ARROYA INVESTMENTS

WATER RESOURCES
And
WASTEWATER REPORT
For
Retreat at TimberRidge

October, 2020

Prepared By:

JDS-HYDRO CONSULTANTS, INC.

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RETREAT AT TIMBERRIDGE

WATER RESOURCES and WASTWATER REPORT

OCTOBER 2020

Prepared for:

ARROYA INVESTMENTS
Colorado Springs, CO 80903

Prepared by:

JDS-Hydro Consultants, Inc
5540 Tech Center Drive, Suite 100
Colorado Springs, CO

Executive Summary:
Water Resources and Wastewater Report—Retreat at TimberRidge
Revision October 26, 2020

Retreat at TimberRidge development by Arroya Investments consists of approximately 227 acres located east of Vollmer Rd and north of Woodmen Rd, in portions of Section 21, 22, 27 & 28, Township 12 South, Range 65 West of the 6th P.M. The land is to be provided water and sewer services through either the Sterling Ranch Metropolitan District (SRMD) or on-site individual wells and septic.

It is expected an urban residential home in Retreat at TimberRidge will require an average of 0.353 annual acre-feet. Rural residential homes in Retreat at TimberRidge will require an average of 0.32 annual acre-feet. This is consistent with historic needs for nearby developments.

The larger rural lots anticipated will be served by on-site single-family wells and septic. After considering water line layout, it was determined that larger rural lots 39, 40, and 41, could be easily provided for Central Water and would be better served on central water. For this reason, the overall Water Resources needed for the Retreat include 167 lots. The following augmentation plans are in place, or pending, to serve these lots.

- An augmentation plan (18CW3002-pending) relinquishes 2,796 acre-feet of Laramie Fox Hills NT water to augment the single family wells on in the Dawson NNT aquifer.

The water available for the Central System from On-site sources is 42.76 annual acre-feet (on a 300 year basis). Therefore, the available supply will not meet the legal and physical needs of 167 residential homes (or single family equivalents) which is 57.89 annual acre-feet. **An additional 16.19 annual acre-feet is required.**

The SRMD has committed to providing the additional water resources on a 300-year basis to make up the annual acre-foot shortfall from the District's overall sources of supply. The SRMD commitment letter (**Appendix E**) allocates an estimated 16.19 required from SRMD sources. The Arapahoe and LFH NT water available on Phase 1 of the Retreat at TimberRidge was not included in the currently available on-site supply in the SRMD commitment letter.

Additional NNT water may be made available if and when an augmentation plan is developed and approved. Certain other rights will be necessary in order to develop and augment this supply.

TABLE OF CONTENTS

SECTION 1 INTRODUCTION

The purpose of this study is to provide a preliminary outline of the water resources and wastewater needs that would be necessary for Phase 1-6 of the Retreat at TimberRidge development.

1.1 New Development Description:

Retreat at TimberRidge development consists of approximately 261 acres located east of Vollmer Rd and north of Woodmen Rd and approximately 7 acres west of Vollmer Rd allocated for Lots 11 and 12 owned by Jacob Decoto, Section 27 & 28, Township 12 South, Range 65 West of the 6th P.M. Phase 1-6 is designated for 205 residential units in addition to stormwater detention facilities, open space, drainageway, and trails.

Appendix A contains a preliminary plan for the Retreat at TimberRidge.

SECTION 2 PROJECTION OF WATER NEEDS

2.1 *Analysis of Water Demands:*

It is expected that the residential lots on central water will be developed with single family housing anticipating turf grass landscaping. The expected water demands are calculated in **Appendix B.** Displayed below is Table 1: Projected Water Demands for Retreat at TimberRidge:

Table 2-1 -Projected Water Demands for Retreat at TimberRidge

# of Units	*Land Use*	*Water Use Per Unit (AF/Unit)*	*Annual Demand (AF)*	*Average Daily Flow (ADF) (GPD)*	*Maximum Daily Flow (MDF) (@ 2.45 x ADF) (GPD)*	*Peak Hour Flow (@ 1.5 x MDF) (GPM)*
167	**Residential (Urban, Central systems)**	**0.353**	**58.95**	**52,627**	**128,900**	**133**
41	**Residential (Rural, Well & OWTS)**	**0.32**	**21.73**	**19,399**	**47,528**	**50**

Total Annual Demand of Retreat at TimberRidge (sans individual wells on rural lots) is 58.95 Acre-Feet.

SECTION 3 PROPOSED WATER RIGHTS AND SYSTEM FACILITIES

3.1 Water Rights:

Water rights adjudications have been decreed by the State of Colorado, Water Division 2 District Court. The findings and relevant information is displayed in **Appendix C**.

Table 3-1
Summary of Immediately Available Legal Water Supply for Retreat at TimberRidge Phase 1-6

Water	Annual Supply (Acre-Feet)	Availability
On-site NT Water	42.76	Available Immediately (Phase 3, 4(not incl. Lot 39-41), & 6)
On-Site NNT Dawson	15.35	Available Immediately (Phase 2 (not incl. Lot 11-12),
On-Site NNT Dawson	5.23	Available Immediately (Phase 1)
Off-Site NNT Dawson	2.00	Available Immediately Lots 11 & 12 in Phase 2

An augmentation plan (16CW3095) relinquished 1,324 acre-feet of Arapahoe NT water to augment 10 single family wells (Phase 1) in the Dawson NNT aquifer. An augmentation plan (18CWXXXX-pending) relinquishes 3,100 acre-feet of Laramie Fox Hills NT water to augment the 29 single family wells (Phase 2 (not incl. Lot 11 & 12), Lot 39-41 in Phase 4, & Phase 5) in the Dawson NNT aquifer. An augmentation plan (18CW3005-pending) relinquishes 403 acre-feet of Laramie Fox Hills NT water to augment the 2 single family wells on Lots 11 and 12 of Phase 2.

The total 300 year legal water supply currently available from on-site sources is 42.76 annual acre-feet. Therefore, the available supply will not meet the legal and physical needs of 167 residential homes (or single family equivalents) which is 58.95 annual acre-feet. An additional 16.19 annual acre-feet is required.

The SRMD has committed to providing the additional water resources on a 300-year basis to make up the annual acre-foot shortfall from the District's overall sources of supply. An updated SRMD commitment letter allocates an estimated 16.19 annual acre-foot required. The Arapahoe and LFH NT water available on Phase 1 of Retreat at TimberRidge was not included in the currently available on-site supply in the SRMD commitment letter. See SRMD commitment letter in **Appendix E**.

Additional NNT water may be made available if and when an augmentation plan is developed and approved.

Beneficial use of the water from the decrees includes domestic, commercial, irrigation, stock water, recreation, wildlife, wetlands, fire protection, piscatorial, and for storage and augmentation associated with such uses and excludes municipal use. The beneficial uses will need to be revised to include municipal use.

Appendix D includes four decrees enumerated in Table 3 as the onsite/offsite water decrees.

3.2 Source of Supply:

Municipal water demand would be met using primarily Arapahoe and Laramie-Fox Hills formation wells. Arroya Investments has contracted with SRMD for the provision of municipal water services. See SRMD commitment letter in **Appendix E**.

Retreat at TimberRidge will be served from SRMD Well Site #1. Well Site #1 will include all storage, treatment, and pumping facilities required to meet the SRMD demands.

3.3 Water Quality and Treatment:

The water quality in Arapahoe and Laramie-Fox Hills aquifers in this area has typically been suitable for potable use with the addition of iron and manganese treatment. SRMD will be responsible for water quality testing and the final design of treatment at Well Site #1 as part of the agreement to provide municipal water services.

3.4 Water Storage:

Water storage at Well Site #1 will be designed based on fire flow needs as well as equalizing storage needs. (Equalizing storage is the amount of water that helps the system meet diurnal peaks during the annual day of highest use in the system). We previously provided recommendations to SRMD that storage should equal at least the required fire supply plus necessary equalizing storage, and should exclude the bottom foot of water storage in the tank. The recommended initial storage tank size was a 1.0 Million Gallon tank followed by a 2.0 Million Gallon tank for future site development.

3.5 *Distribution and Transmission Lines:*

For the purpose of fire protection, we recommend minimum eight-inch lines throughout the residential subdivision. The lines should be looped wherever street layout allows. An 12-inch diameter transmission line should be extended south-southwesterly along one of the major roadways from the Storage tank at Well Site #1 into the Retreat at TimberRidge development.

3.6 Pumping for Service Pressures:

Ground elevations within the development service area range from approximately 7150 to 7280. Adequate service pressures are generally considered 60 psi for residential service. The preliminary tank site is on the Sterling property at a base elevation of approximately 7300 feet which would be capable of supplying

acceptable service pressures to ground elevations of approximately 7160. A pumping facility at Well Site #1 would be required to provide for service pressures for lots platted after Filing #1

SECTION 4 WASTEWATER AND WASTEWATER TREATMENT

4.1 Wastewater Loads

Wastewater projections are based on similar District historical use. Average daily wastewater loads are expected to be roughly 172 gallons per day per single family residence. Maximum daily wastewater loads are expected to be roughly 210 gallons per day per single family residence. There are 164 initial residential units expected in Phase 3, 4 (not incl. Lot 39-41), & 6 on the central wastewater system. **Appendix B** includes a complete breakdown.

Table 4-1 - Projected Wastewater Loadson Central Wastewater System for Retreat at TimberRidge

Wastewater Loads		
# of Units	***Average Daily Flow (ADF) (GPD)***	***Maximum Daily Flow (GPD)***
164	**28,208**	**34,440**

Total Expected Daily Loads of Retreat at TimberRidge – Phase 3, 4 & 6 is 28,208 gallons/day.

4.2 Wastewater Collection and Pumping

All lands to be developed within Phase 3, 4 (not incl. Lot 39-41), & 6 will gravity feed to the southern portion of the site and tie-into the Sterling Ranch collection system. Arroya Investments has contracted with SRMD for the provision of wastewater collection, conveyance, and treatment services. See SRMD commitment letter in **Appendix E**. The Sterling Ranch collection system will include a lift station that will pump through a force main that extends along the southern side of Sterling Ranch. From the Southeast corner of Sterling Ranch, the force main extends southerly across Woodmen Road and then easterly to Meridian Road. From this point wastewater is intercepted by Meridian Service Metropolitan District gravity sewer infrastructure.

4.3 Wastewater Treatment

Sterling Ranch Metropolitan District has contracted with Meridian Service Metropolitan District for the provision of wastewater treatment services.

It is expected that MSMD will treat wastewater flows through its participation in the Cherokee wastewater treatment facility. The Cherokee Wastewater Facility is

in compliance with their current COC issued by the Colorado Department of Public Health and Environment.

4.4 On-Site Wastewater Treatment Systems

41 single family homes (Phase 1 & 2, Lot 39-41 on Phase 4, and Phase 5) on a minimum lot size of 2.5 acres will be served by individual on-site wastewater treatment systems. The site was evaluated for on-site wastewater treatment systems by Entech Engineering, Inc. in April 2017. Two (2) percolation tests and three (3) tactile test pits were performed across the site. Percolation test and tactile test pits were located in anticipated locations of proposed on-site wastewater treatment systems. The on-site soils are described as having moderate to moderately rapid percolation rates. Due to shallow bedrock and percolation rates less than 60 minutes per inch in some areas, a designed system will likely be necessary depending on site selection for the majority of the lots.

Based on the evaluation, the site is suitable for on-site wastewater treatment systems. Additional testing will be required in other areas of proposed on-site wastewater treatment systems (remaining lots of Phase 2, Lots 39-31 of Phase 4, and Phase 5). Each on-site wastewater treatment system should be evaluated and installed according to El Paso County Guidelines and properly maintained to prevent contamination of surface and subsurface water resources. The Soil, Geology, and Geologic Hazard Report by Entech Engineering, Inc. dated April 12, 2017 is included in **Appendix F**.

Appendix A

Retreat at TimberRidge

PRELIMINARY PLAN

EL PASO COUNTY, COLORADO

LEGAL DESCRIPTION

RETREAT AT TIMBER RIDGE

A PORTION OF SECTION 21, 22, 27 AND 28, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE 6TH P.M., EL PASO COUNTY, COLORADO, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS:
A LINE BETWEEN THE NORTHEAST CORNER OF THE NORTHWEST ONE-QUARTER OF THE NORTHWEST ONE-QUARTER (NW1/4 NW1/4) OF SECTION 27 AND THE SOUTHEAST CORNER OF THE NORTHWEST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER (NW1/4 SW1/4) OF SAID SECTION 27, TOWNSHIP 12 SOUTH, RANGE 65 WEST, MONUMENTED AT THE NORTHERLY END BY A 3-1/4" ALUMINUM CAP STAMED "2006 ESI PLS 10376" AND MONUMENTED AT THE SOUTHERLY END BY A 3-1/4" ALUMINUM CAP STAMPED "2006 ESI PLS 10376" AND IS ASSUMED TO BEAR S00°54'30"E, A DISTANCE OF 3925.63 FEET;

PARCEL 1
COMMENCING AT THE NORTHEAST CORNER OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 27, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE 6TH P.M., SAID POINT ALSO BEING THE **POINT OF BEGINNING**;

THENCE S00°54'30"E ON THE EAST LINE OF THE WEST HALF OF THE WEST HALF OF SAID SECTION 27, A DISTANCE OF 3925.63 FEET TO THE SOUTHEAST CORNER OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SAID SECTION 27;

THENCE S87°35'00"W ON THE SOUTH LINE OF SAID NORTHWEST QUARTER OF THE SOUTHWEST QUARTER, A DISTANCE OF 1332.78 FEET TO THE SOUTHWEST CORNER OF SAID NORTHWEST QUARTER OF THE SOUTHWEST QUARTER;

THENCE N00°53'18"W ON THE WEST LINE OF SAID NORTHWEST QUARTER OF THE SOUTHWEST QUARTER, A DISTANCE OF 1316.78 FEET TO THE NORTHWEST CORNER OF SAID NORTHWEST QUARTER OF THE SOUTHWEST QUARTER;

THENCE S89°08'28"W ON THE SOUTH LINE OF THE SOUTHEAST QUARTER OF THE NORTHEAST QUARTER OF SECTION 28, A DISTANCE OF 1326.68 FEET TO THE SOUTHWEST CORNER OF SAID SOUTHEAST QUARTER OF THE NORTHEAST QUARTER;

THENCE N00°30'49"W ON THE WEST LINE OF SAID SOUTHEAST QUARTER OF THE NORTHEAST QUARTER, A DISTANCE OF 1270.77 FEET TO A POINT ON THE EASTERLY RIGHT-OF-WAY LINE OF VOLLMER ROAD AS RECORDED IN BOOK 2678 AT PAGE 430 OF THE RECORDS OF THE EL PASO COUNTY CLERK AND RECORDER;

THENCE N21°41'10"E ON SAID EASTERLY RIGHT-OF-WAY LINE, A DISTANCE OF 1450.84 FEET TO THE POINT OF INTERSECTION OF THE SOUTHERLY RIGHT-OF-WAY LINE AS DESCRIBED IN A DEED RECORDED IN BOOK 2678 AT PAGE 431 OF SAID COUNTY RECORDS;

THENCE ON THE SOUTHERLY, EASTERLY AND NORTHERLY RIGHT-OF-WAY LINES OF SAID DEED THE FOLLOWING FOUR COURSES:

1. N89°40'23"E, A DISTANCE OF 761.52 FEET TO A POINT ON THE EAST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 28;
2. N00°52'58"W ON SAID EAST LINE, A DISTANCE OF 30.00 FEET TO THE SOUTHEAST CORNER OF SAID SECTION 21;
3. N00°37'14"W ON THE WEST LINE OF THE SOUTHWEST QUARTER OF SECTION 22, A DISTANCE OF 30.00 FEET;
4. S89°40'23"W, A DISTANCE OF 736.82 FEET TO THE POINT OF INTERSECTION OF THE EASTERLY RIGHT-OF-WAY LINE AS DESCRIBED IN A DEED RECORDED IN BOOK 2678 AT PAGE 431 OF SAID COUNTY RECORDS;

THENCE N21°41'10"E ALONG SAID EASTERLY RIGHT-OF-WAY LINE, A DISTANCE OF 113.82 FEET;

THENCE S68°18'50"E, A DISTANCE OF 145.93 FEET TO A POINT OF CURVE;

THENCE ALONG THE ARC OF A CURVE TO THE LEFT HAVING A RADIUS OF 560.00 FEET, A CENTRAL ANGLE OF 22°00'47" FOR A LENGTH OF 215.15 FEET TO A POINT OF TANGENT;

THENCE N89°40'23"E ON A LINE THAT IS 40.00 NORTHERLY OF AND PARALLEL WITH THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 21, A DISTANCE OF 348.92 FEET;

THENCE N88°38'56"E ON A LINE THAT IS 40.00 NORTHERLY OF AND PARALLEL WITH THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 22, A DISTANCE OF 477.80 FEET TO A POINT ON THE WESTERLY BOUNDARY LINE OF A WARRANTY DEED RECORDED UNDER RECEPTION NO. 217111767 OF SAID RECORDS;

THENCE ALONG THE BOUNDARY OF SAID WARRANTY DEED THE FOLLOWING SEVEN COURSES:

1. N47°35'42"E, A DISTANCE OF 44.33 FEET;
2. N36°59'01"E, A DISTANCE OF 517.38 FEET;
3. N56°32'31"E, A DISTANCE OF 489.24 FEET;
4. N38°17'19"E, A DISTANCE OF 182.67 FEET;
5. N89°41'56"E, A DISTANCE OF 1283.66 FEET;
6. S00°18'04"E, A DISTANCE OF 852.14 FEET TO A POINT ON THE SOUTH LINE OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 21;
7. S88°38'37"W ON SAID SOUTH LINE, A DISTANCE OF 1300.52 FEET TO THE **POINT OF BEGINNING.**

CONTAINING A CALCULATED AREA OF 9,891,306 SQ. FEET, OR 227.07 ACRES.
TOGETHER WITH:

PARCEL 2

BEGINNING AT THE EAST 1/16TH CORNER OF SAID SECTION 21 AND 28;

THENCE N89°40'23" ON THE NORTH LINE OF THE NORTHEAST QUARTER OF SAID SECTION 28, A DISTANCE OF 499.73 FEET TO A POINT ON THE WESTERLY RIGHT OF WAY LINE OF VOLLMER ROAD AS RECORDED IN BOOK 2678 AT PAGE 30 OF SAID RECORDS;

THENCE S21°41'10"W ON SAID WESTERLY RIGHT OF WAY LINE, A DISTANCE OF 1312.75 FEET TO A POINT ON THE WEST LINE OF THE NORTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 28;

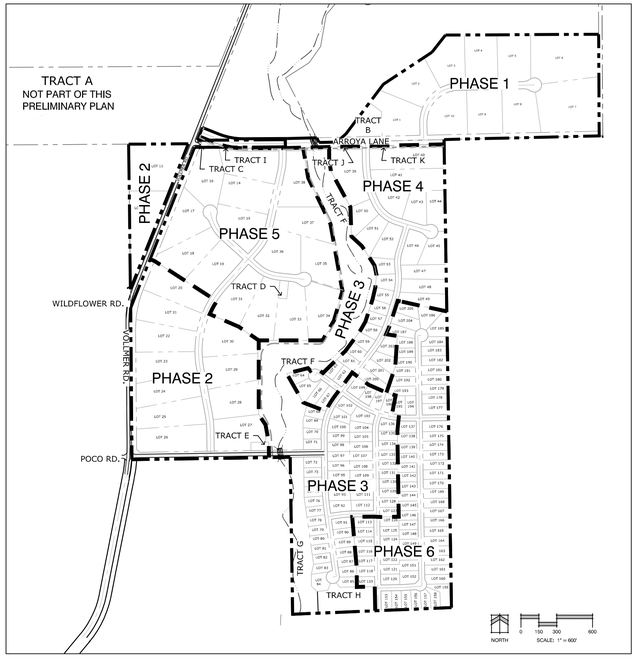
THENCE N00°41'17"W ON SAID WEST LINE, A DISTANCE OF 1217.12 FEET TO THE **POINT OF BEGINNING**.

CONTAINING A CALCULATED AREA OF 304,098 SQUARE FEET, OR 6.98 ACRES.

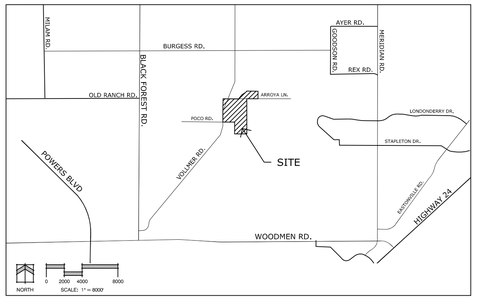
GENERAL NOTES

1. All rural roads will be asphalt with gravel shoulders. All urban streets will be asphalt with type A or C curb & gutter.
2. This property is subject to the findings summary and conclusions of a geologic hazard report prepared by ENTECH dated April 12, 2017 and revised on December 1, 2017. A copy of said report has been submitted with the zone change request for Retreat at TimberRidge PUD. Contact the El Paso County Land use review team, if you would like to review said report.
3. Development Requirements:
   - A. Maximum lot coverage:
     - a. For lots less than 20,000 Sq. Ft. - 45%
     - b. For lots with a minimum lot size of 20,000 Sq. Ft. - 45%
     - c. For lots 2.5 acres and greater including Tract A - 20%
   - B. Maximum building helght: thirty (35) feet.
   - C. Minimum Lot Size: 12,000 Sq. Ft.
   - D. Setback minimums:
     - a. For lots less than 20,000 square feet:
       Front - 25 feet minimum
       Corner Lots - 10 feet for non-garage front
       Side - 7.5 feet minimum
       Rear - 25 feet minimum
     - b. For lots with a minimum lot size of 20,000 square feet:
       Front - 25 feet minimum
       Corner Lots - 15 feet for non-garage front
       Side - 15 feet minimum
       Rear - 35 feet minimum
     - c. For lots 2.5 acres and greater including Tract A:
       Front - 35 feet minimum
       Side - 25 feet minimum
       Rear - 50 feet minimum, except that lots 20 - 26 shall have a rear yard setback of 100 feet minimum
   - E. Accessory buildings must comply with the setbacks established above, except that the rear yard setback may be reduced to twenty (20) feet for any lots that do not abut a public street or the golf course. Accessory structures are governed by architectural covenants regarding building colors and materials to be consistent with the primary structure of the site.
4. All development of lots are subject to the development guidelines and provisions of the approved PUD Resolution File No# _____ and PUD Rec. _____ .
5. Final Plats may contain more than one phase and may not be sequenced as shown on the Phasing Diagram.

PHASE & TRACT MAP



VICINITY MAP



SITE DATA

OWNERS:	Arroya Investments LLC 1283 Kelly Johnson Blvd. Colorado Springs, CO 80920 Jacob Decoto 10620 Vollmer Rd Colorado Springs, CO 80910
APPLICANT:	N.E.S. Inc. 619 N Cascade Ave., Suite 200 Colorado Springs, CO 80903
TAX ID NUMBER:	5227000004; 5228000019; 5227000003; 5227000001; 5200000398; 5200000397; 5222000023; 5200000393
DEVELOPMENT SCHEDULE:	2018
SITE ACREAGE:	234.05 AC
CURRENT ZONING:	RR-5
PROPOSED ZONING:	PUD
CURRENT LAND USE:	Vacant
PROPOSED LAND USE:	Residential: 205 Total Lots, 0.876 DU/AC • 2.5 AC Minimum: 41 Lots • 1 AC Minimum: 11 Lots • 100' x 150' Minimum: 11 Lots • 80' x 150' Minimum: 142 Lots Open Space: 27.58 AC • Open Space (Sand Creek Greenway): 22.34 AC • Landscape & Buffers: 1.17 AC • Detention/Water Quality: 4.07 AC

PHASING PLAN

PHASE	TOTAL COUNT	LOT COUNTS	LOT NUMBERS	MINIMUM LOT SIZE	AVERAGE LOT SIZE
1	10 Lots	10	1-10	2.5 Acres	3.01 Acres
2	13 Lots	13	11-12, 20-30	2.5 Acres	2.73 Acres
3	59 Lots	59	68-112, 127-136, 196-199	80' x 150'	14,326 SF
4	33 Lots	3	39-41	2.5 Acres	2.54 Acres
		11	42-52	1 Acre	1.06 Acres
		9	53-61	100' x 150'	17,618 SF
		10	62-67, 200-203	80' x 150'	19,636 SF
5	15 Lots	15	13-19, 31-38	2.5 Acres	2.56 Acres
6	75 Lots	2	204-205	100' x 150'	22,120 SF
		73	113-126, 137-195	80' x 150'	15,619 SF

TRACT TABLE

TRACT	SIZE	USE	OWNERSHIP	MAINTENANCE
A	Not a part of this preliminary plan			
B	1.296 AC (56,448 SF)	Detention, Water Quality	TimberRidge MetroDistrict	TimberRidge MetroDistrict
C	0.065 AC (2,844 SF)	Signage, Landscape	TimberRidge MetroDistrict	TimberRidge MetroDistrict
D	0.251 AC (10,955 SF)	Detention, Water Quality	TimberRidge MetroDistrict	TimberRidge MetroDistrict
E	0.241 AC (10,500 SF)	Detention, Water Quality	TimberRidge MetroDistrict	TimberRidge MetroDistrict
F	17.762 AC (773,713 SF)	Regional & Local Trails, Existing Drainageway, Open Space	TimberRidge MetroDistrict	TimberRidge MetroDistrict + El Paso County Parks
G	4.580 AC (199,518 SF)	Existing Drainageway, Open Space	TimberRidge MetroDistrict	TimberRidge MetroDistrict
H	2.279 AC (99,280 SF)	Detention, Water Quality, Local Trail	TimberRidge MetroDistrict	TimberRidge MetroDistrict
I	0.374 AC (16,303 SF)	Regional Trails, Landscape	TimberRidge MetroDistrict	TimberRidge MetroDistrict + El Paso County Parks
J	0.366 AC (15,941 SF)	Regional Trails, Landscape	TimberRidge MetroDistrict	TimberRidge MetroDistrict + El Paso County Parks
K	0.360 AC (15,684 SF)	Regional Trails, Landscape	TimberRidge MetroDistrict	TimberRidge MetroDistrict + El Paso County Parks

SHEET INDEX

Land Planning
Landscape Architecture
Urban Design

NES

N.E.S. Inc.
619 N. Cascade Avenue, Suite 200
Colorado Springs, CO 80903

Tel. 719.471.0073
Fax 719.471.0267

www.nescolorado.com

PLANNERS | LANDSCAPE ARCHITECTS

IN ASSOCIATION WITH

Retreat at TimberRidge

Preliminary Plan

EL PASO COUNTY, CO

PROJECT INFO
DATE: 04/11/18
PROJECT MGR: J. MAYNARD
PREPARED BY: K. MARSHALL

SEAL

ISSUE INFO

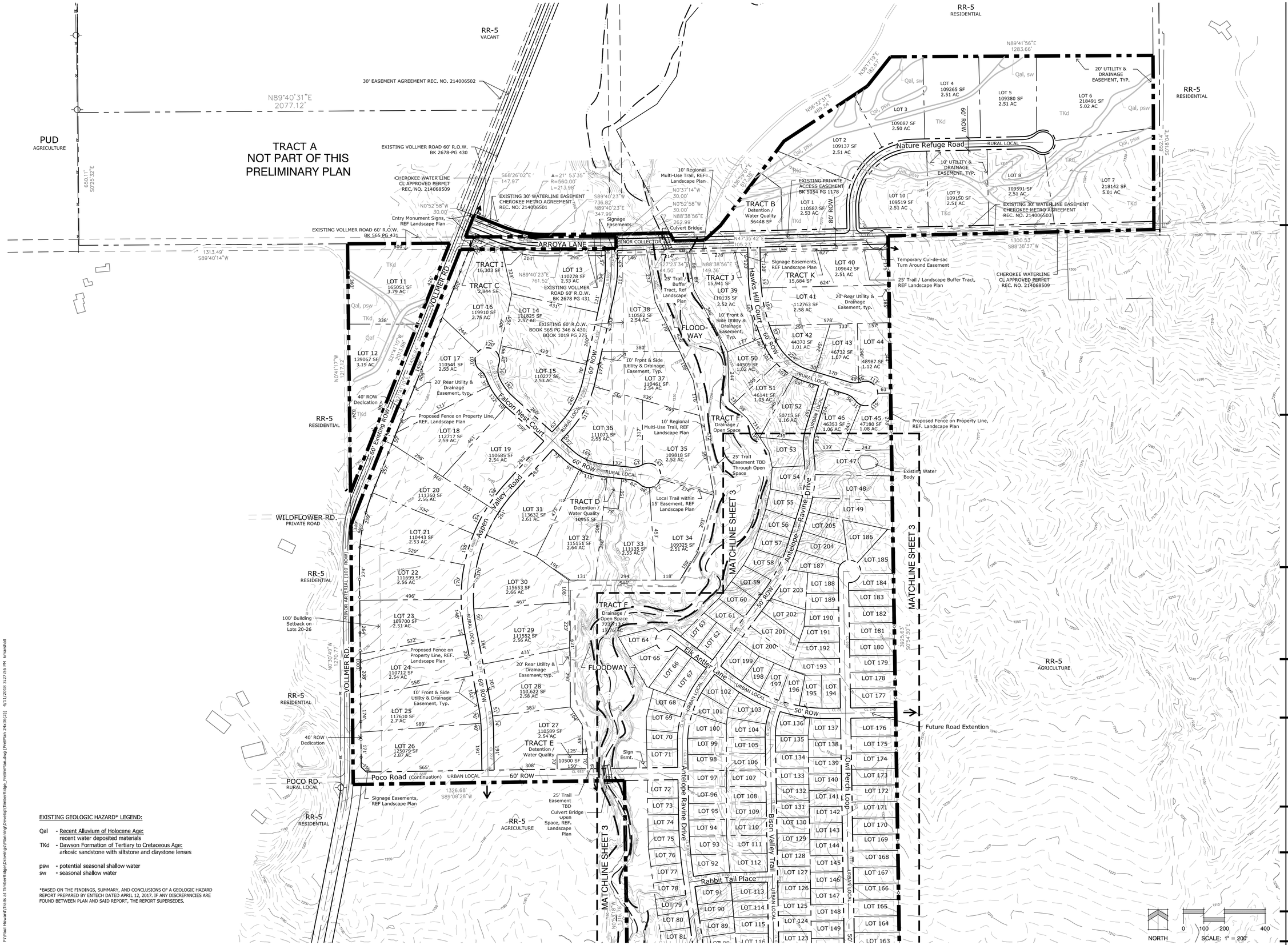
DATE:	BY:	DESCRIPTION:

ISSUE / REVISION

SHEET TITLE
COVER SHEET

SHEET NUMBER
1 OF 3

PLAN FILE #



EXISTING GEOLOGIC HAZARD* LEGEND:

Qal - Recent Alluvium of Holocene Age:
recent water deposited materials

TKd - Dawson Formation of Tertiary to Cretaceous Age:
arkosic sandstone with siltstone and claystone lenses

psw - potential seasonal shallow water
sw - seasonal shallow water

*BASED ON THE FINDINGS, SUMMARY, AND CONCLUSIONS OF A GEOLOGIC HAZARD REPORT PREPARED BY ENTECH DATED APRIL 12, 2017. IF ANY DISCREPANCIES ARE FOUND BETWEEN PLAN AND SAID REPORT, THE REPORT SUPERSEDES.

