

# Pleasant Valley Estates (*Revised*)

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## *Amended Tentative Subdivision Map Application*

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**February 20, 2020**

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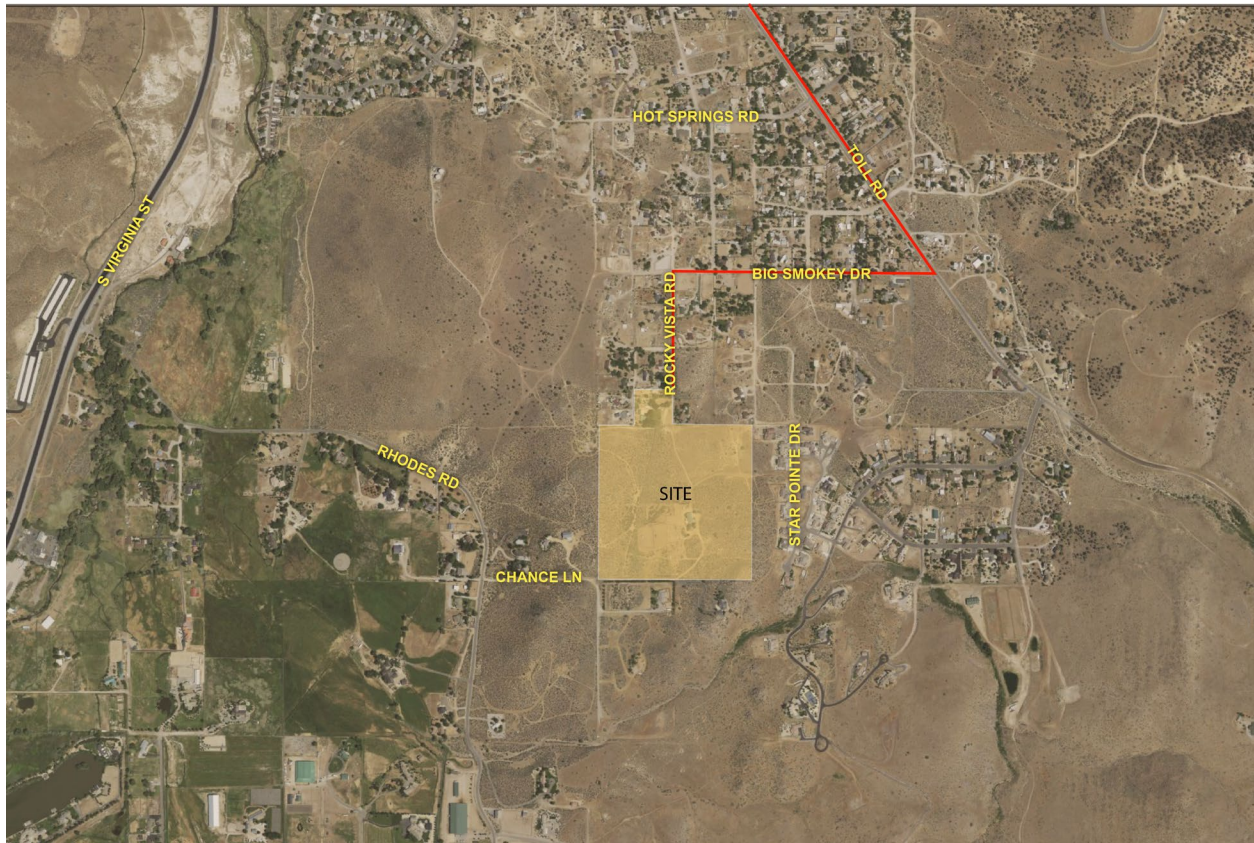
**Introduction**

This application includes the following request:

- A **Tentative Subdivision Map with Common Open Space** to create 45 single-family lots on approximately 42.40 acres within the South Valleys Area Plan.

**Project Location**

The Pleasant Valley Estates site (APNs 017-410-38, 017-410-39, and 017-200-30) consists of approximately 42.40 acres and is located north of Chance Lane, east of Rhodes Road, south of Big Smokey Drive, and west of Toll Road.



**Figure 1 – Vicinity Map**

The proposed property consists of several different zoning designations, including MDS (Medium Density Suburban), LDS (Low Density Suburban), MDR (Medium Density Rural), and GR (General Rural). The property is vacant except for two single-family residential units, one in the center of the site, and one in the northern most part of the parcels. Adjacent zoning designations consist of MDS to the north, a combination of MDS and LDS to the west, a combination of MDR and HDR (High Density Residential) to the south, and LDS to the east. See the zoning map below.

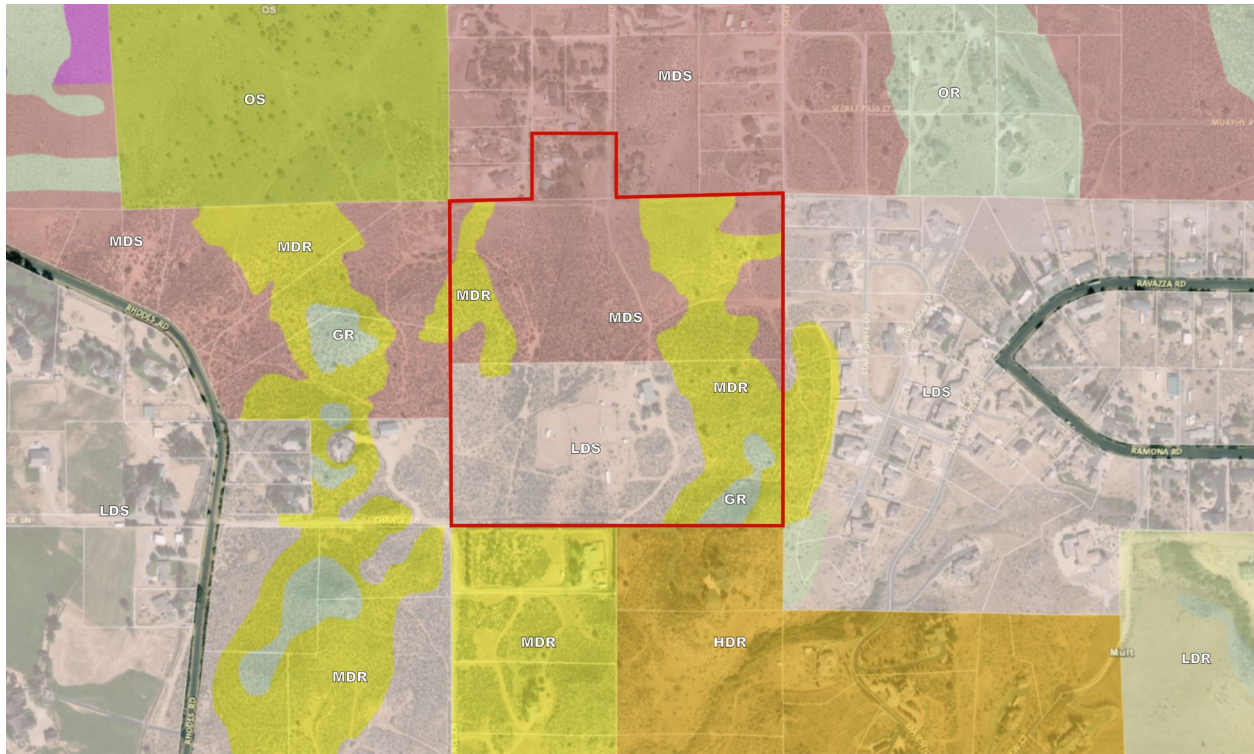


Figure 2 – Zoning Map

Figure 3 (below) shows the existing site conditions.



Looking North Across Site



Looking East Across Site



Looking South Across Site



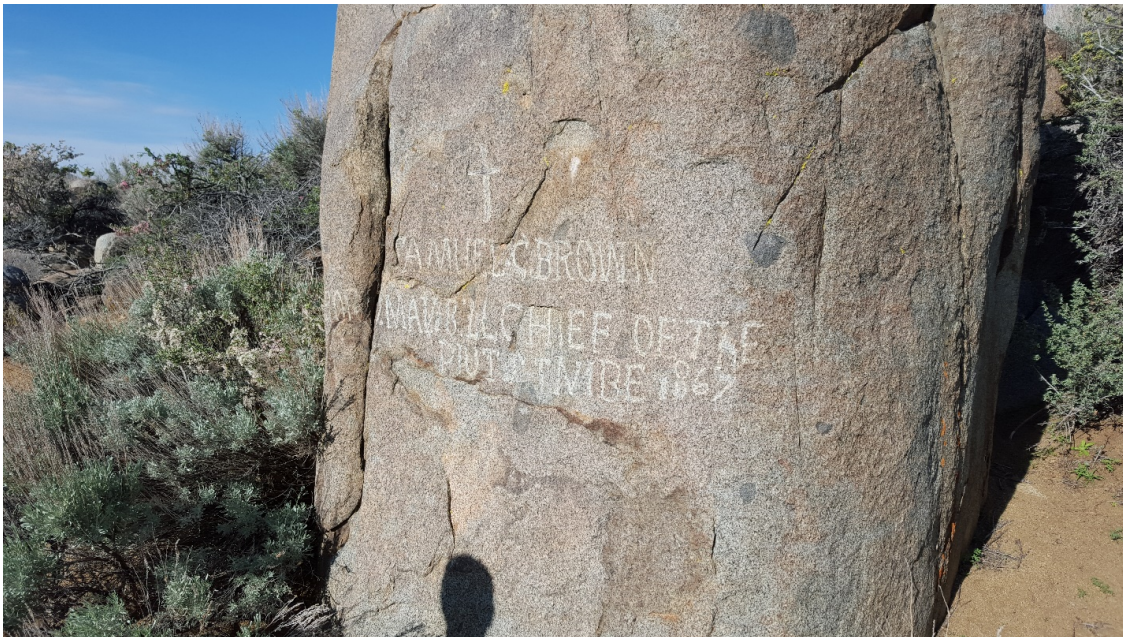
Looking West Across Site

Figure 3 – Existing Conditions

**Project Summary**

This application includes a tentative Subdivision Map request to create 45 single-family lots at the project site. It is planned to develop Pleasant Valley Estates as a Common Open Space Development approach, per the standards contained in Article 408 of the Washoe County Development Code.

The plan developed for Pleasant Valley Estates includes 45 lots for an overall density of 1.10 dwellings per acre. Included within the project are 2.61 acres of open space. Common Area A will serve as a Detention Pond, and Common Area B within it will be the lift station. This also includes a common area C on the east side that will protect steep terrain while providing a buffer to the south-eastern corner. This area will also connect closely with Common Areas D and E on the north to provide property edge buffers to connect walking paths to public land. It is also noteworthy that no motorized vehicles will be allowed in this area. In addition, common area lot F has been provided near the western property line to protect a large boulder with historical markings on it, shown in Figure 3 (below).



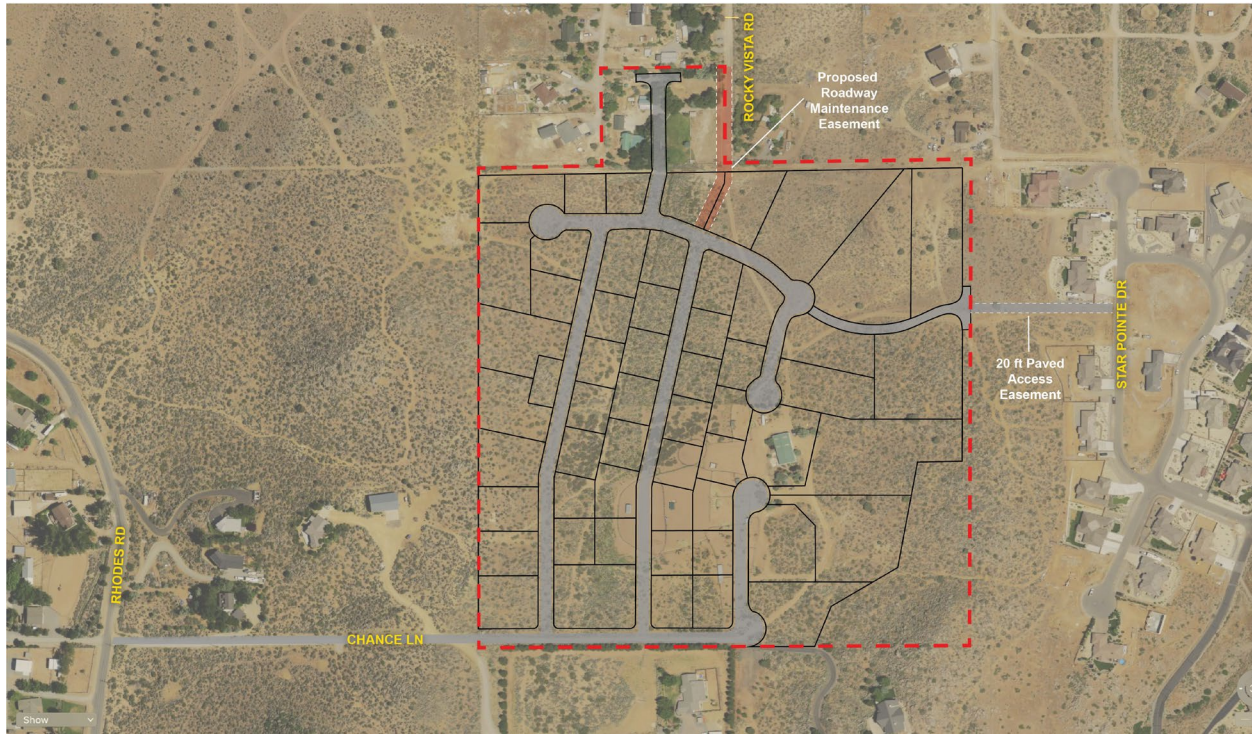
**Figure 4 – Existing Historical/Cultural Resource**

Although the open space areas within Pleasant Valley Estates will be private and maintained by a planned LMA (Landscape Maintenance Association), a public use easement will be dedicated to allow all residents access.

Lot sizes within Pleasant Valley Estates are consistent with the MDS zoning and are complementary to the existing subdivision to the north. Lots within Pleasant Valley Estates range in size from 12,000 square feet

(0.28 acres) to 4.5 acres with an overall average lot size of .75 acres.

The project also advances Goal Six of the Toll Road Character Management area by helping to establish a connection between Rhodes Road and Toll Road.



**Figure 5 – Proposed Subdivision Map**

Primary access will be provided from Chance Lane with secondary access connecting through to Star Pointe Dr to the east through a newly acquired easement, as well as future easement access to Rocky Vista Road to the north. This will ensure multiple connections to the property as well as proper emergency access and meets all applicable Washoe County requirements. As a relatively small single-family development, there are 45 PM peak trips which is below the threshold of 80 peak hour trips for requiring a traffic study. To accommodate the small amount of increased traffic, existing roads around the site will be improved to Washoe County standards. Roadways within Pleasant Valley Estates will also be constructed to Washoe County standards and will be dedicated as public rights-of-way. Roads will include 42-foot right of way with curb, gutter, and sidewalk.

Home plans are not proposed with this map but envisioned to complement surrounding development. Larger lots included within Pleasant Valley Estates are conducive to larger single-story floor plans although two-story homes are allowed. Consistent with Washoe County policy, final home plans and elevations will be subject to the review and approval of the Washoe County Design Review Committee for



compliance with development code and Area Plan standards.

### **Site Analysis**

Common Open Space:

Article 408 of the Washoe County Development Code establishes regulations related to Common Open Space Developments (COSD). Specifically, Section 110.408.30 requires a site analysis be conducted. This site analysis criteria is listed below and addressed in **bold face** type.

Section 110.408.30 Site Analysis to Determine Common Open Space and Lot Size Variations. A site analysis showing development opportunities and constraints shall be prepared as a key consideration, along with the project design objectives, to determine the total area covered by lots and roads, lot areas, and the total area to be designated as common open space. The site analysis shall include information and maps, including a site opportunities and constraints map, describing all significant physical and contextual features or factors which may affect the development of the property. The elements of the site analysis shall include, as a minimum, the following information:

- (a) Location Map. A general location map providing the context of location and vicinity of the site.

**Figure 1 included in this report provides an overall location/vicinity map for Pleasant Valley Estates. Additionally, a vicinity map is also included on the Tentative Map Title Sheet in the attached map pocket.**

- (b) Land Use. Current and planned land use on the site and adjacent current, planned and approved, but unbuilt land uses.

**As shown in Figures 1 and 3 of this report, the project site is currently vacant except for one single-family residence. Surrounding parcels consist of scattered single-family residences or vacant lots as shown in Figure 1. The surrounding lots are complementary to the proposed lot sizes within Pleasant Valley Estates.**

- (c) Existing Structures. A description of the location, physical characteristics, condition and proposed use of any existing structures.

**The existing single-family residence is located near the center of the two properties included in this proposal. The residence is in fairly good condition and will continue to function as a single-family residence. The proposed tentative map has created a separate lot for this residence.**

- (d) Existing Vegetation. A description of existing vegetation, including limits of coverage, and major tree sizes and types. In the instance of heavily wooded sites, typical tree sizes, types and limits of tree coverage may be substituted.

The Pleasant Valley Estates site is characterized by natural vegetation consisting mostly of sagebrush, rabbit brush, and patches of cheat grass. There are no existing trees on the property, except for a couple of small evergreens on the northern parcel located on Rocky Vista which will stay intact. There are also no known foreign species, etc.

(e) Prevailing Winds. An analysis of prevailing winds.

**Prevailing winds in the area are from west to east with occasional northerly winds during storm events. The proposed project layout should not be negatively impacted by the prevailing winds in the area.**

(f) Topography. An analysis of slopes on the site using contour interval of five (5) feet, or at a contour interval appropriate for the site and agreed to by the Director of Community Development.

**The project site qualifies as a hillside development and contains slopes greater than 30 percent on approximately 4.5 percent of the site. A slope analysis has been performed by the project engineer (see Figure 6 below) showing the amount of the subject parcels that contain slopes. The engineering plans included with this application provide for grading and drainage plans that clearly depict the site topography. The portion of hillside area that cannot reasonably be graded will be included in the common open space area.**

(a) Soil. An analysis of the soil characteristics of the site using Soil Conservation Service (SCS) information.

**The site characteristics are comparable to surrounding developed areas, which have shown no soil or geologic conditions that would preclude residential development at the densities proposed.**

(b) Natural Drainageways. Identification of natural drainageways on and adjacent to the site.

**Natural drainage that occurs within the site will be retained and is incorporated into the provided open space. A detailed hydrology study is also included as an appendix to this report.**

(c) Wetlands and Water Bodies. Identification of existing or potential wetlands and water bodies on the site.

**Not applicable. No wetlands or water bodies exist onsite.**

(d) Flood Hazards. Identification of existing and potential flood hazards using Federal Emergency Management Agency (FEMA) information.

**There are no flood hazard areas within the Pleasant Valley Estates site.**

- (e) Seismic Hazards. Identification of seismic hazards on or near the site, including location of Holocene faults.

**The site characteristics are comparable to surrounding developed areas, which have shown no geologic conditions that would preclude residential development at the densities proposed.**

- (f) Avalanche Hazards. An analysis of avalanche and other landslide hazards.

**The site characteristics are comparable to surrounding developed areas, which have shown no avalanche hazards that would preclude residential development at the densities proposed.**

- (g) Sensitive Habitat and Migration Routes. An analysis of sensitive habitat areas and migration routes.

**Not applicable. There are no known or identified sensitive habitats or migration routes onsite.**

- (h) Significant Views. A description and analysis of all on and off site significant views.

**Views across the property are previously shown in Figure 3. In general, houses in the area enjoy views of surrounding mountains, including Slide Mountain and Mt. Rose to the west. Housing lots in this tentative map will be able to take advantage of these views without impacting the views from existing houses. This is due to the continuously variable terrain of the area and substantial southern and southwestern exposure of the area.**

- (i) Easements. A description of the type and location of any easements on the site.

**All existing and proposed easements are clearly depicted on the engineering plans included with this report. Additionally, a preliminary title report is being submitted with the original report that identifies and describes all existing easements.**

- (j) Utilities. A description of existing or available utilities, and an analysis of appropriate locations for water, power, sanitary sewer and storm water sewer services.

**The attached engineering plans and drawings depict all existing utilities/infrastructure and proposed extensions, etc. The project will connect to all municipal services including sewer, water, natural gas, cable television, etc.**

- (k) Appropriate Access Points. An analysis of appropriate access points based upon existing and proposed streets and highways and site opportunities and constraints.

**Primary access will be provided from Chance Lane with secondary access connecting through to Star Pointe Dr to the east through a newly acquired easement, as well as future easement access to Rocky Vista Road to the north. This will ensure multiple connections to the property as well as proper**

emergency access and meets all applicable Washoe County requirements.

- (l) Other Information. All other information deemed appropriate and necessary by the Director of Community Development.

This report provides for all pertinent and required details. Additional information and analysis can be provided on an as-needed basis as it may arise during the public review process.

