ALPINE CITY PLANNING COMMISSION MEETING

NOTICE is hereby given that the **PLANNING COMMISSION** of Alpine City, UT will hold **a Public Hearing and a Regular Meeting at Alpine City Hall,** 20 North Main, Alpine, Utah on **Tuesday, September 6, 2016 at 7:00 pm** as follows:

I. GENERAL BUSINESS

A. Welcome and Roll Call: Steve Cosper
B. Prayer/Opening Comments: Steve Swanson
C. Pledge of Allegiance: By Invitation

II. PUBLIC COMMENT

Any person wishing to comment on any item not on the agenda may address the Planning Commission at this point by stepping to the microphone and giving his or her name and address for the record.

III. ACTION ITEMS

A. Conditional Use Permit – Building Blocks Preschool of Alpine – Jenny Smith
The Planning Commission will review a conditional use permit for a preschool located at 395 East Silverleaf Dr.

B. Beck Pines Preliminary Plan – Approximately 600 West Westfield Road – Dana Beck
The Planning Commission will consider approving a preliminary plan for the Beck Pines Subdivision. The proposed subdivision consists of 19 lots ranging in size from 20,004 square feet to 23,903 square feet on a site that is 11.29 acres. The site is located in the CR-20,000 zone.

C. PUBLIC HEARING – Alpine Ridge PRD Subdivision Concept Plan – Approx. 1425 Grove Dr. – Paul Kroff
The Planning Commission will review a proposed concept plan for the Alpine Ridge Subdivision that consists of 69 lots on 189.5 acres. This property is located in the CR-40,000 zone. The subdivision will be a Planned Residential Development (PRD) and consist of lots ranging in size from 0.47 acres to 2.94 acres.

D. PUBLIC HEARING – Lone Pine Subdivision Concept Plan – 615 East 300 North – Ivory Homes
The Planning Commission will review a proposed concept plan for the Lone Pine Subdivision that consists of 9 lots on 5.68 acres. This property is located in the CR-20,000 zone (1/2 acre).

E. Three Falls Subdivision Amendment – Plat D – Will Jones
The Planning Commission will review proposed amendments to the Three Falls Subdivision.

F. General Plan Update
The Planning Commission will discuss an update of the Alpine City General Plan, specifically as it pertains to the Transportation (Circulation) Element.

IV. COMMUNICATIONS

V. APPROVAL OF PLANNING COMMISSION MINUTES: August 16, 2016

ADJOURN

Chairman Steve Cosper
September 2, 2016

THE PUBLIC IS INVITED TO ATTEND ALL PLANNING COMMISSION MEETINGS. If you need a special accommodation to participate in the meeting, please call the City Recorder's Office at 801-756-6347 ext. 5.

CERTIFICATION OF POSTING. The undersigned duly appointed recorder does hereby certify that the above agenda notice was posted at Alpine City Hall, 20 North Main, Alpine, UT. It was also sent by e-mail to The Daily Herald located in Provo, UT a local newspaper circulated in Alpine, UT. This agenda is also available on the City's web site at www.alpinecity.org and on the Utah Public Meeting Notices website at www.utah.gov/pmn/index.html.

PUBLIC MEETING AND PUBLIC HEARING ETIQUETTE

Please remember all public meetings and public hearings are now recorded.

- All comments **must** be recognized by the Chairperson and addressed through the microphone.
- When speaking to the Planning Commission, please stand, speak slowly and clearly into the microphone, and state your name and address for the recorded record.
- Be respectful to others and refrain from disruptions during the meeting. Please refrain from conversation with others in the audience as the microphones are very sensitive and can pick up whispers in the back of the room.
- Keep comments constructive and not disruptive.
- Avoid verbal approval or dissatisfaction of the ongoing discussion (i.e., booing or applauding).
- Exhibits (photos, petitions, etc.) given to the City become the property of the City.
- Please silence all cellular phones, beepers, pagers or other noise making devices.
- Be considerate of others who wish to speak by limiting your comments to a reasonable length, and avoiding repetition of what has already been said. Individuals may be limited to two minutes and group representatives may be limited to five minutes.
- Refrain from congregating near the doors or in the lobby area outside the council room to talk as it can be very noisy and disruptive. If you must carry on conversation in this area, please be as quiet as possible. (The doors must remain open during a public meeting/hearing.)

Public Hearing v. Public Meeting

If the meeting is a **public hearing**, the public may participate during that time and may present opinions and evidence for the issue for which the hearing is being held. In a public hearing there may be some restrictions on participation such as time limits.

Anyone can observe a **public meeting**, but there is no right to speak or be heard there - the public participates in presenting opinions and evidence at the pleasure of the body conducting the meeting.

ALPINE PLANNING COMMISSION AGENDA

SUBJECT: **Building Blocks Preschool of Alpine Conditional Use Permit**

FOR CONSIDERATION ON: **6 September 2016**

PETITIONER: **Jenny Smith**

ACTION REQUESTED BY PETITIONER: **Approve the Conditional Use Permit**

APPLICABLE STATUTE OR ORDINANCE: **Section 3.23 (Conditional Uses)**

BACKGROUND INFORMATION:

The applicant is proposing a home occupation (preschool) at 395 East Silverleaf Drive. An email explaining her proposed preschool is attached. The only glaring concern for this proposed preschool is the amount of traffic that it could generate. Section 3.23.7.3.13 states:

> *"The physical appearance, traffic, and other activities in connection with the home occupation will not be contrary to the intent of the zone in which the home occupation is located and, in the opinion of the Planning Commission, the activities of the home occupation will not depreciate surrounding property values or the quality of the area for residential purposes as determined by the Planning Commission."*

The Planning Commission should address any issues they may see with potential traffic concerns. The applicant will need to be in compliance with all other terms and conditions as laid out in section 3.23.7.3.

STAFF RECOMMENDATION:

Staff recommends approval of the conditional use permit for the proposed home occupation (Building Blocks of Alpine Preschool) with the following conditions:

- **The Building Official inspect the area of the home to be used for the preschool.**
- **A business license be obtained.**

Jason Bond

From: Kevin and Jenny Smith <kevjensmith@comcast.net>
Sent: Thursday, August 25, 2016 9:45 AM
To: Jason Bond
Subject: Building Blocks Preschool

Dear Alpine Planning Commission,

I am excited to open Building Blocks Preschool of Alpine and I am hoping you approve the plans. I live on 395 E. Silverleaf Drive. I will hold school every Tuesday, Wednesday, and Thursday during the school year. I have 2 classes each day. The first class will have 8 students. School begins at 9:25 and ends at 11:40. My second class will have 5 students and will start and 11:55 and end at 2:10. I am allowing the parents to load their own children rather than loading each child one at a time. This should shorten the time cars are lined up on the street.

Thank you for your time and consideration. I am looking forward to meeting you.

Jenny Smith
(801)3620-9528
buildingblocksalpine@gmail.com

ALPINE PLANNING COMMISSION AGENDA

SUBJECT: **Beck Pines Preliminary Plan**

FOR CONSIDERATION ON: **6 September 2016**

PETITIONER: **Dana Beck**

ACTION REQUESTED BY PETITIONER: **Approve the Preliminary Plan**

APPLICABLE STATUTE OR ORDINANCE: **Article 4.6 (Major Subdivision)**

BACKGROUND INFORMATION:

The proposed Beck Pines Subdivision consists of 19 lots ranging in size from 20,004 square feet to 23,903 square feet on a site that is 11.29 acres. The site is located in the CR-20,000 zone.

The concept plan was approved by the Planning Commission on July 26, 2016. The subdivision was presented to the City Council the same night for informational purposes. The City Council gave no specific direction moving forward.

STAFF RECOMMENDATIONS:

The Engineering Department recommends that preliminary approval of the proposed development be POSTPONED until the following conditions are met:

- Sidewalk is shown to be constructed along the entire frontage of Westfield Road.
- A temporary turn-a-round is added to the plans at the northern end of Long Drive.
- Remove and cap or re-use the existing sewer lateral off Long Drive.
- Remove and cap the existing PI service for Lot 5.
- The Developer submit a storm drain system designed for a 50-year storm which discharges to Fort Creek, preferably without the use of sumps.
- At Final, the Developer clearly labels Westfield Road access restrictions for Lots 5, 12 and 13 on the plat(s).
- The Developer address redlines in the construction drawings.

Date: September 2, 2016

By: Jed Muhlestein, P.E.
Assistant City Engineer

Subject: Beck Pines Subdivision – ENGINEER'S PRELIMINARY REVIEW
19 Lots on 11.29 Acres, CR 20,000 Zone

ENGINEERING REVIEW

This is the engineering review for the proposed Beck Pines subdivision. The proposed development consists of 19 lots on 11.29 acres. The development is located in the CR 20,000 zone near 621 South Westfield Road, also known as the Beck Properties. A map was created to show this plan in conjunction with Harvest Meadows to give an overall idea of what is being considered for the area.

Street System

The street system connects Westfield Road to Long Drive with a cul-de-sac extending off the Long Drive segment. The cul-de-sac terminates with a 60-foot radius sized turn-a-round and is less than 450 feet in length, both of which meet code. Street grades and intersection designs are also in compliance with code.

The property fronts Westfield Road and extends Long Drive. At concept it was mentioned that frontage improvements consisting of the standard street width, curb, gutter, and sidewalk would be required through-out on both sides of the streets; this is not currently reflected on the plan along Westfield Road in regards to sidewalk. Sidewalk exists on the southern half of the frontage shown, up to about the mid-point of Lot 12. **Sidewalk would need extended from the existing sidewalk along Lot 12 northward to the northern property boundary of Lot 13.**

A temporary turn-a-round would be required at the end of Long Drive where it stubs into the northern property. This is not currently reflected on the plans.

Utilities

A detailed utility plan has been submitted and reviewed. Each utility will be discussed below:

Sewer System. An extension of the Long Drive sewer line was built in anticipation for this development and runs along the easterly boundary through the property. New lines and

laterals are shown connecting to this line with minor modifications on the northerly end to keep the sewer in the street. The line is shown as being built to the north boundary for future development. 4-inch sewer laterals would be required for each new lot. There is an existing sewer lateral that was used for a shop located on the proposed Lots 7, 10, and 11. **This existing lateral either needs removed and capped at the main or re-used for Lot 9 if possible.**

Culinary Water System. The subdivision is well below the 5350 foot elevation, which is the highest elevation the existing water system can serve and still provide a minimum 40 psi required by ordinance. There is currently an 8-inch waterline in Long Drive and a 10-inch in Westfield Road. The plans show connection to both these lines with 8 inch lines throughout the development. The Fire Marshall has approved the location of proposed fire hydrants. 3/4-inch water laterals are shown to be constructed for each lot.

Pressurized Irrigation System. Similar to the culinary, there are currently pressurized irrigation lines in both Westfield Road and Long Drive; 12-inch and 8-inch respectively. Connection to both these lines is shown with new 6-inch lines throughout the development. 1-inch laterals are shown to be constructed for each new lot, Lot 5 already has a service installed on Westfield Road, but this is not the standard location for a PI service. It is shown to have a new service installed in the standard location, which is close to the water meter. It would be required the developer **cap the existing PI service at the main line in Westfield Road**.

Storm Water Drainage System. The development shows piping that can handle the 10 year storm and sumps designed for a 25 year storm event. The storm drain system needs to be designed to handle the 50-year event for detention. The City prefers detention basins over sumps as they are easier to maintain. Detention basins should be located on lots with appropriate easements. This scenario may seem restrictive to home owners, but can be quite attractive if done correctly and is much more accessible for maintenance. See attached example of a detention basin on a lot. It is located at 508 N. Country Manor Lane. If the developer is adamant about using sumps the design needs to be such that the sumps are located out of the road platform and behind the curb. A percolation test needs to be done to prove the infiltration rates can be achieved as shown in the storm drain calculations. The design needs to be such that flows above the 50-year event can discharge to Fort Creek whether detention basins or sumps are used. Currently the city has reviewed a concept plan for Harvest Meadows, land adjacent to Beck Pines. Coordination needs to occur between the two developers so Beck Pines can connect to the storm drain system within their development or the Beck Pines development needs to design so they can outfall to Fort Creek without Harvest Meadows. **Re-submittal of the storm drain design and calculations will be required**.

Misc. Utilities. There is a 12-inch high pressure gas line and associated easement running through the property along the boundaries of lots 13-15 and 19. The developer has taken this into consideration and aligned boundaries in such a way as to keep the easement along property boundaries. At Final, the plat should give direction for individuals to be able to look up the specifics of the easement so they are aware of what that entails.

General Subdivision Remarks
The lot line between Lot 6 and the existing Beck residence is shown to be straightened, this was a recommendation from Concept.

The property is not located within any of the sensitive areas as outlined in the city planning maps. A geotechnical report has been submitted addresses public road, public infrastructure, and residential foundation design and is included herewith. The only minor concern mentioned in the report was the findings of small amounts of collapsible soil. The report suggests a geotechnical engineer be present during foundation excavation as these soils can be visually identified and remedied at that time.

There are two existing buildings on lots 7, 10, 11, and 12 that would need removed prior to recordation or as a condition of recording with a bond provided. The buildings will need to be removed to be compliant with setback requirements of the zone.

Westfield Ditch runs through the property generally along Westfield Road. Per Dev. Code 4.7.19.1 the ditch is required to be piped through the development and the plans do reflect this. However, the design of the piped ditch runs generally through the middle of the Lot 12. Having utilities through the middle of lots is typically avoided if possible. **Engineering recommends the developer alter the design of the piped ditch as redlined.**

Lot 5 has double frontage. Per Dev. Code 4.7.3.4 double frontage lots are prohibited unless recommended by the Planning Commission and City Council. At Concept it was recommended by the Planning Commission to restrict Westfield Road access for not only Lot 5, but also Lots 12 and 13. Engineering agrees with this recommendation and recommends that access restrictions be clearly labeled on the plat(s).

Besides the larger points of concern mentioned in this report, there are some minor **redline corrections on the plans that need addressed**.

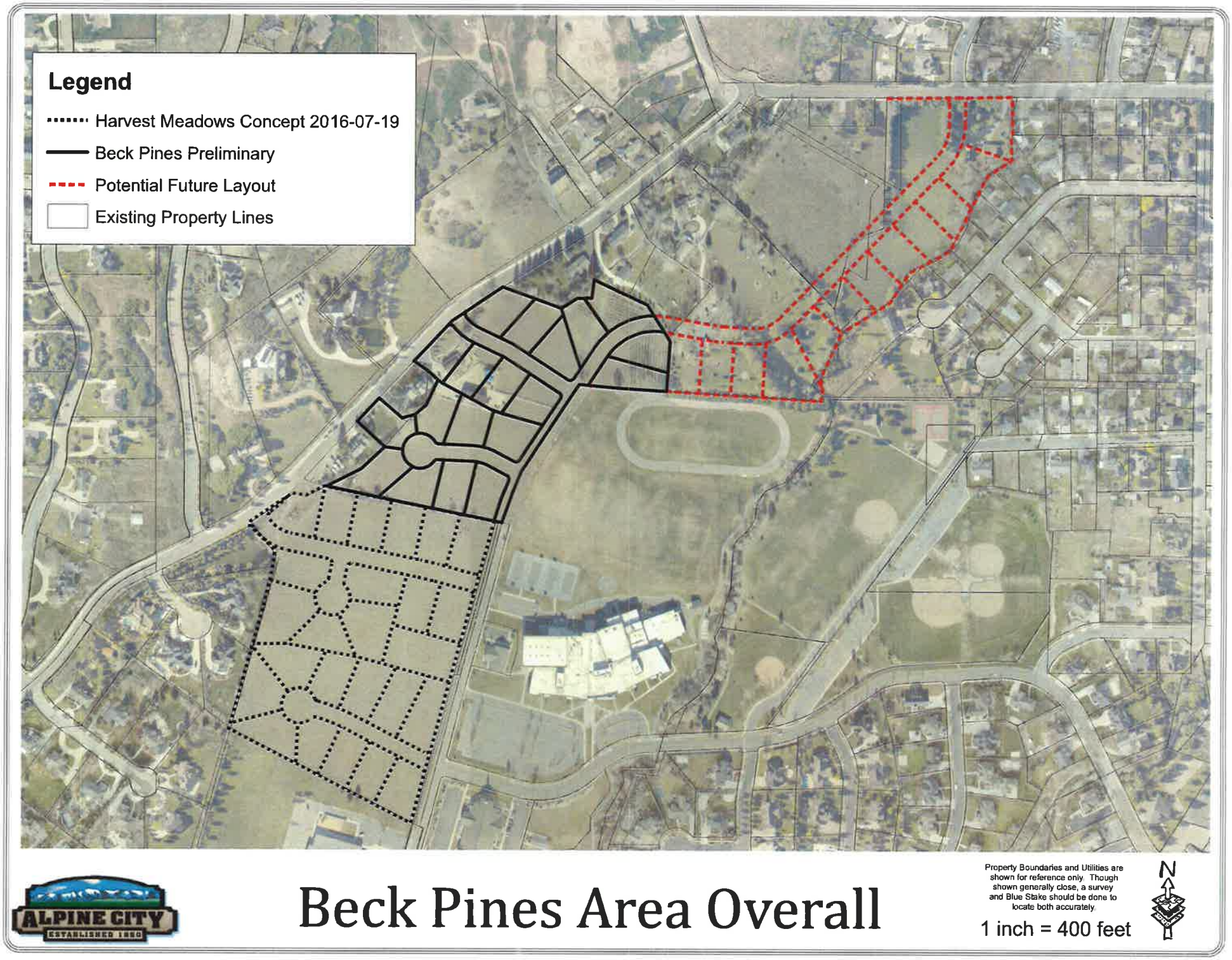
ENGINEERING RECOMENDATION

We recommend that Preliminary Approval of the proposed development be POSTPONED until the following conditions are met:

- **Sidewalk is shown to be constructed along the entire frontage of Westfield Road**
- **A temporary turn-a-round is added to the plans at the northern end of Long Drive**
- **Remove and cap or re-use the existing sewer lateral off Long Drive**
- **Remove and cap the existing PI service for Lot 5**
- **The Developer submit a storm drain system designed for the 50-year storm which discharges to Fort Creek, preferably without the use of sumps**
- **At Final, the Developer clearly labels Westfield Road access restrictions for Lots 5, 12, and 13 on the plat(s)**

- **The Developer address redlines on the construction drawings**

Storm Drain Detention Basin on Lot
508 N. Country Manor Lane



Beck Pines Area Overall

Property Boundaries and Utilities are shown for reference only. Though shown generally close, a survey and Blue Stake should be done to locate both accurately.

1 inch = 400 feet

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Beck Pines - Alpine Utilities

Property Boundaries and Utilities are shown for reference only. Though shown generally close, a survey and Blue Stake should be done to locate both accurately.

1 inch = 150 feet

BOUNDARY DESCRIPTION

BEGINNING AT A POINT LOCATED NORTH 89°48'18" EAST ALONG SECTION LINE 584.57 FEET AND NORTH 651.00 FEET FROM THE SOUTHWEST CORNER OF SECTION 24, TOWNSHIP 4 SOUTH, RANGE 1 EAST, SALT LAKE BASE AND MERIDIAN

THENCE NORTH 63°11'36" EAST 133.26 FEET; THENCE NORTH 46°46'56" EAST 110.26 FEET; THENCE NORTH 47°07'06" WEST 129.00 FEET; THENCE NORTH 42°54'41" EAST 103.94 FEET; [illegible]

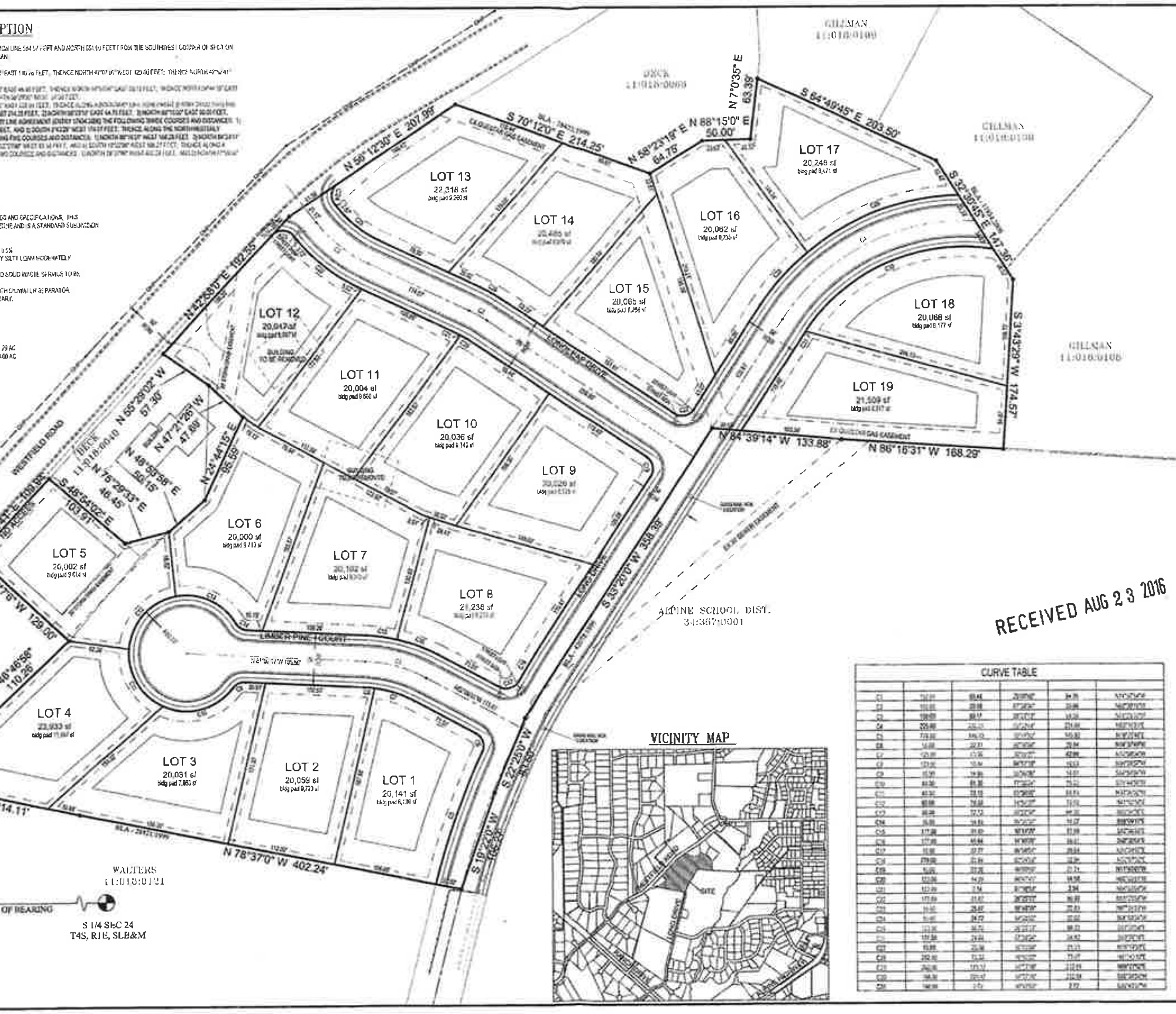
AREA = [illegible]

NOTES

1. ALL CONSTRUCTION TO CONFORM WITH ALPINE CITY STANDARDS AND SPECIFICATIONS. THIS DEVELOPMENTS CONFORMS TO REQUIREMENTS OF CR-40,000 ZONE AND IS A STANDARD SUBDIVISION NOT A PRD.
2. 1' CONTOURS ARE FROM A SURVEY COMPLETED IN AUG 2016
3. ALL STREETS AND SEWER LINES TO HAVE MINIMUM SLOPES OF 0.5%
4. SOIL TYPES ON PROPERTY: TmC = TIMP LOAM AND WeC = WELBY SILTY LOAM MODERATELY PERMEABLE, WELL-DRAINED, SLIGHT EROSION HAZARD.
5. WATER, SEWER, PRESSURE IRRIGATION, FIRE PROTECTION, AND SOLID WASTE SERVICE TO BE PROVIDED BY ALPINE CITY.
6. ALL CATCH BASINS TO BE STANDARD PRE-TREATMENT TYPE WITH OIL/WATER SEPARATOR.
7. NONE OF THIS SITE IS IN ZONE A 100-YEAR FLOOD PLAIN BOUNDARY.

TABULATIONS

TOTAL ACREAGE	11.29 AC
OPEN SPACES	0.00 AC
DENSITY CALCULATION 0%-5.9% SLOPE 11.29 AC / 0.54 DU/AC = 10.47 LOTS	
TOTAL # LOTS	19 LOTS



BECK PINES SUBDIVISION

DEVELOPER: DANA BECK
621 WESTFIELD ROAD
ALPINE, UT 84004
(801) 372-9700

SCALE: 1"= 50'

berg CIVIL ENGINEERING

BECK PINES

PRELIMINARY CONSTRUCTION DRAWINGS

SHEET NAME	SHEET NUMBER
COVER	C1

BECK PINES SUBDIVISION

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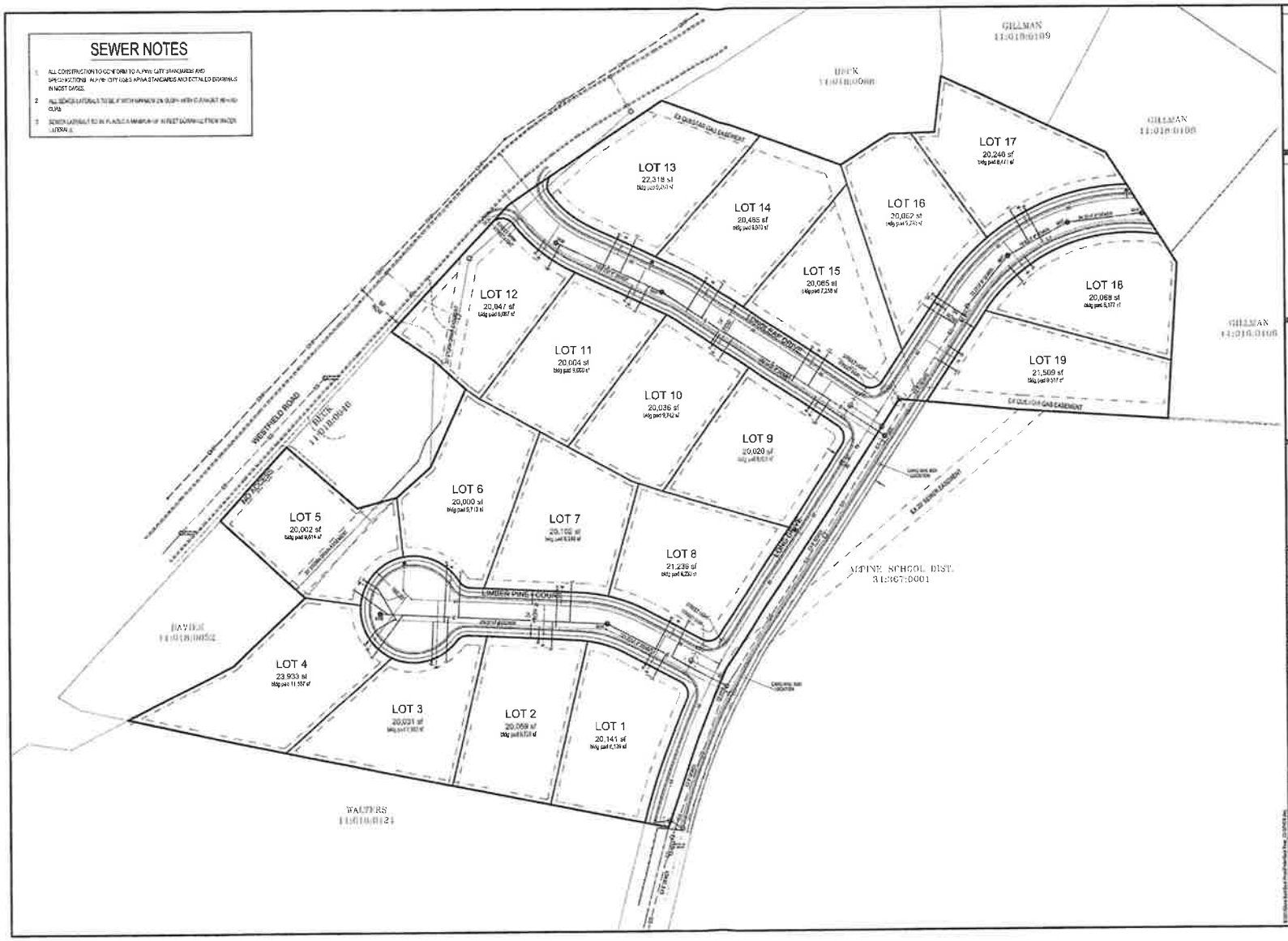
BECK PINES

PRELIMINARY CONSTRUCTION DRAWINGS

UTILITY C2



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SCALE: 1"= 50'

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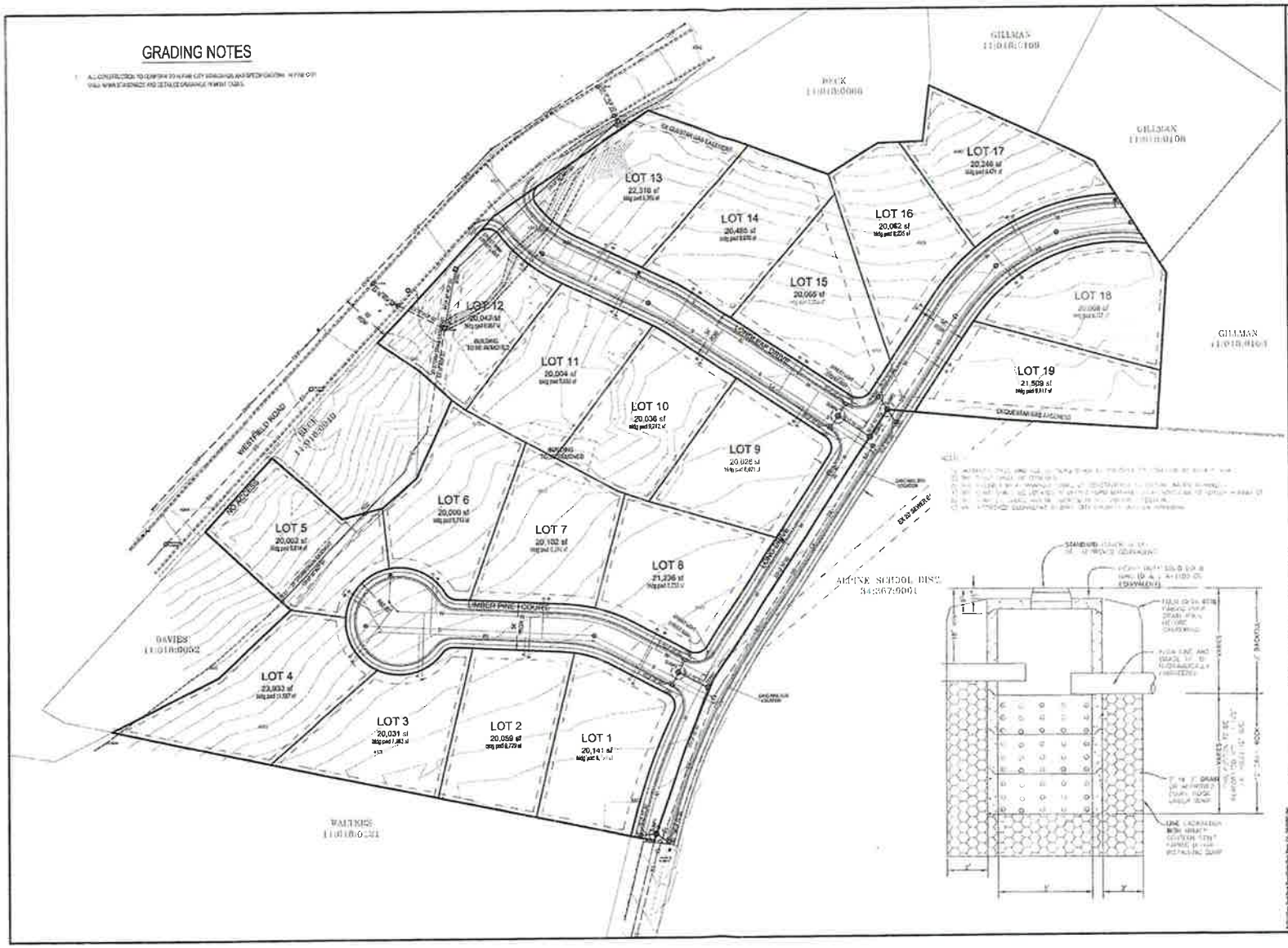
BECK PINES

PRELIMINARY CONSTRUCTION DRAWINGS

SHEET NAME	SHEET NUMBER
SEWER PLAN	*C3*

GRADING NOTES

1. ALL CONSTRUCTION TO CONFORM TO ALPINE CITY STANDARDS AND SPECIFICATIONS. REFER TO SITE UTILITY DRAWINGS AND DETAILS FOR DRAINAGE PIPING DETAILS.



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SCALE: 1"= 50'

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office (801) 492-1277
cell (801) 616-1677

NO.	DATE	DESCRIPTION
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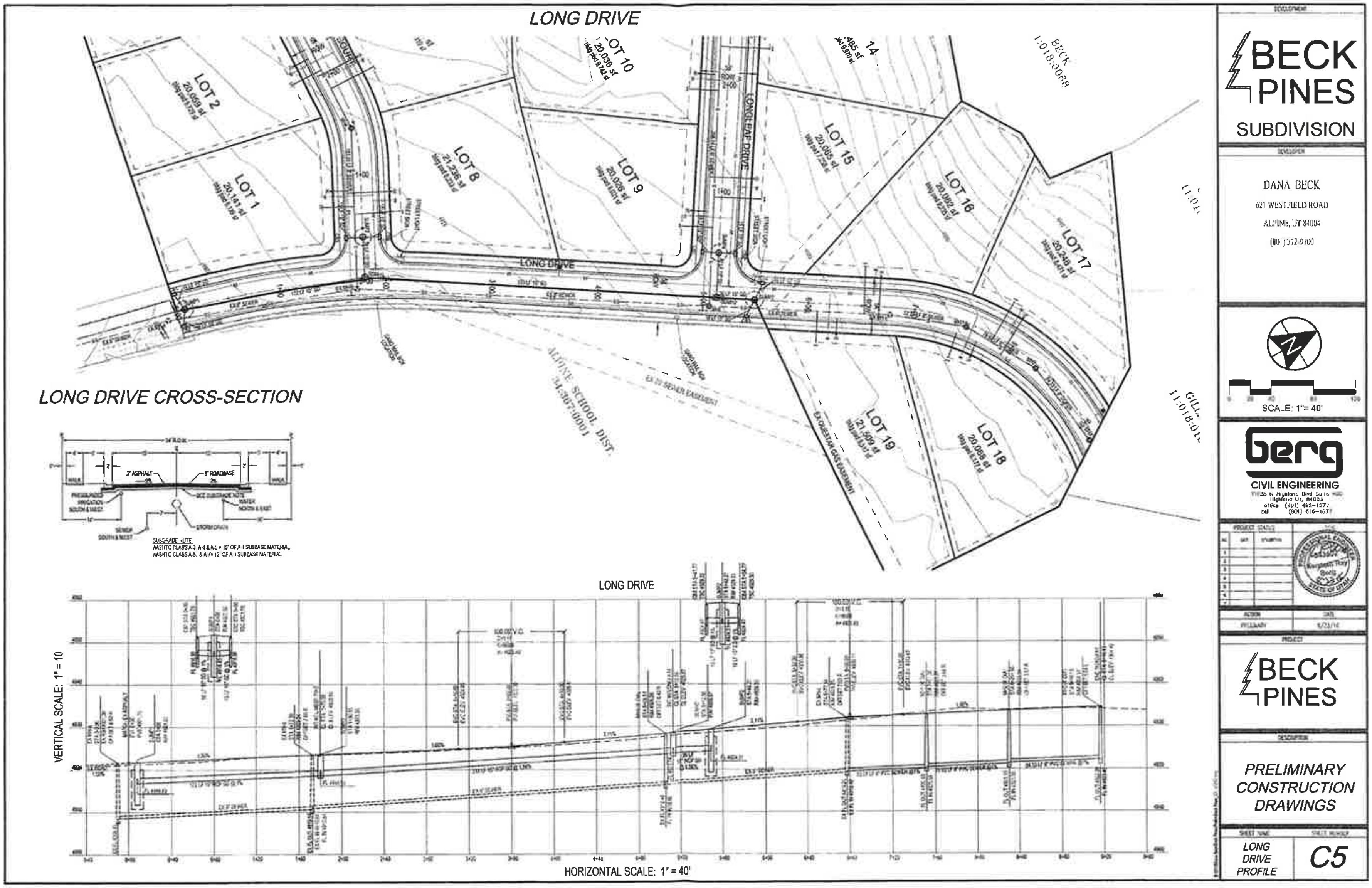
PRELIMINARY — 6/21/16

BECK PINES

PRELIMINARY CONSTRUCTION DRAWINGS

SHEET NAME	SHEET NUMBER
GRADING & DRAINAGE	*C4*


LONG DRIVE
LOT 1
20,141 sf
LOT 2
20,059 sf
LOT 8
21,236 sf
LOT 9
20,026 sf
LOT 10
20,038 sf
LOT 15
20,065 sf
LOT 16
20,062 sf
LOT 17
20,246 sf
LOT 18
20,068 sf
LOT 19
21,509 sf
LONGLEAF DRIVE
LONG DRIVE
ALPINE SCHOOL DIST.
BECK
1:018:0068
EX QUESTAR GAS EASEMENT
LONG DRIVE CROSS-SECTION
3" ASPHALT
8" ROADBASE
SUBGRADE NOTE
LONG DRIVE
VERTICAL SCALE: 1" = 10
HORIZONTAL SCALE: 1" = 40'
BECK PINES
SUBDIVISION
DANA BECK
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(801) 372-9700
SCALE: 1"= 40'
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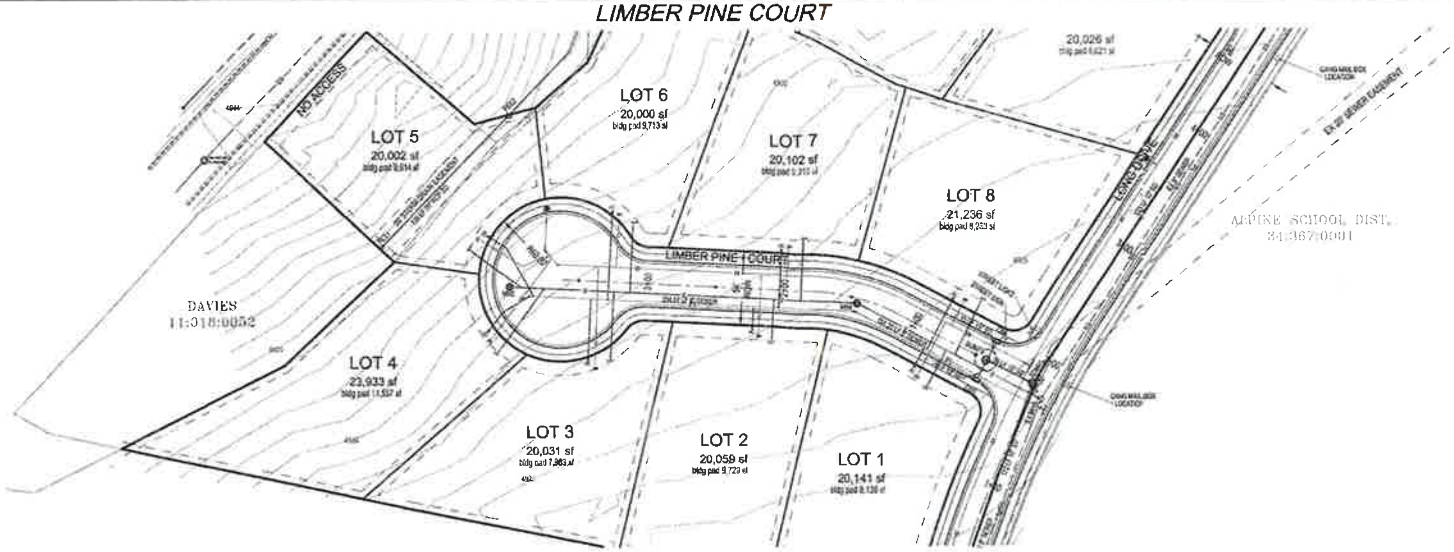
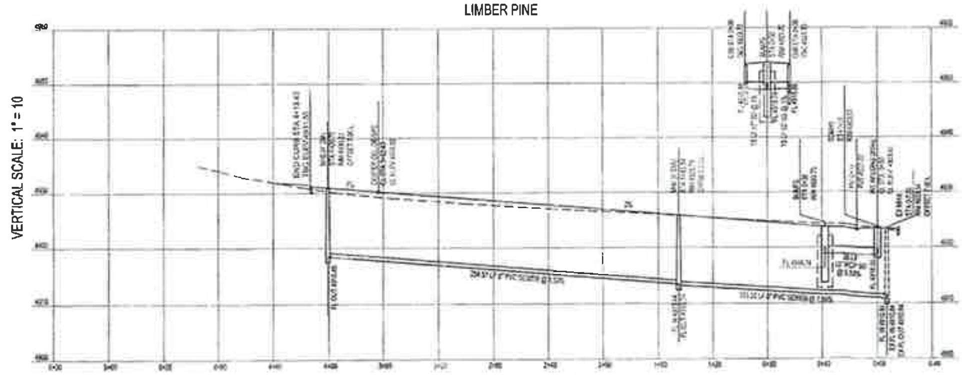
BECK PINES
PRELIMINARY
CONSTRUCTION
DRAWINGS
LONG
DRIVE
PROFILE
C5

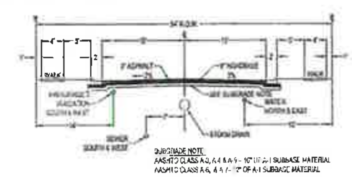
LIMBER PINE COURT



LIMBER PINE



LIMBER PINE COURT CROSS-SECTION



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SCALE: 1" = 40'

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CIVIL ENGINEERING

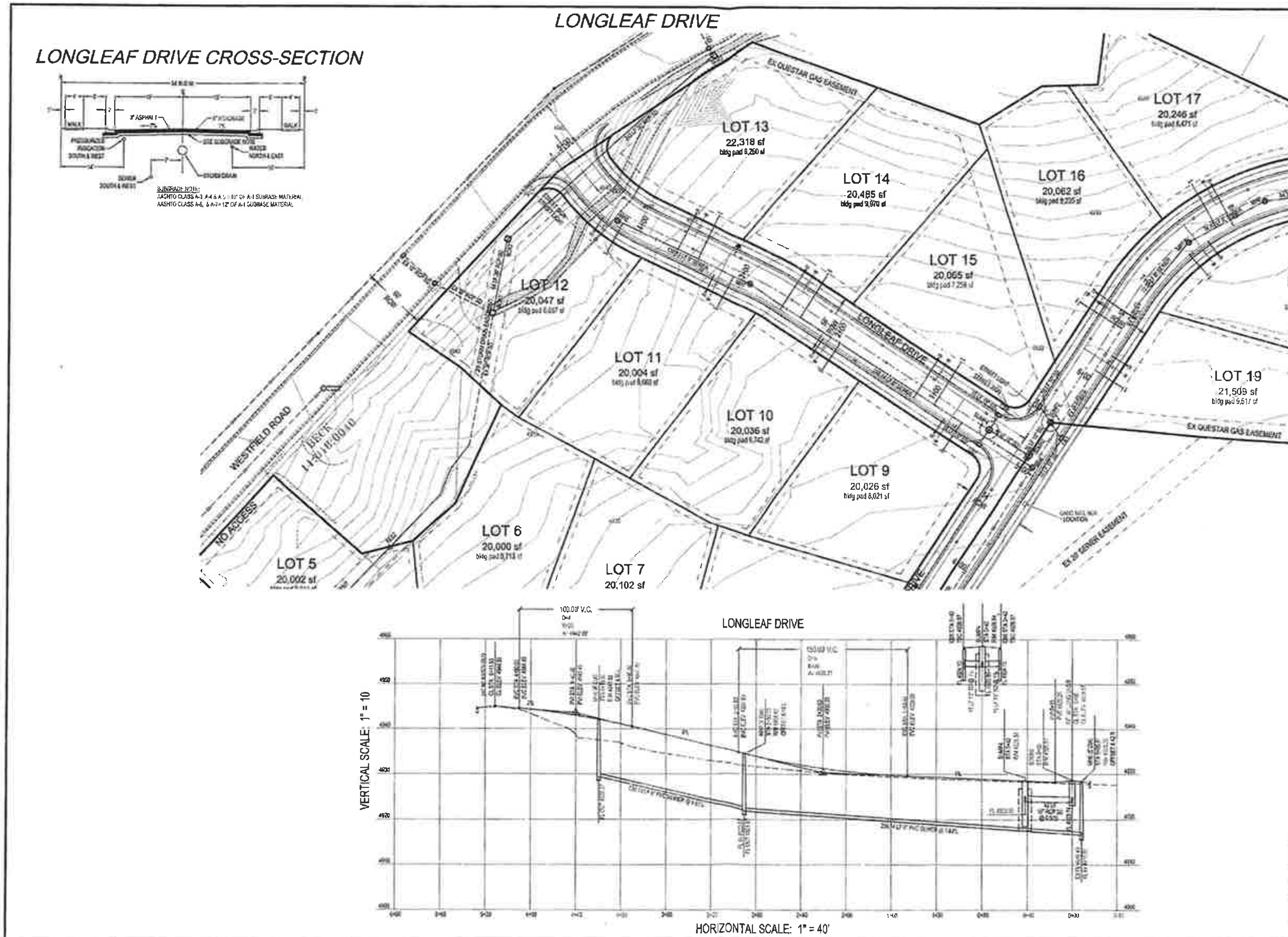
PRELIMINARY

BECK PINES

PRELIMINARY CONSTRUCTION DRAWINGS

LIMBER PINE COURT PROFILE

C6



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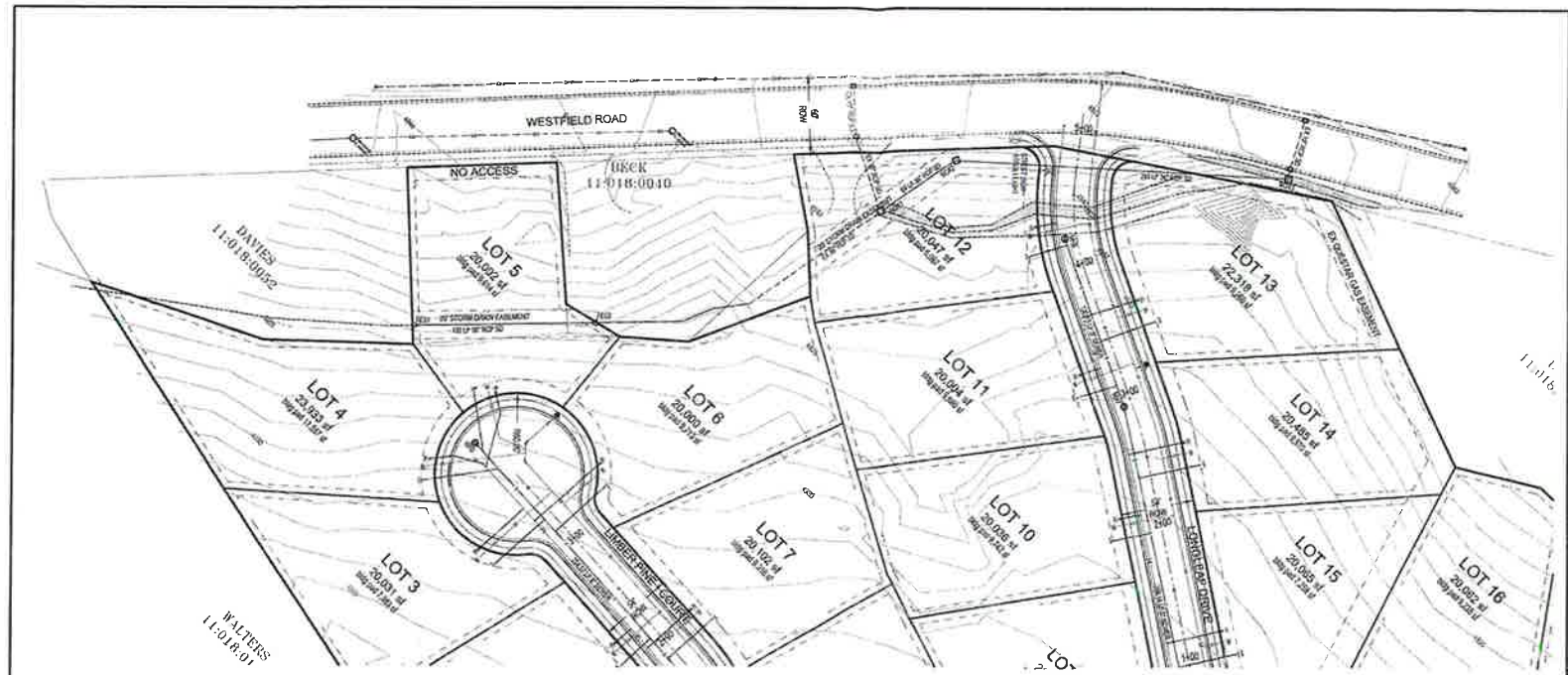
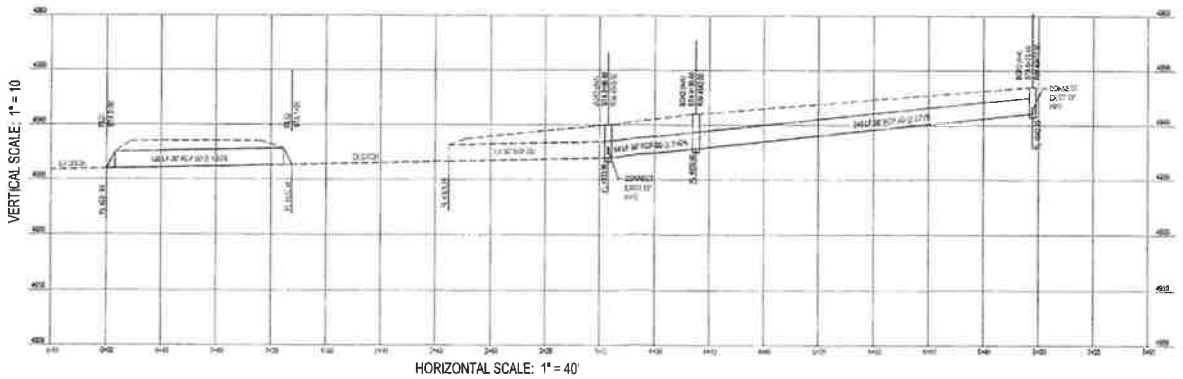
PRELIMINARY CONSTRUCTION DRAWINGS

LONGLEAF DRIVE PROFILE

C7





BECK PINES

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SCALE: 1"= 40'

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NO.	DATE	DESCRIPTION
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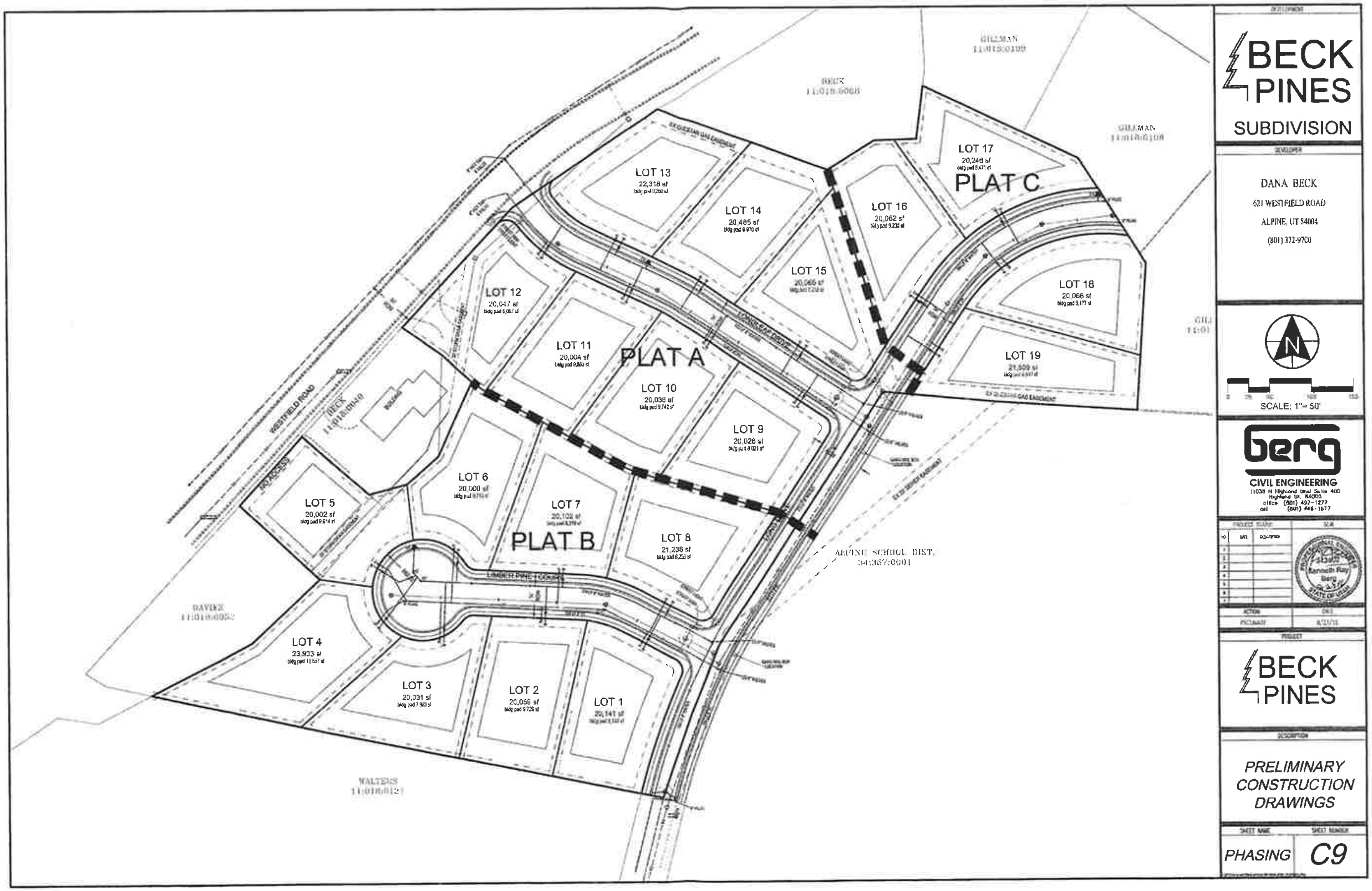
ACTION	DATE
PRELIMINARY	6/23/16

BECK PINES

PRELIMINARY CONSTRUCTION DRAWINGS

SHEET NAME	SHEET NUMBER
DITCH PROFILE	C8


LOT 1
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LOT 9
20,026 sf
LOT 10
20,036 sf
LOT 11
20,004 sf
LOT 12
20,047 sf
LOT 13
22,318 sf
LOT 14
20,485 sf
LOT 15
20,060 sf
LOT 16
20,062 sf
LOT 17
20,246 sf
LOT 18
20,066 sf
LOT 19
21,509 sf
PLAT A
PLAT B
PLAT C
WESTFIELD ROAD
NO ACCESS
GILLMAN
BECK
DAVIES
WALTERS
ALPINE SCHOOL DIST.
SCALE: 1"= 50'
BECK PINES
SUBDIVISION
DANA BECK
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berg
CIVIL ENGINEERING
BECK PINES
PRELIMINARY CONSTRUCTION DRAWINGS
PHASING
C9

CMT ENGINEERING LABORATORIES

Geotechnical Engineering Investigation
Dana Beck Subdivision
575 Westfield Road
Alpine, UT

PREPARED FOR:

Ken Berg
Berg Civil Engineering
11038 N. Highland Blvd., Suite 400
Highland, Utah 84003

PREPARED BY:

CMT Engineering Laboratories

CMT Project No. 8852

August 24, 2016

CMT ENGINEERING LABORATORIES

August 24, 2016

Ken Berg
Berg Civil Engineering
11038 N. Highland Blvd., Suite 400
Highland, Utah 84003

Subject: Geotechnical Engineering Investigation
Dana Beck Subdivision
575 Westfield Road
Alpine, Utah
CMT Engineering Project Number 8852

Mr. Berg:

Submitted herewith is the report of our geotechnical engineering investigation for the subject site. This report contains the results of our findings and an engineering interpretation of the results with respect to the available project characteristics. It also contains recommendations to aid in the design and construction of the earth related phases of this project.