NORTH

0 100 200 400

SCALE: 1" = 200'

Land Planning
Landscape Architecture
Urban Design

NES

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Retreat at TimberRidge

Preliminary Plan

EL PASO COUNTY, CO

PROJECT INFO

DATE: 04/11/18
PROJECT MGR: J. MAYNARD
PREPARED BY: K. MARSHALL

SEAL

ISSUE INFO

DATE:	BY:	DESCRIPTION:

ISSUE REVISION

PRELIMINARY PLAN

SHEET TITLE

SHEET NUMBER

2 OF 3

PLAN FILE #

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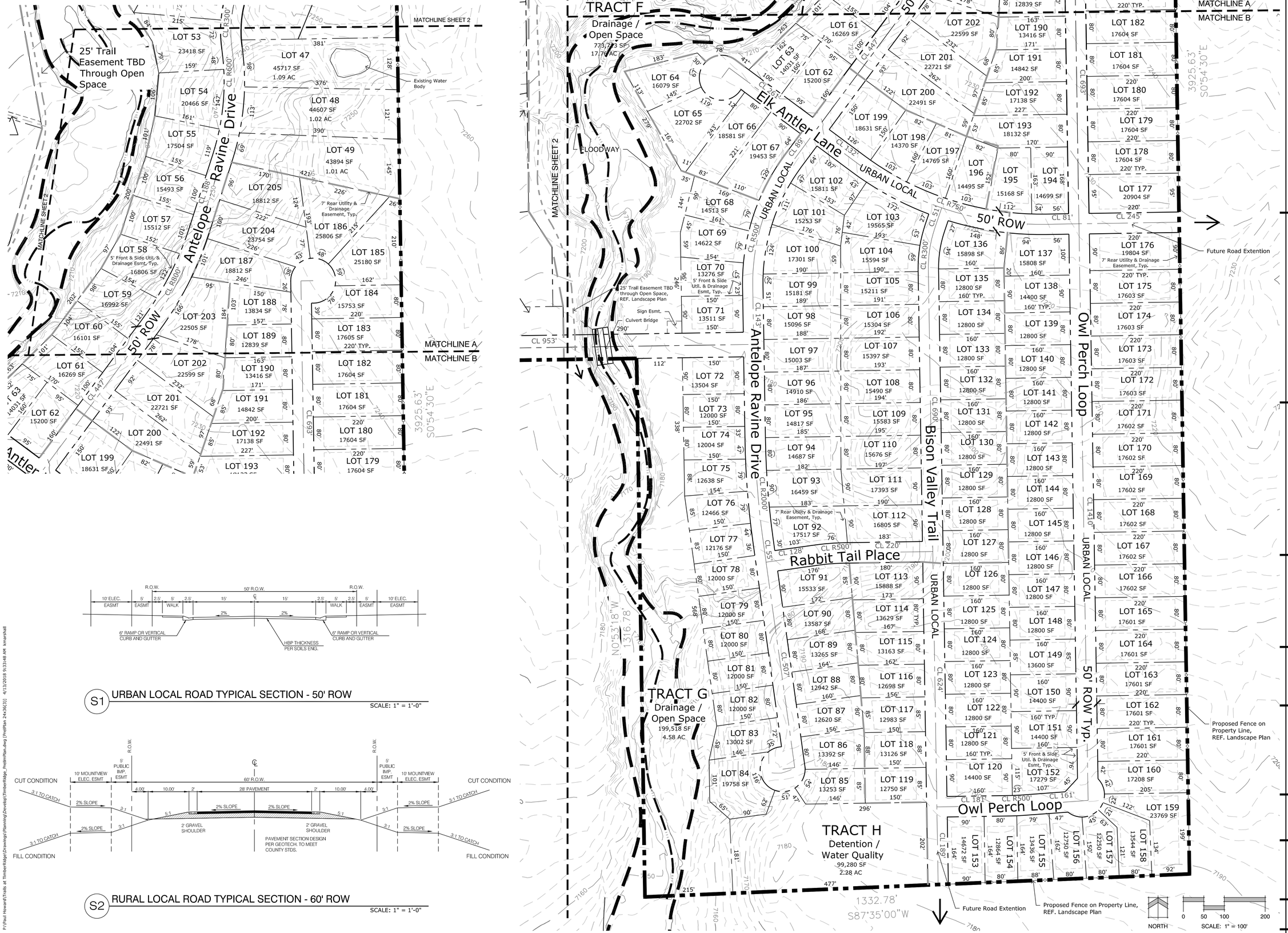

S1 URBAN LOCAL ROAD TYPICAL SECTION - 50' ROW

SCALE: 1" = 1'-0"

S2 RURAL LOCAL ROAD TYPICAL SECTION - 60' ROW

SCALE: 1" = 1'-0"

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Land Planning
Landscape Architecture
Urban Design

NES

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619 N. Cascade Avenue, Suite 200
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Retreat at TimberRidge

Preliminary Plan

EL PASO COUNTY, CO

PROJECT INFO
DATE: 04/11/18
PROJECT MGR: J. MAYNARD
PREPARED BY: K. MARSHALL

SEAL

ISSUE INFO

DATE:	BY:	DESCRIPTION:

ISSUE / REVISION

PRELIMINARY PLAN

SHEET TITLE

SHEET NUMBER 3 OF 3

PLAN FILE #

Appendix B

Appendix B
Arroya Investments - Retreat at TimberRidge
Water Demands and Wastewater Loads Estimate (Phase 1-6)

Water (Urban)	***0.353***	***AF/Year-SFE***
Water (Rural)	***0.53***	***AF/Year-SFE***
Wastewater (Base Flow)	***172***	***GPD/SFE***
Wastewater (MDF)	***210***	***GPD/SFE***

Land Use	Density	Water Demands						Wastewater Loads		
		SFE	Unit Use	Acre-Feet	ADF (GPD)	Max Daily Use (GPD)	Peak Hour (GPM)	SFE	Average Daily Flow	Max Day Daily Flow
Residential										
Phase 1[1]	Rural (2.5 Min)	10	0.53	0	0	0	0	10	0	0
Phase 2[2]	Rural (2.5 Min)	13	0.53	0	0	0	0.0	13	0	0
Phase 3	Low (.27 Min)	59	0.353	20.827	18,593	40,905	42.6	59	10,148	12,390
Phase 4[3]	Rural (2.5 Min)	3	0.53	0	0	0	0.0	3	0	0
	Low (1.0 Min)	11	0.353	3.883	3,467	7,626	7.9	11	1,892	2,310
	Low (.34 Min)	9	0.353	3.177	2,836	6,240	6.5	9	1,548	1,890
	Low (.27 Min)	10	0.353	3.53	3,151	6,933	7.2	10	1,720	2,100
Phase 5[4]	Rural (2.5 Min)	15	0.53	0	0	0	0.0	15	0	0
Phase 6	Low (.34 Min)	2	0.353	0.706	630	1,387	1.4	2	344	420
	Low (.27 Min)	73	0.353	25.769	23,005	50,611	52.7	73	12,556	15,330
			Total Demand	**57.89 AF/Year**	**51,682 GPD**	**113,701 GPD**	**118 GPM**	**164**	**28,208 GPD**	**34,440 GPD**

[1] *Phase 1 to be served by 10 single family wells and septic.*
[2] *Phase 2 to be served by 13 single family wells and septic.*
[3] *Phase 4 - (Lots 39-41) to be served by 3 single family wells and septic.*
[4] *Phase 5 to be served by 15 single family wells and septic.*

Appendix C

Table 2

Update October 20, 2020

Sterling Ranch Metropolitan District
Comprehensive Water Supply Inventory
Current Legal Supply

Land Formation/Aquifer	Reference Finding/ Determination/ Decree	Tributary Status	Volume	Annual Allocation 100 Year	Annual Allocation 300 Year	Approved Well Locations	Notes	Saturated Sand Thickness	Saturated Specific Yield
			Acre-Feet	A-F/Year	A-F/Year				
Currently Available On-Site Sterling Water Legal Sources									
Laramie Fox Hills	86-CW-19	NT	53,900	539.00	179.67	KLF-1 - KLF-4	Under 1410 acres	255	15%
	08CW113	NT	40	0.40	0.13		Under 41.44 acres, reduced to 1.44 acres		
Arapahoe	86-CW-18	NT	57500	575.00	191.67	KA-1 - KA-4	Under 1410 acres	240	17%
					371.47				
								57528	
Case Pending Available On-Site Sterling Water Legal Sources (Note 2)									
Laramie Fox Hills	20CW 3059 (Pending)	NT	2780	27.80	9.27		97.54 acres SR Quarry (Note 5)	190	
Arapahoe	20CW 3059 (Pending)	NNT	4320	43.20	14.40	**Augmented via Same Case**	97.54 acres SR Quarry (Note 5)	260.5	
Denver	20CW 3059 (Pending)	NNT	4895	48.95	16.32	**Augmented via Same Case**	97.54 acres SR Quarry (Note 5)	295.2	
Denver	08CW113 Aug 20CW 3059 (Pending)	NNT	72893	728.93	242.98	**Augmented via Pending Case**	Sterling Ranch 1410 acres		
Arapahoe	08CW113 Aug 20CW 3059 (Pending)	NNT	60	0.60	0.20	**Augmented via Pending Case**	Sterling Ranch 41.44 reduced to 1.44 acres		
					283.16				
Currently Available On-Site Retreat Water Legal Sources (Note 1)									
Laramie Fox Hills	17CW3002	NT	6,440				Under 225.97 acres	190	15%
LFH (Retained Water by predesecer in title)		NT	-612						
LFH (Relinquishment)	18CW3002	NT	-2,796						
			3,032	30.32	10.11				
Arapahoe	17CW3002	NT	9,796	97.96	32.65		Under 225.97 acres	255	17%
Legal Supply: Phase 3, Phase 4 (excluding Lots 39-41) and Phase 6			**12.828**	**128.28**	**42.76**				
Augmentation (Dawson NNT)	18CW3002	Aug	2,796	27.96	9.32		pumping		
(excluding Lots 11-12),					**9.32**	26 Single Family Wells			
Augmentation (Dawson NNT)	18CW3095	Aug	1567.5	15.68	5.23		Replace actual depletions		
Legal Supply Phase 1					**5.23**	1)			
Currently Available Off-Site Ground Water Legal Sources									
Augmentation (Dawson NNT)	18CW3005	Aug	240.0	2.40	0.80	(Phase 2 - Lots 11 &12)	pumping		
2)			**240.0**	**2.4**	**0.8**				
Total Current Available 300-Year Water Supply					**697.39**	**For Sterling Ranch including Retreat Central system**			

Note 1. The water listed in the shaded area will be used to serve single family wells and is not included in the Total Available for the Central System

Current SFE supported by Existing water rights	***1976***	***Single Family Equivalents under El Paso County 300 year Rule***
Includes both Retreat and Sterling Ranch		
Based on established Use Caracteristic 0.353 AF/SFE		

Appendix D

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PGS 16 $88.00 DF $0.00
Electronically Recorded Official Records El Paso County CO
Chuck Broerman, Clerk and Recorder
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DISTRICT COURT, WATER DIVISION 2, COLORADO Court Address: 501 North Elizabeth Street, Suite 116 Pueblo, CO 81003	DATE FILED: May 31, 2017 9:37 AM CASE NUMBER: 2017CW3002
CONCERNING THE APPLICATION FOR WATER RIGHTS OF: **ARROYA INVESTMENTS, LLC, JACOB DECOTO, MARVIN ORNES and TERRI WAHLBERG** **IN EL PASO COUNTY**	▲ COURT USE ONLY ▲ Case No.: 17CW3002
FINDINGS OF FACT, CONCLUSIONS OF LAW, RULING OF REFEREE AND DECREE	

THIS MATTER comes before the Water Referee on the Application filed by Arroya Investments, LLC, Jacob Decoto, Marvin Ornes and Terri Wahlberg, and having reviewed said Application and other pleadings on file, and being fully advised on this matter, the Water Referee makes the following findings and orders:

GENERAL FINDINGS OF FACT

1. The applicants in this case are Arroya Investments, LLC ("Arroya"), Jacob Decoto ("Decoto"), Marvin Ornes ("Ornes") and Terri Wahlberg ("Wahlberg") (collectively, "Applicants"). Applicants are, collectively, the owners of the four separately owned parcels of land totaling approximately 335.59 acres under which the groundwater sought to be adjudicated herein are located, and are likewise the owners of the place of use where the water is anticipated to be put to beneficial use.

2. The Applicants filed this Application with the Water Court for Water Division 2 on January 31, 2017. The Application was referred to the Water Referee by order of the Court dated February 2, 2017.

3. The time for filing statements of opposition to the Application expired on the last day of March, 2017, and a no statements of opposition were timely filed.

4. On February 2, 2017, the Division 2 Water Court ordered that publication occur in the *Daily Transcript* within El Paso County.

5. The Clerk of this Court has caused publication of the Application filed in this matter as provided by statute and the publication costs have been paid. On February 15, 2017, proof of publication in the *Daily Transcript* was filed with the Court. All notices of the Application have been given in the manner required by law.

6. Pursuant to C.R.S. §37-92-302(2), the Office of the State Engineer has filed Determination of Facts for each aquifer with this Court dated March 14, 2017.

7. Pursuant to C.R.S. §37-92-302(4), the office of the Division Engineer for Water Division 2 filed its Consultation Report dated March 29, 2017, with the Court. The Consultation Report has been considered by the Water Referee in the entry of this Ruling.

8. The Water Court has jurisdiction over the subject matter of these proceedings and over all who have standing to appear as parties whether they have appeared or not. The land and water rights involved in this case are not within a designated groundwater basin.

GROUNDWATER RIGHTS

9. The Applicants requested the adjudication and quantification all Denver Basin groundwater in each aquifer underlying the four (4) specifically described parcels of land owned by each of the Applicants, respectively, as described herein. No plan for augmentation for the use of the not-nontributary groundwater was sought or is decreed herein. The Applicants shall construct such wells as necessary for withdrawal of Applicants' full entitlements of water supplies decreed herein. The following findings are made with respect to such underground water rights:

A. Property Description. All wells to all aquifers will be located on the Applicants respective properties. Such Properties are more specifically described as follows:

i. Arroya Parcel. The "Arroya Parcel" is an approximately 226 acre parcel located in the SE1/4 SE1/4 of Section 21, the W1/2 SW1/4 of Section 22, the E1/2 NE1/4 of Section 28, the W1/2 NW1/4 and the NW1/4 SW1/4 of Section 27, all in Township 21 South, Range 65 West of the 6th P.M., El Paso County, Colorado, as more particularly described on attached **Exhibit A**, and depicted on attached **Exhibit E**. The Arroya Parcel is owned by Applicant Arroya Investments, LLC.

ii. West Parcel No. 1. The "West Parcel No. 1" is an approximately 36.01 acre parcel located in the SW1/4 SE1/4 and the SE1/4 SE1/4 of Section 21, and the NE1/4 NE1/4 of Section 27, Township 12 South, Range 65 West of the 6th P.M., El Paso County, Colorado, as more particularly described on attached **Exhibit B**, and depicted on attached **Exhibit E**. The West Parcel No. 1 is owned by Applicant Jacob Decoto.

iii. West Parcel No. 2. The "West Parcel No. 2" is an approximately 36.03 acre parcel located in the SW1/4 SE1/4 and the SE1/4 SE1/4 of Section 21, Township 12 South, Range 65 West of the 6th P.M., El Paso County, Colorado, as more particularly described on attached **Exhibit C**, and depicted on attached **Exhibit E**. The West Parcel No. 2 is owned by Applicant Jacob Decoto.

iv. West Parcel No. 3. The "West Parcel No. 3" is an approximately 37.58 acre parcel located in the NW1/4 SE1/4 and the NE1/4 SE1/4 of Section 21, Township 12 South, Range 65 West of the 6th P.M., El Paso County, Colorado, as more particularly described on attached **Exhibit D**, and depicted on attached **Exhibit E**. The West Parcel No. 3 is owned by Applicants Marvin Ornes and Terri Wahlberg.

B. Existing Wells. There is currently one (1) existing well constructed to the Dawson aquifer on West Parcel No. 2 (Decoto): DWR Permit No. 4554, an exempt domestic well. DWR Permit No. 4554 is an exempt structure; water from the Dawson aquifer sufficient to allow for such continued exempt use has been excluded from the quantification herein. Two additional exempt domestic wells have been permitted since the filing of the application in this matter, DWR Permit No. 304551 on West Parcel No. 1 (Decoto), and DWR Permit No. 304498 on West Parcel No. 3 (Ornes/Wahlberg), and are excluded from quantification herein.

C. Additional Wells. Applicants anticipated additional wells will be constructed on each the Applicants' respective properties. To the extent any additional wells may be constructed to the not-nontributary Dawson and/or Denver aquifer(s), such wells may be constructed only pursuant to a subsequent decree providing an approved plan for augmentation, or as exempt well structures pursuant to C.R.S. §37-92-602.

10. Of the statutorily described Denver Basin aquifers, the Dawson, Denver, Arapahoe, and Laramie-Fox Hills aquifers all exist beneath the Applicants' respective properties. The Dawson and Denver aquifers contain not-nontributary water, while the water of the Arapahoe and Laramie-Fox Hills aquifers underlying the Applicants' respective properties is nontributary. The quantity of water in the Denver Basin aquifers exclusive of artificial recharge underlying each of the Applicants' respective properties as allocated on a pro-rata per acre basis from the amounts described in the State Engineer's Determination of Facts, is as follows:

A. Arroya Parcel (225.97 acres):

Aquifer	Sand Thickness (Feet)	Total Ground Water Storage (Acre Feet)	Annual Average Withdrawal – 100 Years (Acre Feet)
Dawson (NNT)	270	12,202	122
Denver (NNT)	310	11,909	119.1
Arapahoe (NT)	255	9,796	98
Laramie-Fox Hills (NT)	190	6,440	64.4

B. West Parcel No. 1 (Decoto – 36.01 acres):

Aquifer	Sand Thickness (Feet)	Total Ground Water Storage (Acre Feet)	Annual Average Withdrawal – 100 Years (Acre Feet)
Dawson (NNT)	270	1,944.4	16.44[1]
Denver (NNT)	310	1,897.7	18.98
Arapahoe (NT)	255	1,561	15.61
Laramie-Fox Hills (NT)	190	1,026.2	10.26

C. West Parcel No. 2 (Decoto – 36.03 acres):

Aquifer	Sand Thickness (Feet)	Total Ground Water Storage (Acre Feet)	Annual Average Withdrawal – 100 Years (Acre Feet)
Dawson (NNT)	270	1,945.4	16.45[2]
Denver (NNT)	310	1,898.8	18.99
Arapahoe (NT)	255	1,562	15.62
Laramie-Fox Hills (NT)	190	1,026.8	10.27

D. West Parcel No. 3 (Ornes & Wahlberg – 37.58 acres):

Aquifer	Sand Thickness (Feet)	Total Ground Water Storage (Acre Feet)	Annual Average Withdrawal – 100 Years (Acre Feet)
Dawson (NNT)	270	2,029.2	17.29[3]
Denver (NNT)	310	1,980.5	19.80
Arapahoe (NT)	255	1,629	16.29
Laramie-Fox Hills (NT)	190	1,071	10.7

[1] Three (3) annual acre feet of Dawson groundwater has been reserved from quantification herein for permitting of an exempt domestic well on this parcel pursuant to C.R.S. §37-92-602, *et seq.*, recently permitted as DWR Permit No. 304551.

[2] Three (3) annual acre feet of Dawson groundwater has been reserved from quantification herein for continued use of DWR Permit No. 4554 as an exempt domestic well on this parcel pursuant to C.R.S. §37-92-602, et seq.

[3] Three (3) annual acre feet of Dawson groundwater has been reserved from quantification herein for permitting of an exempt domestic well on this parcel pursuant to C.R.S. §37-92-602, et seq., recently permitted as DWR Permit No. 304498.

11. Pursuant to §37-90-137(9)(c.5)(I), C.R.S., the augmentation requirements for wells in the Dawson aquifer require the replacement to the effected stream systems of actual stream depletions on an annual basis, to the extent necessary to prevent injurious effect, based upon actual aquifer conditions. The augmentation requirements for wells to the Denver aquifer are for 4% of pumping. Applicants shall not be entitled to construct a non-exempt well or use water from the not-nontributary Dawson or Denver aquifers except pursuant to an approved augmentation plan in accordance with C.R.S. §37-90-137(9)(c.5).

12. Applicants shall be entitled to withdraw all legally available groundwater in the Denver Basin aquifers underlying Applicants' respective properties. Said amounts can be withdrawn over the 100-year life for the aquifers as set forth in C.R.S. §37-90-137(4), or withdrawn over a longer period of time based upon local governmental regulations or Applicants' water needs. The average annual amounts of ground water available for withdrawal from the underlying Denver Basin aquifers, based upon the 100-year aquifer life is determined and set forth above, based upon the March 14, 2017 Office of the State Engineer Determination of Facts. Such groundwater may be withdrawn from wells located upon the overlying land or contiguous properties with such contiguity to allow such withdrawal, consistent with the Denver Basin Rules as promulgated by the Office of the State Engineer, as may be amended from time to time.

13. Applicants shall be entitled to withdraw an amount of groundwater in excess of the average annual amount decreed herein from the Denver Basin aquifers underlying Applicants' respective properties, so long as the sum of the total withdrawals from wells in the aquifer does not exceed the product of the number of years since the date of issuance of the original well permit or the date of entry of the decree herein, whichever comes first, and the annual volume of water which Applicants are entitled to withdraw from the aquifer underlying Applicants' respective properties.

14. The Applicants shall have the right to use the ground water for beneficial uses on or off the Applicants' respective properties consisting of domestic, commercial, irrigation, stock water, recreation, wildlife, wetlands, fire protection, piscatorial, and for storage and augmentation associated with such uses. The amount of groundwater decreed for such uses upon the Applicants' respective properties is reasonable as such uses are to be made for the long term use and enjoyment of the Applicants' respective properties and are to establish and provide for adequate water reserves. The nontributary groundwater, may be used, reused, and successively used to extinction, both on and off the Applicants' respective properties subject, however, to the relinquishment of the right to consume two percent of such nontributary water withdrawn. Applicants may use such water by immediate application or by storage and subsequent application to the beneficial uses and purposes stated herein. Provided however, as set forth above, Applicants shall only be entitled to construct a non-exempt well or use water from the not-nontributary Dawson and Denver aquifers pursuant to a decreed augmentation plan entered by the Court. Withdrawals of groundwater available from the nontributary aquifers beneath the Applicants' respective properties in the

amounts determined in accordance with the provisions of this decree will not result in material injury to any other vested water rights or to any other owners or users of water.

15. Applicants may construct such wells on their respective properties as necessary for the withdrawal of all entitlements from each aquifer as described above, and such withdrawals may be made through any combination of wells. As to each of Applicants' respective properties, these wells shall be treated as a well field.

CONCLUSIONS OF LAW

16. The application for adjudication of Denver Basin groundwater was filed with the Water Clerk for Water Division 2 pursuant to C.R.S. §§37-92-302(1)(a) and 37-90-137(9)(c).

17. The Applicants' request for adjudication of these water rights is contemplated and authorized by law, and this Court and the Water Referee have exclusive jurisdiction over these proceedings. C.R.S. §§37-92-302(1)(a), 37-92-203, and 37-92-305.

18. Subject to the terms of this decree, the Applicants are entitled to the sole right to withdraw all the legally available water in the Denver Basin aquifers underlying the Applicants' respective properties, and the right to use that water to the exclusion of all others subject to the terms of this decree.

19. The Applicants have complied with C.R.S. §37-90-137(4), and the groundwater is legally available for withdrawal by the requested nontributary well(s), and legally available for withdrawal by the requested not-nontributary well(s) upon the entry of a subsequent decree approving an augmentation plan pursuant to C.R.S. §37-90-137(9)(c.5). Applicants are entitled to a decree from this Court confirming their rights to withdraw groundwater pursuant to C.R.S. §37-90-137(4).

20. The Denver Basin water rights applied for in this case are not conditional water rights, but are vested water rights determined pursuant to C.R.S. §37-90-137(4). No applications for diligence are required. The claims for nontributary and not-nontributary groundwater meet the requirements of Colorado Law.

21. The determination and quantification of the nontributary and not-nontributary groundwater rights in the Denver Basin aquifers as set forth herein is contemplated and authorized by law. C.R.S. §§37-90-137, and 37-92-302 through 37-92-305.

IT IS THEREFORE ORDERED, ADJUDGED AND DECREED AS FOLLOWS:

22. All of the foregoing Findings of Fact and Conclusions of Law are incorporated herein by reference, and are considered to be a part of this decretal portion as though set forth in full.

23. The Application for Adjudication of Denver Basin Groundwater proposed by the Applicants is approved, subject to the terms of this decree.

24. The Applicants have furnished acceptable proof as to all claims and, therefore, the Application for Adjudication of Groundwater as requested by the Applicants is granted and approved in accordance with the terms and conditions of this decree. Approval of this Application will not result in any material injury to senior vested water rights.

25. The Applicants shall comply with C.R.S. §37-90-137(9)(b), requiring the relinquishment of the right to consume two percent (2%) of the amount of the nontributary groundwater withdrawn. Ninety-eight percent (98%) of the nontributary groundwater withdrawn may therefore be consumed. No plan for augmentation shall be required to provide for such relinquishment.

26. The Court retains jurisdiction over this matter to make adjustments in the allowed average annual amount of withdrawal from the Denver Basin aquifers, either upwards or downwards, to conform to actual local aquifer characteristic, and that the Applicants need not refile, republish, or otherwise amend this application to request such adjustments.

A. At such time as adequate data may be available, Applicant or the State Engineer may invoke the Court's retained jurisdiction as provided in this Paragraph 26 for purposes of making a final determination of water rights as to the quantities of water available and allowed average annual withdrawals from any of the Denver Basin aquifers quantified and adjudicated herein. Any person seeking to invoke the Court's retained jurisdiction for such purpose shall file a verified petition with the Court setting forth with particularity the factual basis for such final determination of Denver Basin water rights under this decree, together with the proposed decretal language to effect the petition. Within four months of the filing of such verified petition, the State Engineer's Office shall utilize such information as available to make a final determination of water rights finding, and shall provide such information to the Court, Applicant, and the petitioning party.

B. If no protest is filed with the Court to such findings by the State Engineer's Office within sixty (60) days, this Court shall incorporate by entry of an Amended Decree such "final determination of water rights", and the provisions of this Paragraph 26 concerning adjustments to the Denver Basin ground water rights based upon local aquifer conditions shall no longer be applicable. In the event of a protest

being timely filed, or should the State Engineer's Office make no timely determination as provided in Paragraph 26.A., above, the "final determination of water rights" sought in the petition may be made by the Water Court after notice to all parties and following a full and fair hearing, including entry of an Amended Decree, if applicable in the Court's reasonable discretion.

27. Pursuant to C.R.S. §37-92-502(5)(a), the Applicants shall install and maintain such water measurement devices and recording devices as are deemed essential by the State Engineer or Division Engineers, and the same shall be installed and operated in accordance with instructions from said entities. Applicants are to install and maintain a totalizing flow meter on all wells, and any additional or replacement wells. Applicants are also to maintain records and provide reports to the State Engineer or Division Engineers as instructed by said entities, on at least an annual basis.

28. The vested water rights and water right structures decreed herein shall be subject to all applicable administrative rules and regulations, as currently in place or as may in the future be promulgated, of the offices of Colorado State and Division Engineers for administration of such water rights, to the extent such rules and regulations are uniformly applicable to other similarly situated water rights and water users.

29. This Ruling of Referee, when entered as a decree of the Water Court, shall be recorded in the real property records of El Paso County, Colorado. Copies of this ruling shall be mailed as provided by statute.

DATED THIS 5th day of May, 2017.

BY THE REFEREE:

Mardell R. DiDomenico, Water Referee
Water Division 2

DECREE

THE COURT FINDS THAT NO PROTEST WAS MADE IN THIS MATTER, THEREFOR THE FORGOING RULING IS CONFIRMED AND APPROVED, AND IS HEREBY MADE THE JUDGMENT AND DECREE OF THIS COURT.

Dated: May 31, 2017.