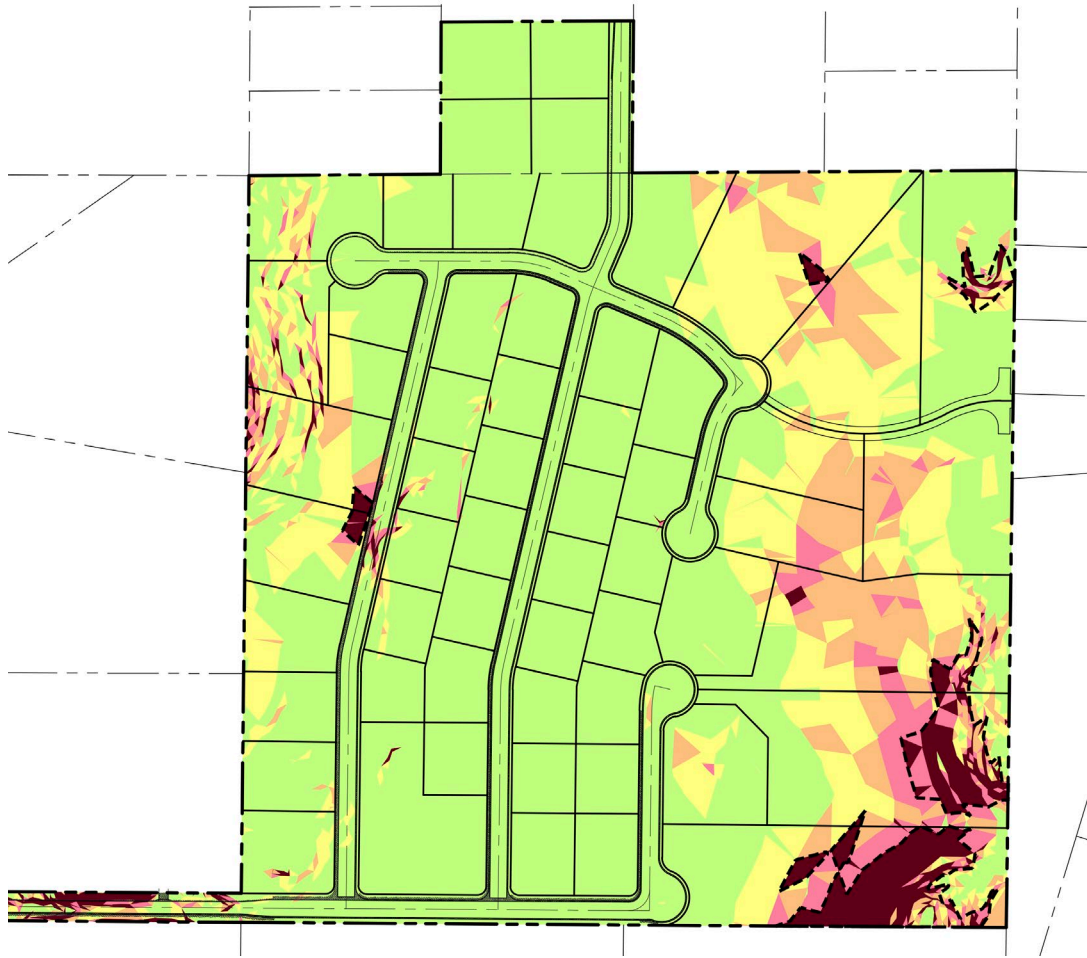


Figure 6 – Slope Constraint Map

**Hillside Ordinance:**

Article 424 of the Washoe County Development Code establishes regulations related to Hillside Development. Specifically, Section 110.424.15(a) requires a site analysis be conducted. This site analysis criteria is listed below and addressed in **bold face** type.

Section 110.424.15(a) Site Analysis. A site analysis, prepared by a qualified engineer, planner, landscape architect, or architect shall be submitted. This analysis shall provide the basis for assessing the opportunities and constraints of the site for development and shall be in the form of a design standards handbook incorporating both textual and graphical representations of the requested action. At a minimum, a site analysis shall include:

- (1) Major topographic conditions including ridgelines, ravines, canyons, and knolls.

**The site does contain significant topographic features with part of it being considered a hillside. The engineering plans included with this application provide for grading and drainage plans that clearly depict the site topography.**

- (2) Preliminary geological conditions including major rock outcroppings, slide areas, and areas underlain with faults that have been active during the Holocene epoch of geological time.

**The site characteristics are comparable to surrounding developed areas, which have shown no geologic conditions that would preclude residential development at the densities proposed. A large boulder is located near the western edge of the site, which is being left in place due to some culturally significant markings. All significant rock outcroppings are being put into the Common Area.**

- (3) Preliminary soil conditions including soil type, expansiveness, slumping, erodibility, and permeability.

**The site characteristics are comparable to surrounding developed areas, which have shown no soil or geologic conditions that would preclude residential development at the densities proposed. Foundation requirements for each individual unit will be determined as part of the Final Map.**

- (4) Significant surface hydrological conditions including natural drainage courses, perennial streams, floodplains, wetlands, and ponding areas.

**Natural drainage that occurs within the site will be retained and is incorporated into the Stormwater Detention Pond located in Common Area A. Hydrology information is shown on the grading/drainage plan.**

- (5) The location and types of significant vegetation including known rare and endangered plant species and general plant communities.

**Initial examination indicates that the site vegetation is typical brush-type plants found throughout the area. No known rare and/or endangered plant species are found onsite.**

- (6) Habitat areas for rare or endangered animal species.

**Initial examination indicates that there are no known rare or endangered animal species on the site. Typical animals such as rabbits, mice, and coyotes are the only known fauna in the immediate vicinity.**

- (7) Preliminary viewshed analysis including cross sections of views to and from the development site from all major roadways within one (1) mile of the project site, and from major focal points on the project site.

**Views across the property are shown in Figure 3. In general, houses in the area enjoy views of surrounding mountains, including Slide Mountain and Mt. Rose to the west. Housing lots in this tentative map will be able to take advantage of these views without impacting the views from existing houses. This is due to the continuously variable terrain of the area and substantial southern and southwestern exposure of the area.**

- (8) How the development responds to the unique conditions of the hillside.

**The tentative subdivision map responds to the unique conditions of the hillside by keeping the largest lots along the eastern end of the property where the hillside is located. The open space designated areas also make sure that all lots are out of the steepest areas.**

- (9) A slope analysis, submitted on a topographic map with contour intervals of a least five (5) feet for planning purposes. This analysis shall indicate the location and amount of land included with the following slope categories, tabulated in acres: 0-15 percent, 15-20 percent, 20-25 percent, 25-30 percent, greater than 30 percent.

**A slope analysis (see Figure 5 above) has been prepared by the project engineer showing the amount of land following the indicated slope categories.**

### **Potential Impacts**

This section aims to provide a cursory impact analysis based on the conceptual plan developed for the project, as presented in Figure 5.

- **Schools**

As part of this Tentative Map process, the Washoe County School District was consulted as to the capacities of schools that serve the project area. It was determined that the project site is zoned for the following schools:

- Pleasant Valley Elementary School
- Depoali Middle School
- Damonte Ranch High School

Washoe County School District provided the School District’s accepted student generation formulas. Assuming a total of 45 lots, the table on the following page summarizes potential school impacts.

It is important to note that this analysis does not consider the potential for children to attend charter schools, private institutions, or home schooling and is therefore a worst-case scenario in terms of student generation projections. In addition, school impacts will now be addressed regionally with the recent passing of WC-1, which is intended to provide funding for new schools throughout Washoe County.

School	Student Generation Rate <sup>1</sup>	Number of New Students
Pleasant Valley Elem. School	0.277/unit	12 students
Depoali Middle School	0.064/unit	3 students
Damonte Ranch High School	0.136/unit	6 students

1 – provided by the Washoe County School District.

- **Public Facilities/Infrastructure**

The project site is located in an area of existing infrastructure. All municipal services (i.e. water, sewer, storm drain, etc.) are either in place or can easily be extended (at the developer’s expense) to serve Pleasant Valley Estates. All new lots within Pleasant Valley Estates will be served by municipal water and sewer. Power, natural gas, cable television, and high-speed internet service all exist at or adjacent to the project site.

Preliminary utility plans are included with the engineering plans located in the map pocket of this report.

- **Public Services**

The project has been reviewed by/commented on by the Truckee Meadows Fire Protection District, which has indicated that the property is within an acceptable response time of the Truckee Meadows Fire Protection District station number 237 located on 395-A at Pagni Lane. Also, the Washoe County Sherriff’s Office has existing patrols within the project area.

**Planning Policy Analysis**

The proposed request must be reviewed for consistency with the goals and policies of the Washoe County Master Plan and South Valleys Area Plan. Each of these planning documents is addressed below:

- **Washoe County Master Plan/South Valleys Area Plan**

The South Valleys Area Plan is an element of the Washoe County Master Plan that establishes the overall theme and vision that the community has in terms of how they wish to see the area develop over the next 20 years. Last updated in 2010, there has been little change within the plan area in the last decade. However, as the region's economy continues to grow, there is now opportunity to implement change within the plan area, consistent with the goals and policies of the Area Plan.

The Introduction section of the Area Plan states that the *“South Valleys community will maintain and apply objective standards and criteria that serve to manage growth and development in South Valleys in a manner that:*

- *Respects the scenic and rural heritage of the area by encouraging architectural and site design standards that are responsive to this heritage;*
- *Maintains a rural agricultural character in the landscape between the urban areas of Reno and Carson City;*
- *Respects private property rights;*
- *Provides a limited range of housing opportunities complementary to the area's rural and historic character;*
- *Encourages the development of commercial opportunities in a manner that helps define the community, provide needed services, and otherwise highlight the character of the community as defined by the Lane Use Table in Appendix A;*
- *Provides ample open space and recreational opportunities;*
- *Promotes the educational and scientific opportunities inherent in the area's natural history and rural character;*
- *Addresses the conservation of natural, scenic, and cultural resources;*
- *Ensures that infrastructure in coincident with development and appropriate in scale and character to the community character articulated below; and*
- *Coordinates resource availability with the construction of infrastructure through the implementation of facilities and resources plans.*

This Tentative Map request is entirely consistent with this intent of the Area Plan. Pleasant Valley Estates will provide residential uses that will complement existing development patterns in the area as well as provide a desired connection between Rhodes Road and Toll Road. The existing cultural resources and rock formations on the site will be protected through deed restrictions. Infrastructure including streets and utilities will be improved and/or provided in the appropriate scale for the development, while complying with Washoe County standards.

The project site is located within the Steamboat Valley Rural Transition Character Management Area defined in the Area Plan. This “transition zone” as discussed in the area plan specifies that in the areas *“{t}o the north and east of Rhodes Road, the densities and land use patterns should provide a transition to the urban land use patterns likely to be implemented in the incorporated areas north of Rhodes Road.”* The density proposed with Pleasant Valley Estates is consistent with the MDS zoning maximum of 3 du/ac



(1.10 du/ac proposed) identified in the plan and provides for an appropriate transition to adjoining properties and City of Reno development to the north.

The Area Plan also contains goals and policies which are applicable to this proposed tentative map. These policies are listed below and are addressed in **bold face** type.

*Goal One: The pattern of land use designations in the South Valleys Area Plan will implement and preserve the community character described in the Character Statement.*

**As described in the previous section, Pleasant Valley Estates conforms to the Character Statement in terms of location within the Steamboat Valley Rural Transition Character Management Area, allowable suburban densities, preservation of natural resources, and informal trail connections.**

*Goal Two: Common Development Standards in the South Valleys planning area. Establish development guidelines that will implement and preserve the community character commonly found within the South Valleys planning area.*

**As described earlier, Pleasant Valley Estates has been designed to be complementary to surrounding uses and properties, keeping the community character intact.**

*SV.2.2: Whenever possible, grading for residential purposes after the date of final adoption of this plan will: a) minimize disruption to natural topography; b) utilize natural contours and slopes; c) complement the natural characteristics of the landscape; d) preserve existing vegetation and ground coverage to minimize erosion; and e) minimize cuts and fills.*

**Pleasant Valley Estates has been designed to minimize disruption to the natural topography, utilize natural contours, and minimize cuts and fills by deed restricting development on the portion of the site with the steepest slopes. This area will also serve to preserve natural characteristics and existing vegetation.**

*SV.2.14: Development activities should be designed to support the efficient use of infrastructure and the conservation of recharge areas, habitat, and open vistas.*

**Access to the site from both Chance Lane and Star Pointe are located along existing roadways within the area, making an efficient use of existing infrastructure. Future utility infrastructure will tie into existing lines already in place in the surrounding area. No recharge areas or significant habitat are located on the site.**

*SV.3.5: Potential historic and cultural resources exist throughout the Steamboat Valley Community. Development should be preceded by efforts to identify cultural and historical resources and provide for their conservation.*

A large boulder with historical markings is located within the project site. To preserve this cultural/historic resource, an open space designation will be made surrounding the engraved outcropping.

SV.3.6: *Emergency or secondary access from the Toll Road area to U.S. 395 via Rhodes Road or other feasible location is desired. Development proposals in this general area should be examined for their ability to provide this access. New development should not be permitted to prevent this access from being established.*

The design of Pleasant Valley Estates is in line to create the desired connection between Rhodes Road and Toll Road via Chance Lane. As seen on the site plan, Chance Lane will be extended into the property in which a turn eastward onto Star Pointe will lead into the subdivision to the east which connects to Toll Rd. A future easement connection onto Rocky Vista Road will also allow for a separate connection that makes its way to Toll Road should future development occur and that access is desired. This connection is extremely important to the safety of the area and completion of the desires within the Area Plan.

### **Tentative Map Findings**

Section 110.608.20 of the Washoe County Development Code establishes legal findings that must be made by the Planning Commission or Board of County Commissioners in order to approve a Tentative Map request. These findings are listed below and are addressed in **bold face** type.

- (a) Environmental and Health Laws. Environmental and health laws and regulations concerning water and air pollution, the disposal of solid waste, facilities to supply water, community or public sewage disposal and, where applicable, individual systems for sewage disposal;

**Pleasant Valley Estates will be served by municipal water and sewer service, ensuring full compliance with this finding. Additionally, solid waste disposal service will be provided through Waste Management which currently operates routes in Pleasant Valley and the surrounding areas.**

- (b) Availability of Water. The availability of water which meets applicable health standards as well as requirements for water rights, quality or will-serve commitments;

**The project site is within the service boundary of the Truckee Meadows Water Authority and has completed a Discovery process through TMWA. Water rights will be dedicated to TMWA to serve the project, ensuring full compliance with this finding. Water rights can be purchased directly from TMWA or on the open market (with full TMWA acceptance).**

- (c) Utilities. The availability and accessibility of utilities;

**The project will be served by all municipal utilities, infrastructure, and services as detailed within this**

report and on the attached engineering plans.

- (d) Public Services. The availability and accessibility of public services such as schools, police and fire protection, transportation, recreation and parks;

The project is within an acceptable response time of the Truckee Meadows Fire Protection District's Station 237 located on Highway 395-A at Pagni Lane and is in an area of existing Sherriff patrols. Schools that will serve the project along with the anticipated number of new students are detailed within this report. It is further recognized that it will be disclosed to all new residents (at time of purchase) that school zoning is subject to change based on current enrollments, capacities, etc.

- (e) Plan Consistency. General conformance with the Development Code and Master Plan;

Pleasant Valley Estates will provide residential uses that will complement existing development patterns in the area as well as provide significant open space and linkages to informal trails in the area. The existing cultural resource on the site will be kept in place within an accessible open space area for residents and the public to enjoy. Infrastructure including streets and utilities will be improved and/or provided in the appropriate scale for the development, while complying with Washoe County standards.

- (f) Impact on Existing Streets. The effect of the proposed subdivision on existing public streets and the need for new streets or highways to serve the subdivision;

As part of this project, Chance Lane will be improved to conform with Washoe County standards. The amount of AM and PM peak trips created by this subdivision does not warrant the need for a traffic study to examine any impacts to other existing roads such as Rhodes Road or Highway 395-A.

- (g) Physical Characteristics. Physical characteristics of the land such as flood plain, slope and soil;

The site is well suited for the type and intensity of development proposed. The site contains no slope or soil conditions that would preclude development nor does it contain any significant wildlife habitats, etc. Drainage will be directed into a detention basin so as not to impact downstream parcels. The hillside area is incorporated into the open space areas and will not impact individual lots within the project.

- (h) Agency Review. The recommendations and comments of the entities reviewing the tentative map; and

Copies of this report and the included plans will be circulated to all applicable reviewing agencies for review and comment. Specific requirements and relevant comments can be included as conditions tied to this request and implemented with final map(s).

- (i) Impact on Existing Drainage System. The effect of the proposed subdivision on the existing natural and man-made drainage system.

**The project will provide for onsite detention to ensure that no additional flows over what currently exist will occur from the site with development of Pleasant Valley Estates. A highly detailed hydrology study is also included in the appendices of this report demonstrating compliance with all applicable Washoe County requirements related to drainage.**

## Washoe County Development Application

Your entire application is a public record. If you have a concern about releasing personal information, please contact Planning and Building staff at 775.328.6100.

<b>Project Information</b>		Staff Assigned Case No.: _____	
Project Name:			
Project Description:			
Project Address:			
Project Area (acres or square feet):			
Project Location (with point of reference to major cross streets <b>AND</b> area locator):			
Assessor's Parcel No.(s):	Parcel Acreage:	Assessor's Parcel No.(s):	Parcel Acreage:
Indicate any previous Washoe County approvals associated with this application: Case No.(s).			
<b>Applicant Information</b> (attach additional sheets if necessary)			
<b>Property Owner:</b>		<b>Professional Consultant:</b>	
Name:		Name:	
Address:		Address:	
Zip:		Zip:	
Phone:                      Fax:		Phone:                      Fax:	
Email:		Email:	
Cell:                              Other:		Cell:                              Other:	
Contact Person:		Contact Person:	
<b>Applicant/Developer:</b>		<b>Other Persons to be Contacted:</b>	
Name:		Name:	
Address:		Address:	
Zip:		Zip:	
Phone:                      Fax:		Phone:                      Fax:	
Email:		Email:	
Cell:                              Other:		Cell:                              Other:	
Contact Person:		Contact Person:	
<b>For Office Use Only</b>			
Date Received:                      Initial:		Planning Area:	
County Commission District:		Master Plan Designation(s):	
CAB(s):		Regulatory Zoning(s):	

# Tentative Subdivision Map Application Supplemental Information

(All required information may be separately attached)

1. What is the location (address or distance and direction from nearest intersection)?

2. What is the subdivision name (proposed name must not duplicate the name of any existing subdivision)?

3. Density and lot design:

a. Acreage of project site	
b. Total number of lots	
c. Dwelling units per acre	
d. Minimum and maximum area of proposed lots	
e. Minimum width of proposed lots	
f. Average lot size	

4. What utility company or organization will provide services to the development:

a. Sewer Service	
b. Electrical Service	
c. Telephone Service	
d. LPG or Natural Gas Service	
e. Solid Waste Disposal Service	
f. Cable Television Service	
g. Water Service	

5. For common open space subdivisions (Article 408), please answer the following:

- a. Acreage of common open space:

- b. What development constraints are within the development and how many acres are designated slope, wetlands, faults, springs, and/or ridgelines:

- c. Range of lot sizes (include minimum and maximum lot size):

d. Proposed yard setbacks if different from standard:

e. Justification for setback reduction or increase, if requested:

f. Identify all proposed non-residential uses:

g. Improvements proposed for the common open space:

h. Describe or show on the tentative map any public or private trail systems within common open space of the development:

i. Describe the connectivity of the proposed trail system with existing trails or open space adjacent to or near the property:

j. If there are ridgelines on the property, how are they protected from development?

k. Will fencing be allowed on lot lines or restricted? If so, how?

l. Identify the party responsible for maintenance of the common open space:

6. Is the project adjacent to public lands or impacted by "Presumed Public Roads" as shown on the adopted April 27, 1999 Presumed Public Roads (see Washoe County Engineering website at <http://www.washoecounty.us/pubworks/engineering.htm>). If so, how is access to those features provided?

7. Is the parcel within the Truckee Meadows Service Area?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

8. Is the parcel within the Cooperative Planning Area as defined by the Regional Plan?

<input type="checkbox"/> Yes	<input type="checkbox"/> No	If yes, within what city?
------------------------------	-----------------------------	---------------------------

9. Has an archeological survey been reviewed and approved by SHPO on the property? If yes, what were the findings?

--

10. Indicate the type and quantity of water rights the application has or proposes to have available:

a. Permit #		acre-feet per year	
b. Certificate #		acre-feet per year	
c. Surface Claim #		acre-feet per year	
d. Other #		acre-feet per year	

a. Title of those rights (as filed with the State Engineer in the Division of Water Resources of the Department of Conservation and Natural Resources):

--

11. Describe the aspects of the tentative subdivision that contribute to energy conservation:

--

12. Is the subject property in an area identified by Planning and Building as potentially containing rare or endangered plants and/or animals, critical breeding habitat, migration routes or winter range? If so, please list the species and describe what mitigation measures will be taken to prevent adverse impacts to the species:

--

13. If private roads are proposed, will the community be gated? If so, is a public trail system easement provided through the subdivision?

--

14. Are there any applicable policies of the adopted area plan in which the project is located that require compliance? If so, which policies and how does the project comply?

--

15. Are there any applicable area plan modifiers in the Development Code in which the project is located that require compliance? If so, which modifiers and how does the project comply?

--

16. Will the project be completed in one phase or is phasing planned? If so, please provide that phasing plan:

--



17. Is the project subject to Article 424, Hillside Development? If yes, please address all requirements of the Hillside Ordinance in a separate set of attachments and maps.