On August 12, 2016, a CMT Engineering Laboratories (CMT) geologist was on-site and supervised the excavation of five test pits extending approximately 10 feet below the existing grade. Soil samples were obtained during the field operations and were then transported to our laboratory for further testing.

Based on the findings of the subsurface investigation, the natural soils consist of CLAY (CL), SAND (SC, SP-SC, SM), and GRAVEL (GM) layers extending to the bottom of the test pits. Groundwater was not encountered in the test pits. Some of the natural soils exhibited a pinhole texture, which typically indicates a moisture sensitive (collapsible) soil. Conventional spread and continuous footings may be utilized to support proposed single family residences provided the recommendations in this report are followed. A detailed discussion of design and construction criteria is presented in this report.

We appreciate the opportunity to work with you on this project. If we can be of further assistance or if you have any questions regarding this project, please do not hesitate to contact us at (801) 492-4132.

Sincerely,
CMT Engineering Laboratories

LICENSED PROFESSIONAL ENGINEER # 374995 JEFFREY J. EGBERT 8/24/16 STATE OF UTAH

Jeffrey J. Egbert, P.E., LEED A.P.
Senior Geotechnical Engineer

William G. Turner, P.E.
Senior Geotechnical Engineer

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CMT ENGINEERING LABORATORIES

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APPENDIX

LOGAN OFFICE: 2005 NORTH 600 WEST, SUITE A, LOGAN, UTAH 84321 • TEL: (435) 753-6815 • FAX: (435) 787-4983
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1.0 INTRODUCTION

CMT Engineering Laboratories (CMT) was retained by Mr. Ken Berg to conduct a geotechnical engineering subsurface investigation for a proposed single family residential subdivision to be developed on approximately 10.5 acres of undeveloped land on the southeast side of Westfield Road in Alpine, Utah (See **Figures 1 and 2** in the Appendix).

The purpose of this study was to assess the subsurface soil conditions at the site and provide recommendations for design and construction of single family residences. Our scope of work included supervising the excavation of five test pits at the site, the collection of samples of the subsurface soils from the test pits, performing laboratory tests, the evaluation of field and laboratory test data, and the preparation of this report which summarizes our findings.

Significant aspects regarding site development

- Single family residences are planned for the site. We project that residences will likely be two levels of wood frame construction above grade with possibly one level of reinforced concrete below grade.
- We project that continuous wall footings will have loads which will not exceed 4 kips per lineal foot and spread footings will have loads that will not exceed 40 kips. Uniform floor loads are projected to not exceed 150 pounds per square foot. If the loading conditions are different than we have projected, please notify us so that any appropriate modifications to our conclusions and recommendations contained herein may be made.

2.0 EXECUTIVE SUMMARY

The following is a brief summary of our findings and conclusions:

1. At the locations of the test pits we encountered natural clayey silty soils with roots and organics (topsoil) on the surface extending about 12 to 24 inches in depth. The natural soils consisted of CLAY (CL), SAND (SC, SP-SC, SM), and GRAVEL (GM) layers extending to the bottom of the test pits.
2. Groundwater was not encountered within the depths explored.
3. Some of the subsurface soils exhibited a pinhole texture which is a typical visual indicator of a potentially moisture sensitive (collapsible) soil. Laboratory testing indicated collapse amounts of about 1.5%, which is considered slight to moderate in collapse potention. We recommend that footing excavations be observed by a CMT geotechnical engineer to assess the presence of moisture sensitive soils.

4. Due to the collapse potential of the natural clay soils we recommend that all footings bear on a minimum of 18 inches of natural sand or gravel soils, or entirely on a minimum of 18 inches of compacted structural fill placed on undisturbed natural soils. All footings excavations should be observed by a CMT engineer to assess the presence of collapsible soils. Footings may be designed using a maximum allowable bearing pressure of 1,500 psf.

3.0 DESCRIPTION OF PROPOSED CONSTRUCTION

The proposed construction will be single family residences which we project will have up to two levels of wood frame construction above grade and possibly one level of reinforced concrete below grade (basement). We project that wall loads will not exceed 4,000 pounds per linear foot, column loads will not exceed 40,000 pounds, and uniform floor loads will not exceed 150 pounds per square foot.

We anticipate that utilities will be installed to service the proposed residences and that asphalt concrete paved local streets will be constructed into the site to access the residences.

4.0 SITE CONDITIONS AND FIELD INVESTIGATION

The general geology, as well as the existing surface and subsurface conditions associated with the subject property are presented in this section.

4.1 General Geology

The subject site is located in the northeast portion of Utah Valley in north-central Utah at an approximate elevation between 4,926 and 4,952 feet above sea level. Utah Valley is a deep, sediment-filled basin that is part of the Basin and Range Physiographic Province. The valley was formed by extensional tectonic processes during the Tertiary and Quaternary geologic time periods. The valley is bordered by the Wasatch Mountain Range on the east and Lake Mountain and West Mountain on the west. Utah Valley is located within the Intermountain Seismic Belt, a zone of active tectonism and seismic activity extending from southwestern Montana to southwestern Utah. The active (evidence of movement within the past 10,000 years) Wasatch Fault Zone is part of the Intermountain Seismic Belt and extends from southeastern Idaho to central Utah along the western base of the Wasatch Mountain Range.

Much of northwestern Utah, including Utah Valley, was also previously covered by the Pleistocene age Lake Bonneville. Utah Lake, which currently occupies much of the western portion of the valley, is a remnant of this ancient fresh water lake. Lake Bonneville reached a high-stand elevation of approximately 5,092 feet above sea level at between 18,500 and

17,400 years ago. Approximately 17,400 years ago, the lake breached its basin in southeastern Idaho and dropped by almost 300 feet relatively fast as water drained into the Snake River. Following this catastrophic release, the lake level continued to drop slowly over time, primarily driven by drier climatic conditions, until reaching the current levels of Utah Lake and the larger Great Salt Lake to the north. Shoreline terraces formed at the high-stand elevation of the lake and several subsequent lower lake levels are visible in places on the mountain slopes surrounding the valley. Much of the sediment within Utah Valley was deposited as lacustrine sediments during both the transgressive (rise) and regressive (fall) phases of Lake Bonneville.

The geology of the USGS 7.5 Lehi, Utah Quadrangle, including the location of the subject site, has been mapped by Biek[1]. The surficial geology at the location of the subject site and adjacent properties is mapped as "Alluvial deposits related to the Provo phase of the Bonneville lake cycle" (Map Unit Qalp) dated to be upper Pleistocene. Unit Qalp is described on the referenced map as "Moderately to well-sorted sand, silt, and pebble gravel deposited principally in river channels; coarsens upgradient and includes boulder-size clasts in the upper reaches of Dry Creek; locally includes veneer of fine-grained eolian sand and silt, and may include loess veneer; large deposits in south-central part of quadrangle are mostly fluvial topset beds that grade into Provo-level deltaic deposits (Qldp) derived from American Fork and Dry Creek Canyons; generally 5 to 20 feet (2-6 m) thick." No fill has been mapped at the location of the site on the geologic map.

No surface fault traces are shown on the referenced geologic map crossing or projecting toward the subject site. No landslide deposits or features, including lateral spread deposits, are mapped on or adjacent to the site. The site is not located within a known or mapped potential debris flow, stream flooding, or rock-fall hazard area

.4.2 Site Conditions

The site is an agricultural property predominately composed of fields but there are two structures (barns/stables) on the west central portion of the site. The surface gradient slopes downward to the west and south. Based upon aerial photos dating back to the early 1990's which are readily available on the internet, it appears the site has been essentially as it is now since at least that time. The site is bound on the northwest by Westfield Road, on the southwest and north by residences, on the south by a cultivated field, and on the east by a school (see **Figures 1 and 2** in the Appendix).

[1]Biek, R.F., 2005, Geologic Map of the Lehi Quadrangle and Part of the Timpanogos Cave Quadrangle, Salt Lake and Utah Counties, Utah; Utah Geological Survey Map 210, Scale 1:24,000.

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4.3 Field Investigation

The subsurface soil conditions were investigated by excavating five test pits on the site at the approximate locations shown on **Figure 2** in the Appendix. The test pits extended to depths of approximately 10 feet below the existing grades. The subsurface soils encountered in the test pits were described in general accordance with ASTM 2488 and samples of the exposed soils were collected from those brought up by the backhoe bucket from varying depths. The subsurface conditions encountered in the field investigation are discussed in Section 4.4. Logs of the test pits, including a description of all soil strata encountered are presented on **Figures 3 through 7** in the Appendix. Sampling information and other pertinent data and observations are also included on the logs. In addition, a Key to Symbols sheet defining the terms and symbols used on the logs, is provided as **Figure 8** in the Appendix.

When backfilling the test pits only minimal effort was made to compact the backfill and no compaction testing was performed. Thus, settlement of the backfill in the test pits over time should be anticipated.

4.4 Sub-Surface Soils

At the locations of the test pits we encountered natural clayey silty soils with roots and organic material (topsoil) on the surface extending about 12 to 24 inches in depth. Below the topsoil we observed layers of CLAY (CL) and SAND (SC, SP-SC, SM) extending to the bottom of test pits TP-1 through TP-4. We estimated the clay layers to have stiff consistency and the sand layers to have medium dense to dense relative density. In test pit TP-5 we encountered GRAVEL (GM) below the surface to about 4 feet in depth followed by a layer of clay to about 7 feet where another layer of gravel was encountered extending to the bottom of TP-5. We estimated the gravel to have a dense relative density. The clay layer in TP-5 exhibited a pinhole texture. Pinholes are a typical visual indicator of a potentially moisture sensitive (collapsible) soils. These soils typically exhibit adequate dry strength, but when wetted lose strength and experience additional settlement (collapse). Samples of the natural clay soils tested in our laboratory exhibited moisture sensitivity in the form of both collapse and expansion. The expansion amount was less than 1% and considered negligible, but the collapse amount was about 1.5% which warrants some precaution.

For a detailed description of the soil profiles encountered in this investigation see the Test Pit Logs (**Figures 3 through 7**) in the Appendix. See **Figure 2** for approximate test pit locations.

4.5 Ground Water

Groundwater was not encountered in the test pits within the depths explored. Groundwater levels can fluctuate as much as 1.5 to 2 feet seasonally. Numerous other factors such as heavy

precipitation, irrigation of neighboring land, and other unforeseen factors, may also influence ground water elevations at the site. The detailed evaluation of these and other factors, which may be responsible for ground water fluctuations, is beyond the scope of this study.

4.6 Site Subsurface Variations

Based on the results of the subsurface explorations and our experience, variations in the continuity and nature of subsurface conditions should be anticipated. Due to the heterogeneous characteristics of natural soils, care should be taken in interpolating or extrapolating subsurface conditions between or beyond the exploratory locations. Seasonal fluctuations in ground water conditions may also occur.

Also, once the subsurface explorations were completed the test pits were backfilled with the excavated soils but little effort was made to compact these soils. Settlement of the backfill in the test pits over time should be anticipated and caution should be exercised when constructing over these locations.

4.7 Seismic Setting

4.7.1 Faulting

As stated in section 4.1 General Geology of this report, no faults are mapped crossing or projecting toward the subject site. The nearest mapped fault trace, about 2 miles east, is the Provo Segment of the Wasatch Fault.

4.7.2 Liquefaction

The project site is within an area mapped by Utah County as having "Very Low" liquefaction potential. Liquefaction of a soil is defined as the condition when saturated, loose, cohesionless, (sand-type) soils have a sudden, large decrease in their ability to support loads. This is because of excessive pore water pressure which develops during a seismic event. Cohesive (clay type) soils typically do not liquefy during a seismic event.

A special liquefaction study was not performed as part of this investigation. During our site specific investigation we did not encounter saturated soils. In our opinion the subsurface conditions we encountered within the depths we explored support the mapped "Very Low" liquefaction potential designation.

4.7.4 Seismic Design Category

The Seismic Design Categories in the International Residential Code (IRC 2015) are based upon the subsurface soil conditions in the upper 100 feet of the subsurface soil profile and on

the guidelines of the International Building Code (IBC 2015). We project that the subsurface soils at the site, in the upper 100 feet of the soil profile, would have properties consistent with IBC Site Classification D.

Using Site Classification D, $S_{DS} = 0.837$, and the **Seismic Design Category** is D_2.

5.0 LABORATORY TESTING

5.1 Laboratory Examination

Selected samples of the subsurface soils were subjected to various laboratory tests to assess pertinent engineering properties. Chart 1 indicates typical laboratory tests, which may be applicable to some of the samples retrieved from the site.

Chart 1 Laboratory Soil Testing

Test Conducted	Specification	To Determine
Moisture Content	ASTM D 2216	% moisture representative of field conditions
Dry Density	ASTM D 2937	Dry unit weight representative of field conditions.
Atterberg Limits	ASTM D 4318	Plasticity and workability
One Dimension Consolidation	ASTM D-2435	Consolidation properties

Laboratory test results are presented on the test pit logs, on **Figures 9 and 10, Consolidation,** and on **Figure 11, Lab Summary**. Note that on the graph of the consolidation tests, when water was added to the samples during the tests, the sample from TP-2 showed about 1.5% collapse while the sample from TP-4 swelled about 0.5%.

5.2 Engineering Analysis and Report

Data obtained from the exploratory test pits and the laboratory-testing program was evaluated and used in the geotechnical analyses, which included the preparation of this report which presents our findings and recommendations.

6.0 FOUNDATION RECOMMENDATIONS

The following recommendations have been developed on the basis of the previously described project characteristics, the subsurface conditions observed in the field, the laboratory test data, as well as common engineering practice.

6.1 Foundation Recommendations

Due to the slight to moderate collapse potential of the natural clay soils we recommend that all footings be established on undisturbed, natural sand or gravel soils which extend at least 18 inches below bottom of footings or on a minimum of 18 inches of compacted structural/engineered fill placed on suitable undisturbed, natural soils. All footing excavations should be observed by a CMT engineer to assess the presence of potentially collapsible soils. Footings may be designed for a maximum allowable bearing pressure of 1,500 psf.

The following are also recommended:

- All topsoil, organic soils, undocumented fill, loose or disturbed soils, or any other deleterious materials should be removed from building footprints prior to the placement of foundations, floor slabs, or structural fill.
- Footing areas should be excavated using a cutting bar or other smooth-bladed equipment to minimize disturbance to the underlying soils.
- Excavation bottoms should be examined by a CMT geotechnical engineer to confirm that suitable bearing materials soils have been exposed.
- All imported structural fill should be placed and compacted in accordance to Section 10.0.
- Continuous footing width should be maintained at a minimum of 20 inches.
- Spot footings should be a minimum of 30 inches in width.
- Exterior footings should be placed a minimum of 30 inches below final grade and interior footings shall be placed a minimum of 16 inches below grade.

The allowable bearing pressure may be increased by 1/3 for temporary loads such as wind and seismic forces.

6.2 Estimated Settlement

Foundations designed and constructed in accordance with our recommendations could experience some settlement however, we project that settlement of footings founded as recommended above would be less than 1 inch. We expect approximately 75 percent of initial settlement to take place during construction.

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As previously indicated, additional settlement could occur if the subsurface natural moisture sensitive soils are allowed to become wetted. The recommendations given in Section 9.0 of this report should be carefully followed.

7.0 LATERAL EARTH PRESSURES

The following lateral soil pressures should be used for design:

1. For the active case, an equivalent fluid pressure of 40 pounds per cubic foot (pcf) for the natural soils. That is when the structure is allowed to yield, i.e. move away from the soil. This requires a minimum movement or rotation at the top of the wall of 0.001H, where "H" is the height of the wall (bottom of footing to top of wall).
2. For the at rest case, 55 pcf for the natural soils. This case occurs when the wall is not allowed to yield.
3. For the passive case, 360 pcf for the natural soils. In this situation, the wall moves into the soil.
4. For the seismic active case, 85 pcf for the natural soils.

The given values for design are based on the use of native clay and sand soils as back fill. If other soils are used, we recommend that this office review the materials and determine if the above design earth pressures are still appropriate.

8.0 FLOOR SLABS

To aid in distributing the floor loads we recommend that all slabs, including exterior flatwork, be underlain by a minimum of 4 inches of granular base. In areas of the site where the natural moisture sensitive soils predominate, we recommend that floor slabs also be underlain by a minimum of 18 inches of structural fill. Consideration should also be given to over excavating below exterior concrete flatwork as well.

To help control normal shrinkage and stress cracking, the floor slabs should have the following features:

1. Adequate reinforcement for the anticipated floor loads with the reinforcement continuous through interior floor joints;

2. Frequent crack control joints; and

3. Non-rigid attachment of the slabs to foundation walls and bearing slabs.

9.0 DRAINAGE RECOMMENDATIONS

9.1 Subsurface Recommendations

The International Residential Code recommends that drains be provided around "foundations that retain earth and enclose habitable or usable space below grade." An exception is allowed if the foundation is installed on "well drained" ground consisting of Group 1 soils. These soils include those defined by the Unified Soil Classification System as GW, GP, GM, SW, SP, SM. Some of the natural soils are Group 1 soils, but some are not.

9.2 Surface Recommendations

Some of the subsurface soil layers exhibit visual indicators of potentially moisture sensitive (collapsible) soil. Laboratory testing indicated slight to moderate collapse amounts (about 1 to 1.5%). It is critical to the long term performance of foundations and floor slabs that water not be allowed to collect near the foundation walls and infiltrate into the underlying soils. We recommend the following:

1. All areas around each residence should be sloped to provide drainage away from the foundations. We recommend a minimum slope of 6 inches in the first 10 feet away from the structure. This slope should be maintained throughout the lifetime of the homes.

2. All roof drainage should be collected in rain gutters with downspouts designed to discharge at least 10 feet from the foundation walls or well beyond the backfill limits, whichever is greater.

3. Adequate compaction of the foundation backfill should be provided. We suggest a minimum of 90% of the maximum laboratory density as determined by ASTM D-1557. Water consolidation methods should not be used under any circumstances.

4. Sprinklers should be aimed away and kept at least 4 feet from the foundation walls. The sprinkling systems should be designed with proper drainage and be well-maintained. Over watering should be avoided.

5. Other precautions may become evident during construction.

10.0 SITE PREPARATION AND GRADING

10.1 General Site Grading

All deleterious materials should be stripped from the site prior to commencement of construction activities. This includes undocumented fill, loose and disturbed soils, topsoil, vegetation, etc. Based upon the conditions observed in the test pits there is topsoil on the surface of the site which we estimated to be about 12 to 24 inches in thickness. However, when stripping and grubbing, topsoil should be distinguished by the apparent organic content and not solely by color, thus we project that stripping and grubbing to a depth of 4 inches will be adequate for the majority of the roots, unless there are trees present. The site should be examined by a qualified geotechnical engineer to assure that all deleterious materials have been removed from beneath the proposed residences.

The exploratory test pits dug as part of our investigation will likely contain loose and disturbed soils and possibly vegetation. If these conditions are encountered in excavations, the loose and disturbed soils should be removed and replaced with structural fill.

Fill placed over large areas to raise overall site grades can induce settlements in the underlying natural soils. If more than 3 feet of site grading fill is anticipated over the existing surface of the site where the clay soils predominated, we should be notified to assess potential settlements and provide additional recommendations as needed. These recommendations may include placement of the site grading fill far in advance to allow potential settlements to occur prior to construction.

10.2 Temporary Excavations

For temporary excavations less than 5 feet deep, either in the native soils or structural fill, slopes should not be steeper that 0.5:1 (horizontal to vertical). Excavations extending up to 10 feet in depth into the natural soils should not be made steeper than 1:1 (horizontal:vertical). If loose sandy soils or groundwater are encountered, flatter slopes, shoring, bracing, and/or dewatering may be required for all conditions. All excavations should be made following OSHA safety guideline.

10.3 Fill Material

The natural sand and gravel soils could possibly be used as fill below footings and all the natural soils could possibly be utilized as site grading fill, but we recommend that the natural clay soils not be used as fill below footings or in utility trenches. The following types of fill are recommended for their specific applications:

10.3.1 Structural Fill:

Well-graded granular soils free of organics, debris, or other deleterious materials are recommended for use as structural fill at this site. We recommend a well-graded sandy gravel material with 25%, and no more than 35%, passing the #200 sieve and no particles greater than 4 inches in maximum dimension.

10.3.2 Non-Structural Fill:

The natural soils may be used as site grading fill and as fill in non-load bearing areas also. The natural clayey soils will be harder to work with due to difficulties controlling the moisture content. All fill material should be approved by the engineer prior to placement.

10.4 Trenches

Most municipalities are requiring that utility trench backfill be composed of granular material with limited fines. Structural fill as described above will meet these specifications. All trench backfill should be compacted to the requirements set forth in **Section 10.5.**

10.5 Fill Placement and Compaction

The various types of compaction equipment available have their limitations as to the maximum lift thickness that can be compacted. For example, hand operated equipment is limited to lifts of about 4 inches and most "trench compactors" have a maximum, consistent compaction depth of about 6 inches. Large rollers, depending on soil and moisture conditions can achieve compaction at 8 to 12 inches. The full thickness of each lift should be compacted to at least the following percentages of the maximum dry density as determined by ASTM D-1557:

1. Compacted fill, supporting foundations.	95%
2. Compacted fill, below floor slabs	95%
3. Backfill of trenches	
a. Below foundations	95%
b. Below floor slabs	95%
c. Below pavements	95%
d. Others	90%

Field density tests should be performed on each lift as necessary to verify that compaction is being achieved. As a minimum, 33% of all spot footings, and one test for every 50 lineal feet of continuous wall footings, shall be tested for each lift.

10.6 Stabilization

The natural soils could be susceptible to rutting and pumping. The likelihood of disturbance or rutting and/or pumping of the existing natural soils is a function of the load applied to the surface, as well as the frequency of the load. Consequently, rutting and pumping can be minimized by avoiding concentrated traffic, minimizing the load applied to the surface by using lighter equipment and/or partial loads, by working in drier times of the year, or by providing a working surface for the equipment. Rubber-tired equipment particularly, because of high pressures, promotes instability in wet, soft soils.

If rutting or pumping occurs, traffic should be stopped and the disturbed soils should be removed and replaced with granular material. Typically a minimum of 18 inches of the disturbed soils must be removed to be effective. However, deeper removal is sometimes required.

The most effective granular material for stabilization is an angular, well-graded gravel such as a pit run or crushed rock with a maximum size of about four inches. We suggest that the initial lift be approximately 12 inches thick and be compacted with a static roller-type compactor. The more angular and coarse the material, the thinner the lift that will be required. We recommend that the fines content (percent passing the no. 200 sieve) be less than 15%, the liquid limit be less than 35, and the plasticity index be less than 15.

Often the amount of granular material can be reduced with the use of a geotextile fabric such as Mirafi RS280i or equivalent. Its use will also help avoid the mixing of the subgrade soils with the granular material. After the excavation of the disturbed soils, the fabric should be spread across the bottom of the excavation and up the sides a minimum of 18 inches. Otherwise, it should be placed in accordance with the manufacturer's recommendation, including proper overlaps. The granular material can then be placed over the fabric in compacted lifts as described above.

11.0 PAVEMENTS

The natural clay soils are projected to exhibit poor pavement support characteristics when saturated or nearly saturated, and these soils have been found to be moisture sensitive. We anticipate light traffic volumes and that vehicle types will be typical for residential construction, except during the build out phase when heavy trucks will be much more frequent. Our pavement design is based upon an estimated California Bearing Ratio (CBR) of 3 for the natural near surface clay soils.

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Table 1: Pavement Design

Material	Pavement Section Thickness (in)
Asphalt	3
Road-Base	6
Sub base	8
Total Thickness	17

*Recommended due to the collapse potential

Untreated base course (UTBC) should conform to city or 1"-minus UDOT specifications for A–1-A/NP and have a CBR value greater than 70%. Material meeting our specification for structural fill can be used for sub base, however we recommend a fines content not exceeding 15% for sub base. Asphalt should conform to the standard city or UDOT specification.

The asphalt pavement should be compacted to 96% of the maximum density for the asphalt material.

12.0 QUALITY CONTROL

Our recommendations in this report are based on the assumption that adequate quality control testing and observations will be conducted by CMT during construction to verify compliance. This may include but not necessarily be limited to the following:

12.1 Field Observations

Observations should be completed during all phases of construction such as site preparation, foundation excavation, structural fill placement and concrete placement.

12.2 Fill Compaction

Compaction testing by CMT is required for all structural supporting fill materials. Maximum Dry Density (Proctor-ASTM 1557) tests should be requested by the contractor immediately after delivery of any granular fill materials. The maximum density information should then be used for field density tests on each lift as necessary to insure that the required compaction is being achieved.

12.3 Concrete Quality

We recommend that freshly mixed concrete be tested by CMT in accordance with ASTM designations.

12.4 Vibration Monitoring

Construction activities, particularly site grading and fill placement, can induce vibrations in existing structures adjacent to the site. Such vibrations can cause damage to adjacent buildings, depending on the building composition and underlying soils. It can be prudent to monitor vibrations from construction activities to maintain records that vibrations did not exceed a pre-defined threshold known to potentially cause damage. CMT can provide this monitoring if desired.

13.0 LIMITATIONS

The recommendations provided herein were developed by, evaluating the information obtained from the test pit and site investigation. The test pit data reflects the subsurface conditions only at the specific locations at the particular time designated on the test pit log. Soil and ground water conditions may differ from conditions encountered at the actual exploration locations. The nature and extent of any variation in the explorations may not become evident until during the course of construction. If variations do appear, it may become necessary to re-evaluate the recommendations of this report after we have observed the variation.

Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties, either expressed or implied.

We appreciate the opportunity to be of service to you on this project. If we can be of further assistance or if you have any questions regarding this project, please do not hesitate to contact us at (801) 492-4132. To schedule materials testing call (801) 381-5141.

14.0 REFERENCES

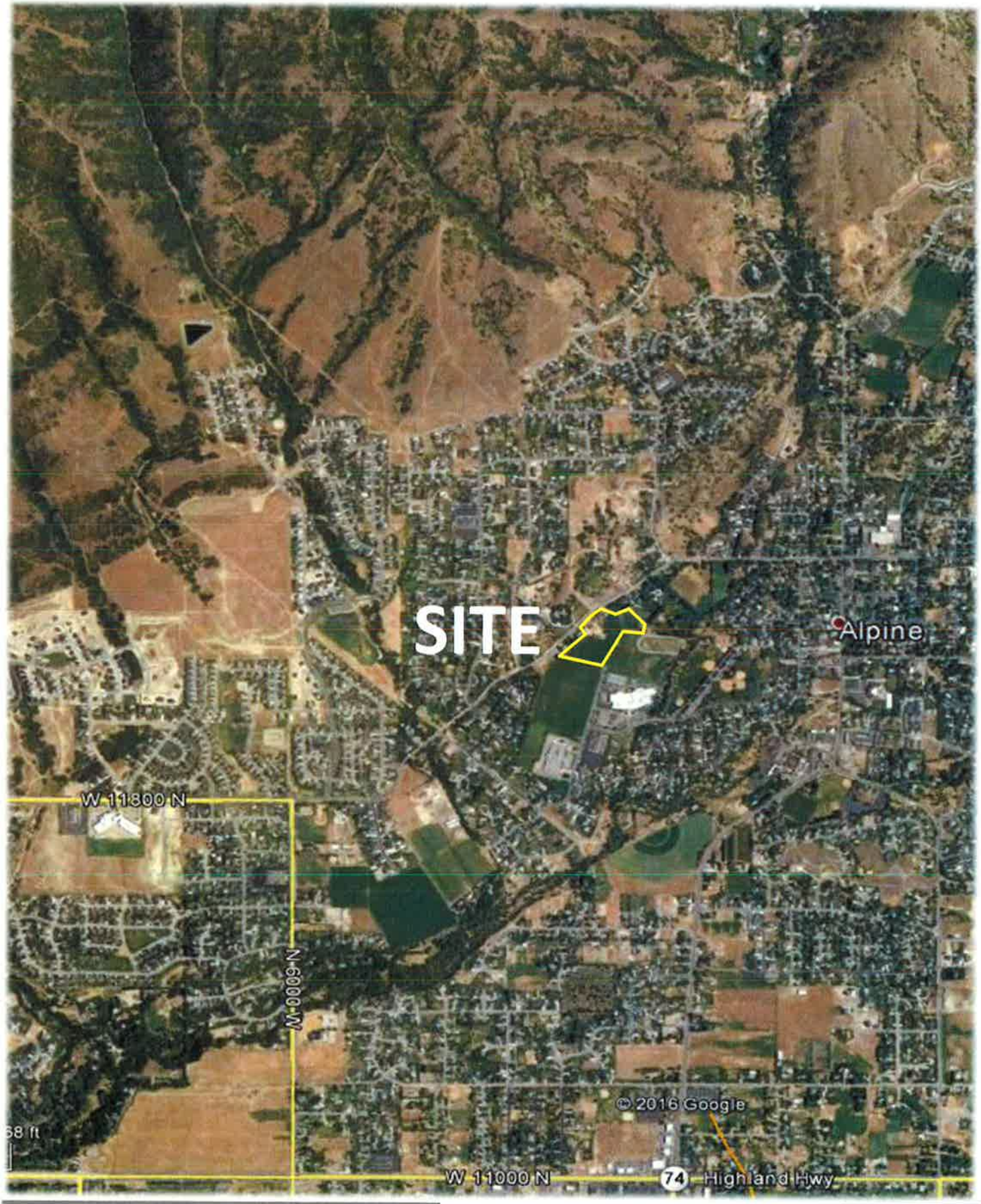
ASTM, American Society for Testing and Materials 2010

Utah County Hazards Map, http://utahcounty.maps.arcgis.com/apps/MapSeries/index.html

IRC, International Residential Code, 2012 Edition, International Conference of Building Officials, Whittier, CA.

IBC, International Building Code, 2012 Edition, International Conference of Building Officials, Whittier, CA.

Appendix



Dana Beck Subdivision

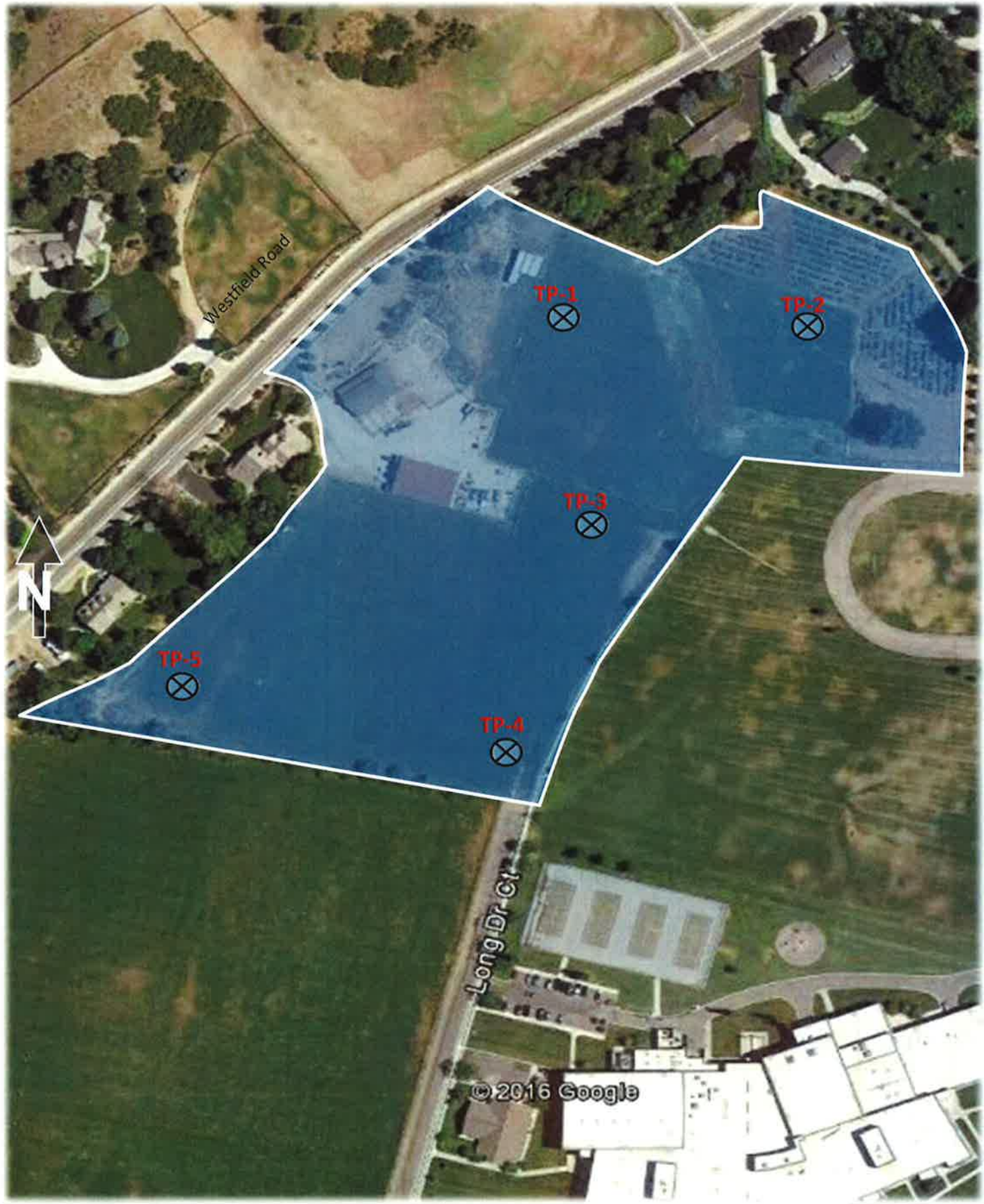
575 Westfield Road, Highland, UT

CMT ENGINEERING LABORATORIES

Vicinity Map

Date: 22-Aug-16
Job # 8852

Figure: 1



Dana Beck Subdivision

575 Westfield Road, Highland, UT

CMT ENGINEERING LABORATORIES

Site Map

Date: 22-Aug-16
Job # 8852

Figure: 2

Dana Beck Subdivision

Test Pit Log

TP-1

575 Westfield Road, Highland

Type: Mini-Excavator | Total Depth: 10 Feet | Date: 8/12/2016

Surface Elev. (approx): | Water Level: | Job #: 8852

Depth (ft.)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI	Dry Density
0		TOPSOIL: Brown sandy silt w/ gravel, organics, dry. Approximately 18 inches.										
2		Brown silty SAND (SM) w/ gravel. moist and medium dense		1	6.4	29	56	15				
4												
6		Brown clayey SAND (SC) w/ gravel moist and medium dense		2	10.1	23	51	25				
8		moist and medium dense		3								
10		End at 10 Feet										
12												
14												

Remarks: Groundwater wasn't encountered.

CMT ENGINEERING LABORATORIES

Excavated By:

Logged By: Mark Larsen

Figure: 3

Dana Beck Subdivision

Test Pit Log

TP-2

575 Westfield Road, Highland

Type: Mini-Excavator | Total Depth: 10 Feet | Date: 8/12/2016

Surface Elev. (approx): | Water Level: | Job #: 8852

Depth (ft.)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI	Dry Density
0		TOPSOIL: Brown clay w/ silt and organics, dry. Approximately 2 feet.										
2		Brown to lt brown lean CLAY (CL) w/ silt, trace gravel.										
		moist and stiff		4								
4												
6		moist and stiff		5	18.3				25	13	12	100.3
8												
		moist and stiff		6								
10		End at 10 Feet										
12												
14												

Remarks: Groundwater wasn't encountered.

CMT ENGINEERING LABORATORIES

Excavated By:

Logged By: Mark Larsen

Figure: 4

Dana Beck Subdivision

Test Pit Log

TP-3

575 Westfield Road, Highland

Type: Mini-Excavator | Total Depth: 10 Feet | Date: 8/12/2016

Surface Elev. (approx): | Water Level: | Job #: 8852

Depth (ft.)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI	Dry Density
0		TOPSOIL: Brown clay w/ silt and organics, dry. Approximately 18 inches.										
2		Brown lean CLAY (CL) w/ silt, trace gravel.										
		moist and stiff		7								
4												
6		Sandy at 6 feet.										
		moist and stiff		8	17.0	2	30	68				
		Gray poorly graded SAND (SP-SC) w/ gravel, trace clay.										
8												
		moist and dense		9	5.1	44	47	9				
10		End at 10 Feet										
12												
14												

Remarks: Groundwater wasn't encountered.

CMT ENGINEERING LABORATORIES

Excavated By:

Logged By: Mark Larsen

Figure: 5

Dana Beck Subdivision

Test Pit Log

TP-4

575 Westfield Road, Highland

Type: Mini-Excavator | Total Depth: 10 Feet | Date: 8/12/2016

Surface Elev. (approx): | Water Level: | Job #: 8852

Depth (ft.)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI	Dry Density
0		TOPSOIL: Brown clay w/ silt and organics, dry. Approximately 18 inches.										
		Brown lean CLAY (CL) w/ silt, trace gravel.										
2		slightly moist and stiff		10	15.4				33	16	17	110.1
4												
		moist and stiff		11								
6												
		Lt brown silty SAND (SM), some gravel.										
8		moist and medium dense		12	9.4	15	58	27				
10		End at 10 Feet										
12												
14												

Remarks: Groundwater wasn't encountered.

CMT ENGINEERING LABORATORIES

Excavated By:

Logged By: Mark Larsen

Figure: 6

Dana Beck Subdivision

575 Westfield Road, Highland

Test Pit Log

TP-5

Type: Mini-Excavator
Surface Elev. (approx):

Total Depth: 10 Feet
Water Level:

Date: 8/12/2016
Job #: 8852

Depth (ft.)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI	Dry Density
0		TOPSOIL: Brown clay w /gravel, silt, and organics, dry. Approximately 1 foot.										
		Gray/tan silty GRAVEL (GM) trace clay										
2		dry and dense		13								
4		Gray/tan silty CLAY (CL) w/ gravel. PINHOLES in matrix										
6		dry and stiff		14	4.9				27	15	12	
		Gray/tan silty GRAVEL (GM) trace clay										
8		dry and dense		15								
10		End at 10 Feet										
12												
14												

Remarks: Groundwater wasn't encountered.

CMT ENGINEERING LABORATORIES

Excavated By:

Logged By: Mark Larsen

Figure: 7

KEY TO SYMBOLS

Symbol Description

Strata symbols

Topsoil

Silty sand

Clayey sand/
Low plasticity clay

Low plasticity
clay

Poorly graded sand
with clay

Silty gravel

Soil Samplers

Bulk/Grab sample

Undisturbed Block Sample

Notes:

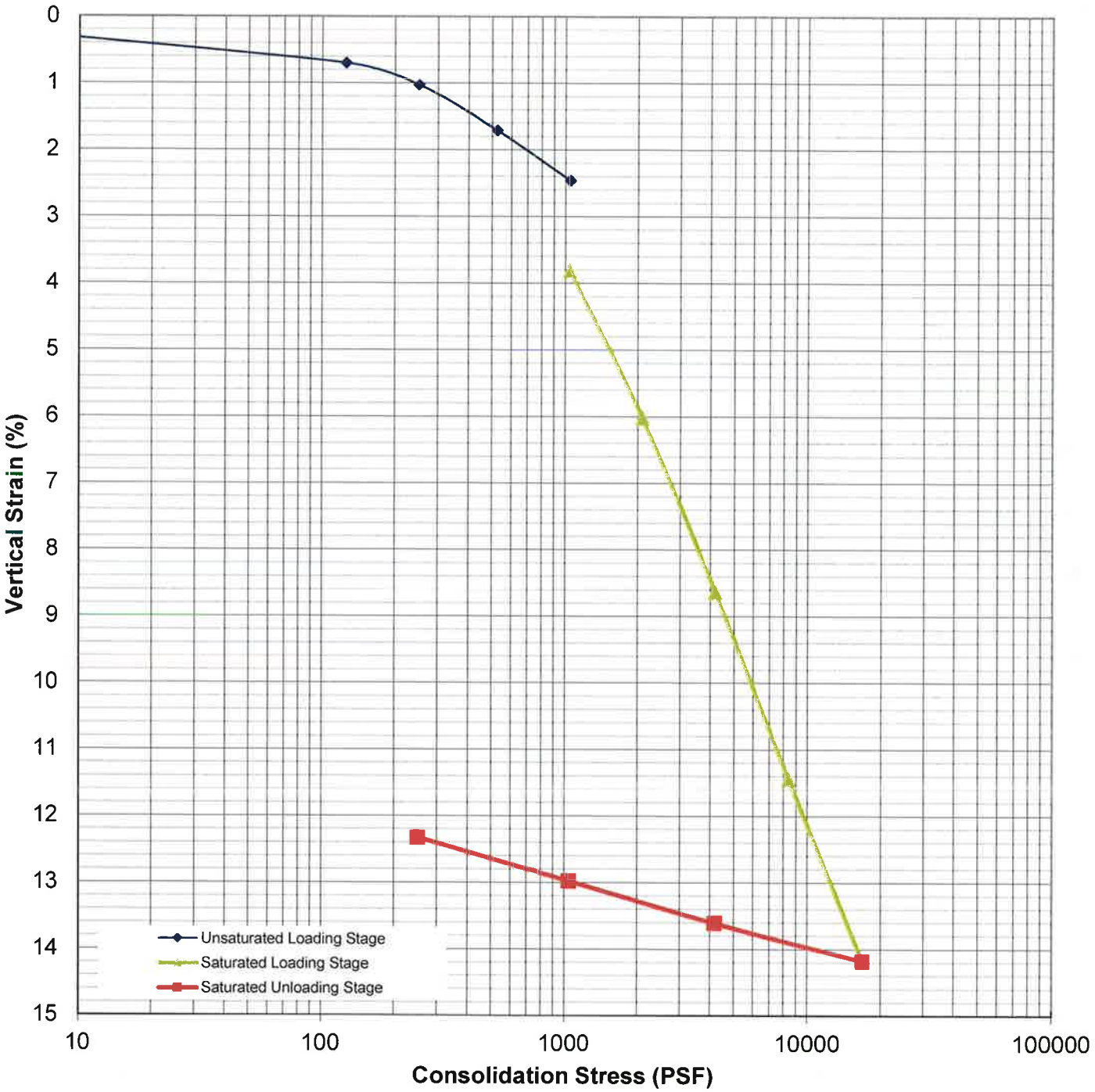
1. The results of laboratory tests on the samples collected are shown on the logs at the respective sample depths.

2. The subsurface conditions represented on the logs are for the locations specified. Caution should be exercised if interpolating between or extrapolating beyond the exploration locations.

3. The information presented on the logs is subject to the limitations, conclusions, and recommendations presented in the report.

Figure:
8

Consolidation



TP-2 @ 6.0'

Soil Class:	CL	LL:	25
Moisture :	18.3	PL:	13
Density:	100.1	PI:	12

Dana Beck Subdivision

575 Westfield Road, Highland, UT

CMT ENGINEERING LABORATORIES

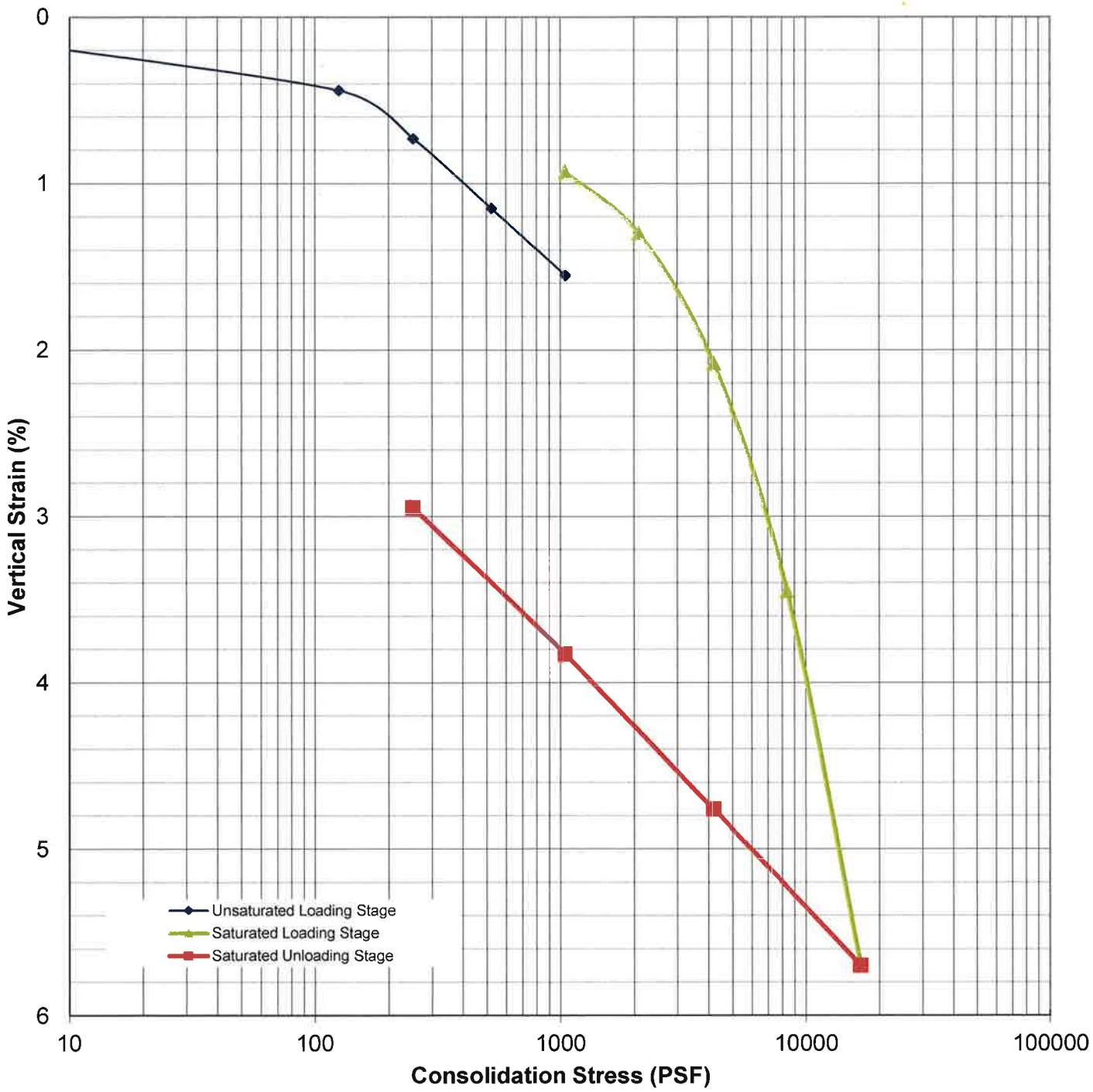
Lab Data

Date: 22-Aug-16

Job # 8852

Figure: 9

Consolidation



TP-4 @ 2.0'

Soil Class:	CL	LL:	33
Moisture :	15.4	PL:	16
Density:	110.1	PI:	17

Dana Beck Subdivision

575 Westfield Road, Highland, UT

CMT ENGINEERING LABORATORIES

Lab Data

Date: 22-Aug-16

Job # 8852

Figure: 10

Dana Beck Subdivision

Lab Summary

575 Westfield Rd, Highland | Berg Civil Engineering | Job #: 8852

Hole	Depth (ft.)	Sample	Soil Class*	T	Sample Type	Moisture ASTM: D2216	Gradation ASTM: D1140/ C117 Gravel	Sand	Fines	Atterberg ASTM: D4318 LL	PL	PI	CBR % 0.10	0.20	Dry Density	Other
TP-1	2.0	1	SM		Bag	6.4	29	56	15							
	5.0	2	SC		Bag	10.1	23	51	25							
	8.0	3	SC		Bag											
TP-2	3.0	4	CL		Bag											
	6.0	5	CL		Block	18.3				25	13	12			100.3	
	9.0	6	CL		Bag											
TP-3	3.0	7	CL		Block											
	6.0	8	CL		Bag	17	2	30	68							
	9.0	9	SP-SC		Bag	5.1	44	47	9.4							
TP-4	2.0	10	CL		Block	15.4				33	16	17			110.1	
	5.0	11	CL		Block											
	8.0	12	SM		Bag	9.4	15	58	27							
TP-5	3.0	13	GM		Block											
	6.0	14	CL		Bag	4.9				27	15	12				
	9.0	15	GM		Bag											

* In accordance with the Unified Soil Classification System

CMT ENGINEERING LABORATORIES

Sampled By: Mark L.

Excavated By: Blaine Hone Exc.

Figure 11

BECK PINES

A RESIDENTIAL SUBDIVISION IN

ALPINE, UTAH

SUPPORTING DOCUMENTS AND

SUMMARY STATEMENT FOR A

PRELIMINARY PLAN APPLICATION

AUG 2016

BECK PINES
A RESIDENTIAL SUBDIVISION IN ALPINE, UTAH

SUPPORTING DOCUMENTS AND SUMMARY STATEMENT FOR A PRELIMINARY PLAN APPLICATION

This brief packet of supporting documents was prepared to fulfill the requirements in conformance with Section 4.6.2.3 of the Alpine City Development Code. For ease of reference, the sections shown herein are the same as in the code

4.6.2.3 SUPPORTING COCUMENTS

4.6.2.3.1 Vicinity Map. Submitted with the **Preliminary Plans – Sheet C1**. It includes the related existing and planned streets, subdivision boundary lines, and zones within 100 feet.

4.6.2.3.2 Covenants or restrictions to be imposed upon the land or structures. None. Easements for storm drain and sewer are shown on the Preliminary Plans.

4.6.2.3.3 Geologic maps and investigation report for the proposed development. Submitted herewith from CMT.

4.6.2.3.4 Environmental Impact Study (EIS). This study was prepared by CMT as part of the geotechnical study.

ENVIRONMENTAL IMPACT STUDY ITEMS

Impact on Environment

1. Faults and Earthquake Hazards. See report from CMT referenced above. No issues in that report need mitigation or remedies.

2. Faults and Earthquake Hazards. See report from CMT referenced above. No issues in that report need mitigation or remedies.

3. Slopes and Elevations. A contour map shows the existing 1' contours and an average elevation of about 4930 for the site. There are no areas of steep slopes or unstable soils needing remedies.

4. Groundwater Recharge. No impacts have been indentified. No facilities, structures, well, drainage on this site are reach the subsurface aquifers. This is just a normal residential subdivision with no unusual circumstances or conditions needing attention. All stormwater except roof drainage will be piped off-site.

5. Flood Hazards. An inspection of the flood hazard maps for this site show that there are none. The existing ditch will be piped through the development.

6. Flood Plains. An inspection of the flood hazard maps for this site show that there are none. There are no streams, creeks, or other natural water courses. There are no noted FEMA floodplain areas identified on this site.

7. Erosion Hazards. The City Engineer has defined none on this site.

8. Wildlife Habitat. This area has been used for residential and agricultural for at least 30 years. Although there are occasional small fowl, rodents, deer, and reptiles that have been observed on this site, none are listed as endangered or protected by the EPA. The area has been fenced for a long time and there are no known animal movement corridors.

9. Air Quality. Any air quality changes that can be expected beyond those that would be expected as a result of normal residential development and traffic flows. None.

10. Flora. This area has been used for agriculture and pasturing of animals. All existing vegetation associated with the current farming operations will likely be removed in favor of grass and shrubs around homes in this residential area.

Impact on Infrastructure

1. Traffic and Transportation. With 19 lots, the maximum number of daily trips will be 190 from normal residential development. For this site, for the current phase, all traffic will enter and exit onto either Westfield Road or Long Drive.

2. Culinary Water and Sewer. The Preliminary Plans shows the proposed sewer system to serve these 19 residential lots. A new sewer line will be constructed in Limber Pine Drive and Longleaf Drive by connecting to the existing sewer that runs through the proposed Long Drive. An average of 400 gpd per unit = 7,600 gpd is expected to be generated from this site.

3. Storm Drainage. The storm drainage plan is shown on the attached Preliminary Plan. Additionally, storm drain runoff calculations are attached hereto. This plan will extend a storm drain pipe along Long Drive to connect the sumps for a future piped outlet.

4. Public Safety/Fire Protection. New water lines (both culinary and irrigation) of sufficient size will be extended to the site to provide fire protection and water service. Fire hydrants will be added for this site increasing the fire protection capabilities in accordance with the ordinance.

Impact on Quality of Life

1. Aesthetics and Cultural. Population densities are very compatible with the surrounding CR-20,000 area. No cultural differences are expected with the surrounding area except that the homes may be larger and newer. There are no sites of historical significance known on this site or immediately surrounding that will be affected. Land use will be the same, cultural patterns will likely be similar, and no large contrast with surrounding land use is anticipated.

2. Viewscapes. The site for this subdivision is not on the hillside and not very visible. There are no unusual cuts or fills needed on the site, and those cuts or fills that are needed will be minor and landscaped as part of the roadway construction.

3. Parks, Trails and Recreation Facilities. None provided and none required. Residents of this site will use the same facilities already provided or planned for normal citizen/City use.

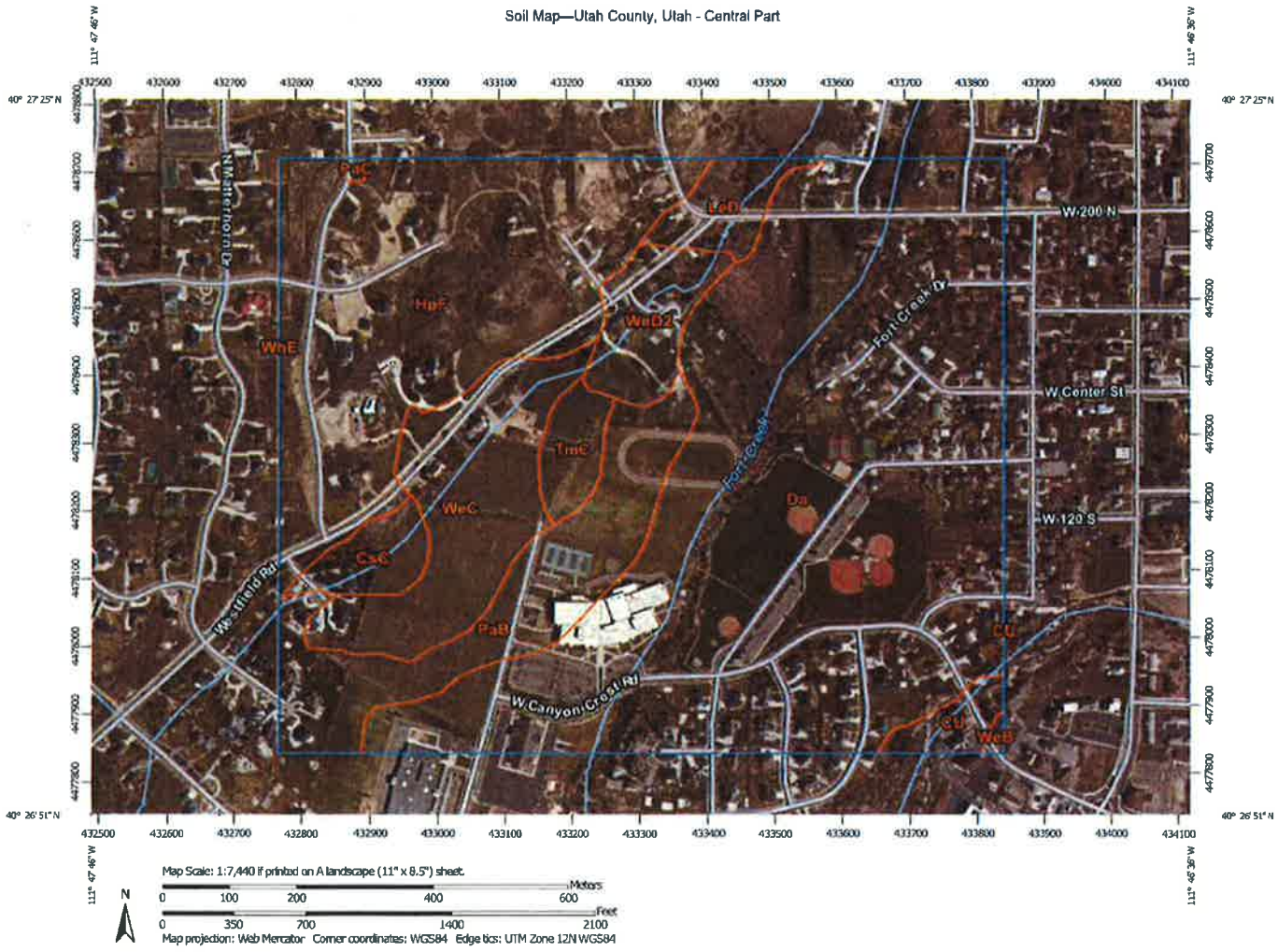
4. Noise. No unusual noise is expected to be generated on this site except temporarily during construction.