BY THE COURT:

LARRY C. SCHWARTZ, WATER JUDGE
WATER DIVISION 2

EXHIBIT A

LEGAL DESCRIPTION – ARROYA PARCEL

A PARCEL OF LAND LOCATED IN A PORTION OF THE SOUTHEAST ONE-QUARTER (SE1/4) OF SECTION 21 AND A PORTION OF THE SOUTHWEST ONE-QUARTER OF SECTION 22, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE 6TH P.M., EL PASO COUNTY, COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: A LINE BETWEEN THE NORTHEAST CORNER OF THE NORTHWEST ONE-QUARTER OF THE NORTHWEST ONE-QUARTER (NW1/4 NW1/4) OF SECTION 27 AND THE SOUTHEAST CORNER OF THE NORTHWEST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER (NW1/4 SW1/4) OF SAID SECTION 27, TOWNSHIP 12 SOUTH, RANGE 65 WEST, MONUMENTED AT THE NORTHERLY END BY A 3-1/4" ALUMINUM CAP STAMED "2006 ESI PLS 10376" AND MONUMENTED AT THE SOUTHERLY END BY A 3-1/4" ALUMINUM CAP STAMPED "2006 ESI PLS 10376" AND IS ASSUMED TO BEAR S00°54'30"E, A DISTANCE OF 3925.63 FEET;

COMMENCING AT THE NORTHEAST CORNER OF THE NORTHWEST ONE-QUARTER OF THE NORTHWEST ONE-QUARTER (NW1/4 NW1/4) OF SECTION 27;
THENCE S88°38'56"W ALONG THE NORTH LINE OF SAID NORTHWEST ONE-QUARTER OF THE NORTHWEST ONE-QUARTER (NW1/4 NW1/4), A DISTANCE OF 1047.88 FEET TO THE POINT OF BEGINNING OF THE PARCEL OF LAND HEREIN DESCRIBED;

THENCE S88°38'56"W CONTINUING ALONG SAID NORTH LINE, A DISTANCE OF 283.03 FEET TO THE NORTHWEST CORNER OF SAID SECTION 27 SAID POINT ALSO BEING A POINT ON THE EASTERLY RIGHT-OF-WAY LINE AS DESCRIBED IN THE DEED, AS RECORDED IN BOOK 2678 AT PAGE 431 OF THE RECORDS OF THE EL PASO COUNTY CLERK AND RECORDER;

THENCE ALONG THE EASTERLY AND NORTHERLY RIGHT-OF-WAY LINES OF SAID DEED THE FOLLOWING TWO (2) COURSES:

1. N00°37'14"W SAID LINE ALSO BEING THE WEST LINE OF THE SOUTHWEST ONE-QUARTER (SW1/4) OF SAID SECTION 22, A DISTANCE OF 30.00 FEET;
2. S89°40'23"W, A DISTANCE OF 736.82 FEET TO THE POINT OF INTERSECTION OF THE EASTERLY RIGHT-OF-WAY LINE AS DESCRIBED IN THE DEED, AS RECORDED IN BOOK 2678 AT PAGE 430 OF SAID COUNTY RECORDS;

THENCE N21°41'10"E ALONG SAID EASTERLY RIGHT-OF-WAY LINE, A DISTANCE OF 1798.07 FEET;
THENCE N59°58'50"E, A DISTANCE OF 694.83 FEET;
THENCE S14°30'58"E, A DISTANCE OF 567.09 FEET;
THENCE N69°36'18"E, A DISTANCE OF 603.87 FEET;
THENCE S30°23'46"E, A DISTANCE OF 264.58 FEET;
THENCE S61°52'38"W, A DISTANCE OF 227.40 FEET;

THENCE S79°15'47"W, A DISTANCE OF 276.17 FEET;
THENCE S89°39'18"W, A DISTANCE OF 356.07 FEET;
THENCE S40°09'47"W, A DISTANCE OF 310.61 FEET;
THENCE S09°56'46"W, A DISTANCE OF 270.03 FEET;
THENCE S35°00'25"W, A DISTANCE OF 167.38 FEET;
THENCE S57°24'01"W, A DISTANCE OF 235.36 FEET;
THENCE S27°23'34"E, A DISTANCE OF 611.29 FEET TO THE POINT OF BEGINNING;

SAID PARCEL OF LAND CONTAINS A CALCULATED AREA OF 35.08 ACRES OF LAND, MORE OR LESS.

Along With:

A PARCEL OF LAND BEING THE NORTHWEST ONE-QUARTER OF THE NORTHWEST ONE-QUARTER (NW1/4 NW1/4) OF SECTION 27, THE SOUTHWEST ONE-QUARTER OF THE NORTHWEST ONE-QUARTER (SW1/4 NW1/4) OF SECTION 27, THE NORTHWEST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER (NW1/4 SW1/4) OF SECTION 27, A PORTION OF THE SOUTHEAST ONE-QUARTER OF THE NORTHEAST ONE-QUARTER OF SECTION 28 AND A PORTION OF THE NORTHEAST ONE-QUARTER OF THE NORTHEAST ONE-QUARTER (NE1/4 NE1/4) OF SECTION 28, ALL IN TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE 6TH P.M., EL PASO COUNTY, COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: A LINE BETWEEN THE NORTHEAST CORNER OF THE NORTHWEST ONE-QUARTER OF THE NORTHWEST ONE-QUARTER (NW1/4 NW1/4) OF SECTION 27 AND THE SOUTHEAST CORNER OF THE NORTHWEST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER (NW1/4 SW1/4) OF SAID SECTION 27, TOWNSHIP 12 SOUTH, RANGE 65 WEST, MONUMENTED AT THE NORTHERLY END BY A 3-1/4" ALUMINUM CAP STAMED "2006 ESI PLS 10376" AND MONUMENTED AT THE SOUTHERLY END BY A 3-1/4" ALUMINUM CAP STAMPED "2006 ESI PLS 10376" AND IS ASSUMED TO BEAR S00°54'30"E, A DISTANCE OF 3925.63 FEET;

COMMENCING AT THE NORTHEAST CORNER OF THE NORTHWEST ONE-QUARTER OF THE NORTHWEST ONE-QUARTER (NW1/4 NW1/4) OF SECTION 27, SAID POINT ALSO BEING THE POINT OF BEGINNING OF THE PARCEL OF LAND HEREIN DESCRIBED;

THENCE S00°54'30"E ALONG THE EAST LINE OF THE WEST ONE-HALF (W1/2) OF SAID SECTION 27, A DISTANCE OF 3925.63 FEET TO THE SOUTHEAST CORNER OF THE NORTHWEST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER NW1/4 SW1/4) OF SAID SECTION 27;
THENCE S87°35'00"W ALONG THE SOUTH LINE OF SAID NORTHWEST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER (NW1/4 SW1/4), A DISTANCE OF 1332.78 FEET TO THE SOUTHWEST CORNER OF SAID NORTHWEST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER (NW1/4 SW1/4);
THENCE N00°53'18"W ALONG THE WEST LINE OF SAID NORTHWEST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER (NW1/4 SW1/4), A DISTANCE OF 1316.78 FEET TO THE NORTHWEST CORNER OF SAID NORTHWEST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER (NW1/4 SW1/4);
THENCE S89°08'28"W ALONG THE SOUTH LINE OF THE SOUTHEAST ONE-QUARTER OF THE NORTHEAST ONE-QUARTER (SE1/4 NE1/4) OF SECTION 28, A DISTANCE OF 1326.68 FEET TO THE SOUTHWEST CORNER OF SAID SOUTHEAST ONE-QUARTER OF THE NORTHEAST ONE-QUARTER (SE1/4 NE1/4);
THENCE N00°30'49"W ALONG THE WEST LINE OF SAID SOUTHEAST ONE-QUARTER OF THE NORTHEAST ONE-QUARTER (SE1/4 NE1/4), A DISTANCE OF 1270.77 FEET TO A POINT ON THE EASTERLY RIGHT-OF-WAY LINE AS DESCRIBED IN THE DEED, AS RECORDED IN

BOOK 2678 AT PAGE 430 OF THE RECORDS OF THE EL PASO COUNTY CLERK AND RECORDER;
THENCE N21°41'10"E ALONG SAID EASTERLY RIGHT-OF-WAY LINE, A DISTANCE OF 1450.84 FEET TO THE POINT OF INTERSECTION OF THE SOUTHERLY RIGHT-OF-WAY LINE AS DESCRIBED IN THE DEED, AS RECORDED IN BOOK 2678 AT PAGE 431 OF SAID COUNTY RECORDS;

THENCE ALONG THE SOUTHERLY AND EASTERLY RIGHT-OF-WAY LINES OF SAID DEED THE FOLLOWING TWO (2) COURSES:

1. N89°40'23"E, A DISTANCE OF 761.52 FEET TO A POINT ON THE EAST LINE OF SAID NORTHEAST ONE-QUARTER OF THE NORTHEAST ONE-QUARTER (NE1/4 NE1/4);
2. N00°52'58"W ALONG SAID EAST LINE, A DISTANCE OF 30.00 FEET TO THE NORTHWEST CORNER OF SAID SECTION 27;

THENCE N88°38'56"E ALONG THE NORTH LINE OF SAID NORTHWEST ONE-QUARTER OF THE NORTHWEST ONE-QUARTER (NW1/4 NW1/4), A DISTANCE OF 1330.91 FEET TO THE POINT OF BEGINNING;

SAID PARCEL OF LAND CONTAINS A CALCULATED AREA OF 190.89 ACRES OF LAND, MORE OR LESS.

EXHIBIT B

LEGAL DESCRIPTION TRAILS AT TIMBERLINE WEST PARCEL 1:

A PARCEL OF LAND LOCATED IN A PORTION OF THE SOUTHEAST ONE-QUARTER (SE1/4) OF SECTION 21 AND A PORTION OF THE NORTHEAST ONE-QUARTER (NE1/4) OF SECTION 28, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE 6TH P.M., EL PASO COUNTY, COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: THE WEST LINE OF THE SOUTHEAST ONE-QUARTER (SE1/4) OF SECTION 21, TOWNSHIP 12 SOUTH, RANGE 65 WEST IS ASSUMED TO BEAR N00°25'32"W, A DISTANCE OF 2638.53 FEET.

COMMENCING AT THE SOUTHWEST CORNER OF SAID SOUTHEAST ONE-QUARTER (SE1/4); SAID POINT ALSO BEING THE POINT OF BEGINNING OF THE PARCEL OF LAND HEREIN DESCRIBED;
THENCE N00°25'32"W ALONG THE WEST LINE OF SAID SOUTHEAST ONE-QUARTER (SE1/4), A DISTANCE OF 650.11 FEET;
THENCE N89°40'31"E, A DISTANCE OF 5077.12 FEET TO A POINT ON THE WESTERLY RIGHT-OF-WAY LINE OF VOLLMER ROAD AS DESCRIBED IN THE DOCUMENT RECORDED IN BOOK 2678 AT PAGE 430 OF THE RECORDS OF THE EL PASO COUNTY CLERK AND RECORDER;
THENCE S21°41'10"W ALONG SAID WESTERLY RIGHT-OF-WAY LINE, A DISTANCE OF 2013.88 FEET TO A POINT ON THE EAST LINE OF THE NORTHWEST ONE-QUARTER OF THE NORTHEAST ONE-QUARTER (NW1/4 NE1/4) OF SAID SECTION 28;
THENCE N00°41'17"W ALONG SAID EAST LINE, A DISTANCE OF 1217.12 FEET TO THE SOUTHEAST CORNER OF THE SOUTHWEST ONE-QUARTER OF THE SOUTHEAST ONE-QUARTER (SW1/4 SE1/4) OF SAID SECTION 21;
THENCE S89°40'14"W ALONG THE SOUTH LINE OF SAID SOUTHWEST ONE-QUARTER OF THE SOUTHEAST ONE-QUARTER (SW1/4 SE1/4), A DISTANCE OF 1343.49 FEET TO THE POINT OF BEGINNING.

SAID PARCEL OF LAND CONTAINS A CALCULATED AREA OF 38.01 ACRES OF LAND, MORE OR LESS.

EXHIBIT C

LEGAL DESCRIPTION TRAILS AT TIMBERLINE WEST PARCEL 2:

A PARCEL OF LAND LOCATED IN A PORTION OF THE SOUTHEAST ONE-QUARTER (SE1/4) OF SECTION 21, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN, EL PASO COUNTY, COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: THE WEST LINE OF THE SOUTHEAST ONE-QUARTER (SE1/4) OF SECTION 21, TOWNSHIP 12 SOUTH, RANGE 65 WEST IS ASSUMED TO BEAR N00°25'32"W, A DISTANCE OF 2638.53 FEET;

COMMENCING AT THE SOUTHWEST CORNER OF SAID SOUTHEAST ONE-QUARTER (SE1/4);
THENCE N00°25'32"W ALONG THE WEST LINE OF SAID SOUTHEAST ONE-QUARTER (SE1/4), A DISTANCE OF 650.01 FEET TO THE POINT OF BEGINNING OF THE PARCEL OF LAND HEREIN DESCRIBED;
THENCE N00°25'32"W CONTINUING ALONG SAID WEST LINE, A DISTANCE OF 705.70 FEET;
THENCE N89°48'31"E, A DISTANCE OF 2364.04 FEET TO A POINT ON THE WESTERLY RIGHT-OF-WAY LINE OF VOLLMER ROAD AS DESCRIBED IN THE DOCUMENT RECORDED IN BOOK 2678 AT PAGE 430 OF THE RECORDS OF THE EL PASO COUNTY CLERK AND RECORDER;
THENCE S21°41'10"W ALONG SAID WESTERLY RIGHT-OF-WAY LINE, A DISTANCE OF 762.26 FEET;
THENCE S89°48'31"W, A DISTANCE OF 2077.12 FEET TO THE POINT OF BEGINNING;

SAID PARCEL OF LAND CONTAINS A CALCULATED AREA OF 36.03 ACRES OF LAND , MORE OR LESS.

EXHIBIT D

LEGAL DESCRIPTION TRAILS AT TIMBERLINE WEST PARCEL 3:

A PARCEL OF LAND LOCATED IN A PORTION OF THE SOUTHEAST ONE-QUARTER (SE1/4) OF SECTION 21, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN, EL PASO COUNTY, COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: THE WEST LINE OF THE SOUTHEAST ONE-QUARTER (SE1/4) OF SECTION 21, TOWNSHIP 12 SOUTH, RANGE 65 WEST IS ASSUMED TO BEAR N00°25'32"W, A DISTANCE OF 2638.53 FEET;

COMMENCING AT THE SOUTHWEST CORNER OF SAID SOUTHEAST ONE-QUARTER (SE1/4);
THENCE N00°25'32"W ALONG THE WEST LINE OF SAID SOUTHEAST ONE-QUARTER (SE1/4), A DISTANCE OF 1356.81 FEET TO THE POINT OF BEGINNING OF THE PARCEL OF LAND HEREIN DESCRIBED;
THENCE N00°25'32"W CONTINUING ALONG SAID WEST LINE, A DISTANCE OF 656.30 FEET;
THENCE N89°40'31"E, A DISTANCE OF 2590.16 FEET TO A POINT ON THE WESTERLY RIGHT-OF-WAY LINE OF VOLLMER ROAD AS DESCRIBED IN THE DOCUMENT RECORDED IN BOOK 2678 AT PAGE 430 OF THE RECORDS OF THE EL PASO COUNTY CLERK AND RECORDER;

THENCE ALONG SAID WESTERLY RIGHT-OF-WAY LINE THE FOLLOWING TWO (2) COURSES:
1. S00°37'14"E, A DISTANCE OF 98.54 FEET;
2. S21°41'10"W, A DISTANCE OF 691.81 FEET;

THENCE S89°40'31"W, A DISTANCE OF 2364.04 FEET TO THE POINT OF BEGINNING;

SAID PARCEL OF LAND CONTAINS A CALCULATED AREA OF 37.58 ACRES OF LAND, MORE OR LESS.

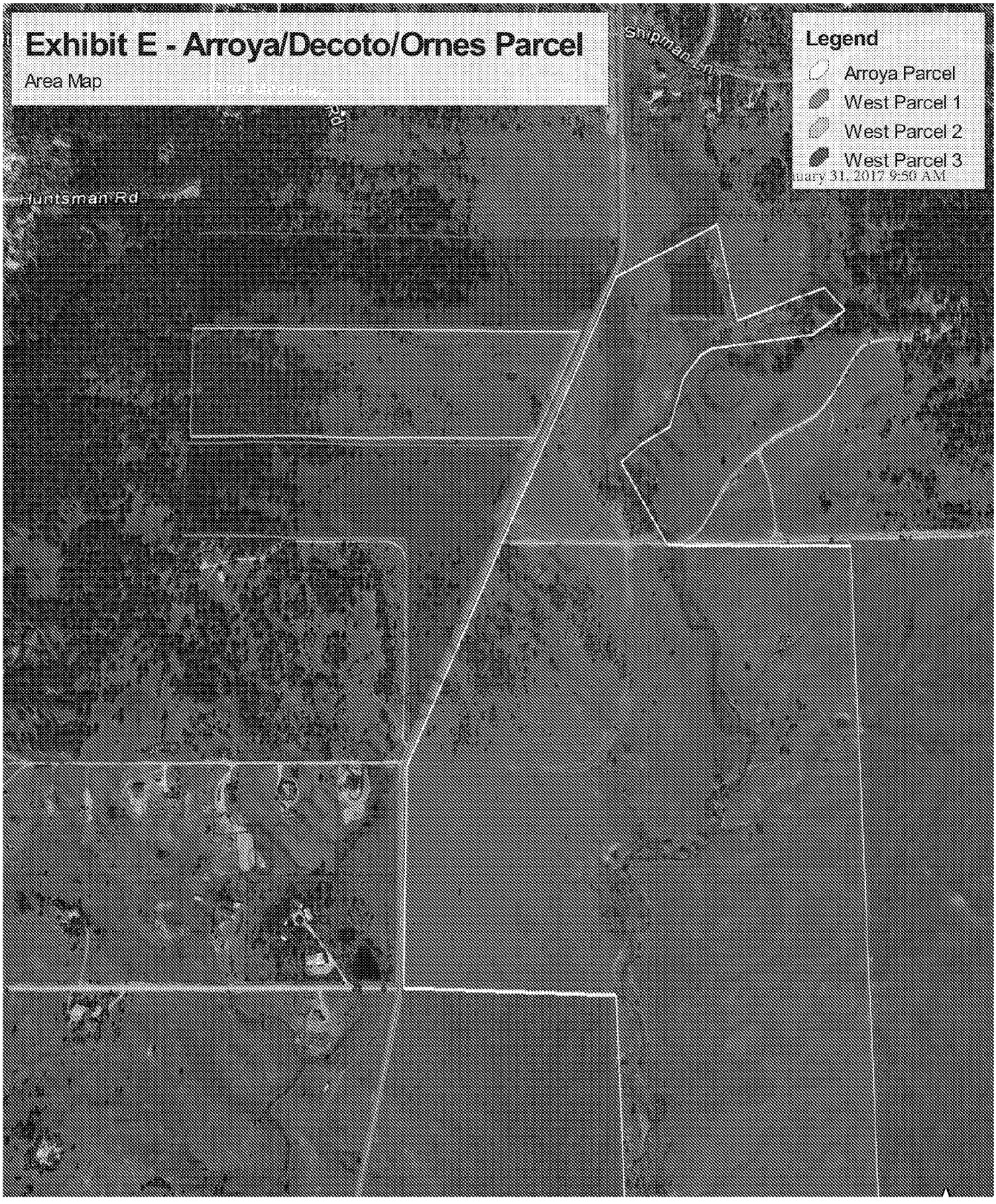


Exhibit E - Arroya/Decoto/Ornes Parcel
Area Map
Legend
Arroya Parcel
West Parcel 1
West Parcel 2
West Parcel 3
Huntsman Rd
Ski Ranch Rd
January 31, 2017 9:50 AM

EXHIBIT A

LEGAL DESCRIPTION:

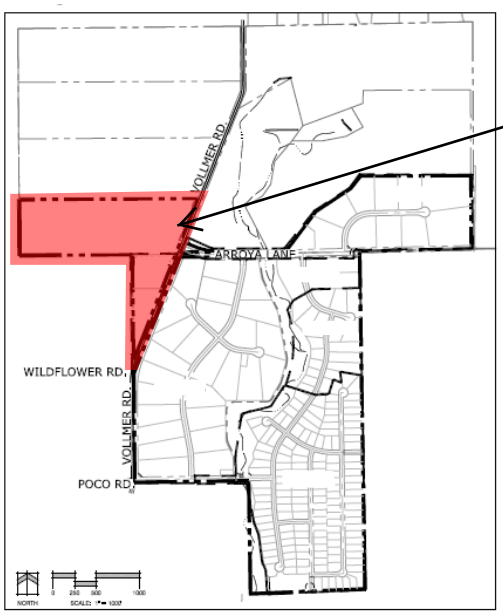
A PARCEL OF LAND LOCATED IN A PORTION OF THE SOUTHEAST ONE-QUARTER (SE1/4) OF SECTION 21 AND A PORTION OF THE NORTHEAST ONE-QUARTER (NE1/4) OF SECTION 28, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE 6TH P.M., EL PASO COUNTY, COLORADO, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

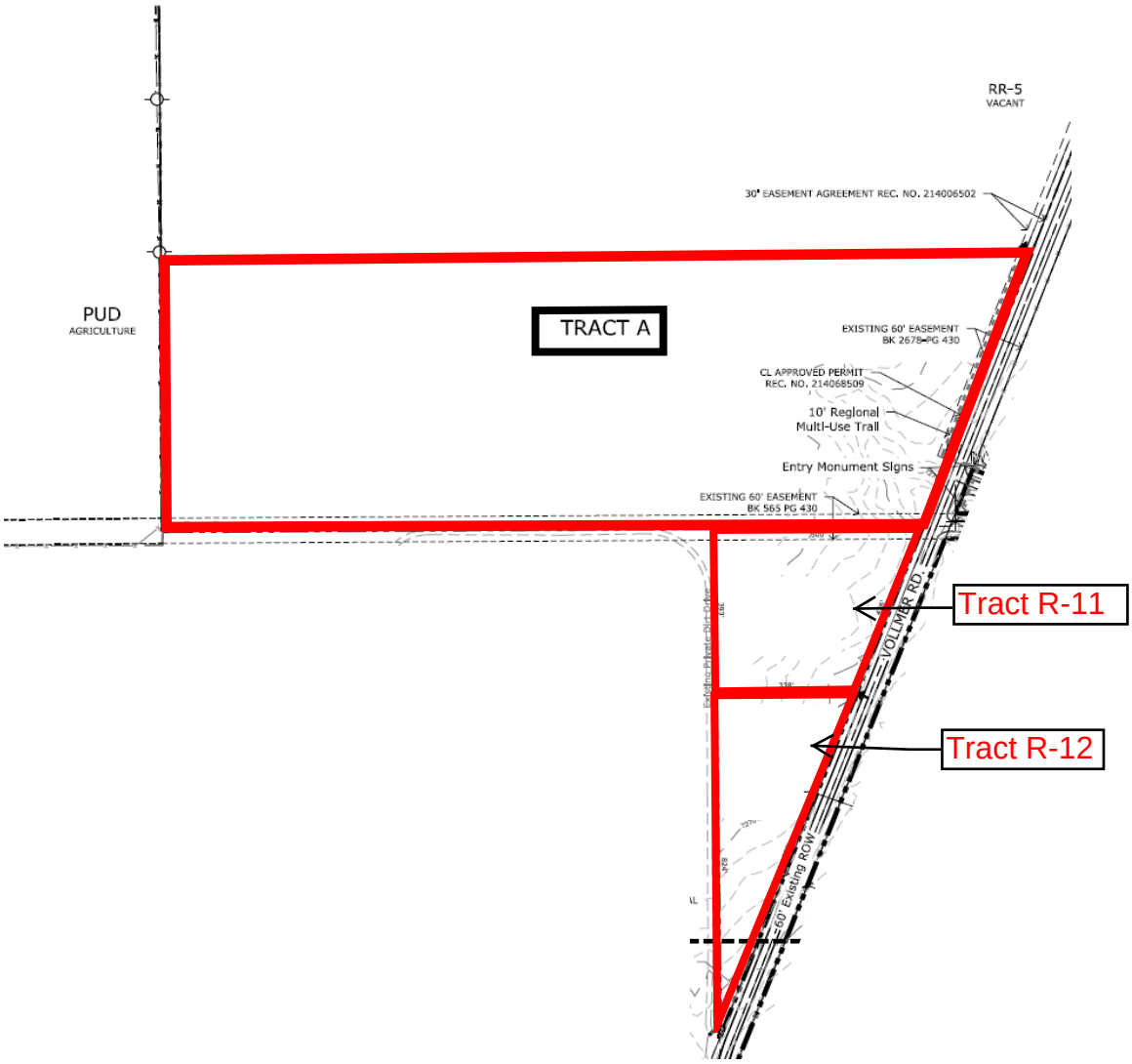
BASIS OF BEARINGS: THE WEST LINE OF THE SOUTHEAST ONE-QUARTER OF SECTION 21, TOWNSHIP 12 SOUTH, RANGE 65 WEST IS ASSUMED TO BEAR N00°25'32"W, A DISTANCE OF 2640.23 FEET;

COMMENCING AT THE SOUTHWEST CORNER OF SAID SOUTHEAST ONE-QUARTER (SE1/4) SAID POINT ALSO BEING THE POINT OF BEGINNING OF THE PARCEL OF LAND HEREIN DESCRIBED;
THENCE N00°25'32"W ALONG THE WEST LINE OF SAID SOUTHEAST ONE-QUARTER (SE1/4), A DISTANCE OF 650.11 FEET;
THENCE N89°40'31"E, A DISTANCE OF 2077.12 FEET TO A POINT ON THE WESTERLY RIGHT-OF-WAY LINE OF VOLLMER ROAD AS DESCRIBED IN THE DOCUMENT RECORDED IN BOOK 2678 AT PAGE 430 OF THE RECORDS OF THE EL PASO COUNTY CLERK AND RECORDER;
THENCE S21°41'10"W ALONG SAID WESTERLY RIGHT-OF-WAY LINE, A DISTANCE OF 2013.88 FEET TO A POINT ON THE EAST LINE OF THE NORTHWEST ONE-QUARTER OF THE NORTHEAST ONE-QUARTER (NW1/4 NE1/4) OF SAID SECTION 28;
THENCE N00°41'17"W ALONG SAID EAST LINE, A DISTANCE OF 1217.12 FEET TO THE SOUTHEAST CORNER OF THE SOUTHWEST ONE-QUARTER OF THE SOUTHEAST ONE-QUARTER (SW1/4 SE1/4) OF SAID SECTION 21;
THENCE S89°40'14"W ALONG THE SOUTH LINE OF SAID SOUTHWEST ONE-QUARTER OF THE SOUTHEAST ONE-QUARTER (SW1/4 SE1/4), A DISTANCE OF 1313.49 FEET TO THE POINT OF BEGINNING;

SAID PARCEL OF LAND CONTAINS A CALCULATED AREA OF 36.01 ACRES OF LAND, MORE OR LESS.

EXHIBIT B - MAP





DISTRICT COURT, WATER DIVISION 2, CO Court Address: 320 W. 10th[th] Street Pueblo, CO 81003 Phone Number: (719) 583-7048	DATE FILED: January 31, 2018 8:14 AM FILING ID: 89C898E09C1FD CASE NUMBER: 2018CW3005
CONCERNING THE APPLICATION FOR WATER RIGHTS OF: **JAKE DECOTO** **IN EL PASO COUNTY**	
Attorneys for Applicants: Chris D. Cummins, #35154 Brian G. Sheldon, #51063 MONSON, CUMMINS & SHOHET, LLC 13511 Northgate Estates Dr., Ste. 250 Colorado Springs, Colorado 80921 Phone Number: (719) 471-1212 Fax Number: (719) 471-1234 E-mail: cdc@cowaterlaw.com bgs@cowaterlaw.com	▲ COURT USE ONLY ▲ **Case No.: 18CW____** (17CW3002)
APPLICATION FOR APPROVAL OF PLAN FOR AUGMENTATION	

I. Name and Address of Applicant:

Jake Decoto
10620 Vollmer Road
Colorado Springs, CO 80908

Name and Address of Attorney:

Chris D. Cummins, #35154
Brian G. Sheldon, #51063
MONSON, CUMMINS & SHOHET, LLC
13511 Northgate Estates Dr., Ste. 250
Colorado Springs, Colorado 80921
(719) 471-1212
E-mail: cdc@cowaterlaw.com
bgs@cowaterlaw.com

II. Summary of Application:

The Applicant in this case is Jake Decoto ("Applicant"). Applicant seeks approval of a plan for augmentation utilizing a portion of the Denver Basin groundwater supplies previously quantified in Case No. 17CW3002, underlying an approximately 36.01 acre property as described in Case No. 17CW3002 as "West Parcel 1", located in El Paso County, Colorado. Such parcel is described on **Exhibit A** ("Applicant's Property"), and depicted on **Exhibit B**. Applicant seeks to utilize the previously quantified Denver Basin groundwater, as augmented herein, for development of three (3) parcels, two of approximately 3.5 acres in size (Tracts R-11 and R-12) and one of approximately 29 acres (Tract A) as depicted on **Exhibit B**, on Applicant's Property, utilizing individual wells and septic systems on all said lots. All previously quantified Denver Basin groundwater not utilized in the plan for augmentation described herein is reserved by Applicant for other uses.

III. APPLICATION FOR PLAN FOR AUGMENTATION.

Applicant is the owner of a 100% of the Applicant's Property and the underlying Denver Basin groundwater subject of the decree issued by the Division 2 Water Court in Case No. 17CW3002, as described in the following table:

Applicant's Property (West Parcel No. 1) – 36.01 acres:

Aquifer	Sand Thickness (Feet)	Total Ground Water Storage (Acre Feet)	Annual Average Withdrawal – 100 Years (Acre Feet)
Dawson (NNT)	270	1,944.4	5.48[1,2]
Denver (NNT)	310	1,897.7	18.98
Arapahoe (NT)	255	1,561	15.61
Laramie-Fox Hills (NT)	190	1,026.2	10.26

A. Structures to be Augmented. The structures to be augmented are Decoto Well Nos. 1, 2 and 3, as proposed or as currently constructed to the not-nontributary

[1] Three (3) annual acre feet of Dawson groundwater was reserved from quantification in the 17CW3002 matter for permitting of an exempt well on this parcel pursuant to C.R.S. §37-92-602, *et seq.* It is Applicant's intent to utilize this water for an exempt stockwatering well, or similar, to be permitted at a later date.