<input type="checkbox"/> Yes	<input type="checkbox"/> No	If yes, include a separate set of attachments and maps.
------------------------------	-----------------------------	---

18. Is the project subject to Article 418, Significant Hydrologic Resources? If yes, please address Special Review Considerations within Section 110.418.30 in a separate attachment.

<input type="checkbox"/> Yes	<input type="checkbox"/> No	If yes, include separate attachments.
------------------------------	-----------------------------	---------------------------------------

## Grading

**Please complete the following additional questions if the project anticipates grading that involves: (1) Disturbed area exceeding twenty-five thousand (25,000) square feet not covered by streets, buildings and landscaping; (2) More than one thousand (1,000) cubic yards of earth to be imported and placed as fill in a special flood hazard area; (3) More than five thousand (5,000) cubic yards of earth to be imported and placed as fill; (4) More than one thousand (1,000) cubic yards to be excavated, whether or not the earth will be exported from the property; or (5) If a permanent earthen structure will be established over four and one-half (4.5) feet high:**

19. How many cubic yards of material are you proposing to excavate on site?

20. How many cubic yards of material are you exporting or importing? If exporting of material is anticipated, where will the material be sent? If the disposal site is within unincorporated Washoe County, what measures will be taken for erosion control and revegetation at the site? If none, how are you balancing the work on-site?

21. Can the disturbed area be seen from off-site? If yes, from which directions, and which properties or roadways? What measures will be taken to mitigate their impacts?

22. What is the slope (Horizontal/Vertical) of the cut and fill areas proposed to be? What methods will be used to prevent erosion until the revegetation is established?

23. Are you planning any berms and, if so, how tall is the berm at its highest? How will it be stabilized and/or revegetated?

24. Are retaining walls going to be required? If so, how high will the walls be, will there be multiple walls with intervening terracing, and what is the wall construction (i.e. rockery, concrete, timber, manufactured block)? How will the visual impacts be mitigated?

25. Will the grading proposed require removal of any trees? If so, what species, how many, and of what size?

26. What type of revegetation seed mix are you planning to use and how many pounds per acre do you intend to broadcast? Will you use mulch and, if so, what type?

27. How are you providing temporary irrigation to the disturbed area?

28. Have you reviewed the revegetation plan with the Washoe Storey Conservation District? If yes, have you incorporated their suggestions?

# Request to Reserve New Street Name(s)

The Applicant is responsible for all sign costs.

## Applicant Information

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
Phone : \_\_\_\_\_ Fax: \_\_\_\_\_  
 Private Citizen                       Agency/Organization

## Street Name Requests

(No more than 14 letters or 15 if there is an "i" in the name. Attach extra sheet if necessary.)


If final recordation has not occurred within one (1) year, it is necessary to submit a written request for extension to the coordinator prior to the expiration date of the original

## Location

Project Name: \_\_\_\_\_  
 Reno                       Sparks                       Washoe County  
Parcel Numbers: \_\_\_\_\_  
 Subdivision                       Parcelization                       Private Street

Please attach maps, petitions and supplementary information.

Approved: \_\_\_\_\_ Date: \_\_\_\_\_  
Regional Street Naming Coordinator  
 Except where noted  
Denied: \_\_\_\_\_ Date: \_\_\_\_\_  
Regional Street Naming Coordinator

## Washoe County Geographic Information Services

1001 E. Ninth Street  
Reno, NV 89512-2845

Phone: (775) 328-2325 - Fax: (775) 328-6133

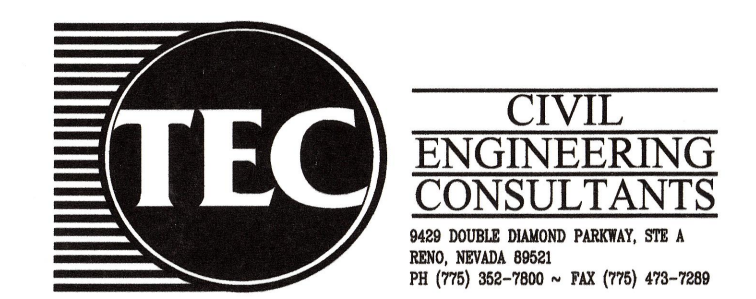
# PLEASANT VALLEY ESTATES TENTATIVE MAP

## OWNER / APPLICANT

PLEASANT VALLEY RANCH ESTATES, LLC  
301 FLINT ST  
RENO, NEVADA 89501

## ENGINEER

TEC CIVIL ENGINEERING CONSULTANTS  
9429 DOUBLE DIAMOND PARKWAY, SUITE A  
RENO, NEVADA 89521

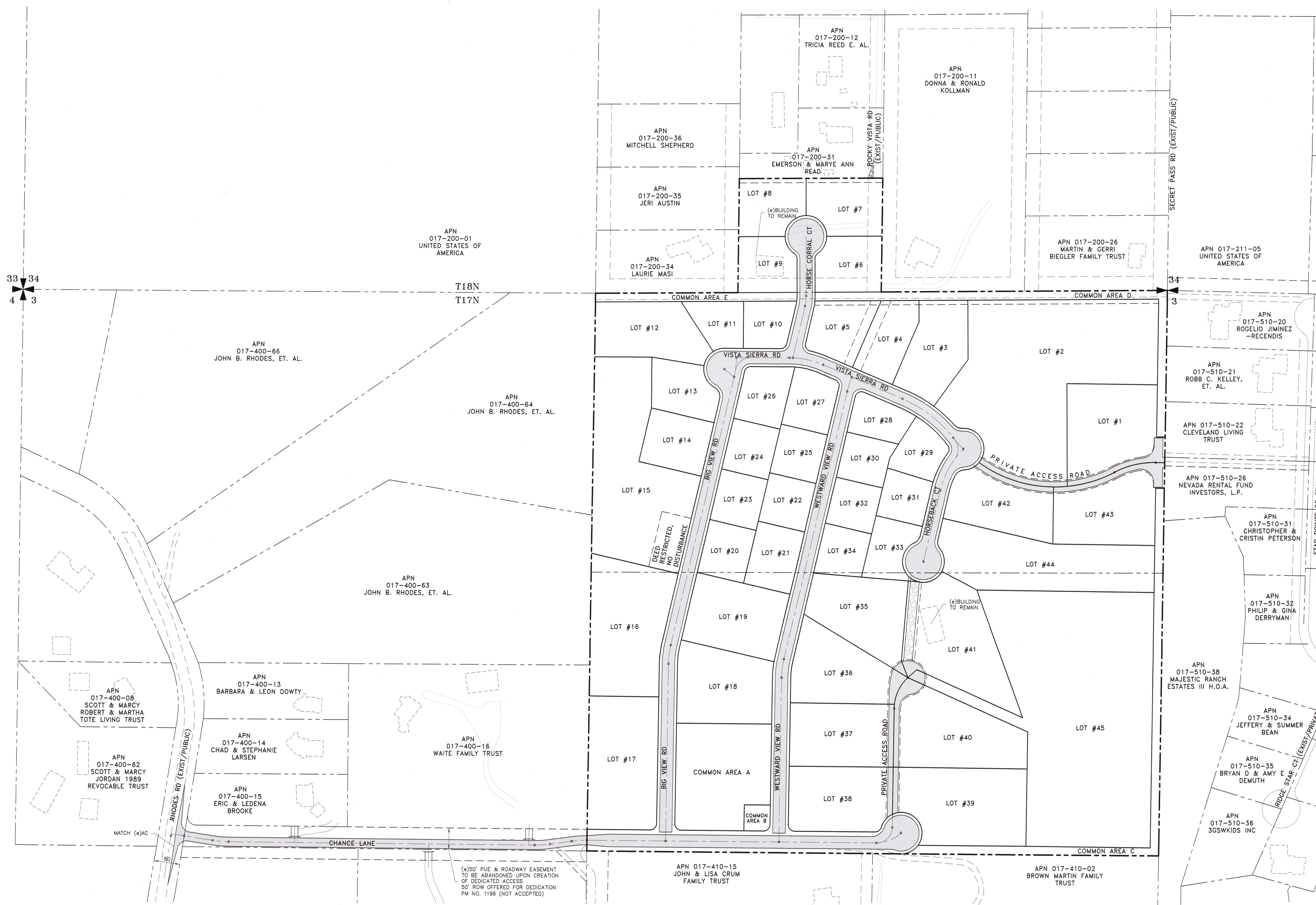
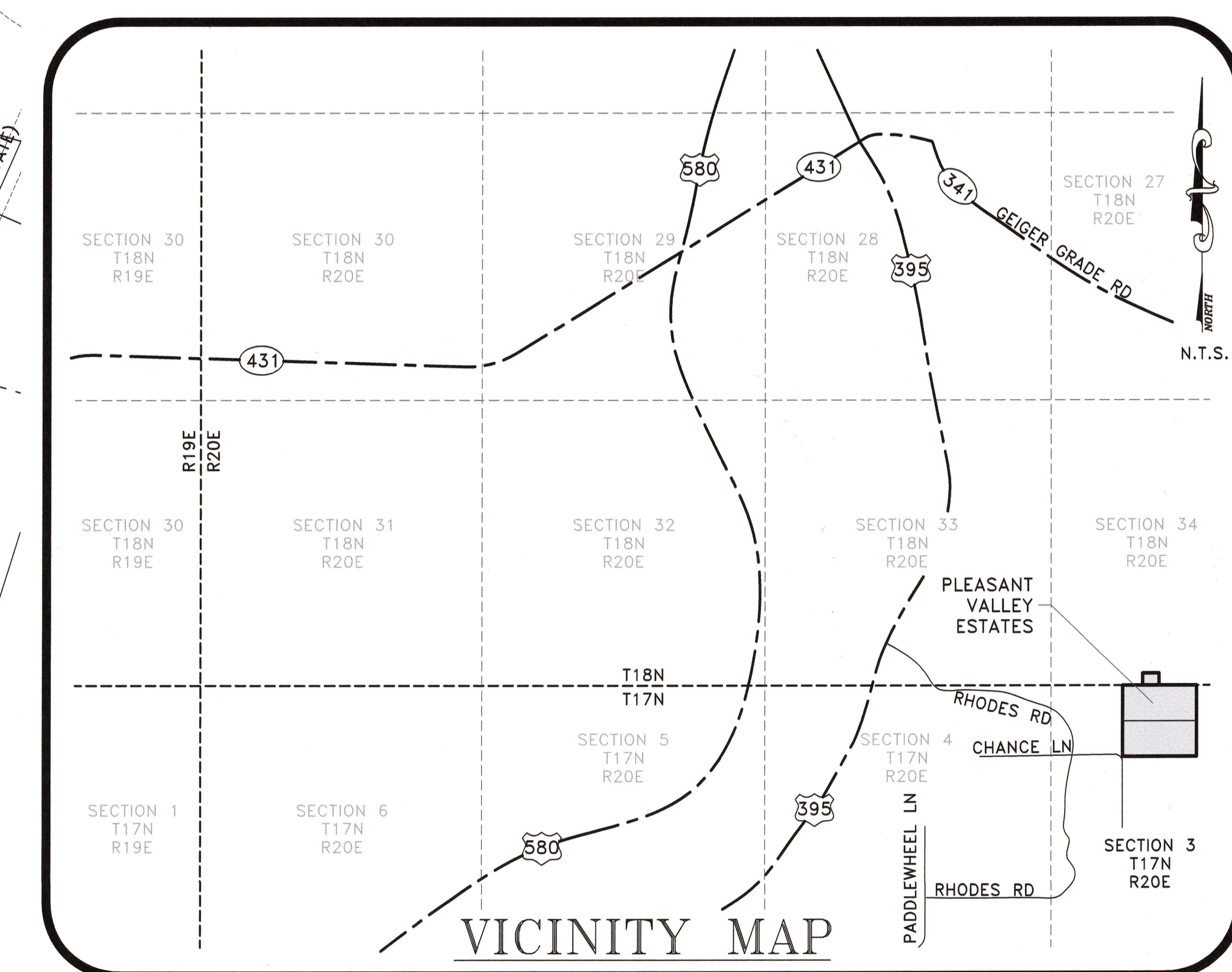
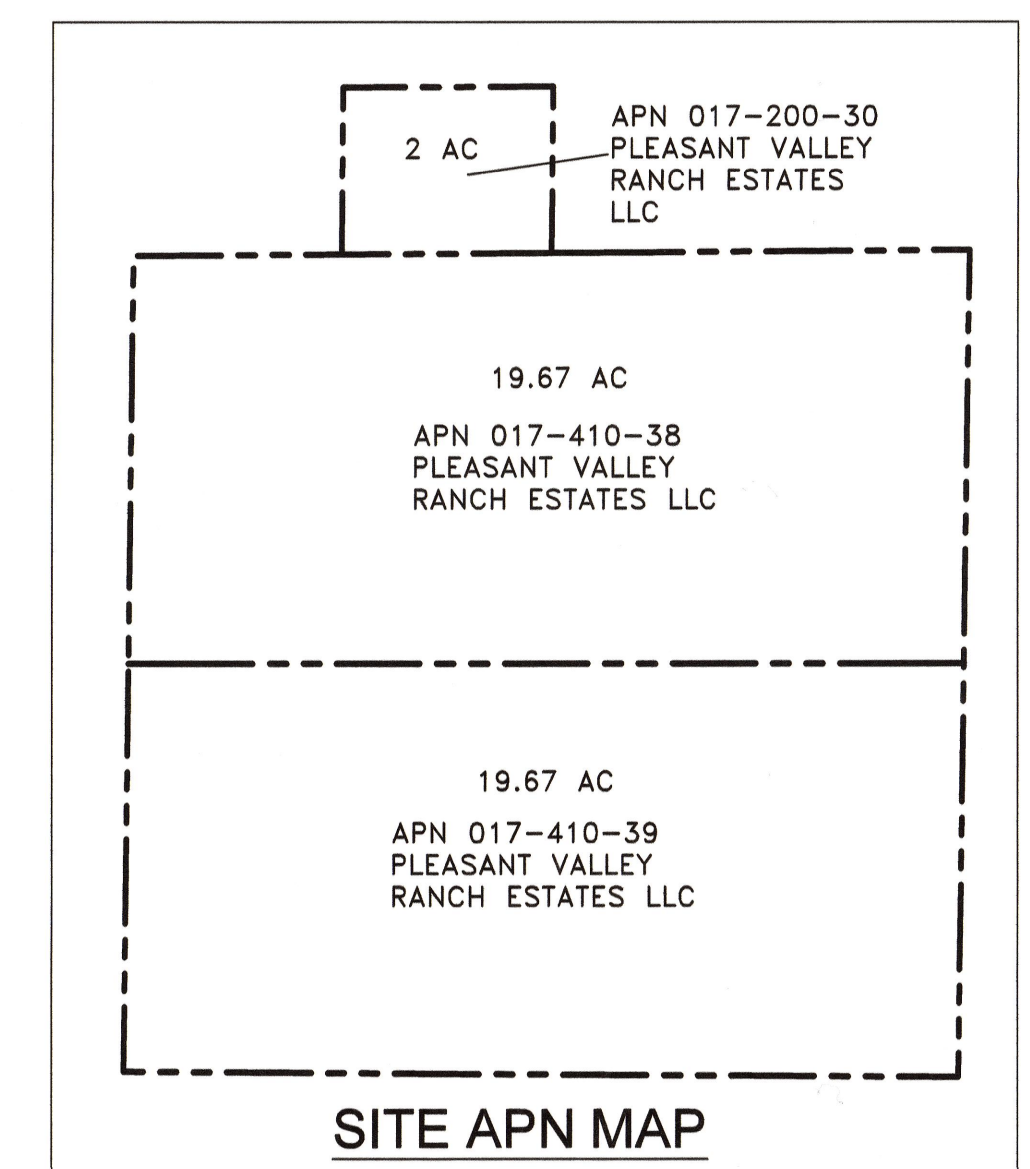


## SHEET INDEX

1	PRELIMINARY COVER SHEET
2	PRELIMINARY SITE PLAN
3	PRELIMINARY GRADING PLAN
4	PRELIMINARY GRADING PLAN
5	PRELIMINARY UTILITY PLAN
6	PRELIMINARY UTILITY PLAN
7	PRELIMINARY CROSS-SECTIONS

## PROJECT DATA

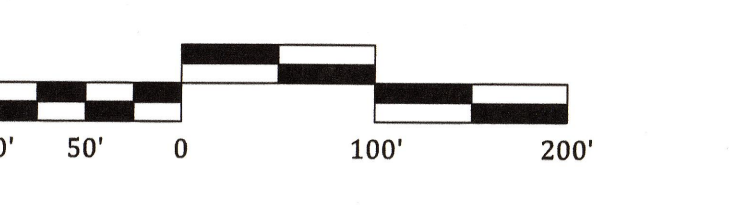
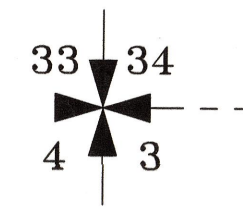
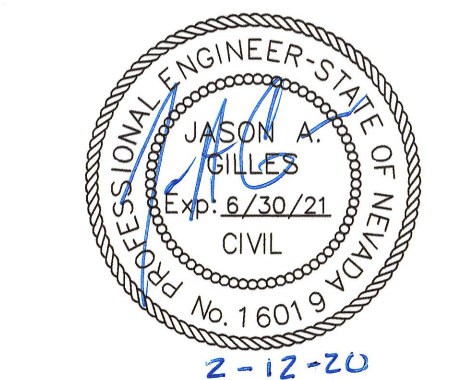
RESIDENTIAL LOTS	45
RESIDENTIAL LOT AREA (TO BE DEDICATED)	34.19 ACRES
STREET AREA (TO BE DEDICATED)	4.54 ACRES
COMMON AREA	2.61 ACRES
ONSITE APNS 017-410-38, 39 AND 017-510-20	41.34 ACRES
CHANCE LANE ROW AREA	1.07 ACRES
TOTAL PROJECT AREA	42.40 ACRES
AVERAGE RESIDENTIAL LOT SIZE	32,878 SQ FT
SMALLEST RESIDENTIAL LOT	12,000 SQ FT
LARGEST RESIDENTIAL LOT	196,020 SQ FT
GROSS DENSITY	1.09 UNITS/ACRE



### LEGEND

(---)	PROJECT BOUNDARY
(---)	PROPOSED PROPERTY LINE/ RIGHT OF WAY
(---)	EXISTING LOT LINE
(---)	CENTERLINE
(---)	EXISTING DIRT ROAD
(---)	EXISTING PAVED ROAD
(---)	PROPOSED ASPHALT ROADS

THIS TENTATIVE SUBDIVISION MAP HAS BEEN CREATED AND IS IN COMPLIANCE WITH ALL APPLICABLE PROVISIONS OF THE WASHOE COUNTY DEVELOPMENT CODE:



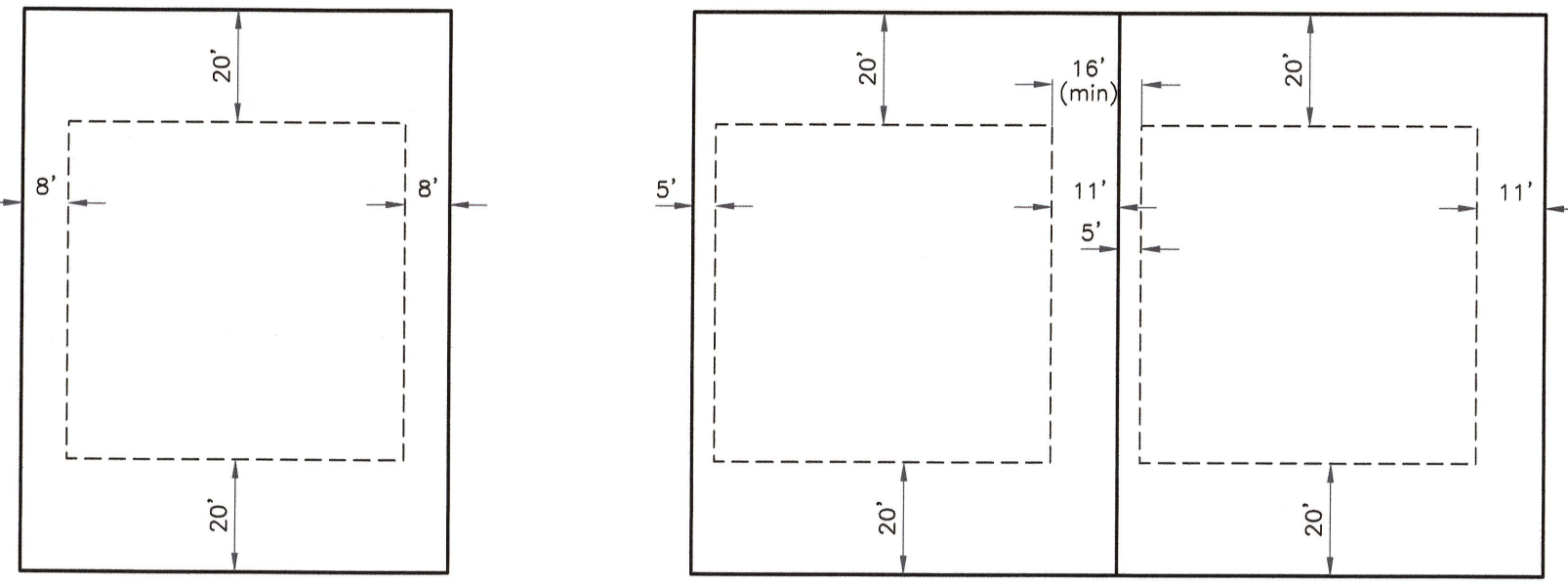
## PRELIMINARY COVER SHEET SHEET 1 of 7

# PLEASANT VALLEY ESTATES TENTATIVE MAP

## BASIS OF BEARING

THE NAD-83/94 NEVADA STATE PLANE WEST ZONE (EPOCH 2010) COORDINATE GRID BEARINGS FROM THE TRUCKEE MEADOWS REGIONAL GPS "VRS" NETWORK. GROUND COORDINATES ARE SHOWN AND WERE OBTAINED BY MULTIPLYING THE GRID COORDINATES BY THE SPARKS MODIFIED SCALE FACTOR OF 1.000197939 (R/S 2775, R/S 3396, & R/S 3885). ALL DISTANCES SHOWN ARE GROUND DISTANCES.