5. Survey Notes of the subdivision. Included on the Preliminary Plan Map.

6. AASHTO. See geotechnical report by CMT listed above.

7. Statement from Utility Companies. See attached.

Soil Map—Utah County, Utah - Central Part



MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Utah County, Utah - Central Part
Survey Area Data: Version 8, Sep 23, 2015

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

Date(s) aerial images were photographed: Mar 31, 2012—Apr 28, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Utah County, Utah - Central Part (UT621)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
CsC	Cleverly gravelly fine sandy loam, 3 to 6 percent slopes	4.3	1.8%
CU	Cobbly alluvial land	2.9	1.3%
Da	Dagor loam	115.3	49.3%
HpF	Hillfield-Welby silt loams, 6 to 35 percent slopes	52.6	22.5%
LeD	Layton loamy fine sand, 6 to 15 percent slopes	4.9	2.1%
PaB	Parleys loam, 0 to 4 percent slopes	21.5	9.2%
PaC	Parleys loam, 3 to 8 percent slopes	0.3	0.1%
TmC	Timpanogos loam, 3 to 6 percent slopes	3.9	1.7%
WeB	Welby silt loam, extended season, 1 to 3 percent slopes	0.3	0.1%
WeC	Welby silt loam, extended season, 3 to 6 percent slopes	20.3	8.7%
WeD2	Welby silt loam, extended season, 6 to 10 percent slopes	7.5	3.2%
WhE	Welby-Hillfield silt loams, 10 to 30 percent slopes	0.0	0.0%
Totals for Area of Interest		**233.9**	**100.0%**

berg
CIVIL ENGINEERING
11038 N Highland Blvd
Suite 400
Highland Ut. 84003
office (801) 492-1277
cell (801) 616-1677
ken@bergcivil.com

BECK PINES PRELIMINARY PLAT

8/23/2016

Storm Drainage Report

General Description

This storm drain report was prepared as part of the Preliminary Submittal. This 11.29 acre site consists of 19 residential lots, roadways and associated facilities. Storm water runoff will be captured at the intersections of Long Drive – Limber Pine Court and Long Drive and Longleaf Drive by a series of pretreatment catch basins.

Design Requirements

The attached Rational Method Calculations show the probable storm water flows. It also shows the required sump storage. City standards require that a 50-year event be used for detention pond calculations with the 3-hr, 6-hr and 24-hr hour storm durations evaluated.

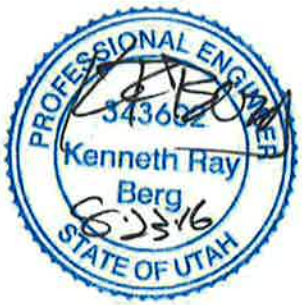
Drainage Basin Boundaries

The longest drainage area was used to determining the sizing of the sumps. Longleaf Drive was the largest drainage area of 2.09 acres. This area was then classified as to the amount of pervious and impervious areas. These areas are shown for each calculation in Appendix A.

Analysis

The calculations show that the maximum flow rate in the gutters and entering the catch basins will be a combined 1.51 cfs. Two catch basins, one on each side of Longleaf Drive near the intersection with Long Drive, can easily handle this maximum flow rate. The storm drainage system as designed has the capacity to convey the 10-year storm event.

The calculations also show that the required storm sump volume to contain the 25-year storm event is 2000 cf. The runoff volume calculations are shown in Appendix A. Preliminary Plan Sheet C4 shows the drainage plan and the sump construction detail.



Appendix A.

BECK PINES
25-year storm - Flow calculations
23-Aug-16

Storm drain calculations were performed using the rational method.

Hydrologic Calculations			
CA CALCULATION			
	C	Area (ft^2)	C * A
Roadway incl walks & gutters	0.90	17382	15644
Patios, walks, & driveways	0.90	5600	5040
Rooftops drain to street	0.90	7000	6300
Landscaping	0.10	60918	6092
Totals		90900	33075
Total Acres:	2.09		
Q_{allow} = INFILTRATION	15 in/hr	refer to sump worksheet	
Q_{allow}	**.446 cfs**		

Maximum flow rate into all CB's
Based on 30 min intensity
Data from table at left Q=CiA
1.51 cfs
This flow rate is split between
two gutters and two catch basins

Detention volume calculations					
Lapsed Time (min.)	Rainfall intensity (in/hr)	Total Rainfall (in)	Rainfall Volume (ft^3)	Release Volume (ft^3)	Required Storage (ft^3)
A	*B*	*C*	*D*	*E*	*F*
5	4.71	0.39	1082	134	948
10	3.58	0.60	1645	268	1377
15	2.96	0.74	2040	401	1638
30	1.99	1.00	2743	803	1940
45	1.55	1.16	3204	1204	**2000**
60	1.23	1.23	3390	1606	1785
90	0.93	1.40	3845	2408	1437
120	0.71	1.42	3914	3211	703
180	0.51	1.53	4217	4817	-600
360	0.31	1.86	5127	9634	-4507
Required Storage =	**2000 ft^3**		or	**0.046 acre·ft**	

Notes:
A, B, & C are based upon NOAA Atlas Appendix Intensity-Duration-Frequency Data for Alpine City
D = C / (12 inches/foot) x total acreage of site x 43,560 sf/acre x run-off coefficient, where Q=CIA and V=CiA
E = an allowable release rate (15 in/hr cfs/acre) x total acreage of site x A x 60 sec.
F = D - E to determine storage volume

25-year return period was chosen to be conservative.
Catch basins as shown on preliminary plan can easily handle the total flow.
Capacity of 15" storm drain pipe at 0.3% = 3.9 cfs.

CALCULATION OF MANHOLE SUMP VOLUME
AND INFILTRATION CAPACITY

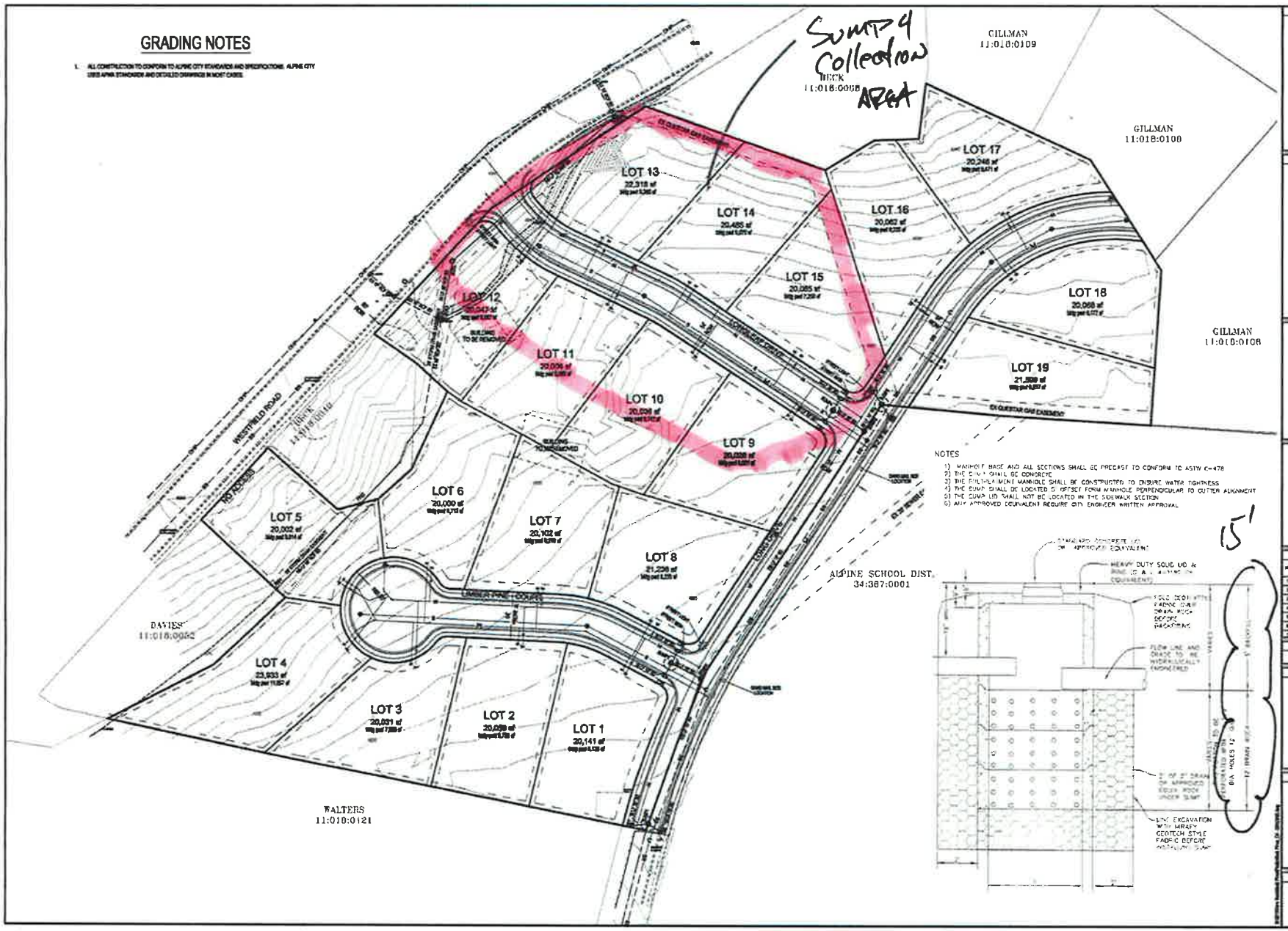
MH inside diameter	5 ft
MH outside diameter	6 ft
Excavation side slope	0.5 :1
Depth of gravel below MH	2 ft
Width at base of excavation	12 ft

	DEPTH INSIDE OF MANHOLE (ft)				
	15	14	13	12	11
Diameter @ top of Excavation	30.36	29.28	28.20	27.12	26.04
Diameter @ bot of Excavation	12.00	12.00	12.00	12.00	12.00
Volume inside MH (cf)	295	275	255	236	216
Volume outside MH (cf)	424	396	368	339	311
Depth of entire cone (ft)	28.11	27.11	26.11	25.11	24.11
Depth to bot of gravel (ft)	17.00	16.00	15.00	14.00	13.00
Volume of entire cone (cf)	6365	5666	5017	4416	3861
Volume of Rock outside MH (cf)	5940	5270	4650	4077	3550
Volume of voids in rock @ 30% (cf)	1782	1581	1395	1223	1065
Volume in MH & voids (cf)	**2077**	1856	1650	1459	1281
Volume in MH & voids (af)	0.0477	0.0426	0.0379	**0.0335**	0.0294
Wall area of cone (sf)	1286	1179	1076	978	883
Infiltration area of bottom (sf)	113	113	113	113	113

Infiltration rate (in/hr)	**MAXIMUM INFILTRATION RATE (cfs) per sump**				
15	0.446	0.409	0.374	**0.339**	0.307

GRADING NOTES

1. ALL CONSTRUCTION TO CONFORM TO ALPINE CITY STANDARDS AND SPECIFICATIONS. ALPINE CITY USES APWA STANDARDS AND DETAILED DRAWINGS IN MOST CASES.



DEVELOPMENT

BECK PINES SUBDIVISION

DEVELOPER

DANA BECK
621 WESTFIELD ROAD
ALPINE, UT 84004
(801) 372-9700

N

0 25 50 100 150
SCALE: 1"= 50'

gerg
CIVIL ENGINEERING
11038 N Highland Blvd Suite 400
Highland UT, 84003
office (801) 492-1277
cell (801) 818-1677

PROJECT STATUS		SEAL
NO.	DATE / DESCRIPTION	
1		
2		
3		
4		
5		
6		
7		

ACTION	DATE
PRELIMINARY	8/22/16

PROJECT

BECK PINES

DESCRIPTION

PRELIMINARY CONSTRUCTION DRAWINGS

SHEET NAME	SHEET NUMBER
GRADING & DRAINAGE	C4

ALPINE PLANNING COMMISSION AGENDA

SUBJECT: **Alpine Ridge PRD Concept Plan**

FOR CONSIDERATION ON: **6 September 2016**

PETITIONER: **Paul Kroff**

ACTION REQUESTED BY PETITIONER: **Approve the Concept Plan**

APPLICABLE STATUTE OR ORDINANCE: **Article 4.6 (Major Subdivision)**

BACKGROUND INFORMATION:

The proposed Alpine Ridge Planned Residential Development (PRD) consists of two parts; recently annexed property (Oberre Annexation) and property that was already located within Alpine City. This distinction needs to be made due to a development agreement between the City and the developer which will affect the lots that were part of the Oberre Annexation. Lots that were already located within Alpine City limits are proposed to be developed as a PRD. Since this area of the proposed development does not fall under the terms of the development agreement, the City Council, with a recommendation from the Planning Commission, will need to determine whether or not this area will be developed as a PRD.

The subdivision as a whole includes a total of 69 lots ranging in size from 20,276 square feet to 2.94 acres on a site that is approximately 189.5 acres. It is proposed to include 125.8 acres of private open space. Approximately 68.9 acres of that open space is already recorded as a conservation easement. The site is located in the CR-40,000 zone. The subdivision is planned to be done in 3 phases.

STAFF RECOMMENDATIONS:

Based on engineering standards, the Engineering Department recommends that the concept plan of the proposed development be approved.

The Planning and Zoning Department recommends that approval of the proposed subdivision concept plan be postponed until the following items are addressed:

- The Planning Commission make a recommendation to the City Council and the City Council make a final determination on whether or not the portion of the development outside of the Oberre Annexation should be developed as a Planned Residential Development (PRD).
- If it is determined that the property outside of the Oberre Annexation area is to be developed as a PRD , the Developer needs to provide more open space to meet the minimum 25% of the project requirement.
- The Developer eliminate "lot 69" or sufficiently address the several concerns.
- The Developer change the name of the subdivision.

Date: September 1, 2016

By: Jason Bond
City Planner

Subject: Planning and Zoning Review
Alpine Ridge PRD Concept Plan
Approximately 1100 North Grove Drive – 69 lots on 189.5 acres

Background

The proposed Alpine Ridge Planned Residential Development (PRD) consists of two parts; recently annexed property (Oberre Annexation) and property that was already located within Alpine City. This distinction needs to be made due to a development agreement between the City and the developer which will affect the lots that were part of the Oberre Annexation. Lots that were already located within Alpine City limits are proposed to be developed as a PRD. Since this area of the proposed development does not fall under the terms of the development agreement, the City Council, with a recommendation from the Planning Commission, will need to determine whether or not this area will be developed as a PRD.

The subdivision as a whole includes a total of 69 lots ranging in size from 20,276 square feet to 2.94 acres on a site that is approximately 189.5 acres. It is proposed to include 125.8 acres of private open space. Approximately 68.9 acres of that open space is already recorded as a conservation easement. The site is located in the CR-40,000 zone. The subdivision is planned to be done in 3 phases.

PART 1 – PROPERTY WITHIN OBERRE ANNEXATION (60 LOTS)

Development Agreement

A majority of the property was recently annexed into Alpine City and a development agreement (attached) was executed between the City and the Developer. The details of the agreement are unique to this development and may not be consistent with typical subdivision requirements.

Lot Area and Width Requirements

The Development Agreement (DA) limits the number of lots to be developed on the property. The Developer shall use the base density for the CR-40,000 zone with no bonus density awarded for any public or private open space. In addition, the existing conservation easement on the property will not be included in calculating the base density for the development (DA 3.2). The total number of lots allowed within the annexed area is 60 lots. The developer shows on the proposed plan 60 of the 69 lots within the annexed area. This is consistent with the terms of the agreement.

The DA also limits the size of the lots. No more than 20% of the lots to be developed shall be less than 30,000 square feet in area, with no lot being smaller than 20,000 square feet in area (DA 3.3). No lot is shown to be less than 20,000 square feet and 10 lots or 17% of the annexed area are less than 30,000 square feet. The size of the proposed lots are consistent with the terms of the development agreement.

Each lot shall abut upon and have direct access to an adjacent public street. The width of each lot shall be not less than 90 feet (as measured along a straight line connecting each side lot line at a point 30 feet back from the front lot line). The length of the front lot line abutting the City street shall be no less than 60 feet (Section 3.9.7.6). Each proposed lot appears to meet the requirements.

PART 2 – PROPERTY ALREADY IN ALPINE CITY (9 LOTS)

Planned Residential Development (PRD) Determination

The 10.6 acre area of the development that is not a part of the development agreement is proposed to be developed as a PRD. The Planning Commission shall make a recommendation to the City Council and the City Council shall make the final decision in deciding whether a project should be a PRD prior to concept approval being given (Section 3.9.1.2).

It is proposed that 2.6 acres be used as private open space ("neighborhood park") and a storm water detention area. A minimum of 25% of the total project area needs to be designated as open space. 2.6 acres of the 10.6 acres would qualify as 25% however, approximately 11,391 square feet of the proposed open space is part of the newly annexed property. The developer will need to tweak some things in order to make the calculations work for this portion of the subdivision to be developed as a PRD.

Lot Area and Width Requirements

The minimum lot size for lots in the CR-40,000 zone developed as a PRD is 20,000 square feet. The proposed plan meets the requirements but some of the lots will need to be modified to address the issue with the open space calculation. When modifying the lots, each lot shall abut upon and have direct access to an adjacent public street. The width of each lot shall be not less than 90 feet (as measured along a straight line connecting each side lot line at a point 30 feet back from the front lot line). The length of the front lot line abutting the City street shall be no less than 60 feet (Section 3.9.7.6).

PART 3 – GENERAL REMARKS (ENTIRE SUBDIVISION)

Subdivision Access

The subdivision will be accessed on the southeast corner of the development from Grove Drive. The Developer has agreed to do offsite improvements to Grove Drive (DA 5.4). A secondary access will be located on the east side and connect to a designated right-of-way that will intersect Alpine Cove Drive. The subdivision will also be accessed from the west side on Elk Ridge Lane. However, this connection only needs to happen once development on the property exceeds 30 platted lots. The

developer does have an option to install Elk Ridge Lane prior to improvements of Grove Drive being completed (DA 5.5).

Public Trails

The proposed subdivision will include a public trail. The alignment of a trail has not been shown on the plan but the developer is working on finding the best layout in relation to the slope and terrain. The intention is that it will connect the trail at the northwest corner of the Heritage Hills open space and a future trail in the Three Falls Ranch open space.

The recorded conservation easement (68.9 acres) located northwest of the proposed homes gives the City the right to construct and maintain a public trail as part of the Alpine City Trail System, to be located only on the Easement Property and only in the location depicted on Exhibit D of the conservation easement (attached) and subject to some express conditions. The City needs to decide if there will be a trail constructed in this location. If so, the developer needs to show a connection to a public right-of-way somewhere near the proposed "lot 36".

"Lot 69"

There are several concerns with "lot 69" of the proposed plan. The Engineering Department will cover the concerns with pressurized irrigation and culinary water pressure. Other concerns include but are not limited to the location of the private driveway in relation to the conservation easement, the design of the driveway, access for emergency fire vehicles and compliance with the hillside protection overlay (Section 3.12.9). The City would prefer to eliminate "lot 69" unless the developer can sufficiently address all of the concerns.

Subdivision Name

The name of the subdivision "Alpine Ridge" already exists in Alpine City. The developer will need to change the name of the subdivision.

RECOMMENDATION

The Planning and Zoning Department recommends that approval of the proposed subdivision concept plan be postponed until the following items are addressed:

- The Planning Commission make a recommendation to the City Council and the City Council make a final determination on whether or not the portion of the development outside of the Oberre Annexation should be developed as a Planned Residential Development (PRD).
- If it is determined that the property outside of the Oberre Annexation area is to be developed as a PRD , the Developer needs to provide more open space to meet the minimum 25% of the project requirement.
- The Developer eliminate "lot 69" or sufficiently address the several concerns.
- The Developer change the name of the subdivision.

Date: August 26, 2016

By: Jed Muhlestein, P.E.
Assistant City Engineer

Subject: Alpine Ridge – ENGINEER'S CONCEPT REVIEW
69 Lots on 189.5 Acres, CR 40,000 Zone

ENGINEERING REVIEW

This is the engineering review for the proposed Alpine Ridge Concept Plan. A separate Planning Review will also be completed. The proposed development consists of 69 lots on 189.5 acres. The development is located in the CR 40,000 zone, west of the Cove subdivision and north east of Heritage Hills Plat A. A map was prepared showing the concept plan overlaid on existing city infrastructure, it is attached for reference. Also attached is a review letter by Horrocks Engineers and the development agreement for annexation between the City and Developer.

Street System

The street system is proposed as shown on the attached maps and appears to be in compliance with the street master plan, which does not show collector or arterial roads on/through the property. The typical residential street, having 30 feet of pavement and a 54-foot right of way, is expected throughout the development. The planning review will discuss secondary access as it pertains to project phasing and the sensitive lands ordinance.

The project is proposed to be phased as shown on the attached map. The phases are proposed to have 27, 31, and 13 lots for Phases 1 thru 3 respectively.

The cul-de-sacs appear to be dimensioned per code and overall road design looks ok. Sidewalks are not shown but would be required along all properties to which the development fronts where sidewalk does not currently exist. The only exception to this would be improvements along Grove Drive which only has sidewalk on the west side of the road.

The connection of Elk Ridge Lane and Grove Drive would provide good traffic flow for the development. The development agreement mentions that once 30 lots are built this connection must be completed.

Grove Drive improvements are discussed in the development agreement, section 5.4. Please review the agreement for those specifics (attached). It is important to point out that the agreement mentions the City will not approve any new development until the needed right of way is dedicated to the City and money is paid for certain Grove Drive improvements. The Grove

Drive right of way should be a condition of Preliminary Approval.

Utilities

A detailed utility plan is not required at concept but a brief summary of each will be discussed to help direct the developer. Horrocks Engineers did a preliminary check of the proposed system for required line sizes and gave some recommendations which are mentioned below.

Sewer System. The upper portion of the property can gravity flow to an 8-inch sewer main located in Grove Drive. The lower portion of the property will need to be served via a master planned sewer main installed through the Towle property located at 1360 N Elk Ridge Lane. This has been known for some time and as mentioned, is a master planned capital improvement project. **The easement for a sewer extension through the Towle property should be acquired before Final Approval.** Section 4.3 of the development agreement discusses this improvement in further detail. A more detailed analysis will need to be done at Preliminary to understand any impacts that may or may not be added to the system due to this development.

Pressurized Irrigation System. Horrocks Engineers has modeled the site and recommends a 12-inch irrigation main to be installed from Grove Drive to Elk Ridge Lane. This is a master planned improvement that is larger than the subdivision would require. The minimum required mainline size in residential roads is a 6-inch line. The city would be responsible for and use impact fees to pay the cost of upsizing this mainline to 12-inch. The remainder of the subdivision would use 6-inch lines for main roads including the northern most cul-de-sac, and 4-inch lines for the minor cul-de-sacs. This 12-inch main would be required to be installed during the first phase of development.

Source of water is an ongoing problem in the high zone where the development is proposed. The development agreement discusses the responsibility of the developer to install a variable speed pump at the Fort Creek booster station which could be dedicated to pumping water to this zone from the low zone. The design of this system improvement should be submitted with the Preliminary Application and the pumps should be installed along with the first phase of development.

Culinary Water System. The subdivision is very close to the 5,350-foot elevation, which is the highest elevation the existing water system can serve and still provide the minimum 40 psi required by ordinance. The culinary water master plan calls for a new 10-inch main to be installed from the Grove tank to the 90-degree bend in Grove Drive that would provide minimum fire flows to the area. The development agreement specifies it is the responsibility of the developer to bring offsite utilities to the development (Development Agreement section 4.2.1). Discussions have indicated that the size of homes desired in the upper portion of the development may require a larger line to meet the fire protection demands. If the developer elects to install a 16-inch line instead of the 10-inch, fire flows would increase to 2,750 gpm and

the maximum sized home to be built without the need for fire sprinklers or alternate construction materials would be 11,300 square feet based on the International Fire Code.

The fire flow for this development is dependent upon the completion of the water system improvements in Three Falls and along Fort Canyon Road. If the subdivision is built and expected to be in service prior to the Three Falls system, other off-site modifications will need to be analyzed.

The Fire Marshall will need to approve the location of proposed fire hydrants as the plan moves forward. 3/4-inch water laterals will need to be constructed for each new lot.

Storm Water Drainage System. The storm water master plan has taken into account discharge from this area. The drainage system for the area would discharge to Northfield Ditch, which runs southward from the property and eventually into the city storm water system. The property would be required to retain the 90th percentile storm and then retain/detain everything above that up to the 100-yr event. **Low Impact Development (LID) is now a state requirement** as a measure of handling storm water and improving water quality. LID emphasizes conservation and use of on-site natural features to protect water quality. There are many ways to meet the LID requirement. LID can be met by the use of drainage swales, rainwater harvesting, curb cuts to direct water to smaller local basins, and so on. The developer needs to evaluate what methods may or may not work on-site using infiltration rates and propose methods at Preliminary.

The Supplemental and North Field ditches run through the property on the south easterly side. Typically ditches are required to be piped through new developments per Dev. Code 4.7.19.1. Discussions with the Alpine Irrigation Company have indicated that the North Field ditch can be abandoned in place, but the Supplemental ditch must be piped with a 30-inch minimum pipe. Complete plans for such should be submitted with Preliminary application.

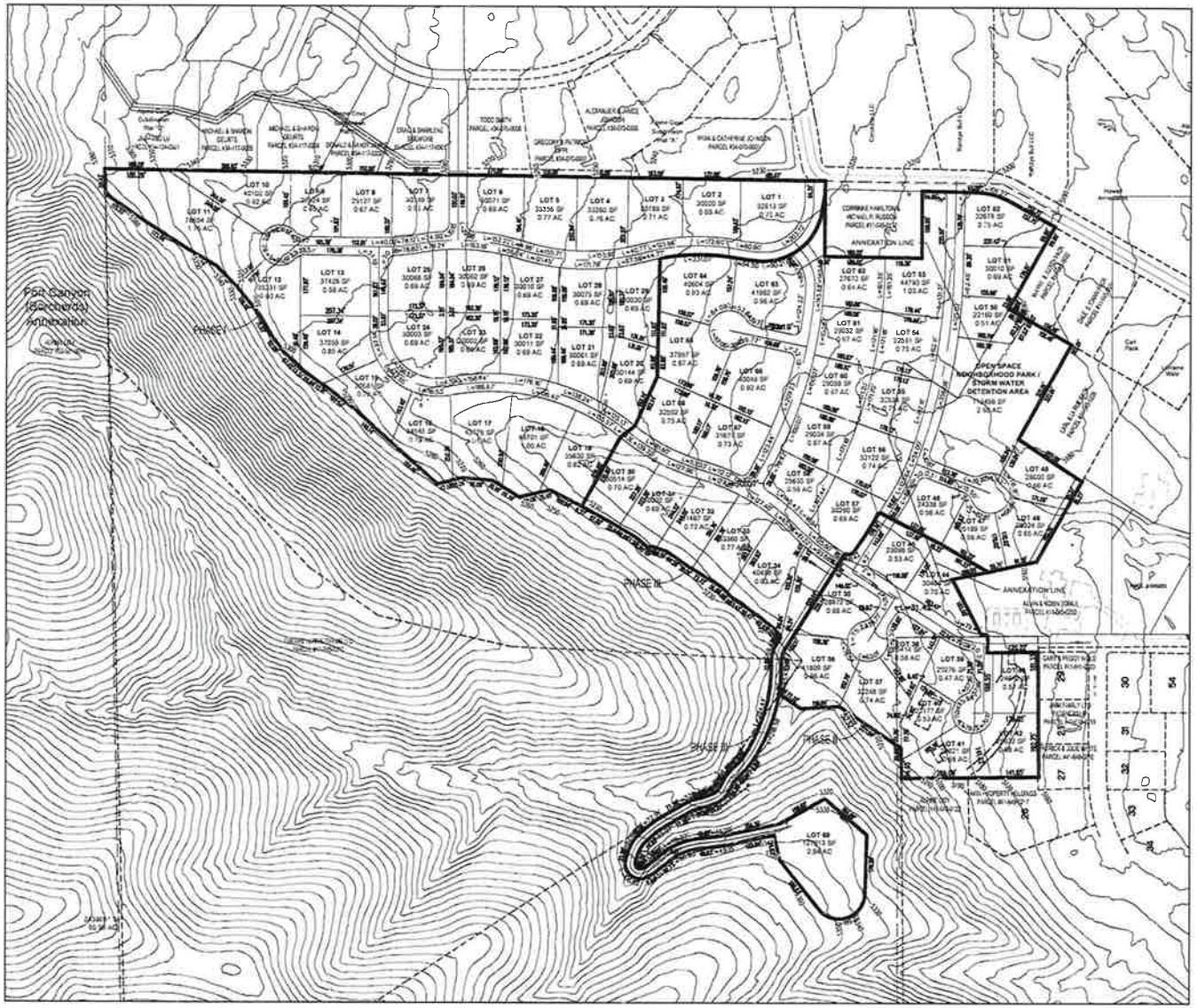
General Subdivision Remarks

The proposed development falls within the Geologic Hazards Overlay Zone as well as the Urban/Wildland Interface. As with any development, the developer would be required to obtain and submit a Geologic Hazards Report for the property. The developer has had such a report prepared and it is included herewith. Of particular concern is the mass grading and fill of an existing ravine that ran through the property. The City has no records of compaction or what type of material was used to fill the ravine. The report did pay specific attention to this area and has provided recommendations for building there. The report also mentions the need to look further into Geologic Hazards such as debri flow (page 10). Along with that, the city hazard maps show potential slide and rock hazards in the area as well. Further study of these issues would be required for Preliminary Approval.

Lot 69. We are concerned about water pressure (both culinary and secondary) to Lot 69 as well as a driveway that meets the ordinance. There are other issues associated with Lot 69 that will be addressed in the Planner's review, but strictly from an engineering stand point, water pressure and driveway design are concerns that we will pay close attention to as the plan moves forward.

ENGINEERING RECOMENDATION

Based on engineering standards, we recommend that Concept Approval of the proposed development be approved.



NORTH

GRAPHIC SCALE

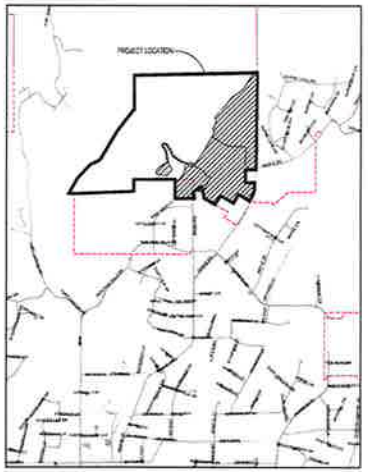
(IN FEET)
1 inch = 150 ft

ALPINE RIDGE
PLANNED RESIDENTIAL DEVLOPMENT
1100 NORTH GROVE DRIVE
ZONING = CR-40000

TOTAL ACREAGE INCLUDED :
PHASE I = 26.7 ACRES
PHASE II = 8.7 ACRES
PHASE III = 29.1 ACRES

TOTAL OF 69 LOTS

TOTAL NUMBER OF LOTS WITHIN ANNEXATION = 60LOTS
(EXCLUDES LOTS 39-43, 46-49)
TOTAL NUMBER OF LOTS LESS THAN 30,000 SF = 10 LOTS (17%)
(LOTS 8, 9, 35, 45, 58-62)



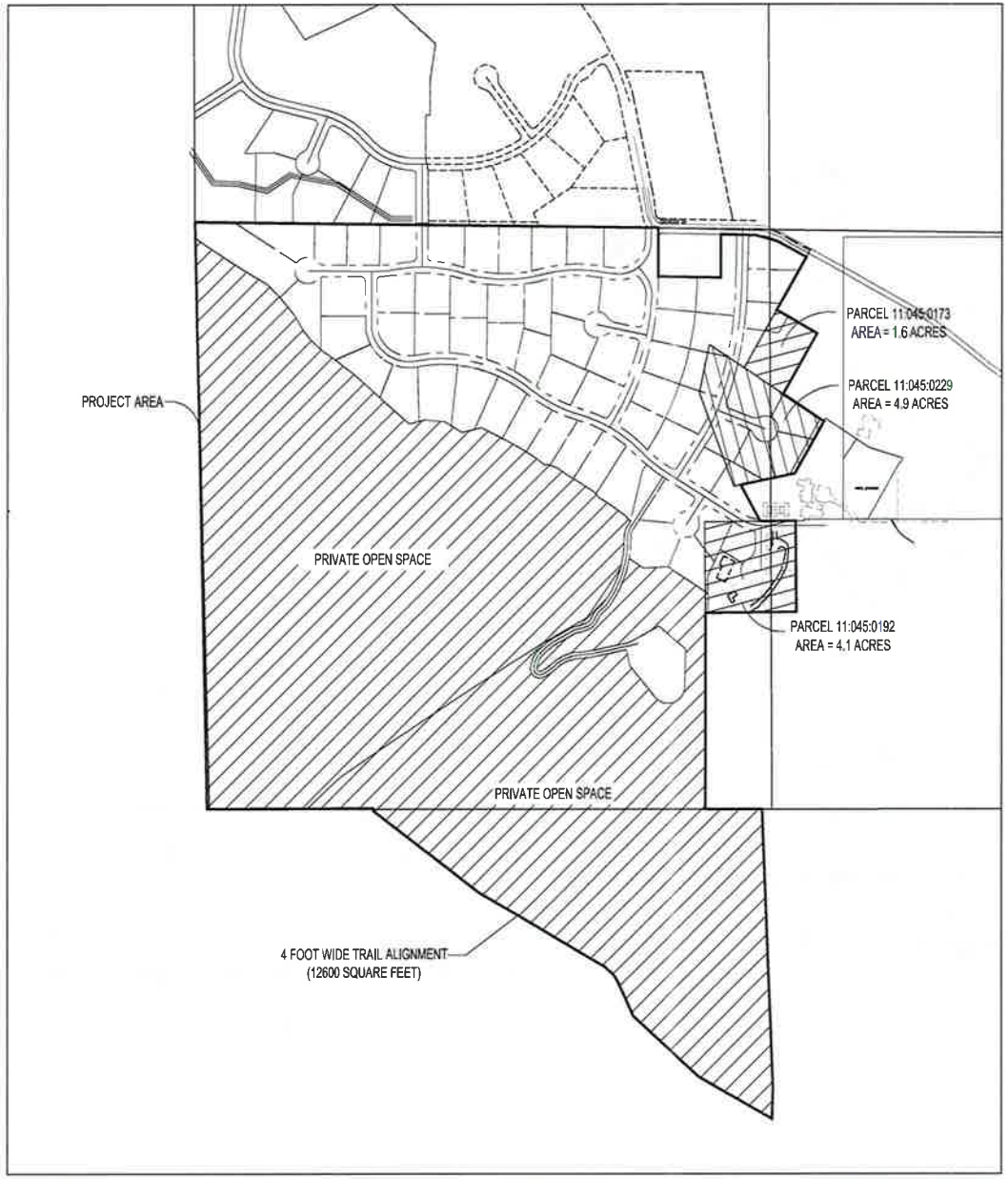
VICINITY MAP

BUSH & GUDGELL, INC.
Engineers - Planners - Surveyors
655 East 4500 South, Suite 100
Salt Lake City, Utah 84107
Phone (801) 364-1212 / Fax (801) 364-1225
www.bushandgudgell.com

CONCEPTUAL PLAN

ALPINE RIDGE
PLANNED RESIDENTIAL DEVELOPMENT
PREPARED FOR: PAUL KROFF

SHEET 2 OF 2 SHEETS



NORTH

GRAPHIC SCALE

(IN FEET)
1 inch = 250ft.

ALPINE RIDGE
PLANNED RESIDENTIAL DEVELOPMENT

TOTAL PROJECT AREA = 189.5 ACRES
PROJECT AREA WITHIN OBERRE ANNEXATION = 178.9 ACRES
PROJECT AREA ALREADY IN ALPINE CITY = 10.6 ACRES

PRIVATE OPEN SPACE AREA = 123.2 ACRES

BUSH & GUDGELL, INC.
Engineers - Planners - Surveyors
655 East 4500 South, Suite 100
Salt Lake City, Utah 84107
Phone (801) 364-1212 / Fax (801) 364-1225
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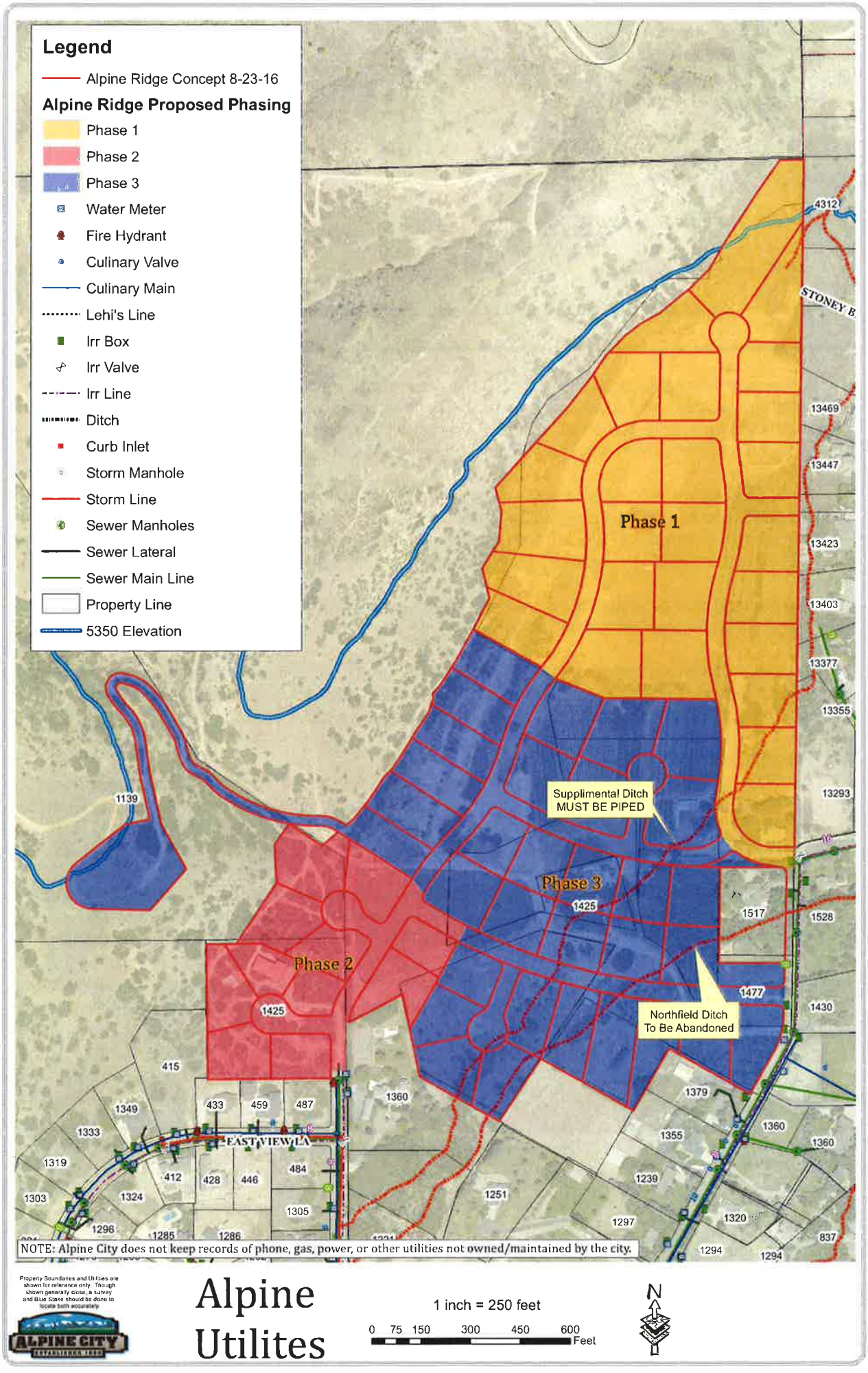
CONCEPT PLAN

ALPINE RIDGE
PLANNED RESIDENTIAL DEVELOPMENT
PREPARED FOR: PAUL CROFF

SHEET 1 OF 2 SHEETS


Legend
Alpine Ridge Concept 8-23-16
Alpine Ridge Proposed Phasing
Phase 1
Phase 2
Phase 3
Water Meter
Fire Hydrant
Culinary Valve
Culinary Main
Lehi's Line
Irr Box
Irr Valve
Irr Line
Ditch
Curb Inlet
Storm Manhole
Storm Line
Sewer Manholes
Sewer Lateral
Sewer Main Line
Property Line
5350 Elevation
Phase 1
Phase 2
Phase 3
Supplimental Ditch
MUST BE PIPED
Northfield Ditch
To Be Abandoned
EAST VIEW LN
NOTE: Alpine City does not keep records of phone, gas, power, or other utilities not owned/maintained by the city.
Property Boundaries and Utilities are shown for reference only. Though shown generally close, a survey and Blue Stake should be done to locate both accurately
ALPINE CITY
Alpine Utilites
1 inch = 250 feet
0 75 150 300 450 600
Feet
N

HORROCKS ENGINEERS

To: **Shane Sorensen, P.E.**
Jed Muhlestein, P.E.
Alpine City

From: **John E. Schiess, P.E.**

Date: October 2, 2014

Memorandum

Subject: **Alpine Ridge Hydraulic Modeling Results and Recommendations**

The proposed Alpine Ridge development is the same as the Oberee annexation that we have modeled and discussed several times over the past couple of years. The development consists of 70 lots in the area between Elk Ridge Lane and Grove Drive west of Alpine Cove. The proposed layout doesn't have road profiles completed so elevations were assumed. More refinement is possible once more detailed plans are available.

I have reviewed the proposed expansion plans with respect to the culinary water system and found the proposed improvements will comply with State of Utah Division of Drinking Water rules and regulations with respect to the minimum sizing requirements of R309-510 and the minimum pressure requirements of R309-105-9. This is based on the following recommendations. Additional comments are included.

The proposed secondary irrigation improvements have been reviewed and recommendations are listed below. The master planned improvements should be adequate for the proposed subdivision.

The proposed sewer system has not been modeled at this time. It is recommended that a preliminary layout be submitted that shows how many lots drain to Elk Ridge and how many drain to Grove Drive. The model can be reviewed to see if any off-site improvements are necessary based on the split.

Recommendations:

1. Construct the master planned culinary water improvements both on-site and off-site which included 8 inch minimum pipes in the subdivision, 8 inch on Grove Drive from the Tee intersection south the existing 8 inch, and 10 inch from the Tee intersection east to the Grove Tank 12 inch outlet piping. If the proposed Three Falls lower tank and booster pump station is built concurrently then the available fire flow would be 1,750 gpm throughout the zone.
2. If higher fire flows are desired then pipe size increases are necessary both on-site and off-site. For example if 2,750 gpm is desired then a 16 inch is required to replace the 10 inch noted above with a 12 inch connecting to the 16 and extending up to the northern most cul-de-sac. The Three Falls improvements would also need to be constructed.
3. Install a 12 inch pressure irrigation line from Grove Drive Tee intersection to Elk Ridge Ln. Most of the rest of the piping can be 6 inch including the northern most cul-de-sac. The other cul-de-sacs can be 4 inch.

ENT 57138:2016 PG 1 of 15
JEFFERY SMITH
UTAH COUNTY RECORDER
2016 Jun 23 10:16 am FEE 74.00 BY BD
RECORDED FOR CROFF, PAUL

ANNEXATION and DEVELOPMENT AGREEMENT

THIS ANNEXATION AND DEVELOPMENT AGREEMENT (the "Agreement") is entered into effective as of the 16th day of June, 2016 between ALPINE CITY, a Utah municipal corporation (the "City") and OBERRE ALPINE FARMS, LLC, a Utah limited liability company; STEVE ZOLMAN, an individual; and ZOLMAN HOLDINGS, LLC, a Utah limited liability company (collectively the "Applicants").

RECITALS OF FACT:

A. The City is a municipality and political subdivision of the State of Utah classified as a fifth class city under the provisions of Section 10-2-301, Utah Code Annotated. The City is located in Utah County, Utah.

B. The Applicants are owners of approximately 179.579 acres consisting of property in Utah County. This property is more particularly described in Exhibit A hereto (the "Property"). The Property is contiguous to the northern boundary of the City and within an area proposed for municipal expansion under the Alpine City Master Annexation Policy Declaration.

C. The Applicants have specifically requested that the Property, along with other property not owned by the Applicants, be annexed into the City, and the City Council, having considered the matter, is willing to annex the Property, only on certain conditions, as set forth herein.

D. Unless otherwise specifically provided herein, future development of the Property is subject to and shall conform with this Agreement, as well as all of the ordinances, rules and regulations adopted by the City as of the date hereof, or which may be amended in the future, which do not conflict with this Agreement, including, but not limited to, the provisions of the Alpine City General Plan, the Alpine City Development Code (the "Development Code"), Alpine City adopted public infrastructure specifications and the Alpine City Municipal Code (collectively, the "Existing City Laws").

E. The City is authorized to enter into annexation and development agreements in appropriate circumstances in order to promote orderly development of property within its boundaries, implement the Alpine City General Plan, and provide infrastructure and other benefits in connection with development.

AGREEMENT:

NOW, THEREFORE, in consideration of the foregoing goals and objectives, the annexation of the Property to the City, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Applicants and the City, intending to be legally bound, agree as follows:

1. **Incorporation of Recitals.** The above Recitals are hereby incorporated into this Agreement.

2. **Conditions to Obligations.** The obligations of Applicants and the City hereunder are contingent upon and subject to the satisfaction of each of the following conditions.

   2.1. Annexation. The Property shall have been annexed into Alpine City. The City acknowledges that Applicants have filed an annexation petition with the City and the City has accepted the petition and has held all public hearings required for consideration of the annexation. Should the annexation not occur because of a referendum or legal challenge, this Agreement and the annexation contemplated herein, shall be null and void.

   2.2 Zoning Designation. When the Property is annexed into the City it shall be annexed into the CR-40,000 zone designation as described in the Alpine City zoning ordinances, subject only to the specific limitations on development of the Property contained in this Agreement.

3. Limitations on Development. Applicants agree in exchange for annexation into the City that the Property, which is specifically identified in Exhibit A hereto, shall be subject to the following limitations on development.

3.1 Limitations on use of the Property. The Applicants specifically agree that the Property shall be developed in the City only as a planned residential development (PRD) as defined and regulated by the Existing Laws of Alpine City.

3.2 Limitation on number of lots to be developed on the Property. The Applicants hereby specifically agree that the maximum total number of residential lots to be developed on the Property shall be calculated using the base density, as calculated in Exhibit E, for the CR-40 zone with no bonus density awarded for any public or private open space. In addition the Applicants agree that the existing Conservation Easement area on the Property shall not be included in calculating the base density for development.

3.3 Limitation on the size of lots to be developed on the Property. The Applicants further agree that no more than 20% of the lots to be developed shall be less than 30,000 sq. ft. in area, with no lot being smaller than 20,000 sq. ft. in area.

4. City's Obligations. Subject to Applicant's performance of its obligations hereunder, the City agrees as follows:

4.1 Annexation. The City agrees that it shall expeditiously proceed to adopt an ordinance annexing the Property into the City in accordance with the Annexation Petition and applicable law. The City further agrees that it will complete the annexation of the Property unless it is determined by a court of competent jurisdiction that the annexation fails to comply with the provisions of Utah's annexation statute, *Utah Code Ann 10-2-401 through 436.*

4.2 Municipal Services/ Credit.

4.2.1 The Property will receive the standard municipal services as part of this development including garbage, culinary water, pressurized irrigation, sewer, snow removal, police and fire protection subject to the payment of all use fees and charges of general application charged or levied therefore by the City. Any extension of utilities to the Property will be the responsibility of the Applicants. If the City elects to upsize any utilities and infrastructure above what is needed to serve the Property, City shall pay for the upsizing costs at the time of construction

4.2.2 Applicants shall pay for and install the variable speed pump associated with the foregoing improvements described in Section 4.2.1 above and shall submit to the City a statement of all costs, including engineering and construction costs, incurred by Applicants in installing the variable speed pump ("Reimbursement Amount"). The City agrees to give one of the Applicants, as designated by the Applicants, a credit against the payment of Pressurized Irrigation Company Impact Fees described on the attached Exhibit B in the amount of the Reimbursement Amount. The Applicant holding the credit may assign it in writing to builders or others for use in offsetting the payment of Pressurized Irrigation Company Impact Fees and Applicant shall inform City of any such assignment of the credit, or portion thereof. .

4.3 Use of Eminent Domain. The City agrees that if the Applicants cannot, after reasonable efforts, acquire the rights of way for off-site road improvements, off-site water infrastructure or off-site sewer infrastructure that the City will be willing to use its power of eminent domain to acquire such rights of way subject only to the Applicants reimbursing to the City the full costs incurred, including land acquisition costs. If the City chooses not to use its powers of eminent domain then the Applicants shall be relieved of and released from any obligation created by this Agreement for those off-site improvements. For purposes of this provision the term off-site means off of the Property.

5. **Applicant's Obligations.** Subject to the performance by the City of its obligations hereunder, Applicant agrees as follows:

5.1 Annexation Fee. Applicants have previously paid the annexation application fees in the amount of $500.00 to the City. As additional consideration for the annexation of the property, and to reimburse the City for the City's existing infrastructure capacity that will be used for the future development, and to pay for the annexed property's proportionate share of the future cost of new City infrastructure that will be necessary to provide services to the future development on the Property, the Applicants agree that they shall pay to the City an amount equal to the existing Alpine City impact fees even though these impact fees were calculated prior to the Property being annexed into the City. Applicants specifically agree that these fees are being paid as a bargained for contractual obligation in consideration of the annexation of the Property and not as an impact fee and that such fees are not subject to the appeal, accounting, or other provisions of the Utah Impact Fee Act. The amount of fees shall be in the amounts as set out in Exhibit B hereto.

5.2 Timing of Payment of Annexation Fees. The annexation fees paid in lieu of impact fees shall be due and payable at the same time and contingent on the same event as if they were an impact fee.

5.3 Future Impact Fees. The City agrees that the payment of the annexation fees paid in lieu of impact fees provided for in this agreement shall relieve the Applicants of any obligation to pay any of the City's impact fees existing at the date of this Agreement. However Applicant agrees that if the City should raise its impact fees or create a new impact fee in the future that is applicable to the City as a whole, that Applicants shall be responsible to pay the net increase in the impact fee or the new fee in the same manner that any other new development in the City would pay the fee.

5.4 Grove Drive Improvements. Applicants hereby agree that they shall acquire and dedicate to the City the right of way for Grove Drive parcels labeled Parcels 1-4 and described and depicted on the attached Exhibit C-1. This dedication shall be provided to the City prior to the City approving any new development on the Property. Applicants further agree to pay the City the costs to construct the Grove Drive improvements within the area depicted in the color "light blue" labeled as "Zol(e)man" on the attached Exhibit C-2, in accordance with the construction standards shown on the cross section for Grove Drive depicted in Exhibit D hereto. Applicants further agree to pay for the costs to construct the Grove Drive improvements within the area depicted in the color "purple" labeled as "Russon" and "Walz", if the Applicants do not install the Elk Ridge Lane connection described in Section 5.5 below. City shall be responsible for the costs to construct within the areas shown in "blue" and labeled "Josh James" on Exhibit C-2 Applicants shall as a condition of any development on the Property pay to complete and install the other improvements described in this Section 5.4 as Applicants' responsibility.

5.5 Elk Ridge Lane. The Applicants agree to connect any development on the Property to Elk Ridge Lane. This connection shall be completed prior to the development on the Property exceeding 30 platted lots. If Applicants elect to install Elk Ridge Lane prior to Grove Drive being completed, Applicants' obligation to pay the amount referenced in section 5.4, and relating only to the "purple" segment of road, shall be waived.

5.6 Water Policy. The Applicants shall dedicate to the City shares of Alpine Irrigation Company shares, to meet the City's water policy. The water shall be provided for the Property at the time that the Applicants, or one of them, seek to record each subdivision plat for lots within the Property at the rate of 0.45 acre feet per residence and 1.66 acre feet per acre for outdoor usage.

5.7 **Off-site Water Infrastructure.** Applicants shall be responsible to build and dedicate to the City any culinary and secondary water infrastructure necessary to extend the services to the Property. The necessary infrastructure shall be as determined by the Alpine City Culinary and Secondary Water master plans and as required by the Alpine City Engineer. Applicants shall dedicate such infrastructure, rights of way and easements to the City at no cost to the City or rights of reimbursement from the City

5.8 **Sewer.** The Applicants shall be responsible to build all off-site sewer mains and facilities necessary to provide service to the Property and to acquire any rights of way and easements necessary for such facilities. Applicants shall dedicate such facilities constructed and rights of way and easements to the City at no cost to the City or rights of reimbursement from the City.

6. **Construction Standards and Requirements.** All construction shall be conducted and completed by a licensed contractor in accordance with the Existing City Laws and the terms of this Agreement. All required public improvements within the Property shall be constructed in accordance with the City's construction standards in effect at the time of construction and shall be dedicated to the City to the extent provided in the Existing City Laws. Prior to commencing any construction or development of any structures or other work of improvements to the Property, Applicants shall secure any and all permits to the extent required by the City under the Existing City Laws or by any other governmental entity having jurisdiction over the work. Applicants shall construct, or cause to be constructed, all improvements in conformity with all applicable federal, state and/or local laws, rules and regulations.

7. **Miscellaneous.**

7.1. **Interpretation.** The fact that one party or the other may have drafted the provisions of this Agreement shall not affect the interpretation of its provisions.

7.2. **Governing Law.** This Agreement shall be governed by and construed in accordance with the laws of the State of Utah.

7.3. **Merger; Amendment.** This Agreement (together with all Exhibits hereto, which exhibits are hereby incorporated herein by reference) constitutes the entire agreement between the City and Applicants concerning the Property and supersedes all prior understandings, agreements or representations, verbal or written, concerning the Property. Except as expressly provided herein, this Agreement shall not be amended except in a writing signed by an officer of Applicant and by the Mayor of the City.

7.4. **Severability.** If any part or provision of this Agreement shall be adjudged unconstitutional, invalid or unenforceable by a court of competent jurisdiction, then such adjudgement shall not affect any other part or provision of this Agreement except that part or provision so adjudged to be unconstitutional, invalid or unenforceable. If any condition, covenant or other provision of this Agreement shall be deemed invalid due to its scope or breadth, such provisions shall be deemed valid to the extent of the scope or breadth permitted by law.

7.5. **Force Majeure.** Neither party hereto shall be liable for any delay or failure in the keeping or performance of its obligations under this Agreement during the time, and to the extent that any such failure is due to causes beyond the control and without the fault or negligence or the party affected, including, acts of God, acts of the United States Government or the State of Utah, fires, floods, strikes, embargoes or unusually adverse weather conditions. Upon the occurrence of any such cause, the party affected thereby shall promptly give written notice (setting forth full particulars) to the other party and shall promptly resume the keeping and performance of the affected obligations after such cause has come to an end. During the existence of such an event, each party shall bear its own cost resulting there from and the Term or any extension of the Term shall be extended on a day-for-day basis. Each party shall make every reasonable effort to keep delay in performance as a result of such cause to a minimum.

7.6. Agreement to Run with Land; Binding Effect. This Agreement shall be recorded against the property and shall deem to run with the Property. This Agreement shall be binding upon and inure to the benefit of the City and Applicants, and their respective heirs, representatives, officers, agents, employees, members, successors and assigns.

7.7. Attorney's Fees. In the event either party shall default in the performance of its obligations hereunder or litigation is commenced, the no breaching party, in addition to its other rights and remedies at law or in equity, shall have the right to recover all costs and expenses incurring by such no breaching party in connection with such proceeding, including reasonable attorney's fees.

7.8. Notices. Any notices, requests and demands required or desired to be given hereunder shall be in writing and shall be served personally upon the party for who intended, or if mailed, by certified mail, return receipt requested, postage prepaid, to such party at its address shown below:

To: Oberre Alpine Farms LLC
Zolman Holdings LLC
Steve Zolman
c/o Paul Kroff
185 N. Pfeifferhorn Dr.
Alpine, UT 84004

With a copy to: John Barlow, Esq.
Mitchell, Barlow & Mansfield
Boston Building
9 Exchange Place
Suite 600
Salt Lake City, UT 84111

To the City: Alpine City
20 North Main Street
Alpine, Utah 84004

Any party may change its address or notice by giving written notice to the other party in accordance with the provisions with this section.

7.9. Headings. The headings contained in this Agreement are intended for convenience only and are in no way to be used to construe or limit the text herein.

7.10. No Third Party Rights. The obligations of Applicants set forth herein shall not create any fights in and/or obligations to any person or parties other than Applicant and the City unless otherwise specifically set forth herein.

7.11. Further Documentation. This Agreement is entered into by all parties with the recognition and anticipation that subsequent agreements implementing and carrying out the provisions of this Agreement may be necessary. The parties agree to negotiate in good faith with respect to all such future agreements.

7.12 Enforcement. The Applicants specifically agree that the City may enforce the terms of this agreement by denying the Applicants, or their successors or assigns, development approval for the Property. City agrees that Applicants may enforce the benefits and other provisions of this Agreement through seeking an injunction, writ of mandamus or specific performance.