[2] The Dawson aquifer annual withdrawal figure represents not the 100-year aquifer life discussed at C.R.S. §37-90-137(4), but rather a 300-year aquifer life consistent with provision of a 300-year water supply in compliance with El Paso County, Colorado land development code as applicable to the subdivision of Applicant's Property.

Dawson aquifer, including any future replacement or substitute wells as may be constructed to the not-nontributary Dawson aquifer formation underlying the subject portion of Applicant's Property. Decoto Well No. 1 is currently permitted and constructed under exempt Permit No. 304551 on Tract A, which will be repermitted upon entry of a decree herein as an augmented structure. There are to be no other water rights diverted from these structures.

B. Water Rights to be Used for Augmentation. The water rights to be used for augmentation during pumping are the septic return flows resulting from pumping of the not-nontributary Dawson aquifer by the Decoto Well Nos. 1, 2 and 3, including from any replacement/substitute wells, as set forth in this plan for augmentation, together with water rights from the nontributary Laramie-Fox Hills aquifer for any injurious post pumping depletions.

C. Statement of Plan for Augmentation. Applicant wishes to provide for the augmentation of stream depletions caused by pumping the not-nontributary Dawson aquifer wells proposed herein. Water use criteria and their consumptive use component for replacement of actual depletions are estimated as follows:

1. Household Use Only: 0.26 acre feet annually within single family dwellings on up to 3 lots, with a maximum of ten percent consumptive use based on a nonevaporative septic leach field disposal systems. The annual consumptive use for each lot would therefore be 0.026 acre feet per well, with return flows of 0.234 acre feet per lot, for total septic return flows on all three lots combined of 0.70 acre feet per year. Any other type of waste water disposal shall require and amendment to this plan of augmentation.

2. Landscape Irrigation: 0.05 acre feet annually per 1,000 square feet (2.18 acre feet per acre) per year, with an 85% assumed consumptive use rate. The annual consumptive use for each 1,000 square feet of lawn and garden irrigated is therefore 0.042 acre feet.

3. Horses (or equivalent livestock): 0.011 acre feet annually (10 gallons per day) per head with a one hundred percent consumptive use component.

4. Hot Tub Use: 0.006 acre feet (2,100 gallons) annually, based upon six fillings per year, with a 50% consumptive use rate. The annual consumptive use for each hot tub is therefore 0.003 acre feet (1,050 gallons).

Applicant will replace depletions resulting from the pumping of Decoto Well Nos. 1, 2 and 3 during the pumping life of such wells utilizing septic return flows from in house uses from lots served by Decoto Well Nos. 1, 2 and 3. The return flows set forth above will accrue to the Arkansas River system where the depletions occur. Applicant requests a finding that these replacements are sufficient. Maximum anticipated pumping from Decoto Well Nos. 1, 2 and 3 will be 2.0 annual acre feet, with 0.4 annual acre feet of pumping allocated to each of Decoto Well Nos. 2 and 3, and 1.2 annual

acre feet of pumping allocated to Decoto Well No. 1, unless a maximum depletion percentage of less than 34% during the pumping life of the wells is adequately evidenced. Of the Denver Basin groundwater described in the above table, therefore, 2.0 annual acre feet of Dawson aquifer supplies and at least 403 total acre feet of nontributary Laramie-Fox Hills groundwater, for replacement of any injurious post pumping depletions, are dedicated to this plan for augmentation. All other previously quantified Denver Basin groundwater supplies are reserved by Applicant, and should Applicant in the future wish to further subdivide the approximately 29-acre Tract A parcel, Applicant my utilize such reserved Denver Basin groundwater supplies for such purposes under a new plan for augmentation, without the need to amend the plan for augmentation sought herein.

D. Augmentation of Depletions During Pumping. Pursuant to C.R.S. §37-90-137(9)(c.5) replacement of actual stream depletions attributable to pumping of the Timber Ridge wells will be required to the extent necessary to prevent injurious effect. Maximum depletions during the 300 year pumping life of subject wells are estimated to be 34% of pumping.

Maximum combined annual pumping from Decoto Well Nos. 1, 2 and 3 shall be 2.0 acre feet. Should Applicant pump 2.0 acre feet per year in combination from Decoto Well Nos. 1, 2 and 3, Applicant would therefore be required to replace a maximum of 0.68 acre feet annually (*i.e.* 34% of pumping). Septic return flows from the combined use of Decoto Well Nos. 1, 2 and 3 in the single family residences to be constructed on each lot would equate to at least a combined 0.7 annual acre feet, fully augmenting any out of priority depletions, and allowing Applicant to make any mix of uses on the residential lots. Applicant will provide accounting to the satisfaction of the State and Division Engineers evidencing that return flows from such uses of pumping from the Decoto Well Nos. 1, 2 and 3 are sufficient for the replacement of the estimated maximum depletion of 34% of pumping, regardless of uses made therefrom. As such, all depletions associated with Applicant's use of water and the operation of Decoto Well Nos. 1, 2 and 3 will be replaced in time, place and amount, during the pumping life of the wells, thereby preventing injury to other vested water rights.

E. Augmentation for Post Pumping Depletions.

For the replacement of any injurious post-pumping depletions, Applicant reserves a 403 acre foot portion of the previously quantified underlying groundwater adjudicated in the nontributary Laramie-Fox Hills aquifer. A portion of the depletions resulting from pumping will be replaced during the pumping life of the wells through septic return flows, estimated at 0.7 acre feet per year, for a total of replacements during pumping of 210 acre feet, assuming the maximum 2.0 acre feet is pumped for the anticipated 300-year aquifer life. Applicant therefore reserves 403 acre feet of the nontributary Laramie-Fox Hills aquifer for replacement of any injurious post-pumping depletions. The 403 acre feet of nontributary groundwater so reserved represents maximum post pumping depletions, less 2% not to be consumed per statute (total maximum actual depletions are estimated as 600 acre feet). Applicant also reserves the right to substitute other

legally available augmentation sources for such post pumping depletions upon further approval of the Court under its retained jurisdiction, and to reserve greater or lesser amounts consistent with the Determination of Facts and/or Summary of Consultation as entered in this case. Even though this reservation is made, Applicant claims that post pumping depletions will be noninjurious and do not need to be replaced. Under the Court's retained jurisdiction, Applicant reserves the right in the future to prove that post pumping depletions will be noninjurious. The reserved nontributary water will be used to replace any injurious post-pumping depletions. By this reservation, it is Applicant's intent that the nontributary Arapahoe aquifer and the remaining portion of the nontributary Laramie-Fox Hills aquifer not so dedicated remain available to Applicant's use without reservation or restriction. Upon entry of a decree in this case, the Applicant will be entitled to file for and receive new permits for Decoto Well Nos. 1, 2 and 3, for the uses in accordance with this Application and the plan for augmentation herein

F. Remarks. Additional remarks are as follows:

1. Applicant requests a finding that it has complied with C.R.S. §37-90-137(4), and that the ground water requested herein is legally available for withdrawal by the requested wells upon the entry of a decree approving an augmentation plan pursuant to C.R.S. §37-90-137(9)(c).

2. The term of this augmentation plan is for 300 years, however the length of the plan for a particular well may be extended beyond such time provided the total plan pumping allocated thereto is not exceeded. Post pumping stream depletions accrue to a particular well or wells only to the extent related to that well's actual pumping.

3. The Court will retain jurisdiction over this matter to provide for the adjustment of the annual amount of ground water withdrawals to be allowed in order to conform to actual local aquifer characteristics from adequate information obtained from well drilling or test holes.

4. Pursuant to C.R.S. §37-90-137, upon approval of the plan for augmentation requested herein, Applicant will file an application with the State Engineer's office to re-permit any existing well(s) on the Applicant's Property for operation under the plan for augmentation, as depicted on **Exhibit B**, excepting any exempt wells to operate utilizing the water reserved in 17CW3002 for such purposes.

5. The Applicant requests a finding that vested water rights of others will not be materially injured by the withdrawals of ground water and the proposed plan for augmentation.

6. The wells shall be installed and metered as reasonably required by the State Engineer. Each well must be equipped with a totalizing flow meter and Applicant shall submit diversion records to the Division Engineer on an annual basis or as otherwise requested by the Division Engineer. The Applicant shall also provide accountings to the Division Engineer and Water Commissioner as required by them to

demonstrate compliance under this plan of augmentation.

7. The Applicant intends to waive the 600 feet well spacing requirement for any wells to be located upon the Applicant's Property.

8. Applicant will comply with any lienholder notice provisions set forth in C.R.S. §37-92-302(2)(b) and §37-90-137(4)(b.5)(I), and such notice will be sent within 10 days of the filing of this Application.

RESPECTFULLY SUBMITTED this 31st day of January, 2018.

MONSON, CUMMINS & SHOHET, LLC
(Pursuant to C.R.C.P. 121, § 1-26(9), the signed original shall be kept on file at the offices of Monson, Cummins & Shohet, LLC)

Chris D. Cummins, #35154
Brian G. Sheldon, #51063
13511 Northgate Estates Dr., Ste. 250
Colorado Springs, CO 80921
(719) 471-1212

VERIFICATION

STATE OF COLORADO)
) ss
COUNTY OF EL PASO)

I, Jake Decoto, state that I have read the foregoing and that all of the statements contained therein are true and accurate to the best of my knowledge and information.

Jake Decoto

The foregoing instrument was acknowledged before me this 30th day of January, 2018, by Jake Decoto.

My commission expires: 12.09.2019

Witness my hand and official seal.
(SEAL)

KAILI ANNE SAGE
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20154047414
MY COMMISSION EXPIRES DECEMBER 9, 2019

Notary Public

DISTRICT COURT, WATER DIVISION 2, CO Court Address: 320 W. 10th Street Pueblo, CO 81003 Phone Number: (719) 583-7048	
CONCERNING THE APPLICATION FOR WATER RIGHTS OF: **ARROYA INVESTMENTS** **IN EL PASO COUNTY**	
Attorneys for Applicants: Chris D. Cummins, #35154 Brian G. Sheldon, #51063 MONSON, CUMMINS & SHOHET, LLC 13511 Northgate Estates Dr., Ste. 250 Colorado Springs, Colorado 80921 Phone Number: (719) 471-1212 Fax Number: (719) 471-1234 E-mail: cdc@cowaterlaw.com bgs@cowaterlaw.com	▲ COURT USE ONLY ▲ **Case No.: 18CW____** (17CW3002)
APPLICATION FOR PLAN FOR AUGMENTATION	

I. Name and Address of Applicant:

Arroya Investments, LLC
c/o Paul Howard, Land Development Corporation
1283 Kelly Johnson Blvd.
Colorado Springs, CO 80920

NAME AND ADDRESS OF ATTORNEY:

Chris D. Cummins, #35154
Brian G. Sheldon, #51063
MONSON, CUMMINS & SHOHET, LLC
13511 Northgate Estates Dr., Ste. 250
Colorado Springs, Colorado 80921
(719) 471-1212
E-mail: cdc@cowaterlaw.com
bgs@cowaterlaw.com

II. Summary of Application:

The Applicant in this case is Arroya Investments, LLC ("Arroya" or "Applicant"). Applicant seeks approval of a plan for augmentation utilizing a portion of the Denver Basin groundwater supplies previously quantified in Case No. 17CW3002, underlying an approximately 72.5 acre portion of the larger Arroya Parcel as described in Case No. 17CW3002, a 225.97 acre parcel of land located in El Paso County, Colorado. Such parcel is described on **Exhibit A** ("Applicant's Property"), and depicted on **Exhibit B**. Applicant seeks to utilize the previously quantified Denver Basin groundwater, as augmented herein, for development of up to twenty-nine (29) 2.5-acre residential lots on said portion of the Applicant's Property utilizing individual wells and septic systems on said lots. All previously quantified Denver Basin groundwater not utilized in the plan for augmentation described herein is reserved by Applicant for other uses.

III. APPLICATION FOR PLAN FOR AUGMENTATION.

Applicant is the owner of a 100% of the Applicant's Property and the underlying Denver Basin groundwater subject of the decree issued by the Division 2 Water Court in Case No. 17CW3002, as described in the following table:

Arroya Parcel (225.97 acres):

Aquifer	Sand Thickness (Feet)	Total Ground Water Storage (Acre Feet)	Annual Average Withdrawal – 100 Years (Acre Feet)
Dawson (NNT)	270	12,202	40.67[1]
Denver (NNT)	310	11,909	119.1
Arapahoe (NT)	255	9,796	98
Laramie-Fox Hills (NT)	190	6,440	64.4

A. Structures to be Augmented. The structures to be augmented are Timber Ridge Well Nos. 1 through 29, as proposed or as currently constructed to the not-nontributary Dawson aquifer, including any future replacement or substitute wells as may be constructed to the not-nontributary Dawson aquifer formation underlying the subject portion of Applicant's Property. There are to be no other water rights diverted from these structures.

[1] The Dawson Annual Average Withdrawals in this table represent not the 100-year aquifer life discussed in C.R.S. 37-90-137(4), but rather a 300-year aquifer life for provision of a 300-year water supply in compliance with El Paso County Land Development Code for the subdivision of a portion of the Applicant's Property, consistent with the plan for augmentation requested herein.

B. Water Rights to be Used for Augmentation. The water rights to be used for augmentation during pumping are the septic return flows resulting from pumping of the not-nontributary Dawson aquifer by the Timber Ridge Well Nos. 1 through 29, including from any replacement/substitute wells, as set forth in this plan for augmentation, together with water rights from the nontributary Laramie-Fox Hills aquifer for any injurious post pumping depletions.

C. Statement of Plan for Augmentation. Applicant wishes to provide for the augmentation of stream depletions caused by pumping the not-nontributary Dawson aquifer wells proposed herein. Water use criteria and their consumptive use component for replacement of actual depletions is estimated as follows:

1. Household Use Only: 0.26 acre feet annually within single family dwellings on up to 29 lots, with a maximum of ten percent consumptive use based on a nonevaporative septic leach field disposal systems. The annual consumptive use for each lot would therefore be 0.026 acre feet per well, with return flows of 0.234 acre feet per lot. For purposes of conservatism, however, as discussed below Applicant will presume septic return flows from each residential lot to be only 0.18 acre feet per year, for total septic return flows of 5.22 acre feet per year. Any other type of waste water disposal shall require and amendment to this plan of augmentation.

2. Landscape Irrigation: 0.05 acre feet annually per 1,000 square feet (2.18 acre feet per acre) per year, with a 85% assumed consumptive use rate. The annual consumptive use for each 1,000 square feet of lawn and garden irrigated is therefore 0.042 acre feet.

3. Horses (or equivalent livestock): 0.011 acre feet annually (10 gallons per day) per head with a one hundred percent consumptive use component.

4. Hot Tub Use: 0.006 acre feet (2100 gallons) annually, based upon six fillings per year, with a 50% consumptive use rate. The annual consumptive use for each hot tub is therefore 0.003 acre feet (1050 gallons).

Applicant will replace depletions resulting from the pumping of Timber Ridge Well Nos. 1 through 29 during the pumping life of such wells utilizing septic return flows from in house uses from lots served by Timber Ridge Well Nos. 1 through 29. The return flows set forth above will accrue to the Arkansas River system where the depletions occur. Applicant requests a finding that these replacements are sufficient. Maximum pumping from Timber Ridge Well Nos. 1 through 29 will be 15.35 annual acre feet. Of the Denver Basin groundwater described in the above table, therefore, 15.35 annual acre feet of Dawson aquifer supplies and 3,100 total acre feet of nontributary Laramie-Fox Hills groundwater, for replacement of any injurious post pumping depletions, are dedicated to this plan for augmentation. All other previously quantified Denver Basin groundwater supplies are reserved by Applicant.

D. Augmentation of Depletions During Pumping. Pursuant to C.R.S. §37-90-137(9)(c.5) replacement of actual stream depletions attributable to pumping of the Timber Ridge wells will be required to the extent necessary to prevent injurious effect. Maximum depletions during the 300 year pumping life of subject wells are estimated to be 34% of pumping.

Maximum combined annual pumping from Timber Ridge Well Nos. 1 through 29 shall be 15.35 acre feet, which represents a maximum of 0.53 acre feet per well/lot. Should Applicant pump the maximum 15.35 acre feet per year in combination from Timber Ridge Well Nos. 1 through 29, Applicant would therefore be required to replace a maximum of 5.22 acre feet annually (*i.e.* 34% of pumping). Septic return flows from the combined use of Timber Ridge Well Nos. 1 through 29 in the single family residences to be constructed on each lot would equate to at least a combined 5.22 annual acre feet, fully augmenting any out of priority depletions, and allowing Applicant to make any mix of uses on the residential lots. Applicant will provide accounting to the satisfaction of the State and Division Engineers evidencing that return flows from such uses of pumping from Timber Ridge Well Nos. 1 through 29 are sufficient for the replacement of a minimum of 34% of pumping, regardless of uses made therefrom. As such, all depletions associated with Applicant's use of water and the operation of Timber Ridge Well Nos. 1 through 29 will be replaced in time, place and amount, during the pumping life of the wells, thereby preventing injury to other vested water rights.

E. Augmentation for Post Pumping Depletions.

For the replacement of any injurious post-pumping depletions, Applicant reserves a 3,100 acre foot of the previously quantified underlying groundwater adjudicated in the nontributary Laramie-Fox Hills aquifer. A portion of the depletions resulting from pumping will be replaced during the pumping life of the wells through septic return flows, estimated at 5.22 acre feet per year, for a total of replacements during pumping of 1,566 acre feet, assuming the maximum 15.35 acre feet is pumped for the anticipated 300-year aquifer life. Applicant therefore reserves 3,100 acre feet of the nontributary Laramie-Fox Hills aquifer for replacement of any injurious post-pumping depletions. The 3,100 acre feet of nontributary groundwater so reserved represents maximum post pumping depletions, less 2% not to be consumed per statute (total maximum actual depletions are estimated as 3,039 acre feet). Applicant also reserves the right to substitute other legally available augmentation sources for such post pumping depletions upon further approval of the Court under its retained jurisdiction. Even though this reservation is made, Applicant claims that post pumping depletions will be noninjurious and do not need to be replaced. Under the Court's retained jurisdiction, Applicant reserves the right in the future to prove that post pumping depletions will be noninjurious. The reserved nontributary water will be used to replace any injurious post-pumping depletions. By this reservation, it is Applicant's intent that the nontributary Arapahoe aquifer and the remaining portion of the nontributary Laramie-Fox Hills aquifer not so dedicated remain available to Applicant's use without reservation or restriction. Upon entry of a decree in this case, the Applicant will be entitled to file for and receive new permits for Timber Ridge Well Nos. 1 through 29, for the uses in

accordance with this Application and the plan for augmentation herein

F. Remarks. Additional remarks are as follows:

1. Applicant requests a finding that it has complied with C.R.S. §37-90-137(4), and that the ground water requested herein is legally available for withdrawal by the requested wells upon the entry of a decree approving an augmentation plan pursuant to C.R.S. §37-90-137(9)(c).

2. The term of this augmentation plan is for 300 years, however the length of the plan for a particular well may be extended beyond such time provided the total plan pumping allocated thereto is not exceeded. Post pumping stream depletions accrue to a particular well or wells only to the extent related to that well's actual pumping.

3. The Court will retain jurisdiction over this matter to provide for the adjustment of the annual amount of ground water withdrawals to be allowed in order to conform to actual local aquifer characteristics from adequate information obtained from well drilling or test holes.

4. Pursuant to C.R.S. §37-90-137, upon approval of the plan for augmentation requested herein, Applicant will file an application with the State Engineer's office to re-permit any existing well(s) on the subject portion of Applicant's approximately 225.97 acre property for operation under the plan for augmentation, as depicted on Exhibit B.

5. The Applicant requests a finding that vested water rights of others will not be materially injured by the withdrawals of ground water and the proposed plan for augmentation.

6. The wells shall be installed and metered as reasonably required by the State Engineer. Each well must be equipped with a totalizing flow meter and Applicant shall submit diversion records to the Division Engineer on an annual basis or as otherwise requested by the Division Engineer. The Applicant shall also provide accountings to the Division Engineer and Water Commissioner as required by them to demonstrate compliance under this plan of augmentation.

7. The Applicant intends to waive the 600 feet well spacing requirement for any wells to be located upon the Applicant's Property.

8. Applicant will comply with any lienholder notice provisions set forth in C.R.S. §37-92-302(2)(b) and §37-90-137(4)(b.5)(I), and such notice will be sent within 10 days of the filing of this Application.

RESPECTFULLY SUBMITTED this 9th day of January, 2018.

MONSON, CUMMINS & SHOHET, LLC
(Pursuant to C.R.C.P. 121, § 1-26(9), the signed original shall be kept on file at the offices of Monson, Cummins & Shohet, LLC)

Chris D. Cummins, #35154
Brian G. Sheldon, #51063
13511 Northgate Estates Dr., Ste. 250
Colorado Springs, CO 80921
(719) 471-1212

VERIFICATION

STATE OF COLORADO)
) ss
COUNTY OF EL PASO)

I, Jake Decoto, as managing member of Arroya Investments, LLC, state that I have read the foregoing and that all of the statements contained therein are true and accurate to the best of my knowledge and information.

Jake Decoto

The foregoing instrument was acknowledged before me this 5th day of January, 2018, by Jake Decoto, as managing member of Arroya Investments, LLC.

My commission expires: 05/22/2021

Witness my hand and official seal.
(SEAL)

ANDREA MALCOLM
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20174021477
MY COMMISSION EXPIRES MAY 22, 2021

Notary Public

DATE FILED: October 13, 2017 4:24 PM
CASE NUMBER: 2016CW3095

DISTRICT COURT, WATER DIVISION 2 **Pueblo County Courthouse** **501 North Elizabeth Street, Suite 116** **Pueblo, CO 81003**	
Concerning the Application for Water Rights of: **ARROYA INVESTMENTS, LLC and ROBERT SCOTT GENERAL CONTRACTORS, INC.** In El Paso County	Δ **COURT USE ONLY** Δ
	Case No. 16CW3095

FINDINGS OF FACT, CONCLUSIONS OF LAW, JUDGMENT AND DECREE

The Court, having reviewed the application, the Summary of Consultation held by the Division Engineer for Water Division 2 on March 10, 2017, and the pleadings in this case, hereby enters the following Findings of Fact, Conclusions of Law, Judgment and Decree:

FINDINGS OF FACT

I. Jurisdictional Facts.

1. The applicants for adjudication of Denver Basin ground water and approval of a plan for augmentation in this case are Arroya Investments, LLC, 1283 Kelly Johnson Blvd., Colorado Springs, CO 80920 ("Arroya"), and Robert Scott General Contractors, Inc. ("Scott"), Attn: Bob Ormston. 2760 Brogans Bluff Drive, Colorado Springs, CO

80918, phone 719.499.6754; email rshomes@comcast.net.

2. The application in this case was filed on December 29, 2016 in Water Division 2. The application was published in the resume for Water Division 2 and in a newspaper of general circulation in El Paso County, as ordered by the Court. Proof of publication has been filed.

3. A timely statement of opposition was filed in Water Division 2 by the City of Colorado Springs acting by and through its enterprise, Colorado Springs Utilities. The City of Colorado Springs has stipulated to entry of a decree in this case, and this decree is consistent with the stipulation. The deadline for filing statements of opposition has expired, and no motions to intervene have been filed.

4. The Court has reviewed and considered the Consultation Report of the Division Engineer for Water Division 2, which was held on and filed on March 10, 2017.

5. The land and water involved herein are not within the boundaries of a designated ground water basin.

II. Description of Denver Basin Water Rights to be Adjudicated.

6. The property beneath which certain water is sought to be adjudicated consists of 35.28 acres situate in the SW1/4 Section 22, T. 12 S., R. 65 W., 6th P.M.; its legal description is found on Exhibit A (the "Property"). A map showing the Property's location is attached as Figure 1.

7. The Property is owned by the Applicant and there are no liens or encumbrances against the Property, so the provisions of C.R.S. §37-92-302(2)(b) do not apply.

8. Pursuant to the Determinations of Fact issued by the State Engineer on February 8, 2017, the amounts of water available for appropriation from each aquifer are as shown on Table 1:

Table I

Aquifer	Acreage	Specific Yield	Sat. Thickness (ft)	Total Amount (AF)	Annual Amount (AF)[1]
Dawson	35.28	.20	275	1,940	19.4
Denver	35.28	.17	280	1,679	16.8
Arapahoe	35.28	.17	250	1,499	15.0
L-Fox Hills	35.28	.15	190	1,005	10.1

9. The estimated depths and tributary status of the four aquifers located beneath the Property are shown on Table II:

[1] This amount is based on annual withdrawals of one percent of the total amount appropriated, as provided in C.R.S. §37-90-137(4)(b). The plan for augmentation decreed herein requires that the water in the Dawson aquifer be withdrawn at a lower rate than would otherwise be allowed by state law.

Table II

Aquifer	Depth below surface (ft)	tributary status
Dawson	100 - 620	not nontributary
Denver	640 - 1,540	not nontributary
Arapahoe	1,590 - 2,075	nontributary
Laramie-Fox Hills	2,350 - 2,635	nontributary

10. Applicants will withdraw water from the Dawson aquifer from as many as 10 wells. Subject to the limitations in this decree, Applicants may also withdraw water from one well in each of the Denver, Arapahoe, and Laramie-Fox Hills aquifers, plus any additional wells in those aquifers required in order for Applicants to withdraw the full decreed amounts. Such wells may be constructed at any location on the Property, provided, that no wells may be located within 100 feet of the Property boundary.

11. Subject to the terms, conditions and limitations of this decree, and the issuance by the State Engineer of a well permit that authorizes the specific use or uses, the Denver Basin ground water rights adjudicated herein are decreed for all beneficial uses except municipal uses.

III. Description of Plan for Augmentation.

12. Overview of plan for augmentation. Applicants intend to subdivide the property into as many as 10 residential lots. Applicants are entitled to drill one well into the Dawson aquifer for each lot. The plan for augmentation is designed to last for 300 years. Septic system return flows will be used to replace depletions which occur during the pumping period, and nontributary Arapahoe and Laramie-Fox Hills aquifer water is hereby reserved in an amount sufficient to replace all post-pumping depletions. Uses of water on such lots are expected to be, but shall not be limited to, some or all of the following uses: for indoor uses for drinking and sanitary purposes in the principal houses and in stand-alone home offices or guest cottages, for livestock watering, for landscape and garden irrigation, hot tubs, swimming pools, and decorative uses such as decorative ponds and fountains, and augmentation through septic system return flows. Annual pumping from the Dawson aquifer will be limited to 0.5225 acre foot (170,257 gallons) annually per well, with one well per lot, and 5.225 acre feet annually. Applicants for well permits will indicate the uses to which they intend to put the water on their well permit applications.

13. Return flows from indoor residential use. The State Engineer has issued an informal guideline estimating that conservatively, water use in single family dwellings will equal at least 0.2 acre foot of water annually for indoor uses, and that return flows from nonevaporative septic systems will equal at least 0.18 acre foot annually. Thus, it

is assumed that each well constructed pursuant to this plan for augmentation will be used in at least one single family dwelling, and will cause septic system return flows of at least 0.18 acre foot annually, or at least 1.8 acre foot annually if 10 wells are constructed. Though there may be return flows from landscape and/or garden irrigation, Applicants do not and will not rely on such return flows to replace depletions during the pumping period under this plan for augmentation, or in any other plan for augmentation.

14. Replacement of depletions during pumping. Applicants shall replace all depletions caused by pumping of the Dawson aquifer water. The State Engineer's computer model “DA02" indicates that during pumping, depletions to the Arkansas River system will gradually increase to a maximum of approximately 34.45 percent of annual pumping in the 300th year, or 1.8 acre feet based on annual pumping of 5.225 acre feet. Applicants shall replace those depletions with septic system return flows, which will equal 1.8 acre feet annually for 10 lots, based on assumed average annual indoor use of at least 0.2 acre foot per dwelling. If the Property is subdivided into fewer than 10 lots, with one Dawson aquifer well per lot, return flows from septic systems will still always exceed stream depletions during the 300 year pumping period. Thus, Applicants may subdivide the Property into fewer than 10 lots, with one well per lot, provided that Applicants comply with all other provisions of this decree. If fewer than 10 lots are approved by the relevant department of the El Paso County Government, the annual

amount allowed to be pumped from each Dawson aquifer well shall remain 0.5225 acre foot per well.

15. Provision of sufficient return flows during the pumping period. Nonevaporative septic systems shall be used for treatment of water used for indoor drinking and sanitary uses on all lots. All septic system return flows from the lots are dedicated to this plan for augmentation, and shall not be sold, leased or otherwise used for any other purpose. Septic system return flows are necessary to provide an adequate source of water to replace stream depletions during the pumping period under the plan for augmentation decreed herein. Accordingly, in order to generate required return flows to replace depletions during pumping, each Dawson aquifer well authorized hereunder must be used to provide water to one or more single family dwellings on the Property, and annual withdrawals shall be limited to withdrawal of 0.5225 acre foot per well. Because this augmentation plan is dependent on return flows from indoor residential uses, no Dawson aquifer well approved pursuant to this plan for augmentation shall be allowed to pump water for any purpose unless it is also used in a residence on the lot on which such well is located. Total post-pumping depletions from Applicants' withdrawals from all Dawson aquifer wells shall in no instance exceed the 1,324 acre feet of water reserved and available for replacement of post pumping depletions from the Arapahoe aquifer, less any replacements of depletions made during the pumping life of the up to 10 Dawson aquifer wells.