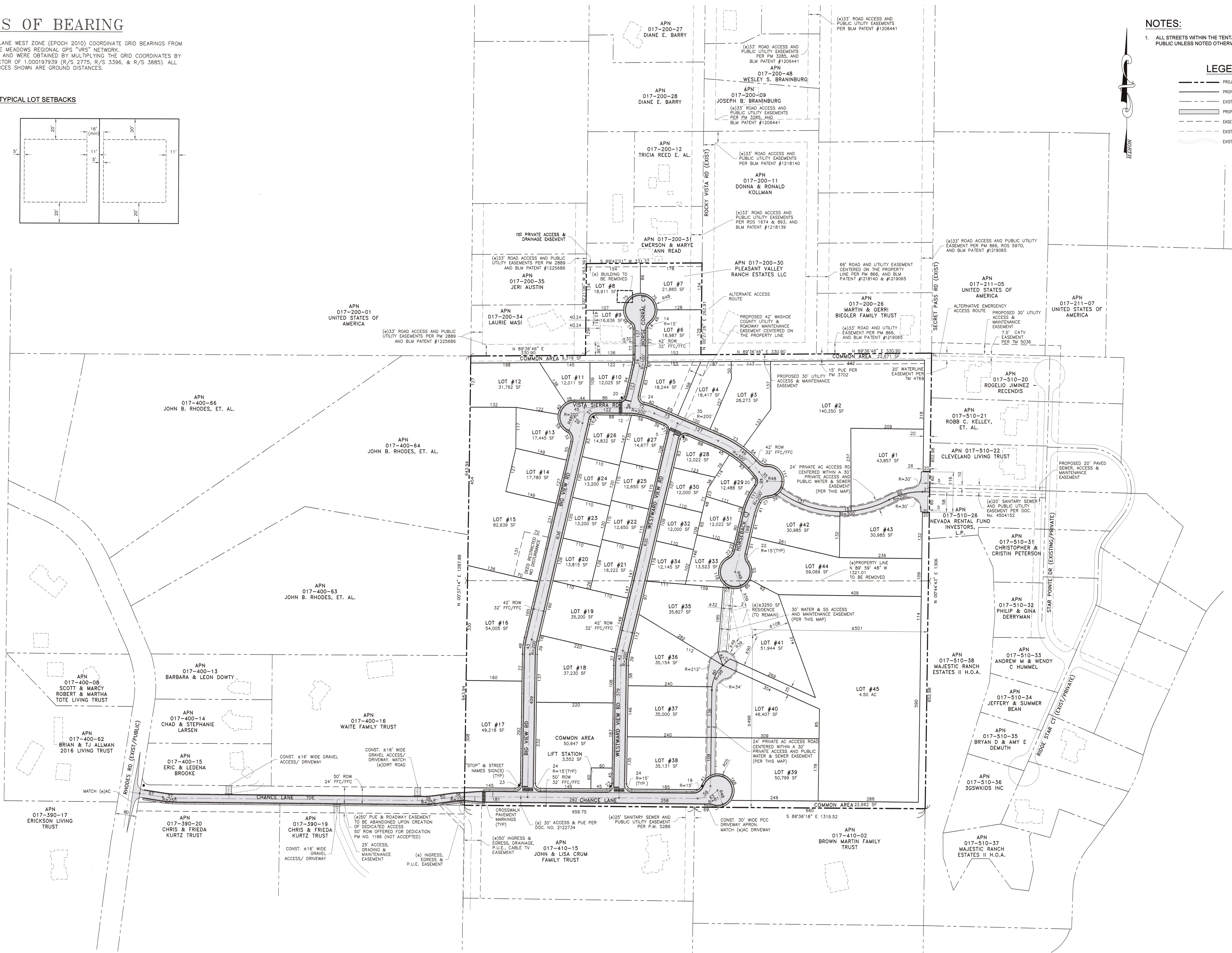
### TYPICAL LOT SETBACKS



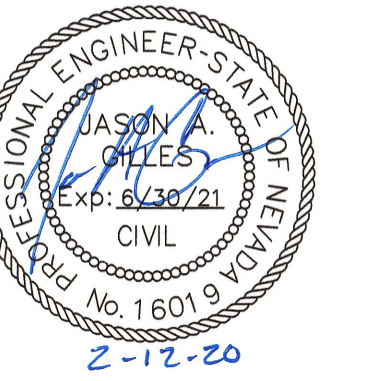
**NOTES:**  
1. ALL STREETS WITHIN THE TENTATIVE MAP ARE PROPOSED PUBLIC UNLESS NOTED OTHERWISE.

### LEGEND

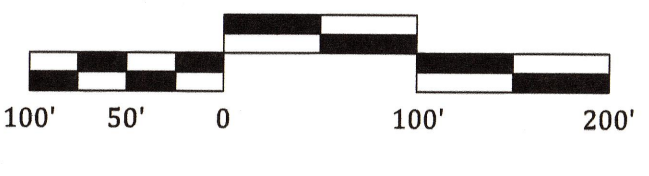
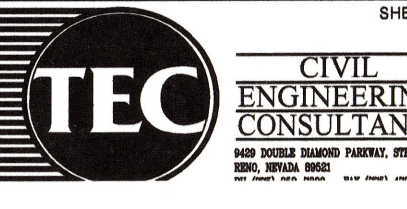
- PROJECT BOUNDARY
- - - PROPOSED LOT LINE
- EXISTING LOT LINE
- PROPOSED A.C. PAVEMENT AREA
- EASEMENT
- EXISTING EASEMENT
- EXISTING PAVED ROAD



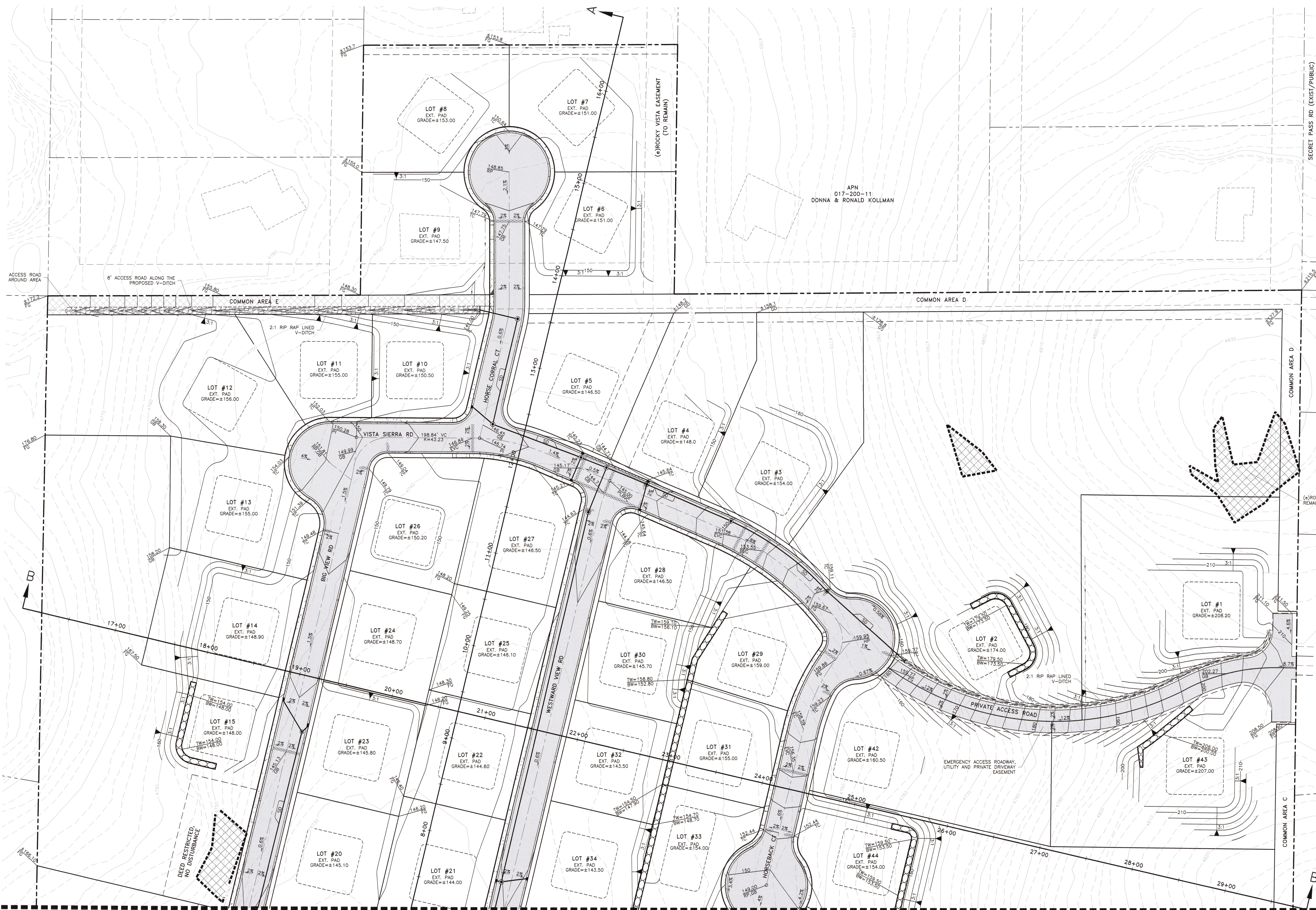
## PRELIMINARY SITE PLAN SHEET 2 of 7



DATE: 2/6/2020  
SCALE: 1"=100'  
JOB #: FRY001



# PLEASANT VALLEY ESTATES TENTATIVE MAP



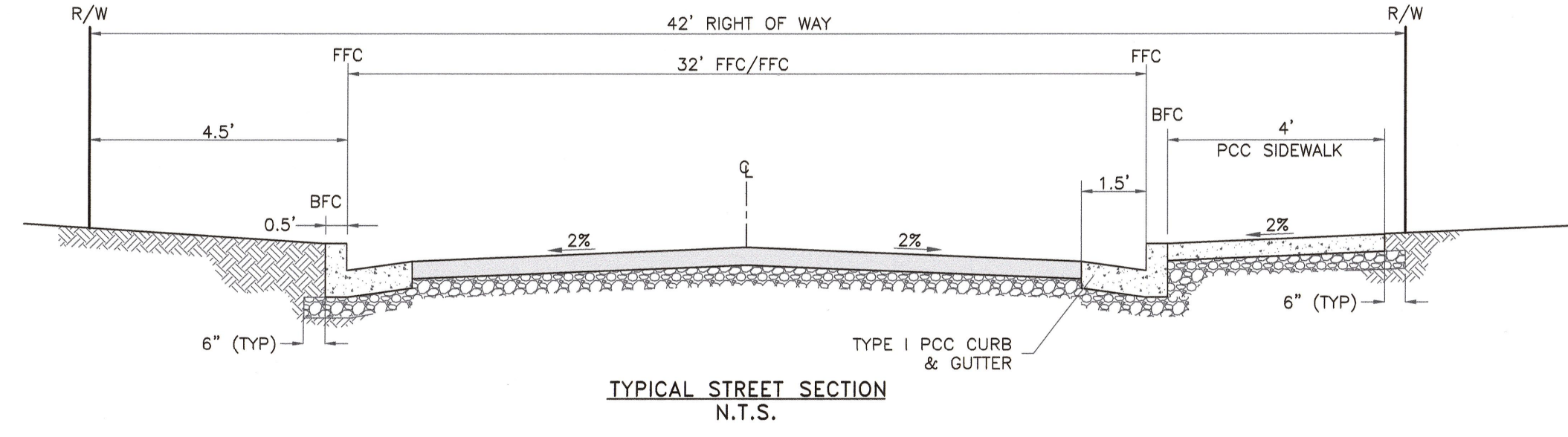
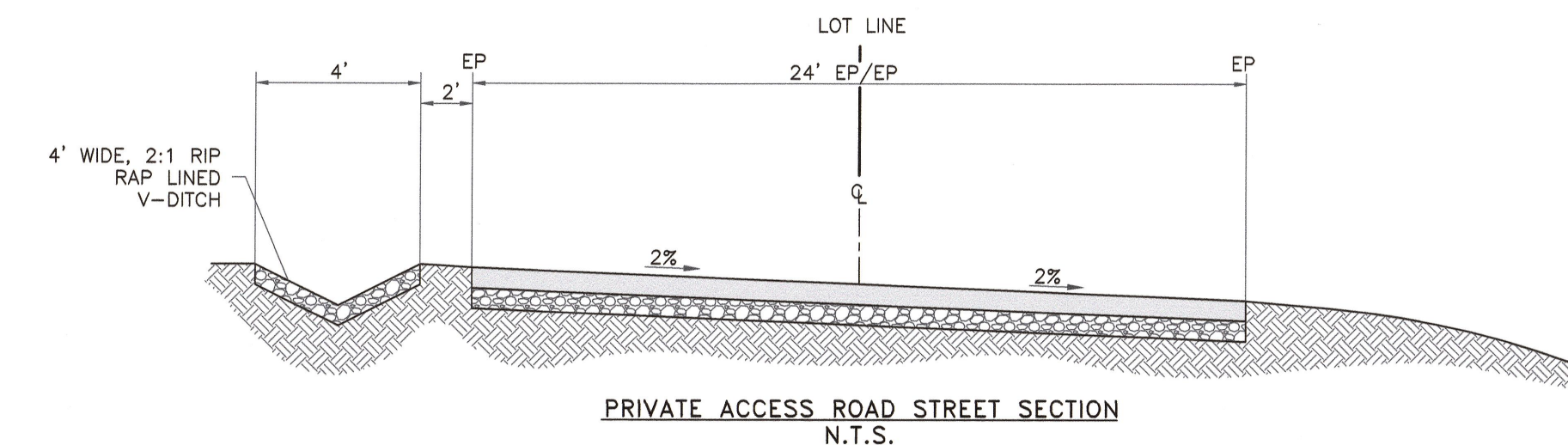
- ### LEGEND
- PROJECT BOUNDARY
  - - - STORM DRAIN (SEE DESCRIPTION) (DASHED IF EXISTING)
  - - - STORM DRAIN MANHOLE (HOLLOW IF EXISTING)
  - CATCH BASIN (HOLLOW IF EXISTING)
  - STORM DRAIN MANHOLE (HOLLOW IF EXISTING)
  - ▭ A.C. PAVEMENT AREA
  - ▭ CONCRETE AREA
  - ▭ ROCKERY RETAINING WALL (6" MAX)
  - ▭ STORM DRAIN MAIN (DASHED IF EXISTING)
  - GRADE BREAK
  - PROPOSED GRADE ● FLOWLINE
  - PROPOSED GRADE ● FINISH GRADE
  - PROPOSED GRADE ● GRADEBREAK
  - PROPOSED GRADE ● HIGHPOINT
  - PROPOSED GRADE ● LOWPOINT
  - PROPOSED GRADE ● TOP OF WALL
  - PROPOSED GRADE ● BOTTOM OF WALL
  - PROPOSED GRADE ● TOP OF CURB
  - EXISTING CONTOUR LINE
  - PROPOSED CONTOUR LINE
  - EXISTING LOT LINE
  - LOT #3
  - LOT NUMBERS
  - SLOPE INDICATOR
  - EXTENTS OF GRADING
  - APPROXIMATE AREAS WITH SLOPES >30%

- ### NOTES:
- 1) ADD 4800 FEET TO ALL SPOT ELEVATIONS.
  - 2) ENTIRE PROJECT LOCATED WITHIN FEMA UNSHADED ZONE X.
  - 3) ALL 3:1 SLOPES TO BE TREATED WITH EITHER DG MULCH, 4" ROCK MULCH OR REVISED SEEDING MIX PER LANDSCAPE ARCHITECT'S RECOMMENDATIONS WITH FINAL DESIGN.
  - 4) DUST PALLIATIVE AND SILT FENCES TO BE UTILIZED ON ALL DISTURBED AREAS UNDEVELOPED FOR OVER 30 DAYS. ADDITIONAL BMPs TO BE PROVIDED AS REQUIRED.

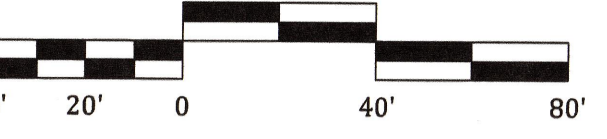
### EARTHWORK QUANTITIES

TOTAL PROJECT AREA	42.40 ACRES
TOTAL DISTURBED AREA	29.22 ACRES
TOTAL AREA >30%	1.70 ACRES
EARTHWORK QUANTITY	230,922 CUYDS
NET EXPORT	0 CUYDS