IN WITNESS WHEREOF, the parties have executed this Agreement by their authorized representatives effective as of the date first above written.

"City"

Alpine City, a Utah municipal corporation

Mayor

ATTEST:

Charmayne G. Warnock, City Recorder

State of Utah
County of Utah

This instrument was acknowledged before me on June 16, 2016 (date of acknowledgment) by Sheldon Wimmer as Mayor, of Alpine City, a Utah Municipal Corporation, and by Charmayne G. Warnock, City Recorder, on behalf of said corporation.

Notary Public in and for the State of Utah (Notary's stamp here)

ALICE WINBERG
NOTARY PUBLIC • STATE OF UTAH
My Commission Expires January 29, 2020
COMMISSION NUMBER 687691

Approved as to form:

David L. Church, City Attorney

Applicant:

By:

State of Utah
County of Utah

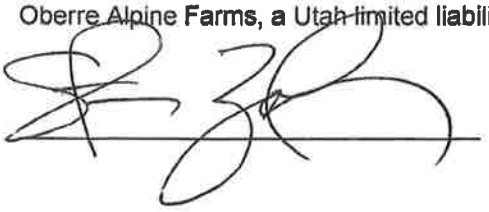
This instrument was acknowledged before me on June 16, 2016 by Steve Zolman.

Notary Public in and for the State of Utah (Notary's stamp here)

CHARMAYNE G. WARNOCK
NOTARY PUBLIC • STATE OF UTAH
My Commission Expires May 15, 2018
COMMISSION NUMBER 676677

"Applicants"

Oberre Alpine Farms, a Utah limited liability company



Steve Zolman

Zolman Holdings LLC, a Utah limited liability company

EXHIBIT A

DESCRIPTION OF THE PROPERTY

Parcel #	Acres
11:006:0001	29.75
11:045:0044	29.42
11:045:0243	103.71
11:045:0182	2.858
11:045:0136	6.671
11:045:0057	1
11:045:0242	4.997
11:045:0138	1.11
11:045:0181	0.063
	179.579

EXHIBIT B

LIST OF FEES

Impact Fees	Per Unit	Per SF	
Pressurized Irrigation		$ 0.095	paid at building permit
Storm	$ 800		paid prior to recordation
Street	$ 1,183		paid prior to recordation
Park/Trail	$ 2,688		paid prior to recordation
Current TSSD impact fee at time of building permit	$ 2,475		paid at building permit
Water	$ 1,123		paid at building permit
Sewer	$ 493		paid at building permit
Sewer Fee	$ 125		paid at building permit
Water Fee (3/4")	$ 150		paid at building permit

EXHIBIT C-1

GROVE DEDICATION

NOTE: GROVE DRIVE DEDICATIONS SHALL BE APPROXIMATELY AS SET FORTH BELOW, PENDING FINAL DEIGN OF GROVE DRIVE.

Parcel 1 - Josh James

Commencing at a point located South 00°47'44" West along the quarter Section line 2134.31 feet from the North quarter corner of Section 4, Township 8 South, Range 2 East, Salt Lake Base and Meridian; thence North 78°35'00" East 83.57 feet; thence South 10°20'51" East 3.32 feet; thence South 79°34'32" West 25.60 feet; thence along the arc of a 29.00 foot radius curve to the left 39.87 feet (chord bears South 40°11'08" West 36.81 feet); thence South 00°47'44" West 145.52 feet; thence along the arc of a 541.00 foot radius curve to the right 72.24 feet (chord bears South 04°37'16" West 72.19 feet), thence along the arc of a 459.00 foot radius curve to the left 61.29 feet (chord bears South 04°37'16" West 61.25 feet); thence South 00°47'44" West 76.50 feet; thence South 78°17'22" West 25.56 feet more or less to the quarter Section line; thence North 00°47'44" East along the quarter Section line 379.71 feet to the point of beginning.

Area = 11,857 SQ.FT.

Parcel 2 - Josh James

Commencing at a point located South 00°47'44" West along the quarter Section line 2514.02 feet from the North quarter corner of Section 4, Township 8 South, Range 2 East, Salt Lake Base and Meridian; North 78°17'22" East 25.56 feet; thence South 00°47'44" West 34.89 feet; thence along the arc of a 490.00 foot radius curve to the right 121.58 feet (chord bears South 07°54'13" West 121.27 feet); thence South 89°41'52" West 9.95 feet more or less to the quarter Section line; thence North 00°47'44" East along the quarter Section line 149.88 feet to the point of beginning.

Area = 3,206 SQ.FT.

Parcel 3 - Corinne and Michael Russon

Commencing at a point located South 00°47'44" West along the quarter Section line 2159.62 feet from the North quarter corner of Section 4, Township 8 South, Range 2 East, Salt Lake Base and Meridian; thence South 00°47'44" West along the quarter Section line 268.70 feet; thence North 89°36'59" West 16.04 feet; thence along the arc of a 500.00 foot radius curve to the right 63.23 feet (chord bears North 04°49'26" East 63.19 feet); thence along the arc of a 500 foot radius curve to the left 66.77 feet (chord bears North 04°37'16" East 66.72 feet); thence North 00°47'44" East 129.74 feet; thence along the arc of a 29.00 foot radius curve to the left 9.55 feet (chord bears North 08°38'23" West 9.51 feet); thence South 89°50'46" East 8.71 feet to the point of beginning.

Area = 2,486 SQ.FT.

Parcel 4- Steve Zolman

Commencing at a point located South 00°47'44" West along the quarter Section line 2428.32 feet from the North quarter corner of Section 4, Township 8 South, Range 2 East, Salt Lake Base and Meridian; thence South 00°47'44" West along the quarter Section line 263.44 feet; thence South 28°20'05" West 168.39 feet; thence South 61°32'40" East 8.24 feet; thence South 28°52'59" West 18.74 feet; thence North 60°40'00" West 41.00 feet; thence North 28°52'59" East 98.69 feet; thence along the arc of a 449.00 foot radius curve to the left 220.11 feet (chord bears North 14°50'21" East 217.91 feet); thence North 00°48'06" East 114.93 feet; thence South 89°36'59" East 16.04 feet more or less to the point of beginning.

Area = 11,468 SQ.FT.

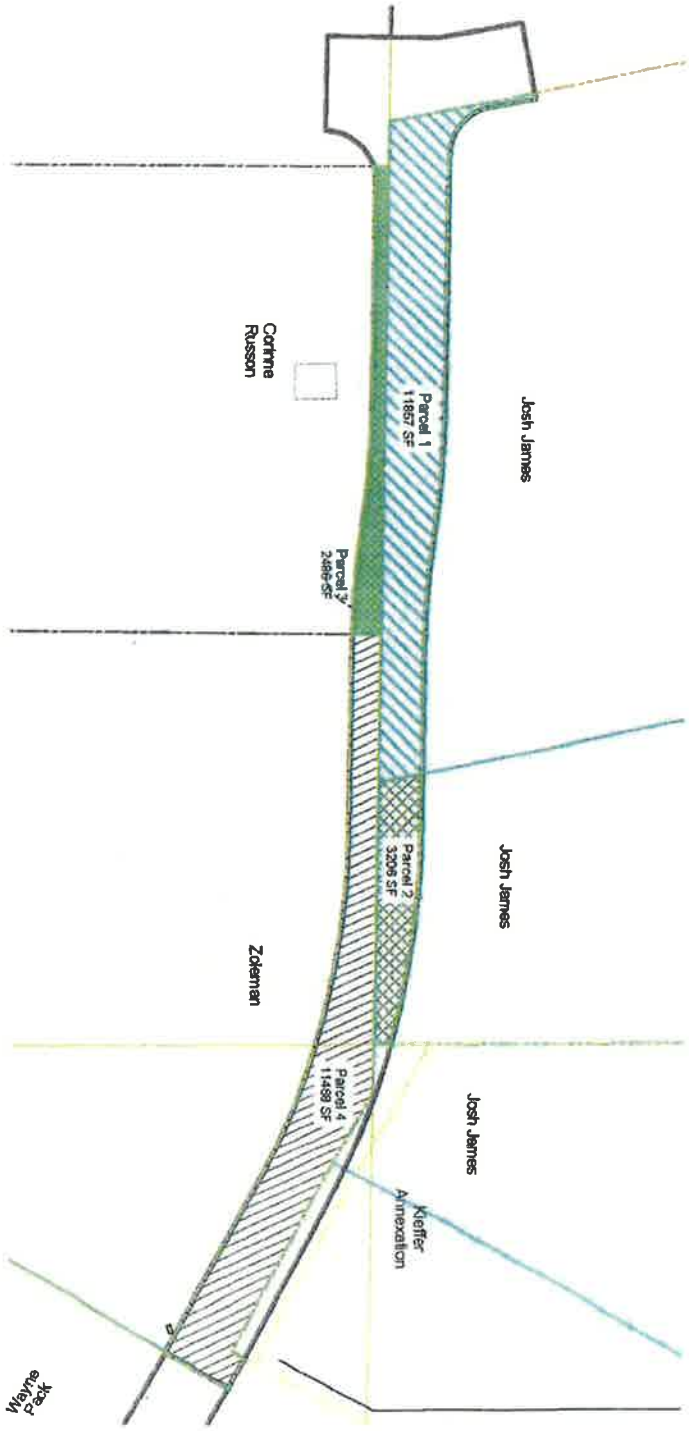


EXHIBIT C-2

GROVE DRIVE IMPROVEMENT FINANCIAL RESPONSIBILITIES

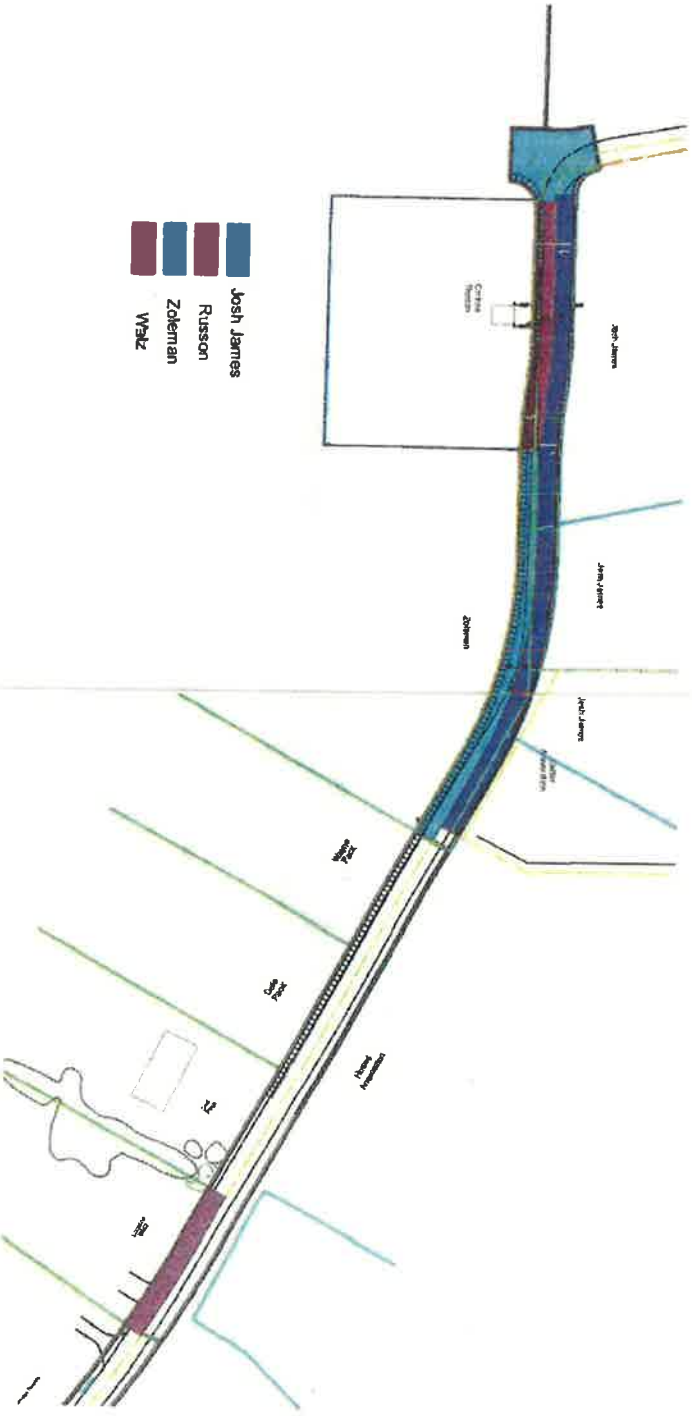
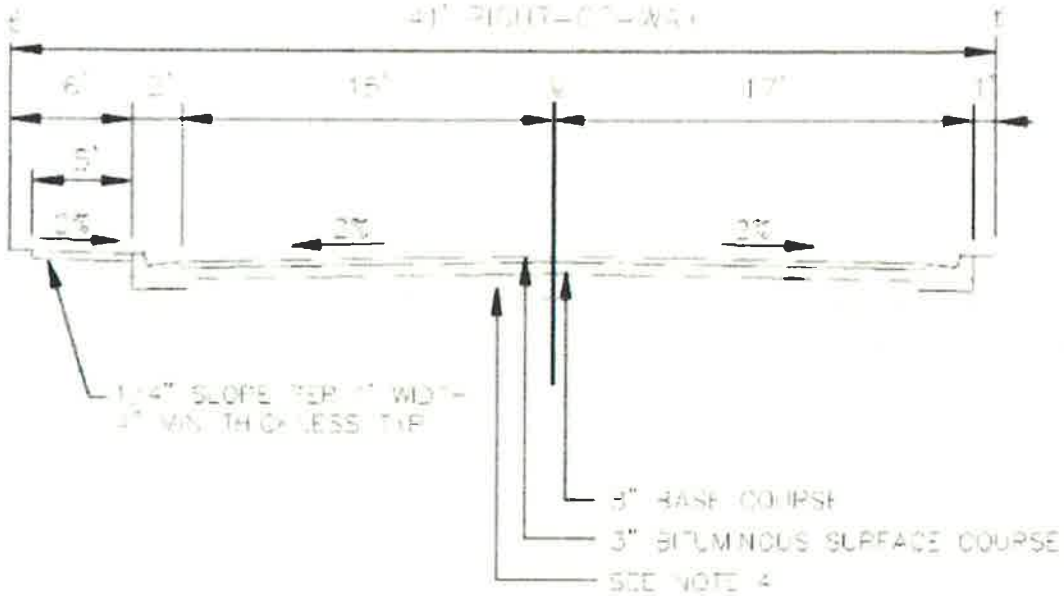


EXHIBIT D

GROVE DRIVE CROSS SECTION



GROVE DRIVE MIN. REQ'D R.O.W.

EXHIBIT E

SLOPE ANALYSIS

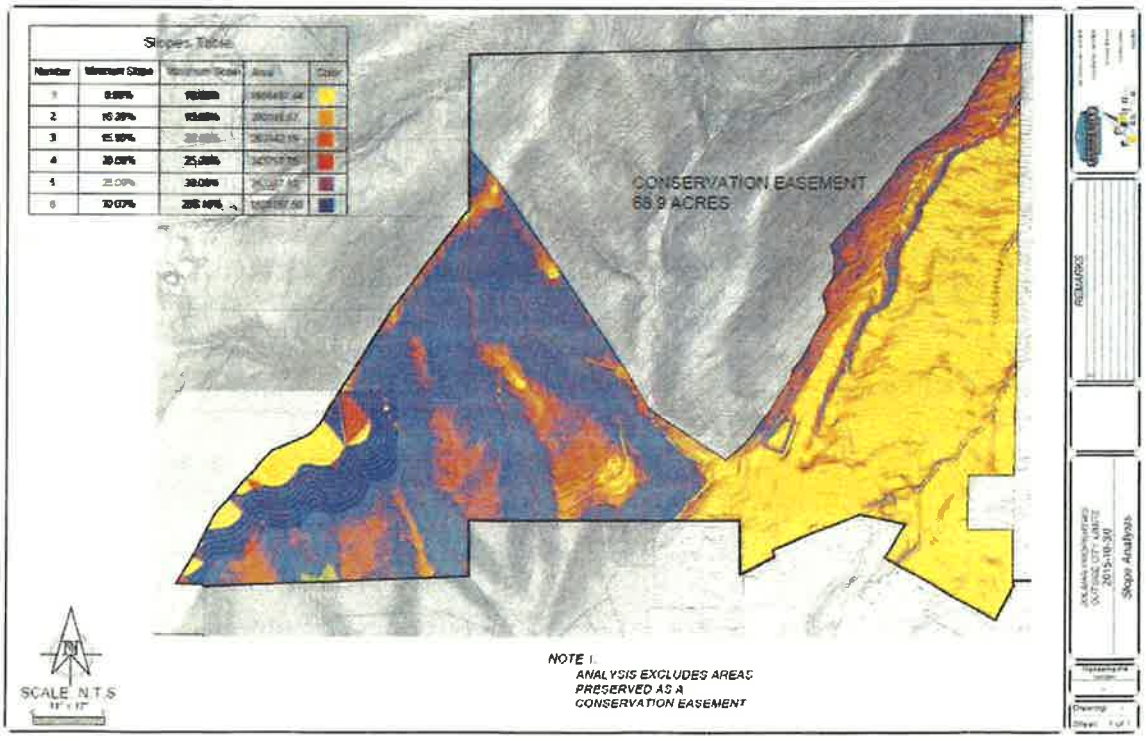
SLOPE ANALYSIS (BASED ON PRD FORMULA 10.5)

Name: Zolman Annexable Properties (Conservation Easement Area Excluded)
Date: October 30, 2015
Contours Used: 1999 Aerial flown contours

CR-40,000 Zone

	Acres	Total Square Feet
Acreage Property	110.88	4,830,128.17
Zone Total Acreage	**110.88**	

Slope Percentages	Percent Acres Within that range	SF within slope range	Acres within slope range	Required Acres per Lot	Allowed Lots for this range
0-9.99%	34.5%	1,666,461.44	38.26	1.00	38.26
10-14.99%	8.1%	390,181.67	8.96	1.50	5.97
15-19.99%	5.4%	263,142.19	6.04	2.00	3.02
20-24.99%	7.1%	343,797.75	7.89	3.00	2.63
25-29.99%	7.5%	363,357.62	8.34	4.00	2.09
30%+	37.3%	1,803,187.50	41.40	5.00	8.28
Totals	**100.0%**		**110.88**		
				Base Density, Non-PRD	**80**
				Private Open Space (10% Max Bonus), PRD	**66**
				Public Open Space (25% Max Bonus), PRD	**75**



Surveyor's Certificate

I HEREBY CERTIFY THAT THIS A TRUE AND ACCURATE MAP OF THE TRACT OF LAND TO BE ANNEXED TO _____Alpine_____CITY, UTAH COUNTY, UTAH.

Boundary Description

Commencing at a point located South 00°47'39" West along the quarter Section line 11.14 feet from the North quarter corner of Section 18, Township 4 South, Range 2 East, salt Lake Base and Meridian: thence South 00°47'39" West along the quarter Section line, said line also being the Westerly Boundary line of Plats "A", "C" Amended, and Plat "D", Alpine Cove Subdivision as shown on record in the office of the Utah County Recorder 2123.97 feet; thence North 78°35'00" East along the Southerly boundary line of Plat "A", Alpine Cove Subdivision as shown on record in the office of the Utah County Recorder 601.96 feet; thence North 71°19'00" East partially along the Southerly boundary line of Plat "A", Alpine Cove Subdivision as shown on record in the office of the Utah County Recorder 145.84 feet; thence South 00°47'43" West along the Westerly boundary line of Plat "E" Amended, Alpine Cove Subdivision as shown on record in the office of the Utah County Recorder 691.76 feet; thence South 89°41'52" West along the Northerly boundary line of the Keiffer Annexation Plat 726.0 feet more or less to the center of section 18; thence along said boundary line as follows: South 00°18'08" East 26.89 feet, South 28°33'59" West 199.33 feet more or less to the Northeast corner of the Pack Annexation Plat, thence along the Pack Brothers, Keystone, and Lindsay Addition annexations as follows: North 60°40'00" West 626.25 feet, North 33°39'00" East 194.56 feet, North 78°13'00" West 226.80 feet, South 69°35'00" West 460.80 feet, South 12°33'00" East 32.91 feet; South 62°21'26" West 185.51 feet; thence South 00°05'00" East 0.26 feet; thence South 62°15'00" West 5.88 feet; thence along Grant Addition Annexation Plat as follows North 00°34'23" West 256.91 feet, South 89°26'28" West 421.56 feet, South 01°07'19" East 0.89 feet; thence West 907.16 feet; thence South 263.11 feet; thence South 87°43'29" West 1291.12 feet; thence along the Fort Canyon (Borcherds) Annexation Plat as follows: North 87°58'36" West 141.05 feet, North 29°42'37" East 392.48 feet, North 42°16'47" East 242.22 feet, North 43°08'11" East 169.04 feet, North 65°25'08" East 176.95 feet, North 58°50'08" East 29.39 feet, North 43°32'14" East 58.34 feet, North 30°50'29" East 532.08 feet, North 30°07'04" East 148.90 feet, North 37°30'55" East 618.98 feet, South 89°58'05" East 10.73 feet, North 00°07'18" West 770.17 feet, North 88°47'14" East 2716.50 feet to the point of beginning.

Area = 8,311,812 SF 190.81 Acres

Surveyor's Certificate

I HEREBY CERTIFY THAT THIS A TRUE AND ACCURATE MAP OF THE TRACT OF LAND TO BE ANNEXED TO Alpine CITY, UTAH COUNTY, UTAH.

Boundary Description

Commencing at a point located South 00°47'39" West along the quarter Section line 11.14 feet from the North quarter corner of Section 18, Township 4 South, Range 2 East, salt Lake Base and Meridian: thence South 00°47'39" West along the quarter Section line, said line also being the Westerly Boundary line of Plats "A", "C" Amended, and Plat "D", Alpine Cove Subdivision as shown on record in the office of the Utah County Recorder 2123.97 feet; thence North 78°35'00" East along the Southerly boundary line of Plat "A", Alpine Cove Subdivision as shown on record in the office of the Utah County Recorder 601.96 feet; thence North 71°19'00" East partially along the Southerly boundary line of Plat "A", Alpine Cove Subdivision as shown on record in the office of the Utah County Recorder 145.84 feet; thence South 00°47'43" West along the Westerly boundary line of Plat "E" Amended, Alpine Cove Subdivision as shown on record in the office of the Utah County Recorder 691.76 feet; thence South 89°41'52" West along the Northerly boundary line of the Keiffer Annexation Plat 726.00 feet more or less to the center of section 18; thence along said boundary line as follows: South 00°18'08" East 26.89 feet, South 28°33'59" West 199.33 feet more or less to the Northeast corner of the Pack Annexation Plat, thence along the Pack Brothers, Keystone, and Lindsay Addition annexations as follows: North 60°40'00" West 626.25 feet, North 33°39'00" East 194.56 feet, North 78°13'00" West 226.80 feet, South 69°35'00" West 460.80 feet, South 12°33'00" East 32.91 feet; South 62°21'26" West 185.51 feet; thence South 00°05'00" East 0.26 feet; thence South 62°15'00" West 5.88 feet; thence along Grant Addition Annexation Plat as follows North 00°34'23" West 256.91 feet, South 89°26'28" West 421.56 feet, South 01°07'19" East 0.89 feet; thence West 907.16 feet; thence South 263.11 feet; thence South 87°43'29" West 1291.12 feet; thence along the Fort Canyon (Borcherds) Annexation Plat as follows: North 87°58'36" West 141.05 feet, North 29°42'37" East 392.48 feet, North 42°16'47" East 242.22 feet, North 43°08'11" East 169.04 feet, North 65°25'08" East 176.95 feet, North 58°50'08" East 29.39 feet, North 43°32'14" East 58.34 feet, North 30°50'29" East 532.08 feet, North 30°07'04" East 148.90 feet, North 37°30'55" East 618.98 feet, South 89°58'05" East 10.73 feet, North 00°07'18" West 770.17 feet, North 88°47'14" East 2716.50 feet to the point of beginning.

Area = 8,311,812 SF 190.81 Acres

Intermountain GeoEnvironmental Services, Inc.
12429 South 300 East, Suite 100, Draper, Utah, 84020
Phone (801) 748-4044 | Fax (801) 748-4045
www.igesinc.com

Geotechnical Investigation
Oberee Annexation
~1425 Grove Drive
Alpine

IGES Project No. 02362-001

August 23, 2016

Prepared for:

Paul Kroff

Intermountain GeoEnvironmental Services, Inc.
12429 South 300 East, Suite 100, Draper, Utah 84020
~ T: (801) 748-4044 ~ F: (801) 748-4045

Prepared for:

Paul Kroff
185 North Pfeifferhorn
Alpine, Utah, 84004

GEOTECHNICAL INVESTIGATION
Oberee Annexation
~1425 Grove Drive
Alpine, Utah

IGES Job No. 02362-001

Prepared by:

Jared K. Williams, P.E.
Project Engineer

Reviewed by:

Kent A. Hartley, P.E.
Principal

IGES, Inc.
12429 South 300 East, Suite 100
Draper, UT 84020
(801) 748-4044

August 23, 2016

TABLE OF CONTENTS

APPENDIX

1.0 EXECUTIVE SUMMARY

This report presents the results of a geotechnical investigation conducted for the proposed Oberee Annexation a 60-acre residential development located at approximately 1425 Grove Drive in Alpine, Utah. Based on the subsurface conditions encountered at the site, it is our opinion that the subject site is suitable for the proposed development provided that the recommendations contained in this report are incorporated into the design and construction of the project. A brief summary of the critical recommendations is included below:

- The native near surface soils consisted primarily of alternating layers of Silty SAND (SM), Poorly Graded SAND (SP), Silty GRAVEL (GM) and Poorly Graded GRAVEL (GP). No groundwater was observed in any of the test pits.
- The primary geotechnical concerns at the subject site is areas of near-surface undocumented fill soils (see approximate fill area on Figure A-2), a mapped normal fault and modern alluvial-fan deposits (see Figure A-3).
- Undocumented fill, soft soil and organic topsoil should be removed below foundation elements. Footings should be established entirely on suitable, undisturbed medium dense, or dense native soils or entirely on a minimum of 12 inches structural fill that extends to suitable, undisturbed native soils and may be proportioned for a maximum net allowable bearing capacity of **3,000 psf.**
- Areas below roadways, slabs, concrete flatwork, or pavement sections should be grubbed a minimum of 6 inches of any existing surface vegetation and highly organic topsoil removed. In areas of undocumented fill we recommend a minimum of 24 inches of the fill be removed, processed and replaced as compacted structural fill where necessary (see approximate fill area on Figure A-2). For areas without undocumented fill the roadways, slabs, concrete flatwork, or pavement sections may be placed directly on graded, suitable, undisturbed native soils. An IGES representative should observe the site preparation and grading operations to assess whether the recommendations presented in this report have been complied with.
- A flexible pavement section of 3/9 (inches of asphalt/road base) constructed over graded and proof-rolled native soils or compacted structural fill as recommended for the residential roadways.

The recommendations made in this report are given with the intent that an adequate program of tests and observations will be made during the construction. IGES staff or other qualified geotechnical engineer should be on site to verify compliance with these recommendations.

2.0 INTRODUCTION

2.1 PURPOSE AND SCOPE OF WORK

This report presents the results of a geotechnical investigation conducted for the proposed Oberee Annexation, a 60-acre residential development located at approximately 1425 Grove Drive in Alpine, Utah. The purposes of this investigation were to assess the nature and engineering properties of the subsurface soils at the site and to provide recommendations for general site grading and design and construction of foundations, slabs-on-grade, roadways, pavement and exterior concrete flatwork.

The scope of work completed for this study included a site reconnaissance, subsurface exploration, soil sampling, infiltration testing, laboratory testing, engineering analyses, and preparation of this report. Our services were performed in accordance with our proposal dated June 7, 2016.

The recommendations contained in this report are subject to the limitations presented in the **Limitations** section of this report (Section 7.1).

2.2 PROJECT DESCRIPTION

The property is bound by Grove Drive to the southeast and Elkridge Lane to the south, existing residences to the east and Dry Creek and the Big Hollow ridge to the north and west as shown on the *Geotechnical Map* (Figure A-2). The site has previously been excavated and mass-graded as a source for aggregate and granite landscape boulders. Construction plans of the proposed development were not available for our review at the time this report was prepared; however, a Concept Plan showing a proposed subdivision with 66 residential lots was provided by Dudley and Associates (Sheet C – 1.0 dated November 11, 2015). We anticipate that the development will consist of public streets with standard curb, gutter, and sidewalks and associated utility improvements. We anticipate structures will consist of two or three story wood-framed buildings constructed with basements or shallow walk-out type basements founded on conventional spread footings. If the proposed plans differ from these parameters, IGES should be contacted to assess the impact on these recommendations.

3.0 METHOD OF STUDY

3.1 FIELD INVESTIGATION

As a part of this investigation, subsurface soil conditions were explored by excavating fifteen exploratory test pits to depths of 8 to 14 feet below the existing site grade. The approximate locations of the explorations are shown on Figure A-2 (*Geotechnical Map*) in Appendix A. The test pits were spaced to provide information at representative locations at the site. Photos taken at the time of our investigation are included on Figure A-4. Logs of the subsurface conditions as encountered in the explorations were recorded at the time of exploration by a member of our technical staff and are presented as Figure A-5 through A-19 in Appendix A. A *Key to Soil Symbols and Terminology* used in the test pit logs is included as Figure A-20.

Test pits were completed using two Volvo EC trackhoes by Decorative Landscaping. Soil sampling was completed to collect representative samples of the various layers observed at the site. Disturbed samples were collected in plastic bags and 5-gallon buckets and relatively undisturbed soil samples were collected with the use of a 6-inch long brass tube attached to a hand sampler driven with a 2-lb sledge hammer. All samples were transported to our laboratory to evaluate the engineering properties of the various earth materials observed. The soils were classified according to the *Unified Soil Classification System* (USCS) by the Geotechnical Engineer. Classifications for the individual soil units are shown on the attached Test Pit Logs.

3.2 LABORATORY INVESTIGATION

Geotechnical laboratory tests were conducted to evaluate the engineering characteristics of onsite earth materials. Laboratory tests conducted during this investigation include:

- In Situ Density and Moisture Content (ASTM D2216 & D2937)
- Particle-Size Distribution (Gradation) (ASTM D6913)
- No. 200 Sieve Wash (ASTM D1140)
- Direct Shear Test (ASTM D3080)
- Modified Proctor - Maximum dry density, optimum moisture content (ASTM D1557)
- California Bearing Ratio (CBR) (ASTM D1883)
- Corrosion Testing-sulfate and chloride concentrations, pH and resistivity (ASTM D4972, D4327, D4327, C1580 and EPA 300.0)

Select results of laboratory tests completed for this investigation are presented on the Test Pit Logs in Appendix A and the complete laboratory results are presented in Appendix B.

3.3 ENGINEERING ANALYSIS

Engineering analyses were performed using soil data obtained from the laboratory test results and empirical correlations from material density, depositional characteristics and classifications. Analyses were performed using formulas, calculations and software that represent the standard of care accepted by the geotechnical industry. These methods include settlement, bearing capacity, lateral earth pressures, trench stability and pavement design. Appropriate factors of safety were applied to the results consistent with current industry practice.

4.0 GENERALIZED SITE CONDITIONS

4.1 SURFACE CONDITIONS

At the time of the field investigation the area consists of existing ranch-style residences, groves of fruit trees, undisturbed native fields, hills and a disturbed gravel pit area. The site slopes from the northeast down to the southwest following the Dry Creek drainage. Disturbed and fill areas from the gravel pit mining are concentrated at the north end of the property. The undisturbed areas are covered with grass, brush, weeds, scrub oak and other native vegetation. Several large fruit tree groves and other agricultural areas were observed mainly near the south end of the property and surround the existing ranch-style residences.

4.2 SUBSURFACE CONDITIONS

4.2.1 Soils

The soils exposed at the site generally consisted of medium dense to dense Silty SAND (SM), Silty GRAVEL (GM), Poorly Graded GRAVEL (GP) and Poorly Graded SAND (SP). A large section of mass-graded fill was observed at the north center of the property. The fill thickness varied but was observed to be about 4 feet thick and consisted of medium dense Silty SAND (SM) and Silty GRAVEL (GM). More detailed descriptions of these soil units and thicknesses are shown on the Test Pit Logs (Plates A-5 to A-19). A key to the soil symbols and terms is located on Plate A-20.

4.2.2 Groundwater

No groundwater was observed in any of the test pits to the depths as excavated. However, groundwater conditions can be expected to rise or fall several feet seasonally depending on precipitation, irrigation and the time of year. However, based on these observations and the dry granular nature of the soils observed groundwater is not anticipated to affect the proposed subdivision or associated improvements.

4.2.3 Infiltration Testing

Based on direction provided by the Civil Engineer, an infiltration test was performed in test pit 13 at the time of our investigation. The infiltration test was located to aid in the storm drain detention/retention pond infiltration calculations and was performed using clean water. The infiltration rate observed was relatively rapid as would be expected in dry granular soils. A summary of the infiltration test follows:

TP-13 INFILTRATION (See Figure A-2 for location)				
Hole Depth = 42 inches below grade Hole Diameter = 5 inches			Average Head = 8 inches Total Soak Time = 1.5 hours	
Time Difference (minutes)	**Depth Difference (inches)**	**Infiltration Rate (min/inch)**	**Infiltration Rate (inch/hour)**	**Comments**
10	6.0	1.6	36.0	Intermediate
10	5.0	2.0	30.0	Intermediate
10	**5.0**	**2.0**	**30.0**	**Final Reading**

It should be noted that the water infiltration rate may vary significantly due to the placement of sod/topsoil, irrigation/precipitation and seasonal conditions. Sediment collected from runoff may reduce the actual infiltration rate to be slower than the predicted infiltration. This and other field conditions should be considered and an appropriate factor of safety should be applied to the rates provided.

5.0 GEOLOGIC CONDITIONS

5.1 GEOLOGIC SETTING

The site is located in Alpine, Utah at an elevation of approximately 5,350 to 5,190 feet above sea level below Chipman Canyon and the Big Hollow drainage including the Dry Creek drainage in the northeast section of the Utah Valley. The Utah Valley represents a deep, sediment-filled structural basin of Cenozoic-age flanked by uplifted blocks; the Wasatch Range on the east, and the Lake and East Tintic Mountains to the west (Hintze, 1980). The Wasatch Range is the easternmost expression of pronounced Basin and Range extension in north-central Utah.

Near-surface geology of the Utah Valley is dominated by sediments which were deposited within the last 30,000 years by Lake Bonneville (Scott et al., 1983; Hintze, 1993; Machette, 1992). The lacustrine sediments near the mountain front consist mostly of gravel and sand. As the lake receded, streams began to incise large deltas that had formed at the mouths of major canyons along the Wasatch Range and the eroded material was deposited in shallow lakes and marshes in the basin and in a series of recessional deltas and alluvial fans. Sediments toward the center of the valley are predominately deep-water deposits of clay, silt and fine sand. However, these deep-water deposits are in places covered by a thin post-Bonneville alluvial cover. Surface sediments at the subject site are mapped primarily as Pinedale Glacial Deposits (*Qgob*), Stream Alluvium *(Qalp)*, Younger Alluvial Fan Deposits *(Qafy)*, and Lake Bonneville Alluvial Fan and Delta Deposits *(Qfdp)* (Machette, 1992).

5.2 SEISMICITY AND FAULTING

An active fault is defined as a fault that has experienced movement within the Holocene (11,000 years before present). There is a fault mapped by Biek (2005) that runs through the subject property (see *Site Geologic Map* on Figure 3 in Appendix A). Due to the nature of the alluvial-fan deposits that are throughout the site, the exact location and age of the faulting is unknown. Biek therefore, dotted the fault line indicating that the fault is concealed and the location is estimated. Further information regarding this fault would require a site specific geologic hazards investigation, which was beyond the scope of this report.

Utilizing the USGS seismic hazard deaggregation data for the site, the seismic hazard that poses the greatest risk to the subject site is the Wasatch fault Zone. The Provo segment of the Wasatch Fault Zone is located approximately 0.3 miles north-northeast of the site.

Following the criteria outlined in the 2012 International Building Code (IBC, 2012), spectral response at the site was evaluated for the *Maximum Considered Earthquake* (MCE), which equates to a probabilistic seismic event having a two percent probability of exceedance in 50 years (2PE50). Spectral accelerations were determined based on the location of the site using the *U.S. Seismic "DesignMaps" Web Application* (USGS, 2012); this software incorporates seismic hazard maps depicting probabilistic ground motions and spectral response data developed for the United States by the U. S. Geological Survey as part of NEHRP/NSHMP (Frankel et al., 1996). These maps have been incorporated into both *NEHRP Recommended Provisions for Seismic Regulations for New Buildings and Other Structures* (FEMA, 1997) and the *International Building Code* (IBC) (International Code Council, 2012).

To account for site effects, site coefficients that vary with the magnitude of spectral acceleration and *Site Class* are used. Site Class is a parameter that accounts for site amplification effects of soft soils and is based on the average shear wave velocity of the upper 100 feet; based on our field exploration, the site is classified as Site Class D (stiff soil) for the soil and fill areas. The short- and long-period *Design Spectral Response Accelerations* are presented in Tables 5.2; a summary of the *DesignMaps* analysis is presented in Appendix D. The *peak ground acceleration* (PGA) may be taken as $0.4*S_{MS}$.

Table 5.2
Site Class D "Stiff Soil" Short- and Long-Period Spectral Accelerations for MCE

Parameter	Short Period (0.2 sec)	Long Period (1.0 sec)
MCE Spectral Response Acceleration (g)	$S_S = 1.189$	$S_1 = 0.445$
MCE Spectral Response Acceleration Site Class D (g)	$S_{MS} = S_S F_a = 1.218$	$S_{M1} = S_1 F_v = 0.692$
Design Spectral Response Acceleration (g)	$S_{DS} = S_{MS}*^2/_3 = 0.812$	$S_{D1} = S_{M1}*^2/_3 = 0.461$

*(https://geohazards.usgs.gov/secure/ designmaps/us/application.php)

5.3 OTHER GEOLOGIC HAZARDS AND CONDITIONS

Geologic hazards and conditions can be defined as naturally occurring geologic conditions or processes that could present a danger to human life and property or result in impacts to conventional construction procedures. These hazards and conditions must be considered before development of the site. There are several hazards and conditions in

addition to seismicity and faulting that if present at a site, should be considered in the design of critical and essential facilities. The other geologic hazards considered for this site are wetting-induced collapsible soils, liquefaction and debris flows.

5.3.1 Collapsible Soils

Collapse (often referred to as "wetting-induced collapse") is a phenomenon where undisturbed native or fill soils under increased loading can exhibit volumetric strain and consolidation upon wetting. Collapsible soils can cause differential settling of structures and roadways. Collapsible soils do not necessarily preclude development and can be mitigated by over-excavating porous, potentially collapsible soils and replacing with engineered fill and by controlling surface drainage and runoff. Collapsible soils are typically characterized by a pinhole structure and relatively low in-situ density.

Based on the in-situ observations and soil densities the native subsurface soils have a low potential for wetting induced collapse. Shallower organic and topsoils and undocumented fill soils have a greater potential for collapse but will be removed as part of the rough grading process as recommended in the General Site Preparation and Grading section. It is our opinion that specific mitigation measures for these soils are not required. However, as part of good construction practice and to keep water away from foundations we recommend that the moisture protection and grading and surface drainage recommendations be implemented.

5.3.2 Liquefaction

Liquefaction is a phenomenon whereby loose, saturated, granular soil deposits experience a significant decrease in shear strength due to increased pore water pressure. Among other effects, liquefaction can cause soil densification resulting in ground settlement. The primary factors affecting liquefaction potential of a soil deposit are: (1) level and duration of seismic ground motions; (2) soil type and consistency; and (3) depth to groundwater. Based on the *Liquefaction-Potential Map for Utah Country* (USGS, 1994) the site resides in an area identified as having a "very low" potential for liquefaction. Based on our research and field investigation we do not consider liquefaction to be a concern at this site. A full liquefaction study and analysis was beyond this scope of work and beyond the standard of care for single family residential developments of this nature.

5.3.3 Debris Flow – Alluvial Fan Flooding

Alluvial fan flooding is a potential hazard that may exist on areas containing Holocene alluvial fan deposits. This type of flooding typically occurs as a debris flood consisting of a mixture of soil, organic material, and rock debris transported by fast-moving flood water. Debris floods and debris flows can be a hazard on alluvial fans or in stream channels above alluvial fans. Just like with stream flooding, debris floods and debris

flows can occur as a result of runoff from spring snowmelt and cloudburst rainstorms. Landslides can also mobilize a debris flow.

There are Holocene alluvial fan deposits mapped on portions of the subject site (see *Site Geologic Map* in Appendix A). There is a potential alluvial fan flood/debris flow hazard associated with these alluvial fans. Due to the nature of the sediments observed in the test pit explorations throughout the site and based on the geometry of the slopes on the western side of the property, it is our opinion that the hazard associated with debris flows and alluvial fan flooding at the subject site may consist of both water/mud flooding and also the mobilization of larger materials. The owner consider may want to consider performing a specific debris flow hazard study to assess the extent of this potential hazard and the possible mitigation efforts required to protect the proposed development.

6.0 ENGINEERING ANALYSIS AND RECOMMENDATIONS

6.1 GENERAL CONCLUSIONS

We recommend that as part of the site grading process any soft, highly organic topsoil, undocumented fill or otherwise unsuitable soils present at the site be removed from beneath proposed footings. For areas where undocumented fill is observed below roadways, slabs, concrete flatwork, or pavement sections we recommend a minimum of 24 inches of the undocumented fill be removed, processed and replaced as compacted structural fill where necessary (see approximate fill area on Figure A-2). For areas without undocumented fill the roadways, slabs, concrete flatwork, or pavement sections may be placed directly on graded, suitable, undisturbed native soils. An IGES representative should observe the site preparation and grading operations to assess whether the recommendations presented in this report have been complied with and if any additional removal and rework of the undocumented fill soils needs to be performed.

6.2 EARTHWORK

Prior to the placement of foundations, general site grading is recommended to provide proper support for foundations, exterior concrete flatwork, concrete slabs-on-grade, and asphalt pavement sections. Site grading is also recommended to provide proper drainage and moisture control on the subject property and to aid in preventing differential movement in foundation soils as a result of variations in moisture conditions.

6.2.1 General Site Preparation and Grading

Within the areas to be graded (below roadways, proposed structures, fill sections, concrete flatwork, or pavement sections), any existing surface vegetation, highly organic topsoil or deleterious materials should be removed. We recommend that the site be grubbed a minimum of 6 inches and any undocumented fill soils be removed prior to placement of structural fill, structural elements, or pavements. If any existing fills are undocumented (i.e. no record of compaction tests) they should be over-excavated and replaced with structural fill, as discussed and recommended in this report. The grubbed organic topsoil may be stockpiled and used in landscaping areas. An IGES representative should observe the site preparation and grading operations to assess whether the recommendations presented in this report have been complied with.

After rough grading has taken place as described previously, IGES recommends that the exposed pavement subgrade be proof-rolled to identify areas of soft or pumping soils; if any soft areas are identified they should be stabilized as recommended in Section 6.2.4. Once this has been accomplished the site may be brought back to the proposed subgrade elevation with the placement of pit-run type granular fill, and then the asphalt or pavement section may be placed.

6.2.2 Trench Excavations

Based on our soil observations, visual classifications and laboratory testing, the native soils at the site classify as Type B soils according to the Occupational Safety and Health Administration (OSHA). Trenches with vertical walls up to 4 feet in depth may be occupied. IGES observed that the soil layers in the upper 4 feet tended to be slightly moist, medium dense to dense, and should easily maintain a nearly vertical cut. When a trench is deeper than 4 feet, we recommend a trench-shield or shoring be used as a protective system for workers in the trench.

The contractor is ultimately responsible for trench and site safety. Pertinent OSHA requirements should be met to provide a safe work environment. If site specific conditions arise that require engineering analysis in accordance with OSHA regulations, IGES can respond and provide recommendations as needed.

6.2.3 Structural Fill and Compaction

All fill placed for the support of structures, flatwork or pavements, should consist of structural fill. Structural fill may consist of an approved imported granular material, native granular soils or screened, processed undocumented fill soils. The onsite undocumented fill soils may be reused as structural fill provided any trash, organics or material larger than 6 inches is removed prior to reuse. Imported soil used as structural fill should be a relatively well-graded granular soil with a maximum of 50 percent passing the No. 4 sieve and a maximum fines content (minus No.200 mesh sieve) of 20 percent. Structural fill should be relatively free of vegetation and debris, and contain no materials larger than 4 inches in nominal size (6 inches in greatest dimension). All structural fill soils should be approved by the geotechnical engineer prior to placement.

All structural fill should be placed in maximum 6-inch loose lifts if compacted by small hand-operated compaction equipment, maximum 8-inch loose lifts if compacted by light- to medium-duty rollers, and maximum 10-inch loose lifts if compacted by heavy-duty compaction equipment that is capable of efficiently compacting the entire thickness of the lift. We recommend that all structural fill be compacted on a horizontal plane. Structural fill placed beneath structures and below concrete flat work or pavement sections should be compacted to at least 95% of the maximum dry density (MDD) as determined by ASTM D-1557 (modified proctor). The moisture content for all structural fill should be at or slightly above the OMC at the time of placement and compaction of any structural fill. Also, prior to placing any fill, the excavation should be observed by the geotechnical engineer to evaluate whether unsuitable materials or loose soils have been removed. In addition, proper grading should precede placement of fill, as described in the **General Site Preparation and Grading** subsection of this report (Section 6.2.1).

All utility trenches backfilled below footings, pavement sections, concrete flatwork, curb and gutter and sidewalks should be backfilled with structural fill that is at or slightly above the OMC when placed and compacted to at least 95 percent of the MDD as determined by ASTM D-1557. Structural fill in landscape areas should be backfilled and compacted to a minimum of 90 percent of the MDD (ASTM D-1557).

Backfill around foundation walls should be placed in lifts no thicker than 12 inches and compacted to approximately 90 percent of the MDD at or slightly above the OMC as determined by ASTM D-1557. Failure to properly moisture-condition and compact foundation wall backfill may result in settlements of up to several inches within the fill if the moisture content of the backfill increases. Only small compaction equipment should be used near basement walls such as jumping jacks and walk-behind/remote controlled compacters. We recommend backfill placement against foundation walls not be completed until floor joists are in place or the basement walls are braced.

The gradation, placement, moisture and compaction recommendations contained in this section meet our minimum requirements. If other governing agencies such as utility, city, county or state entities have more stringent requirements which exceed our recommendations, the more stringent specifications are to be followed.

6.2.4 Soft Soil Stabilization

Although not anticipated, soft and/or pumping soils may be encountered depending on the time of year. If encountered, stabilization of soft or pumping subgrade should be accomplished by using a clean, coarse angular material worked into the soft subgrade. We recommend the material be greater than 3 inches in nominal diameter, but less than 6 inches. The stabilization material should be worked (pushed) into the soft subgrade soils until a relatively firm and unyielding surface is established. Once a relatively firm and unyielding surface is achieved, the area may be brought to final design grade using structural fill. Other earth materials not meeting aforementioned criteria may also be suitable; however, such material should be evaluated on a case-by-case basis and should be approved by IGES prior to use.

The placement of a woven geotextile and compacted structural fill may be used as an alternative or in conjunction to the procedures previously described to stabilize soft soils. The woven geotextile should consist of TenCate Mirafi 600X or approved equivalent. The geotextile should be placed to cover the entire excavation bottom where structural fill will be placed. The geotextile should be installed in accordance with the manufacturer's recommendations; seams should be overlapped a minimum of 12 inches. Following placement of the geotextile, compacted structural fill may be placed to the required grade.

6.3 FOUNDATIONS

Basements for the proposed residences are acceptable at this site and are recommended for the areas where near-surface undocumented fill soils are encountered. The basement excavations should be extended to suitable, undisturbed native soils below the undocumented fill. All soft, organic, topsoil or undocumented fill should be removed from beneath the proposed footings. All footing excavations should be observed by IGES or other qualified geotechnical engineer prior to constructing foundations.

Strip footings should be a minimum of 24 inches wide, isolated spread footings should be a minimum of 36 inches wide. Exterior footings should be embedded at least 30 inches below final grade for frost protection and confinement. Interior footings not exposed to the full effects of frost should be embedded at least 12 inches for confinement.

The proposed structures may be supported on conventional strip footings. The footings should be founded entirely on suitable, undisturbed, medium dense, or stiff native soils or a zone of structural fill with a minimum thickness of 12 inches that extends to suitable, relatively undisturbed native soils. Footings constructed in this manner may be proportioned for a maximum net allowable bearing capacity of 3,000 psf. The preceding values are for dead load plus live load conditions. A 1/3 increase is allowed for temporary wind or seismic conditions.

Settlements of properly designed and constructed conventional footings, founded as described above, are anticipated to be less than 1 inch. Differential settlements should be on the order of one-half the total settlement over 30 feet.

6.4 CONCRETE SLAB-ON-GRADE CONSTRUCTION

For areas without undocumented fill the slabs-on-grade and concrete flatwork may be placed directly on graded, suitable, undisturbed native soils. For areas where undocumented fill is observed we recommend a minimum of 24-inch over-excavation be removed, processed and re-placed as compacted structural fill. An IGES representative should observe the site preparation and grading operations to assess whether the recommendations presented in this report have been complied with. Below all slabs we recommend 4 inches of clean, compacted, free-draining gravel. Any structural fill placed should meet the requirements in Section 6.2.3 of this report. If soft soils are exposed following the over-excavation, they should be stabilized by compacting gravel and cobbles until the soil is firm and relatively unyielding or by using a woven geotextile consisting of TenCate Mirafi 600X or approved equivalent.

All concrete slabs should be designed to minimize cracking as a result of shrinkage. This should include appropriate spacing of concrete control joints and saw-cut joints.

Additionally, consideration should be given to reinforcing the slab with welded wire, re-bar, or fiber mesh as appropriate. All concrete work should be performed in accordance with the American Concrete Institute (ACI) codes and recommendations.

6.5 EARTH PRESSURE AND LATERAL RESISTANCE

Lateral forces imposed upon conventional foundations due to wind or seismic forces may be resisted by the development of passive earth pressures and friction between the base of the footing and the supporting soils.

Based on an internal angle of friction of 32° the ultimate lateral earth pressures for the native soils acting against retaining walls and buried structures may be computed from the lateral pressure coefficients or equivalent fluid densities presented in the following table:

Condition	Lateral Pressure Coefficient	Equivalent Fluid Density (pounds per cubic foot)
Active*	0.28	37
At-rest**	0.47	63
Passive*	3.25	440
Seismic Active***	0.79	107

* Based on Coulomb's equation

** Based on Jaky

*** Based on Mononobe-Okabe

These coefficients and densities assume level, granular backfill with no buildup of hydrostatic pressures. If sloping backfill, surcharges or groundwater are present, we recommend the geotechnical engineer be consulted to provide more accurate lateral pressure parameters once the design geometry is established.

Walls and structures allowed to rotate slightly should use the active condition. If the element is constrained against rotation, the at-rest condition should be used. These values should be used with an appropriate factor of safety against overturning and sliding. A value of 1.5 is typically used.

For seismic analyses, the *active* earth pressure coefficient provided in the table is based on the Mononobe-Okabe pseudo-static approach and only accounts for the dynamic horizontal thrust produced by ground motion. Hence, the resulting dynamic thrust pressure *should be added* to the static pressure to determine the total pressure on the wall. The pressure distribution of the dynamic horizontal thrust may be closely approximated as an inverted triangle with stress decreasing with depth and the resultant acting at a

distance approximately 0.6 times the loaded height of the structure, measured upward from the bottom of the structure.

6.6 MOISTURE PROTECTION AND SURFACE DRAINAGE

Precautions should be taken during and after construction to minimize the potential for saturation of foundation soils. Over wetting the soils prior to or during construction is likely to result in increased softening and pumping, causing equipment mobility problems and difficulty in achieving compaction. Moisture should not be allowed to infiltrate the soils in the vicinity of, or upslope from, the structures. We have included the following as minimum recommendations:

- Rain gutters should be installed around the entire roof perimeters of proposed structures.
- Downspouts should be installed to direct all roof runoff a minimum of 10 feet away from structures.
- The grade within 10 feet of the structures should be sloped a minimum of 5% away from the structure.
- No pressurized irrigation lines should be placed within 5 feet of the structures and we recommend the area within 5 feet of the structure be hardscaped, xeriscaped or planted with drought tolerant plants that do not require irrigation.

6.7 ASPHALT CONCRETE PAVEMENT DESIGN

For areas without undocumented fill the pavement section may be placed directly on graded, suitable, undisturbed native soils. For areas where undocumented fill is observed we recommend a minimum 24-inch over-excavation to be removed, processed and replaced as compacted structural fill. An IGES representative should observe the site preparation and grading operations to assess whether the recommendations presented in this report have been complied with.

A laboratory-determined CBR value of 32.0 was obtained from a representative sample of the near-surface soils during our investigation. This value indicates that the subsurface soils will provide very good pavement support. No traffic information was available at the time this report was prepared, however, we have assumed equivalent single axle load (ESAL) values of 275,000 ESALs for the subdivision roadways. The following pavement design has been developed for a 20-year design life assuming an annual growth rate of 0%. Based on the previously presented data, information provided by the client and the above mentioned assumptions, we recommend that pavement section be constructed in accordance with Table 6.7.1. The exposed subgrade should be proof-rolled as recommended in Section 6.2.1 and if needed, stabilized as recommended in Section 6.2.5. After grading has taken place as recommended in Section 6.2.1, placement and

compaction of the road base/granular borrow may take place. The road base should have a minimum CBR value of 30 and should be compacted to at least 95% of the MDD at or slightly above the OMC as determined by ASTM D1557.

Table 6.7.1 - Flexible Pavement Section

Section Alternatives	Asphalt Concrete (in.)	Untreated Road Base (in.)
Proposed Roadway Section	**3**	**9**

* Road Base/Borrow to be placed after proof roll, see Section 6.2.1.

Asphalt has been assumed to be a high stability plant mix; base course material should be composed of crushed stone with a minimum CBR of 70. Asphalt should be compacted to a minimum density of 96% of the Marshall value and base course should be compacted to at least 95% of the MDD of the modified proctor.

If traffic conditions vary significantly from the stated assumptions, IGES should be contacted so we can modify the design sections as necessary. If a significant volume of heavy construction traffic occurs after the pavement section has been constructed, the owner should anticipate maintenance or a decrease in the design life of the pavement area.

6.8 SOIL CORROSIVITY

Laboratory testing of a representative soil sample obtained from TP-7 at 3 feet indicated a soluble sulfate content of 8.1 ppm. Accordingly, the sample is classified as having a 'low' potential for deterioration of concrete due to the presence of soluble sulfate. As such, conventional Type I/II Portland cement may be used for all concrete in contact with site soils.

To evaluate the corrosion potential of ferrous metal in contact with onsite native soil a sample was tested for soil resistivity, soluble chloride and pH. The tests indicated that the onsite soil tested had a soluble chloride content of 5.1 ppm and a pH of 7.4. Based on these results, the onsite native soils are considered to have a *low* degree of corrosivity on ferrous metal. A minimum soil resistivity of 7457 OHM-cm was also obtained. Based on this result, the onsite native soil is considered to be *moderately corrosive* to ferrous metal. Rebar and steel pipes surrounded by concrete or inert imported fill material will be shielded from the majority of the corrosion effects. However, consideration should be given to retaining the services of a qualified corrosion engineer to provide an assessment of any metal that may be in direct contact with site soils or structural fill derived from site soils.

7.0 CLOSURE

7.1 LIMITATIONS

The recommendations contained in this report are based on our limited field exploration, laboratory testing, and understanding of the proposed construction. The subsurface data used in the preparation of this report were obtained from the explorations made for this investigation. It is likely that variations in the soil and groundwater conditions exist between and beyond the points explored. The nature and extent of variations may not be evident until construction occurs. If any conditions are encountered that differ from those described in this report, IGES should be immediately notified so that we may make any necessary revisions to recommendations contained in this report. In addition, if the scope of the proposed construction changes from that described in this report, we should be notified. It is critical that this report be used in its entirety. This report was prepared in accordance with the generally accepted standard of practice at the time the report was written. No warranty, expressed or implied, is made.

It is the Client's responsibility to see that all parties to the project including the Designer, Contractor, Subcontractors, etc. are made aware of this report in its entirety. The use of information contained in this report for bidding purposes should be done at the Contractor's option and risk.

7.2 ADDITIONAL SERVICES

The recommendations made in this report are based on the assumption that an adequate program of tests and observations will be made during the construction. IGES staff should be on site to verify compliance with these recommendations. These tests and observations should include, but not necessarily be limited to, the following:

- Observations and testing during site preparation, earthwork and structural fill placement.
- Observation of footing excavations.
- Consultation as may be required during construction.
- Quality control on concrete placement to verify slump, air content, and strength.