16. Replacement of post-pumping depletions.

A. Applicants shall replace post-pumping depletions for the shortest of the following four periods: (1) the period provided by the Colorado Legislature, should it eventually specify one and if the Applicants obtain Water Court approval for such modification; (2) the period determined by the State Engineer, should the State Engineer lawfully establish such a period; (3) the period established through rulings of the Colorado Supreme Court in relevant cases; or (4) until Applicants or their successors petition the Water Court and after notice to all parties in this case prove that they have complied with all statutory requirements.

B. Replacement of post-pumping depletions shall commence after the earliest of the five following events has occurred: (1) 1,567.5 acre feet have been pumped from the Dawson aquifer; or (2) ten consecutive years have passed with no pumping from the Dawson aquifer; or (3) when Applicants or their successors acknowledge in writing that all withdrawals for beneficial use from the Dawson aquifer have permanently ceased; (4) when accounting shows that return flows from the use of the water being withdrawn from the Dawson aquifer wells are insufficient to replace depletions that already occurred, or (5) 300 years subsequent to entry of the decree in this case, i.e., 2317 A.D.

C. At the time Applicants or their successors must begin replacing post-pumping depletions, Applicants shall cause a depletion analysis to be

conducted, using the computer model generally accepted as being most accurate at that time, to calculate the amount and timing of post-pumping depletions which must be replaced, based on actual withdrawals during the applicable pumping period. After the depletion analysis has been completed, the Arapahoe aquifer water as decreed herein, or such other source of water as receives judicial approval after notice, shall then be pumped at the appropriate times and delivered to the Arkansas River system in a manner that will adequately replace all post-pumping depletions from pumping of the Dawson aquifer wells approved pursuant to this decree. Applicants' successors in interest shall be required by the terms of this decree to construct an Arapahoe aquifer well pursuant to this plan for augmentation at the time replacement of post-pumping depletions must commence pursuant to this decree, unless after notice a different source of water is approved by the court for replacement of post-pumping depletions, or unless the obligation is modified or terminated pursuant to ¶ 16.A. above.

D. Applicants hereby reserve and dedicate to this plan for augmentation 1,324 acre feet of Arapahoe aquifer ground water rights decreed herein for the purpose of replacing all post-pumping depletions to the Arkansas River system. This amount has been calculated as follows:

I. Based on a maximum allowable annual Dawson aquifer pumping of 5.225 acre feet for 300 years, a total of 1567.5 acre feet may be

pumped from the up to ten Dawson aquifer wells under this plan for augmentation. Approximately 270 acre feet of stream depletions will occur during the pumping period, and there will be approximately 1,297.5 acre feet of post-pumping depletions.

II. Rule 8 of the Denver Basin Rules, 2 CCR 406-2, requires that only 98 percent of nontributary Denver Basin water may be consumed. The amount of water which must be reserved to replace post-pumping depletions is 1,324 acre feet, which was calculated by dividing post-pumping depletions of 1,297.5 acre feet by 0.98 and rounding to the next larger whole acre foot.

E. Applicants shall, at the time they must begin replacement of post-pumping depletions,construct an Arapahoe aquifer which the rpost-pumping replacements shall be pumped.

F. If at some time replacement of post-pumping depletions is no longer required pursuant to ¶16.A. above, or if Applicants receive judicial approval to use a different water source for augmentation purposes, Applicants shall petition the court pursuant to its retained jurisdiction to modify or terminate the reservation.

17. Recording of decree and covenants. A certified copy of this decree shall be recorded in the real estate records of El Paso County and shall constitute a covenant running with the Property, requiring Applicants and their successors in interest to the

Property to comply withthe requirements of this decree and plan for augmentation, including the requirement to construct an Arapahoe aquifer well or take other measures as necessary to replace post-pumping depletions. Additional covenants shall be recorded in the real estate records of El Paso County and shall clearly indicate that failure of the property owner to comply with the terms of this decree may result in an order from the State Engineer to curtail or eliminate pumping to curtail or eliminate pumping from the Dawson aquifer wells aproved hereunder. Said covenants shall be amended as necessary to conform to the provisions of any amendment to this augmentation plan. Any proposed change in the method of wastewater treatment and disposal for Dawson aquifer wells approved hereunder shall require water court approval after notice in the water resume and publication in a newspaper of general circulation in El Paso County.

18. Appurtenances to Property. This plan for augmentation, the right to 1,567.5 acre feet of Dawson aquifer ground water which may be pumped pursuant to the plan for augmentation, and the right to 1,324 acre feet of Arapahoe aquifer ground water Hills aquifer water rights which are reserved for replacement of post-pumping depletions, shall be considered as appurtenances to the Property, and shall be conveyed pursuant to the appurtenance clause in any deed conveying the Property or any portion thereof, whether or not the plan for augmentation and the water rights are specifically referenced in the deed. It is anticipated that the plan for augmentation and the water rights

reserved for replacement of post-pumping depletions will be conveyed by Applicants to a homeowners association or similar organization charged with the responsibility of implementing and carrying out the provisions of this decree.

19. Meters and reporting requirements. All wells permitted pursuant to this decree shall be equipped with a properly installed and calibrated totalizing flow meter. Applicants shall record the metered use on November 1 and April 1 of each year, and report such use to the water commissioner within two weeks after the measurements have been made. The water commissioner may require more frequent metering and reporting.

20. Finding of no injury. The Court finds that under the terms and conditions herein the requirements of C.R.S. §37-90-137(9)(c) have been met, and that no injury will be caused to the owner of or anyone entitled to use water under a vested water right or decreed conditional water right.

CONCLUSIONS OF LAW

21. The Court has jurisdiction over the subject matter of this action and over all persons who could have appeared herein, whether or not they did so appear.

22. All conditions precedent to the granting of this decree have been performed.

23. The plan for augmenting depletions caused by pumping the not nontributary Dawson aquifer is required by C.R.S. §37-90-137(9), and is subject to the

requirement of C.R.S. §37-92-305(3) and 305(8) that no injury will occur to the owners of or persons entitled to use water under an absolute water right or decreed conditional water right as a result of implementing such plan for augmentation. Applicants have complied with all the conditions of C.R.S. §37-92-305(3), (8) and all other relevant statutes.

24. Applicants can maintain dominion and control over the septic system return flows by determining the quantity of such return flows, as set forth above, and thus has the legal ability to use said return flows in this plan for augmentation. See, Public Service Co. v. Willows Water District, 856 P.2d 829 (Colo. 1993).

JUDGMENT AND DECREE

25. The forgoing findings of fact and conclusions of law are hereby incorporated into this judgment and decree.

26. Adjudication of Dawson aquifer groundwater rights.

A. Applicants are granted a vested right to 1,940 acre feet of ground water in the not nontributary Dawson aquifer located beneath the Property, subject to modification by the Court under its retained jurisdiction. One thousand five hundred sixty seven and one-haolf (1,567.5) acre feet are reserved for use in the plan for augmentation decreed herein.

B. Pumping of the Dawson aquifer ground water rights pursuant to this plan for augmentation is limited to 0.5225 acre foot (170,257 gallons) annually per

well for up to ten wells, 5.225 acre feet annually from all Dawson aquifer wells, and 1,567.5 acre feet in total. All well permits for Dawson aquifer wells authorized under this the plan for augmentation shall limit withdrawals to 15 gpm per well and to 0.5225 acre foot annually.

C. Because the pumping limits are established by the plan for augmentation decreed herein, the "water banking" provisions of Rule 8.A of 2 CCR 402-7 ("Water Banking Rules") do not apply to the Dawson aquifer ground water rights.

D. These Dawson aquifer ground water rights decreed herein are approved for all beneficial uses, except municipal uses.

27. Adjudication of Denver aquifer ground water rights.

A. Applicants are granted a vested right to 1,679 acre feet of ground water in the not nontributary Denver aquifer located beneath the Property, subject to modification by the Court under its retained jurisdiction.

B. The Denver aquifer water may only be pumped pursuant to a court-approved plan for augmentation; no such plan for augmentation is decreed herein. Applicants' Denver aquifer ground water rights may be pumped at a rate not to exceed 16.8 acre feet annually except pursuant to the Water Banking Rules, and if allowed by a required plan for augmentation. The pumping rate shall not exceed 150 gpm.

C. These Denver aquifer ground water rights decreed herein are approved for all beneficial uses, except municipal uses.

28. Adjudication of Arapahoe aquifer ground water rights.

A. Applicants are granted a vested right to 1,499 acre feet of ground water in the nontributary Arapahoe aquifer located underneath the Property, subject to modification by the Court under its retained jurisdiction.

B. One-thousand three hundred twenty four (1,324) acre feet of the Arapahoe aquifer water rights are reserved for the replacement of post-pumping depletions pursuant to the plan for augmentation decreed herein. The Arapahoe aquifer ground water rights reserved for replacement of post-pumping depletions shall be pumped in accordance with the requirements established by the computer model referred to in ¶ 16.C above. The 175 acre feet of Arapahoe aquifer ground water rights which are not reserved for replacement of post-pumping depletions may be pumped at a rate not to exceed 1.75 acre feet annually, except pursuant to the Water Banking Rules. Such water may be pumped at a rate not to exceed 150 gpm.

C. The Arapahoe aquifer ground water rights which are reserved for the replacement of post-pumping depletions are decreed for augmentation use only. The Arapahoe aquifer water rights which are not so reserved are decreed for all beneficial uses except municipal use.

29. Adjudication of Laramie-Fox Hills ground water rights.

A. Applicants are granted a vested right to 1,005 acre feet of ground water in the nontributary Laramie-Fox Hill aquifer located beneath the Property, subject to modification by the Court under its retained jurisdiction.

B. The Laramie-Fox Hills aquifer ground water rights decreed herein may be pumped at rate not to exceed 10.1 acre feet annually except pursuant to the Water Banking Rules, and may be pumped at a rate not to exceed 150 gm.

C. The Laramie-Fox Hills aquifer ground water rights decreed herein are decreed for all beneficial uses, except municipal uses. No more than 98 percent of the Laramie Fox Hills ground water rights may be consumed. Wells in the Laramie-Fox Hills aquifer may be pumped at a rate not to exceed 150 gpm.

30. Vested Water Rights. The Denver Basin aquifer ground water rights decreed herein are vested water rights, and no applications for findings of diligence are required. Pursuant to C.R.S. §37-92-305(11), the Court will retain jurisdiction to finally determine the amount of water available for appropriation, based on site-specific data when it becomes available, and to adjust upward or downward as appropriate the amount available for withdrawal from each aquifer. The Applicants need not refile, republish, or otherwise amend this decree to request or obtain such adjustment.

31. Approval of Plan for Augmentation. The plan for augmentation described herein is approved. Depletions caused by pumping water from up to ten wells in the

Dawson aquifer shall be replaced as provided and decreed herein. Annual withdrawals from the Dawson aquifer shall not exceed 0.5225 acre foot (170,257 gallons) per well, nor more than 5.225 acre feet total, and total withdrawals over the 300 year pumping period shall not exceed 1,567.5 acre feet. The State or Division Engineer shall curtail the pumping of more than those amounts from the Dawson aquifer absent prior modification of this plan for augmentation by amendment of this decree or court approval of an additional plan for augmentation which replaces depletions attributable to such additional pumping. The State Engineer shall also curtail all diversions, the depletions from which are not replaced in a manner to prevent injury to vested water rights or decreed conditional water rights.

32. Necessity of residence on a lot prior to pumping. In order to ensure replacement of depletions during the pumping period, pumping and use of the Dawson aquifer wells for any beneficial uses other than indoor residential use shall not be allowed unless ground water is also being pumped and used for indoor residential use. In order for this plan for augmentation to operate, return flows from septic systems shall at all time during pumping be in an amount sufficient to replace the amount of stream depletions.

33. Well spacing. No well in the Dawson aquifer shall be constructed within 300 feet of another well in the same aquifer, other than replacement wells. Minimum

spacing between wells in each of the other three aquifers shall be determined pursuant to the provisions of C.R.S. § 37-90-137(2).

34. Issuance of well permits. Upon submission of a properly completed well permit application and filing fee, the State Engineer shall issue a permit for each well approved herein, consistent with the terms of this decree and all applicable statutes and rules upon submission of the filing fee and a properly completed well permit application. The State Engineer shall identify the specific uses which can be made of the ground water to be withdrawn, and shall not issue a permit for any proposed use, which use the State Engineer determines to be speculative at the time of the application or which would be inconsistent with the requirements of this decree and the plan for augmentation approved herein, or any modified decree and plan for augmentation.

35. Additional provisions.

A. Applicants may construct replacement wells in order to maintain levels of production, to meet water supply demands or to recover the entire amount of groundwater in the subject aquifers underlying the Property. As replacement wells are planned, applications for new well permits shall be filed in accordance with C.R.S. §37-90-137(10).

B. Two or more wells constructed into a given aquifer shall be considered a well field. In effecting production of water from such well field,

Applicants may produce the entire amount which may be produced from any given aquifer through any combination of wells within the well field.

C. In considering applications for permits for wells or additional wells to withdraw the groundwater which is the subject of this decree, the State Engineer shall be bound by this decree and shall issue said permits in accordance with provisions of C.R.S. § 37-90-137(10). Each well shall be equipped with a properly functioning totalizing flow meter.

D. Groundwater production shall be limited to the subject aquifers. Plain, unperforated casing must be installed and properly grouted to prevent withdrawal from or intermingling of water from zones other than those for which the well was designed.

E. Each well shall be permanently identified by its permit number, this Water Court case number, and the name of the producing aquifer on the above-ground portion of the well casing or on the pump house.

F. In the event that the allowed average annual amounts decreed herein are adjusted pursuant to the retained jurisdiction of the Court, Applicants shall obtain permits to reflect such adjusted average annual amounts. Subsequent permits for any wells herein shall likewise reflect any such adjustment of the average annual amounts decreed herein.

36. Retained jurisdiction provisions regarding quantity of water appropriated.

A. At such time as adequate data is available, any person, including the State Engineer, may invoke the Court's retained jurisdiction to make a Final Determination of Water Right as to the quantities of water available for appropriation and allowed average annual withdrawals from any of the Denver Basin aquifers quantified and adjudicated herein. Any person seeking to invoke the Court's retained jurisdiction for such purpose shall file a verified petition with the Court setting forth with particularity the factual basis for the Final Determination of Water Right, together with proposed decretal language. Within four months of notice that the retained jurisdiction for such purpose has been invoked, the State Engineer shall use the information available to him to make a final determination of water rights findings. The State Engineer shall submit such finding to the Water Court and the Applicants.

B. If no protest to such finding is made within 60 days, this Court shall incorporate by entry of an Amended Decree such Final Determination of Water Rights shall be incorporated into the decree by the Water Court. In the event of a protest, or in the event the State Engineer makes no determination within four months, such final determination shall be made by the Water Court after notice and hearing.

37. Retained jurisdiction regarding injury/compliance with plan for augmentation. Pursuant to C.R.S. §37-92-304(6), C.R.S., the Court shall perpetual

jurisdiction for the purposes of determining compliance with the terms of the augmentation plan decreed herein, and whether, even if the Applicants are complying with the plan for augmentation, the operation of such plan for augmentation is causing injury to the vested water rights of others. Any person seeking to invoke the retained jurisdiction of the Court pursuant to this paragraph shall file a verified petition with the Court. The petition to invoke retained jurisdiction or to modify the decree shall set forth with particularity the factual basis upon which the requested reconsideration is premised, together with proposed decretal language to effect the petition. The person lodging the petition shall have the burden of going forward to establish *prima facie* facts alleged in the petition. If the Court finds those facts to be established, Applicants shall thereupon have the burden of proof to show: (1) if non-compliance is alleged, that Applicants are complying with the provisions of the plan for augmentation; (2) that if injury is alleged even if the Applicants are complying with the plan for augmentation, (a) that no such injury is occurring, or (b) that any modification sought by Applicants will prevent injury to other appropriators, or (c) that any modification sought by the person filing the petition is not required to prevent injury to other appropriators, or (d) that any term or condition proposed by Applicants in response to the petition will prevent injury to other appropriators.

38. Retained jurisdiction regarding substitution of replacement source for post-pumping depletions. The Court shall retain jurisdiction in perpetuity over the issue whether Applicants may substitute a different source of water in place of the reserved

Arapahoe and Laramie-Fox Hills aquier water rights for replacement of post-pumping depletions.

Dated: September 19, 2017.

BY THE REFEREE:

Mardell R. DiDomenico
Water Referee, Water Division 2

NO PROTEST WAS FILED IN THIS MATTER. THE FOREGOING RULING IS CONFIRMED AND APPROVED, AND IS MADE THE JUDGMENT AND DECREE OF THIS COURT.

Dated: October 13, 2017.

BY THE COURT:

LARRY C. SCHWARTZ, WATER JUDGE
WATER DIVISION 2

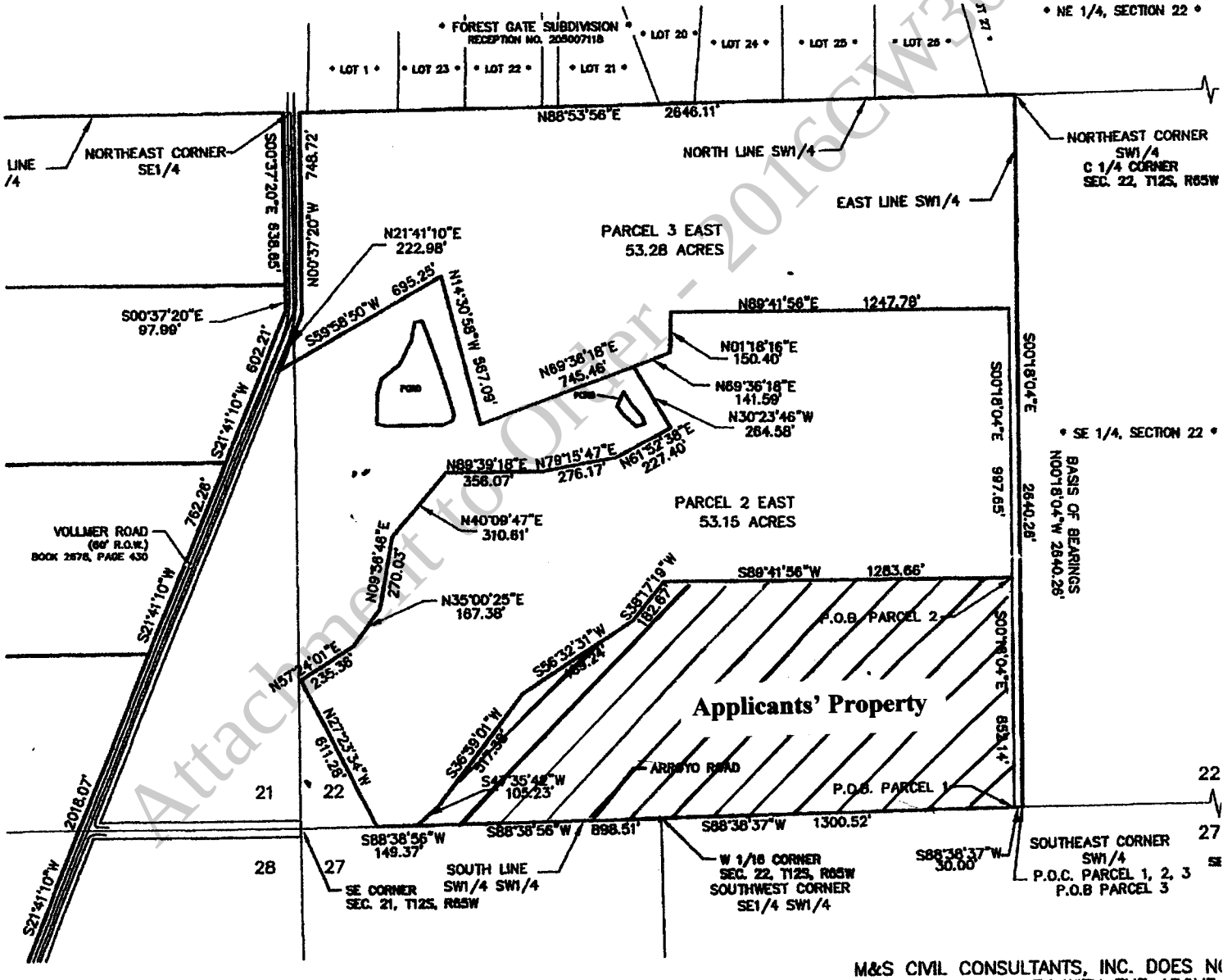


FIGURE 1

Appendix E

STERLING RANCH METROPOLITAN DISTRICT

November 2, 2020

RE: Water/Wastewater Service Commitment for the Retreat at Timber Ridge Urban Lots

To Whom It May Concern:

This request is for Water/Wastewater Service Commitment for the urban lot portion of a residential development which is located on approximately 200 acres of land southeast of the intersection of Vollmer Road and Arroya Lane. This is an update of the original April 2018 letter.

This commitment is to serve 164 urban sized lots and 3 larger rural sized lots as noted in the revised Water reports. Therefore, water service is for 167 total single-family homes, but wastewater services are for 164 single family lots.

The Sterling Ranch Metropolitan District (The District) was formed in February 8, 2011, and is in the process of developing the district central water system and sewer facilities. We have calculated the urban lot water and wastewater needs as follows:

Annual Water Supply	58.95 Acre-Feet
Average Daily Wastewater Flows	28,208 Gallons/Day

The Sterling Ranch Metropolitan District system includes source of supply, treatment, storage, and water rights sufficient to supply the needs of the urban lots within the proposed Retreat at Timber Ridge residential development.

The Retreat at Timber Ridge will provide Denver Basin water rights in the Laramie Fox Hills and Arapahoe formations equivalent to 42.76 annual acre-feet on a 300 year basis to Sterling Ranch Metropolitan District and SRMD will in turn will provide adequate water resources on a 300 year basis to make up the 16.19 annual acre-feet $_{300}$ difference out of SRMD overall source of supply.

The Sterling Ranch Metropolitan District hereby commits to providing water and wastewater service to the above described development area in the volumes listed above.

If you have any questions, please do not hesitate to contact me.

Sincerely,
Sterling Ranch Metropolitan District

Jim Morley
President, Sterling Ranch Metropolitan District Number 1

Appendix F

ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO 80907
PHONE (719) 531-5599
FAX (719) 531-5238

July 11, 2017

Arroya Investments
P.O. Box 50223
Colorado Springs, Colorado 80949

Attn: Peter Martz

Re: Final Submittal – Response Letter
The Retreat at Timber Ridge – 2.5+ Acre Lots
Colorado Springs, Colorado

Dear Mr. Martz:

As requested, we have submitted a Soils, Geology, Geologic Hazards, and Wastewater Study report for the above referenced site. This letter is in response to the Colorado Geological Survey Review Letter dated June 12, 2017, File No. PUD173; El Paso County, CO; CGS Unique No. EP-17-0048.

- Entech Engineering, Inc. April 12, 2017. Soils, Geology and Geologic Hazard Study, The Retreat at Timber Ridge – 2.5+ Acre Lots, Vollmer Road and Arroya Lane, El Paso County, CO, Entech Job No. 170209.

We have reviewed the Colorado Geological Survey response to the study and agree with their comments and recommendations. Additional recommendations regarding mitigation across the site provided in the report by Entech should be followed.

We trust this has provided you with the information you required. If you have any questions or need additional information, please do not hesitate to contact us.

Respectfully Submitted,

ENTECH ENGINEERING, INC.

Logan L. Langford
Geologist

Joseph C. Goode, Jr., P.E.
President

COLORADO LICENSED
JOSEPH COLLIN GOODE JR
23725
7.11.17
PROFESSIONAL ENGINEER

LLL

Encl.

Entech Job Nos. 170209
AA projects\2017\170209 response ltr

ENTECH
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SOIL, GEOLOGY, AND GEOLOGIC HAZARD
THE RETREAT AT TIMBER RIDGE
2.5+ ACRE LOTS
VOLLMER ROAD AND ARROYA LANE
EL PASO COUNTY, COLORADO

Prepared for

Arroya Investments
P.O. Box 50223
Colorado Springs, Colorado 80949

Attn: Peter Martz

April 12, 2017

Respectfully Submitted,

ENTECH ENGINEERING, INC.

Logan L. Langford
Geologist

LLL/rm

Encl.

Entech Job No. 170209
AAprojects/2017/170209 countysoil/geo/wastewater

Reviewed by:

Joseph C. Goode, P.E.
President

STATE OF COLORADO LICENSED
JOSEPH COLLIN GOODE JR
23725
4.12.17
PROFESSIONAL ENGINEER

TABLE OF CONTENTS

1.0 SUMMARY

Project Location

The project lies in portions of the SW¼ of Section 22 and the NE¼ of Section 28, Township 12 South, Range 65 West of the 6th Principal Meridian in El Paso County, Colorado. The site is located approximately 3 miles northeast of Colorado Springs, Colorado.

Project Description

Total acreage involved in the project is approximately forty-two acres. The proposed site development consists of twelve single-family residential lots. Ten lots are located north of Arroya Lane, and two lots are located west of Vollmer Road just south of Arroya Lane. The development will utilize individual water wells and on-site wastewater treatment systems.

Scope of Report

This report presents the results of our geologic evaluation and treatment of engineering geologic hazard study.

Land Use and Engineering Geology

This site was found to be suitable for the proposed development. Areas were encountered where the geologic conditions will impose some constraints on development and land use. These include areas of shallow bedrock, expansive soils, artificial fill, seasonal shallow groundwater and potentially seasonally shallow groundwater areas. Based on the proposed development plan, it appears that these areas will have some impact on the development. These conditions will be discussed in greater detail in the report.

In general, it is our opinion that the development can be achieved if the observed geologic conditions on site are either avoided or properly mitigated. All recommendations are subject to the limitations discussed in the report.

2.0 GENERAL SITE CONDITIONS AND PROJECT DESCRIPTION

The site is located in portions of the SW¼ of Section 22 and the NE¼ of Section 28, Township 15 South, Range 65 West of the 6th Principal Meridian in El Paso County, Colorado. The site is located approximately 3 miles northeast of Colorado Springs, Colorado, at Vollmer Road and Arroya Lane. The location of the site is as shown on the Vicinity Map, Figure 1.

The topography of the site is generally gradually to moderately sloping to the southeast and southwest towards Sand Creek. The drainages on site flow in southerly and direction through the central portion of the site. Water was not observed in the drainages on-site at the time of this investigation. The site boundaries are indicated on the USGS Map, Figure 2. Previous land uses have included grazing and pasture land. The site contains primarily field grasses, weeds, cacti, and yuccas, and ponderosa pine trees. Site photographs, taken March 9 and 28, 2017, are included in Appendix A.

Total acreage involved in the proposed development is approximately forty-two acres. Twelve single-family rural residential lots are proposed. The proposed lots will be approximately 2.5+ acres. The area will be serviced individual water wells and on-site wastewater treatment systems. The proposed Preliminary Concept Plan and the proposed Development Plan is presented in Figures 3 and 4.

3.0 SCOPE OF THE REPORT

The scope of the report will include the following:

- A general geologic analysis utilizing published geologic data. Detailed site-specific mapping will be conducted to obtain general information in respect to major geographic and geologic features, geologic descriptions and their effects on the development of the property.

- The site will be evaluated for on-site wastewater treatment systems in accordance with El Paso Land Development Code.

4.0 FIELD INVESTIGATION

Our field investigation consisted of the preparation of a geologic map of any bedrock features and significant surficial deposits. The Natural Resource Conservation Service (NRCS), previously the Soil Conservation Service (SCS) survey was also reviewed to evaluate the site. The position of mappable units within the subject property are shown on the Geologic Map. Our mapping procedures involved both field reconnaissance and measurements and air photo reconnaissance and interpretation. The same mapping procedures have also been utilized to produce the Engineering Geology Map which identified pertinent geologic conditions affecting development. The field mapping was performed by personnel of Entech Engineering, Inc. on March 9 and 28, 2017.

Two Test Borings were performed for the percolation test profile holes, and three test pits were excavated across the site to determine general soil and bedrock characteristics. The locations of the profile holes and test pits are indicated on the Development Plan/Test Boring Location Map, Figure 4. The Test Boring and Test Pit Logs are presented in Appendix B. Results of this testing will be discussed later in this report.

Laboratory testing was also performed on some of the soils to classify and determine the soils engineering characteristics. Laboratory tests included grain-size analysis ASTM D-422, Atterberg Limits ASTM D-4318, volume change testing using FHA Swell Testing and Swell/Consolidation test. Results of the laboratory testing are included in Appendix C. A Summary of Laboratory Test Results is presented in Table 1.

5.0 SOIL, GEOLOGY AND ENGINEERING GEOLOGY

5.1 General Geology

Physiographically, the site lies in the western portion of the Great Plains Physiographic Province. Approximately 12 miles to the west is a major structural feature known as the Rampart Range Fault. This fault marks the boundary between the Great Plains Physiographic Province and the Southern Rocky Mountain Province. The site exists within the southeastern edge of a large structural feature known as the Denver Basin. Bedrock in the area tends to be

very gently dipping in a northeasterly direction (Reference 1). The rocks in the area of the site are sedimentary in nature and typically Upper Cretaceous in age. The bedrock underlying the site consists of the Dawson Formation. Overlying this formation are unconsolidated deposits of man-made, and alluvial soils of Quaternary Age. The alluvial soils were deposited by water on site and as stream deposits along the drainages on-site. The site's stratigraphy will be discussed in more detail in Section 5.3.

5.2 Soil Conservation Survey

The Natural Resource Conservation Service (Reference 2), previously the Soil Conservation Service (Reference 3) has mapped three soil types on the site (Figure 5). In general, the soils classify as gravelly loamy sand and coarse sandy loam. The soils are described as follows:

Type	Description
40	Kettle Gravelly Loamy Sand, 3 to 8% slopes
41	Kettle Gravelly Loamy Sand, 8 to 40% slopes
71	Pring Coarse Sandy Loam, 3 to 8% slopes

Complete descriptions of each soil type are presented in Appendix D. The soils have generally been described to have moderate to moderately rapid permeabilities. Possible hazards with soil erosion are present on the site. The erosion potential can be controlled with vegetation. The majority of the soils have been described to have slight to moderate erosion hazards.