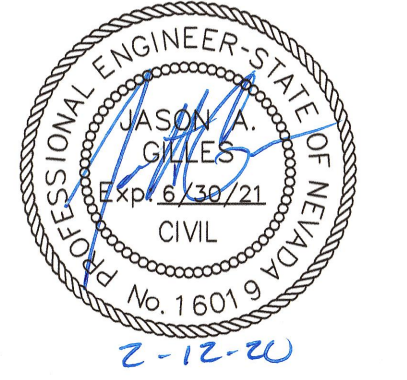
**BASIS OF ELEVATION**  
BASIS OF ELEVATIONS IS THE RENO DATUM, NAVD 1988



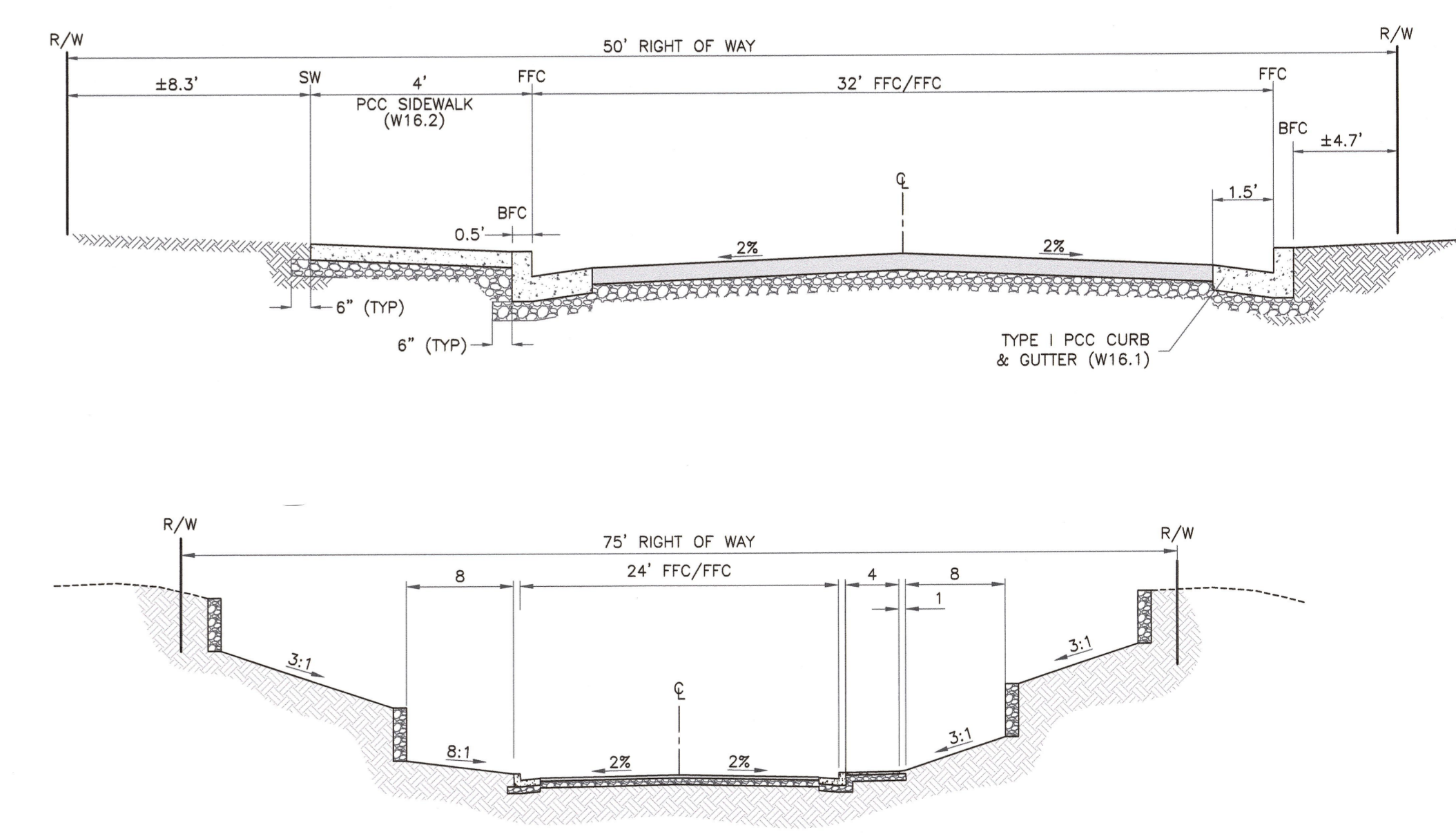
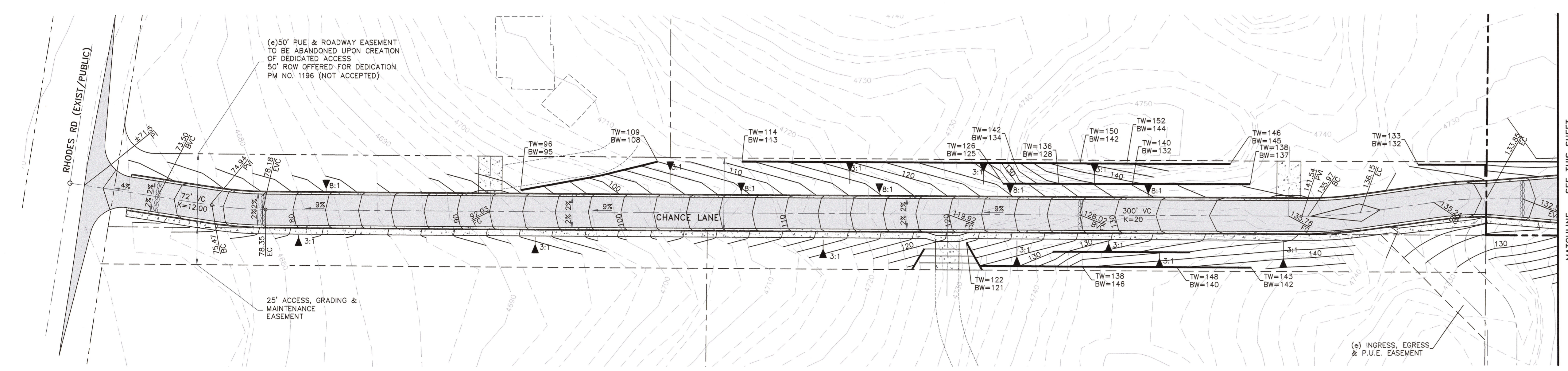
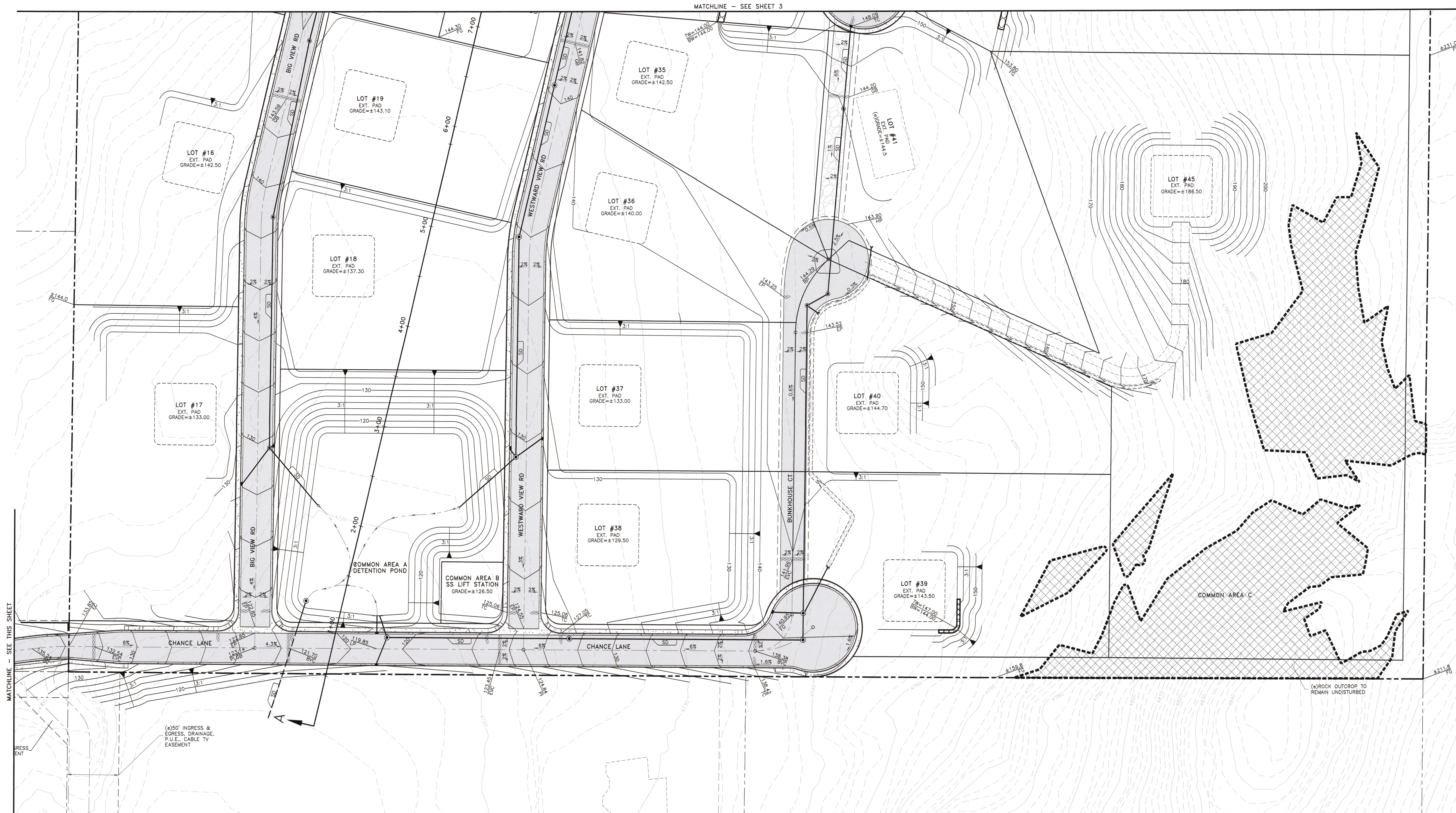
## PRELIMINARY GRADING PLAN SHEET 3 of 7



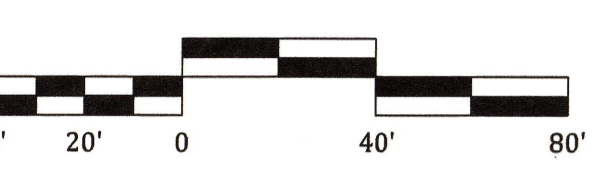
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SCALE: 1"=40'  
JOB #: PLY-001



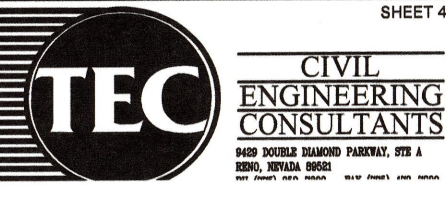
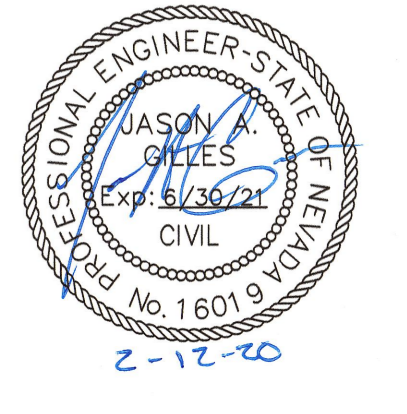
# PLEASANT VALLEY ESTATES TENTATIVE MAP



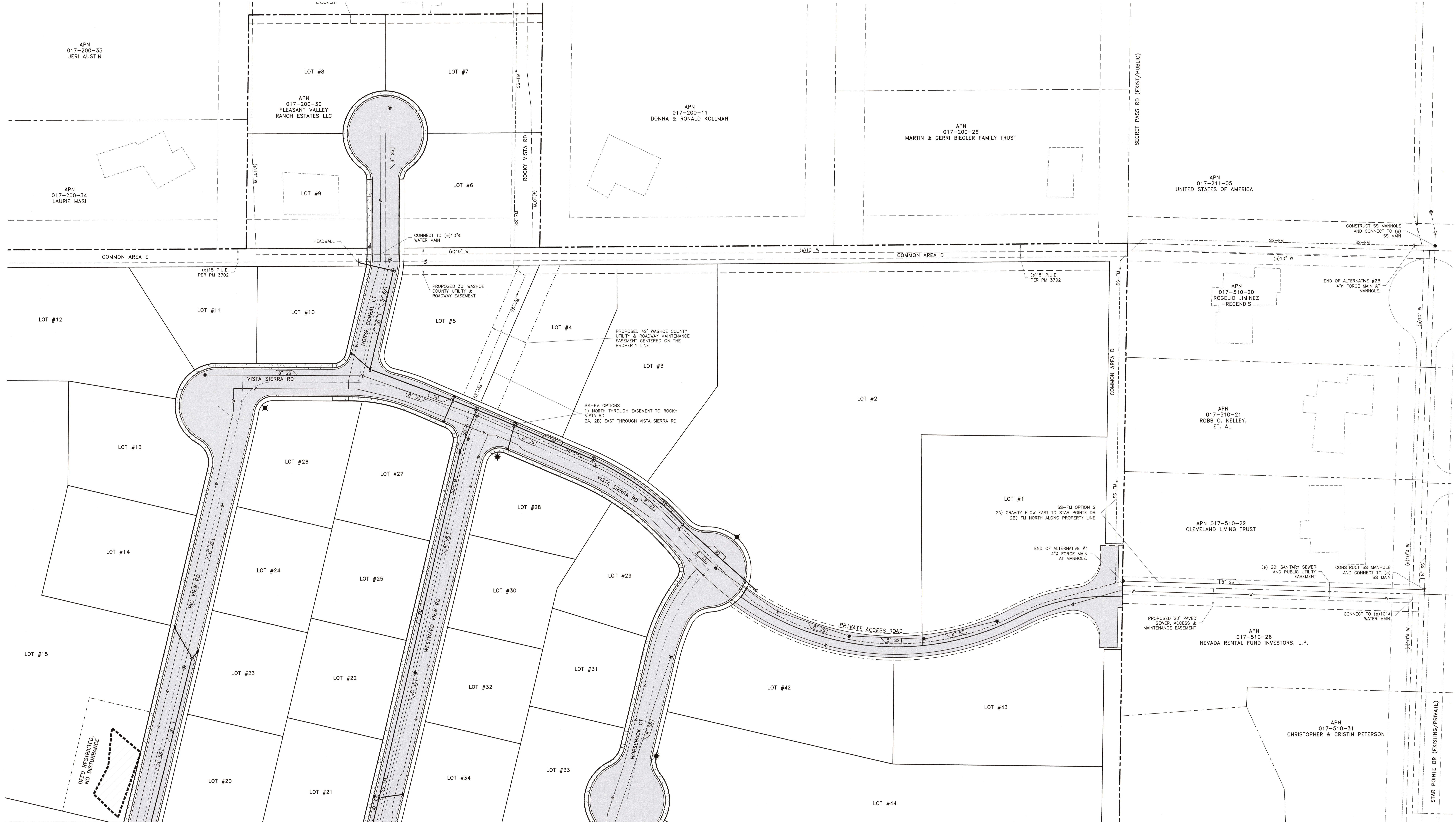
## PRELIMINARY GRADING PLAN SHEET 4 of 7



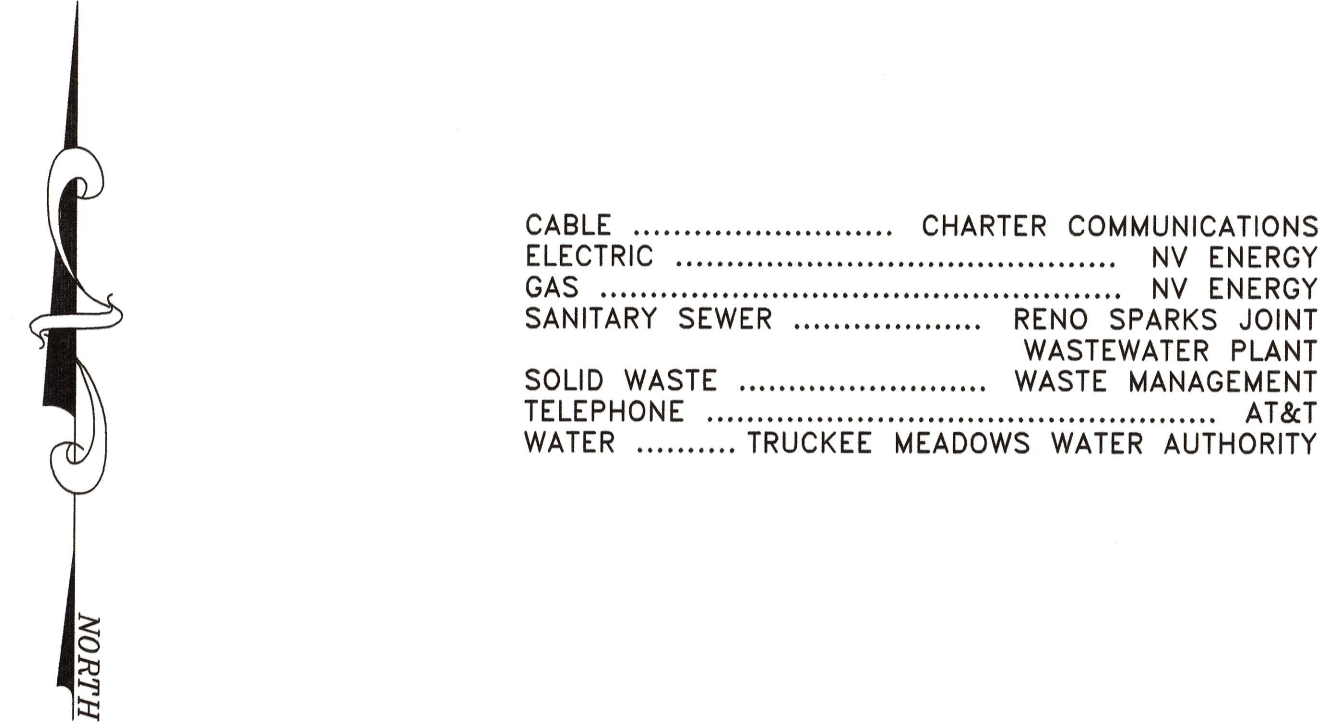
DATE: 2/6/2020  
 SCALE: 1"=40'  
 JOB #: FRY.001



# PLEASANT VALLEY ESTATES TENTATIVE MAP

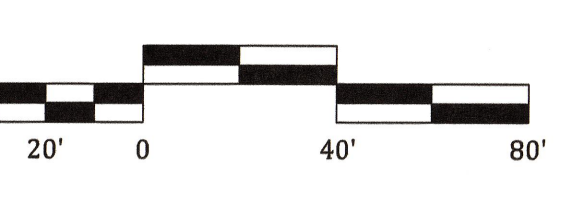


MATCHLINE - SEE SHEET 6



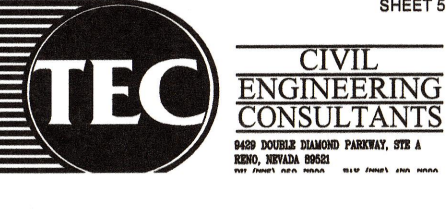
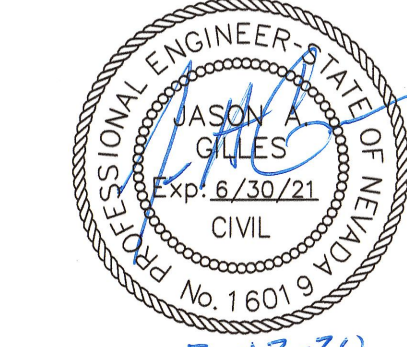
**NOTES:**

- 1) ALL PROPOSED WATER TO BE OWNED AND MAINTAINED BY TRUCKEE MEADOWS WATER AUTHORITY.
- 2) ALL PROPOSED SEWER TO BE PUBLICLY OWNED AND MAINTAINED.
- 3) ALL PROPOSED STORM DRAIN TO BE PUBLICLY OWNED AND MAINTAINED. (UNLESS OTHERWISE NOTED)



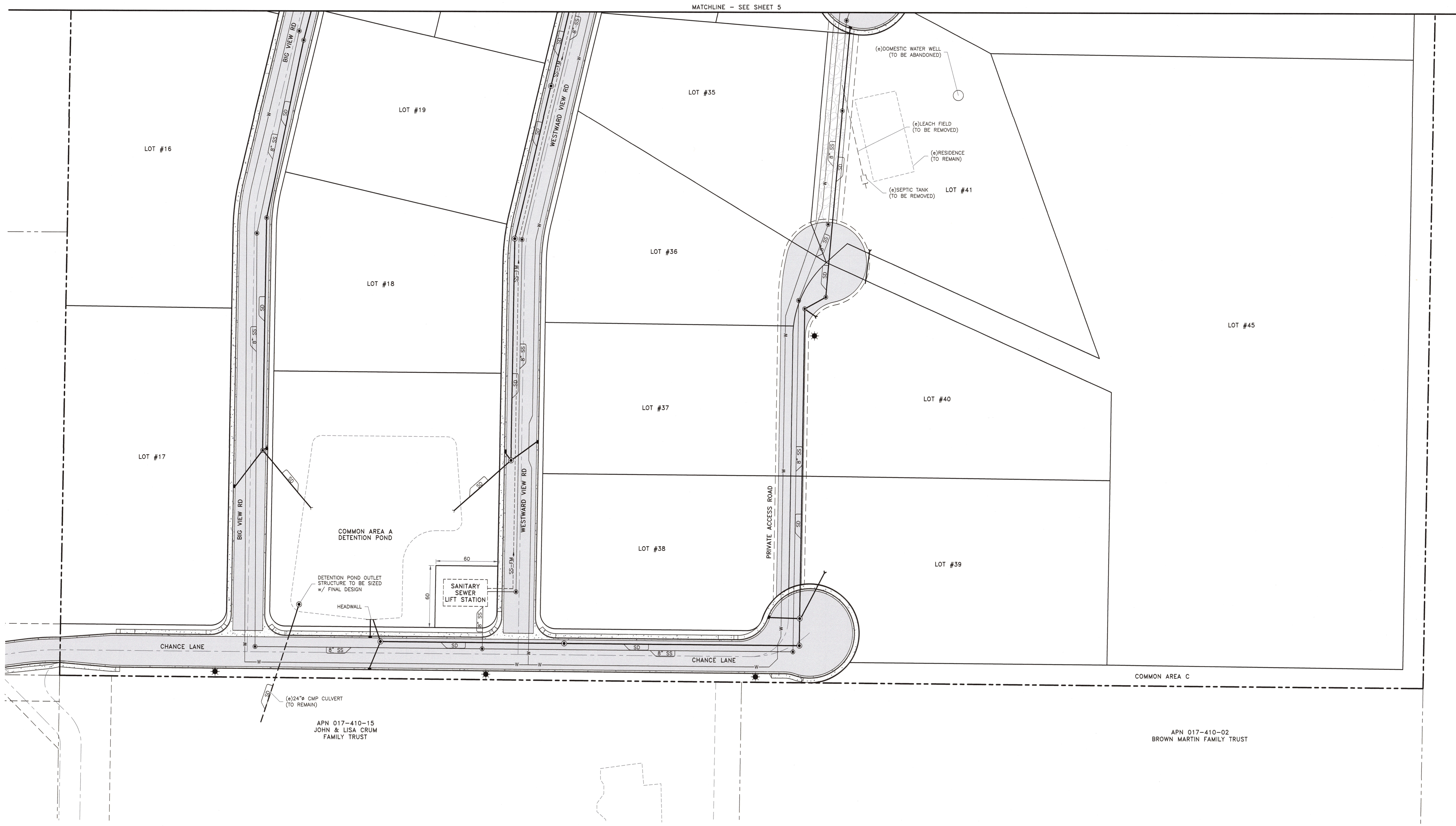
## PRELIMINARY UTILITY PLAN SHEET 5 of 7