We also recommend that project plans and specifications be reviewed by us to verify compatibility with our conclusions and recommendations. Additional information concerning the scope and cost of these services can be obtained from our office.

8.0 REFERENCES CITED

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APPENDIX A

BASE MAP: LEHI, UTAH - U.S.G.S. 7.5 MINUTE QUADRANGLES, 2014

0 1,000 2,000

SCALE 1" = 2,000'
(8½"x11" ONLY)

N

IGES®

PROJECT NUMBER: 02362-001

SITE VICINITY MAP

GEOTECHNICAL INVESTIGATION
OBEREE ANNEXATION
~1425 GROVE DRIVE
ALPINE, UTAH

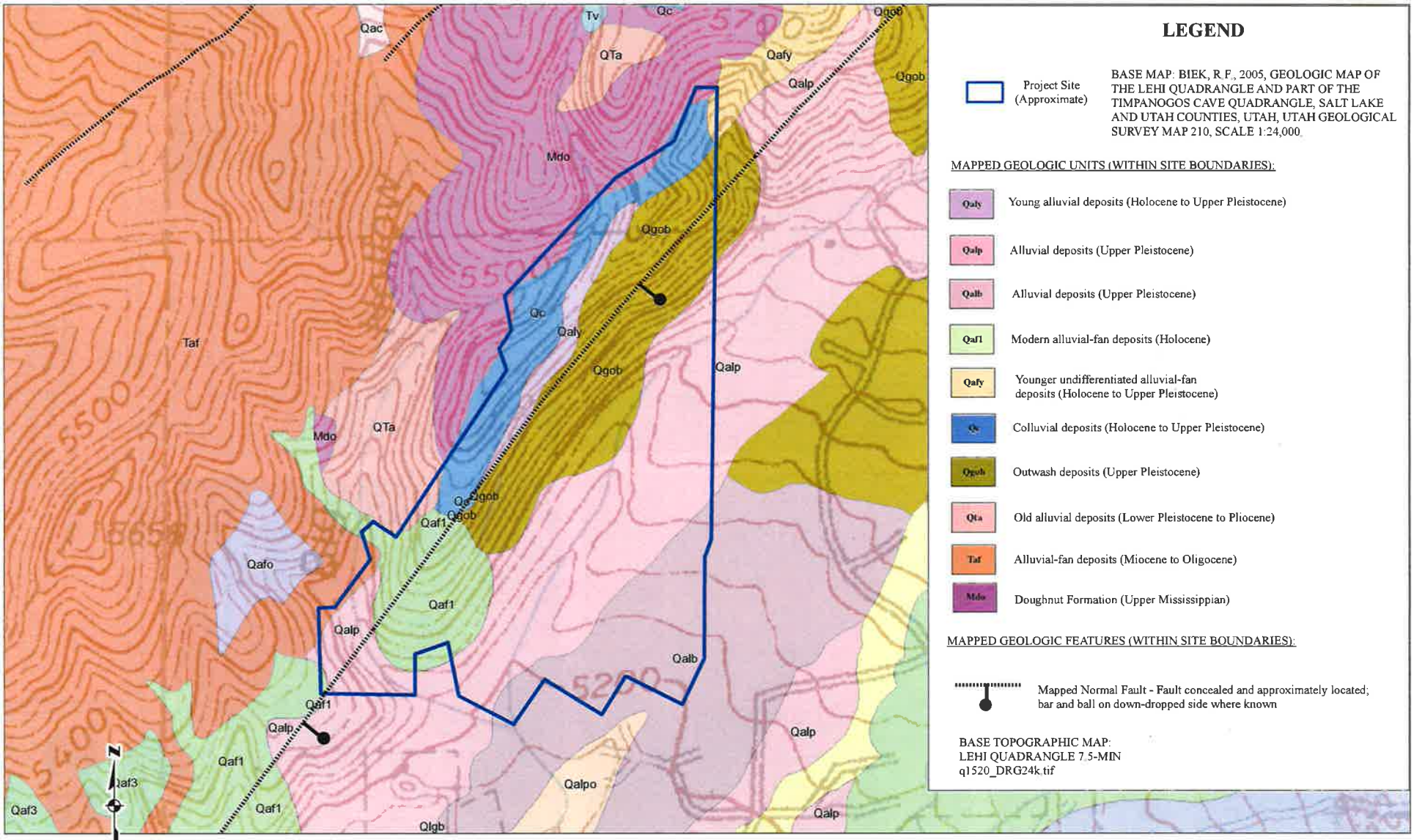
UT

FIGURE

A-1

THIS PLAN VIEW IS FOR REFERENCE ONLY AND DOES NOT REPRESENT A BOUNDARY OR TOPO SURVEY. ALL FEATURES AND PROPERTY LINES ARE APPROXIMATE.
AERIAL IMAGES FROM AGRC WEBSITE, 2012 HIGH RESOLUTION ORTHOPHOTOGRAPHY (HRO), 12TVK340800.tif, DATE OF IMAGES - SPRING, 2012.

IGES® PROJECT NUMBER: 02362-001	GEOTECHNICAL MAP GEOTECHNICAL INVESTIGATION OBEREE ANNEXATION ~1425 GROVE DRIVE ALPINE	0 200 400 SCALE 1" = 400' (8½"x11" ONLY)	FIGURE A-2



LEGEND

Project Site (Approximate)

BASE MAP: BIEK, R.F., 2005, GEOLOGIC MAP OF THE LEHI QUADRANGLE AND PART OF THE TIMPANOGOS CAVE QUADRANGLE, SALT LAKE AND UTAH COUNTIES, UTAH, UTAH GEOLOGICAL SURVEY MAP 210, SCALE 1:24,000

MAPPED GEOLOGIC UNITS (WITHIN SITE BOUNDARIES):

- Qaly — Young alluvial deposits (Holocene to Upper Pleistocene)
- Qalp — Alluvial deposits (Upper Pleistocene)
- Qalb — Alluvial deposits (Upper Pleistocene)
- Qaf1 — Modern alluvial-fan deposits (Holocene)
- Qafy — Younger undifferentiated alluvial-fan deposits (Holocene to Upper Pleistocene)
- Qc — Colluvial deposits (Holocene to Upper Pleistocene)
- Qgob — Outwash deposits (Upper Pleistocene)
- QTa — Old alluvial deposits (Lower Pleistocene to Pliocene)
- Taf — Alluvial-fan deposits (Miocene to Oligocene)
- Mdo — Doughnut Formation (Upper Mississippian)

MAPPED GEOLOGIC FEATURES (WITHIN SITE BOUNDARIES):

Mapped Normal Fault - Fault concealed and approximately located; bar and ball on down-dropped side where known

BASE TOPOGRAPHIC MAP:
LEHI QUADRANGLE 7.5-MIN
q1520_DRG24k.tif

0 200 400 800 Feet

1 inch = 400 feet (11" X 17" ONLY)

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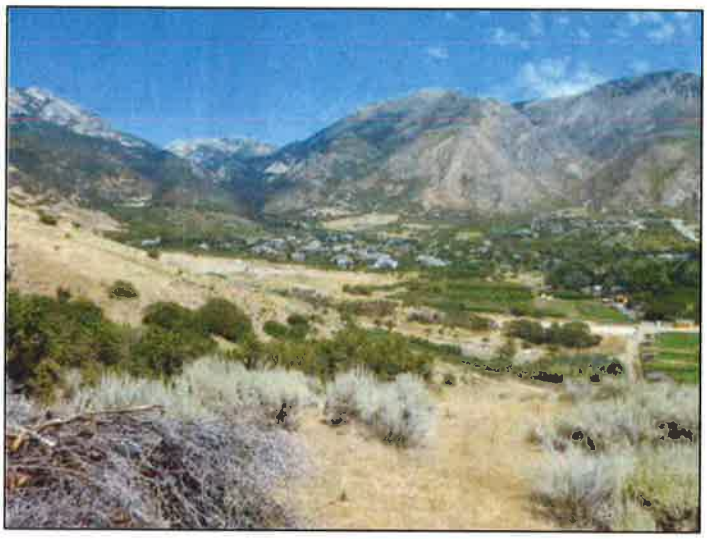
Project Number - 02362-001

GEOTECHNICAL INVESTIGATION
OBEEREE ANNEXATION
~1425 GROVE DRIVE
ALPINE, UTAH
SITE GEOLOGIC MAP

FIGURE
A-3



TEST PIT 1

TEST PIT 4

TEST PIT 5

TEST PIT 11

TEST PIT 15

PHOTOS TAKEN ON AUGUST 2, 2016

IGES®

PROJECT NUMBER: 01791-006

SITE PHOTOS

GEOTECHNICAL INVESTIGATION
OBEREE ANNEXATION
~1425 GROVE DRIVE
ALPINE

FIGURE

A-4

DATE
STARTED: 8/2/16
COMPLETED: 8/2/16
BACKFILLED: 8/2/16

Geotechnical Investigation
Oberee Annexation
~1425 Grove Drive
Alpine, UT
Project Number 02362-001

IGES Rep: JKW
Rig Type: Volvo TrackH

TEST PIT NO:
TP - 1
Sheet 1 of 1

LOCATION
LATITUDE 40.47840 LONGITUDE -111.76480 ELEVATION 5,344

ELEVATION	DEPTH FEET	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
	0				SC	Clayey SAND Topsoil - medium dense, slightly moist to dry, dark brown with frequent roots, roots extend to approximately 4 feet					
	1										
	2				SM	Silty SAND - medium dense to dense, slightly moist to dry, brown to light brown with gravel and trace cobble, weathered bedrock					
	3										
5340	4								14.4		
	5				GM	Silty GRAVEL - medium dense, slightly moist to dry, tan, weathered bedrock cobbles					
	6				SM	Silty SAND - medium dense to dense, slightly moist to dry, brown to light brown with gravel and trace cobble, weathered bedrock					
	7						80.6	9.0	37.1		
	8				GM	Silty GRAVEL - medium dense, slightly moist to dry, tan, weathered bedrock cobbles					
5335	9										
	10				SM	Silty SAND - medium dense to dense, slightly moist to dry, brown to light brown with gravel and trace cobble, weathered bedrock					
	11				GM	Silty GRAVEL - medium dense, slightly moist to dry, tan, weathered bedrock cobbles					
	12				SM	Silty SAND - medium dense to dense, slightly moist to dry, brown to light brown with gravel and trace cobble, weathered bedrock					
	13										
5330	14										

Moisture Content and Atterberg Limits

Plastic Limit | Moisture Content | Liquid Limit

10 20 30 40 50 60 70 80 90

LOG OF TEST PITS - 4 LINE HEADER W ELEV DAG 02362-001 GINT GPJ IGES GDT 8/23/16

IGES

SAMPLE TYPE
- GRAB SAMPLE
- 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- MEASURED
- ESTIMATED

NOTES:

Figure A-5

DATE
STARTED: 8/2/16
COMPLETED: 8/2/16
BACKFILLED: 8/2/16

Geotechnical Investigation
Oberee Annexation
~1425 Grove Drive
Alpine, UT
Project Number 02362-001

IGES Rep: JKW
Rig Type: Volvo TrackH

TEST PIT NO.
TP - 2
Sheet 1 of 1

LOCATION
LATITUDE 40.47760 LONGITUDE -111.76560 ELEVATION 5,292

DEPTH FEET	ELEVATION	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index	Moisture Content and Atterberg Limits (Plastic Limit / Moisture Content / Liquid Limit)
0	5290				SM	Silty SAND Fill - medium dense, slightly moist to dry, light brown to dark brown with granite cobbles and boulders up to 48 inches in diameter with 3- to 8-inch diameters typical						10 20 30 40 50 60 70 80 90
1												
2												
3												
4												
5												
6												
7	5285											
8					SC-SM	Silty SAND with Clay Topsoil - medium dense, slightly moist, dark brown with frequent 1/2- to 1-inch diameter roots						
9												
10					SP	Poorly Graded SAND with Gravel - medium dense to dense, moist, red-brown with granite gravel, cobble and boulders with 3- to 8-inch diameters typical						
11												
12	5280											
13												
14												

SAMPLE TYPE
- GRAB SAMPLE
- 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- MEASURED
- ESTIMATED

NOTES:

Figure A-6

LOG OF TEST PITS - 4 LINE HEADER W ELEV DAG 02362-001 GINT GPJ IGES.GDT 8/23/16

DATE
STARTED: 8/2/16
COMPLETED: 8/2/16
BACKFILLED: 8/2/16

Geotechnical Investigation
Oberee Annexation
~1425 Grove Drive
Alpine, UT

Project Number 02362-001

IGES Rep: JKW
Rig Type: Volvo TrackH

TEST PIT NO:
TP - 3
Sheet 1 of 1

LOCATION
LATITUDE 40.47700 LONGITUDE -111.76480 ELEVATION 5,300

DEPTH ELEVATION	DEPTH FEET	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index	Moisture Content and Atterberg Limits (Plastic Limit / Moisture Content / Liquid Limit)
5295	0				SM	Silty SAND with Gravel Fill - loose to medium dense, slightly moist, brown, dark brown and red-brown with granite cobbles and boulders up to 36 inches in diameter with 3- to 12-inch diameters typical						
	1											
	2											
	3											
	4											
	5				SM	Silty SAND - medium dense, moist, red-brown with trace clay, frequent 1/4- to 1-inch diameter roots and granite gravel, cobbles and boulders						
	6											
	7											
5290	8				SP	Poorly Graded SAND with Gravel - medium dense to dense, slightly moist, red-brown with granite cobbles and boulders up to 36 inches in diameter with 3- to 12-inch diameters typical						
	9											
	10											
	11											
	12											
	13											
	14											
5285												

Moisture Content and Atterberg Limits
Plastic Limit — Moisture Content — Liquid Limit
10 20 30 40 50 60 70 80 90

IGES

SAMPLE TYPE
- GRAB SAMPLE
- 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- MEASURED
- ESTIMATED

NOTES:

Figure A-7

LOG OF TEST PITS - 4 LINE HEADER W ELEV DAG 02362-001 GINT GPJ IGES.GDT 8/23/16

DATE
STARTED: 8/2/16
COMPLETED: 8/2/16
BACKFILLED: 8/2/16

Geotechnical Investigation
Oberee Annexation
~1425 Grove Drive
Alpine, UT
Project Number 02362-001

IGES Rep: JKW
Rig Type: Volvo TrackH

TEST PIT NO.
TP - 4
Sheet 1 of 1

LOCATION
LATITUDE 40.47680 LONGITUDE -111.76650 ELEVATION 5,269

DEPTH FEET	ELEVATION	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
0					SM	Silty SAND Fill - medium dense, slightly moist, light brown with granite cobbles and boulders with 3- to 12-inch diameters typical					
3					SC-SM	Silty SAND with Clay Topsoil - medium dense, moist, dark brown, trace clay, trace gravel and cobble, with roots 1/4- to 1-inch in diameter					
6					SM	Silty SAND - dense, moist, dark brown with granite gravel, cobble with white calcium stringers and mottles			31.9		
5265											
5260											
5255											
14											

Moisture Content and Atterberg Limits

Plastic Limit — Moisture Content — Liquid Limit

10 20 30 40 50 60 70 80 90

SAMPLE TYPE
- GRAB SAMPLE
- 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- MEASURED
- ESTIMATED

NOTES:

Figure A-8

LOG OF TEST PITS - 4 LINE HEADER W ELEV DAG 02362-001 GINT.GPJ IGES.GDT 8/23/16

DATE
STARTED: 8/2/16
COMPLETED: 8/2/16
BACKFILLED: 8/2/16

Geotechnical Investigation
Oberee Annexation
~1425 Grove Drive
Alpine, UT

Project Number 02362-001

IGES Rep: JKW
Rig Type: Volvo TrackH

TEST PIT NO:
TP - 5
Sheet 1 of 1

LOCATION
LATITUDE 40.47610 LONGITUDE -111.76500 ELEVATION 5,272

DEPTH FEET	ELEVATION	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index	Moisture Content and Atterberg Limits (Plastic Limit / Moisture Content / Liquid Limit)
0					SM	Silty SAND Fill - loose to medium dense, slightly moist, brown with dark and red-brown, with gray granite gravel cobbles and boulders up to 24 inches in diameter with 3- to 12-inch diameters typical						10 20 30 40 50 60 70 80 90
1												
2	5270											
3												
4												
5					SP	Poorly Graded SAND with Gravel - medium dense to dense, slightly moist, gray with weathered granite gravel, cobble and boulders up to 24 inches in diameter with 3- to 12-inch diameters typical, sand is coarse-grained, layers of weathered granite and some iron staining						
6												
7	5265											
8												
9												
10												
11												
12	5260											
13												
14												

LOG OF TEST PITS - 4 LINE HEADER W ELEV DAG 02362-001 GINT GPJ IGES GDT 8/23/16

IGES

SAMPLE TYPE
- GRAB SAMPLE
- 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- MEASURED
- ESTIMATED

NOTES:

Figure A-9

DATE
STARTED: 8/2/16
COMPLETED: 8/2/16
BACKFILLED: 8/2/16

Geotechnical Investigation
Oberee Annexation
~1425 Grove Drive
Alpine, UT
Project Number 02362-001

IGES Rep: JKW
Rig Type: Volvo TrackH

TEST PIT NO: **TP - 6**
Sheet 1 of 1

LOCATION
LATITUDE 40.47580 LONGITUDE -111.76670 ELEVATION 5,241

DEPTH FEET	ELEVATION	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
0					SM	Silty SAND Topsoil - medium dense, slightly moist to dry, brown with frequent roots					
1	5240				SM	Silty SAND - medium dense, dry, light brown with blocky calcium streaks and trace gravel and cobble					
2									12.2		
3											
4							98.8	9.0			
5					SP	Poorly Gradeded SAND - medium dense to dense, slightly moist, brown to gray to red-brown, with granite gravel, cobbles and boulders up to 36 inches in diameter with 2- to 12-inch diameters typical					
6	5235										
7											
8											
9											
10											
11	5230										
12											
13											
14											

Moisture Content and Atterberg Limits
Plastic Limit — Moisture Content — Liquid Limit
10 20 30 40 50 60 70 80 90

LOG OF TEST PITS - 4 LINE HEADER W ELEV DAG 02362-001 GINT GPJ IGES GDT 8/23/16

SAMPLE TYPE
- GRAB SAMPLE
- 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- MEASURED
- ESTIMATED

NOTES:

Figure A-10

DATE
STARTED: 8/2/16
COMPLETED: 8/2/16
BACKFILLED: 8/2/16

Geotechnical Investigation
Oberee Annexation
~1425 Grove Drive
Alpine, UT
Project Number 02362-001

IGES Rep: JKW
Rig Type: Volvo TrackH

TEST PIT NO:
TP - 7
Sheet 1 of 1

LOCATION
LATITUDE 40.47500 LONGITUDE -111.76510 ELEVATION 5,244

DEPTH FEET	ELEVATION	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION
0					SM	Silty SAND Topsoil - medium dense, dry, brown, blocky with frequent roots in upper 6 inches
1						
2					SM	Silty SAND with Silty GRAVEL - medium dense, dry, light brown with granite gravel, cobble and boulders up to 36 inches in diameter with 1- to 8-inch diamters typical
3						
4	5240					
5						
6					SP	Poorly Gradeded SAND - medium dense, dry, light brown with granite gravel, cobble and boulders up to 36 inches in diameter with 1- to 8-inch diamters typical, sand is coarse-grained from desicated granite rock
7						
8						
9	5235					
10						
11						
12						
13						
14	5230					

Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index

Moisture Content and Atterberg Limits

Plastic Limit — Moisture Content — Liquid Limit

10 20 30 40 50 60 70 80 90

LOG OF TEST PITS - 4 LINE HEADER W ELEV DAG 02362-001 GINT.GPJ IGES.GDT 8/23/16

IGES

SAMPLE TYPE
- GRAB SAMPLE
- 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- MEASURED
- ESTIMATED

NOTES:

Figure A-11

DATE
STARTED: 8/2/16
COMPLETED: 8/2/16
BACKFILLED: 8/2/16

Geotechnical Investigation
Oberee Annexation
~1425 Grove Drive
Alpine, UT
Project Number 02362-001

IGES Rep: JKW
Rig Type: Volvo TrackH

TEST PIT NO.
TP - 8
Sheet 1 of 1

LOCATION
LATITUDE 40.47400 LONGITUDE -111.76510 ELEVATION 5,227

DEPTH FEET	ELEVATION	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index	Moisture Content and Atterberg Limits (Plastic Limit / Moisture Content / Liquid Limit; 10 20 30 40 50 60 70 80 90)
0					SM	Silty SAND Topsoil - medium dense, slightly moist to dry, brown, with frequent fine roots and grainite gravel, cobbles and boulders						
1					SM	Silty SAND - medium dense, dry, light and red-brown with granite gravel, cobble and boulders up to 48 inches in diameter with 4- to 18-inch diamters typical						
2	5225											
3												
4												
5												
6												
7	5220											
8					SP	Poorly Gradeded SAND - medium dense, dry, light brown with granite gravel, cobble and boulders up to 36 inches in diameter with 1- to 8-inch diamters typical, sand is coarse-grained from desicated granite rock						
9												
10												
11												
12	5215											
13												
14												

LOG OF TEST PITS - 4 LINE HEADER W ELEV DAG 02362-001 GINT GPJ IGES GDT 8/23/16

IGES

SAMPLE TYPE
- GRAB SAMPLE
- 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- MEASURED
- ESTIMATED

NOTES:

Figure A-12

DATE
STARTED: 8/2/16
COMPLETED: 8/2/16
BACKFILLED: 8/2/16

Geotechnical Investigation
Oberee Annexation
~1425 Grove Drive
Alpine, UT
Project Number 02362-001

IGES Rep: JKW
Rig Type: Volvo TrackH

TEST PIT NO:
TP - 9
Sheet 1 of 1

LOCATION
LATITUDE 40.47350 LONGITUDE -111.76800 ELEVATION 5,205

DEPTH FEET	ELEVATION	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index	Moisture Content and Atterberg Limits (Plastic Limit / Moisture Content / Liquid Limit)
0					SM	Silty SAND Fill - loose, slightly moist to dry, light brown, with rounded granite gravel, cobbles and boulders up to 36 inches in diameter with 3- to 12-inch diameters typical, some construction debris, trash, etc.						10 20 30 40 50 60 70 80 90
1												
2					SP	Poorly Gradeded SAND - medium dense, dry, light brown with granite gravel, cobble and boulders up to 36 inches in diameter with 1- to 8-inch diamters typical, sand is coarse-grained from desicated granite rock						
3												
4												
5	5200											
6												
7												
8												
9												
10	5195											
11												
12												
13												
14												
	5190											

IGES

SAMPLE TYPE
- GRAB SAMPLE
- 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- MEASURED
- ESTIMATED

NOTES:

Figure A-13

LOG OF TEST PITS - 4 LINE HEADER W ELEV DAG 02362-001 GINT GPJ IGES GDT 8/23/16

DATE
STARTED: 8/2/16
COMPLETED: 8/2/16
BACKFILLED: 8/2/16

Geotechnical Investigation
Oberee Annexation
~1425 Grove Drive
Alpine, UT
Project Number 02362-001

IGES Rep: JKW
Rig Type: Volvo TrackH

TEST PIT NO:
TP -10
Sheet 1 of 1

LOCATION
LATITUDE 40.47410 LONGITUDE -111.76990 ELEVATION 5,259

DEPTH ELEVATION	DEPTH FEET	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index	Moisture Content and Atterberg Limits (Plastic Limit / Moisture Content / Liquid Limit)
5255	0				SM	Silty SAND Topsoil - medium dense, slightly moist to dry, dark brown, with frequent 1/4- to 1-inch diameter scrub oak roots with trace granite gravel, cobbles						
	1											
	2											
	3				SM	Silty SAND - medium dense, slightly moist, light brown with frequent roots, trace granite gravel, cobble, sand is coarse-grained						
	4											
	5						98.0	5.7	16.4			
	6											
	7											
	8											
5250	9											
	10											
	11											
	12											
	13											
5245	14											

Moisture Content and Atterberg Limits
Plastic Limit — Moisture Content — Liquid Limit
10 20 30 40 50 60 70 80 90

LOG OF TEST PITS - 4 LINE HEADER W ELEV DAG 02362-001 GINT GPJ IGES GDT 8/23/16

IGES

SAMPLE TYPE
- GRAB SAMPLE
- 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- MEASURED
- ESTIMATED

NOTES:

Figure A-14

DATE
STARTED: 8/2/16
COMPLETED: 8/2/16
BACKFILLED: 8/2/16

Geotechnical Investigation
Oberee Annexation
~1425 Grove Drive
Alpine, UT
Project Number 02362-001

IGES Rep: JKW
Rig Type: Volvo TrackH

TEST PIT NO:
TP -11
Sheet 1 of 1

LOCATION
LATITUDE 40.47340 LONGITUDE -111.77140 ELEVATION 5,350

DEPTH FEET	ELEVATION	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index
0	5345				SC	Clayey SAND Topsoil - medium dense, slightly moist to dry, brown					
1					SM	Silty SAND - dense, dry, brown to red-brown with rounded granite gravel, cobble with 1/2- to 6-inch diamters typical					
2											
3							93.4	4.3			
4						- medium dense, dry, light brown with granite gravel, cobble and boulders up to 36 inches in diameter with 1- to 8-inch diamters typical, sand is coarse-grained from desicated granite rock					
5											
6											
7											
8											
9											
10	5340										
11									18.5		
12											
13											
14											
	5335										

Moisture Content and Atterberg Limits

Plastic Limit | Moisture Content | Liquid Limit

10 20 30 40 50 60 70 80 90

LOG OF TEST PITS - 4 LINE HEADER W ELEV DAG 02362-001 GINT GPJ IGES GDT 8/23/16

IGES

SAMPLE TYPE
- GRAB SAMPLE
- 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- MEASURED
- ESTIMATED

NOTES:

Figure A-15

DATE
STARTED: 8/2/16
COMPLETED: 8/2/16
BACKFILLED: 8/2/16

Geotechnical Investigation
Oberee Annexation
~1425 Grove Drive
Alpine, UT
Project Number 02362-001

IGES Rep: JKW
Rig Type: Volvo TrackH

TEST PIT NO:
TP -12
Sheet 1 of 1

LOCATION
LATITUDE 40.47390 LONGITUDE -111.76600 ELEVATION 5,218

DEPTH FEET	ELEVATION	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index	Moisture Content and Atterberg Limits (Plastic Limit – Moisture Content – Liquid Limit; 10 20 30 40 50 60 70 80 90)
0					GM	Silty GRAVEL Topsoil - medium dense to dense, slightly moist to dry, brown, with frequent roots, rounded granite gravel, cobbles and boulders up to 24 inches in diameter with 3- to 12-inch diameters typical						
1												
2												
3	5215				GP	Poorly Graded GRAVEL - dense, slightly moist, brown, with rounded granite gravel, cobbles and boulders up to 24 inches in diameter with 3- to 12-inch diameters typical						
4												
5												
6												
7												
8	5210											
9												
10												
11												
12												
13	5205											
14												

LOG OF TEST PITS - 4 LINE HEADER W ELEV DAG 02362-001 GINT GPJ IGES.GDT 8/23/16

IGES

SAMPLE TYPE
- GRAB SAMPLE
- 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- MEASURED
- ESTIMATED

NOTES:

Figure A-16

DATE
STARTED: 8/2/16
COMPLETED: 8/2/16
BACKFILLED: 8/2/16

Geotechnical Investigation
Oberee Annexation
~1425 Grove Drive
Alpine, UT
Project Number 02362-001

IGES Rep: JKW
Rig Type: Volvo TrackH

TEST PIT NO:
TP -13
Sheet 1 of 1

LOCATION
LATITUDE 40.47250 LONGITUDE -111.76870 ELEVATION 5,191

DEPTH FEET	ELEVATION	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index	Moisture Content and Atterberg Limits (Plastic Limit – Moisture Content – Liquid Limit; 10 20 30 40 50 60 70 80 90)
0					SM	Silty SAND Fill - loose, slightly moist to dry, light brown with fine roots, granite gravel and boulders						
1	5190											
2					SC-SM	Silty SAND with Clay Topsoil - medium dense, slightly moist, dark brown with frequent 1/4-inch diameter roots						
3												
4					SM	Silty SAND - medium dense, slightly moist, brown						
5							87.5	8.1				●
6	5185											
7					SP	Poorly Graded SAND - medium dense, slightly moist, brown						
8												
9												
10					GM	Silty GRAVEL - dense, slightly moist, light brown to tan with subangular gravel and cobble (not granite) with 1/2- to 4-inch diameters typical						
11	5180											
12												
13												
14												

LOG OF TEST PITS - 4 LINE HEADER W ELEV DAG 02362-001 GINT GPJ IGES GDT 8/23/16

IGES

SAMPLE TYPE
- GRAB SAMPLE
- 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- MEASURED
- ESTIMATED

NOTES:

Figure A-17

DATE
STARTED: 8/2/16
COMPLETED: 8/2/16
BACKFILLED: 8/2/16

Geotechnical Investigation
Oberee Annexation
~1425 Grove Drive
Alpine, UT
Project Number 02362-001

IGES Rep: JKW
Rig Type: Volvo TrackH

TEST PIT NO:
TP -14
Sheet 1 of 1

LOCATION
LATITUDE 40.47290 LONGITUDE -111.76660 ELEVATION 5,193

DEPTH FEET	ELEVATION	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index	Moisture Content and Atterberg Limits (Plastic Limit / Moisture Content / Liquid Limit)
0					SM	Silty SAND Topsoil - medium dense, dry, brown with frequent 1/4- to 1-inch diameter roots, with subrounded granite gravel, cobbles and boulders up to 36 inches in diameter with 4- to 12-inch diameters typical						
1												
2												
3	5190								24.2			
4					SM	Silty SAND - medium dense to dense, dry, brown with frequent roots and subrounded granite gravel, cobbles and boulders up to 36 inches in diameter with 4- to 12-inch diameters typical						
5												
6												
7					GP	Poorly Graded GRAVEL - dense, slightly moist to dry, gray with coarse-grained desicated granite sand and subrounded granite cobbles and boulders up to 36 inches in diameter with 4- to 12-inch diameters typical						
8	5185											
9												
10												
11												
12												
13	5180											
14												

Moisture Content and Atterberg Limits: Plastic Limit / Moisture Content / Liquid Limit
10 20 30 40 50 60 70 80 90

LOG OF TEST PITS - 4 LINE HEADER W ELEV DAG 02362-001 GINT GPJ IGES.GDT 8/23/16

IGES

SAMPLE TYPE
- GRAB SAMPLE
- 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- MEASURED
- ESTIMATED

NOTES:

Figure
A-18

DATE
STARTED: 8/2/16
COMPLETED: 8/2/16
BACKFILLED: 8/2/16

Geotechnical Investigation
Oberee Annexation
~1425 Grove Drive
Alpine, UT
Project Number 02362-001

IGES Rep: JKW
Rig Type: Volvo TrackH

TEST PIT NO:
TP -15
Sheet 1 of 1

LOCATION
LATITUDE 40.47720 LONGITUDE -111.76510 ELEVATION 5,210

ELEVATION	DEPTH FEET	SAMPLES	WATER LEVEL	GRAPHICAL LOG	UNIFIED SOIL CLASSIFICATION	MATERIAL DESCRIPTION	Dry Density(pcf)	Moisture Content %	Percent minus 200	Liquid Limit	Plasticity Index	Moisture Content and Atterberg Limits (Plastic Limit — Moisture Content — Liquid Limit) 10 20 30 40 50 60 70 80 90
5205	0				SC	Clayey SAND Topsoil - medium dense, moist, dark brown with frequent fine roots						
	1											
	2				GM	Silty GRAVEL - medium dense to dense, slighlty moist, brown to red-brown with trace fine roots and rounded granite cobbles and boulders up to 18 inches in diameter with 3- to 12-inch diameters typical						
	3											
	4											
	5											
	6											
	7				GP	Poorly Graded GRAVEL - medium dense to dense, slighlty moist, gray to red-brown with trace fine roots and rounded granite cobbles and boulders up to 18 inches in diameter with 3- to 12-inch diameters typical			4.5			
	8											
	9											
5200	10											
	11											
	12											
	13											
	14											
5195												

IGES

SAMPLE TYPE
- GRAB SAMPLE
- 3" O.D. THIN-WALLED HAND SAMPLER

WATER LEVEL
- MEASURED
- ESTIMATED

NOTES:

Figure A-19

LOG OF TEST PITS - 4 LINE HEADER W ELEV DAG 02362-001 GINT GPJ IGES GDT 8/23/16

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			USCS SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS (More than half of material is larger than the #200 sieve)	GRAVELS (More than half coarse fraction is larger than the #4 sieve)	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
			GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, GRAVEL-SILT-SAND MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS (More than half coarse fraction is smaller than the #4 sieve)	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
			SP	POORLY-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS, SAND-GRAVEL-SILT MIXTURES
			SC	CLAYEY SANDS SAND-GRAVEL-CLAY MIXTURES
FINE GRAINED SOILS (More than half of material is smaller than the #200 sieve)	SILTS AND CLAYS (Liquid limit less than 50)		ML	INORGANIC SILTS & VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (Liquid limit greater than 50)		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILT
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS & ORGANIC SILTS OF MEDIUM-TO-HIGH PLASTICITY
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

LOG KEY SYMBOLS

BORING SAMPLE LOCATION

TEST-PIT SAMPLE LOCATION

WATER LEVEL (level after completion)

WATER LEVEL (level where first encountered)

CEMENTATION

DESCRIPTION	DESCRIPTION
WEAKELY	CRUMBLES OR BREAKS WITH HANDLING OR SLIGHT FINGER PRESSURE
MODERATELY	CRUMBLES OR BREAKS WITH CONSIDERABLE FINGER PRESSURE
STRONGLY	WILL NOT CRUMBLE OR BREAK WITH FINGER PRESSURE

OTHER TESTS KEY

C	CONSOLIDATION	SA	SIEVE ANALYSIS
AL	ATTERBERG LIMITS	DS	DIRECT SHEAR
UC	UNCONFINED COMPRESSION	T	TRIAXIAL
S	SOLUBILITY	R	RESISTIVITY
O	ORGANIC CONTENT	RV	R-VALUE
CBR	CALIFORNIA BEARING RATIO	SU	SOLUBLE SULFATES
COMP	MOISTURE/DENSITY RELATIONSHIP	PM	PERMEABILITY
CI	CALIFORNIA IMPACT	-200	% FINER THAN #200
COL	COLLAPSE POTENTIAL	Gs	SPECIFIC GRAVITY
SS	SHRINK SWELL	SL	SWELL LOAD

MODIFIERS

DESCRIPTION	%
TRACE	<5
SOME	5 - 12
WITH	>12

MOISTURE CONTENT

DESCRIPTION	FIELD TEST
DRY	ABSENCE OF MOISTURE, DUSTY, DRY TO THE TOUCH
MOIST	DAMP BUT NO VISIBLE WATER
WET	VISIBLE FREE WATER, USUALLY SOIL BELOW WATER TABLE

STRATIFICATION

DESCRIPTION	THICKNESS	DESCRIPTION	THICKNESS
SEAM	1/16-1/2"	OCCASIONAL	ONE OR LESS PER FOOT OF THICKNESS
LAYER	1/2-12"	FREQUENT	MORE THAN ONE PER FOOT OF THICKNESS

GENERAL NOTES

1. Lines separating strata on the logs represent approximate boundaries only. Actual transitions may be gradual.
2. No warranty is provided as to the continuity of soil conditions between individual sample locations.
3. Logs represent general soil conditions observed at the point of exploration on the date indicated.
4. In general, Unified Soil Classification designations presented on the logs were evaluated by visual methods only. Therefore, actual designations (based on laboratory tests) may vary.

APPARENT / RELATIVE DENSITY - COARSE-GRAINED SOIL

APPARENT DENSITY	SPT (blows/ft)	MODIFIED CA. SAMPLER (blows/ft)	CALIFORNIA SAMPLER (blows/ft)	RELATIVE DENSITY (%)	FIELD TEST
VERY LOOSE	<4	<4	<5	0 - 15	EASILY PENETRATED WITH 1/2-INCH REINFORCING ROD PUSHED BY HAND
LOOSE	4 - 10	5 - 12	5 - 15	15 - 35	DIFFICULT TO PENETRATE WITH 1/2-INCH REINFORCING ROD PUSHED BY HAND
MEDIUM DENSE	10 - 30	12 - 35	15 - 40	35 - 65	EASILY PENETRATED A FOOT WITH 1/2-INCH REINFORCING ROD DRIVEN WITH 5-LB HAMMER
DENSE	30 - 50	35 - 60	40 - 70	65 - 85	DIFFICULT TO PENETRATE 12" WITH 1/2-INCH REINFORCING ROD DRIVEN WITH 5-LB HAMMER
VERY DENSE	>50	>60	>70	85 - 100	PENETRATED ONLY FEW INCHES WITH 1/2-INCH REINFORCING ROD DRIVEN WITH 5-LB HAMMER

CONSISTENCY - FINE-GRAINED SOIL		TORVANE	POCKET PENETROMETER	FIELD TEST
CONSISTENCY	SPT (blows/ft)	UNTRAINED SHEAR STRENGTH (tsf)	UNCONFINED COMPRESSIVE STRENGTH (tsf)	
VERY SOFT	<2	<0.125	<0.25	EASILY PENETRATED SEVERAL INCHES BY THUMB. EXUDES BETWEEN THUMB AND FINGERS WHEN SQUEEZED BY HAND.
SOFT	2 - 4	0.125 - 0.25	0.25 - 0.5	EASILY PENETRATED ONE INCH BY THUMB. MOLDED BY LIGHT FINGER PRESSURE.
MEDIUM STIFF	4 - 8	0.25 - 0.5	0.5 - 1.0	PENETRATED OVER 1/2 INCH BY THUMB WITH MODERATE EFFORT. MOLDED BY STRONG FINGER PRESSURE.
STIFF	8 - 15	0.5 - 1.0	1.0 - 2.0	INDENTED ABOUT 1/2 INCH BY THUMB BUT PENETRATED ONLY WITH GREAT EFFORT.
VERY STIFF	15 - 30	1.0 - 2.0	2.0 - 4.0	READILY INDENTED BY THUMBNAIL.
HARD	>30	>2.0	>4.0	INDENTED WITH DIFFICULTY BY THUMBNAIL.

IGES®

KEY TO SOIL SYMBOLS AND TERMINOLOGY

FIGURE

A-20

APPENDIX B

Water Content and Unit Weight of Soil

(In General Accordance with ASTM D7263 Method B and D2216)

Project: Oberee
No: 02362-001
Location: Alpine
Date: 8/9/2016
By: IM

Sample Info.	Boring No.	TP-6	TP-13						
	Sample:								
	Depth:	4.0'	5.0'						
Unit Weight Info.	Sample height, H (in)	6.000	5.360						
	Sample diameter, D (in)	2.416	2.416						
	Sample volume, V (ft^3)	0.0159	0.0142						
	Mass rings + wet soil (g)	1032.02	863.93						
	Mass rings/tare (g)	254.35	253.86						
	Moist soil, Ws (g)	777.67	610.07						
	Moist unit wt., γ_m (pcf)	107.71	94.58						
Water Content	Wet soil + tare (g)	748.28	731.05						
	Dry soil + tare (g)	697.08	685.99						
	Tare (g)	128.30	127.73						
Water Content, w (%)		**9.0**	**8.1**						
Dry Unit Wt., γ_d (pcf)		**98.8**	**87.5**						

Entered by:_____

Reviewed:_____

Amount of Material in Soil Finer than the No. 200 (75µm) Sieve

(ASTM D1140)

Project: Oberee
No: 02362-001
Location: Alpine
Date: 8/9/2016
By: BSS/IM

Sample Info.	Boring No.	TP-1	TP-3	TP-4	TP-6	TP-10	TP-11	TP-14	TP-15
	Sample								
	Depth	4.0'	7.0'	10.0'	2.0'	5.0'	12.0'	3.0'	7.0'
	Split	Yes	No	Yes	Yes	No	No	No	No
	Split Sieve*	3/8"		3/8"	3/8"				
	Method	B	B	B	B	B	B	B	B
Specimen soak time (min)		410	430	420	320	310	420	420	390
Moist total sample wt. (g)		1650.06	769.49	1212.98	935.22	365.69	486.97	458.84	556.66
Moist coarse fraction (g)		757.74		169.66	59.58				
Moist split fraction + tare (g)		1204.42		881.50	883.13				
Split fraction tare (g)		312.10		326.65	464.62				
Dry split fraction (g)		867.91		495.89	398.29				
Dry retained No. 200 + tare (g)		947.98	660.66	636.18	810.87	410.68	677.97	625.37	818.89
Wash tare (g)		312.10	219.38	326.65	464.62	121.53	294.21	288.38	299.57
No. 200 Dry wt. retained (g)		635.88	441.28	309.53	346.25	289.15	383.76	336.99	519.32
Split sieve* Dry wt. retained (g)		745.50		166.20	58.37				
Dry total sample wt. (g)		1613.41	701.63	1098.65	891.70	345.81	471.06	444.80	543.52
Coarse Fraction	Moist soil + tare (g)	972.75		335.10	187.92				
	Dry soil + tare (g)	960.51		331.64	186.71				
	Tare (g)	215.01		165.44	128.34				
	Water content (%)	1.64		2.08	2.07				
Split Fraction	Moist soil + tare (g)	1204.42	988.87	881.50	883.13	487.22	781.18	747.22	856.23
	Dry soil + tare (g)	1180.01	921.01	822.54	862.91	467.34	765.27	733.18	843.09
	Tare (g)	312.10	219.38	326.65	464.62	121.53	294.21	288.38	299.57
	Water content (%)	2.81	9.67	11.89	5.08	5.75	3.38	3.16	2.42
Percent passing split sieve* (%)		**53.8**		**84.9**	**93.5**				
Percent passing No. 200 sieve (%)		**14.4**	**37.1**	**31.9**	**12.2**	**16.4**	**18.5**	**24.2**	**4.5**

Entered by:_____
Reviewed:_____

Laboratory Compaction Characteristics of Soil

(ASTM D698 / D1557)

Project: Oberee
No: 02362-001
Location: Alpine
Date: 8/5/2016
By: DKS

Boring No.: TP-3
Sample:
Depth: 3 to 4'
Sample Description: Brown silty sand with gravel
Engineering Classification: Not requested
As-received water content (%): Not requested
Preparation method: Moist
Rammer: Mechanical-sector face
Rock Correction: Yes * See results below
Percent fraction retained, Pc (%) 12.3
Percent fraction passing, Pf (%) 87.7

Method: ASTM D1557 C
Mold Id. Inc 6
Mold volume (ft^3): 0.0748

Optimum water content (%): 6.2
Maximum dry unit weight (pcf): 137.4

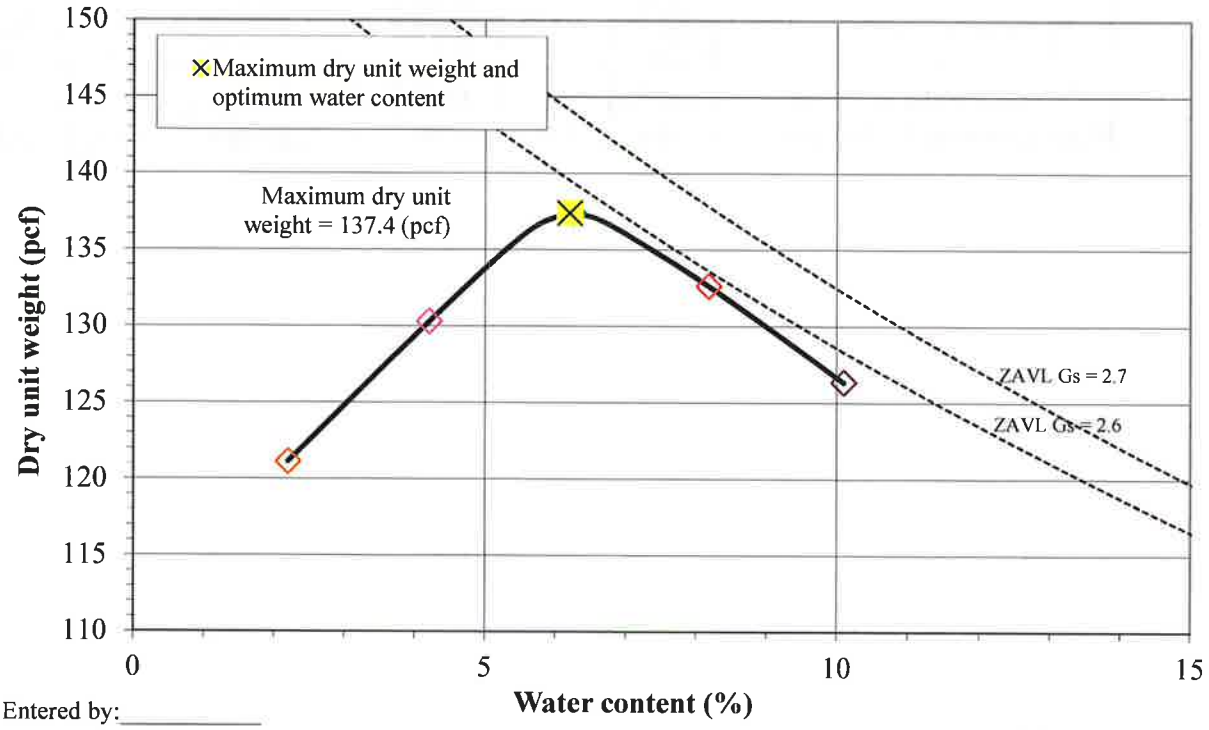
Point Number	+6%	+4%	+2%	As Is	-2%			
Wt. Sample + Mold (g)	11257.5	11405.9	11490.0	11145.5	10737.8			
Wt. of Mold (g)	6537.7	6537.7	6537.7	6537.7	6537.7			
Wet Unit Wt., γ_m (pcf)	139.1	143.5	146.0	135.8	123.8			
Wet Soil + Tare (g)	2365.70	2127.89	2003.06	2252.93	2093.66			
Dry Soil + Tare (g)	2168.47	1983.40	1898.40	2170.93	2053.44			
Tare (g)	215.36	215.46	222.26	223.37	221.75			
Water Content, w (%)	10.1	8.2	6.2	4.2	2.2			
Dry Unit Wt., γ_d (pcf)	126.3	132.6	137.4	130.3	121.1			

*Correction of Unit Weight and Water Content for Soils Containing Oversize Particles

(ASTM D4718)

Corrected water content (%): 5.5
Corrected dry unit weight (pcf): 140.3

Oversized fraction, +3/4-in. (%): 12.3
Water content, +3/4-in. (%): 0.6
Sieve for oversized fraction: 3/4-in.
Bulk specific gravity, Gs: 2.65 Assumed



Entered by:_____
Reviewed:_____

California Bearing Ratio

(In general accordance with ASTM D 1883)

Project: Oberee
Number: 02362-001
Location: Alpine
Date: 8/16/2016
By: DKS

Boring No.: TP-3
Sample:
Depth: 3 to 4'
Original Method: ASTM D1557 C
Engineering Classification: Not requested
Condition of Sample: Soaked
Scalp and Replace: No

Maximum Dry Unit Weight (pcf):	137.4
Optimum Water Content (%):	6.2
Relative Compaction (%):	94.8
0.1 in. Corrected CBR (%):	**32.0**
0.2 in. Corrected CBR (%):	**39.4**

As Compacted Data			Before	After
Mold Id.	6	Wet Soil + Tare (g)	2081.72	2052.55
Wt. of Mold + Sample (g)	11673.7	Dry Soil + Tare (g)	1981.90	1950.40
Wt. of Mold (g)	6961.4	Tare (g)	408.53	328.93
Dry Unit Weight (pcf)	130.2	Water Content (%)	6.3	6.3
After Soaking Data			**Average**	**Top 1 in.**
Wt. of Mold + Sample (g)	11808.4	Wet Soil + Tare (g)	559.12	481.51
Dry Unit Weight (pcf)	130.2	Dry Soil + Tare (g)	524.51	453.33
		Tare (g)	128.31	127.75
		Water Content (%)	8.7	8.7

Swell Data

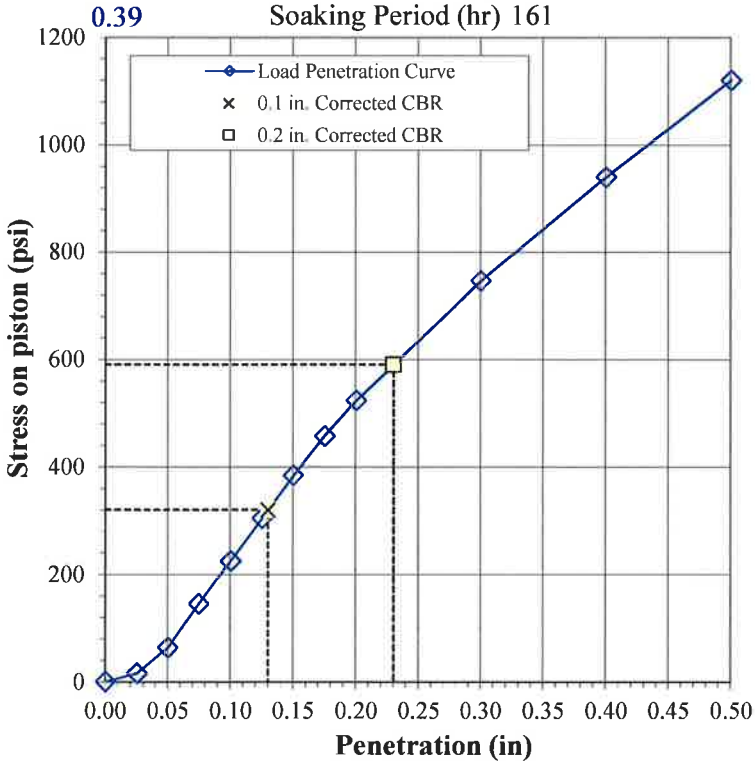
Date	Time	Dial
8/8/2016	13:53	0.388
8/15/2016	07:10	0.39

Surcharge (psf) 50
Swell (%) 0.04
Soaking Period (hr) 161

Penetration Data	Piston ID	CBR T1

Zero load (lb) = 0
Area of Piston (in^2) = 3.0

Penetration (in.)	Raw Load (lb)	Piston Stress (psi)	Std. Stress (psi)
0.000	0	0	
0.025	46	15	
0.050	190	63	
0.075	435	145	
0.100	674	225	1000
0.125	913	304	1125
0.150	1151	384	1250
0.175	1371	457	1375
0.200	1570	523	1500
0.300	2238	746	1900
0.400	2816	939	2300
0.500	3361	1121	2600



Entered By:_____
Reviewed:_____

Direct Shear Test for Soils Under Drained Conditions

(ASTM D3080)

IGES

Project: Oberee
No: 02362-001
Location: Alpine
Date: 8/8/2016
By: JDF

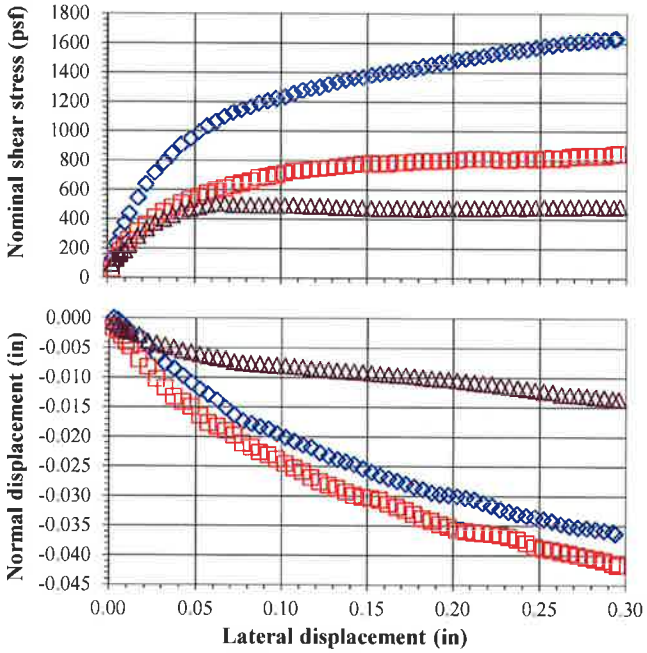
Boring No.: TP-1
Sample:
Depth: 7.0'
Sample Description: Light brown silty sand
Sample type: Undisturbed-trimmed from thin-wall

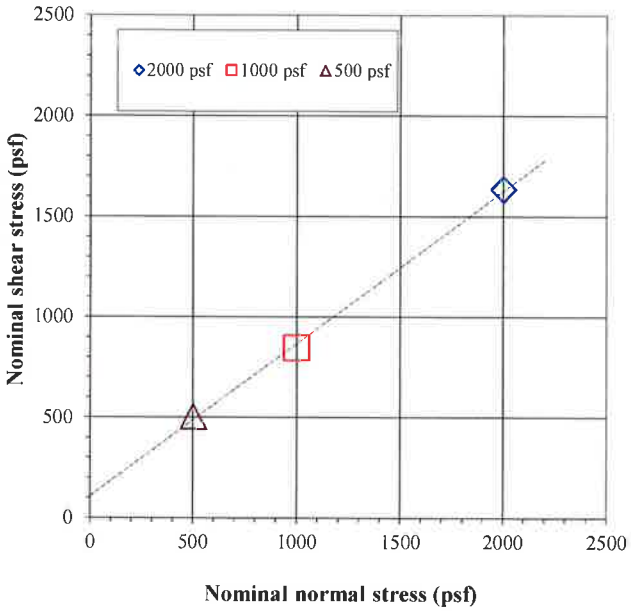
Test type: Inundated
Lateral displacement (in.): 0.3
Shear rate (in./min): 0.0043
Specific gravity, Gs: 2.65 Assumed

	Sample 1		Sample 2		Sample 3	
Nominal normal stress (psf)	2000		1000		500	
Peak shear stress (psf)	1633		845		503	
Lateral displacement at peak (in)	0.294		0.295		0.067	
Load Duration (min)	1029		1042		1062	
	Initial	Pre-shear	Initial	Pre-shear	Initial	Pre-shear
Sample height (in)	1.0000	0.9335	1.0000	0.9119	1.0000	0.9770
Sample diameter (in)	2.416	2.416	2.416	2.416	2.416	2.416
Wt. rings + wet soil (g)	148.00	172.86	162.41	180.63	160.19	184.06
Wt. rings (g)	42.37	42.37	45.07	45.07	44.63	44.63
Wet soil + tare (g)	397.39		397.39		397.39	
Dry soil + tare (g)	375.24		375.24		375.24	
Tare (g)	128.07		128.07		128.07	
Water content (%)	9.0	34.6	9.0	25.9	9.0	31.5
Dry unit weight (pcf)	80.6	86.3	89.5	98.1	88.1	90.2
Void ratio, e, for assumed Gs	1.05	0.92	0.85	0.69	0.88	0.83
Saturation (%)*	22.5	100.0	28.0	100.0	27.1	100.0

		Average of 3 samples	Initial	Pre-shear
ϕ' (deg)	37	Water content (%)	9.0	30.7
c' (psf)	109	Dry unit weight (pcf)	86.1	91.5