5.3 Site Stratigraphy

The Falcon NW Quadrangle Geology Map showing the site is presented in Figure 6 (Reference 4). The Geology Map prepared for the site is presented in Figure 7. Three mappable units were identified on this site which are described as follows:

Qaf **Artificial Fill of Holocene Age:** These are recent deposits of man-made fill. They are associated with the erosion berm located on the two lots west of Vollmer Road.

Qal **Recent alluvium of Holocene Age:** These are recent deposits that have been deposited along the drainages on-site.

Tkd **Dawson Formation of Tertiary to Cretaceous Age:** The Dawson Formation typically consist of arkosic sandstone with interbedded fine-grained sandstone, siltstone and claystone. Overlying this formation is a variable layer of residual soil. The residual soils were derived from the in-situ weathering of the bedrock materials on-site. These soils consisted of silty to clayey sands and sandy clays.

The soils listed above were mapped from site-specific mapping, the *Geologic Map of the Falcon NW Quadrangle* distributed by the Colorado Geological Survey in 2003 (Reference 4), the *Geologic Map of the Colorado Springs-Castle Rock Area*, distributed by the US Geological Survey in 1979 (Reference 5), and the *Geologic Map of the Denver 1^0 x 2^0 Quadrangle*, distributed by the US Geological Survey in 1981 (Reference 6). The Test Borings and Profile Holes were also used in evaluating the site and are included in Appendix B. The Geology Map prepared for the site is presented in Figure 7.

5.4 Soil Conditions

The soils encountered in the Test Borings can be grouped into three general soil types. The soils were classified using the Unified Soil Classification System (USCS). The test pit soils were classified using the USDA Textural Soil Classification.

Soil Type 1 clayey to very clayey sand and silty to slightly silty sand (SC, SM, SM-SW), encountered in both of Test Borings and all of the test pits at the existing ground surface and extending to depths ranging from 1 foot to 14 feet bgs. These soils were encountered at loose to dense states and at moist conditions. The majority of the soils were encountered and medium dense states. Samples tested had 11 to 34 percent passing the No. 200 Sieve.

Soil Type 2 silty sandstone and clayey to very clayey sandstone (SM, SC), encountered in both of Test Borings and all of the Test Pits at depths ranging from 1 foot to 14 feet bgs and extending to the termination of the test borings (15 feet). The sandstone was encountered at dense to very dense states and at moist conditions. Samples tested had 48 percent passing the No. 200 Sieve. Swell/Consolidation Testing on a sample of the very clayey sandstone resulted in a swell of 0.2 percent, which is in the low expansion range.

Soil Type 3 sandy claystone and siltstone (CL, MH), encountered in Test Pit Nos. 2 and 3 at depths ranging from 5 to 6.5 feet and extended to the termination test pit (8 feet). The claystone and siltstone were encountered at hard consistencies and at moist conditions. Samples tested had 60 to 77 percent passing the No. 200 Sieve. FHA Swell Testing resulted in an expansion pressure of 1280 psf, which is in the moderate expansion range.

The Test Boring and Test Pit Logs are presented in Appendix B. Laboratory Test Results are presented in Appendix C. A Summary of Laboratory Test Results is presented in Table 1.

5.5 Groundwater

Groundwater was not encountered in the test borings, which were drilled to 15 feet. Signs of seasonally occurring groundwater were observed in Test Pit Nos. 2 and 3 at depths of 5 to 6 feet. Areas of water, seasonal shallow groundwater water, and potential seasonal shallow groundwater have been mapped along the drainages on-site. These areas are discussed in the following section. Fluctuation in groundwater conditions may occur due to variations in rainfall and other factors not readily apparent at this time.

It should be noted that in the sandy materials on site, some groundwater conditions might be encountered due to the variability in the soil profile. Isolated sand and gravel layers within the soils, sometimes only a few feet in thickness and width, can carry water in the subsurface. Groundwater may also flow on top of the underlying bedrock. Builders and planners should be cognizant of the potential for the occurrence of such subsurface water features during construction on-site and deal with each individual problem as necessary at the time of construction.

6.0 ENGINEERING GEOLOGY – IDENTIFICATION AND MITIGATION OF GEOLOGIC HAZARDS

As mentioned previously, detailed mapping has been performed on this site to produce an Engineering Geology Map Figure 7. This map shows the location of various geologic conditions of which the developers should be cognizant during the planning, design and construction

stages of the project. These hazards and the recommended mitigation techniques are as follows:

Artificial Fill

These are recent man-made fill deposits associated with the erosion berm located across the two lots west of Vollmer Road.

Mitigation: The erosion berms can either be avoided or penetrated by foundations. The fill on this site is considered uncontrolled for construction purposes. Any uncontrolled fill encountered beneath foundations will require removal and recompaction at a minimum of 95% of its maximum Modified Procter Dry Density, ASTM D-1557.

Collapsible Soils

The majority of the soils encountered on-site do not exhibit collapsible characteristics, however, areas of loose soils were encountered in the test borings drilled on site. Should loose or collapsible soils be encountered beneath foundations, recompaction and moisture conditioning of the upper 2 feet of soil at 95% of its maximum Modified Proctor Dry Density ASTM D-1557 will be required. Exterior flatwork and parking areas may also experience movement. Proofrolling and recompaction of soft areas should be performed during site work.

Expansive Soils

Expansive soils were encountered in the test borings drilled on site. These occurrences are typically sporadic; therefore, none have been indicated on the maps. These clays, claystones and siltstones, if encountered beneath foundations, can cause differential movement in the structure foundation. These occurrences should be identified and dealt with on an individual basis.

Mitigation Should expansive soils be encountered beneath the foundation, mitigation will be necessary. Mitigation of expansive soils will require special foundation design. Overexcavation and replacement with non-expansive soils at a minimum of 95% of its maximum Modified Proctor Dry Density, ASTM D-1557 is a suitable mitigation, which is common in the area. Floor slabs on expansive soils should be expected to experience movement. Overexcavation and replacement has been successful in minimizing slab movements. The use of structural floors should be considered for basement construction on highly expansive clays. Final recommendations should be determined after additional investigation of each building site.

Groundwater and Floodplain Areas

Areas within the drainages on-site have been identified as areas of seasonally high groundwater areas. Water was not flowing in the any of the drainages at the time of this investigation. The site is not mapped within floodplain zones according to the FEMA Map No. 08041CO764F, Figure 8 (Reference 7). These areas are discussed as follows:

Seasonal Shallow Groundwater Area

In these areas, we would anticipate periodic high subsurface moisture conditions and frost heave potential on a seasonal basis. Additional, highly organic soils could be encountered in these areas. These areas lie within defined drainages and it is anticipated they will be avoided by development. Any structures in or adjacent to these areas should follow the mitigation discussed below.

Mitigation: Foundations must have a minimum 30-inch depth for frost protection. In areas where high subsurface moisture conditions are anticipated periodically, subsurface perimeter drains are recommended to help prevent the intrusion of water into areas below grade. Typical drain details are presented in Figure 9. Any grading in these areas should be done to direct surface flow around construction to avoid areas of ponded water. Structures should not block drainages. All organic material should be completely removed prior to any fill placement. Finished floor levels must be located a minimum of one foot above floodplain levels.

Potentially Seasonal Shallow Groundwater Area

In these areas, we would anticipate the potential for periodically high subsurface moisture conditions, frost heave potential and highly organic soils. The majority of these areas lie within defined drainages which can likely be avoided by the proposed development. The same mitigation recommendations for the seasonal shallow groundwater areas apply to the potentially seasonal shallow groundwater areas.

6.1 Relevance of Geologic Conditions to Land Use Planning

As mentioned earlier in this report, we understand that the development will be single family residential. It is our opinion that the existing geologic and engineering geologic conditions will impose some constraints on the proposed development and construction. The most significant problems affecting development will be those associated with the drainages on site that can be

properly mitigated. Other hazards on site may be satisfactorily mitigated through proper engineering design and construction practices.

The upper materials are typically at loose to dense states. The granular soils encountered in the upper soil profiles of the test borings and test pits should provide good support for foundations. Loose soils if encountered at foundation depth will require mitigation. Foundations anticipated for the site are standard spread footings possibly in conjunction with overexcavation in areas of expansive soils or loose soils. Excavation is anticipated to be moderate with rubber tired equipment for the site sand materials, and will require track mounted equipment for the dense sandstone, and hard claystone and siltstone. Expansive layers may also be encountered in the soil and bedrock on this site. Areas of expansive soils encountered on site are sporadic; therefore, none have been indicated on the maps. Expansive soils, if encountered, will require special foundation design and/or overexcavation. These soils will not prohibit development.

In summary, development of the site can be achieved if the items mentioned above are mitigated. These items can be mitigated through proper design and construction or through avoidance. Investigation on each lot is recommended prior to construction.

7.0 ECONOMIC MINERAL RESOURCES

Some of the sandy materials on-site could be considered a low-grade sand resource. According to the *El Paso County Aggregate Resource Evaluation Map* (Reference 8), the area is not mapped with any aggregate deposits. According to the *Atlas of Sand, Gravel and Quarry Aggregate Resources, Colorado Front Range Counties* distributed by the Colorado Geological Survey (Reference 9), areas of the site are not mapped with any resources. According to the *Evaluation of Mineral and Mineral Fuel Potential* (Reference 10), the area of the site has been mapped as "Fair" for industrial minerals. However, considering the silty nature of much of these materials and abundance of similar materials through the region and the close proximity to developed land, they would be considered to have little significance as an economic resource.

According to *the Evaluation of Mineral and Mineral Fuel Potential of El Paso County State Mineral Lands* (Reference 10), the site is mapped within the Denver Basin Coal Region.

However, the area of the site has been mapped as "Poor" for coal resources. No active or inactive mines have been mapped in the area of the site. No metallic mineral resources have been mapped on-site (Reference 10).

The site has been mapped as "Fair" for oil and gas resources (Reference 10). No oil or gas fields have been discovered in the area of the site. The sedimentary rocks in the area may lack the geologic structure for trapping oil or gas; therefore, it may not be considered a significant resource. Hydraulic fracturing is a new method that is being used to extract oil and gas from rocks. It utilizes pressurized fluid to extract oil and gas from rocks that would not normally be productive. The area of the site has not been explored to determine if the rocks underlying the site would be commercially viable utilizing hydraulic fracturing. The practice of hydraulic fracturing has come under review due to concerns about environmental impacts, health and safety.

8.0 ON-SITE WASTEWATER TREATMENT

The site was evaluated for on-site wastewater treatment systems for the proposed lots in accordance with El Paso Land Development Code. Two (2) percolation tests and three (3) tactile test pits were performed across the stie. Percolation test and tactile test pits were located in anticipated locations of proposed on-site wastewater treatment system (OWTS) for the development. The approximate locations of the profile holes and test pits are indicated on Figure 4 and 7, and on the Septic Suitability Map, Figure 10. The locations were chosen to determine a general understanding of the soil and bedrock conditions across the site. The results of the percolation tests and test pits are presented in Table 2. The specific test results are presented in Appendix E of this report.

The Natural Resource Conservation Service (Reference 2), previously the Soil Conservation Service (Reference 3) has been mapped with three soil descriptions. The Soil Survey Map (Reference 2) is presented in Figure 5, and the Soil Survey Descriptions are presented in Appendix D. The soils are described as having moderate to moderately rapid percolation rates.

The percolation rates varied from 44 (PH-2) to 133 (PH-1) minutes per inch. The percolation rate for PH-1 is not suitable for conventional OWTS, the rate for PH-2 is suitable for a conventional OWTS. Percolation rates slower than 60 minutes per inch will require designed

systems. Shallow bedrock was also encountered in the profile holes and test pits, and will also required a designed system. Additional drilling may identify areas where faster rates are encountered that are suitable for conventional systems.

Standard penetration testing, ASTM D-1586, was performed in each profile hole to evaluate the density of the soil and the presence of bedrock. Bedrock was encountered in The Profile Holes at 3 to 14 feet. Designed systems are required in areas of shallow bedrock.

Soils encountered in the tactile test pits consisted of sandy loam to gravelly sandy loam, gravelly loamy sand, and gravelly sandy clay loam with underlying clayey to silty sandstone, sandy claystone and sandy siltstone. The limiting layers encountered in the test pits are the sandy clay loam, silty to clayey sandstone, sandy claystone and sandy siltstone, which corresponds to an LTAR values of 0.15 to 0.20 gallons per day per square foot. The bedrock was encountered at 1 to 5 feet in the test pits. The conditions encountered in the test pits will require a designed system. Signs of seasonal shallow groundwater were observed at depths ranging from 5 to 6 feet in Test Pit Nos. 2 and 3.

Absorption fields must be maintained a minimum of 4 feet above groundwater or bedrock. Groundwater was not encountered in the profile holes which was drilled to 15 feet, however; signs of seasonally shallow groundwater were observed in Test Pit Nos. 2 and 3 at depths ranging from 5 to 6 feet. Shallow bedrock was encountered in the profile holes and test pits at depths ranging from 1 to 14 feet.

In summary, it is our opinion the site is suitable for individual on-site wastewater treatment systems (OWTS) and that contamination of surface and subsurface water resources should not occur provided the OWTS sites are evaluated and installed according to El Paso County Guidelines and properly maintained. Based on the testing performed as part of this investigation and the type of project designed systems will likely be required for the majority of the lots. A Septic Suitability Map is presented in Figure 10. Absorption fields must be located a minimum of 100 feet from any well, including those on adjacent properties. Absorption fields must also be located a minimum of 50 feet from any ponded areas and 25 feet from dry gulches. It should be noted that additional testing will be required for the individual lots prior to construction.

9.0 EROSION CONTROL

The soil types observed on the site are mildly to highly susceptible to wind erosion, and moderately to highly susceptible to water erosion. A minor wind erosion and dust problem may be created for a short time during and immediately after construction. Should the problem be considered severe enough during this time, watering of the cut areas or the use of chemical palliative may be required to control dust. However, once construction has been completed and vegetation re-established, the potential for wind erosion should be considerably reduced.

With regard to water erosion, loosely compacted soils will be the most susceptible to water erosion, residually weathered soils become increasingly less susceptible to water erosion. For the typical soils observed on-site, allowable velocities or unvegetated and unlined earth channels would be on the order of 3 to 4 feet/second, depending upon the sediment load carried by the water. Permissible velocities may be increased through the use of vegetation to something on the order of 4 to 7 feet/second, depending upon the type of vegetation established. Should the anticipated velocities exceed these values, some form of channel lining material may be required to reduce erosion potential. These might consist of some of the synthetic channel lining materials on the market or conventional riprap. In cases where ditch-lining materials are still insufficient to control erosion, small check dams or sediment traps may be required. The check dams will serve to reduce flow velocities, as well as provide small traps for containing sediment. The determination of the amount, location and placement of ditch linings, check dams and of the special erosion control features should be performed by or in conjunction with the drainage engineer who is more familiar with the flow quantities and velocities.

Cut and fill slope areas will be subjected primarily to sheetwash and rill erosion. Unchecked rill erosion can eventually lead to concentrated flows of water and gully erosion. The best means to combat this type of erosion is, where possible, the adequate re-vegetation of cut and fill slopes. Cut and fill slopes having gradients more than three (3) horizontal to one (1) vertical become increasingly more difficult to revegetate successfully. Therefore, recommendations pertaining to the vegetation of the cut and fill slopes may require input from a qualified landscape architect and/or the Soil Conservation Service.

10.0 CLOSURE

It is our opinion that the existing geologic engineering and geologic conditions will impose some constraints on development and construction of the site. The majority of these conditions can be mitigated through proper engineering design and construction practices. The proposed development and use is consistent with anticipated geologic and engineering geologic conditions.

It should be pointed out that because of the nature of data obtained by random sampling of such variable and non-homogeneous materials as soil and rock, it is important that we be informed of any differences observed between surface and subsurface conditions encountered in construction and those assumed in the body of this report. Individual investigations for building sites will be required prior to construction. Construction and design personnel should be made familiar with the contents of this report. Reporting such discrepancies to Entech Engineering, Inc. soon after they are discovered would be greatly appreciated and could possibly help avoid construction and development problems.

This report has been prepared for Arroya Investments. for application to the proposed project in accordance with generally accepted geologic soil and engineering practices. No other warranty expressed or implied is made.

We trust that this report has provided you with all the information that you required. Should you require additional information, please do not hesitate to contact Entech Engineering, Inc.

BIBLIOGRAPHY

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TABLES

TABLE 1

SUMMARY OF LABORATORY TEST RESULTS

CLIENT ARROYA INVESTMENTS
PROJECT THE RETREAT AT TIMBER RIDGE
JOB NO. 170209

SOIL TYPE	TEST BORING NO.	DEPTH (FT)	WATER (%)	DRY DENSITY (PCF)	PASSING NO. 200 SIEVE (%)	LIQUID LIMIT (%)	PLASTIC INDEX (%)	SULFATE (WT %)	FHA SWELL (PSF)	SWELL/ CONSOL (%)	UNIFIED CLASSIFICATION	SOIL DESCRIPTION
1	1	2-3			34.3						SC	SAND, CLAYEY
1	2	2-3			11.2						SM-SW	SAND, SLIGHTLY SILTY
1	TP-3	4-5			16.4						SM	SAND, CLAYEY
2	1	5	14.9	108.3	47.6					0.2	SC	SANDSTONE, VERY CLAYEY
3	TP-2	5-6			76.6				1280		CL	CLAYSTONE, SANDY
3	TP-3	6-8			60.6						CL	CLAYSTONE, VERY SANDY

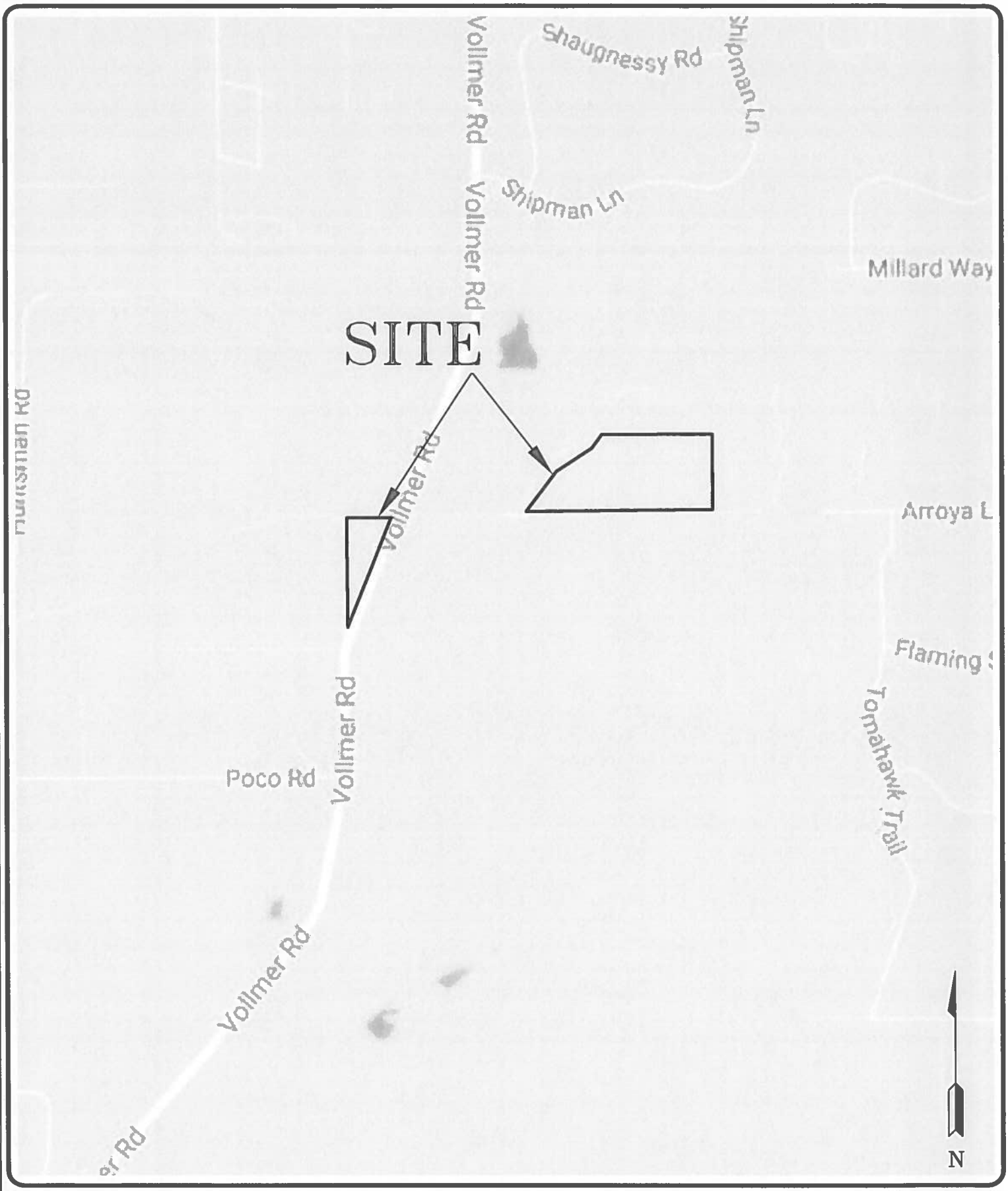
Table 2: Summary of Percolation Test and Tactile Test Pit Results

Percolation Test No.	Percolation Rate (min/in)	Depth to Bedrock (ft.)	Depth to Groundwater (ft.)
1	133*	N/A	N/A
2	44	N/A	N/A

Test Pit No.	USDA Soil Type Limiting Layer	LTAR Value	Depth to Bedrock (ft.)	Depth to Groundwater (ft.)
1	4*	0.20	1	N/A
2	4A*	0.15	3.5	N/A
3	4A*	0.15	5	N/A

*- Conditions that will require an engineered OWTS

FIGURES



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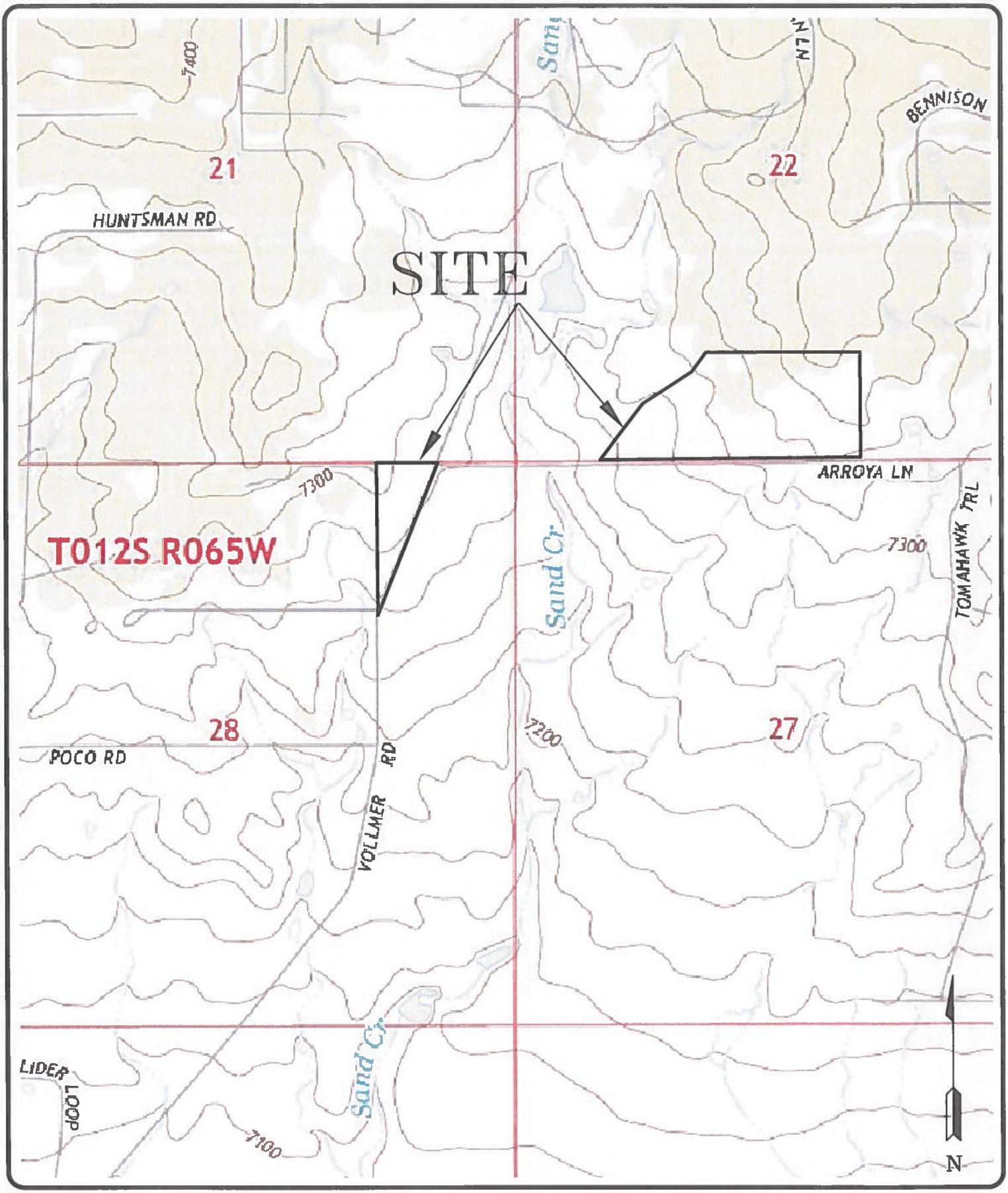
VICINITY MAP
THE RETREAT AT TIMBER RIDGE
VOLLMER ROAD AND ARROYA LANE
EL PASO COUNTY, CO.
FOR: ARROYA INVESTMENTS

DRAWN:	DATE:	CHECKED:	DATE:
LLL	3/31/17		

JOB NO.: 170209

FIG NO.: 1



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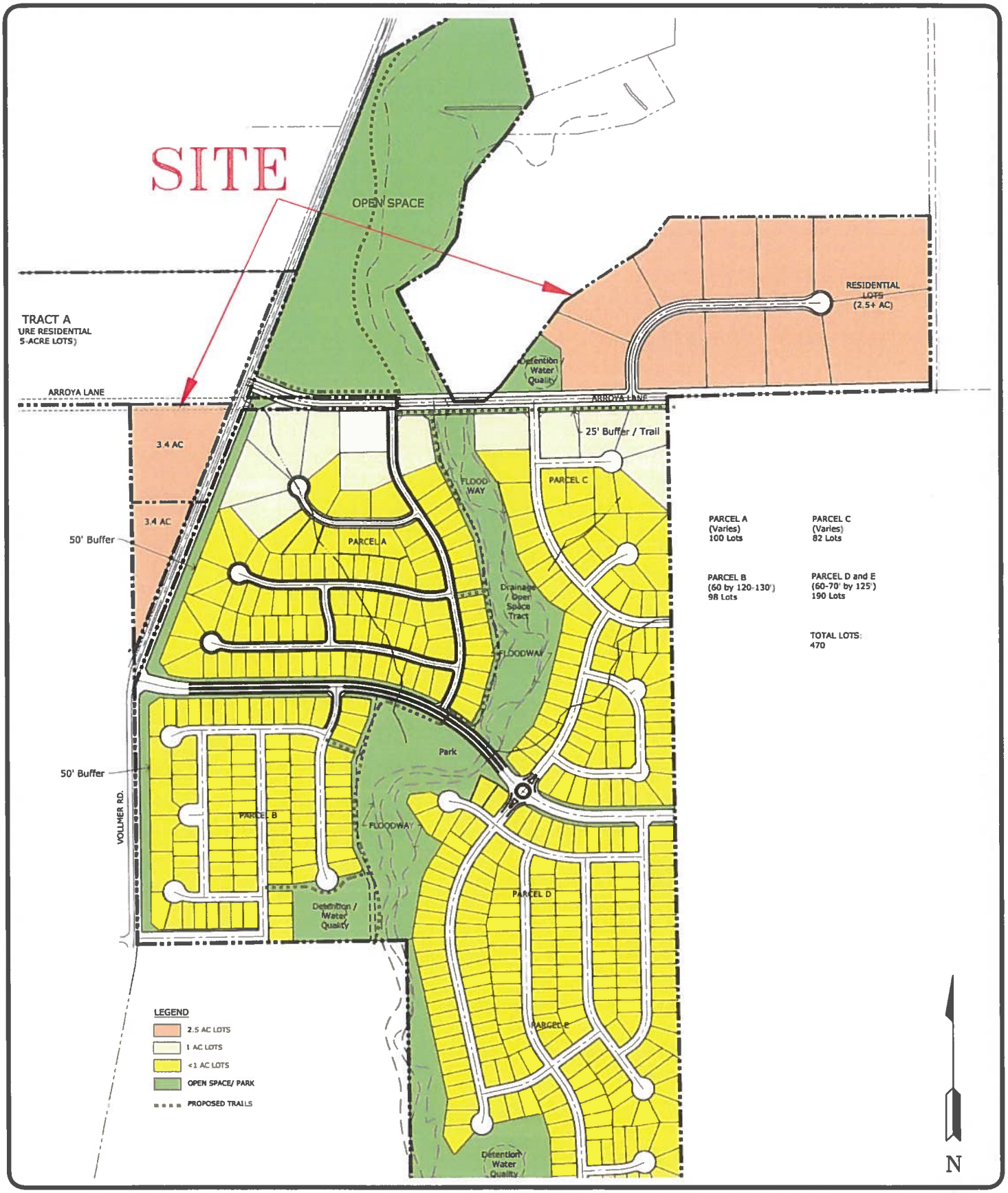
USGS MAP
THE RETREAT AT TIMBER RIDGE
VOLLMER ROAD AND ARROYA LANE
EL PASO COUNTY, CO.
FOR: ARROYA INVESTMENTS

