceptions)

Our Order No. ABB846408

The policy or policies to be issued will contain exceptions to the following unless the same are disposed of to the satisfaction of the Company:

14. EASEMENT AND RIGHT OF WAY FOR PIPELINE PURPOSES AS GRANTED TO VESSELS OIL & GAS CO. BY INSTRUMENT RECORDED APRIL 25, 1985 UNDER RECEPTION NO. 684896.
15. EASEMENT AND RIGHT OF WAY FOR SEWER LINE PURPOSES AS GRANTED TO THE ERIE WATER AND SANITATION DISTRICT BY INSTRUMENT RECORDED NOVEMBER 21, 1994, UNDER RECEPTION NO. 1479811.
16. OIL AND GAS LEASE BETWEEN ERIE EIGHT, LTD., LESSOR, AND CENTENNIAL PETROLEUM, INC., LESSEE, RECORDED JULY 21, 1980 UNDER RECEPTION NO. 404110.

NOTE: AMENDED PRODUCTION AFFIDAVIT IN CONNECTION WITH SAID LASE WAS RECORDED SEPTEMBER 2, 1982 UNDER RECEPTION NO. 509991.
17. EASEMENTS, CONDITIONS, COVENANTS, RESTRICTIONS, RESERVATIONS AND NOTES ON THE RECORDED PLAT OF CREEKSIDE SUBDIVISION.
18. TERMS, CONDITIONS, PROVISIONS, BURDENS AND OBLIGATIONS AS SET FORTH IN CREEKSIDE SUBDIVISION DEVELOPMENT AGREEMENT RECORDED FEBRUARY 28, 2002 UNDER RECEPTION NO. 2259499.
19. NOTWITHSTANDING THE INSURING CLAUSES OF THE POLICY, THE COMPANY DOES NOT INSURE AGAINST LOSS OR DAMAGE BY REASON OF A LACK OF A RIGHT OF ACCESS TO AND FROM THE LAND.