*Pre-shear saturation set to 100% for phase calculations





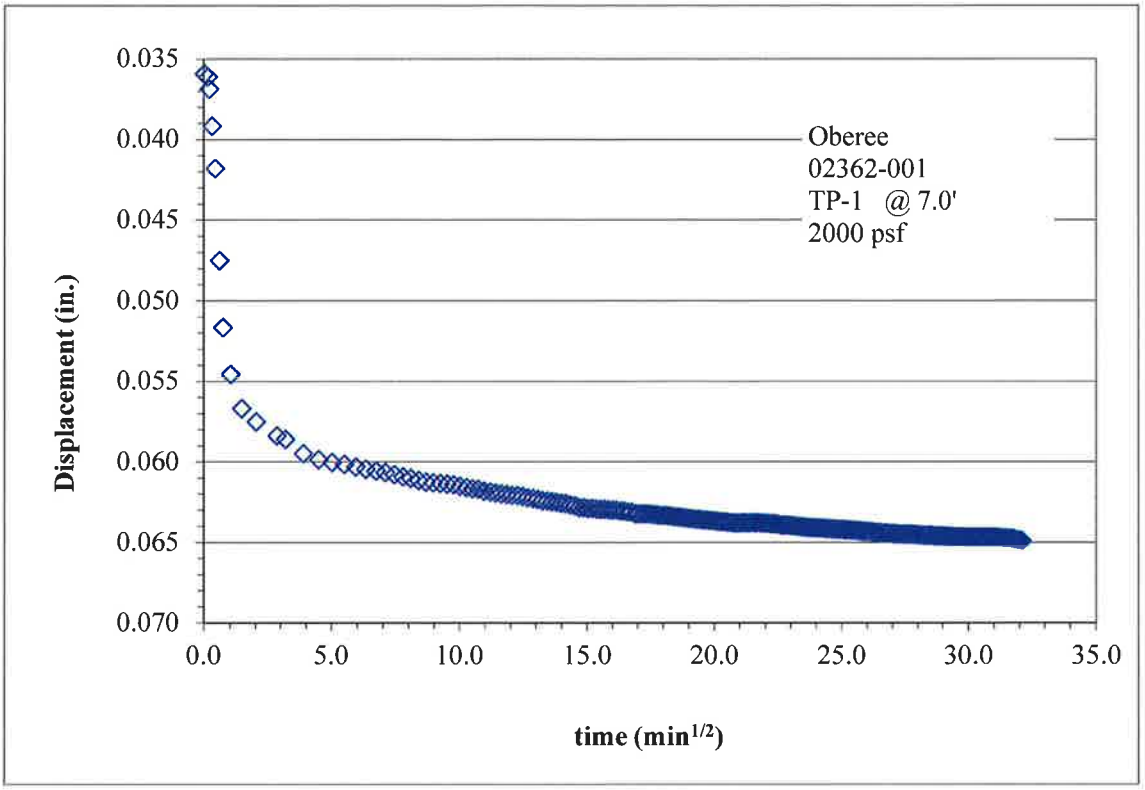
Entered by:_____
Reviewed:_____

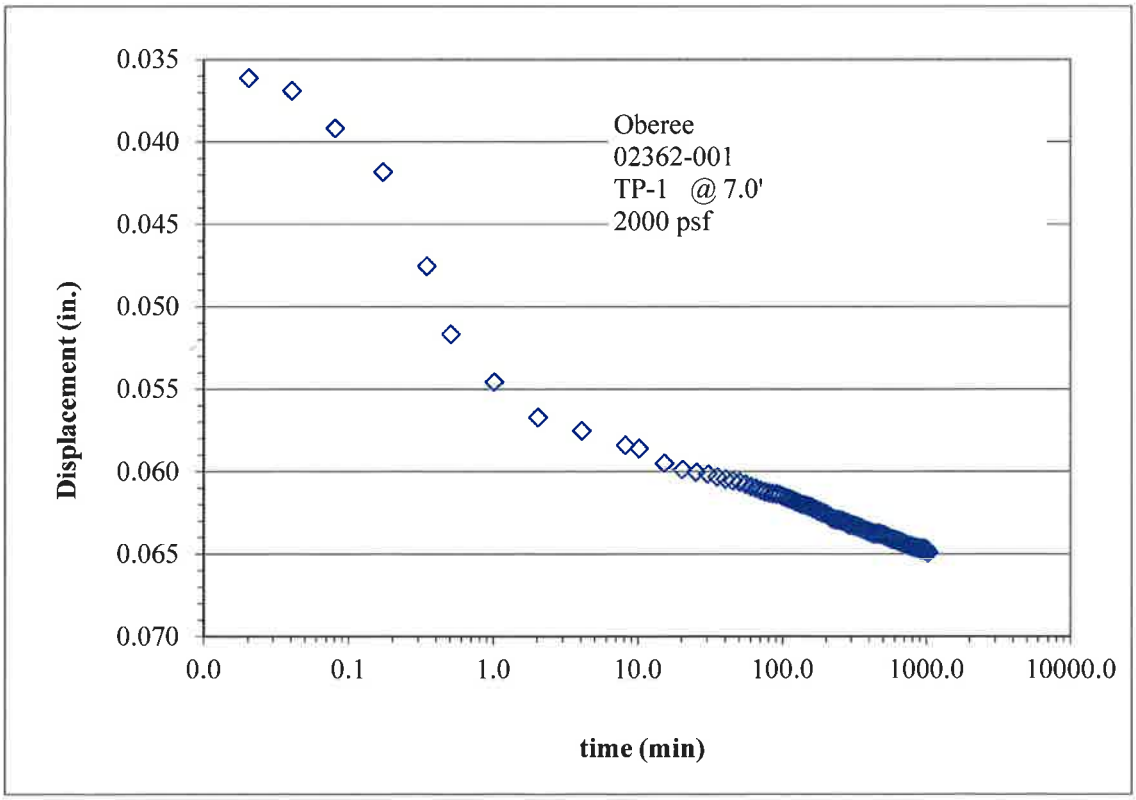
Direct Shear Test for Soils Under Drained Conditions

(ASTM D3080)

Project: Oberee
No: 02362-001
Location: Alpine

Boring No.: TP-1
Sample:
Depth: 7.0'





Direct Shear Test for Soils Under Drained Conditions

(ASTM D3080)

Project: Oberee
No: 02362-001
Location: Alpine
Date: 8/9/2016
By: BRR

Boring No.: TP-10
Sample:
Depth: 5.0'
Sample Description: Brown silty sand
Sample type: Undisturbed-trimmed from ring

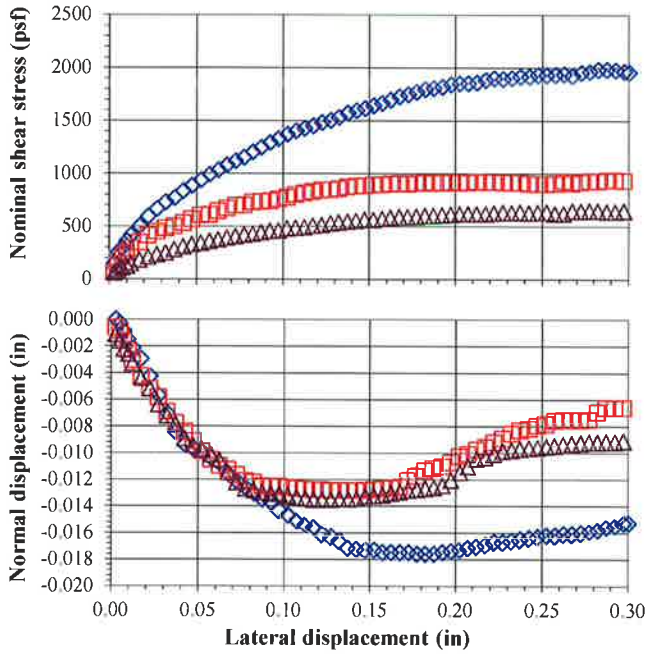
Test type: Inundated
Lateral displacement (in.): 0.3
Shear rate (in./min): 0.0172
Specific gravity, Gs: 2.65 Assumed

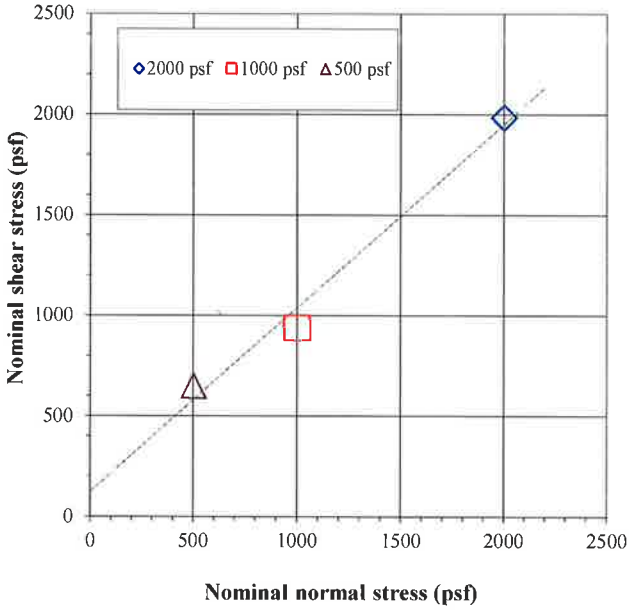
	Sample 1		Sample 2		Sample 3	
Nominal normal stress (psf)	2000		1000		500	
Peak shear stress (psf)	1984		937		648	
Lateral displacement at peak (in)	0.282		0.292		0.277	
Load Duration (min)	60		68		89	
	Initial	Pre-shear	Initial	Pre-shear	Initial	Pre-shear
Sample height (in)	1.0000	0.9130	1.0000	0.9461	1.0000	0.9416
Sample diameter (in)	2.416	2.416	2.416	2.416	2.416	2.416
Wt. rings + wet soil (g)	170.13	187.42	173.74	192.11	169.73	189.32
Wt. rings (g)	45.38	45.38	45.57	45.57	45.34	45.34
Wet soil + tare (g)	487.22		487.22		487.22	
Dry soil + tare (g)	467.34		467.34		467.34	
Tare (g)	121.53		121.53		121.53	
Water content (%)	5.7	20.4	5.7	20.9	5.7	22.4
Dry unit weight (pcf)	98.0	107.3	100.7	106.4	97.7	103.8
Void ratio, e, for assumed Gs	0.69	0.54	0.64	0.55	0.69	0.59
Saturation (%)*	22.2	100.0	23.7	100.0	22.0	100.0

ϕ' (deg)	42
c' (psf)	125

Average of 3 samples	Initial	Pre-shear
Water content (%)	5.7	21.2
Dry unit weight (pcf)	98.8	105.8

*Pre-shear saturation set to 100% for phase calculations





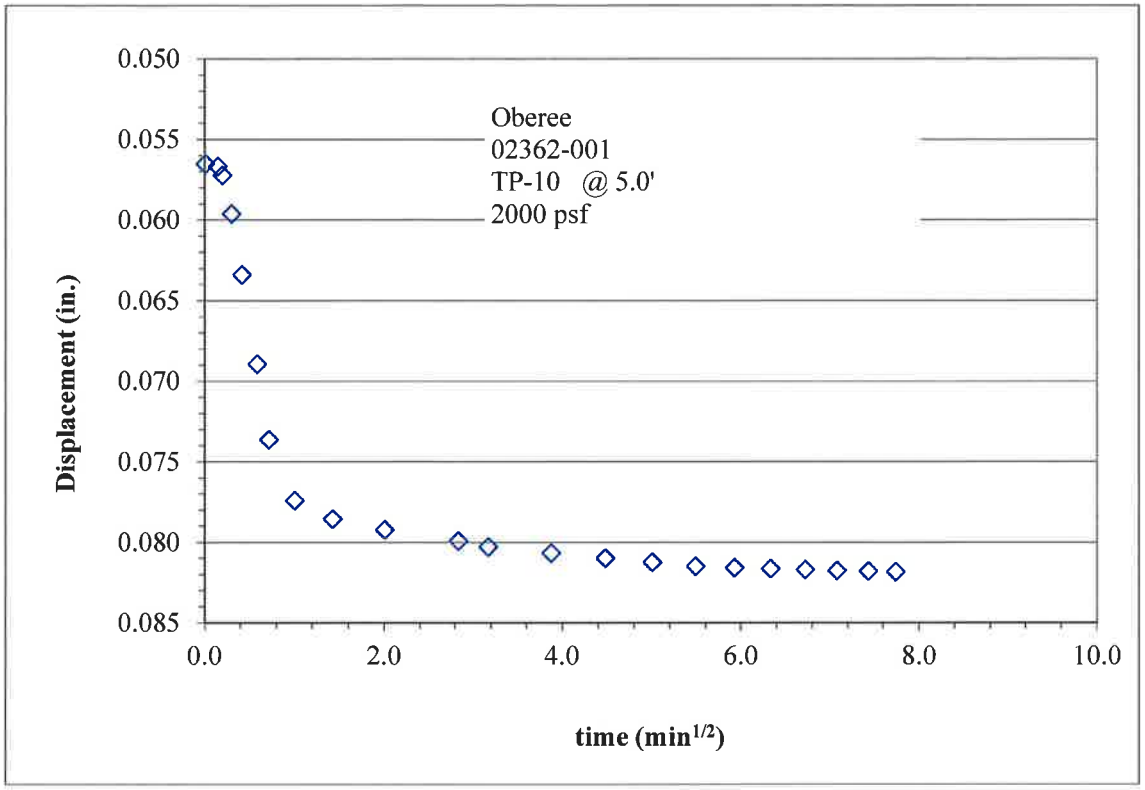
Entered by:_____
Reviewed:_____

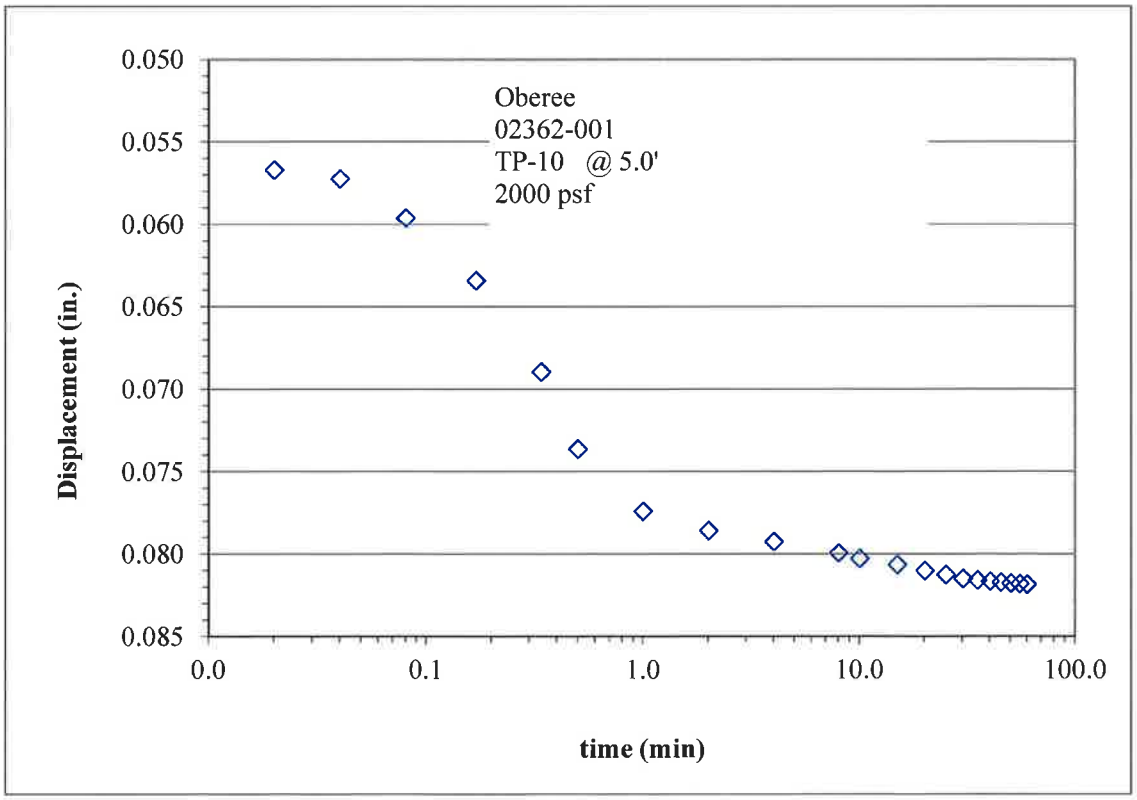
Direct Shear Test for Soils Under Drained Conditions

(ASTM D3080)

Project: Oberee
No: 02362-001
Location: Alpine

Boring No.: TP-10
Sample:
Depth: 5.0'





Direct Shear Test for Soils Under Drained Conditions

(ASTM D3080)

Project: Oberee
No: 02362-001
Location: Alpine
Date: 8/15/2016
By: JDF

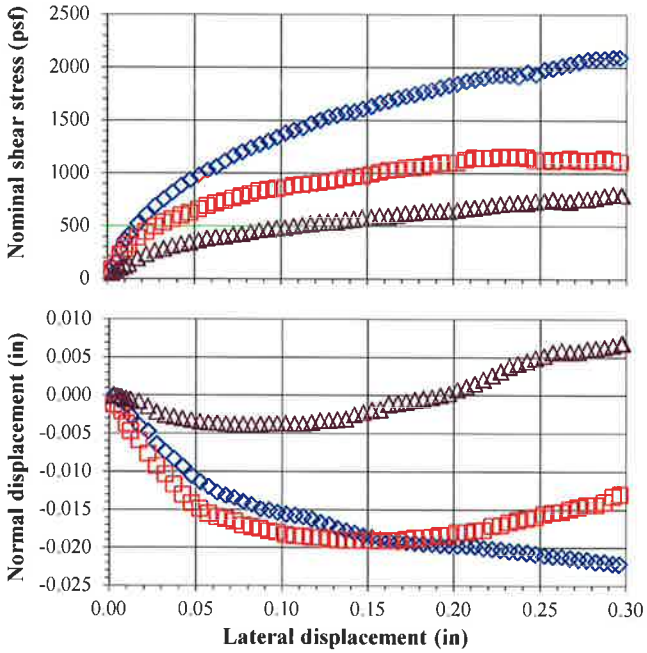
Boring No.: TP-11
Sample:
Depth: 3.0'
Sample Description: Brown clayey sand with gravel
Sample type: Undisturbed-trimmed from thin-wall

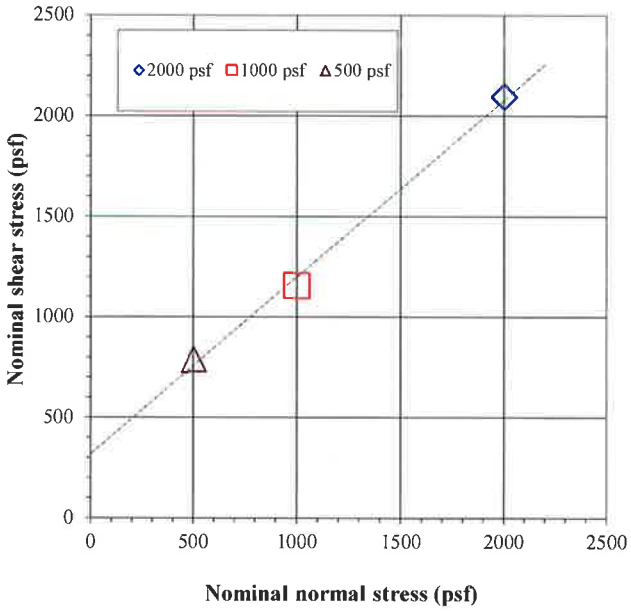
Test type: Inundated
Lateral displacement (in.): 0.3
Shear rate (in./min): 0.0022
Specific gravity, Gs: 2.65 Assumed

	Sample 1		Sample 2		Sample 3	
Nominal normal stress (psf)	2000		1000		500	
Peak shear stress (psf)	2095		1153		790	
Lateral displacement at peak (in)	0.292		0.227		0.292	
Load Duration (min)	1038		1046		1077	
	Initial	Pre-shear	Initial	Pre-shear	Initial	Pre-shear
Sample height (in)	1.0000	0.9360	1.0000	0.9693	1.0000	0.9887
Sample diameter (in)	2.416	2.416	2.416	2.416	2.416	2.416
Wt. rings + wet soil (g)	918.15	941.25	614.91	641.11	618.63	644.70
Wt. rings (g)	800.92	800.92	499.16	499.16	498.94	498.94
Wet soil + tare (g)	399.82		399.82		399.82	
Dry soil + tare (g)	389.69		389.69		389.69	
Tare (g)	151.48		151.48		151.48	
Water content (%)	4.3	24.8	4.3	27.8	4.3	27.0
Dry unit weight (pcf)	93.4	99.8	92.3	95.1	95.4	96.4
Void ratio, e, for assumed Gs	0.77	0.66	0.79	0.74	0.73	0.71
Saturation (%)*	14.6	100.0	14.2	100.0	15.4	100.0

		Average of 3 samples	Initial	Pre-shear
ϕ' (deg)	41	Water content (%)	4.3	26.5
c' (psf)	319	Dry unit weight (pcf)	93.7	97.1

*Pre-shear saturation set to 100% for phase calculations





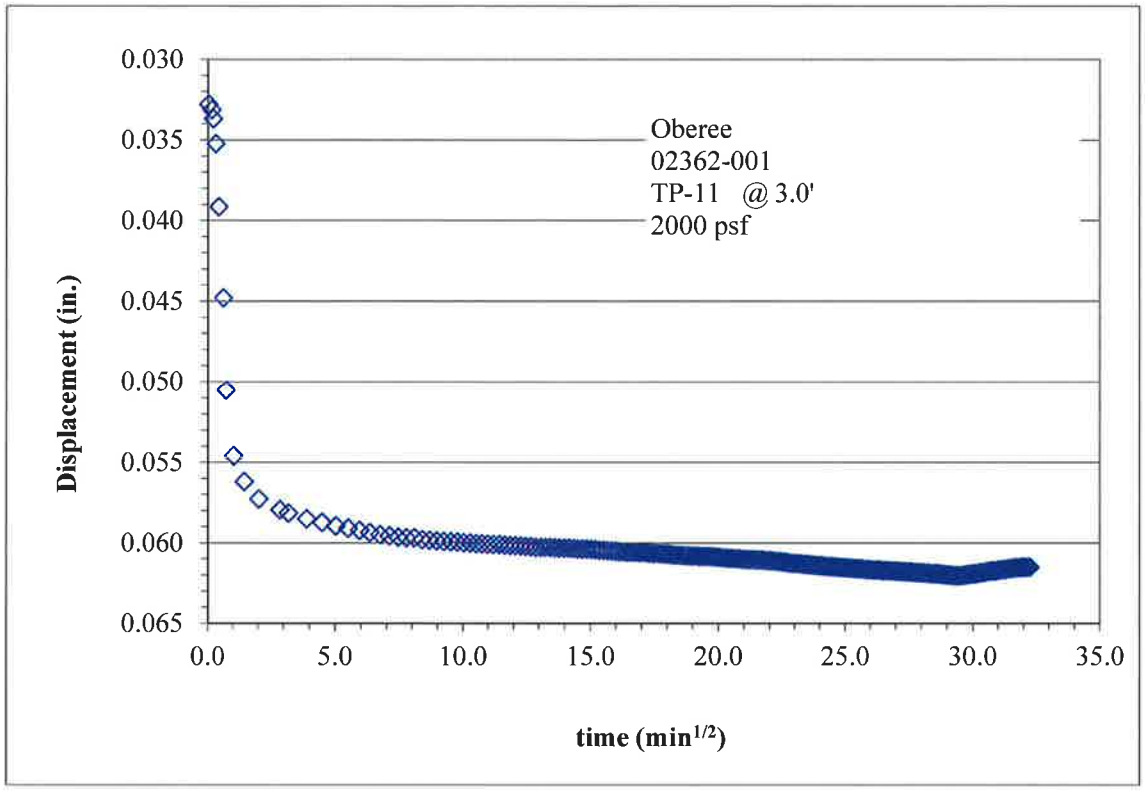
Entered by:_____
Reviewed:_____

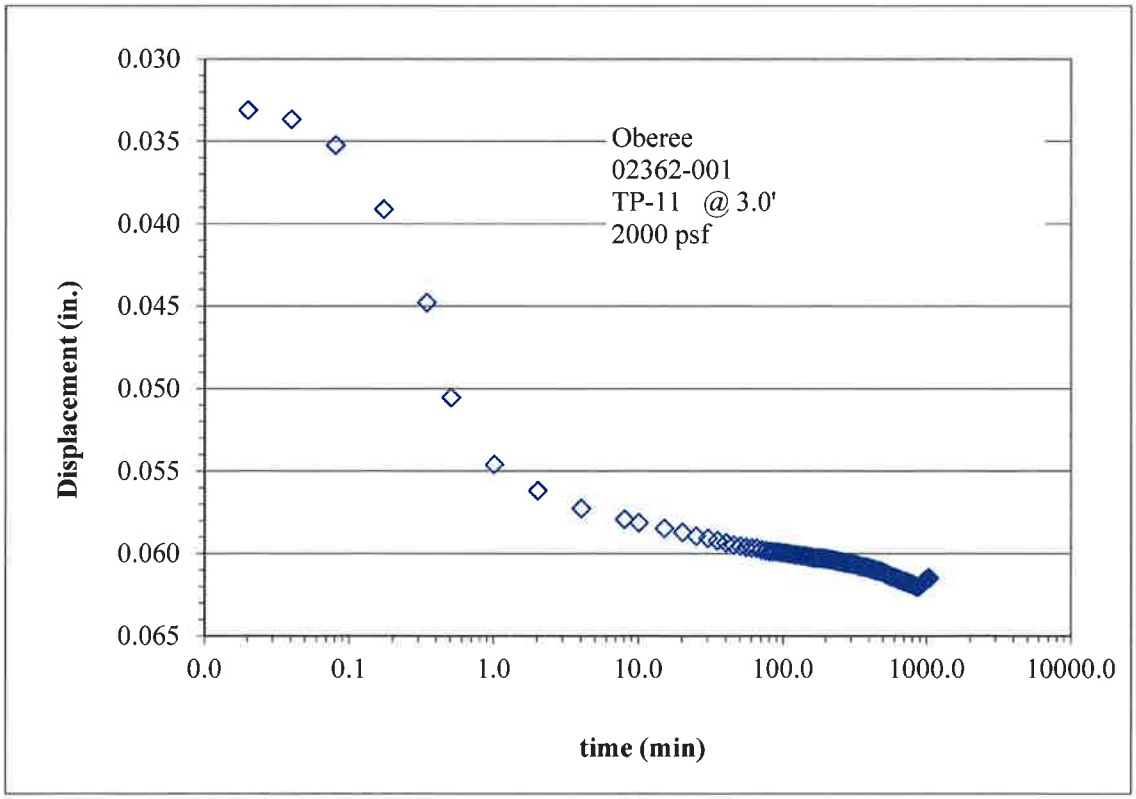
Direct Shear Test for Soils Under Drained Conditions

(ASTM D3080)

Project: Oberee
No: 02362-001
Location: Alpine

Boring No.: TP-11
Sample:
Depth: 3.0'





Minimum Laboratory Soil Resistivity, pH of Soil for Use in Corrosion Testing, and Ions in Water by Chemically Suppressed Ion Chromatography *(AASHTO T 288, T 289, ASTM D4327, and C1580)*

Project: Oberee
No: 02362-001
Location: Alpine
Date: 8/9/2016
By: IM/DKS

Sample info.	Boring No.	TP-7							
	Sample								
	Depth	3.0'							
Water content data	Wet soil + tare (g)	90.22							
	Dry soil + tare (g)	84.97							
	Tare (g)	37.85							
	Water content (%)	11.1							
Chem. data	pH	7.44							
	Soluble chloride* (ppm)	<5.11							
	Soluble sulfate** (ppm)	8.09							
Resistivity data	Pin method	2							
	Soil box	Miller Small							
		Approximate Soil condition (%)	Resistance Reading (Ω)	Soil Box Multiplier (cm)	Resistivity (Ω-cm)	Approximate Soil condition (%)	Resistance Reading (Ω)	Soil Box Multiplier (cm)	Resistivity (Ω-cm)
		As Is	13390	0.67	8971				
		+3	11170	0.67	7484				
		+6	11130	0.67	7457				
		+9	11300	0.67	7571				
	Minimum resistivity (Ω-cm)	**7457**							

* Performed by AWAL using EPA 300.0

** Performed by AWAL using ASTM C1580

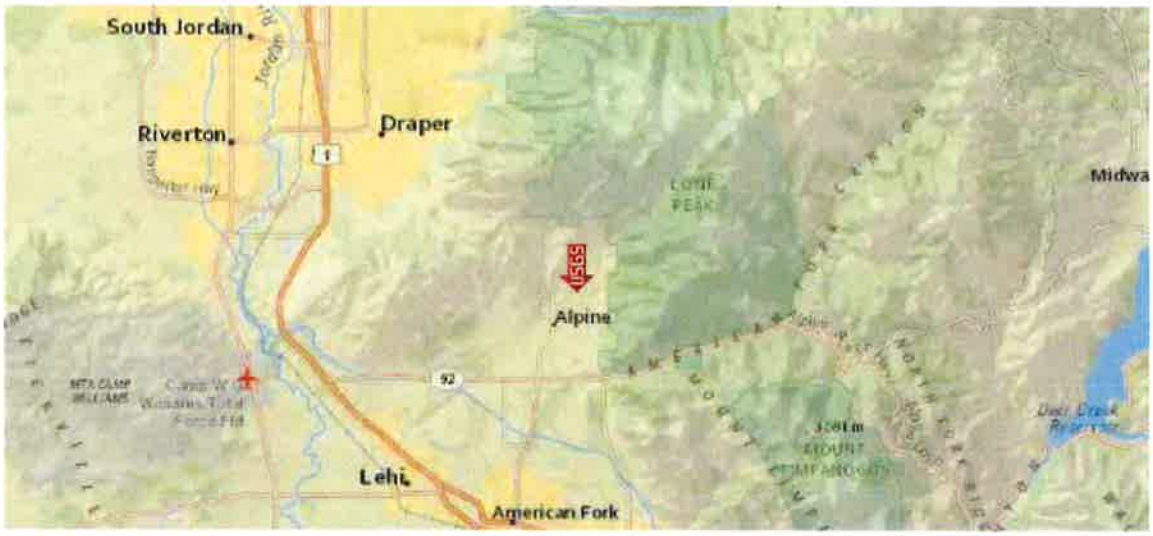
Entered by:_____
Reviewed:_____

APPENDIX C

USGS Design Maps Summary Report

User–Specified Input

Report Title	1425 Grove Drive Alpine UT Wed August 10, 2016 16:38:00 UTC
Building Code Reference Document	2012/2015 International Building Code (which utilizes USGS hazard data available in 2008)
Site Coordinates	40.4739°N, 111.766°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III

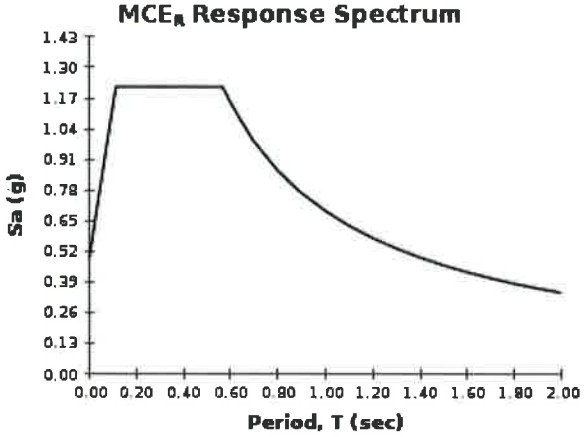


USGS–Provided Output

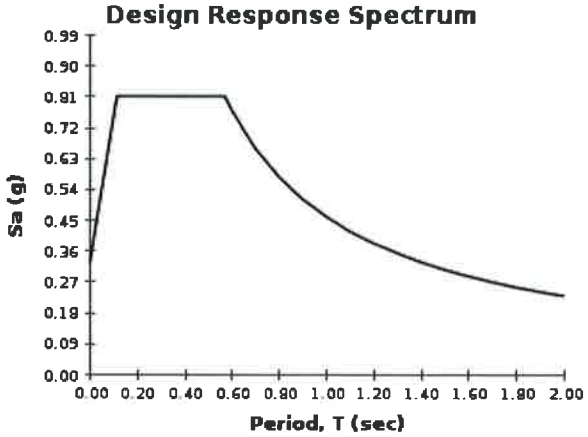
S_S =	1.189 g	S_{MS} =	1.218 g	S_{DS} =	0.812 g
S_1 =	0.445 g	S_{M1} =	0.692 g	S_{D1} =	0.461 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.

MCE_R Response Spectrum



Design Response Spectrum

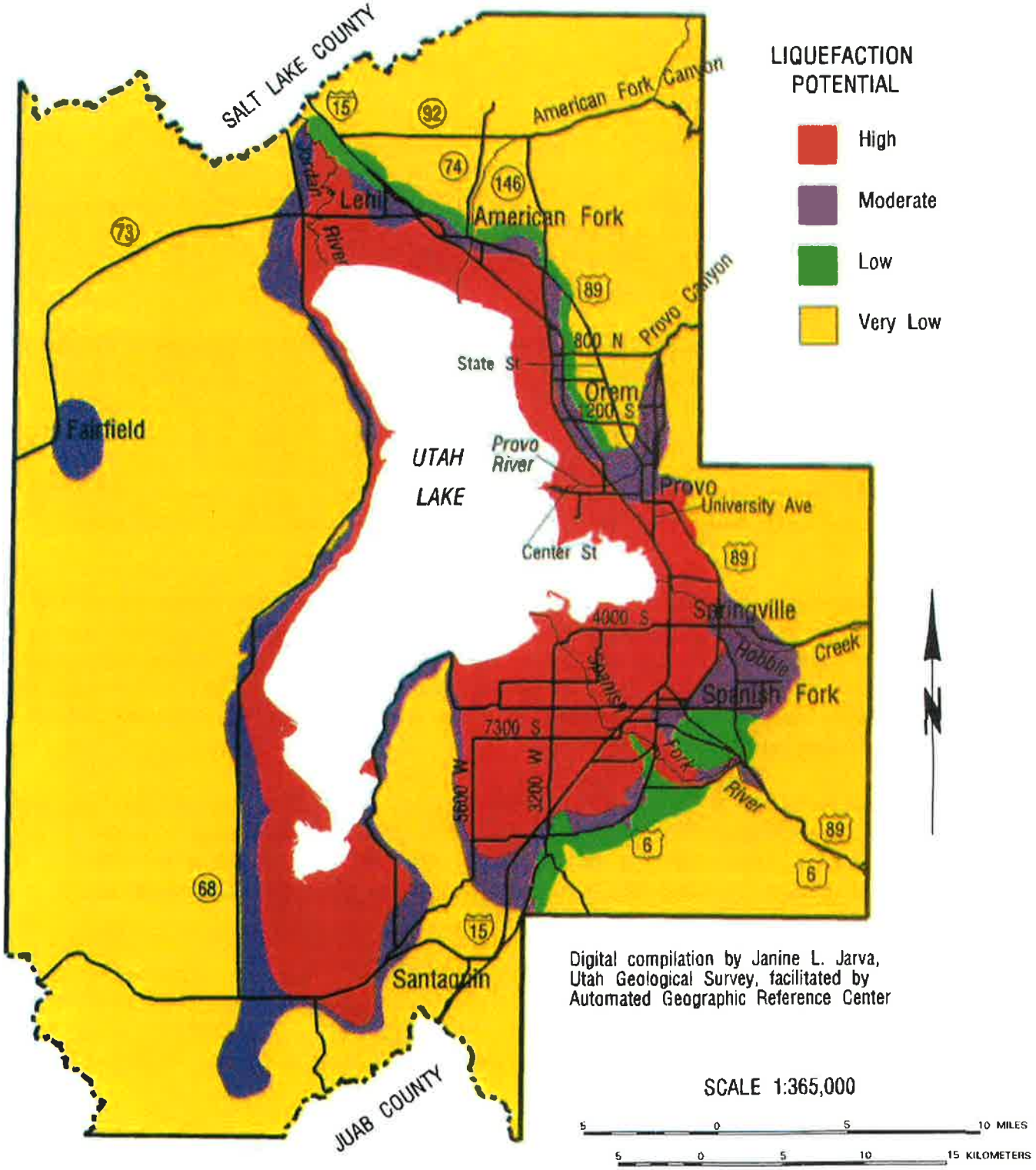


LIQUEFACTION-POTENTIAL MAP FOR A PART OF UTAH COUNTY, UTAH

UTAH GEOLOGICAL SURVEY

Public Information Series 28

August 1994



Digital compilation by Janine L. Jarva, Utah Geological Survey, facilitated by Automated Geographic Reference Center

This map is for general reference only and was modified from Anderson, L.R., Keaton, J.R., and Bischoff, J.E., 1994, Liquefaction potential map for Utah County, Utah: Utah Geological Survey Contract Report 94-3, 46 p., scale 1:48,000. Copies of this report are available at the Utah Geological Survey.

58/22

E

UPON RECORDING RETURN TO:

Wade R. Budge
SNELL & WILMER L.L.P.
15 West South Temple Street
Suite 1200
Salt Lake City, UT 84101

ENT 113246:2010 PG 1 of 22
RODNEY D. CAMPBELL
UTAH COUNTY RECORDER
2010 Dec 27 2:05 pm FEE 58.00 BY EO
RECORDED FOR SHELL & WILMER LLP

----------SPACE ABOVE THIS LINE FOR RECORDER'S USE ONLY----------

GRANT OF CONSERVATION EASEMENT

THIS GRANT OF CONSERVATION EASEMENT ("Grant") is made by CHAPPELL ALPINE FARMS LLC, a Utah limited liability company ("Grantor"), whose address is Attention: Jared Chappell, 1425 North Grove Drive, Alpine, UT 84004, to the ALPINE CITY, a political subdivision of the State of Utah ("Holder"), whose address is 20 North Main, Alpine, Utah 84004.

WHEREAS, Grantor is the sole owner in fee simple of certain real property located in Utah County, consisting of approximately 111.90 acres, more particularly described in Exhibit A attached hereto and incorporated by this reference (the "Property"); and

WHEREAS, Grantor desires to grant an conservation preservation easement over a portion of the Property, which will be the underlying property consisting of approximately 68.90 acres, more particularly described in Exhibit B attached hereto and incorporated by this reference ("Easement Property"); and

WHEREAS, Grantor, by this Grant, does not encumber the remaining portion of the Property with a conservation preservation easement ("Field Property"), which is more particularly described on the attached Exhibit C; and

WHEREAS, Grantor and Holder have negotiated Grantor's granting of a perpetual conservation easement over the Easement Property and desire to set forth in this grant the terms and conditions that will govern this Easement [as defined below]; and

WHEREAS, Grantor and Holder acknowledge and agree that the restrictions and obligations set forth in this Grant shall apply to the Easement Property but do not apply to the Field Property, which property will continue to be owned and used by Grantor; and

WHEREAS, the Easement Property possesses natural, scenic, public hiking, wildlife habitat and open space values (which are sometimes referred to collectively herein as the "Conservation Values") that are of great importance to the people of Alpine City and Utah County as well as the people of the State of Utah; and

WHEREAS, the specific Conservation Values of the Easement Property are further documented in an inventory of relevant features of the Easement Property incorporated by this reference ("Baseline Documentation"), dated as of June 28, 2010 that consists of reports, maps, photographs, and other documentation that the parties provided, collectively, and agree provides an accurate representation of the Easement Property at the date of this Grant and that is intended to serve as an objective, though nonexclusive, information baseline for monitoring compliance with the terms of this Easement; and

WHEREAS, Grantor intends that the Conservation Values of the Easement Property be preserved and maintained by the continuation of land use patterns existing at the time of this Grant, which, it is acknowledged, do not significantly impair or interfere with the Conservation Values and which protect and support the biodiversity of the area; and

WHEREAS, the natural, scenic, wildlife habitat and open space values or Conservation Values of the Easement Property are of great importance to Grantor, Holder, and the general public, and are worthy of protection; and

WHEREAS, Grantor intends that these values or Conservation Values be preserved and continued, in a manner consistent with Grantor's private ownership, use, and quiet enjoyment of the Easement Property; and

WHEREAS, Alpine City has established and operates a public trail system to provide access to open spaces, recreation and travel between parts of the city and the lands surrounding the city;

WHEREAS, Alpine City has established a conservation policy which is identified in its land use ordinances, its General Plan and its Annexation Policy Plan and Alpine City has the resources to promote and carry forward its conservation policies and to protect the Conservation Values described herein; and

WHEREAS, an important part of Alpine City's conservation policy is found in its General Plan which states:

> "The City should also consider annexing lands identified in its Annexation Policy Plan. Annexation of areas along the foothills can assist in preserving and protecting sensitive and critical lands, preserving the natural beauty of the foothills, and encouraging consistent development policy along the foothills.";

and

WHEREAS, the Easement Property is located within ½ mile of United States National Forest and the Lone Peak Wilderness Area within the Uinta National Forest and is included within the foothills that surround and border Alpine City; and

WHEREAS, the Easement Property has the following characteristics:

(a) the Easement Property and some of the surrounding lands are rural in character and have historically been used for ranching, agricultural, open space, and rural residential and recreational uses; and

(b) the area is one of the most important in the area of Alpine City from the standpoint of open space, scenic beauty and wildlife habitat and Grantor wants these conservation values protected for future generations and for the public surrounding and travelling along roads bordering the Property; and

WHEREAS, Grantor further intends, as owner of the Easement Property, to convey to Holder the right to preserve and protect the Conservation Values of the Easement Property, in perpetuity; and

WHEREAS, Holder is a "qualified organization" within the meaning of Section 170(h) of the Internal Revenue Code of 1986, as amended; and

WHEREAS, Holder agrees by accepting this grant forever to honor the intentions of Grantor stated herein, and to preserve and protect the Conservation Values of the Easement Property.

NOW THEREFORE, in consideration of the above and the mutual eovenants contained herein, and pursuant to the Land Conservation Easement Act, Utah Code Ann. §§57-18-1, -7 (the "Act"), Grantor hereby voluntarily grants and conveys to Holder, its successors and assigns, a conservation easement in perpetuity over the Property of the nature and character and to the extent hereinafter set forth (hereinafter referred to as this "Easement") forever and in perpetuity, rights including rights of enforcement hereunder.

Section 1.0. Purpose. The purpose of this Easement is to assure the Easement Property will be retained in its natural, scenic, and open space condition reflected in the Baseline Documentation referenced in this Easement in perpetuity, and to prevent any use of the Easement Property that will significantly impair or interfere with the Conservation Values of the Easement Property. Grantor intends that this Easement will restrict the use of the Easement Property in perpetuity to such activities as are consistent with the Conservation Values of the Easement Property and purposes of this Easement. In so doing, it is the purpose of this Easement to protect the wildlife values found in the Easement Property; allow public access through a hiking trail administered by Holder; promote biodiversity; protect the scenic values associated with the Easement Property's prominent ridge; foster the continuation of responsible ranching, agricultural and recreational practices; and to protect the area for its open space values. This Easement shall not be construed to impose upon Grantor an affirmative obligation to take specific steps to maintain or improve the Easement Property, or to incur any cost or expense to accomplish same.

Section 2.0. Prohibited Uses. Any activity or use of the Easement Property inconsistent with the purposes of this Easement is prohibited. Without limiting the generality of the foregoing, the following activities on and uses of the Easement Property are expressly prohibited:

2.1 Development and Construction. Except as provided in Sections 4.1 and 4.3, development and construction of any buildings or structures on the Easement

Property, including, but not limited to, buildings intended for occupancy for residential purposes is prohibited;

2.2 Subdivision. Any division or subdivision of the Easement Property or title to the Easement Property, whether by physical or legal process, is prohibited;

2.3 Timber Harvesting. Timber Harvesting is prohibited. Trees may be cut to control insects and disease, to prevent personal injury and property damage and for firewood for domestic use only. Dead trees maybe harvested at Grantor's discretion for firewood or construction purposes.

2.4 Trash. The dumping or accumulation of any kind of trash or refuse on the Easement Property is strictly prohibited. However, this shall not prevent the storage of agricultural products and by-products on the Easement Property in accordance with all applicable government laws and regulations.

2.5 Feed Lot. The establishment or maintenance of a commercial feed lot is prohibited. For purposes of this Easement, "commercial feed lot" is defined as a permanently constructed confined area or facility within which the property is not grazed or cropped annually, and which is used and maintained for purposes of engaging in the business of the reception and feeding of livestock. Nothing in this section shall prevent Grantor from seasonally confining Grantor's livestock into an area for feeding or from leasing pasture for the grazing of livestock owned by others, or from grazing Grantor's own livestock on the land consistent with the provisions hereof.

2.6 Mining. The commercial mining or extraction of soil, sand, gravel, oil, natural gas, fuel, or any other mineral substance, using any surface mining method is prohibited.

2.7. Construction of Buildings and Other Structures. The construction of any building or other structure (except for installation of or replacement of fences as allowed in this Grant or installation or construction of stockwells or stockponds consistent with historic livestock grazing practice) is prohibited. Construction and/or operation of cellular towers, radio-telephone repeaters, wind powered electrical generators, television or radio antennas, radio-dispatch facilities, microwave or other wireless communications systems, and structures of any kind are prohibited. Before undertaking any construction that requires advance permission, Grantor shall notify Holder of such request at least 60 days before the onset of such work.

2.8. Commercial or Industrial Activity. No commercial or industrial uses shall be allowed on the Property. Grantor's retained rights to use the Easement Property for livestock grazing, pasture, stockwatering and related use, as set forth herein, shall not be deemed a prohibited commercial use.

Section 3.0. Extinguishment of Development Rights. All rights to develop or use the Easement Property for any purpose that is prohibited by, or that is inconsistent with this Easement, are hereby extinguished by Grantor.

Section 4.0. Permitted Uses and Practices. Grantor intends that this Easement shall confine the future use of the Easement Property primarily to the preservation of open space and view corridors, grazing, a hiking and nature trail, wildlife protection and the other uses which are described herein and which are consistent with this Easement's purpose. The following uses and practices by Grantor, though not an exhaustive recital of consistent uses and practices, are permitted under this Easement, and these uses shall not be precluded, prevented, or limited by this Easement:

4.1 Maintaining, repairing, relocating, removing and replacing the existing improvements on the Easement Property, including, but not limited to, the water tank and associated water lines and the "P" painted rock feature and maintaining and repairing existing fences and utilities on the Easement Property;

4.2 Removing brush and vegetation necessary to minimize the risk of wildfire on the Easement Property;

4.3 Additional "wildlife friendly" fencing shall be permitted, designed and constructed in a manner that minimizes the adverse effect of the fencing on wildlife or on the natural features of the Easement Property. In the event of destruction, deterioration or obsolescence of said fences, Grantor may replace the same with fences of similar size, function, and capacity. Grantor may install fencing or locate rocks along the hiking trail described herein;

4.4 Continuing current and historic modes and levels of ranching, including the pasturing, grazing, feeding, and care of livestock, including, but not limited to, horses, and cattle, and to maintain stockponds and stockwells on the Easement Property, either replacement or new, provided they are used to continue the current and historic modes and levels of ranching. Grantor's activities may include those normally incident to range preservation and enhancement;

4.5 Maintaining and controlling any flood waters by use of dams or earth damming construction in order to prevent damage to the Easement Property by flood waters or in order to improve or construct stockponds;

4.6 Utilizing the Easement Property for recreational and educational uses including horseback riding and hiking;

4.7 Using agrichemicals, including but not limited to, fertilizers and biocides, but only in those amounts and with the frequency of application reasonably necessary to accomplish reasonable grazing and agricultural purposes, including weed control. All agrichemical use shall be in accordance with label directions and in compliance with applicable federal, state, and local laws, regulations, and requirements;

4.8 Preserving, repairing, maintaining, and replacing the existing roads and utility access across the Easement Property and to relocate the existing roads and utility access on the Property when reasonably necessary to maintain the use thereof; and

4.9 Using ranch and related vehicles upon and across the Easement Property, except as expressly prohibited.

Section 5.0. Reserved Rights. Grantor reserves to itself and to its personal representatives, heirs, successors, and assigns, all rights accruing from the ownership of the Easement Property, including the right to engage in or permit, or to invite others to engage in, all uses of the Easement Property that are not expressly prohibited herein and that are not inconsistent with the purposes of this Easement.

Section 6.0. Rights of Holder. To accomplish the purposes of this Easement, the following rights are conveyed to Holder by this Easement:

6.1. To take such actions as are reasonably necessary to preserve and protect the Conservation Values of the Easement Property; and

6.2. On an annual basis, to enter upon the Easement Property at a mutually agreed upon time which is reasonable to both Grantor and Holder in order to monitor Grantor's compliance with and otherwise enforce the terms of this Easement, provided that such entry by Holder shall not unreasonably interfere with Grantor's use and quiet enjoyment of the Easement Property; and

6.3. In the event when emergency circumstances or prevention of a threatened material breach require, to enter the Easement Property to enforce the terms of this Easement without notice while not unreasonably interfering with Grantor's use and quiet enjoyment of the Easement Property; and

6.4. To prevent any activity on or use of the Easement Property that is inconsistent with the purposes of this Easement and to require of the appropriate persons the restoration of such areas or features of the Easement Property that are damaged by any activity or use that is inconsistent with the purposes of this Easement.

6.5 To manage and administer the hiking trail described below in Section 7, and to take all necessary steps to prevent trespassing upon the Easement Property by anyone utilizing the hiking trail.

Grantor acknowledges and agrees that the grant of the Easement constitutes a property right, vested in Holder on the date this instrument was executed by all parties (the "Effective Date"), having a fair market value at least equal to the proportionate value that the Easement bears to the fair market value of the Easement Property on the Effective Date.

Section 7.0. Easement Access and Trail Use.

7.1 Holder's Access. Holder, and not the general public, shall have reasonable ingress and egress over Grantor's Field Property for the purpose of accessing the Easement Property. Grantor may, in the exercise of its reasonable discretion, designate the location, manner and method of access to the Easement Property over the Field Property. The purpose of this right of access is to allow Holder to obtain access to the Easement Property for purposes of evaluating and administering it in accordance

with the terms of this Grant. With the exception of the right to construct and utilize a hiking trail in strict accordance with section 7.2 below, no right of access by the general public to any portion of the Easement Property is conveyed or created by this Grant of Easement. The access granted by this section 7.1 is not intended to provide access for the hiking trail, which trail use and access is described and defined in the following section 7.2.

7.2 Trail Use and Access. Grantor grants to Holder the right to construct and maintain a public trail (the "Trail") as part of the Alpine City Trail System, to be located only on the Easement Property and only in the location depicted on the attached Exhibit D, and subject to the following express conditions:

7.2.1 Construction. Holder may not construct the Trail until both of the following have occurred: (i) such time as the subdivision, presently called the Three Falls subdivision, located to the north of the Easement Property, has constructed and completed lot improvements, and has dedicated to Holder public trails that will connect into the Trail; and (ii) the owner of the Field Property, or such portion of it as may be needed to connect with other trails of Holder, has agreed to an extension of the Trail to other trails of Holder or the owner of the property to the west (presently property owned by the Grant family) of the Easement Property has agreed to allow the installation of a trail over said Grant family property for purposes of connecting the Trail to other trails of Holder. It is the intent of Grantor and Holder that: (i) no construction shall occur if such construction would create a dead end in the Trail or a circumstance where the Trail would not be connected to the Alpine Trail system on both ends of the Trail that is planned to traverse the Property, or (ii) to compel the construction of the Trail over land not within the Easement. Holder alone shall be responsible for the costs of constructing and maintaining the Trail.

7.2.2 Width and Location of Trail. The width of the Trail shall be no wider than four (4) feet except that Holder may utilize a space of up to ten (10) feet during the construction or reconstruction of the Trail. Holder agrees to restore the construction area to its reasonable pre-construction condition after the installation of the Trail and to consult with and notify Grantor before commencing construction of the Trail. Holder and Grantor agree that the Trail shall only be installed in the location depicted on the attached Exhibit D and that the location of the Trail shall first be flagged so that both Grantor and Holder can confirm its location prior to commencement of construction.

7.2.3 Operation and Use. Holder agrees to post sufficient number of signs to alert all users of the Trail that it is only a hiking and nature trail, that the public may not operate motorized vehicles on the Trail, that the Trail may only be used by hikers, cyclists and horseback riders, and that the public will be trespassing on private property if they stray from the Trail. Holder shall install such protective measures as may be necessary to prevent or impede

motor vehicle use of the Trail. Nothing in this section shall be interpreted as to prevent Grantor from crossing or utilizing the Trail or portions thereof with a motorized vehicle. Holder agrees to cooperate in efforts to fence or locate barriers, including boulders, along the Trail as may be necessary or where there have been instances of members of the public straying from the Trail.

7.2.4 Grantor's Remedies with Respect to Trail. Subject to section 9 hereof, if Holder fails to operate the Trail as required by this section, and has been provided sixty (60) days written notice of its failure to so operate the Trail, Grantor may bring an action at law or in equity in a court of competent jurisdiction to enforce the terms of this Easement, to enjoin the violation, *ex parte* as necessary, by temporary or permanent injunction, and to require the restoration of the Easement Property at the cost of the Holder to the condition that existed prior to any such injury or to compel the operation of the Trail in accordance with this Grant.

Section 8.0. Holder's Remedies.

8.1. Notice of Violation; Corrective Action. If Holder determines that a violation of the terms of this Easement has occurred or is threatened, Holder shall give written notice to Grantor of such violation and demand corrective action sufficient to cure the violation and, where the violation involves injury to the Easement Property resulting from any use or activity inconsistent with the purpose of this Easement, to restore the portion of the Easement Property injured to its prior condition with a plan approved by Holder at Grantor's expense. Holder and Grantor acknowledge that the Baseline Documentation is an accurate representation of the Easement Property's condition on the Effective Date and that such information may be used to measure any alleged violation of this Easement. Notwithstanding the foregoing, should a future controversy arise over the physical condition of the Easement Property, the parties may use all relevant documents that will assist in resolving a controversy.

8.2. Injunctive Relief. If Grantor fails to cure the violation within twenty (20) days after receipt of notice thereof from Holder, or under circumstances where the violation cannot reasonably be cured within a twenty (20) day period, fails to begin curing the violation within the twenty (20) day period, or fails to seek accommodation to cure the violation, or fails to continue diligently to cure such violation until finally cured, Holder may bring an action at law or in equity in a court of competent jurisdiction to enforce the terms of this Easement, to enjoin the violation, *ex parte* as necessary, by temporary or permanent injunction, and to require the restoration of the Easement Property to the condition that existed prior to any such injury.

8.3. Damages. Holder shall be entitled to recover damages for violation of the terms of this Easement or injury to any Conservation Values protected by this Easement which are proximately caused by Grantor, including, without limitation, damages for the loss of scenic, aesthetic, or environmental values. Without limiting the

Grantor's liability therefor, Holder, in its sole discretion, may apply any damages recovered to the cost of undertaking any corrective action on the Easement Property.

8.4. Forbearance. Enforcement of the terms of this Easement shall be at the discretion of Holder and any forbearance by Holder to exercise its rights under this Easement in the event of any breach of any term of this Easement shall not be construed to be a waiver of such term or of any subsequent breach of the same or any other term of this Easement or of Holder's rights under this Easement. No delay or omission by Holder in the exercise of any right or remedy upon any breach shall impair such right or remedy or be construed as a waiver of such a right or remedy.

8.5. Acts Beyond Grantor's Control, Force Majeure. Nothing contained in this Easement shall be construed to entitle Holder to bring any action against Grantor for any injury to or change in the Easement Property resulting from causes beyond Grantor's control, including, without limitation, acts of third parties, fire, flood, storm, and earth movement, or from any prudent action taken by Grantor under emergency conditions to prevent, abate, or mitigate any threatened or actual significant injury to the Easement Property resulting from such causes.

8.6. Emergency Enforcement. If Holder, in its sole discretion, determines that circumstances require immediate action to prevent or mitigate significant damage to the Conservation Values of the Easement Property, Holder may pursue its remedies under this section without prior notice to Grantor or without waiting for the period provided for cure to expire.

8.7. Scope of Relief. Holder's rights under this section apply equally in the event of either actual or threatened violations of the terms of this Easement. Grantor agrees that Holder's remedies at law for any violation of the terms of this Easement are inadequate and that Holder shall be entitled to the injunctive relief described in this section, both prohibitive and mandatory, in addition to such other relief to which Holder may be entitled, including specific performance of the terms of this Easement, without the necessity of proving either actual damages or the inadequacy of otherwise available legal remedies. Holder's remedies described in this section shall be cumulative and shall be in addition to all remedies now or hereafter existing at law or in equity.

8.8. Costs of Enforcement. In connection with litigation or arbitration proceeding under this Easement, the prevailing party shall be entitled to recover from the other party its expenses, including, without limitation, costs and expenses of suit and reasonable attorney fees. Furthermore, any costs of restoration necessitated by Grantor's violation of the terms of this Easement shall be borne by Grantor.

8.9. Waiver of Certain Defenses. Grantor hereby waives any defense of laches, estoppel or prescription as they may relate to the Easement Property.

Section 9.0. Mediation. Grantor and Holder agree to submit any dispute that one of them or both may have concerning this Easement to mediation prior to commencing any suit. Any suit

commenced before a mediation has occurred shall be stayed until after the parties have participated in a mediation. The parties agree to divide equally among themselves the fees for a mediator selected in accordance with this provision.

Section 10.0. Costs, Liabilities, Taxes, and Environmental Compliance.

10.1. Costs, Legal Requirements, and Liabilities. Grantor retains all responsibilities and shall bear all costs and liabilities of any kind related to the ownership, operation, upkeep, and maintenance of the Easement Property, including the maintenance of adequate liability insurance coverage. Grantor remains solely responsible for obtaining any applicable governmental permits and approvals for any construction or other activity or use which shall be undertaken in accordance with all applicable federal, state, and local laws, regulations, and requirements. Grantor shall keep the Easement Property free of any mechanics' or materialmen's liens arising out of any work performed for, materials furnished to, or obligations incurred by the Grantor. Holder shall keep the Easement Property and Easement free of any mechanics' and materialmen's liens arising out of any work performed for, materials furnished to, or obligations incurred by Holder.