DRAWN:	DATE:	CHECKED:	DATE:
LLL	3/31/17		

JOB NO.: 170209

FIG NO.: 2



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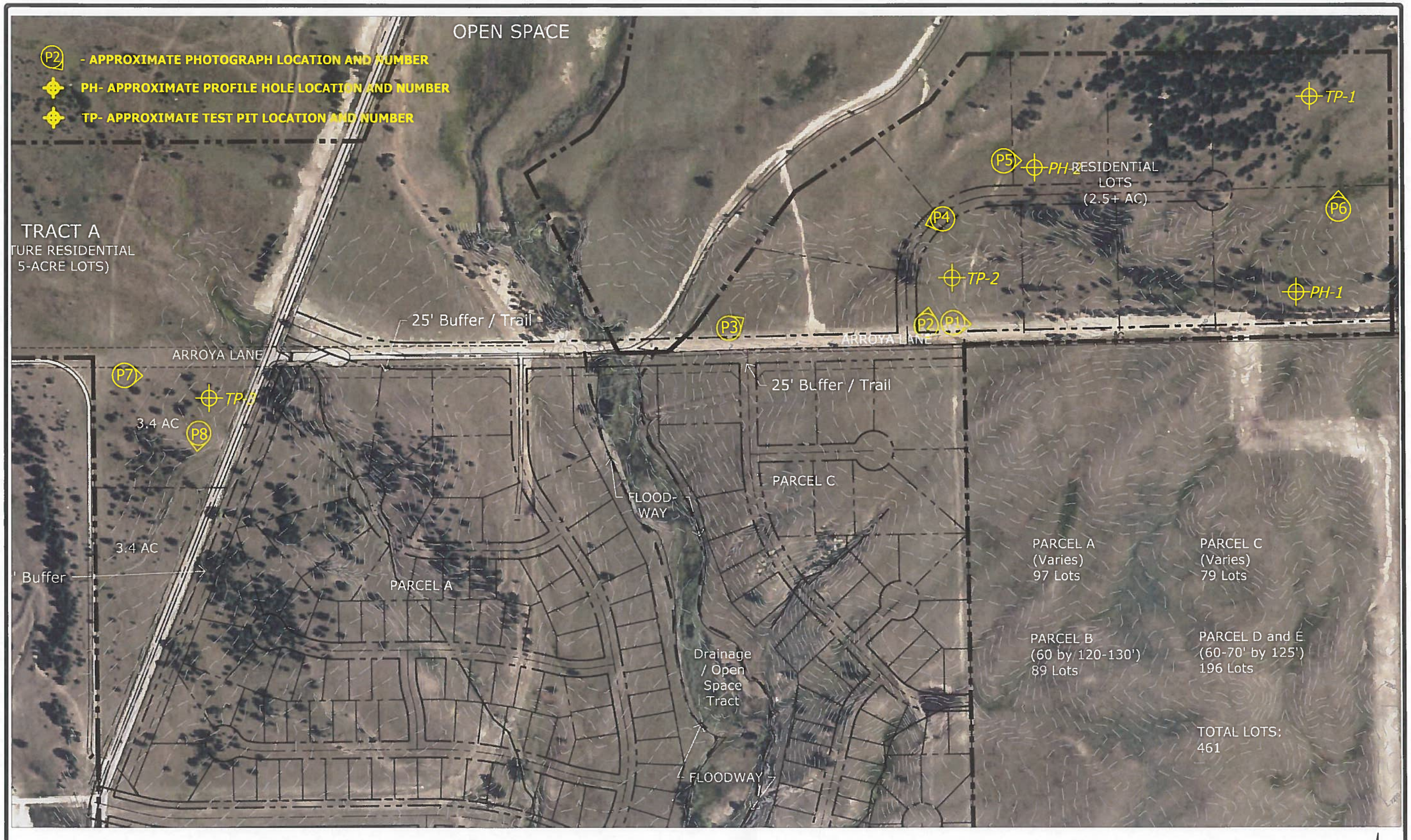
PRELIMINARY CONCEPT PLAN
THE RETREAT AT TIMBER RIDGE
VOLLMER ROAD AND ARROYA LANE
EL PASO COUNTY, CO.
FOR: ARROYA INVESTMENTS

DRAWN:	DATE:	CHECKED:	DATE:
LLL	3/31/17		

JOB NO.: 170209

FIG NO.: 3



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SITE PLAN/TEST BORING AND TEST PIT LOCATION MAP
THE RETREAT AT TIMBER RIDGE
VOLLMER ROAD AND ARROYA LANE
EL PASO COUNTY, CO.
FOR: ARROYA INVESTMENTS

DRAWN	LLL
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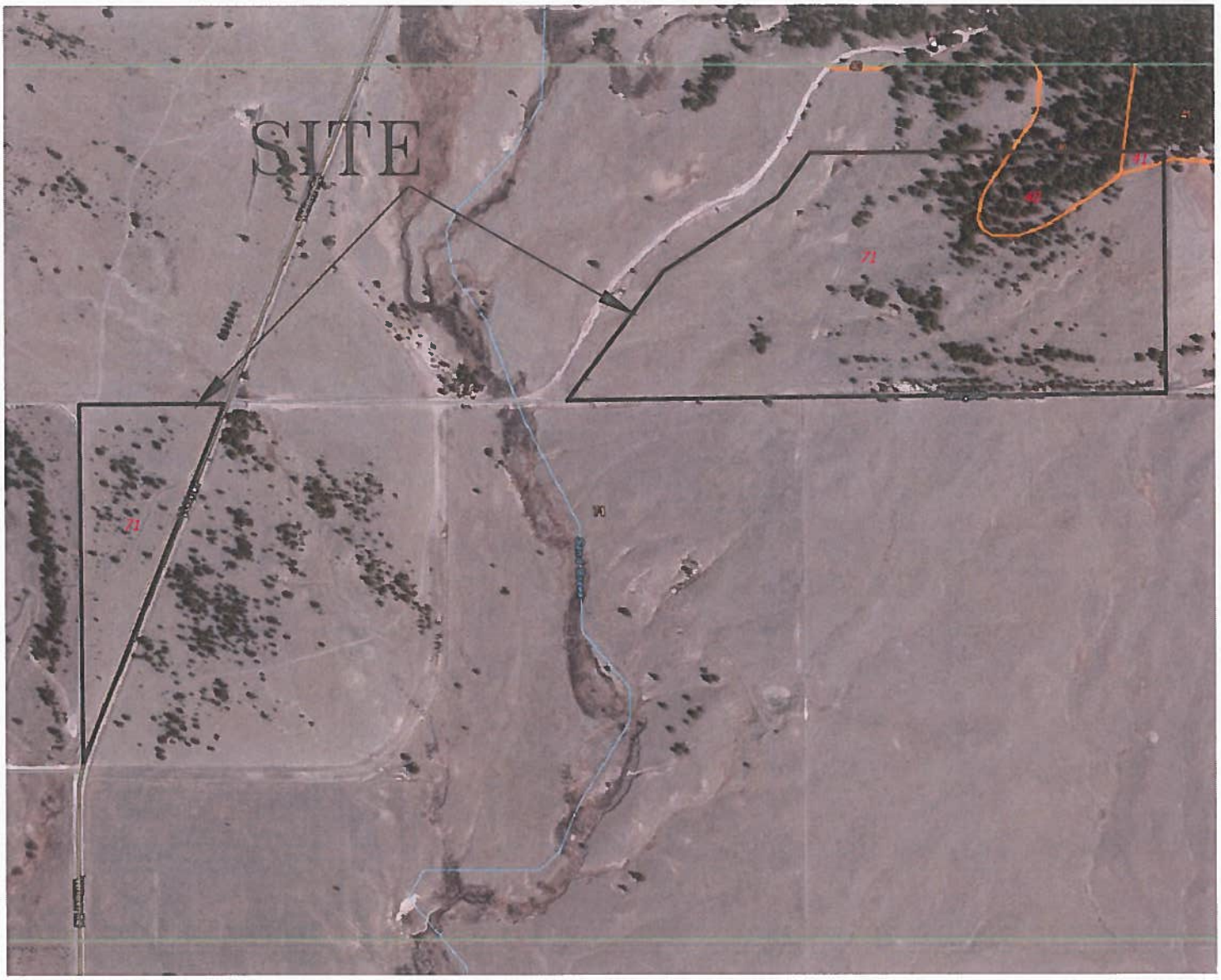
DATE	4/3/17
SCALE	AS SHOWN
JOB NO.	170209
FIGURE No.	4



N

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SOIL SURVEY MAP
THE RETREAT AT TIMBER RIDGE
VOLLMER ROAD AND ARROYA LANE
EL PASO COUNTY, CO.
FOR: ARROYA INVESTMENTS

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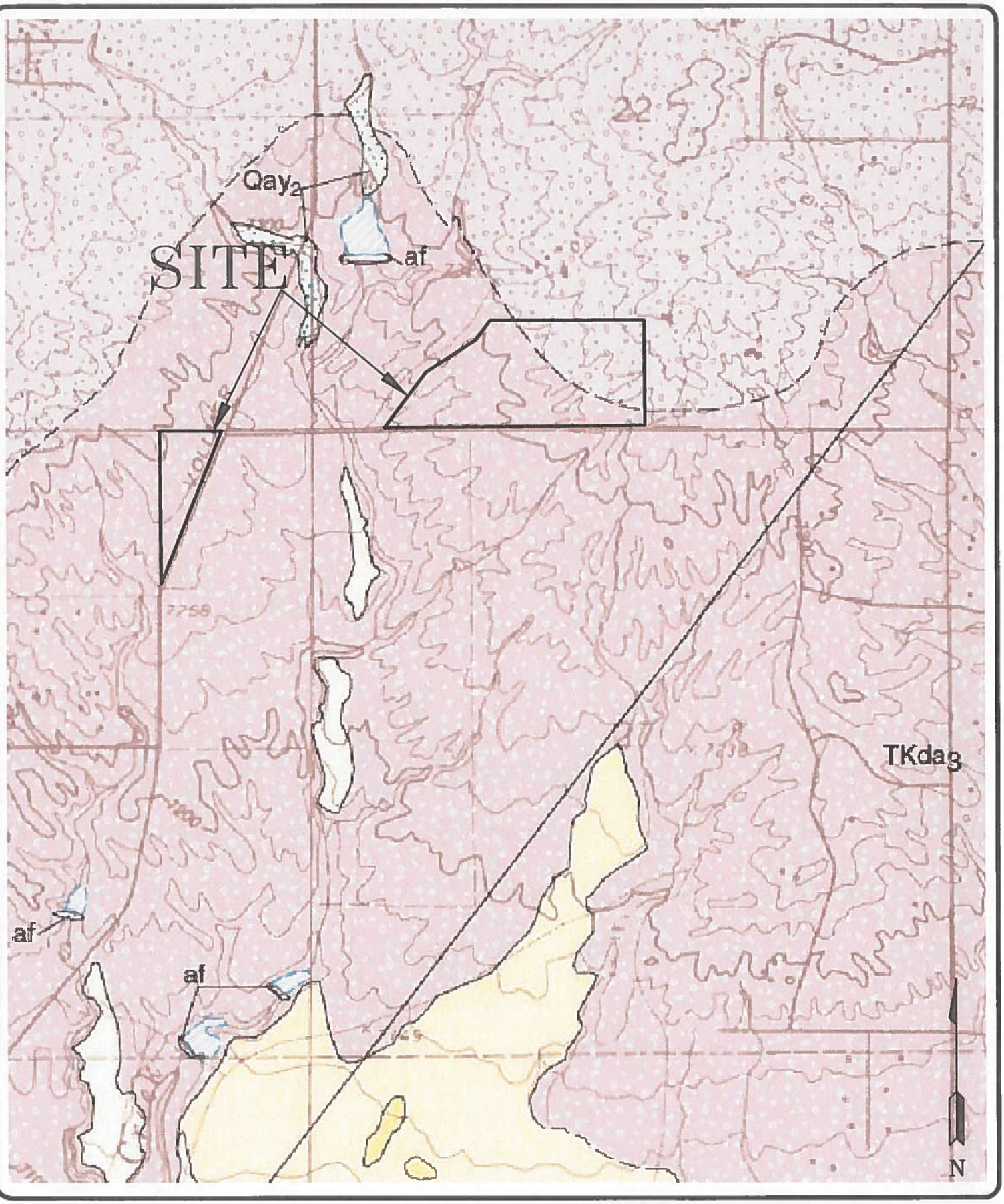
LLL	3/31/17		

JOB NO.: 170209

FIG NO.: 5



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FALCON NW QUADRANGLE GEOLOGY MAP
THE RETREAT AT TIMBER RIDGE
VOLLMER ROAD AND ARROYA LANE
EL PASO COUNTY, CO.
FOR: ARROYA INVESTMENTS

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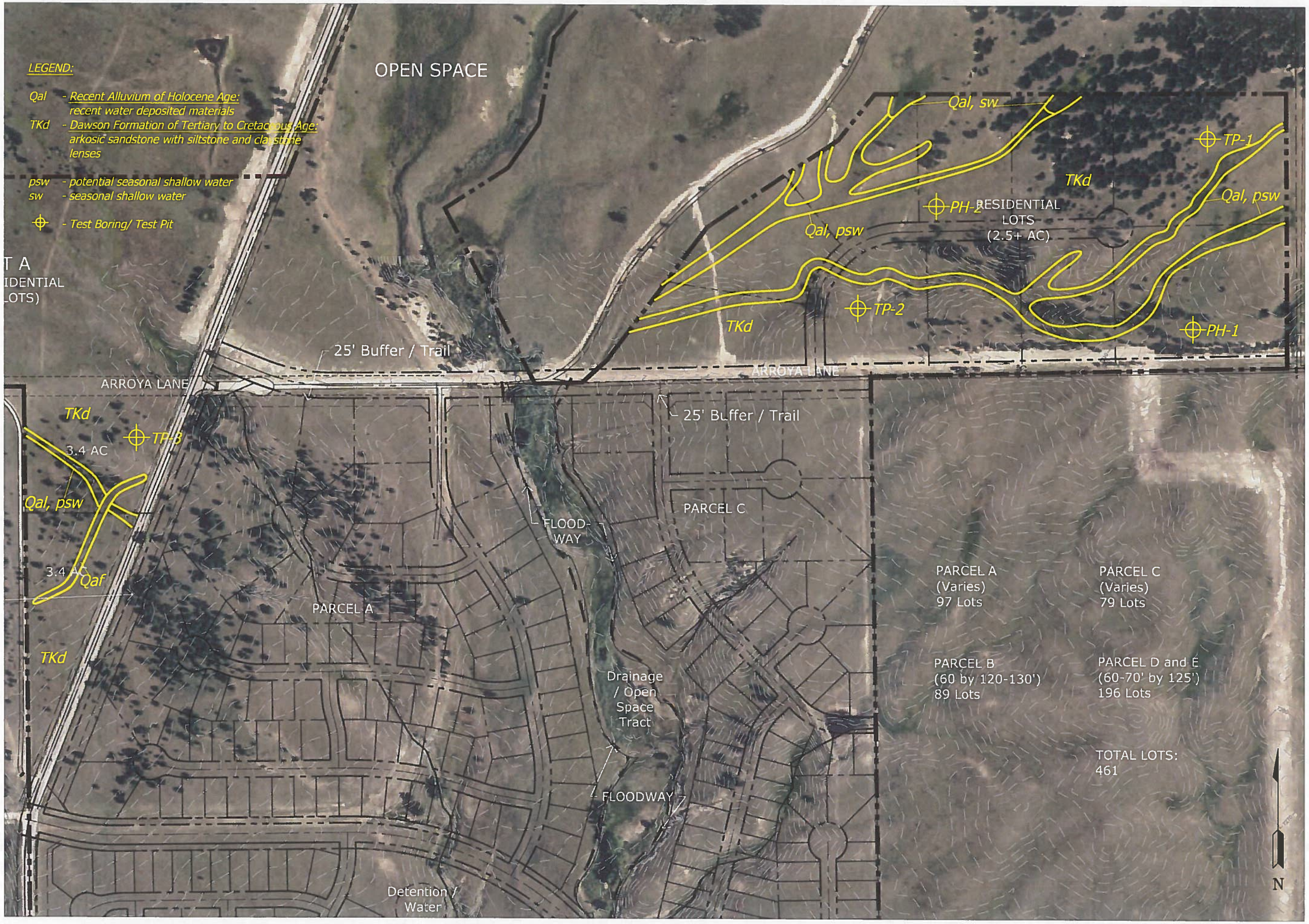
LLL	3/31/17		

JOB NO.: 170209

FIG NO.: 6



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GEOLOGY MAP/ENGINEERING GEOLOGY
THE RETREAT AT TIMBER RIDGE
VOLLMER ROAD AND ARROYA LANE
EL PASO COUNTY, CO.
FOR: ARROYA INVESTMENTS

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DATE	4/3/17
SCALE	AS SHOWN
JOB NO.	170209
FIGURE No.	7

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 Base Flood Elevation line and value; elevation in feet*
- (EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

- A — A Cross section line
- 23 — 23 Transect line
- 97°07'30", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4276000 M 1000-meter Universal Transverse Mercator grid tick values, zone 4
- 600000 FT 5000-foot grid tick values: Hawaii State Plane coordinate system, zone 3 (FIPSZONE 5103), Transverse Mercator projection
- DX5510 X Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M 2 Coastal Mile marker

MAP REPOSITORY

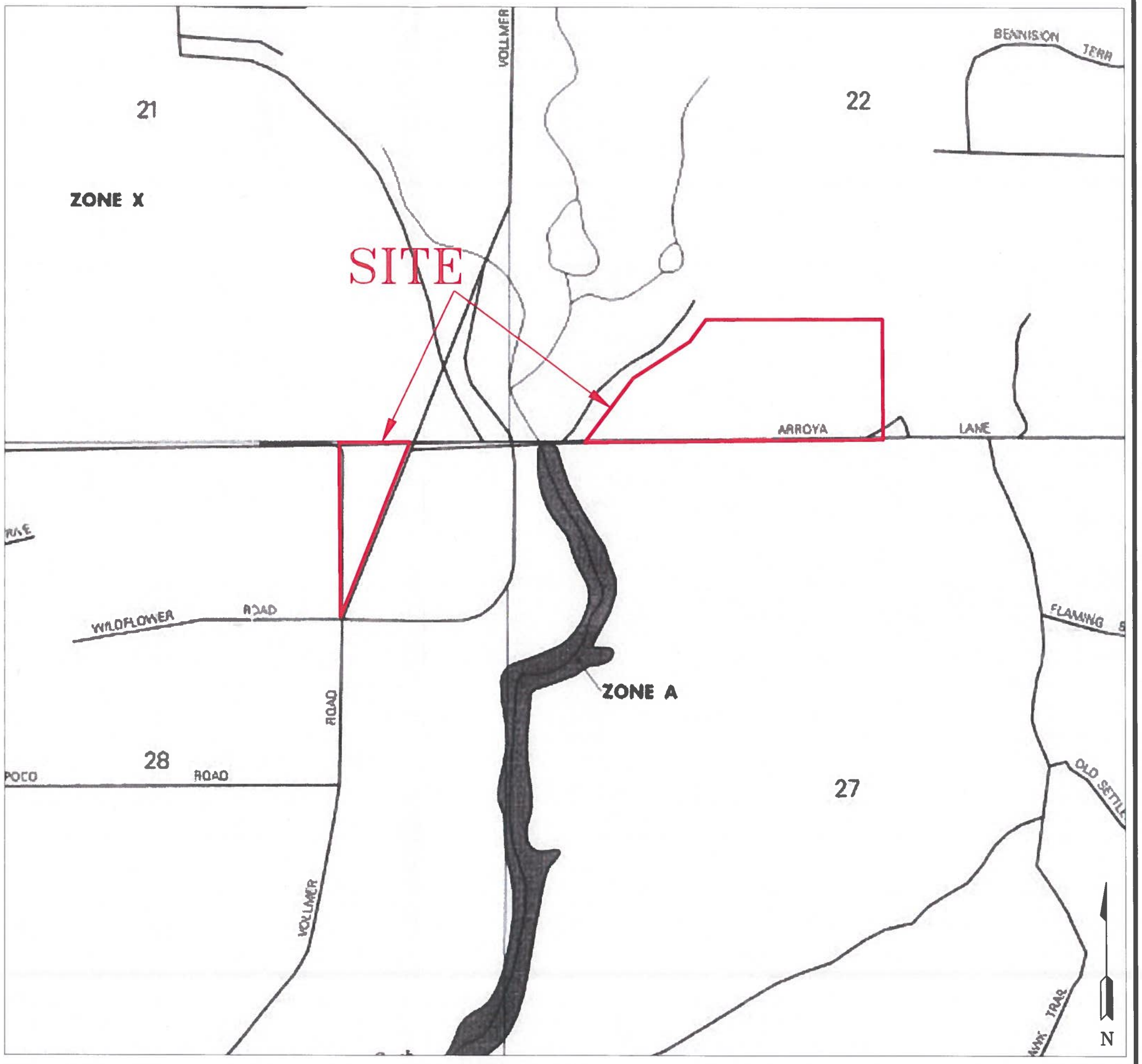
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

November 20, 2000

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

September 30, 2004 – to change Special Flood Hazard Areas, to update map format, to reflect revised shoreline and to incorporate previously issued Letters of Map Revision.



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FLOODPLAIN MAP
THE RETREAT AT TIMBER RIDGE
VOLLMER ROAD AND ARROYA LANE
EL PASO COUNTY, CO.
FOR: ARROYA INVESTMENTS

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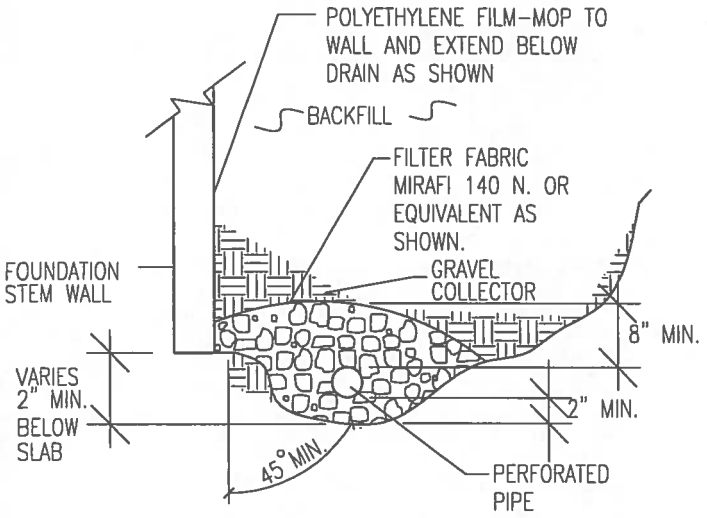
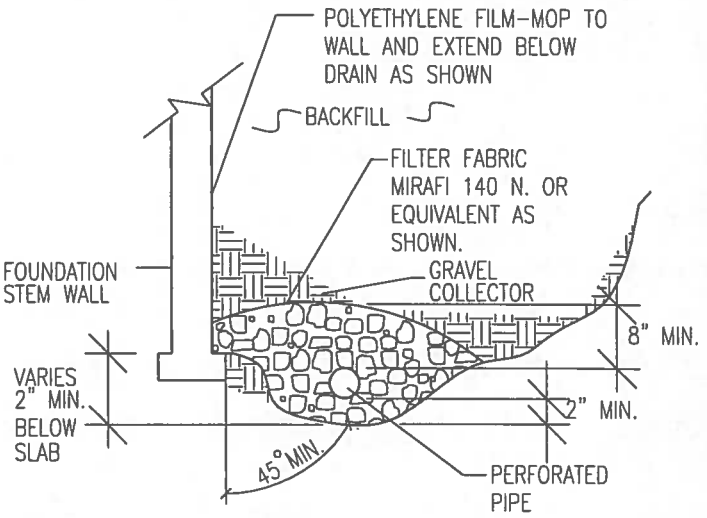
DATE	3/31/17
SCALE	AS SHOWN
JOB NO.	170209
FIGURE No.	8





NOTES:

–GRAVEL SIZE IS RELATED TO DIAMETER OF PIPE PERFORATIONS–85% GRAVEL GREATER THAN 2x PERFORATION DIAMETER.

–PIPE DIAMETER DEPENDS UPON EXPECTED SEEPAGE. 4–INCH DIAMETER IS MOST OFTEN USED.

–ALL PIPE SHALL BE PERFORATED PLASTIC. THE DISCHARGE PORTION OF THE PIPE SHOULD BE NON–PERFORATED PIPE.

–FLEXIBLE PIPE MAY BE USED UP TO 8 FEET IN DEPTH, IF SUCH PIPE IS DESIGNED TO WITHSTAND THE PRESSURES. RIGID PLASTIC PIPE WOULD OTHERWISE BE REQUIRED.

–MINIMUM GRADE FOR DRAIN PIPE TO BE 1% OR 3 INCHES OF FALL IN 25 FEET.

–DRAIN TO BE PROVIDED WITH A FREE GRAVITY OUTFALL, IF POSSIBLE. A SUMP AND PUMP MAY BE USED IF GRAVITY OUT FALL IS NOT AVAILABLE.

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PERIMETER DRAIN DETAIL

DRAWN:	DATE:	DESIGNED:	CHECKED:
		DS	LLL

JOB NO.: 170209

FIG NO.: 9

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SEPTIC SUITABILITY MAP
THE RETREAT AT TIMBER RIDGE
VOLLMER ROAD AND ARROYA LANE
EL PASO COUNTY, CO.
FOR: ARROYA INVESTMENTS

DRAWN	LLL
CHECKED	
DATE	4/3/17
SCALE	AS SHOWN
JOB NO.	170209
FIGURE No.	10

APPENDIX A: Site Photographs

1

Looking east from the southern portion of the site.

March 9, 2017

2

Looking north from the southern portion of the site.

March 9, 2017

Job No. 170209

3

Looking northeast from the southwestern portion of the site on the north side of Arroya Lane.

March 9, 2017

4

Looking west central portion of the site.

March 9, 2017

Job No. 170209

5

Looking east from the area of Profile Hole No. 2.

March 9, 2017

6

Looking north from the southeast portion of the site.

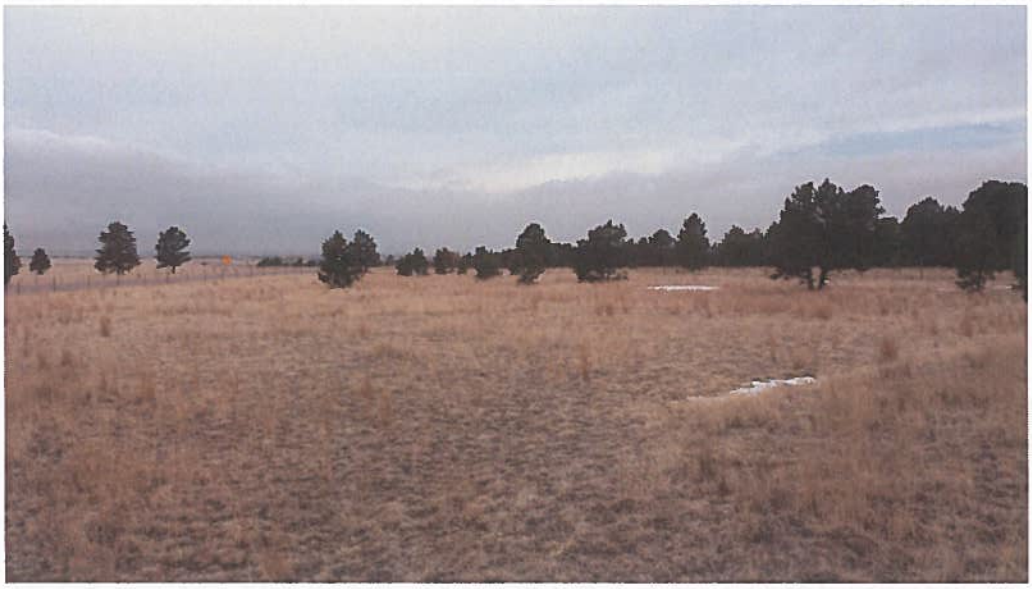
March 28, 2017

Job No. 170209

7

Looking east from the northwestern portion of the western lots towards Arroya Lane.

March 28, 2017



8

Looking south from the central portion of the western lots along Vollmer Road.