DATE: 2/6/2020  
SCALE: 1"=40'  
JOB #: FRY.001

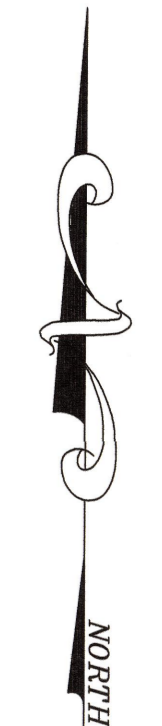




# PLEASANT VALLEY ESTATES TENTATIVE MAP



MATCHLINE - SEE SHEET 5



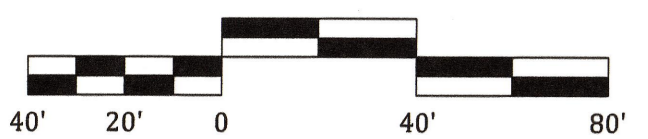
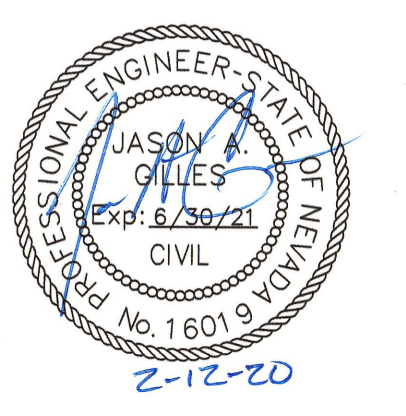
- NOTES:**
- 1) ALL PROPOSED WATER TO BE OWNED AND MAINTAINED BY TRUCKEE MEADOWS WATER AUTHORITY.
  - 2) ALL PROPOSED SEWER TO BE PUBLICLY OWNED AND MAINTAINED.
  - 3) ALL PROPOSED STORM DRAIN TO BE PUBLICLY OWNED AND MAINTAINED. (UNLESS OTHERWISE NOTED)

**LEGEND**

	PROJECT BOUNDARY
	PROPOSED PROPERTY LINE/ RIGHT OF WAY
	EXISTING LOT LINE
	PROPOSED SANITARY SEWER (DASHED IF EXISTING)
	PROPOSED STORM DRAIN (DASHED IF EXISTING)
	PROPOSED WATER MAIN (DASHED IF EXISTING)
	MANHOLES (HOLLOW IF EXISTING)
	CATCH BASIN
	CENTERLINE
	PROPOSED ASPHALT ROADS
	PROPOSED GRAVEL AREAS
	PROPOSED STREET LAMP

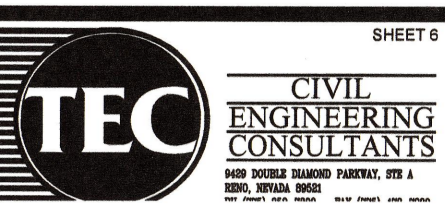
APN 017-410-15  
JOHN & LISA CRUM  
FAMILY TRUST

APN 017-410-02  
BROWN MARTIN FAMILY TRUST



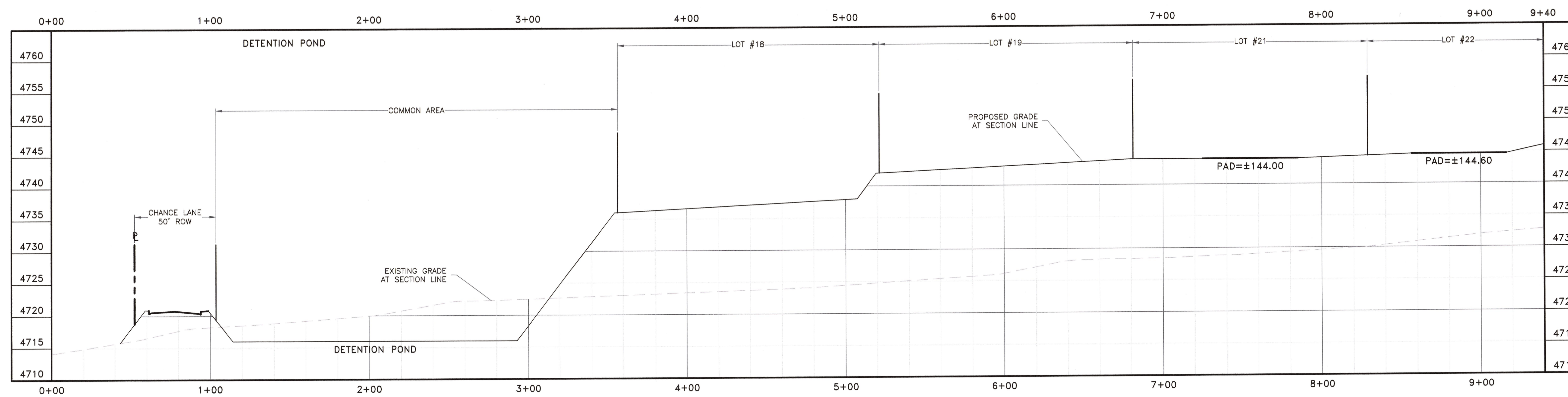
## PRELIMINARY UTILITY PLAN SHEET 6 of 7

DATE: 2/6/2020  
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JOB #: PRV-001



# PLEASANT VALLEY ESTATES TENTATIVE MAP

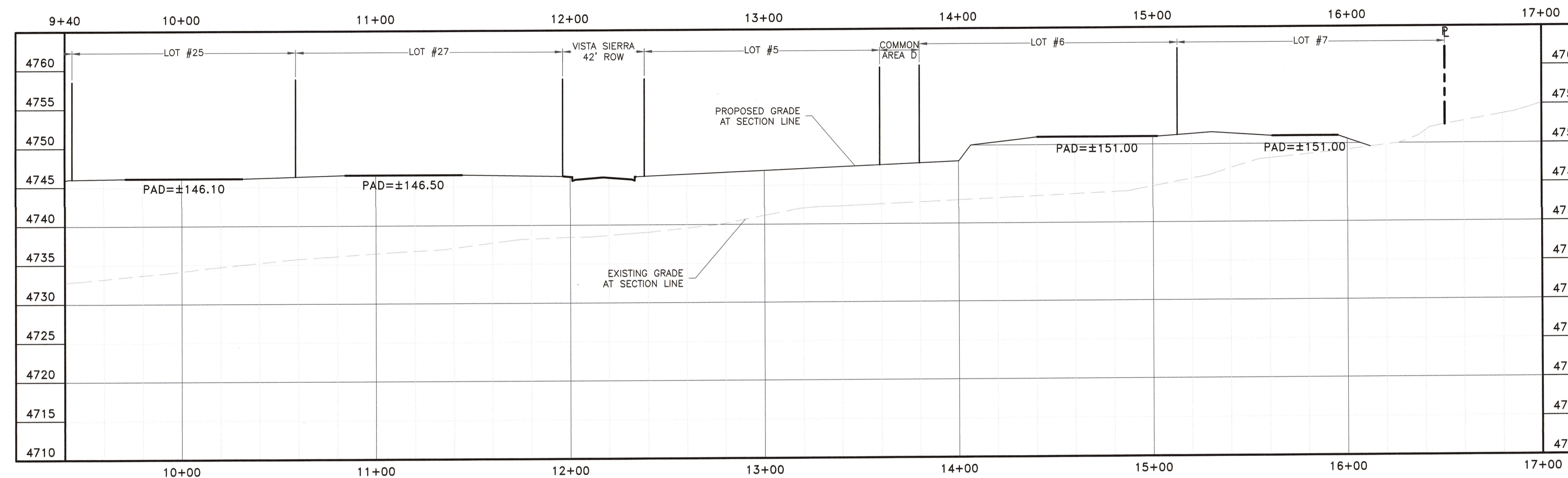
## SECTION A-A



HORIZONTAL SCALE  
1"=40'

VERTICAL SCALE  
1"=10'

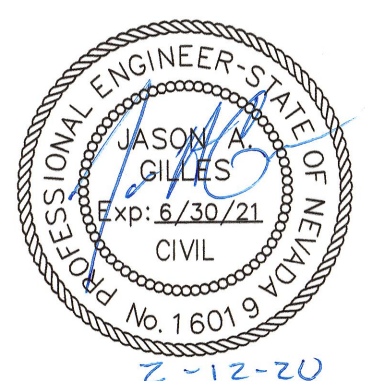
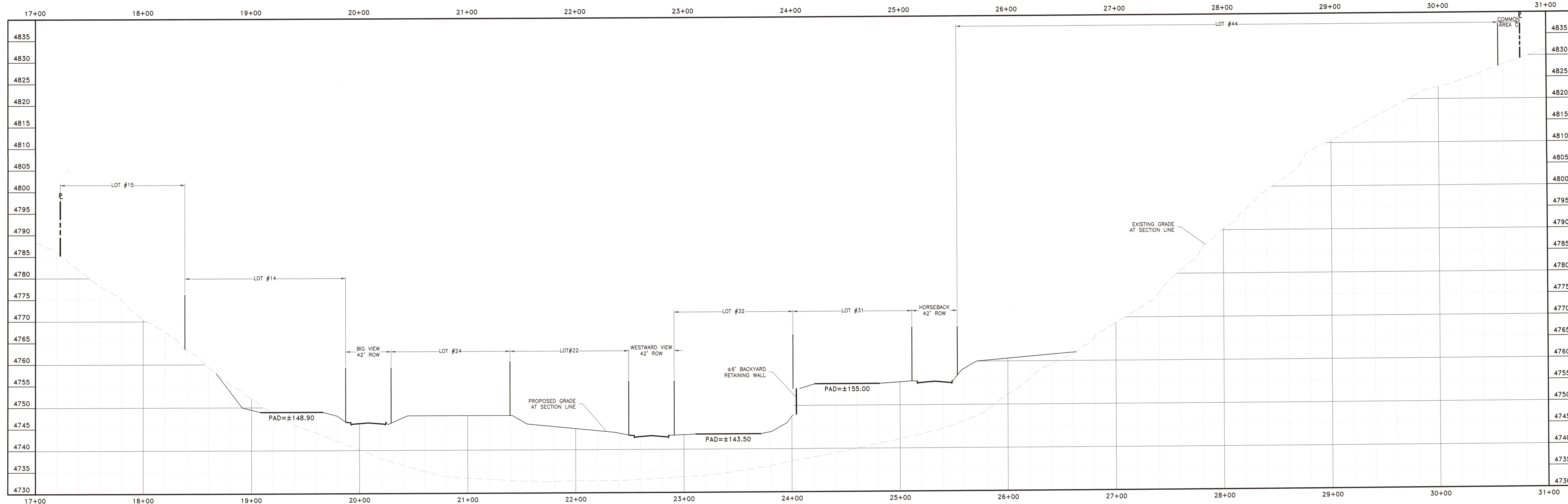
## SECTION A-A



### LEGEND

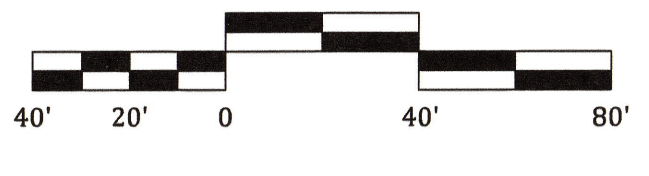
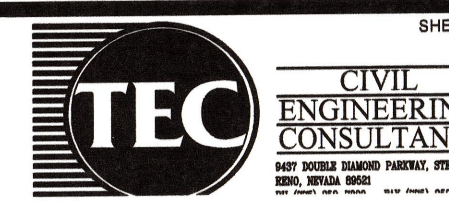
- PROJECT BOUNDARY
- LOT LINES
- - - EXISTING GROUND

## SECTION B-B



## PRELIMINARY CROSS-SECTIONS SHEET 7 of 7

DATE: 02/6/2020  
SCALE: 1"=40'  
JOB #: FRY.01



PRELIMINARY SANITARY SEWER REPORT

TO SUPPORT THE

TENTATIVE MAP FOR THE  
PLEASANT VALLEY ESTATES  
RESIDENTIAL SUBDIVISION

PREPARED FOR:

PLEASANT VALLEY RANCH ESTATES LLC  
301 FLINT STREET RENO, NV 89501



PREPARED BY:



CIVIL  
ENGINEERING  
CONSULTANTS

JOB #: FRY001  
DATE: JANUARY 28<sup>TH</sup>, 2020

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5.1.1. Route #1.....	2
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## 1. Introduction

This Preliminary Sanitary Sewer Analysis was prepared to support the Tentative Map for the Pleasant Valley Estates Residential Subdivision. Pleasant Valley Estates spans across three existing parcels of land with a cumulative area of approximately 41.34 acres (Assessor's Parcel Numbers (APNs): 017-200-30, 017-410-38 and 39). APN 017-200-30 is located in the southeastern ¼ of the southwestern ¼ of Section 34, Township 18 North, Range 20 East. APNs 017-410-38 & 39 are located in the northeastern ¼ of the northwestern ¼ of Section 3, Township 17 North, Range 20 East. Pleasant Valley Estates is a 45-lot residential subdivision which has a surrounding area that consists primarily of single-family residential homes. The location of the project is depicted in Figure 1 (Vicinity Map).

## 2. Project Area

The site generally slopes from north to south at an approximate grade of 2.2%. The onsite sewer infrastructure will not convey any offsite sanitary sewer flows. No special areas or large flow commercial uses are located on or adjacent to the project site. All sewage to be generated is domestic use.

## 3. Methodology

Sanitary sewer flows were estimated utilizing the design criteria in Chapter 2 (Gravity Sewer Collection Design Standards) of the Washoe County Department of Water Resources, Engineering Design Standards. Peak flows for the mains were estimated at 270-gallons per day (GPD) per capita with 3-capita per dwelling unit (±810-gallons/day/dwelling unit). The Manning's equation was utilized to determine the capacities of the sanitary sewer mains, and a roughness ( $n$ ) of 0.012 for the PVC pipes to determine the capacities and velocities of the sanitary sewer mains.

Manning's Equation

$$Q = \frac{1.49}{n} * A * R^{\frac{2}{3}} * S^{\frac{1}{2}}$$

- Q = Capacity of pipe (ft<sup>3</sup>/s)
- n = Manning's runoff coefficient (unitless)- n = 0.012 for all proposed pipes
- A = Cross-sectional area of the pipe (ft<sup>2</sup>)
- R = Hydraulic radius of the pipe (ft)
- S = Slope of pipe (ft/ft)

## 4. Existing Sanitary Sewer System

### 4.1. Layout

As indicated in Figure 2, the nearest existing sanitary sewer main is located to the east of the site within Star Pointe Drive. This sanitary sewer main conveys sewage north along Star Pointe Drive

to Secret Pass Road. The sanitary sewer main then extends north along Secret Pass Drive to Big Smokey Drive. The sanitary sewer main then extends westerly along Big Smokey Drive to Sylvester Road. The sanitary sewer main flows northerly along Sylvester Road away from the project. Per the Washoe County Regional Mapping System Website, the 8-inch diameter sanitary sewer mains convey the sewage northwesterly towards the crossing of Geiger Grade Road prior to upsizing to a 12-inch diameter trunk main. (Figure 4)

#### **4.2. Capacity**

The existing sanitary sewer mains are listed in the Washoe County Regional Mapping System Website as 8-inch diameter sanitary sewer mains. The existing sanitary sewer main slopes were also obtained from this website. The existing sanitary sewer main capacities vary with a minimum capacity (slope=0.25%) of 0.212-million gallons per day (MGD). This 0.25% slope is less than that currently required by Washoe County (0.5%) for an 8-inch diameter sanitary sewer main.

### **5. Proposed Sanitary Sewer System**

#### **5.1. Layout**

The proposed sanitary sewer system will consist of 8-inch diameter PVC sanitary sewer mains and 4-inch diameter PVC sanitary sewer laterals. The proposed sanitary sewer mains will convey sewage to the southern end of the property to a future lift station located within the common area south of Lot #18. The proposed lift station will pump the sewage north along Westward View Road to 1 of 3 potential routes.

##### **5.1.1. Route #1**

The first potential route is to pump the sewage north along Westward View Road along Rocky Vista Road to Node A (Figure 2). From this point the sewage would gravity flow via a proposed 8-inch diameter sanitary sewer system northerly to Big Smokey Drive then easterly to the existing sanitary sewer manhole located at the intersection of Big Smokey Drive and Sylvester Road.

##### **5.1.2. Route #2**

The second potential route is to pump the sewage north along Westward View Road to the proposed Vista Sierra Road then easterly along Vista Sierra Road to the eastern boundary of the project (Node B, Figure 2). From this point, the sewage would then flow via a proposed 8-inch diameter sanitary sewer main easterly into the existing sanitary sewer main located in Star Pointe Drive.

##### **5.1.3. Route #3**

The third potential route is to pump sewage similar to Route #2. However, the force main is further extended north along the easterly boundary of the site to the northeast corner of the subject property. At this point the force main extends easterly towards Star Pointe Drive where

it terminates at a proposed sanitary sewer manhole (Node C, Figure 2). An 8-inch diameter sanitary sewer main will extend from this proposed manhole easterly and connect to the existing sanitary sewer main located in Star Pointe Drive.

An overview of the proposed site layout and sanitary sewer system is presented in Figure 3. The approximate Node locations for each sewer route are further identified in Figure 2.

## 5.2. Proposed Sewage Demands

The proposed 45-lot subdivision is anticipated to generate 36,450 gallons per day (0.036 million gallons per day (MGD)) peak flow. The project site consists of homes, as such estimated peak flows are assumed to be that of single family residential dwelling units.

The following assumptions were made:

- 45-lot subdivision
- 1 home = 1 dwelling unit
- Single Family Residential assumption per Chapter 2 = 3.0 capita/dwelling unit
- 270 gallons per capita per day (peak flow) \* 3.0 = ±810 gallons/day per dwelling unit (peak flow)

$$45 \text{ Dwelling Units} * 3 \frac{\text{Capita}}{\text{Dwelling Unit}} * 270 \frac{\text{gpd}}{\text{Capita}} = 36,450 \text{ gpd (0.036 - MGD)}$$

## 5.1. Capacity

The future sanitary sewer mains were assumed to have slopes approximately equal to their respective street grades with a minimum slope of 0.5%. Assuming a sanitary sewer main was constructed with PVC pipe at a minimal slope of 0.5%, it would have a minimum capacity of 0.299 million gallons per day (MGD) while flowing 50% full.

## 6. Discussion

All of the proposed sanitary sewer mains will be sized to convey the proposed peak sewage demand of approximately 0.036-MGD. The proposed sanitary sewer lift station and associated force mains will also be sized to convey the proposed sewage flows. Regardless of which sanitary sewer route is ultimately constructed, all of the sewage generated will be added to the existing sanitary sewer main located in Sylvester Road and all of its downstream mains.

As previously discussed, the sanitary sewer mains in Sylvester Road and downstream are 8-inch diameter until the main diameter increases to a 12-inch diameter trunk main. The approximate location of the existing downstream sanitary sewer system and the location of the trunk main are indicated in Figure 4.

The flattest sanitary sewer main affected by the development of Pleasant Valley is listed on the Washoe Regional Mapping Website as 0.25%. As indicated in Figure 4, this sanitary sewer main is located upstream of the 12-inch diameter sanitary sewer trunk main. An 8-inch diameter sanitary sewer main with a slope of 0.25% has a half full capacity of approximately 0.212-MGD. This pipe is estimated to be approximately 64% full under existing conditions. The peak sewage rate (including Pleasant Valley) at this sanitary sewer main is estimated at 0.357-MGD which equates to the main being approximately 71% full.

This pipe is flatter than that required by Washoe County and appears to be incorrectly listed in the website. This length of the sanitary sewer main is most likely either steeper than what is listed or more likely this pipe is also 12-inches in diameter similar to the adjacent trunk main which would result in a half full capacity of approximately 0.624-MGD. In either case, this pipe will need to be surveyed with final design of this project to determine if the information listed in the website is accurate. If the information is accurately listed, upsizing of this sanitary sewer main may be required. Based upon the estimated peak flow rates and the information provided in the Washoe Regional Mapping Website, all of the other affected sanitary sewer mains will convey the proposed sewage while remaining less than half full.