10.2. Taxes. Grantor shall pay, before delinquency, any and all taxes, assessments, fees, and charges levied or assessed by competent authority on the Easement Property (collectively "taxes"), including any taxes imposed upon, or incurred as a result of, this Easement, and shall furnish Holder with satisfactory evidence of payment upon request. Holder agrees to cooperate in Grantor's efforts to have the Easement Property taxed as greenbelt or at a reduced property tax rate as a result of the Easement and shall cooperate in allowing such complementary uses as may be necessary to achieve the preferred and lower property tax rate.

10.3. Representations and Warranties. Grantor represents and warrants that, after reasonable investigation and to the best of its knowledge:

(a) No substance defined, listed, or otherwise classified pursuant to any federal, state, or local law, regulation, or requirement as hazardous, toxic, polluting, or otherwise contaminating to the air, water, soil, or in any way harmful or threatening to human health or the environment exists or has been released, generated, treated, stored, used, disposed of, deposited, abandoned, or transported in, on, from, or across the Easement Property, provided that nothing in this Section purports to apply to fertilizers, biocides or other such permitted substances incident to stockraising and ranching activities;

(b) There are not now any underground storage tanks (other than for water) located on the Easement Property, whether presently in service or closed, abandoned, or decommissioned, and no underground storage tanks have been removed from the Easement Property in a manner not in compliance with applicable federal, state, and local laws, regulations, and requirements;

(c) Grantor and the Easement Property are in compliance with all federal, state, and local laws, regulations, and requirements applicable to the Easement Property and its use;

(d) There is no pending or threatened litigation in any way affecting, involving, or relating to the Easement Property; and

(e) No civil or criminal proceedings or investigations have been instigated at any time or are now pending, and no notices, claims, demands, or orders have been received, arising out of any violation or alleged violation of, or failure to comply with, any federal, state, local law, regulation, or requirement applicable to the Easement Property and its use, nor do there exist any facts or circumstances that the Grantor might reasonably expect to form the basis for any such proceedings, investigations, notices, claims, demands, or orders.

10.4. Remediation. If at any time there occurs, or has occurred, an unlawful release by Grantor or by any of Grantor's family members, employees, agents, contractors, or invitees (other than Holder) in, on, or about the Easement Property of any substance now or hereafter defined, listed, or otherwise classified pursuant to any federal, state, or local law, regulation, or requirement as hazardous, toxic, polluting, or otherwise contaminating to the air, water, or soil, or in any way harmful or threatening to human health or the environment, Grantor agrees to take all steps necessary to assure its containment and remediation, including any cleanup that may be required.

10.5. Control. Nothing in this Easement shall be construed as giving rise, in the absence of a judicial decree, to any right or ability in Holder to exercise physical or managerial control over the day-to-day operations of the Easement Property, or any of Grantor's activities on the Easement Property, or otherwise to become an operator with respect to the Property within the meaning of The Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA").

10.6. Hold Harmless. Grantor hereby releases and agrees to hold harmless, indemnify, and defend Holder and its members, directors, officers, attorneys, employees, agents, and contractors and its heirs, personal representatives, successors, volunteers and assigns each of them (collectively "Indemnified Parties") from and against any and all liabilities, penalties, fines, charges, costs, losses, damages, expenses, causes of action, claims, demands, orders, judgments, or administrative actions, including, without limitation, reasonable attorneys' fees, arising from: (1) injury to or the death of any person, or physical damage to any property, resulting from any act or omission of Grantor occurring on or about the Easement Property; (2) Grantor's violation of, or failure to comply with, any state, federal, or local law, regulation, or requirement in any way affecting, involving, or relating to the Easement Property; (3) the presence or release in, on, from, or about the Easement Property, at any time, of any substance now or hereafter, except as contemplated or permitted hereunder.

Grantor and Holder agree that the purpose of the foregoing indemnity provision is to require the Grantor to bear the expense of the aforestated claims made by a third party against the Holder which arise solely because the Holder has an interest in the Property as a result of this Easement. Nothing herein shall require that Grantor indemnify, defend or hold harmless any of the Indemnified Parties for any injury, death, physical damage, property damage, personal injury or any other damage, cost, expense or liability caused by the acts, omissions or negligence of any Indemnified Parties, nor for any injury, death, physical damage, property damage, personal injury or any other damage, cost, expense or liability caused by third parties and not the fault of Grantor. Holder shall at all times maintain commercial general liability insurance insuring Holder for acts or omissions giving rise to personal injury or property damage.

Section 11.0. Extinguishment/ Condemnation.

11.1. Extinguishment. If an unexpected change occurs in the conditions surrounding the Property that makes the continued use of the Easement Property for conservation purposes impossible or impractical this Easement may be terminated or extinguished, whether in whole or in part, by judicial proceedings in a court of competent jurisdiction; provided that, (1) Holder's vested interest in the Easement Property described in paragraph 6.5 hereof is maintained, (2) upon the subsequent sale or exchange of the Property, the net proceeds from such sale or exchange are divided between Holder and Grantor in the proportionate value of this Easement as established at the time of its creation (unless applicable state law requires that Holder receive all proceeds from such sale or exchange), and (3) Holder uses all of its share of such proceeds in a manner consistent with the Conservation Values.

11.2. Condemnation. If all or any part of the Easement Property is taken by exercise of the power of eminent domain or acquired by purchase in lieu of condemnation, whether by public, corporate, or other authority, so as to terminate this Easement, in whole or in part, the parties shall act jointly to recover the full value of their interests in the Easement Property, subject to the taking or in lieu of purchase and all direct or incidental damages resulting therefrom. All expenses reasonably incurred shall be paid out of the amount recovered. All net proceeds recovered by the parties shall be divided in accordance with the proportionate value of this Easement as established at the time of its creation (unless applicable state law requires that Holder receive all of such proceeds). All interpretations of Holder's property rights shall follow Treasury Regulation Section 1.170.

Section 12.0. Assignment of Holder's Interest. This Easement is transferable by Holder, but Holder may assign its interest in this Easement only to a "qualified organization" within the meaning of Section 170(h) of the Internal Revenue Code of 1986, as amended (or any successor provision then applieable), and the applicable Regulations promulgated thereunder and the Act. As a condition of such assignment, Holder shall require that a qualified assignee expressly accept such assignment, assume the obligations of Holder hereunder, and agree in writing that the conservation purposes that this grant is intended to advance shall continue to be carried out following the assignment. This Easement may not be assigned to another governmental entity, be it federal or local agency or political subdivision, other than a qualified state agency of the State of Utah. Prior to assigning its interest in this Easement, Holder shall obtain the prior written consent of Grantor or the then current owner of fee title to the Easement Property. Any assignment without the required consent as stated herein, shall be void and of no effect. Grantor shall not unreasonably withhold its consent to any such assignment so long as it is not to a prohibited party identified herein.

Section 13.0 Amendment of the Easement. Notwithstanding the provisions related to the extinguishment of this Easement, if circumstances arise under which an amendment to or modification of the Easement would be appropriate, Grantor and Holder may mutually agree to amend the Easement; provided that no amendment shall be allowed that affects the status of the Easement as a qualified conservation contribution under Section 170(h) of the Internal Revenue Code of 1986, as amended (or any successor provision then applicable), and the applicable regulation promulgated thereunder or the Act, assuming that this Easement otherwise qualifies. Any such amendment shall be consistent with the purposes of the Easement, shall not affect its perpetual duration, and shall not impair any of the Conservation Values. Any such amendment shall be recorded in the official records of Utah County, Utah recorder. Nothing in this Easement in any way purports to indicate that the parties anticipate, or represent to one another, that the grant of the Easement qualifies for deductions or other favorable tax treatment, and such treatment is in no way a contingency of any obligation hereunder.

Section 14.0. Subsequent Transfers by Grantor. Grantor agrees to incorporate the terms of this Easement by reference in any deed or other legal instrument by which they divest themselves of any interest in all or a portion of the Easement Property, including, without limitation, a leasehold interest. Grantor further agrees to give written notice to Holder of the transfer of any interest in the Easement Property subject to this Easement at least thirty (30) days prior to the date of such transfer. The failure of Grantor to perform any act required by this subsection shall not impair the validity of this Easement or limit its enforceability in any way.

Section 15.0. Recordation. Holder shall record this instrument in a timely fashion in the official records of Utah County, and may re-record it at any time as may be required to preserve Holder's rights in this Easement.

Section 16.0. General Provisions.

16.1. Notices. Any notice, demand, request, consent, approval, or communication that any party desires or is required to give to the other shall be in writing and either served personally or sent by first class mail, postage prepaid, to the other party at the address shown at the beginning of this Easement, or at such other address as a party may hereafter specify by written notice to the other parties or at such address maintained by the Division of Corporation and Commercial Code, Utah Department of Commerce.

16.2. Grant in Perpetuity. Subject to Sections 11.1, and 11.2 hereof, the Easement herein granted shall be a burden upon and shall run with the Easement Property in perpetuity and shall bind Grantor and Grantor's respective personal representatives, heirs, successors, and assigns forever.

16.3. Termination of Rights and Obligations. A party's rights and obligations under this Easement terminate upon transfer of party's interest in the Easement or Easement Property, except that liability for acts or omissions occurring prior to transfer shall survive transfer.

16.4. Liberal Construction. Any general rule of construction to the contrary notwithstanding, this Easement shall be liberally construed in favor of the grant to effect the purposes of this Easement and the policy and purposes of the Land Conservation Easement Act, Utah Code Ann. §§57-18-1, -7. If any provision of this instrument is found to be ambiguous, invalid, or unenforceable, an interpretation consistent with the purposes of this Easement that would render the provision valid and enforceable shall be favored over interpretation that would render it invalid or unenforceable.

16.5. Severability. If any provision of this Easement, or the application thereof, is found to be invalid, the remainder of the provisions of this Easement, or the application of such provision to circumstances or persons other than those to which it is found invalid, shall not be affected so long as the purposes of this Easement are not unduly frustrated.

16.6. Entire Agreement. This instrument sets forth the entire agreement between the parties with respect to this Easement.

16.7. Governing Law. The laws of the State of Utah shall govern the validity, performance, and enforcement of this Easement. Notwithstanding which of the parties may be deemed to have prepared this Easement, this Easement shall not be interpreted either for or against Grantor or Holder, but this Easement shall be interpreted in accordance with the general tenor of the language in an effort to carry out the purposes of this Easement.

16.8. Successors. The covenants, terms, conditions, and restrictions of this Easement shall be binding upon, and inure to the benefit of, the parties, hereto and their respective personal representatives, heirs, successors, and assigns and shall continue

as a servitude running in perpetuity with the Easement Property. The terms "Grantor" and "Holder" wherever used herein, and any pronouns used in place thereof, shall include, respectively, the above-named Grantor its successors, and assigns, and the above-named Holder and its successors and assigns.

16.9. Captions. The captions in this instrument have been inserted solely for convenience of reference and are not a part of this instrument and shall have no effect upon construction or interpretation.

16.10. Counterparts. The parties may execute this instrument in two or more counterparts, which shall, in the aggregate, be signed by all parties; each counterpart shall be deemed an original instrument as against any party who has signed it. In the event of any disparity between the counterparts produced, the recorded counterpart shall be controlling.

[Signature page to follow]

TO HAVE AND TO HOLD, the said Easement unto the said Holder, its successors and assigns forever.

IN WITNESS WHEREOF, Grantor has executed this Grant of Conservation Easement as of July 15, 2010:

CHAPPELL ALPINE FARMS LLC,
a Utah limited liability company

By _____
Its _____

The undersigned Holder hereby accepts the foregoing Grant of Easement.

ALPINE CITY, a political subdivision of the State of Utah

By _____
Hunt Willoughby, Mayor

Attest:

_____
City Recorder, Alpine City

Acknowledgments

STATE OF UTAH)
) ss.
COUNTY OF UTAH)

The foregoing instrument was subscribed, sworn to, and acknowledged before me this 16 day of July, 2010 by Jared Chappell, the Manager of Chappell Alpine Farms LLC, as Grantor.

Notary Public

MICHELLE THOMAS
NOTARY PUBLIC - STATE of UTAH
835 N. 900 W.
PROVO, UT 84604
COMM. EXP. 8-28-2011

STATE OF UTAH)
) ss.
COUNTY OF UTAH)

The foregoing instrument was subscribed, sworn to, and acknowledged before me this 16th day of July, 2010 by HUNT WILLOUGHBY, Mayor of Alpine City, as Holder.

Notary Public

EXHIBIT "A"

PROPERTY DESCRIPTION

Commencing at the North Quarter corner of Section 18, Township 4 South, Range 2 East, Salt Lake Base and Meridian; thence South 00°47'44" West along the One-Quarter Section Line 2159.621 feet; thence along a Deer Fence as follows: North 89°50'46" West 225.351 feet; South 00°49'55" West 482.103 feet; South 89°36'59" East 225.65 feet along a Deer Fence and extension thereof to the One-Quarter Section Line; thence South 00°47'44" West along the One-Quarter Section Line 48.173 feet; thence South 27°02'01" West 188.51 feet; thence North 61°02'02" West 323.332 feet along a Deer Fence; thence along the Wayne Park Title (W.D. Entry 11602-69) Dale Pack Title (Q.C.D. Entry 12141-92 and Carl Pack Title (W.D. Entry 389343-83) as follows: South 29°57" West 224.978 feet North 60°40' West 321.919 feet to the East Title of Weixler; thence along the Weixler Title (W.D. Entry 25617.92) as follows: North 33°39' East 406.854 feet; North 77°12'34" West 225.245 feet; South 69°35' West 460.80 feet South 12°33' East 32.95 feet to the Northerly boundary of Dean Lindsay Title (W.D. Entry 39295.80); thence South 62°09' West 190.041 feet; thence along a fence line and Grant Title (W.D.1780-91) as follows: North 00°34'37" West 256.025 feet North 00°34'24" West 145.52 feet; North 32°57'25" West 324.82 feet; North 33°37'02" West 376.55 feet; North 34°13'41" West 266.95 feet; North 43°13'49" West 212.37 feet to the Section Line; thence North 00°02'21" East 461.775 feet along the Section Line to the Northwest corner of said Section 18: thence North 88°33'09" East 2719.90 feet along the Section Line to the Point of Beginning.

Less And Excepting the Following 2 Parcels:

Commencing at a fence post located North 00°02'21" East along the Section Line 371.96 feet and East 2010.13 feet from the West One-Quarter corner of Section 18, Township 4 South, Range 2 East, Salt Lake Base and Meridian; thence North 10°53'37" West 363.18 feet; thence East 553.28 feet; thence South 06°19'38" West 340.50 feet; thence South 34°58'49" East 102.86 feet; thence South 19°01'01" West 55.51 feet; thence South 46°20'46" West 49.90 feet to a fence corner thence South 00°49'55" West along a Fence Line 453.99 feet; thence along the North boundary of an easement right of way as follows: along the arc of a 73.26 foot radius curve to the right 80.60 feet (chord bears North 57°28'39" West 76.60 feet; North 25°57'30" West 113.44 feet; along the Arc of a 200.00 foot radius curve to the left 148.03 feet, (chord bears North 47°09'45" West 144.68 feet); thence North 11°29'57" West 100.41 feet; thence North 01°35'35" East 316.55 feet; thence South 84°24'28" West 132.84 feet; thence South 65°53'45" West 89.34 feet to the Point of Beginning. (11-045-0136).

Commencing North 382.10 feet and East 1936.12 feet from the West Quarter corner of Section 18, Township 4 South, Range 2 East, Salt Lake Base and Meridian; thence North 15°18' West 11.52 feet; thence North 74°42' East 250 feet along a Fence Line; thence South 15°18' East 239.36 feet; thence South 78°13' West 280.79 feet to the Point of Beginning. (11-045-0057)

EXHIBIT "B"

Legal Description of "Easement Property"

Beginning at a point South 88°33'07'' West 74.43 feet from the North Quarter Corner of Section 18, Township 4 South, Range 2 East, Salt Lake Base and Meridian; and running thence South 34°57'14'' West 115.53 feet; thence South 32°51'36'' West 173.94 feet; thence South 30°12'54'' West 105.94 feet; thence South 45°12'21'' West 85.41 feet; thence South 51°03'16'' West 108.18 feet; thence South 60°28'12'' West 71.97 feet; thence South 52°59'20'' West 62.28 feet; thence South 43°34'32'' West 80.33 feet; thence South 34°42'39'' West 81.59 feet; thence South 37°54'31'' West 107.57 feet; thence South 41°52'53'' West 333.60 feet; thence South 14°04'50'' East 75.42 feet; thence South 04°43'18'' West 91.09 feet; thence South 31°55'48'' West 94.86 feet; thence South 13°11'38'' East 94.46 feet; thence South 27°24'35'' West 115.21 feet; thence South 28°48'14'' West 97.02 feet; thence South 31°50'10'' West 85.86 feet; thence South 41°14'13'' West 40.85 feet; thence South 13°25'22'' East 13.45 feet; thence South 18°24'14'' West 46.79 feet; thence South 34°48'03'' West 64.26 feet; thence South 31°36'42'' West 100.03 feet; thence South 33°51'47'' West 35.81 feet; thence South 45°19'26'' West 41.25 feet; thence South 33°00'51'' West 37.43 feet; thence South 34°04'20'' West 50.47 feet; thence South 37°44'46'' West 62.93 feet; thence South 49°00'58'' West 128.87 feet; thence North 55°50'00'' West 452.24 feet; thence North 29°46'46'' West 246.39 feet; thence North 32°34'24'' West 145.52 feet; thence North 32°57'25'' West 324.82 feet; thence North 33°37'02'' West 376.55 feet; thence North 34°13'41'' West 266.95 feet; thence North 43°13'49'' West 212.32 feet; thence North 00°02'05'' East 462.43 feet; thence North 88°33'07'' East 2642.32 feet to the point of beginning.

Comprising 3,001,424 Sq Ft or 68.90 Acres +/-.

EXHIBIT "C"

Legal Description of Grantor's "Field Property"

Commencing at the North Quarter corner of Section 18, Township 4 South, Range 2 East, Salt Lake Base and Meridian; thence South 00°47'44" West along the One-Quarter Section Line 2159.621 feet; thence along a Deer Fence as follows: North 89°50'46" West 225.351 feet; South 00°49'55" West 482.103 feet; South 89°36'59" East 225.65 feet along a Deer Fence and extension thereof to the One-Quarter Section Line; thence South 00°47'44" West along the One-Quarter Section Line 48.173 feet; thence South 27°02'01" West 188.51 feet; thence North 61°02'02" West 323.332 feet along a Deer Fence; thence along the Wayne Park Title (W.D. Entry 11602-69) Dale Pack Title (Q.C.D. Entry 12141-92 and Carl Pack Title (W.D. Entry 389343-83) as follows: South 29°57" West 224.978 feet North 60°40' West 321.919 feet to the East Title of Weixler; thence along the Weixler Title (W.D. Entry 25617.92) as follows: North 33°39' East 406.854 feet; North 77°12'34" West 225.245 feet; South 69°35' West 460.80 feet South 12°33' East 32.95 feet to the Northerly boundary of Dean Lindsay Title (W.D. Entry 39295.80); thence South 62°09' West 190.041 feet; thence along a fence line and Grant Title (W.D.1780-91) as follows: North 00°34'37" West 256.025 feet North 00°34'24" West 145.52 feet; North 32°57'25" West 324.82 feet; North 33°37'02" West 376.55 feet; North 34°13'41" West 266.95 feet; North 43°13'49" West 212.37 feet to the Section Line; thence North 00°02'21" East 461.775 feet along the Section Line to the Northwest corner of said Section 18: thence North 88°33'09" East 2719.90 feet along the Section Line to the Point of Beginning.

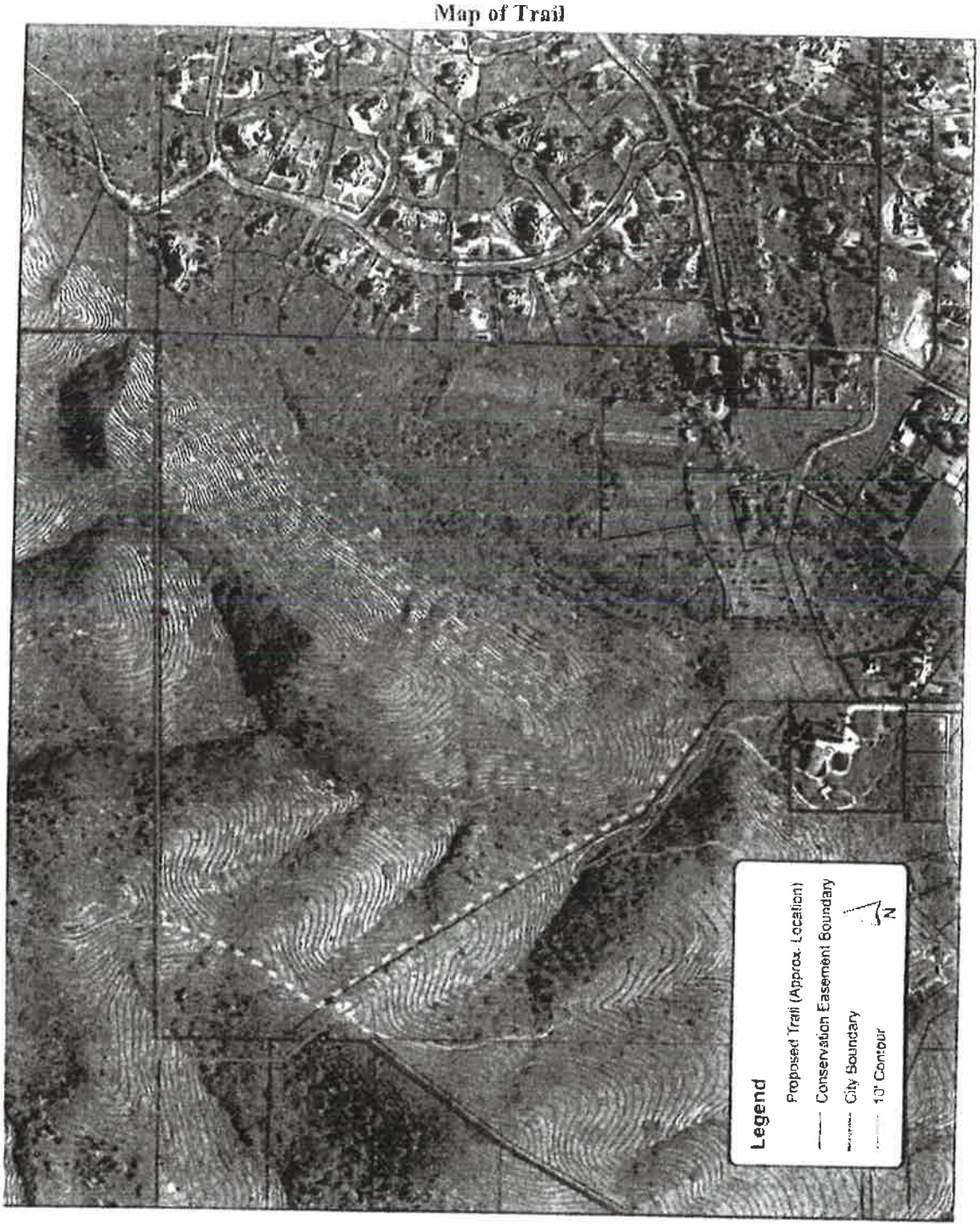
Less And Excepting the Following 3 Parcels:

Commencing at a fence post located North 00°02'21" East along the Section Line 371.96 feet and East 2010.13 feet from the West One-Quarter corner of Section 18, Township 4 South, Range 2 East, Salt Lake Base and Meridian; thence North 10°53'37" West 363.18 feet; thence East 553.28 feet; thence South 06°19'38" West 340.50 feet; thence South 34°58'49" East 102.86 feet; thence South 19°01'01" West 55.51 feet; thence South 46°20'46" West 49.90 feet to a fence corner thence South 00°49'55" West along a Fence Line 453.99 feet; thence along the North boundary of an easement right of way as follows: along the arc of a 73.26 foot radius curve to the right 80.60 feet (chord bears North 57°28'39" West 76.60 feet; North 25°57'30" West 113.44 feet; along the Arc of a 200.00 foot radius curve to the left 148.03 feet, (chord bears North 47°09'45" West 144.68 feet); thence North 11°29'57" West 100.41 feet; thence North 01°35'35" East 316.55 feet; thence South 84°24'28" West 132.84 feet; thence South 65°53'45" West 89.34 feet to the Point of Beginning. (11-045-0136).

Commencing North 382.10 feet and East 1936.12 feet from the West Quarter corner of Section 18, Township 4 South, Range 2 East, Salt Lake Base and Meridian; thence North 15°18' West 11.52 feet; thence North 74°42' East 250 feet along a Fence Line; thence South 15°18' East 239.36 feet; thence South 78°13' West 280.79 feet to the Point of Beginning. (11-045-0057)

Beginning at a point South 88°33'07'' West 74.43 feet from the North Quarter Corner of Section 18, Township 4 South, Range 2 East, Salt Lake Base and Meridian; and running thence South 34°57'14'' West 115.53 feet; thence South 32°51'36'' West 173.94 feet; thence South 30°12'54'' West 105.94 feet; thence South 45°12'21'' West 85.41 feet; thence South 51°03'16'' West 108.18 feet; thence South 60°28'12'' West 71.97 feet; thence South 52°59'20'' West 62.28 feet; thence South 43°34'32'' West 80.33 feet; thence South 34°42'39'' West 81.59 feet; thence South 37°54'31'' West 107.57 feet; thence South 41°52'53'' West 333.60 feet; thence South 14°04'50'' East 75.42 feet; thence South 04°43'18'' West 91.09 feet; thence South 31°55'48'' West 94.86 feet; thence South 13°11'38'' East 94.46 feet; thence South 27°24'35'' West 115.21 feet; thence South 28°48'14'' West 97.02 feet; thence South 31°50'10'' West 85.86 feet; thence South 41°14'13'' West 40.85 feet; thence South 13°25'22'' East 13.45 feet; thence South 18°24'14'' West 46.79 feet; thence South 34°48'03'' West 64.26 feet; thence South 31°36'42'' West 100.03 feet; thence South 33°51'47'' West 35.81 feet; thence South 45°19'26'' West 41.25 feet; thence South 33°00'51'' West 37.43 feet; thence South 34°04'20'' West 50.47 feet; thence South 37°44'46'' West 62.93 feet; thence South 49°00'58'' West 128.87 feet; thence North 55°50'00'' West 452.24 feet; thence North 29°46'46'' West 246.39 feet; thence North 32°34'24'' West 145.52 feet; thence North 32°57'25'' West 324.82 feet; thence North 33°37'02'' West 376.55 feet; thence North 34°13'41'' West 266.95 feet; thence North 43°13'49'' West 212.32 feet; thence North 00°02'05'' East 462.43 feet; thence North 88°33'07'' East 2642.32 feet to the point of beginning.

EXHIBIT "D"
Map of Trail



ALPINE PLANNING COMMISSION AGENDA

SUBJECT: Lone Pine Subdivision Concept Plan

FOR CONSIDERATION ON: 6 September 2016

PETITIONER: Ivory Homes

ACTION REQUESTED BY PETITIONER: Approve the Concept Plan

APPLICABLE STATUTE OR ORDINANCE: Chapter 4 (Subdivision)

PETITION IN COMPLIANCE WITH ORDINANCE: Yes

BACKGROUND INFORMATION:

The proposed Lone Pine Subdivision (formerly the Walters property) consists of 9 lots ranging from 20,563 square feet to 32,811 square feet on a site that is 5.68 acres. The site is located in the CR-20,000 zone.

STAFF RECOMMENDATIONS:

The Planning & Zoning Department and Engineering Department recommends approval of the proposed Lone Pine Subdivision concept plan.

Date: August 30, 2016

By: Jason Bond
City Planner

Subject: Planning and Zoning Review
Lone Pine Subdivision Concept Plan - REVISED
Approximately 615 East 300 North – 9 lots on 5.68 acres

Background

The proposed Lone Pine Subdivision (formerly the Walters property) consists of 9 lots ranging from 20,563 square feet to 32,811 square feet on a site that is 5.68 acres. The site is located in the CR-20,000 zone.

Lot Area and Width Requirements

The proposed lots for this subdivision meet the lot area requirement of at least 20,000 square feet.

Each lot shall abut upon and have direct access to an adjacent public street. The width of each lot shall be not less than 110 feet (measured at the front setback). When the lot abuts upon a cul-de-sac or sharp curve, the length of the front lot line abutting the City street shall be no less than 80 feet (Section 3.3.6).

RECOMMENDATION

The Planning and Zoning Department recommends approval of the proposed Lone Pine Subdivision concept plan.

Date: August 26, 2016

By: Jed Muhlestein, P.E.
Assistant City Engineer

Subject: Lone Pine Estates – ENGINEER'S REVISED CONCEPT REVIEW
9 Lots on 5.68 Acres, CR 20,000 Zone

ENGINEERING REVIEW

This is the REVISED CONCEPT engineering review for the proposed Lone Pine Estates, formerly known as the Walters Subdivision which was reviewed at the June 26, 2016 Planning Commission Meeting. A separate Planning Review will also be completed. The proposed development consists of 9 lots including an existing home. The development is located in the CR 20,000 zone at 615 East 300 North.

The only difference between the original concept plan and this plan is a re-arrangement of lot lines on the westerly side of the development. All previous comments still apply and are included as follows.

Street System

The street system consists of a 232 foot long cul-de-sac and terminates with a 60-foot radius sized turn-a-round, both of which meet code. The property to be developed fronts both 300 North and Bristol Court. Frontage improvements consisting of street widening, curb, gutter, and sidewalk would be required on both streets. Street right-of-way would also be required to meet the typical 54-foot standard street cross-section, this is reflected on the proposed concept plan.

A concern about traffic at the intersection of Bristol Court and 300 North has been brought up at past meetings. The engineering department has looked at the intersection twice and neither study warranted a 4-way stop situation. With 8 new lots being added to the area another study could be done but the study wouldn't be done until all the new lots were occupied with homes.

Utilities

A detailed utility plan is not required at concept. Having said that, some general observations are mentioned:

Sewer System. There is an existing 8-inch sewer line in 300 North and Bristol Court that

could serve the development. An 8-inch extension of the sewer main would be required in the cul-de-sac. 4-inch sewer laterals would be required for each new lot.

Culinary Water System. The subdivision is well below the 5350 foot elevation, which is the highest elevation the existing water system can serve and still provide a minimum 40 psi required by ordinance. There are currently 8-inch water lines in both streets to which the property fronts. A new waterline would be required for the cul-de-sac, sizing can be determined at preliminary. The Fire Marshall will need to approve the location of proposed fire hydrants as the plan moves forward. 3/4-inch water laterals will need to be constructed for each new lot.

Pressurized Irrigation System. There is currently a 10-inch pressurized irrigation line in 300 North which the cul-de-sac would connect to via a new 4-inch main. This line is high in pressure which would require pressure reducing valves (PRV's) to be installed in the pressurized irrigation connection boxes. Lot 101 would not require a PRV as the line in Bristol Court operates at a more common pressure for outdoor use. 1-inch laterals would be required for each new lot.

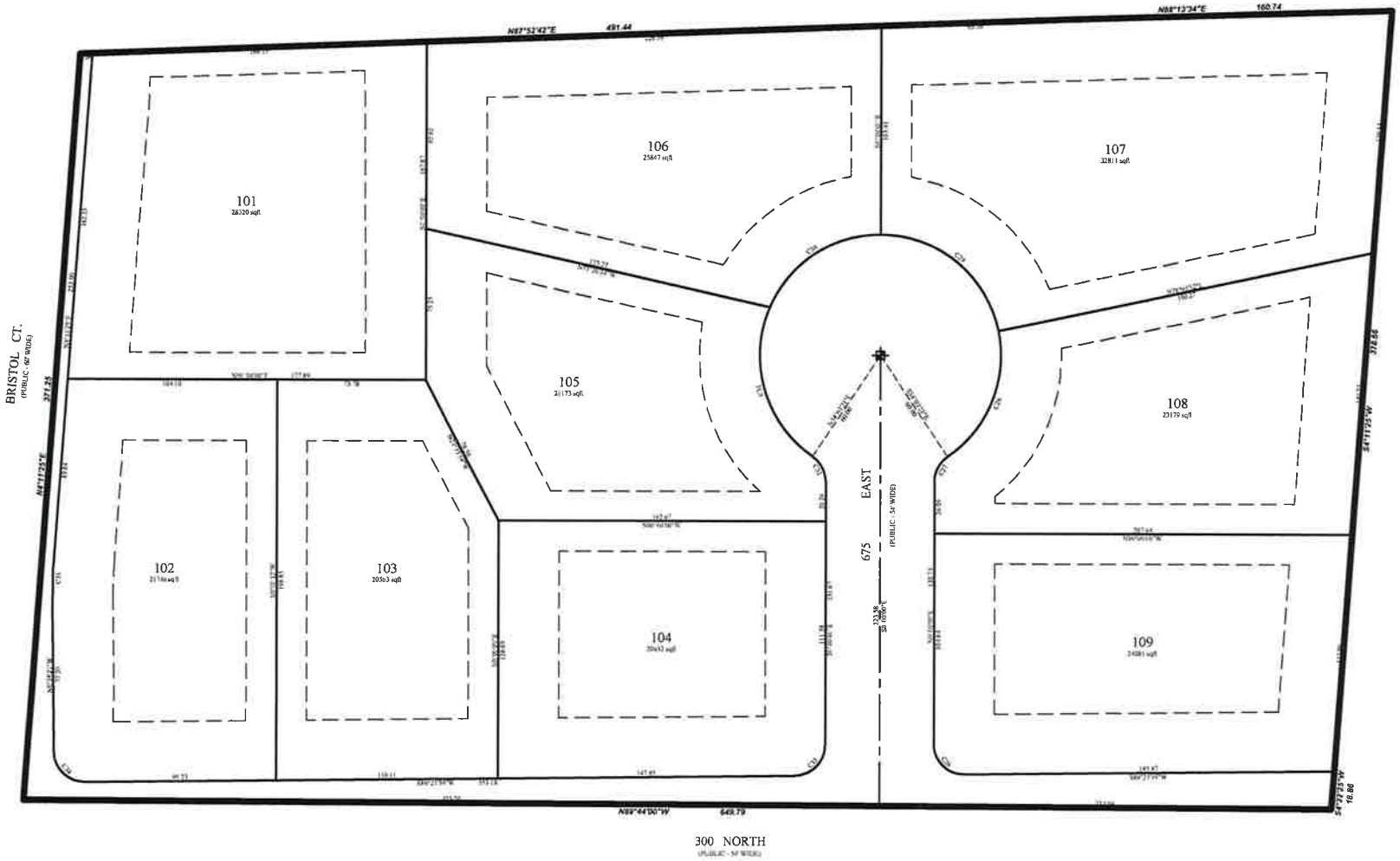
Storm Water Drainage System. Storm drainage detention of the 50-year event would be required for the development. It would need to be built such that it could discharge to Dry Creek and stub for future development to the east. The details of this, and all the utilities, will be worked out at Preliminary.

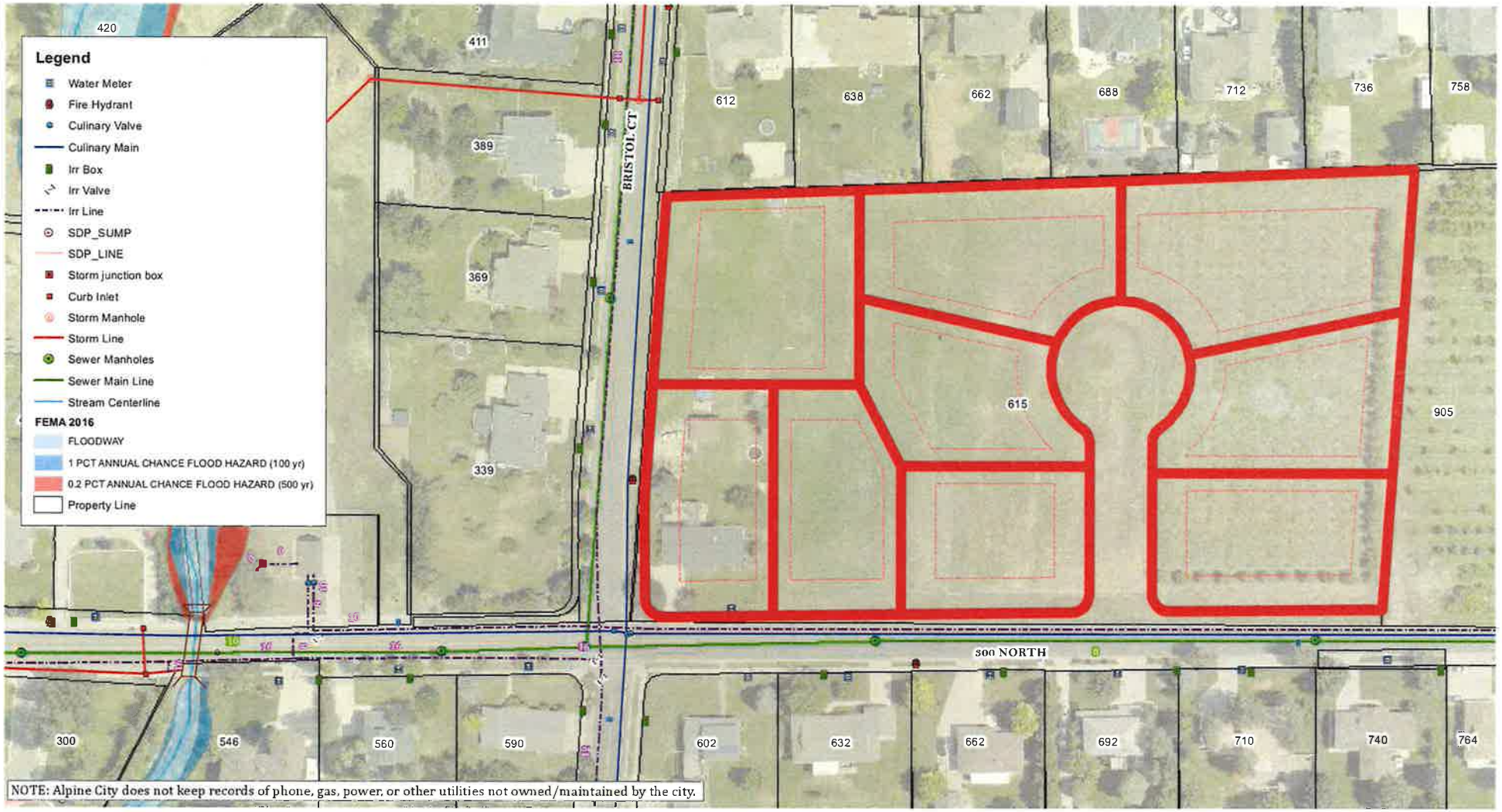
General Subdivision Remarks

The property is not located within any of the sensitive areas as outlined in the city planning maps. A geotechnical report would be required at Preliminary.

ENGINEERING RECOMENDATION

We recommend that Concept Approval of the proposed development be approved.


BRISTOL CT.
(PUBLIC - 66' WIDE)
N87°53'42"E 491.44
N88°13'34"E 160.74
101
28320 sqft
106
25847 sqft
107
32811 sqft
105
21173 sqft
108
23179 sqft
102
21186 sqft
103
20503 sqft
104
20x92 sqft
109
24081 sqft
675 EAST
(PUBLIC - 54' WIDE)
N89°44'50"W 648.79
300 NORTH
(PUBLIC - 80' WIDE)



Property Boundaries and Utilities are shown for reference only. Though shown generally close, a survey and Blue Stake should be done to locate both accurately

ALPINE CITY
ESTABLISHED 1860

Alpine Utilites

1 inch = 80 feet

0 20 40 80 120 160 Feet

N

ALPINE PLANNING COMMISSION AGENDA

SUBJECT: **Three Falls Amendment – Plat D**

FOR CONSIDERATION ON: **6 September 2016**

PETITIONER: **Will Jones**

ACTION REQUESTED BY PETITIONER: **Approve the Proposed Amendment**

APPLICABLE STATUTE OR ORDINANCE: **Article 4.6 (Major Subdivision)**

BACKGROUND INFORMATION:

The Three Falls subdivision consists of 57 lots on a site that is 806.35 acres. The site is located in the CE-5 zone. Three Falls Subdivision is a plat amendment to the Ilangeni Estates subdivision and was approved by resolution on March 10, 2015. As the Developer makes progress in the construction of the project, they are finding obstacles and reason for amending the subdivision. Plat D will be the third plat amending the subdivision and shows 1 less lot and reconfigures 13 others. Private and public open space is also reconfigured and minimally reduced.

STAFF RECOMMENDATIONS:

The Planning and Zoning Department recommends that approval of the proposed subdivision amendment (Plat D) be postponed until the following items are addressed:

- **"Lot 55" and "Lot 56" as shown on the proposed amendment be changed to have the required frontage on a public street.**
- **The lots be renumbered to show that the highest numbered lot is reflective of the total number of lots in the subdivision.**

The Engineering Department recommends approval of the proposed plat amendment with the following condition:

- **The water policy be met prior to recordation.**

Date: September 2, 2016

By: Jason Bond
City Planner

Subject: Planning and Zoning Review
Three Falls Subdivision Amendment – Plat D

Background

The Three Falls subdivision consists of 57 lots on a site that is 806.35 acres. The site is located in the CE-5 zone. Three Falls Subdivision is a plat amendment to the Ilangeni Estates subdivision and was approved by resolution on March 10, 2015. As the Developer makes progress in the construction of the project, they are finding obstacles and reason for amending the subdivision. Plat D will be the third plat amending the subdivision and shows 1 less lot and reconfigures 13 others. Private and public open space is also reconfigured and minimally reduced.

Lot Area and Width Requirements

The proposed amended lots meet the lot area requirement of at least 20,000 square feet. However, "Lot 55" and "Lot 56" are shown to not have the required frontage on a public street. Each lot shall abut upon and have direct access to an adjacent public street. The width of each lot shall be not less than 90 feet (as measured along a straight line connecting each side lot line at a point 30 feet back from the front lot line). The length of the front lot line abutting the City street shall be no less than 60 feet (Section 3.9.7.6).

Emergency Access Road

Part of the proposed amendment includes an emergency access road between Mountain Park Road and Hidden Springs Circle to avoid having a cul-de-sac that is too long. This secondary access road shall have a minimum paved width of not less than 20 feet and an unobstructed vertical clearance of not less than 13 feet 6 inches to permit two way traffic (Section 3.12.7.4). "Lot 57" has frontage on the secondary access road but still has the required frontage on a fully improved public street. Driveway access will be required to be from the fully improved public street.

Open Space

The reconfiguration of the lots has affected both the private and public open space. A minimum of 50% of the entire project is required to be open space. Of the total 806.35 acres in the Three Falls

subdivision, 515.08 acres is currently designated as public open space and 102.70 acres is currently designated as private open space. The Developer has provided more than enough open space to meet the requirement with 77% of the subdivision designated as open space. The proposed amendment would remove 0.83 acres of land from the designated public open space and 1.67 acres of land from the private open space. The open space requirement will still be met.

General Remarks

The proposed amendment eliminates "Lot 54". However, remaining lots 55, 56 and 57 make it appear like the subdivision still consists of a total of 57 lots. Staff requests that the lots be renumbered so that the highest numbered lot is reflective of the total number of lots in the subdivision. If a lot is gained back in a future amendment, it can be labeled "lot 57".

RECOMMENDATION

The Planning and Zoning Department recommends that approval of the proposed subdivision amendment (Plat D) be postponed until the following items are addressed:

- **"Lot 55" and "Lot 56" as shown on the proposed amendment be changed to have the required frontage on a public street.**
- **The lots be renumbered to show that the highest numbered lot is reflective of the total number of lots in the subdivision.**

Date: September 1, 2016

By: Jed Muhlestein, P.E.
Assistant City Engineer

Subject: **Three Falls Subdivision Plat D – Amendment of Three Falls Sub.**
14 Lots on 421.21 Acres

Background

The Owners of Three Falls are proposing an amendment to a portion of their development which consists of 14 lots on 421.21 acres (total development is 57 lots on 806.35 acres).

Reasons for amendment
The developer has provided a list of reasons for changes. These are:

1. An old road runs through Lot 8. When looked at more closely the developer wanted to alter the building pad because of this. In so doing, the lot lines needed adjusted so building setbacks were in compliance with code.
2. The upper west corner of development was altered due to the owners figuring out a better road design which greatly reduced the need for retaining walls. This affected lots 25, 26, 55, 56, and 57. One lot was eliminated in doing this but it will most likely be added back on the easterly side of the development at a later date with another plat amendment.
3. After the roads were staked for construction it was decided that a better road design could be achieved by altering the alignment by the Sliding Rock area.
4. Open Space B was split in two so that if/when the east side of the development is amended, it can be done without having to amend the entire plat.

The amended lots meet current slope ordinance requirements. The construction drawings are not complete but the road and grading portions are, which have been reviewed to be acceptable. All requirements of the development agreement still stand (i.e. – individual lot geotechnical reports, landscaping restrictions, etc.) and the plat notes are identical to what was originally platted.

The secondary access road was required to have the same design as the other secondary access on the property, which is 20 feet of asphalt with curb and gutter on both sides.

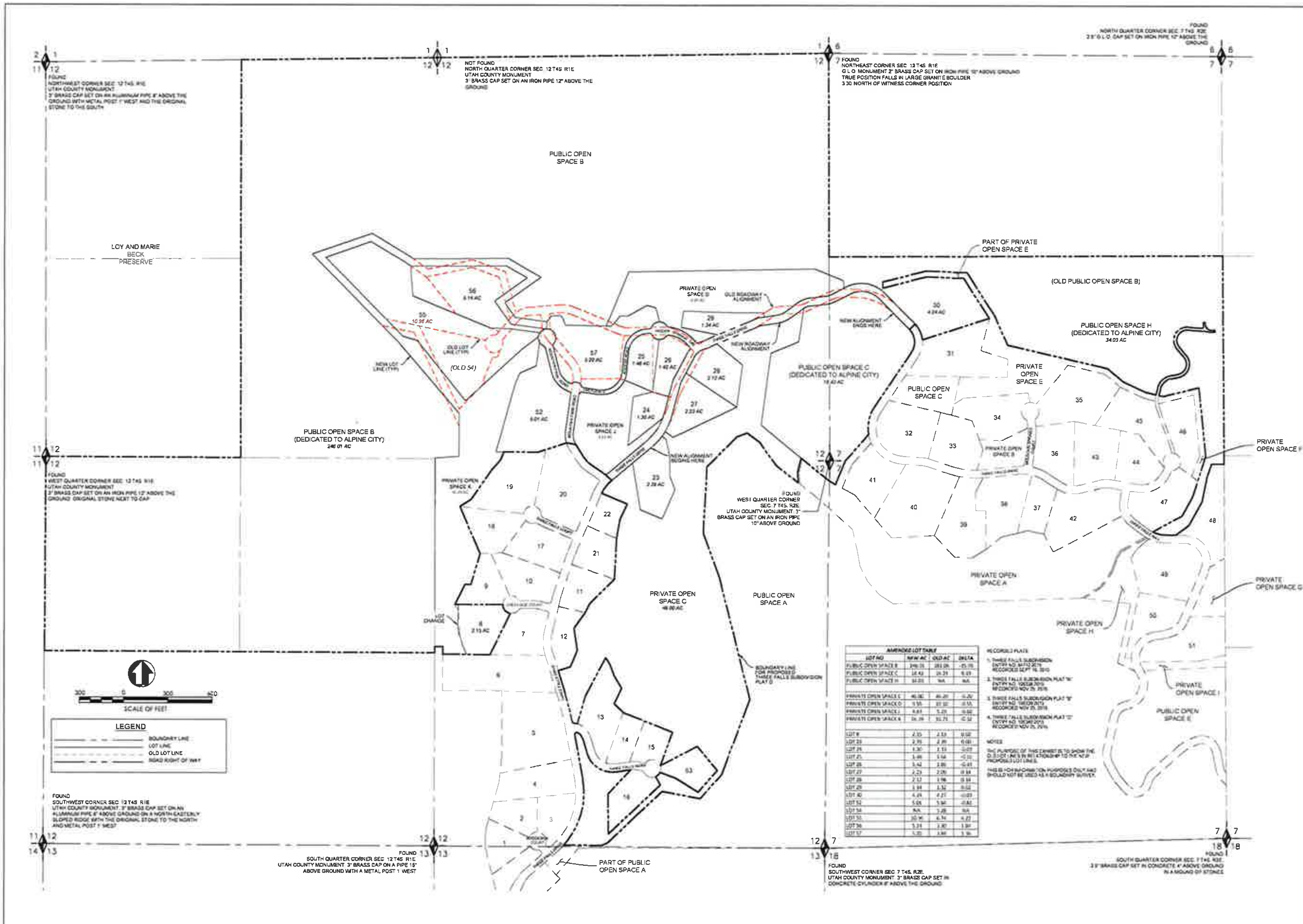
Changing the lots will require an alteration of water policy for the development. The water

policy will need to be met prior to recordation of the plat.

Engineering is in support of the changes as they result in a better design of roads and infrastructure.

Engineering recommends approval of the proposed plat amendment with the following conditions:

- **The water policy be met prior to recordation**



AMENDED LOT TABLE

LOT NO	NEW AC	OLD AC	DELTA
PUBLIC OPEN SPACE B	[illegible]	[illegible]	[illegible]
PUBLIC OPEN SPACE C	18.42	[illegible]	[illegible]
PUBLIC OPEN SPACE H	34.03	N/A	N/A
PRIVATE OPEN SPACE C	46.80	[illegible]	[illegible]
PRIVATE OPEN SPACE D	9.55	[illegible]	-0.55
PRIVATE OPEN SPACE J	4.61	5.23	-0.62
PRIVATE OPEN SPACE K	[illegible]	[illegible]	-0.32
LOT 8	2.15	2.13	0.02
LOT 23	[illegible]	[illegible]	[illegible]
LOT 24	1.30	1.33	-0.03
LOT 25	1.46	[illegible]	[illegible]
LOT 26	1.42	[illegible]	[illegible]
LOT 27	2.23	[illegible]	[illegible]
LOT 28	2.12	1.98	0.14
LOT 29	1.34	1.32	0.02
LOT 30	4.24	4.27	-0.03
LOT 52	5.01	[illegible]	[illegible]
LOT 54	N/A	[illegible]	N/A
LOT 55	10.36	[illegible]	[illegible]
LOT 56	[illegible]	[illegible]	[illegible]
LOT 57	3.20	[illegible]	[illegible]

RECORDED PLATS

1. THREE FALLS SUBDIVISION ENTRY NO. [illegible] RECORDED SEPT [illegible]
2. THREE FALLS SUBDIVISION PLAT "A" ENTRY NO. [illegible] RECORDED NOV 25, 2015
3. THREE FALLS SUBDIVISION PLAT "B" ENTRY NO. [illegible] RECORDED NOV 25, 2015
4. THREE FALLS SUBDIVISION PLAT "C" ENTRY NO. [illegible] RECORDED NOV 25, 2015

NOTES

THE PURPOSE OF THIS EXHIBIT IS TO SHOW THE OLD LOT LINES IN RELATIONSHIP TO THE NEW PROPOSED LOT LINES.

THIS IS FOR INFORMATION PURPOSES ONLY AND SHOULD NOT BE USED AS A BOUNDARY SURVEY.

EXHIBIT
THREE FALLS SUBDIVISION
ALPINE, UTAH

PSOMAS
4179 Riverboat Road, Suite 200
Salt Lake City, Utah 84123
(801) 270-5777 (801) 270-5782 (FAX)

DATE: 08-30-2016
SCALE: 1" = 100'
PROJECT NO.: 8PVR010200

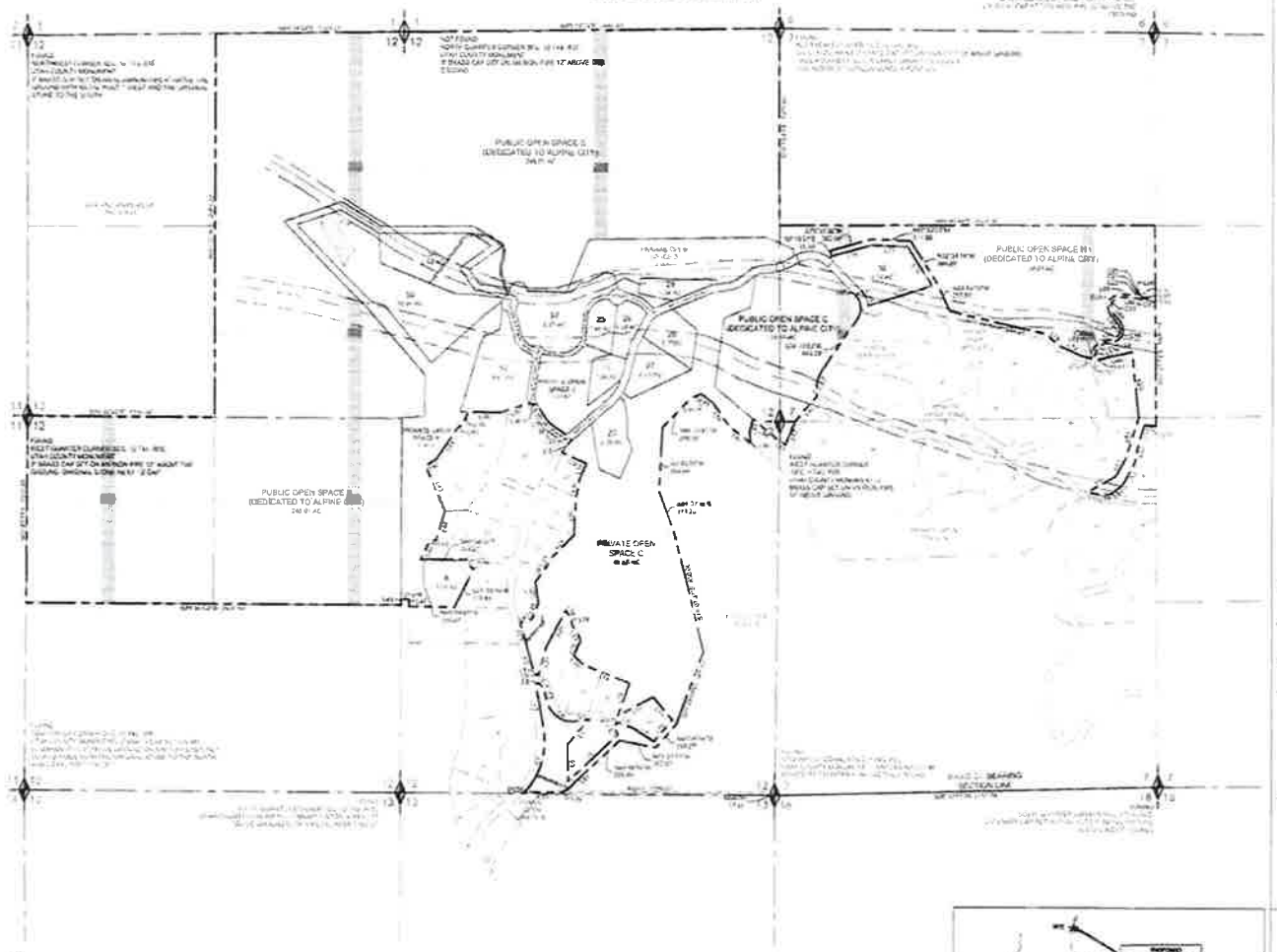
DESIGNED: SRV
DRAWN: SRV
CHECKED: CEA

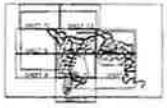
SHEET: 1 of 1

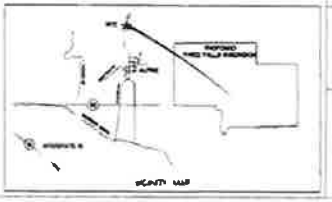
THREE FALLS SUBDIVISION PLAT "D"

AMENDING PUBLIC OPEN SPACE B & C, PRIVATE OPEN SPACE C, D, J, & K
AND LOTS 9, 23, 24, 25, 26, 27, 28, 29, 52, 55, 56 AND 57
OF THREE FALLS SUBDIVISION (AMENDED AND EXTENDED PLANNED ESTATES)
AND LOT 23 OF THREE FALLS SUBDIVISION PLAT "C"

A SUBDIVISION LYING AND SITUATE IN SECTION 12, THE NORTHEAST QUARTER OF SECTION 13 TOWNSHIP 6 SOUTH, RANGE 3 EAST AND THE WEST HALF OF SECTION 7 TOWNSHIP 6 SOUTH, RANGE 4 EAST, SALT LAKE BASE AND MERIDIAN, ALPINE CITY UTAH COUNTY, UTAH







SURVEYOR'S CERTIFICATE

BOUNDARY DESCRIPTION

ACCEPTANCE BY LEGISLATIVE BODY

CITY MAYOR

CITY RECORDER

CITY ENGINEER

PLANNING COMMISSION APPROVAL

Approved this ____ Day of _____, A.D. 20__, by the Alpine City Planning Commission.