March 28, 2017

Job No. 170209

APPENDIX B: Test Boring Logs from the Profile Holes and Test Pit Logs

PROFILE HOLE NO. 1
DATE DRILLED 2/16/2017
Job # 170209

REMARKS

DRY TO 14.5', 2/17/17

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	
			30	13.0		SAND, CLAYEY, FINE GRAINED, GREEN BROWN, DENSE, MOIST
5			50/11"	13.1		SANDSTONE, VERY CLAYEY TO CLAYEY, FINE TO COARSE GRAINED, GREEN BROWN, VERY DENSE, MOIST
10			50/7"	13.4		
15			50/7"	9.2		
20						

PROFILE HOLE NO. 2
DATE DRILLED 2/16/2017
CLIENT ARROYA INVESTMENTS
LOCATION THE RETREAT AT TIMBER RIDGE

REMARKS

DRY TO 14', 2/17/17

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	
			19	2.3		SAND, SLIGHTLY SILTY, FINE TO COARSE GRAINED, TAN, MEDIUM DENSE TO LOOSE, MOIST
5			7	7.4		
10			6	5.5		
15			50	12.5		SANDSTONE, CLAYEY, FINE GRAINED, TAN, VERY DENSE, MOIST
20						

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PROFILE HOLE LOG

DRAWN:	DATE:	CHECKED:	DATE:
		LLL	3/31/17

JOB NO.: 170209
FIG NO.: B-1

TEST PIT NO. 1
DATE EXCAVATED 2/15/2017
Job # 170209

REMARKS	Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	USDA Soil Type
topsoil, sandy loam, brown	1			gr	w	2A
weathered to formational silty sandstone, fine to coarse grained, reddish-tan	2			ma		4
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					

TEST PIT NO. 2
DATE EXCAVATED 2/15/2017
CLIENT ARROYA INVESTMENTS
LOCATION VOLLMER ROAD & ARROYA LANE

REMARKS	Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	USDA Soil Type
topsoil, sandy loam, brown	1			gr	w	2a
gravelly loamy sand, fine to coarse grained, tan	2			sg		1
	3					
weathered silty sandstone, fine to coarse grained, reddish-tan	4			ma		4
	5					
sandy claystone, olive-gray	6			ma		4A
	7					
	8					
	9					
	10					

Soil Structure Shape
granular - gr
platy - pl
blocky - bl
prismatic - pr
single grain - sg
massive - ma

Soil Structure Grade
weak - w
moderate - m
strong - s
loose - l

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TEST PIT LOG

DRAWN:	DATE:	CHECKED:	DATE:
		LLL	3/31/17

JOB NO.: 170209
FIG NO.: B-2

TEST PIT NO. 3
DATE EXCAVATED 3/28/2016
Job # 170209

REMARKS	Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	USDA Soil Type
topsoil, sandy loam, brown	1			gr	w	2A
gravelly loamy sand, fine to coarse grained, tan	2			sg		1
	3					
	4					
sandy clay loam, very fine to coarse grained, tan-gray	5			ma		3A
weathered clayey sandstone, very fine to coarse grained, tan-gray	6			ma		4A
	7					
siltstone, very fine to fine grained, tan to reddish-tan	8			ma		4A
	9					
	10					

TEST PIT NO.
DATE EXCAVATED
CLIENT ARROYA INVESTMENTS
LOCATION VOLLMER ROAD & ARROYA LANE

REMARKS	Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	USDA Soil Type
	1					
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					

Soil Structure Shape
granular - gr
platy - pl
blocky - bl
prismatic - pr
single grain - sg
massive - ma

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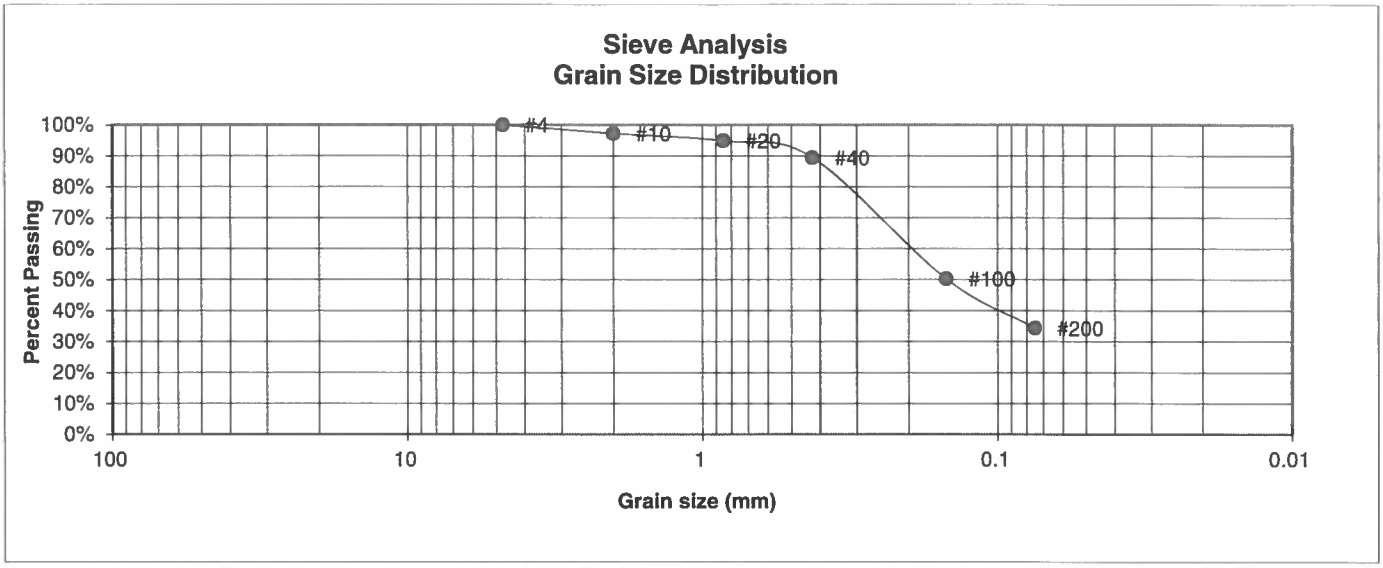
TEST PIT LOG

DRAWN:	DATE:	CHECKED: LLL	DATE: 3/31/17

JOB NO.: 170209
FIG NO.: B-3

APPENDIX C: Laboratory Test Results

BORING NO.	1	UNIFIED CLASSIFICATION	SC	TEST BY	BL
DEPTH(ft)	2-3	AASHTO CLASSIFICATION		JOB NO.	170209
CLIENT	ARROYA INVESTMENTS				
PROJECT	THE RETREAT AT TIMBER RIDGE				



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	97.2%
20	94.9%
40	89.5%
100	50.3%
200	34.3%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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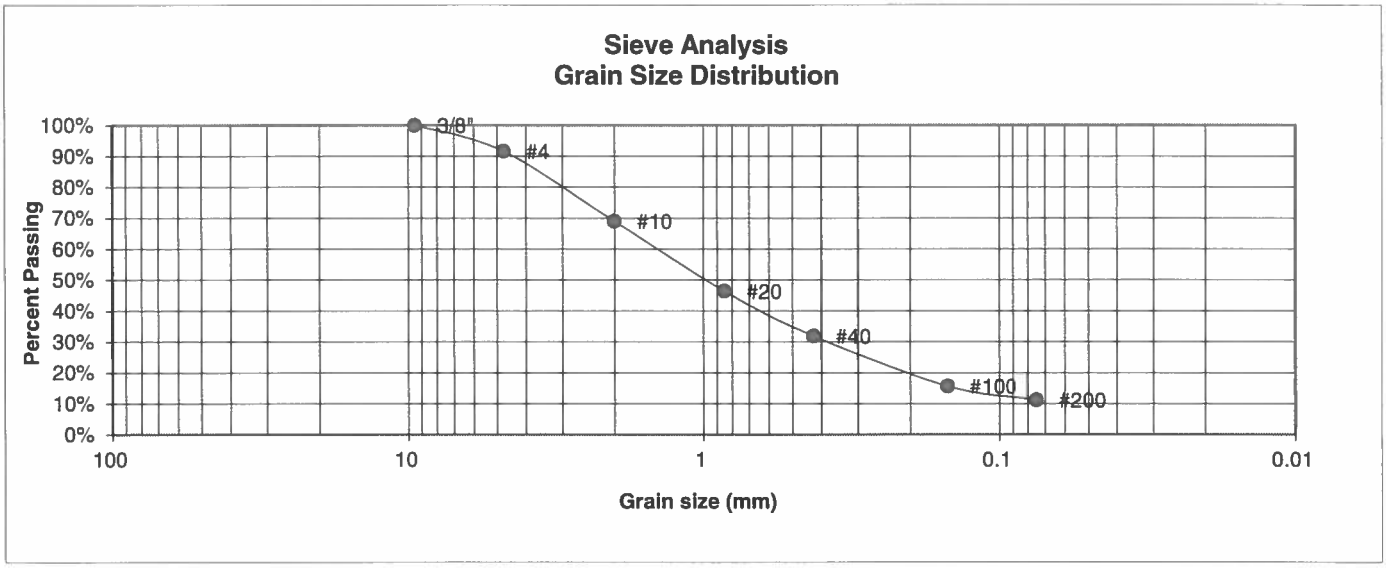
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		LLL	3/31/17

JOB NO.: 170209
FIG NO.: C-1

BORING NO.	2	UNIFIED CLASSIFICATION	SM-SW	TEST BY	BL
DEPTH(ft)	2-3	AASHTO CLASSIFICATION		JOB NO.	170209
CLIENT	ARROYA INVESTMENTS				
PROJECT	THE RETREAT AT TIMBER RIDGE				



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	91.6%
10	69.0%
20	46.4%
40	31.9%
100	15.7%
200	11.2%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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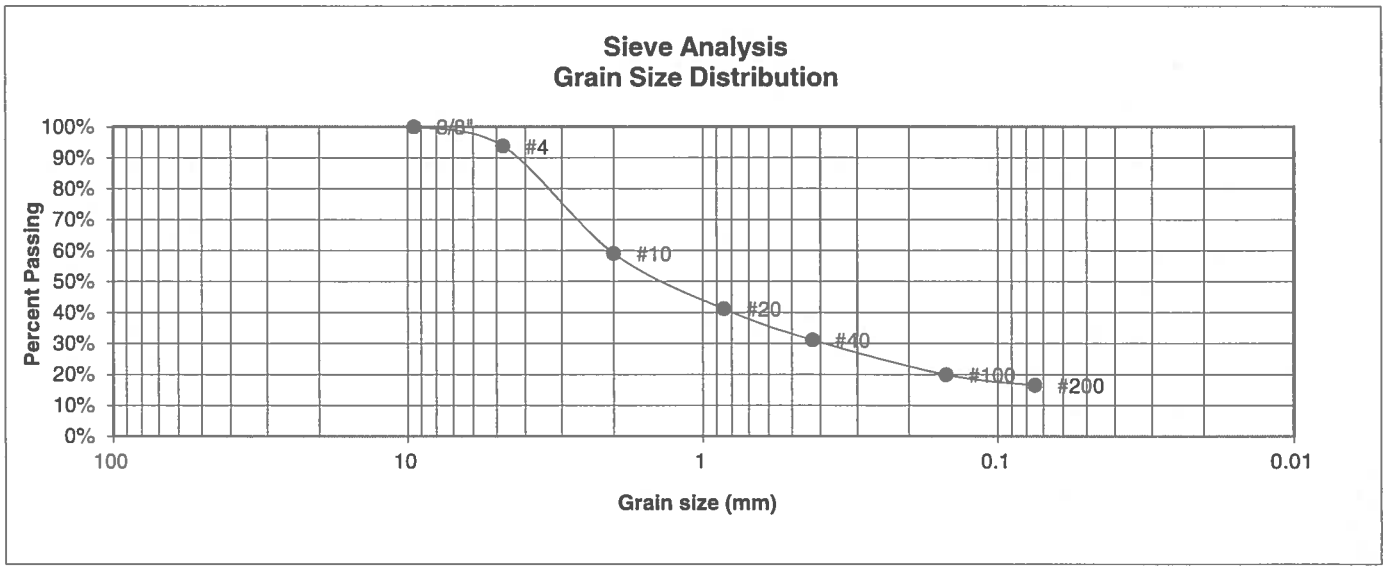
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		LLL	3/31/17

JOB NO.: 170209
FIG NO.: L-2

BORING NO.	TP-3	UNIFIED CLASSIFICATION	SM	TEST BY	BL
DEPTH(ft)	4-5	AASHTO CLASSIFICATION		JOB NO.	170209
CLIENT	ARROYA INVESTMENTS				
PROJECT	THE RETREAT AT TIMBER RIDGE				



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	93.7%
10	59.1%
20	41.1%
40	31.1%
100	19.9%
200	16.4%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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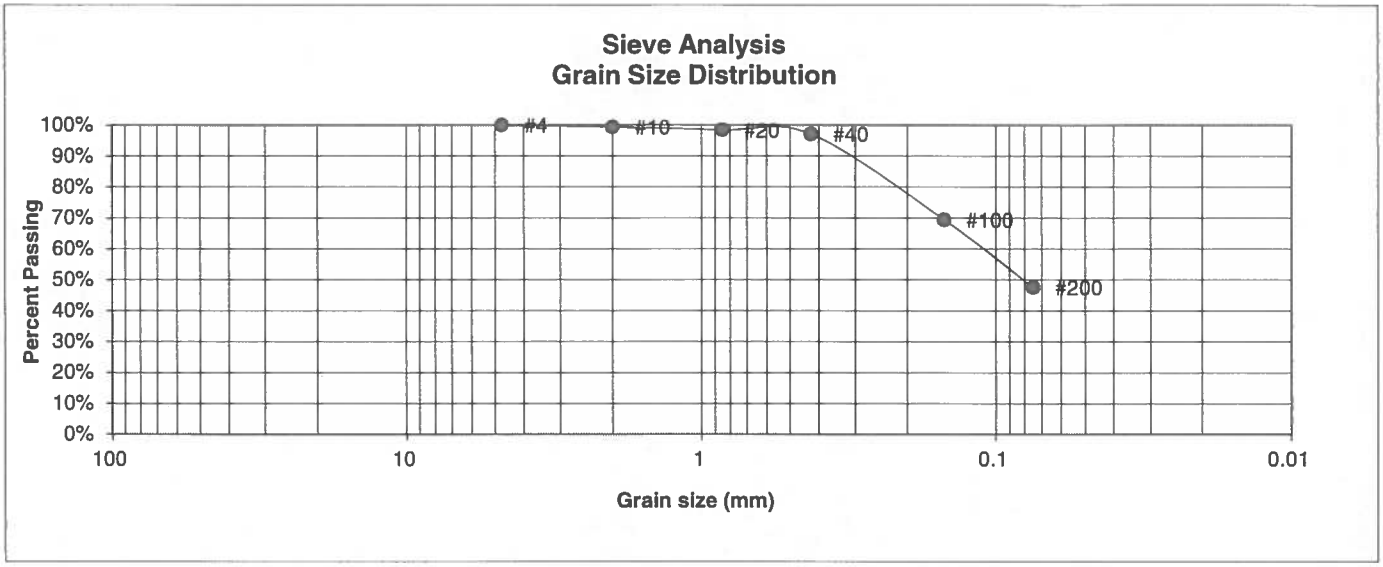
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		LLL	3/31/17

JOB NO.: 170209
FIG NO.: C-3

BORING NO.	1	UNIFIED CLASSIFICATION	SC	TEST BY	BL
DEPTH(ft)	5	AASHTO CLASSIFICATION		JOB NO.	170209
CLIENT	ARROYA INVESTMENTS				
PROJECT	THE RETREAT AT TIMBER RIDGE				



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	99.4%
20	98.4%
40	97.1%
100	69.4%
200	47.6%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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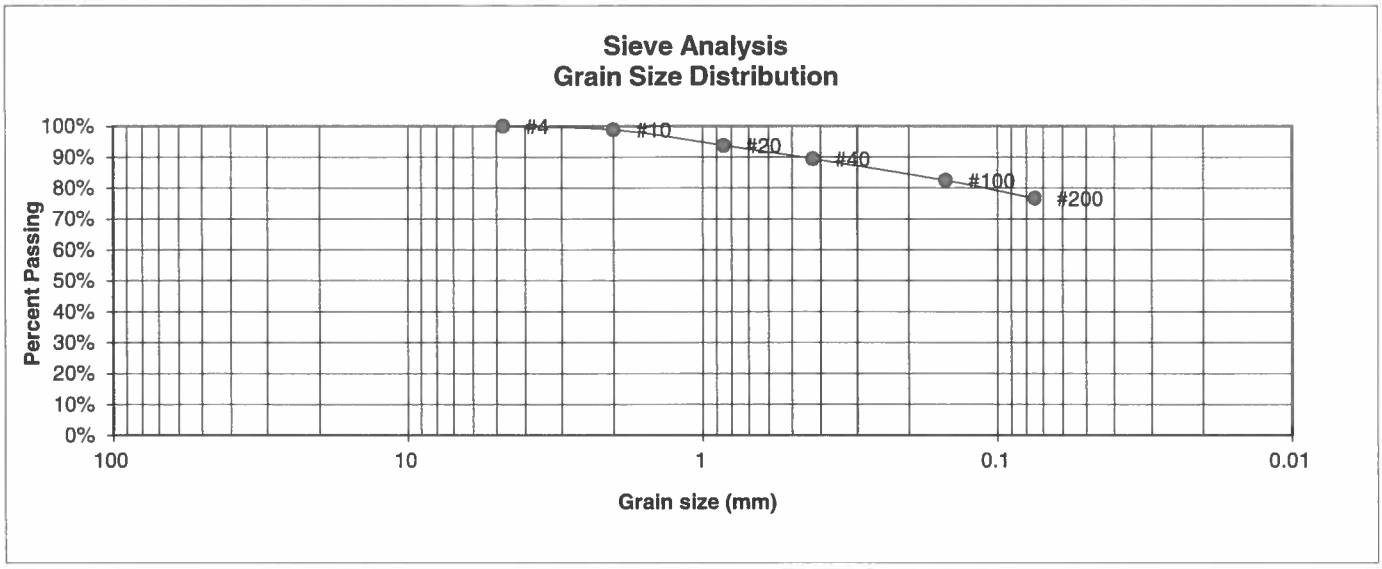
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		LLL	3/31/17

JOB NO.: 170209
FIG NO.: C-4

BORING NO.	TP-2	UNIFIED CLASSIFICATION	CL	TEST BY	BL
DEPTH(ft)	5-6	AASHTO CLASSIFICATION		JOB NO.	170209
CLIENT	ARROYA INVESTMENTS				
PROJECT	THE RETREAT AT TIMBER RIDGE				



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	98.9%
20	93.8%
40	89.4%
100	82.4%
200	76.6%

Atterberg Limits	
Plastic Limit	
Liquid Limit	
Plastic Index	
Swell	
Moisture at start	11.5%
Moisture at finish	20.8%
Moisture increase	9.4%
Initial dry density (pcf)	103
Swell (psf)	1280

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LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
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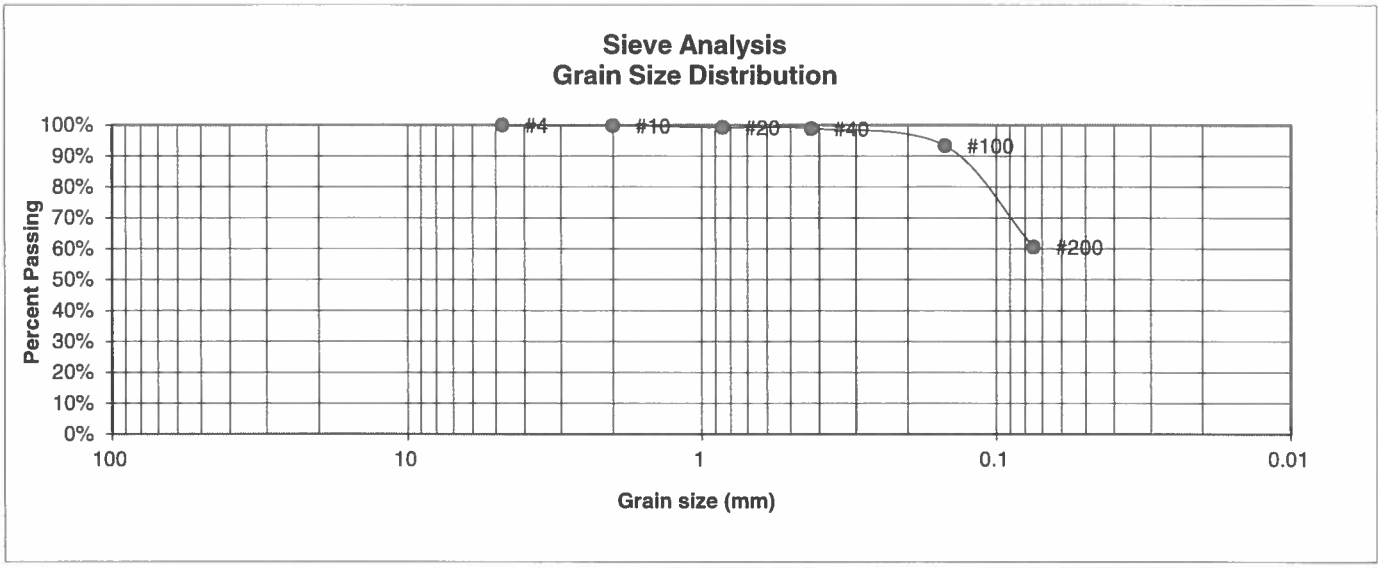
JOB NO.: 170209
FIG NO.: C-5

BORING NO.	TP-3	UNIFIED CLASSIFICATION	CL	TEST BY	BL
DEPTH(ft)	6-8	AASHTO CLASSIFICATION		JOB NO.	170209
CLIENT	ARROYA INVESTMENTS				
PROJECT	THE RETREAT AT TIMBER RIDGE				



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	99.8%
20	99.3%
40	98.9%
100	93.3%
200	60.6%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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LABORATORY TEST RESULTS

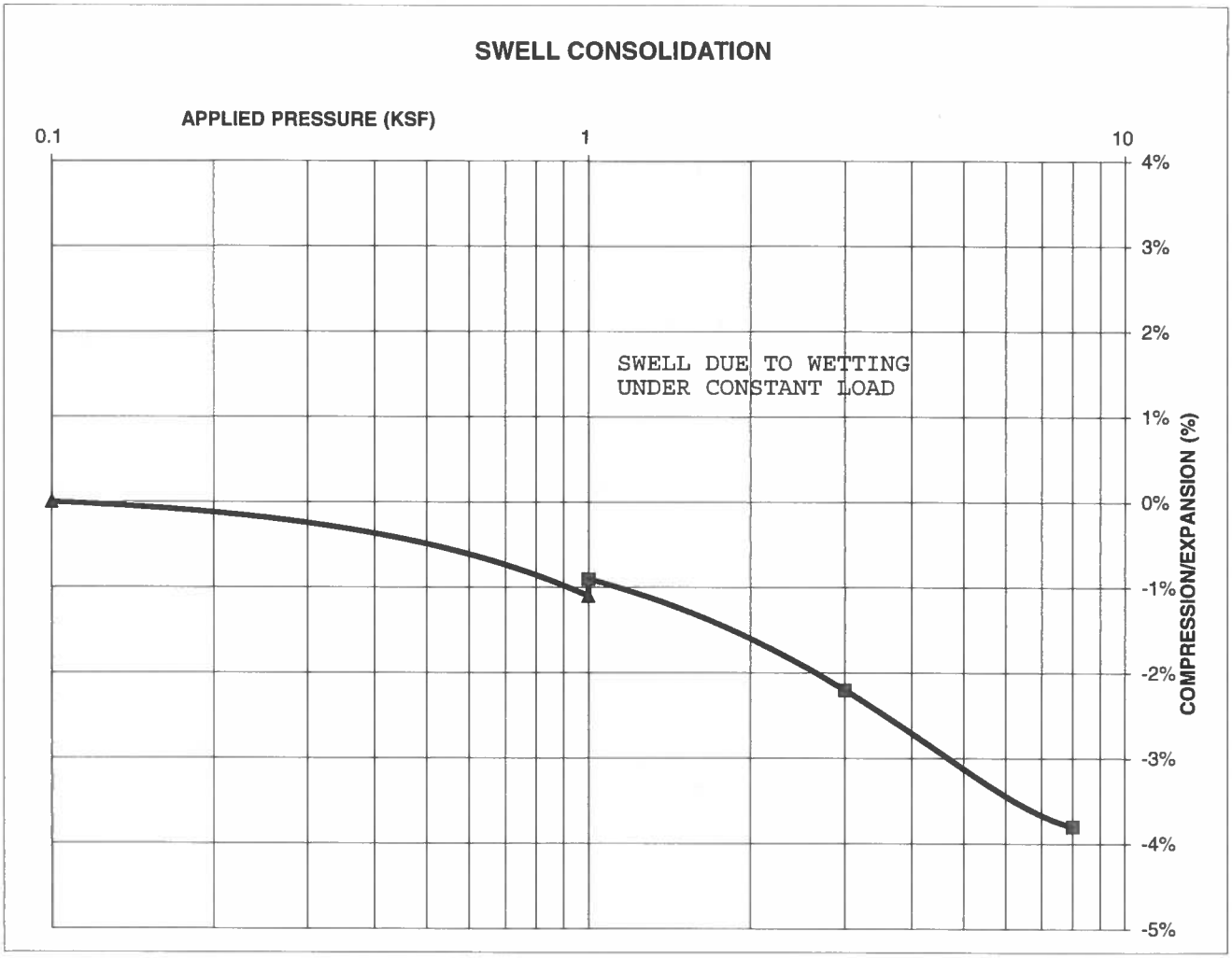
DRAWN:	DATE:	CHECKED:	DATE:
		LLL	3/31/17

JOB NO.: 170209
FIG NO.: L-6

CONSOLIDATION TEST RESULTS

SAMPLE FROM:	1	DEPTH(ft)	5
DESCRIPTION	SAND, VERY CLAYEY		
NATURAL UNIT DRY WEIGHT (PCF)			108
NATURAL MOISTURE CONTENT			14.9%
SWELL/CONSOLIDATION (%)			0.2%

JOB NO. 170209
CLIENT ARROYA INVESTMENTS
PROJECT THE RETREAT AT TIMBER RIDGE



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SWELL CONSOLIDATION
TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		LLL	3/31/17

JOB NO.: 170209

FIG NO.: C-7

APPENDIX D: Soil Survey Descriptions

El Paso County Area, Colorado

40—Kettle gravelly loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 368g
Elevation: 7,000 to 7,700 feet
Farmland classification: Not prime farmland

Map Unit Composition

Kettle and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kettle

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy alluvium derived from arkose

Typical profile

E - 0 to 16 inches: gravelly loamy sand
Bt - 16 to 40 inches: gravelly sandy loam
C - 40 to 60 inches: extremely gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Other soils

Percent of map unit:
Hydric soil rating: No

Pleasant
Percent of map unit:
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 14, Sep 23, 2016

El Paso County Area, Colorado

41—Kettle gravelly loamy sand, 8 to 40 percent slopes

Map Unit Setting

National map unit symbol: 368h
Elevation: 7,000 to 7,700 feet
Farmland classification: Not prime farmland

Map Unit Composition

Kettle and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kettle

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy alluvium derived from arkose

Typical profile

E - 0 to 16 inches: gravelly loamy sand
Bt - 16 to 40 inches: gravelly sandy loam
C - 40 to 60 inches: extremely gravelly loamy sand

Properties and qualities

Slope: 8 to 40 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Other soils

Percent of map unit:
Hydric soil rating: No

Pleasant
Percent of map unit:
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 14, Sep 23, 2016

El Paso County Area, Colorado

71—Pring coarse sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 369k
Elevation: 6,800 to 7,600 feet
Farmland classification: Not prime farmland

Map Unit Composition

Pring and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pring

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Arkosic alluvium derived from sedimentary rock

Typical profile

A - 0 to 14 inches: coarse sandy loam
C - 14 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: Loamy Park (R048AY222CO)
Hydric soil rating: No

Minor Components

Pleasant

Percent of map unit:
Landform: Depressions
Hydric soil rating: Yes

Other soils

Percent of map unit:
Hydric soil rating: No

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 14, Sep 23, 2016

APPENDIX E: Percolation Test Results

Client: Arroya Investments
Job Number: 170209
Test Location: The Retreat at Timber Ridge

PERCOLATION HOLES - #1

Date Holes Prepared: 2/16/2017
Date Hole Completed: 2/17/2017

Hole No. 1
Depth: 34"

Trial	Time (min.)	Water Level Change (in.)
1	10	1/8
2	10	0
3	10	1/8

Perc Rate (min./in.): 80

Hole No. 2
Depth: 36"

Trial	Time (min.)	Water Level Change (in.)
1	10	0
2	10	0
3	10	1/8

Perc Rate (min./in.): 80

Hole No. 3
Depth: 34"

Trial	Time (min.)	Water Level Change (in.)
1	10	0
2	10	0
3	10	0

Perc Rate (min./in.): 240

Average Perc Rate (min./in.) 133

PROFILE HOLE

Date Profile Hole Completed: 2/16/2017

Depth	Visual Classification	Remarks
0-3'	Sand, clayey, fine grained, green brown	
3-15'	Sandstone, very clayey, fine grained, green brown	Sandstone Bedrock at 3' No Groundwater

30 Blows / ft. @ 2'
50 Blows / 11" @ 4'
50 Blows / 7" @ 9'

LTAR = 0.1 gallons per square foot per day.

Remarks:
* - Due to slow percolation rate and shallow bedrock, a designed system or additional drilling is recommended

GPS Coordinates: 38° 59' 03.3" N, 104° 39' 17.6" W

Observer: Graham Espenlaub
By:

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PERCOLATION TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		LLL	3/31/17

JOB NO.: 170209
FIG NO.: E-1

Client: Arroya Investments
Job Number: 170209
Test Location: The Retreat at Timber Ridge

PERCOLATION HOLES - #2

Date Holes Prepared: 2/16/2017
Date Hole Completed: 2/17/2017

Hole No. 1
Depth: 36"

Trial	Time (min.)	Water Level Change (in.)
1	10	1/8
2	10	0
3	10	1/8

Perc Rate (min./in.): 80

Hole No. 2
Depth: 36"

Trial	Time (min.)	Water Level Change (in.)
1	10	1/8
2	10	3/8
3	10	3/8

Perc Rate (min./in.): 27

Hole No. 3
Depth: 31"

Trial	Time (min.)	Water Level Change (in.)
1	10	7/8
2	10	5/8
3	10	3/8

Perc Rate (min./in.): 27

Average Perc Rate (min./in.) 44

PROFILE HOLE

Date Profile Hole Completed: 2/16/2017

Depth	Visual Classification	Remarks
0-14'	Sand, slightly silty, fine to coarse grained, tan	
14-15'	Sandstone, clayey, fine to coarse grained, brown	Sandstone Bedrock at 14' No Groundwater

19 Blows / ft. @ 2'
7 Blows / ft. @ 4'
6 Blows / ft. @ 9'

LTAR = 0.35 gallons per square foot per day.
Soil Treatment Area (Soil Type 3) = 2.7 square feet per gallon.

Remarks:

GPS Coordinates: 38° 59' 07.0" , 104° 39' 29.2" W

Observer: Graham Espenlaub
By:

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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

PERCOLATION TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		LLL	3/31/17

JOB NO.: 170209
FIG NO.: E-2