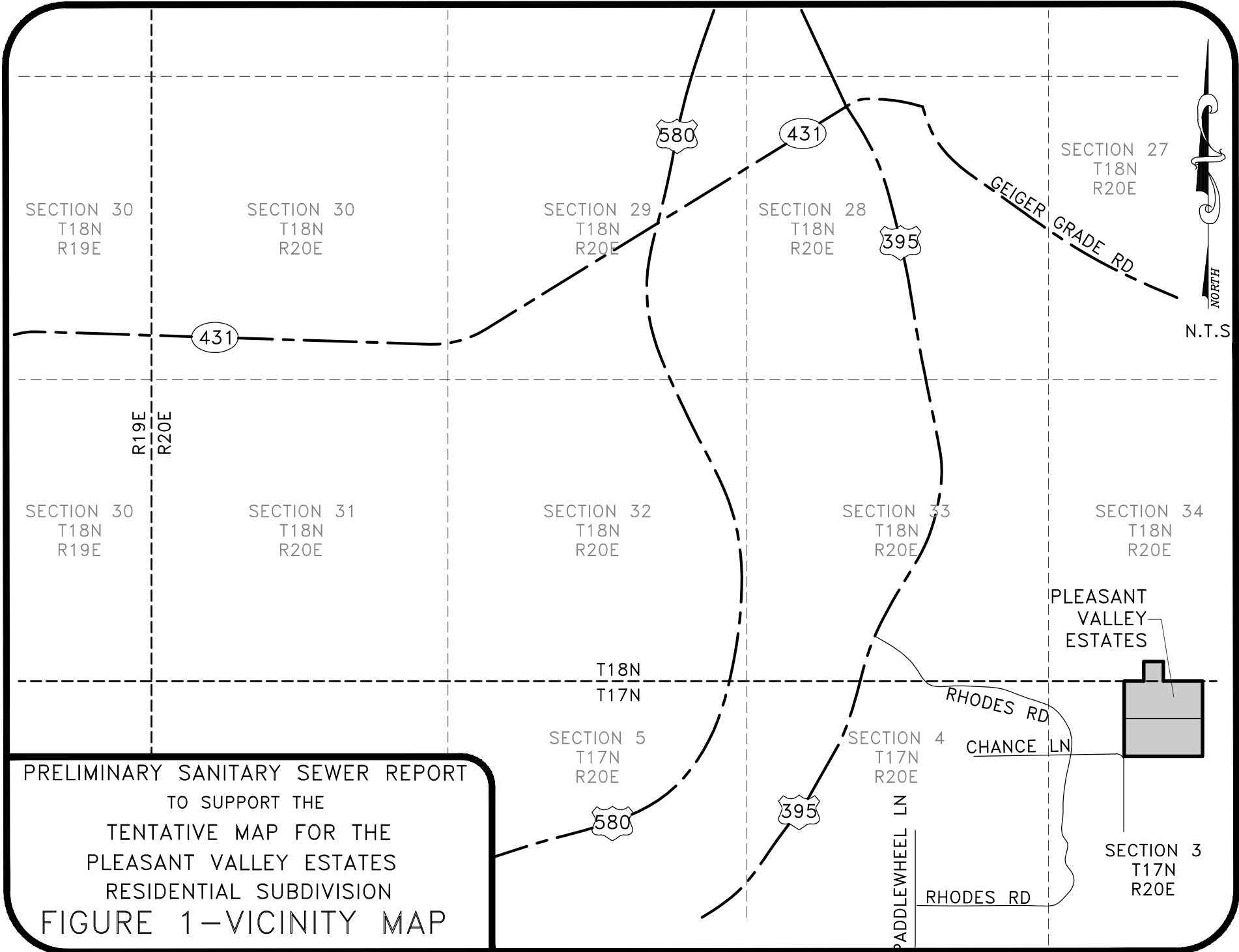
## **7. Summary/Conclusion**

The Pleasant Valley Tentative Map is a proposed 45-lot subdivision. The proposed sanitary sewer system will convey all of the generated sewage to a sanitary sewer lift station. The proposed lift station will convey the sewage to one of three potential locations where it will tie into the existing sanitary sewer system. All 3 points of connection are conveyed via the same portion of the existing sanitary sewer system. One existing sanitary sewer main may be undersized to accommodate the flows from either the existing or the future peak demands while remaining less than half full. This pipe will be surveyed to determine its existing diameter and slope to verify its capacity. Upsizing of this pipe may be required depending the results of this survey. Therefore, with the proposed development of this subdivision and the potential upsizing of the previously discussed offsite sanitary sewer main, no adverse effects are anticipated to the proposed or existing sanitary sewer systems.

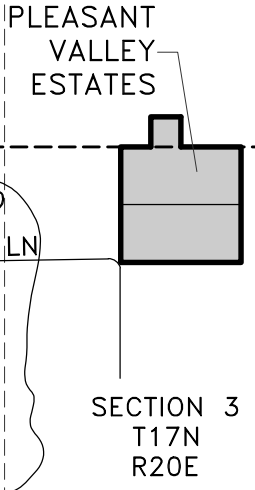


## **References**

- Washoe County Engineering Design Standards, Chapter 2- Gravity Sewer Collection Design Standards, March, 2016.



PRELIMINARY SANITARY SEWER REPORT  
 TO SUPPORT THE  
 TENTATIVE MAP FOR THE  
 PLEASANT VALLEY ESTATES  
 RESIDENTIAL SUBDIVISION  
 FIGURE 1-VICINITY MAP





**OPTION A**

±1,850 LF FORCE MAIN  
±345 LF GRAVITY MAIN

APPROXIMATE SEWAGE LIFT  
=±90 FEET

**OPTION B**

±1,283 LF FORCE MAIN  
±504 LF GRAVITY MAIN

APPROXIMATE SEWAGE LIFT  
=±120 FEET

**OPTION C**

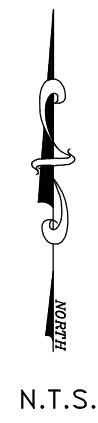
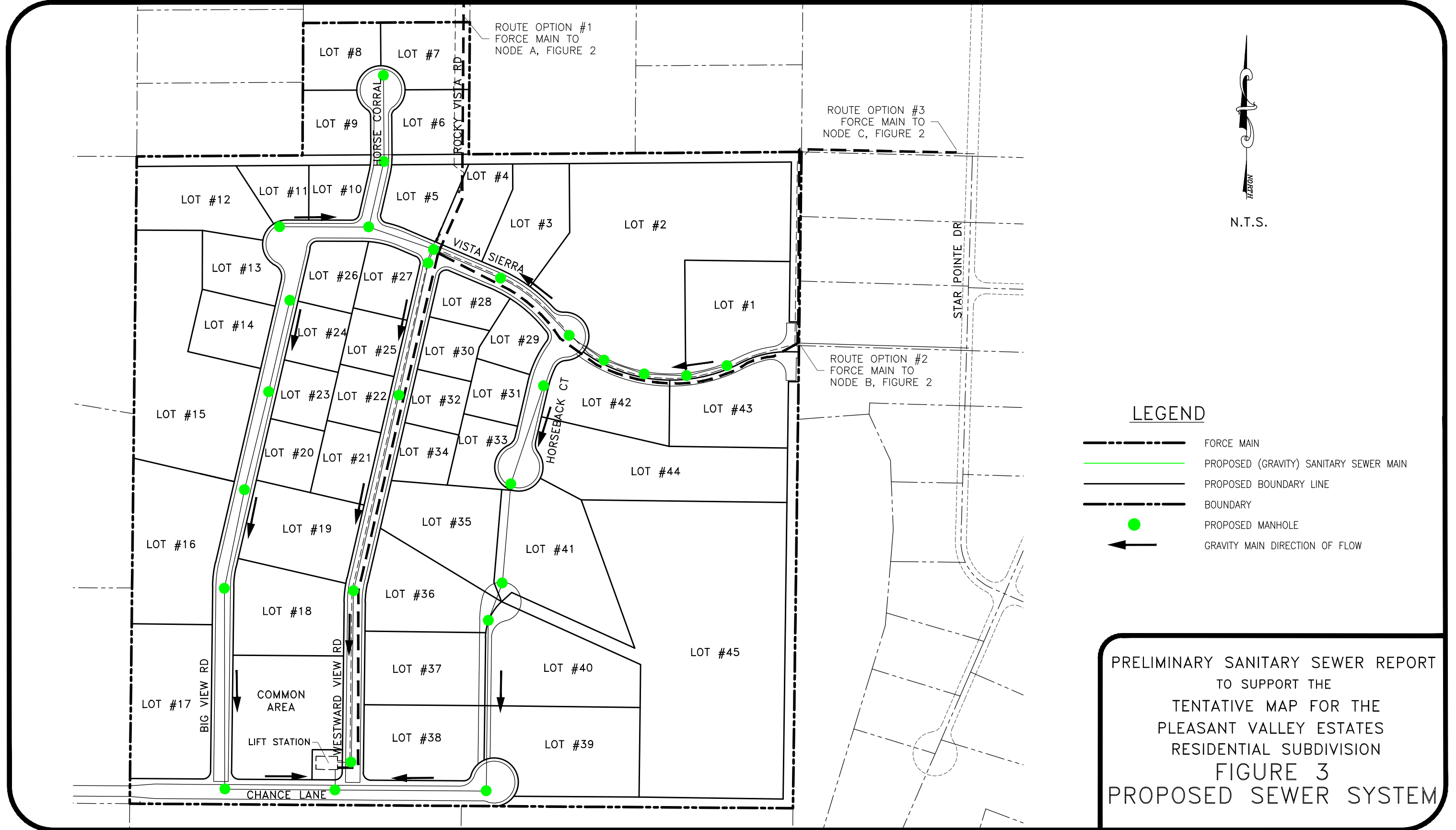
±2,005 LF FORCE MAIN  
±880 LF GRAVITY MAIN

APPROXIMATE SEWAGE LIFT  
=±62 FEET







**LEGEND**

 EXISTING SS MAIN (w/ DIRECTION OF FLOW)

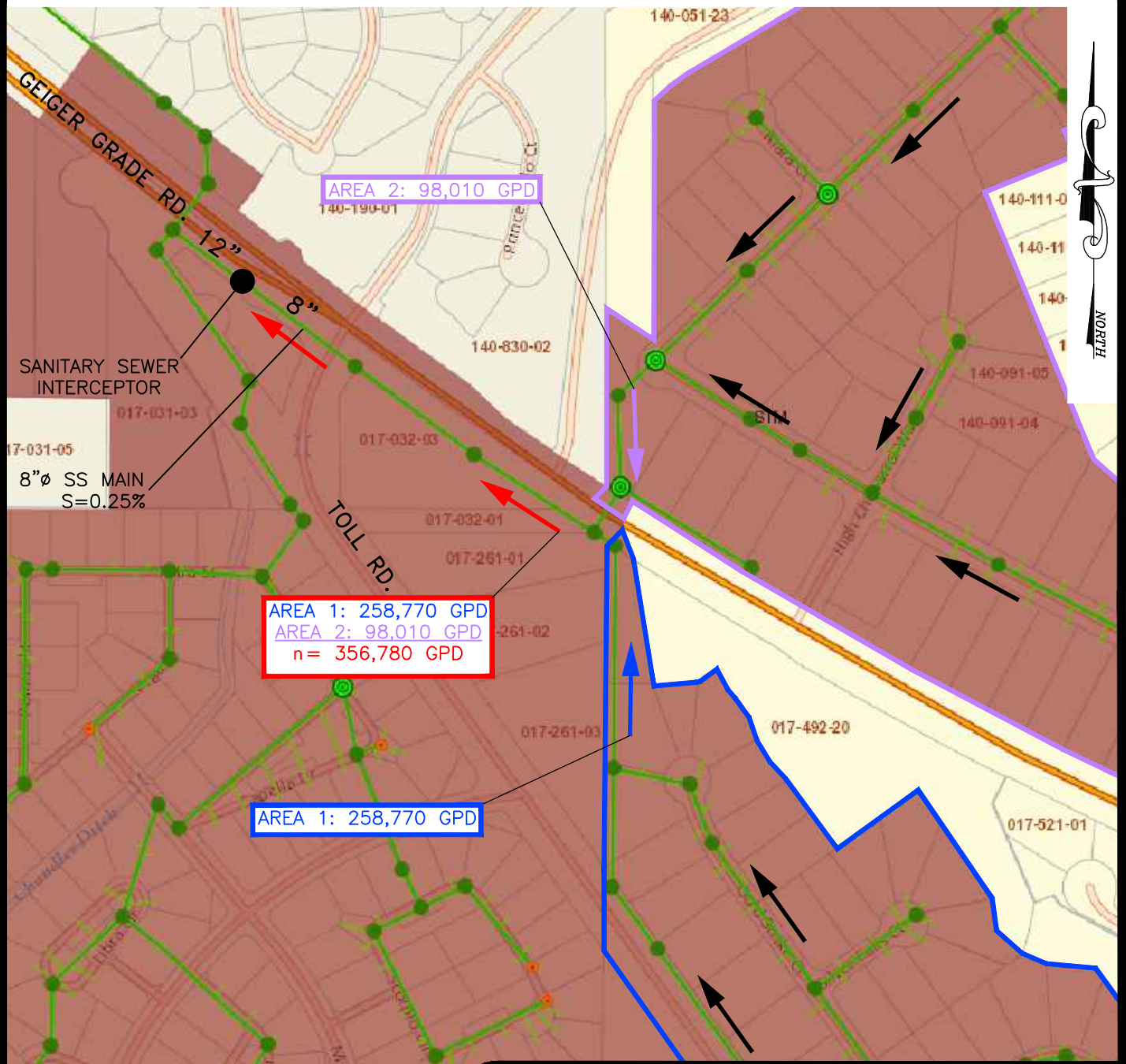
PRELIMINARY SANITARY SEWER REPORT  
TO SUPPORT THE  
TENTATIVE MAP FOR THE  
PLEASANT VALLEY ESTATES  
RESIDENTIAL SUBDIVISION  
**FIGURE 2**  
EXISTING SEWER SYSTEM



**LEGEND**

-  FORCE MAIN
-  PROPOSED (GRAVITY) SANITARY SEWER MAIN
-  PROPOSED BOUNDARY LINE
-  BOUNDARY
-  PROPOSED MANHOLE
-  GRAVITY MAIN DIRECTION OF FLOW

PRELIMINARY SANITARY SEWER REPORT  
 TO SUPPORT THE  
 TENTATIVE MAP FOR THE  
 PLEASANT VALLEY ESTATES  
 RESIDENTIAL SUBDIVISION  
**FIGURE 3**  
**PROPOSED SEWER SYSTEM**



**LEGEND**

-  AREA 1
-  AREA 2
-  FLOW DIRECTION

PRELIMINARY SANITARY SEWER REPORT  
 TO SUPPORT THE  
 TENTATIVE MAP FOR THE  
 PLEASANT VALLEY ESTATES  
 RESIDENTIAL SUBDIVISION  
 FIGURE 4  
 CONTRIBUTING AREAS

**PRELIMINARY HYDROLOGY REPORT**

**TO SUPPORT THE**

**PLEASANT VALLEY ESTATES  
TENTATIVE MAP**

**PREPARED FOR:**

**PLEASANT VALLEY ESTATES, LLC  
301 FLINT ST  
RENO NV 89501**



**PREPARED BY:**



**CIVIL  
ENGINEERING  
CONSULTANTS**

**JOB #: FRY001  
DATE: JANUARY 28<sup>TH</sup>, 2020**

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Figure 3: Proposed Drainage Basins.....APPENDIX B

## 1. **Introduction**

### 1.1. **Project Site**

The proposed ±41.34-acre subdivision will be located east of Rhodes Road in Washoe County. The project is located in the NW ¼ of Section 3, Township 17N, Range 20E, and SW ¼ of Section 34, Township 18N, Range 20E, in Assessor's Parcel Numbers (APNs) 017-200-30, 017-410-38, and 017-410-39. The exact location of the site is indicated in Figure 1 (Vicinity Map).

### 1.2. **Flood Zone**

The project is located in the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) 32031C3263G and 32031C3351G. The Panel is listed in the FEMA FIRM Index Map as being entirely within an Unshaded Flood Zone X (areas determined to be outside the 500-year flood plain) according to the FEMA National Flood Insurance Program. The maps are provided in the appendix.

### 1.3. **Methodology**

For drainage basins that are not complex and have small drainage areas, the design storm runoff may be analyzed using the Rational Method in accordance with Truckee Meadows Regional Drainage Manual Section 304.3. The Rational Formula Method is based on the formula:

$$Q = CIA$$

where,  $Q$  = maximum rate of runoff (cfs);  
 $C$  = runoff coefficient;  
 $I$  = average intensity of rainfall (inches/hour); and  
 $A$  = contributing basin area (acres).

The detention pond was sized using the Rational Method.

#### 1.3.1. **Rainfall Intensity**

The rainfall intensity,  $I$ , is the average rainfall rate in inches per hour for the period of maximum rainfall of a given frequency having a duration equal to the time of concentration. NOAA Atlas 14 is to be used for rainfall data.

#### 1.3.2. **Time of Concentration (Tc)**

The time of concentration is the time required for water to flow from the hydraulically most distant part of the drainage area to the point under consideration. It was determined by utilizing the judgement of engineer on record. The time of concentration was calculated using the given formula:

$$t_c = t_i + t_t$$

where,  $t_c$  = time of concentration (minutes);  
 $t_i$  = initial, inlet, or overland flow time (minutes); and  
 $t_t$  = travel time in ditch, channel, gutter, storm sewer, etc. (minutes).

The Initial or overland flow time was calculated using the equation:



$$t_i = \frac{1.8(1.1 - R)L_0^{1/2}}{S^{1/3}}$$

where,  $t_i$  = initial or overland flow time (minutes);  
 $R$  = flow runoff coefficient;  
 $L_0$  = length of overland flow (feet, 500 feet maximum); and  
 $S$  = average overland basin slope (percent).

For the Rational Formula Method, the 5-year runoff coefficient,  $C_5$ , presented in Truckee Meadows Regional Drainage Manual Table 701 shall be used as the flow runoff coefficient,  $R$ .

The overland flow length,  $L_0$ , is generally defined as the length of flow over which the flow characteristics appear as sheet flow or very shallow flow in grassed swales.

The travel time in ditch, channel, gutter, storm sewer, etc. was calculated using the equation:

$$t_t = \frac{D}{V} \left( \frac{1}{60} \right)$$

where,  $t_t$  = ditch and gutter flow time (minutes);  
 $D$  = distance of travel (feet); and  
 $V$  = velocity (feet per second).

The minimum  $t_c$  in Washoe County for non-urban watersheds shall be 10 minutes.

The time of concentration for the first design point in an urbanized basin should not exceed the time of concentration calculated using the equation:

$$t_c = \frac{L}{180} + 10$$

where,  $t_c$  = time of concentration at the first design point in an urban watershed (minutes); and  
 $L$  = watershed length (feet).

For subsequent design points, the time of concentration is calculated by accumulating the travel times in downstream reaches. The minimum  $t_c$  for urbanized paved areas shall be 5 minutes and 10 minutes for vegetated landscape areas.

## **2. Existing Conditions**

### **2.1. Offsite Runoff**

Approximately 21.14 acres of offsite area drains through the existing site. To the northwest, there is a portion of a hill that is conveyed to and through the site. To the north, a saddle separates most of the drainage from the aforementioned hill. However, this saddle contributes approximately 11.88 acres of runoff to the site. To the west, several peaks separate the site from Rhodes Road. These peaks contribute approximately 0.47 acres of runoff to the site. There is no contributing runoff from the south of the site to the proposed project. The east property line runs along a ridge; as such, very little contributing offsite flows are anticipated from the east. Reference Figure 2 for existing basin delineation.

**2.2. Onsite Runoff**

The offsite flows contributing from the north, northwest, and west all flow to the middle of the site and are channelized. The channel then flows south to an existing 24” Corrugated Metal Pipe (CMP). The CMP 24” pipe crosses under an existing dirt driveway that runs east to west along the southern boundary, draining offsite to adjacent properties. Reference Figure 2 for existing basin delineation.

**2.3. Calculations**

The time of concentration was calculated to be 20.80-minutes. Interpolating between the 15 and 30-minute rainfall intensities, 1.10 and 2.66-inches/hour were calculated for the rainfall intensities for the 5 and 100-year storm event.

**Table 1: Existing Drainage Basins Hydrology**

AREA	RUNOFF COEFFICIENT (C)		RAINFALL INTENSITY (i)		AREA (A) (ACRES)	PEAK RUNOFF RATE (Q)=CiA (FT <sup>3</sup> /SEC)	
	(UNITLESS)	(UNITLESS)	(INCHES/HR)			5-YEAR	100-YEAR
	5-YEAR	100-YEAR	5-YEAR	100-YEAR			
EX-1	0.05	0.30	1.10	2.66	63.54	3.49	50.70
<b>C=0.05 (5-YEAR STORM, OPEN SPACE)</b> <b>C= 0.30 (100-YEAR STORM, OPEN SPACE)</b>							

As indicated in Table 1, approximately 3.49-cfs and 50.70-cfs of peak runoff are currently generated by the 5 and 100-year storm events, respectively.

**3. Proposed Runoff Conditions**

**3.1. Offsite Runoff**

Flow from the north will be captured via storm drain and curb and gutter. The flow from the northwest will be captured with an eight-foot V-ditch that runs along the northern boundary of the property. This V-ditch will then direct the offsite runoff to a storm drain inlet. The storm drain inlet will be connected to the site’s storm drain infrastructure. Reference Figure 3 for the proposed basin delineation.

**3.2. Onsite Runoff**

Storm drain infrastructure will be located throughout the site to maintain proper drive-isles and prevent flooding. The storm drain infrastructure will convey the runoff to a detention pond on the south side of the site. With final design, a detention pond outlet structure will be designed to meter flows out at existing rates. The metered flows will be conveyed to historic locations. Reference Figure 3 for the proposed basin delineation.

**3.3. Calculations**

The proposed conditions were analyzed similarly to the existing conditions. The same drainage basin was utilized, but with a different time of concentration, rainfall intensity, and roughness coefficient. The time of concentration was shortened to 11.28 minutes. This changed the rainfall intensities to 1.45 and 3.53-

inches/hour for the 5 and 100-year storm event, respectively. The C-values were altered by creating a weighted average of open space, 1/2 acre lots, and impervious concrete and asphalt.

**Table 2: Proposed Drainage Basins Hydrology**

AREA	RUNOFF COEFFICIENT (C)		RAINFALL INTENSITY (i)		AREA (A)  (ACRES)	PEAK RUNOFF RATE (Q)=CiA  (FT <sup>3</sup> /SEC)	
	(UNITLESS)	(UNITLESS)	(INCHES/HR)			5-YEAR	100-YEAR
	5-YEAR	100-YEAR	5-YEAR	100-YEAR	5-YEAR	100-YEAR	
BASIN 1	0.30	0.48	1.45	3.53	63.54	27.64	107.66
<b>C=0.30 (5-YEAR STORM, WEIGHTED C-VALUE)</b> <b>C= 0.48 (100-YEAR STORM, WEIGHTED C-VALUE)</b>							

As indicated in Table 2, approximately 24.88 and 100.93-cfs of peak runoff are generated onsite during the 5 and 100-year storm events, respectively.