Director, Planning Commission

APPROVAL AS TO FORM

Approved as to form this ____ Day of _____, A.D. 20__

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OF THREE FALLS SUBDIVISION (AMENDED AND EXTENDED PLANNED ESTATES)
AND LOT 23 OF THREE FALLS SUBDIVISION PLAT "C"

SURVEYOR'S SEAL	NOTARY PUBLIC SEAL	CITY ENGINEER'S SEAL	CLERK-RECORDER'S SEAL

THREE FALLS SUBDIVISION PLAT "D"

AMENDING PUBLIC OPEN SPACE B & C, PRIVATE OPEN SPACE C, D, J, & K
AND LOTS 8, 23, 24, 25, 26, 27, 28, 29, 52, 55, 56 AND 57
OF THREE FALLS SUBDIVISION (AMENDED AND EXTENDED HANGENI ESTATES)
AND LOT 23 OF THREE FALLS SUBDIVISION PLAT "C"

OWNERS DEDICATION

NAME | TITLE

NAME | TITLE

ACKNOWLEDGEMENT

STATE OF UTAH
COUNTY OF ____________ S.S.

MY COMMISSION EXPIRES ____________

NOTARY PUBLIC
RESIDING IN ____________

OWNERS DEDICATION

NAME | TITLE

NAME | TITLE

ACKNOWLEDGEMENT

STATE OF UTAH
COUNTY OF ____________ S.S.

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NOTARY PUBLIC
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MY COMMISSION EXPIRES ____________

NOTARY PUBLIC
RESIDING IN ____________

OWNERS DEDICATION

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NOTARY PUBLIC
RESIDING IN ____________

OWNERS DEDICATION

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MY COMMISSION EXPIRES ____________

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ACKNOWLEDGEMENT

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COUNTY OF ____________ S.S.

MY COMMISSION EXPIRES ____________

NOTARY PUBLIC
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OWNERS DEDICATION

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COUNTY OF ____________

MY COMMISSION EXPIRES ____________

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OWNERS DEDICATION

NAME | TITLE

NAME | TITLE

ACKNOWLEDGEMENT

STATE OF UTAH
COUNTY OF ____________

MY COMMISSION EXPIRES ____________

NOTARY PUBLIC
RESIDING IN ____________

NA

THREE FALLS SUBDIVISION PLAT "D"
(AMENDEDING THREE FALLS SUBDIVISION)
ALPINE, UTAH

P S O M A S

2
13

THREE FALLS SUBDIVISION PLAT "D"

AMENDING PUBLIC OPEN SPACE B & C, PRIVATE OPEN SPACE C, D, J, & K
AND LOTS 5, 23, 24, 25, 26, 27, 28, 29, 52, 55, 56 AND 57
OF THREE FALLS SUBDIVISION (AMENDED AND EXTENDED ILANGENI ESTATES)
AND LOT 23 OF THREE FALLS SUBDIVISION PLAT "C"

BOUNDARY DESCRIPTION:

[illegible]

DEVELOPMENT NOTES:

[illegible]

[illegible]	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
24	[illegible]
25	[illegible]
[illegible]	[illegible]
27	2526 THREE FALLS DRIVE
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

THREE FALLS SUBDIVISION PLAT "D"
(AMENDEDING THREE FALLS SUBDIVISION)
ALPINE, UTAH

PSOMAS

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THREE FALLS SUBDIVISION PLAT "D"

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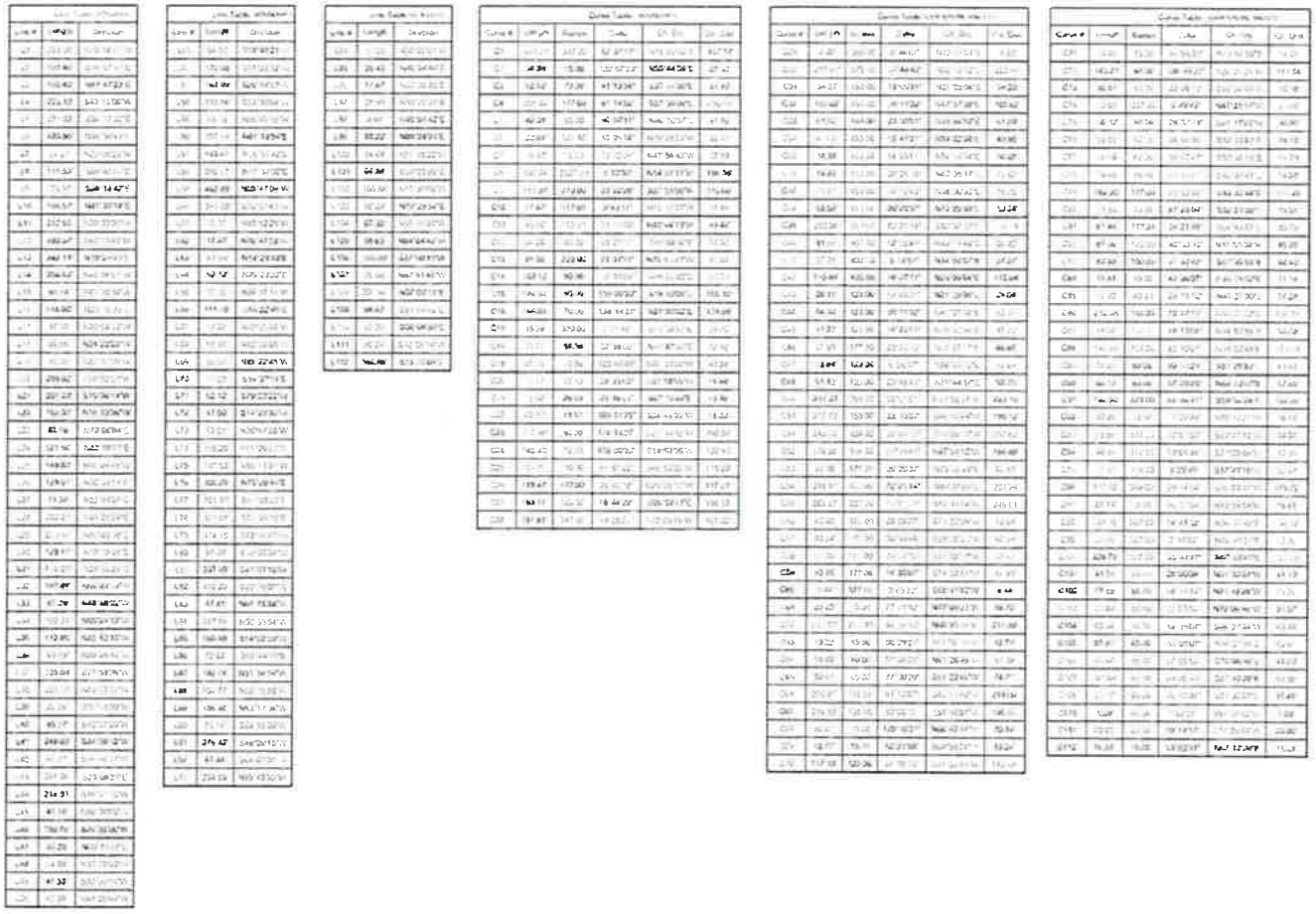
AND LOTS 8, 23, 24, 25, 26, 27, 28, 29, 32, 55, 56 AND 57
OF THREE FALLS SUBDIVISION (AMENDED AND EXTENDED ILANGENI ESTATES)
AND LOT 22 OF THREE FALLS SUBDIVISION PLAT "C"



THREE FALLS SUBDIVISION PLAT "D"
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ALPINE, UTAH

PSOMAS

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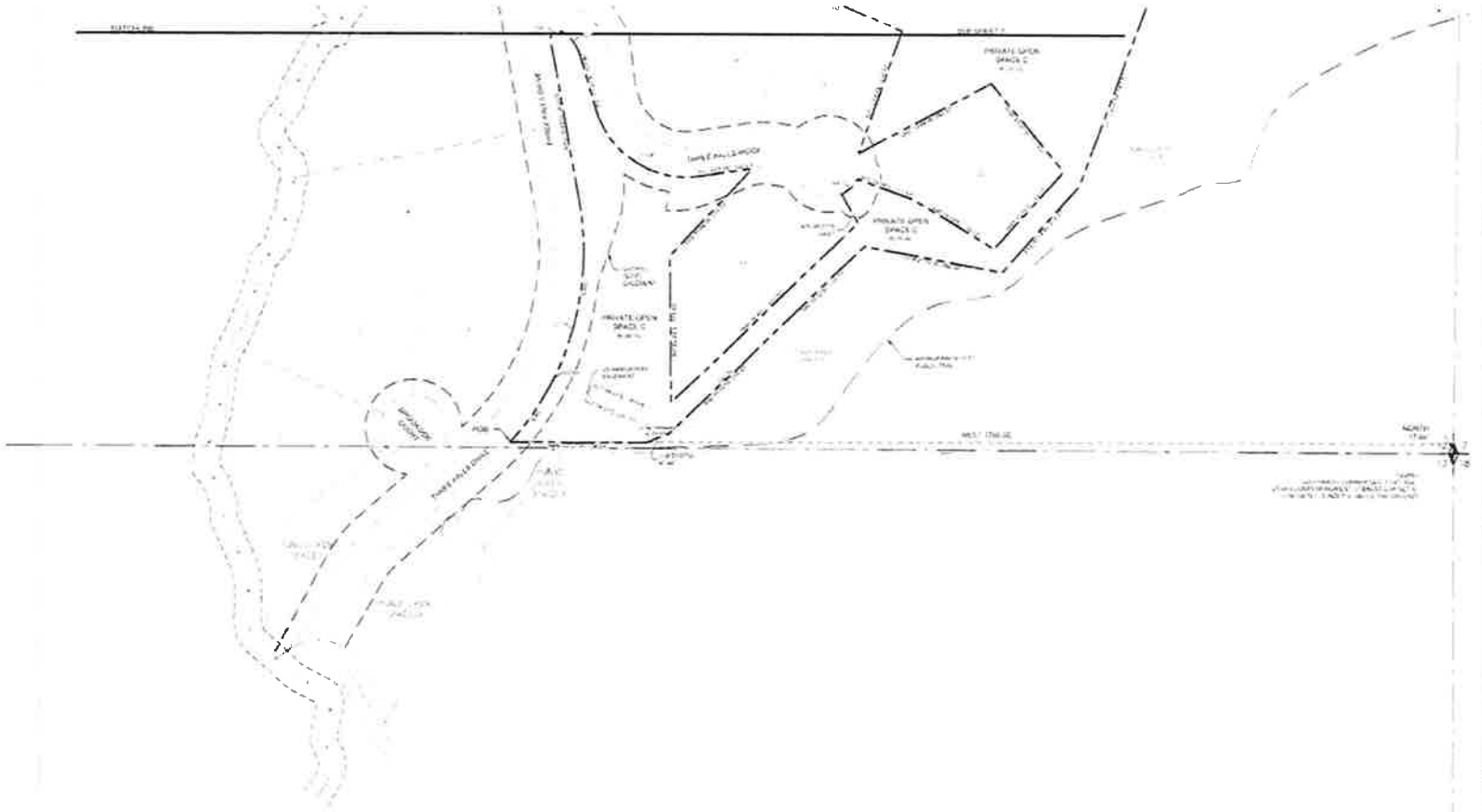

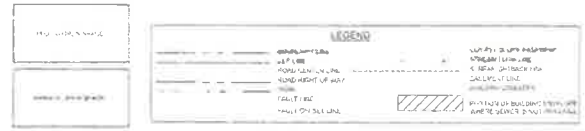

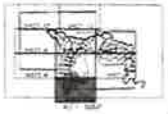

THREE FALLS SUBDIVISION PLAT "D"
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ALPINE, UTAH

PSOMAS

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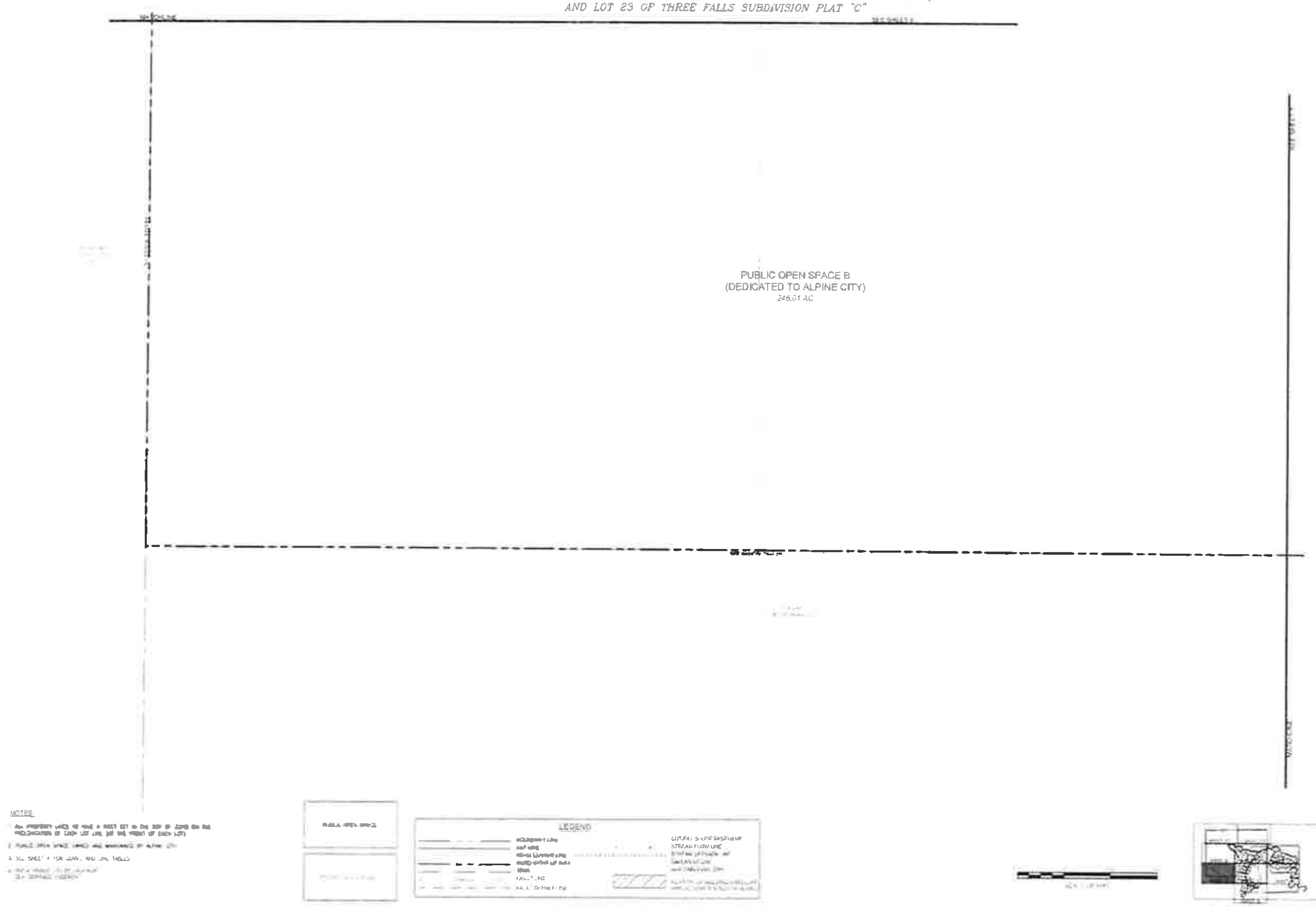

THREE FALLS SUBDIVISION PLAT "D"
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ALPINE, UTAH

PSOMAS

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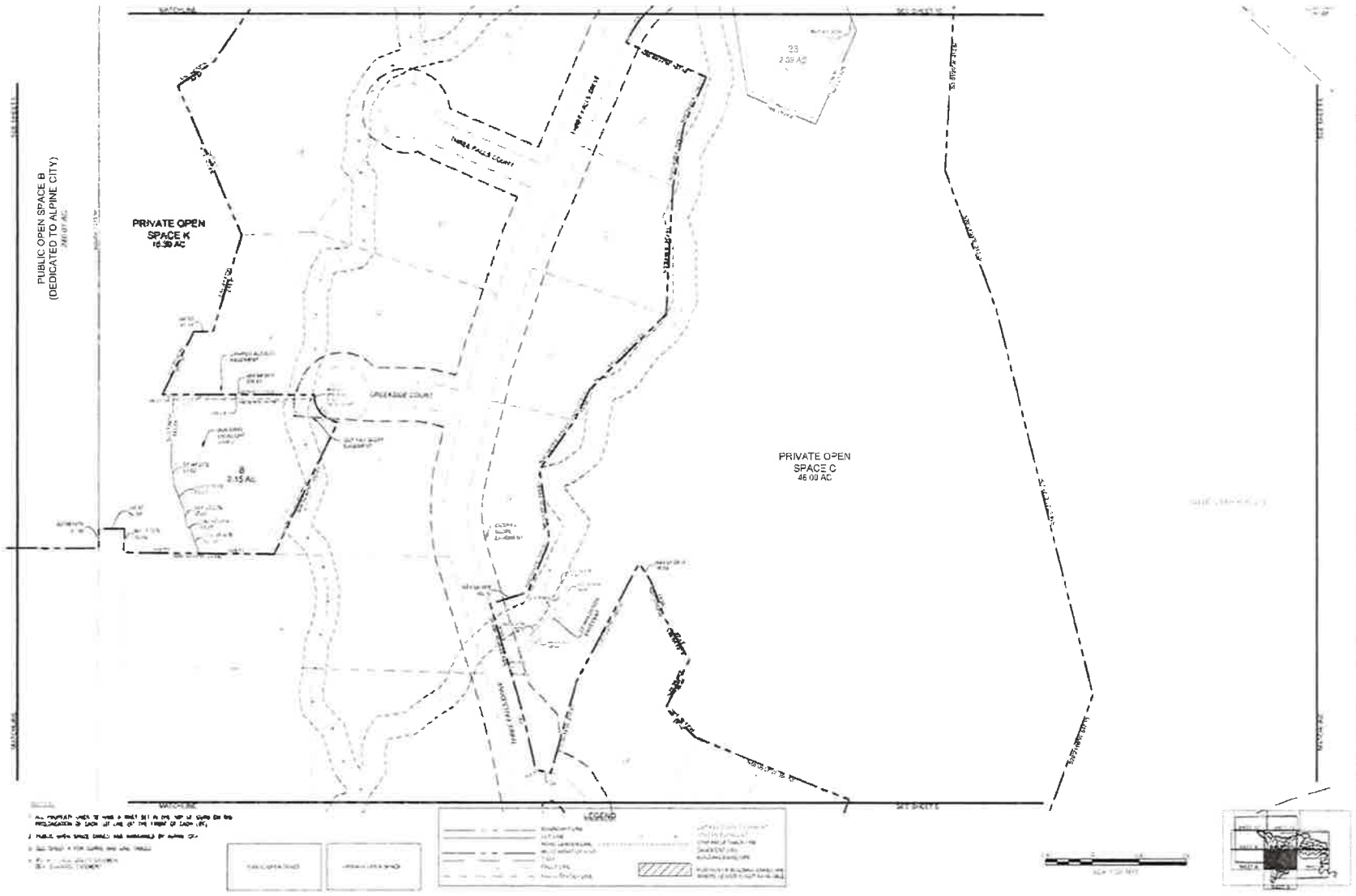

THREE FALLS SUBDIVISION PLAT "D"
(AMENDEDING THREE FALLS SUBDIVISION)
ALPINE, UTAH

PSOMAS

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13

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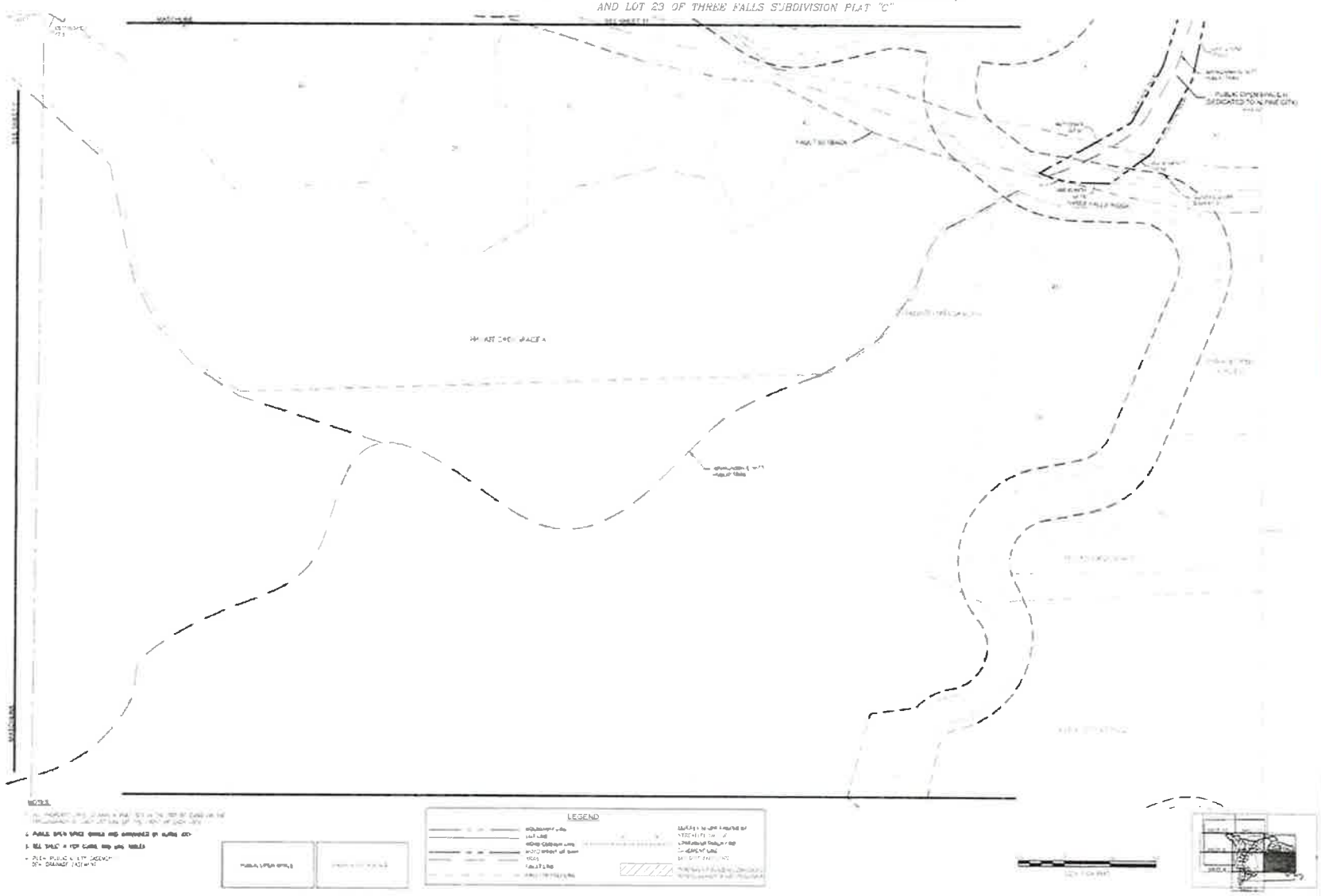

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(AMENDEDING THREE FALLS SUBDIVISION)
ALPINE, UTAH

PSOMAS

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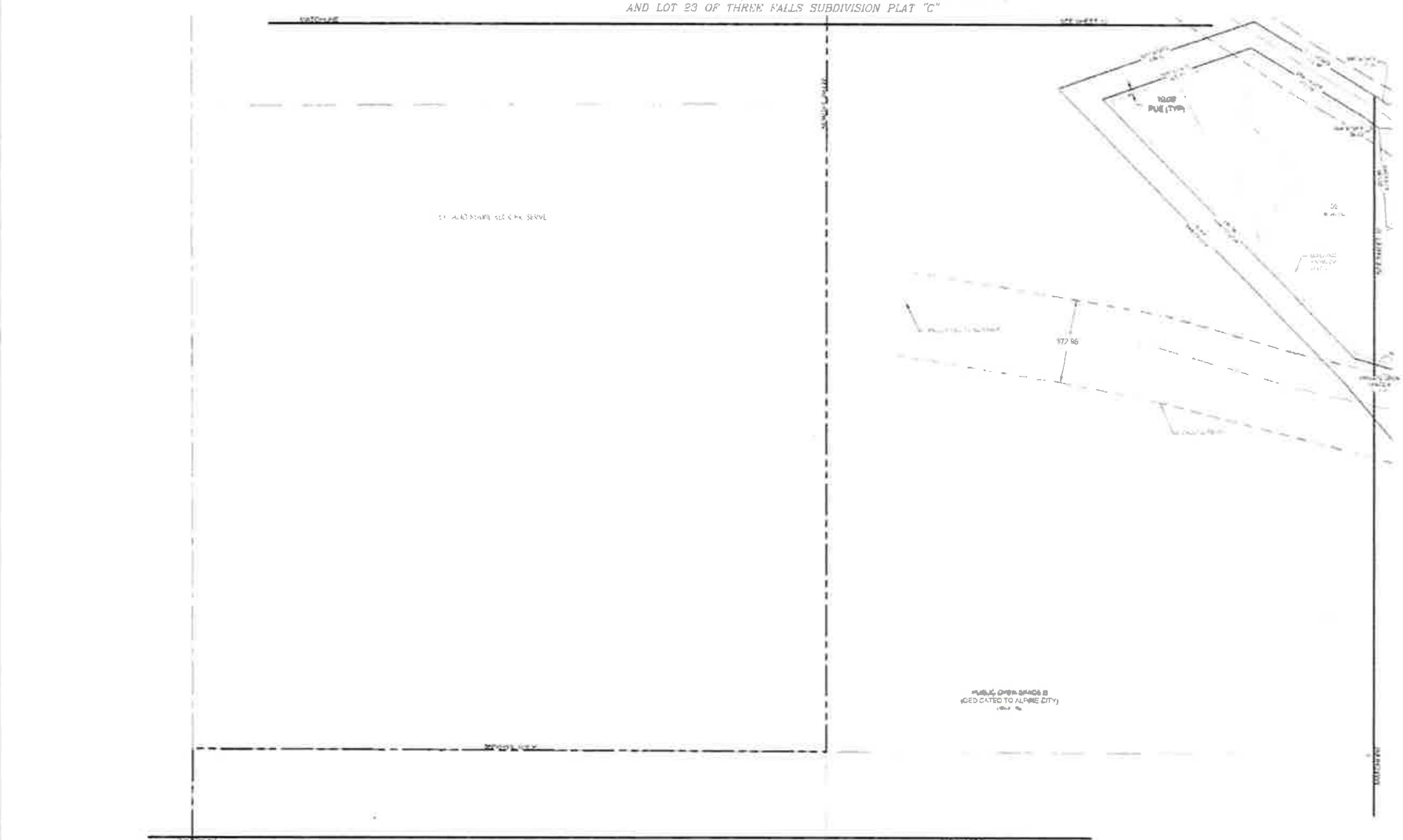

NOTES:

LEGEND

THREE FALLS SUBDIVISION PLAT "D"
(AMENDEDING THREE FALLS SUBDIVISION)
ALPINE, UTAH

PSOMAS

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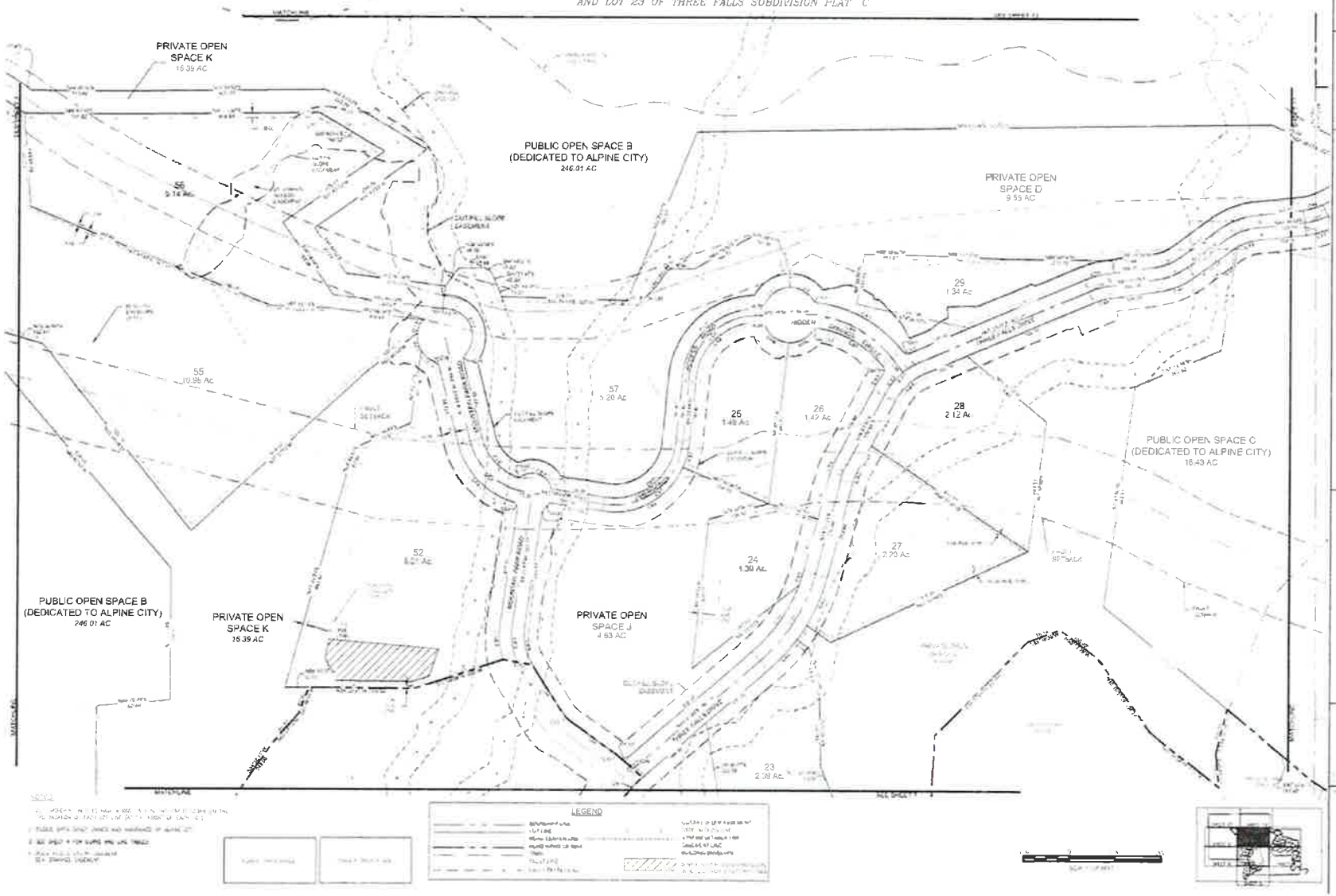
OF THREE FALLS SUBDIVISION (AMENDED AND EXTENDED ILANGENI ESTATES)
AND LOT 23 OF THREE FALLS SUBDIVISION PLAT "C"



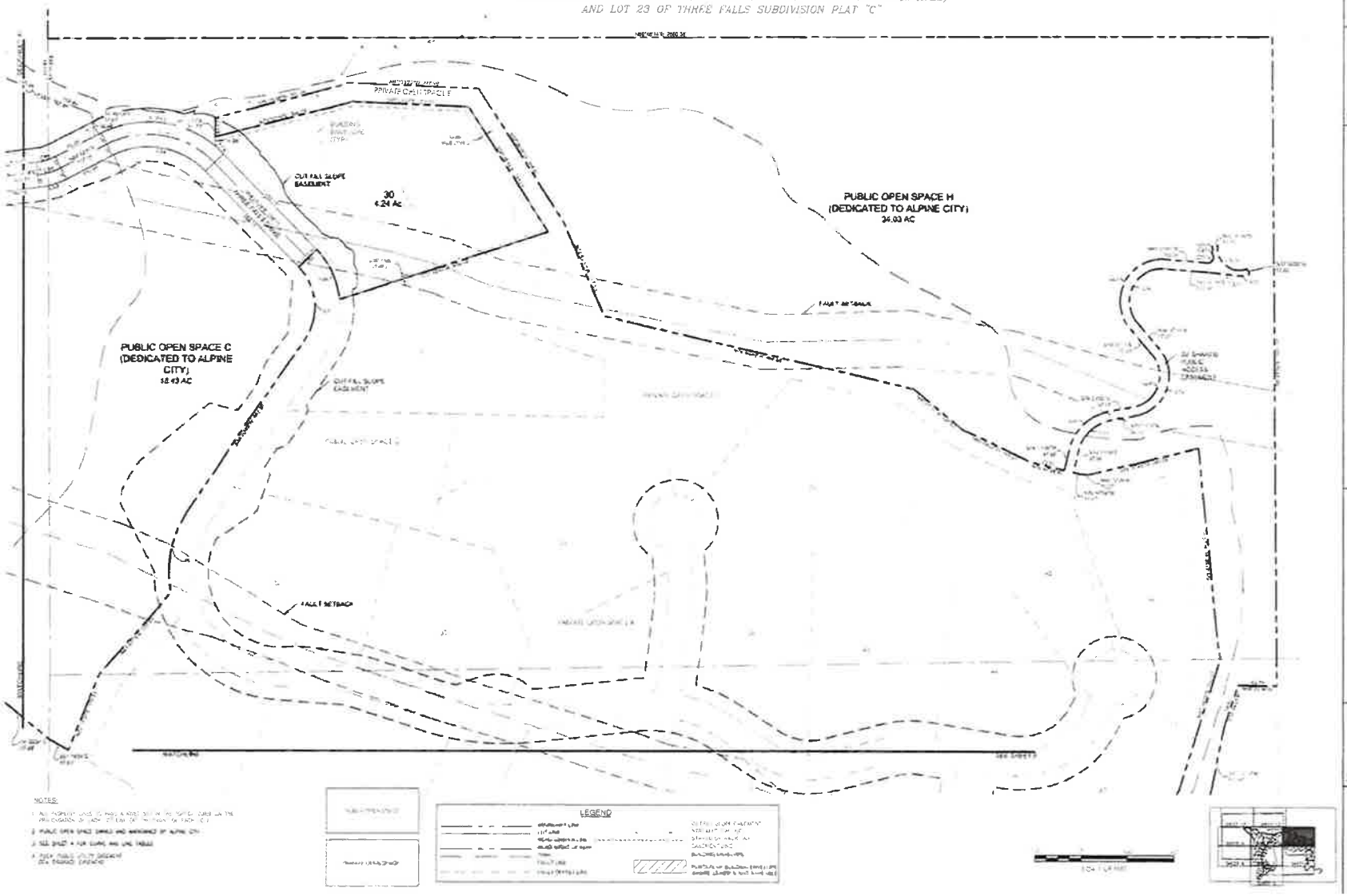
THREE FALLS SUBDIVISION PLAT "D"
(AMENDEDING THREE FALLS SUBDIVISION)
ALPINE, UTAH

PSOMAS

10
13

THREE FALLS SUBDIVISION PLAT "D"

AMENDING PUBLIC OPEN SPACE B & C, PRIVATE OPEN SPACE C, D, J, & K
AND LOTS 6, 23, 24, 25, 26, 27, 28, 29, 52, 55, 56 AND 57
OF THREE FALLS SUBDIVISION (AMENDED AND EXTENDED ILANGENI ESTATES)
AND LOT 23 OF THREE FALLS SUBDIVISION PLAT "C"



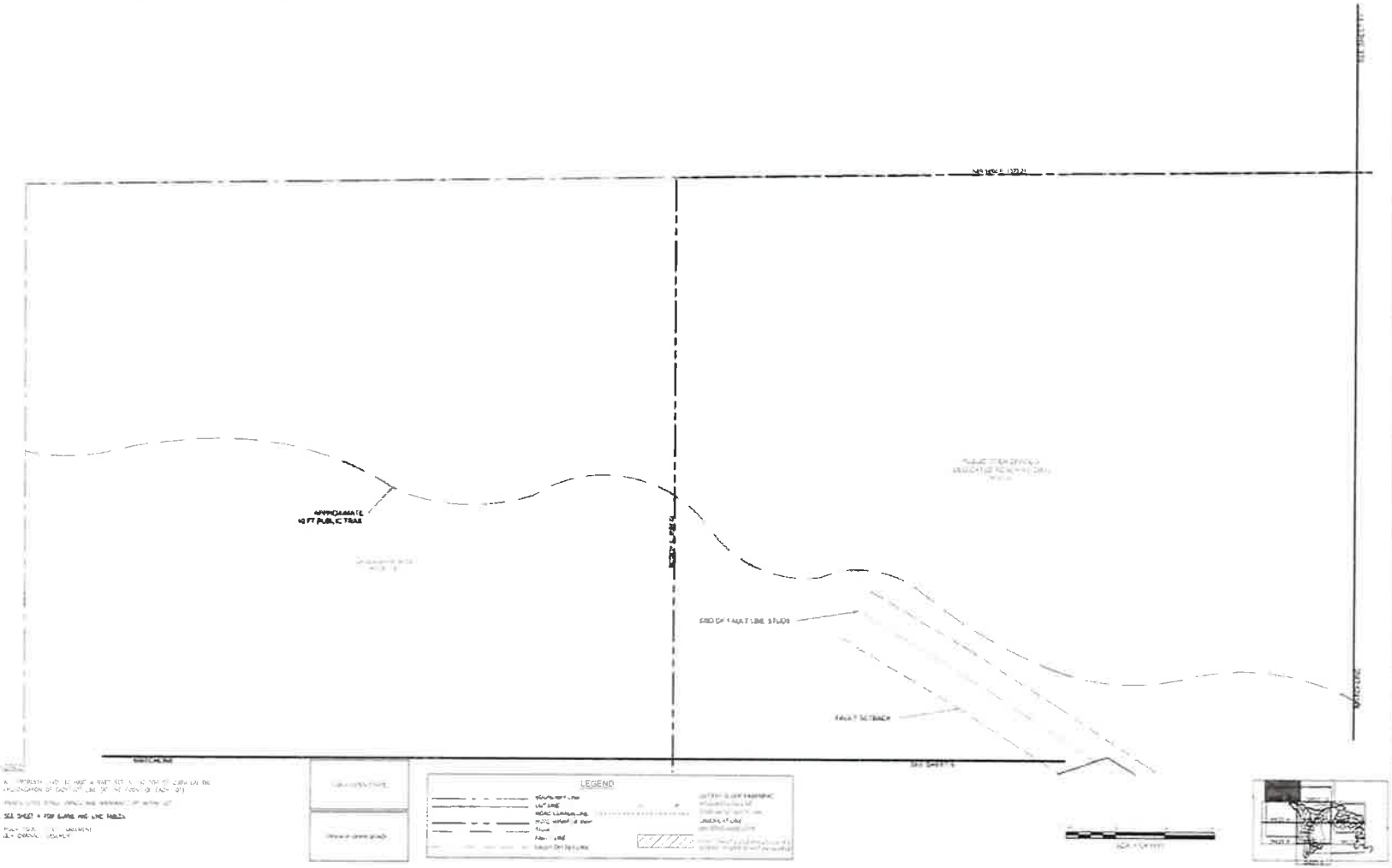
THREE FALLS SUBDIVISION PLAT "D"
(AMENDEDING THREE FALLS SUBDIVISION)
ALPINE, UTAH

PSOMAS

11
13

THREE FALLS SUBDIVISION PLAT "D"

AMENDING PUBLIC OPEN SPACE B & C, PRIVATE OPEN SPACE C, D, I, & K
AND LOTS 8, 23, 24, 25, 26, 27, 28, 29, 52, 55, 56 AND 57
OF THREE FALLS SUBDIVISION (AMENDED AND EXTENDED ILANGENI ESTATES)
AND LOT 20 OF THREE FALLS SUBDIVISION PLAT "C"



THREE FALLS SUBDIVISION PLAT "D"
(AMENDEDING THREE FALLS SUBDIVISION)
ALPINE, UTAH

PSOMAS

12
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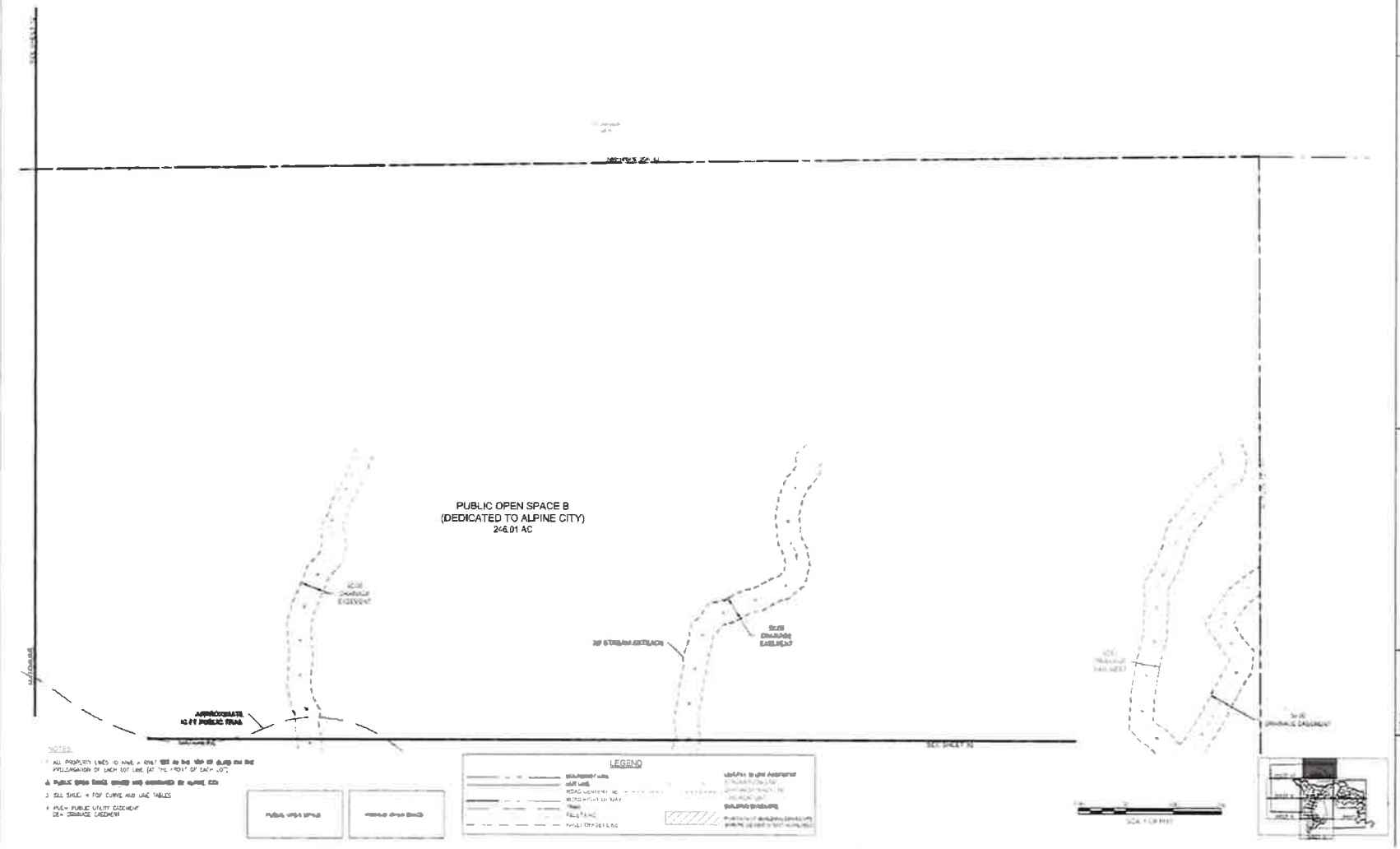
THREE FALLS SUBDIVISION PLAT "D"

AMENDING PUBLIC OPEN SPACE B & C, PRIVATE OPEN SPACE C, D, J, & K
AND LOTS 8, 23, 24, 25, 26, 27, 28, 29, 52, 55, 56 AND 57
OF THREE FALLS SUBDIVISION (AMENDED AND EXTENDED ILANGENI ESTATES)
AND LOT 23 OF THREE FALLS SUBDIVISION PLAT "C"



PSOMAS

THREE FALLS SUBDIVISION PLAT "D"
(AMENDEDING THREE FALLS SUBDIVISION)
ALPINE, UTAH

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13

ALPINE PLANNING COMMISSION AGENDA

SUBJECT: **General Plan Update 2016 – Transportation (Circulation) Element**

FOR CONSIDERATION ON: **6 September 2016**

PETITIONER: **Staff**

ACTION REQUESTED BY PETITIONER: **Provide Direction for Updating the General Plan**

APPLICABLE STATUTE OR ORDINANCE: **Article 2.1 (General Plan)**

BACKGROUND INFORMATION:

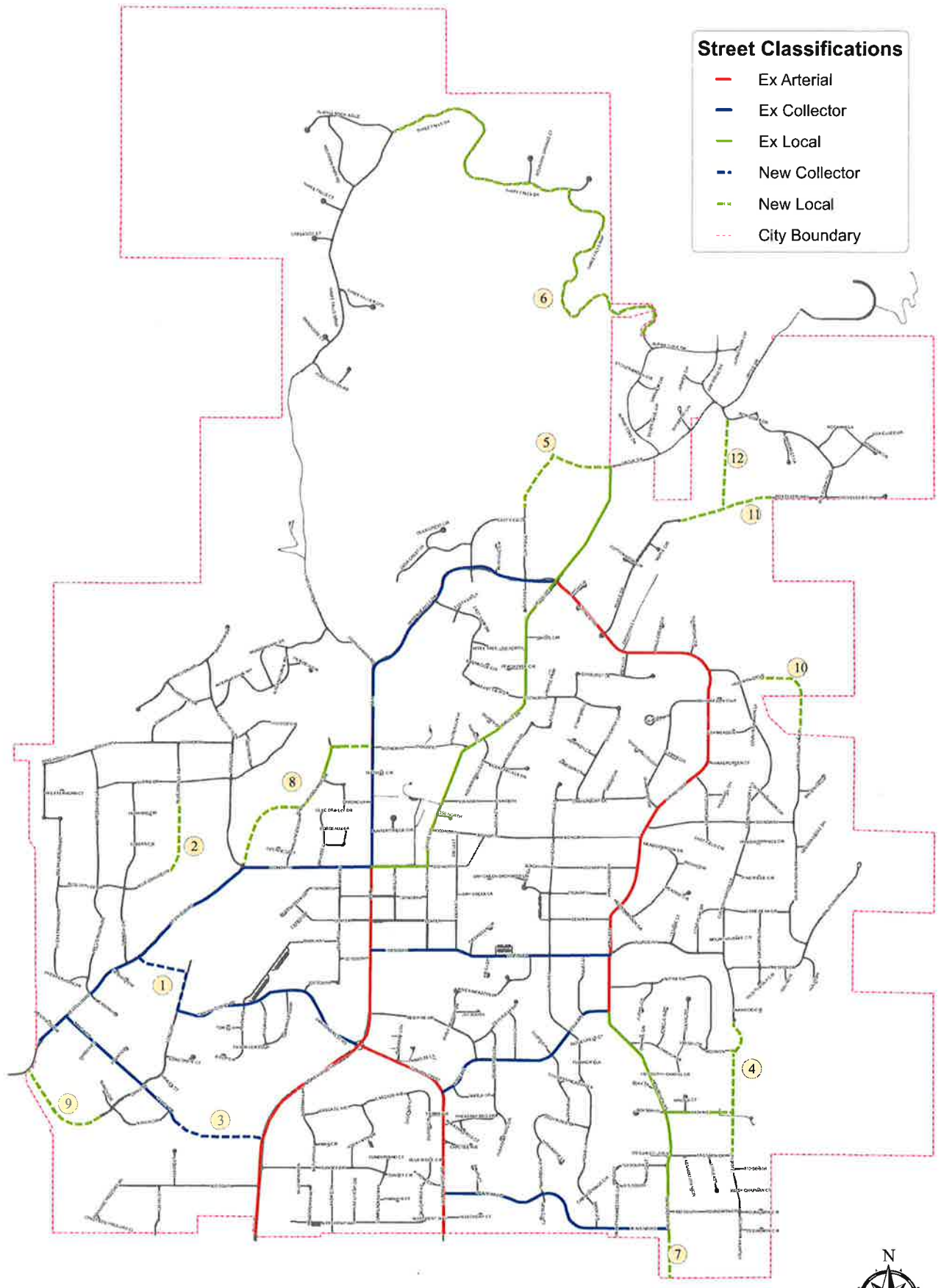
Attached is the proposed update to the Street Master Plan and corresponding street improvement plan in which the Planning Commission recommended be attached to the street master plan. The Planning Commission should review and provide direction to staff as necessary.

Alpine City Street Improvement Plan

Project Number	Recommended Improvements		Planning Level Cost Estimate	Potential Funding Source*
	Project	Limits		
	0-5 Year Improvements			
1	Canyon Crest Road (west)	Canyon Crest Road to Westfield Road	$165,600	C, O
2	Blue Spruce Road	Complete between Sunrise Drive and Lupine Drive	$193,200	C, O
3	Ranch Drive & Dry Creek Bridge	Ranch Circle to Main Street	$155,400 $300,000	S, C, O
4	Country Manor Lane (South)	Oakwood Circle to Wintergreen Court	$303,600	C, O
5	Elk Ridge Lane	East View Lane to Grove Drive		C, O
6	Three Falls Secondary Access	Three Falls Drive to Alpine Cove Drive		C, O
	5-10 Year Improvements			
7	Smooth Canyon	Healey Boulevard to Highland City		C, O
	10-20 Year Improvements			
8	Westfield Road	200 North to Pioneer Drive	$441,600	C, O
9	Long Drive	Ranch Circle to Westfield Road	$110,400	C, O
10	North Bald Mountain Drive	North of Bald Mountain Circle to Alpine Boulevard	$400,200	C, O
11	Moyle Drive	Lambert Park to Box Elder Circle	$345,000	C, O
12	1000 East (Lambert Park)	Moyle Drive to Box Elder Drive / Grove Drive	$207,000	C, O
13	GPS System (street portion)		$8,000	C, O
14	Intersection Improvements w/ ROW		$1,020,000	S, C, O
15	TMP Update in 5 years		$20,000	C, O
	Total Costs		$3,670,000	

*Potential Funding Sources: F-Federal, S-State, C-City, and O-Other.

**Miscellaneous local roads are scattered throughout the various different implementation time frames but have not been included since they will most likely be built by developers as part of their developments.



Alpine City
Transportation Master Plan

Proposed 2016

ALPINE CITY PLANNING COMMISSION MEETING AT
Alpine City Hall, 20 North Main, Alpine, Utah
August 16, 2016

I. GENERAL BUSINESS

A. Welcome and Roll Call: The meeting was called to order at 7:00 pm by Chairman Steve Cosper. The following Commission members were present and constituted a quorum.

Chairman: Steve Cosper
Commission Members: Bryce Higbee, Jason Thelin, David Fotheringham, Steve Cosper, Jane Griener, Steve Swanson, Judi Pickell
Commission Members Not Present: Jason Thelin, Bryce Higbee, Judi Pickell
Staff: Jason Bond, Jed Muhlestein, Marla Fox
Others: Mayor Sheldon Wimmer, Lon Lott, Loraine Lott, Sylvia Christiansen

B. Prayer/Opening Comments: Jane Griener
C. Pledge of Allegiance: By Invitation

II. PUBLIC COMMENT

There were no public comments.

III. ACTION ITEMS

A. PUBLIC HEARING – Amendments To All Zones Prohibiting Heliports (Article 3.1 – 3.7)

Jason Bond explained that at the last City Council meeting, a concern was raised by a resident about the landing and taking off of helicopters in the City. The City Council discussed the topic and felt that it was necessary to prohibit heliports from being installed and disturbing the residential neighborhoods in the City. Jason Bond presented the proposed language which would be applied to all zones. He confirmed that the language had been reviewed by the City Attorney.

Steve Cosper asked if the amendment would prohibit helicopters coming into Alpine City and landing in a residential backyard. Jason Bond stated that the language wouldn't prohibit helicopters from coming into the City for occasional medical emergencies, but it would prohibit someone from building a helicopter pad for personal use.

Steve Cosper opened the Public Hearing.

Lorraine Lott stated that a helicopter lands regularly in her neighborhood and it is very disturbing to the residents. She did not know the purpose of those helicopter flights. Jason Bond stated that a heliport that was installed prior to the adoption of this amendment would likely be grandfathered in, but he would confirm that with the City Attorney.

Mayor Wimmer explained that an established heliport pad is normally marked by a triangle and a windsock. He was curious as to whether the helicopter mentioned by Ms. Lott was used for medical purposes.

Steve Cosper closed the Public Hearing.

MOTION: Jane Griener moved to recommend approval of the proposed amendments to all zones prohibiting heliports.

Steve Swanson seconded the motion. The motion was unanimous with 4 Ayes and 0 Nays. David Fotheringham, Steve Cosper, Jane Griener and Steve Swanson all voted Aye.

B. PUBLIC HEARING – Storm Drainage and Flood Plains & Flood Damage Prevention Overlay amendments (Section 4.7.18 & Section 3.12.8)

Jed Muhlestein explained that the Utah Pollutant Discharge Elimination System (UPDES) recently issued a new Small Municipal Separate Storm Sewer Systems (MS4) permit that went into effect March 1, 2016. Alpine City's storm water system is governed by this MS4 permit. In the process of updating the City's storm drainage design manual to be in compliance with the permit, it became apparent that some ordinance modifications were needed.

Jed Muhlestein explained that Section 4.7.18 of the Development Code addresses the storm drainage designs and floor plains, but the City's flood plain ordinance was recently updated. Because the floor plain ordinance is fairly up-to-date, only two items would be added to the section with the proposed amendment. Any other changes to the section would be notes referencing other sections of the City Code. Jed Muhlestein reviewed the proposed changes.

Steve Cosper opened the Public Hearing

Lon Lott asked if these changes will interfere with what was previously discussed about the flood plains. Jed Muhlestein confirmed that it would not.

Steve Cosper closed the Public Hearing

MOTION: David Fotheringham moved to recommend approval of the proposed amendments to Section 4.7.18 and Section 3.12.8 of the Alpine City Development Code as it is written and the changes proposed.

Jane Griener seconded the motion. The motion was unanimous with 4 Ayes and 0 Nays. David Fotheringham, Steve Cosper, Jane Griener and Steve Swanson all voted Aye.

C. General Plan Update

The Planning Commission was given a copy of the current Transportation (Circulation) Element of the General Plan and asked to review and discuss the language and give direction. They were also given a draft of the updated Transportation (Circulation) Element.

Jason Bond stated that the goal of the Transportation (Circulation) Element of the General Plan was to create and maintain a multi-modal transportation system that is pedestrian friendly, safe and efficient. He read the following proposed policies:

1. Connect neighborhoods and open spaces of the City with appropriate trails, sidewalks and bike lanes that support alternate forms of local transportation and recreation.

2. Promote good traffic circulation by following the Street master Plan.

3. Work with adjacent communities and other agencies to acquire financial aid for transportation improvements and regional integration.

4. Emphasize the maintenance of roads to ensure a high quality road system.

5. Promote the use of roundabouts and other transportation options to prevent the need for stop lights therefore maintaining the historic small-town rural atmosphere.

The Planning Commission had a discussion about the wording of these policies and made small verbiage changes, including Steven Swanson's suggestion that the word "safe" or "safety" be included in the policies.

David Fotheringham suggested that the parentheses be removed from the word "Circulation" in the title of the document. Jason Bond explained that the word "Circulation" was included in the code because the State Code refers to this section as the Transportation/Circulation Element. He stated that the word should be included, but the parentheses were not necessary.

The Planning Commission had a discussion regarding roundabouts and the potential locations for such intersections in Alpine City. Mayor Wimmer presented some of his experiences with roundabouts in other cities and stated that they can be useful alternatives to traffic signals. The Planning Commission agreed that Alpine should be a City with few traffic signals.

The Planning Commission agreed that the proposed goal and policies were concise, but sufficient to meet the transportation needs of Alpine City.

IV. COMMUNICATIONS

The Planning Commission Members discussed the success of Alpine Days.

Jason Bond reminded the Planning Commission that there is a fifth Tuesday in the month of August, so the next meeting would be the first Tuesday in September.

V. APPROVAL OF PLANNING COMMISSION MINUTES: August 2, 2016

MOTION: Jane Griener moved to approve the Planning Commission Minutes for August 2, 2016 as written.

Steve Swanson seconded the motion. The motion passed with 4 Ayes and 0 Nays. David Fotheringham, Steve Cosper, Jane Griener and Steve Swanson all voted Aye.

Adjourn

Steve Cosper stated that the Planning Commission had covered all of the items on the agenda and adjourned the meeting at 7:50 pm.