### 3.4. Detention Pond Volume and Discharge

As shown in Table 3, the increase in peak runoff rates are estimated to be 21.39 and 50.23-cfs for the 5 and 100-year storm events, respectively. Detention volume is calculated by multiplying the time of concentration by the peak flows of the proposed and existing conditions, and then finding the difference between the two. The detention volume required has been calculated to be approximately 14,351-cubic feet. The provided detention volume allotted is approximately 48,376-cubic feet. The volume provided has a factor of safety of 3.3. Detention summary calculations can be seen in Table 3. The excess runoff volume will be captured via a detention pond located on the south side of the site. Runoff from the site will be restricted through the use of a detention structure that will be sized with final design. The existing 24" CMP culvert will then be utilized to convey the restricted flow as existing conditions did previously.

**Table 3: Detention Summary**

AREA	PEAK RUNOFF RATE		TIME OF CONCENTRATION  (MIN)	Volume	
	(FT <sup>3</sup> /SEC)	(FT <sup>3</sup> /SEC)		(FT <sup>3</sup> )	(FT <sup>3</sup> )
	5-YEAR	100-YEAR	5-YEAR	100-YEAR	
ENTIRE-EX	3.49	50.70	20.8	4,355.52	63,273.60
ENTIRE-PRO	27.64	107.66	11.28	18,706.75	72,864.29
<b>TOTAL DIFFERENCE</b>				14,351.23	9,590.69

## 4. Discussion/ Conclusions

The Pleasant Valley Estates Tentative map is a ±41.34-acre subdivision located east of Rhodes Road in Washoe County. Currently, runoff through the site flows from north to south and is captured and carried offsite via a 24" CMP pipe. The proposed site will utilize storm drain pipes, inlets, manholes, V-ditches, drainage swales, and a detention pond at 24" CMP to convey and manage the predicted stormwater. The subdivision is anticipated to increase stormwater runoff and volume. The increase in runoff will be captured, detained, and metered out at historic rates with the use of a detention pond and outlet structure, which will be appropriately sized with final design. As such, no adverse hydrologic effects are anticipated due to the development of this project site.

**References**

- *Truckee Meadows Regional Drainage Manual* dated April, 2009

# APPENDIX A

# APPENDIX B



**NOAA Atlas 14, Volume 1, Version 5**  
**Location name: Reno, Nevada, USA\***  
**Latitude: 39.3729°, Longitude: -119.7263°**  
**Elevation: 4752.21 ft\*\***



\* source: ESRI Maps  
 \*\* source: USGS

**POINT PRECIPITATION FREQUENCY ESTIMATES**

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Tryppaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF\\_tabular](#) | [PF\\_graphical](#) | [Maps\\_&\\_aerials](#)

**PF tabular**

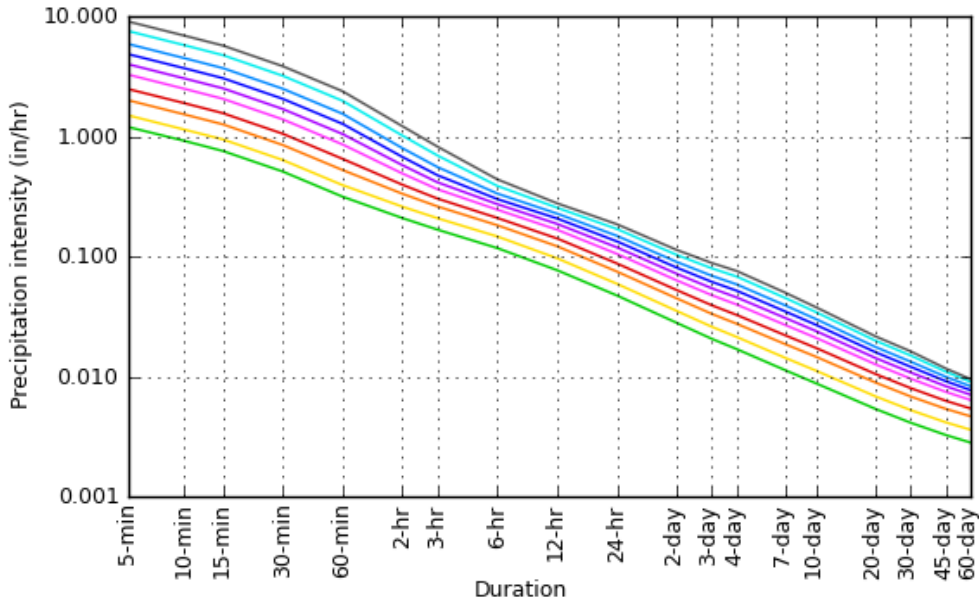
<b>PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)<sup>1</sup></b>										
<b>Duration</b>	<b>Average recurrence interval (years)</b>									
	<b>1</b>	<b>2</b>	<b>5</b>	<b>10</b>	<b>25</b>	<b>50</b>	<b>100</b>	<b>200</b>	<b>500</b>	<b>1000</b>
<b>5-min</b>	<b>1.20</b> (1.03-1.42)	<b>1.50</b> (1.28-1.78)	<b>2.00</b> (1.70-2.39)	<b>2.48</b> (2.10-2.95)	<b>3.28</b> (2.69-3.91)	<b>4.00</b> (3.18-4.84)	<b>4.85</b> (3.73-5.95)	<b>5.89</b> (4.36-7.38)	<b>7.55</b> (5.26-9.74)	<b>9.06</b> (6.01-12.0)
<b>10-min</b>	<b>0.918</b> (0.786-1.08)	<b>1.14</b> (0.978-1.36)	<b>1.52</b> (1.30-1.81)	<b>1.89</b> (1.60-2.24)	<b>2.49</b> (2.05-2.98)	<b>3.04</b> (2.42-3.68)	<b>3.69</b> (2.84-4.53)	<b>4.48</b> (3.31-5.61)	<b>5.74</b> (4.00-7.41)	<b>6.89</b> (4.58-9.10)
<b>15-min</b>	<b>0.756</b> (0.648-0.892)	<b>0.944</b> (0.808-1.12)	<b>1.26</b> (1.07-1.50)	<b>1.56</b> (1.32-1.86)	<b>2.06</b> (1.69-2.46)	<b>2.51</b> (2.00-3.04)	<b>3.05</b> (2.35-3.74)	<b>3.70</b> (2.74-4.64)	<b>4.74</b> (3.30-6.12)	<b>5.70</b> (3.78-7.52)
<b>30-min</b>	<b>0.510</b> (0.438-0.602)	<b>0.636</b> (0.544-0.754)	<b>0.848</b> (0.722-1.01)	<b>1.05</b> (0.890-1.25)	<b>1.39</b> (1.14-1.66)	<b>1.69</b> (1.35-2.05)	<b>2.05</b> (1.58-2.52)	<b>2.49</b> (1.84-3.12)	<b>3.19</b> (2.22-4.12)	<b>3.84</b> (2.55-5.06)
<b>60-min</b>	<b>0.315</b> (0.271-0.372)	<b>0.393</b> (0.337-0.466)	<b>0.525</b> (0.447-0.624)	<b>0.650</b> (0.551-0.773)	<b>0.857</b> (0.705-1.03)	<b>1.05</b> (0.834-1.27)	<b>1.27</b> (0.979-1.56)	<b>1.54</b> (1.14-1.93)	<b>1.98</b> (1.38-2.55)	<b>2.38</b> (1.58-3.13)
<b>2-hr</b>	<b>0.209</b> (0.184-0.242)	<b>0.260</b> (0.230-0.300)	<b>0.333</b> (0.290-0.384)	<b>0.396</b> (0.341-0.456)	<b>0.491</b> (0.412-0.570)	<b>0.576</b> (0.472-0.676)	<b>0.674</b> (0.538-0.804)	<b>0.798</b> (0.615-0.974)	<b>1.01</b> (0.748-1.29)	<b>1.22</b> (0.864-1.58)
<b>3-hr</b>	<b>0.167</b> (0.149-0.190)	<b>0.208</b> (0.187-0.238)	<b>0.261</b> (0.231-0.297)	<b>0.304</b> (0.267-0.346)	<b>0.363</b> (0.314-0.416)	<b>0.415</b> (0.353-0.480)	<b>0.475</b> (0.396-0.557)	<b>0.556</b> (0.453-0.661)	<b>0.694</b> (0.548-0.867)	<b>0.822</b> (0.633-1.06)
<b>6-hr</b>	<b>0.118</b> (0.105-0.132)	<b>0.147</b> (0.131-0.166)	<b>0.182</b> (0.161-0.206)	<b>0.210</b> (0.184-0.237)	<b>0.245</b> (0.213-0.280)	<b>0.273</b> (0.234-0.313)	<b>0.301</b> (0.254-0.349)	<b>0.334</b> (0.276-0.393)	<b>0.387</b> (0.312-0.462)	<b>0.439</b> (0.347-0.538)
<b>12-hr</b>	<b>0.077</b> (0.068-0.087)	<b>0.097</b> (0.086-0.109)	<b>0.122</b> (0.108-0.138)	<b>0.141</b> (0.124-0.160)	<b>0.167</b> (0.145-0.190)	<b>0.187</b> (0.160-0.215)	<b>0.207</b> (0.175-0.241)	<b>0.228</b> (0.189-0.268)	<b>0.255</b> (0.205-0.306)	<b>0.277</b> (0.219-0.338)
<b>24-hr</b>	<b>0.047</b> (0.043-0.053)	<b>0.059</b> (0.054-0.066)	<b>0.075</b> (0.068-0.084)	<b>0.088</b> (0.079-0.098)	<b>0.105</b> (0.094-0.117)	<b>0.119</b> (0.106-0.133)	<b>0.134</b> (0.117-0.150)	<b>0.149</b> (0.129-0.169)	<b>0.169</b> (0.145-0.194)	<b>0.186</b> (0.156-0.215)
<b>2-day</b>	<b>0.028</b> (0.025-0.032)	<b>0.035</b> (0.032-0.040)	<b>0.045</b> (0.040-0.051)	<b>0.053</b> (0.047-0.059)	<b>0.063</b> (0.056-0.072)	<b>0.072</b> (0.063-0.082)	<b>0.081</b> (0.070-0.093)	<b>0.090</b> (0.077-0.104)	<b>0.103</b> (0.086-0.121)	<b>0.113</b> (0.093-0.135)
<b>3-day</b>	<b>0.021</b> (0.019-0.023)	<b>0.026</b> (0.023-0.029)	<b>0.033</b> (0.030-0.037)	<b>0.039</b> (0.035-0.044)	<b>0.048</b> (0.042-0.054)	<b>0.054</b> (0.048-0.062)	<b>0.062</b> (0.053-0.070)	<b>0.069</b> (0.059-0.079)	<b>0.080</b> (0.067-0.093)	<b>0.088</b> (0.073-0.104)
<b>4-day</b>	<b>0.017</b> (0.015-0.019)	<b>0.021</b> (0.019-0.024)	<b>0.028</b> (0.025-0.031)	<b>0.033</b> (0.029-0.037)	<b>0.040</b> (0.035-0.045)	<b>0.046</b> (0.040-0.051)	<b>0.052</b> (0.045-0.059)	<b>0.059</b> (0.050-0.067)	<b>0.068</b> (0.057-0.079)	<b>0.076</b> (0.063-0.089)
<b>7-day</b>	<b>0.011</b> (0.010-0.013)	<b>0.014</b> (0.013-0.016)	<b>0.019</b> (0.017-0.021)	<b>0.022</b> (0.020-0.025)	<b>0.027</b> (0.024-0.031)	<b>0.031</b> (0.027-0.035)	<b>0.035</b> (0.030-0.040)	<b>0.039</b> (0.034-0.045)	<b>0.045</b> (0.038-0.053)	<b>0.050</b> (0.042-0.059)
<b>10-day</b>	<b>0.009</b> (0.008-0.010)	<b>0.011</b> (0.010-0.013)	<b>0.015</b> (0.013-0.017)	<b>0.017</b> (0.015-0.020)	<b>0.021</b> (0.019-0.024)	<b>0.024</b> (0.021-0.027)	<b>0.027</b> (0.023-0.031)	<b>0.030</b> (0.026-0.035)	<b>0.035</b> (0.029-0.040)	<b>0.038</b> (0.032-0.044)
<b>20-day</b>	<b>0.005</b> (0.005-0.006)	<b>0.007</b> (0.006-0.008)	<b>0.009</b> (0.008-0.010)	<b>0.011</b> (0.009-0.012)	<b>0.013</b> (0.011-0.014)	<b>0.014</b> (0.013-0.016)	<b>0.016</b> (0.014-0.018)	<b>0.018</b> (0.015-0.020)	<b>0.020</b> (0.017-0.023)	<b>0.022</b> (0.018-0.025)
<b>30-day</b>	<b>0.004</b> (0.004-0.005)	<b>0.005</b> (0.005-0.006)	<b>0.007</b> (0.006-0.008)	<b>0.008</b> (0.007-0.009)	<b>0.010</b> (0.009-0.011)	<b>0.011</b> (0.010-0.012)	<b>0.012</b> (0.011-0.014)	<b>0.013</b> (0.012-0.015)	<b>0.015</b> (0.013-0.017)	<b>0.016</b> (0.014-0.019)
<b>45-day</b>	<b>0.003</b> (0.003-0.004)	<b>0.004</b> (0.004-0.005)	<b>0.005</b> (0.005-0.006)	<b>0.006</b> (0.006-0.007)	<b>0.007</b> (0.007-0.008)	<b>0.008</b> (0.007-0.009)	<b>0.009</b> (0.008-0.010)	<b>0.010</b> (0.009-0.011)	<b>0.011</b> (0.010-0.012)	<b>0.012</b> (0.010-0.013)
<b>60-day</b>	<b>0.003</b> (0.003-0.003)	<b>0.004</b> (0.003-0.004)	<b>0.005</b> (0.004-0.005)	<b>0.005</b> (0.005-0.006)	<b>0.006</b> (0.006-0.007)	<b>0.007</b> (0.006-0.008)	<b>0.008</b> (0.007-0.009)	<b>0.008</b> (0.007-0.009)	<b>0.009</b> (0.008-0.010)	<b>0.010</b> (0.008-0.011)

<sup>1</sup> Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

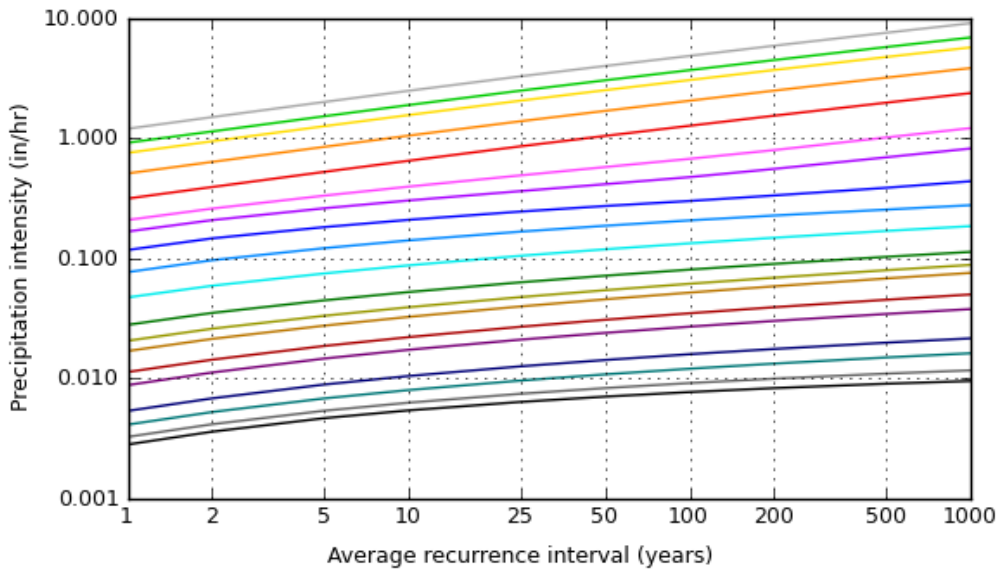
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# PF graphical

PDS-based intensity-duration-frequency (IDF) curves  
Latitude: 39.3729°, Longitude: -119.7263°



Average recurrence interval (years)
1
2
5
10
25
50
100
200
500
1000



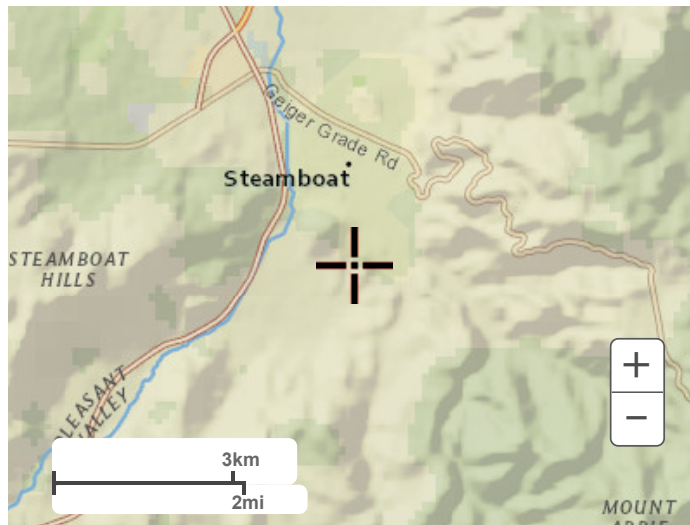
Duration
5-min
10-min
15-min
30-min
60-min
2-hr
3-hr
6-hr
12-hr
24-hr
2-day
3-day
4-day
7-day
10-day
20-day
30-day
45-day
60-day

[Back to Top](#)

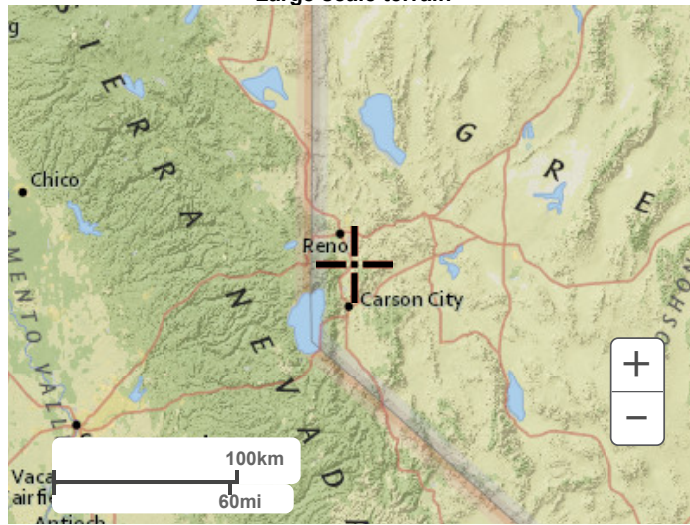
## Maps & aerials

Small scale terrain

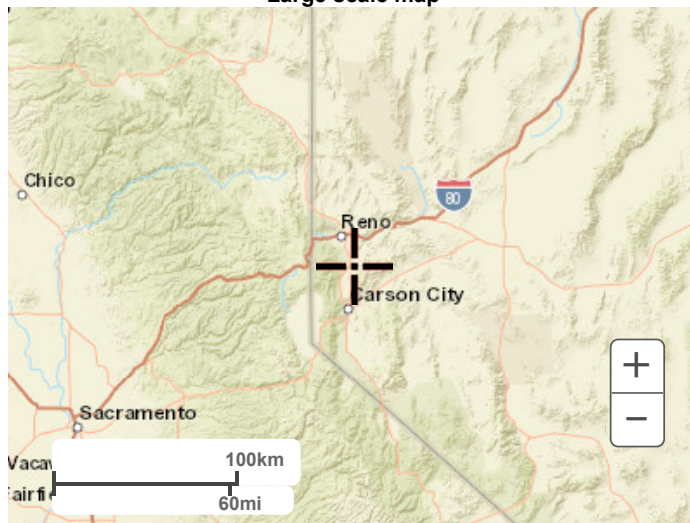




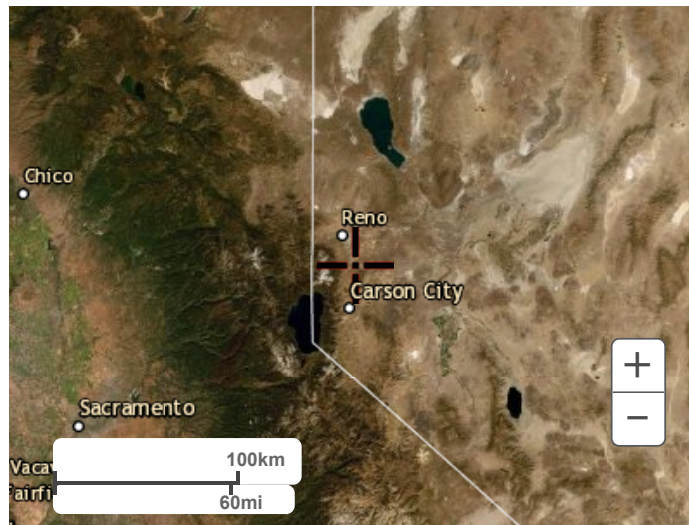
Large scale terrain



Large scale map



Large scale aerial



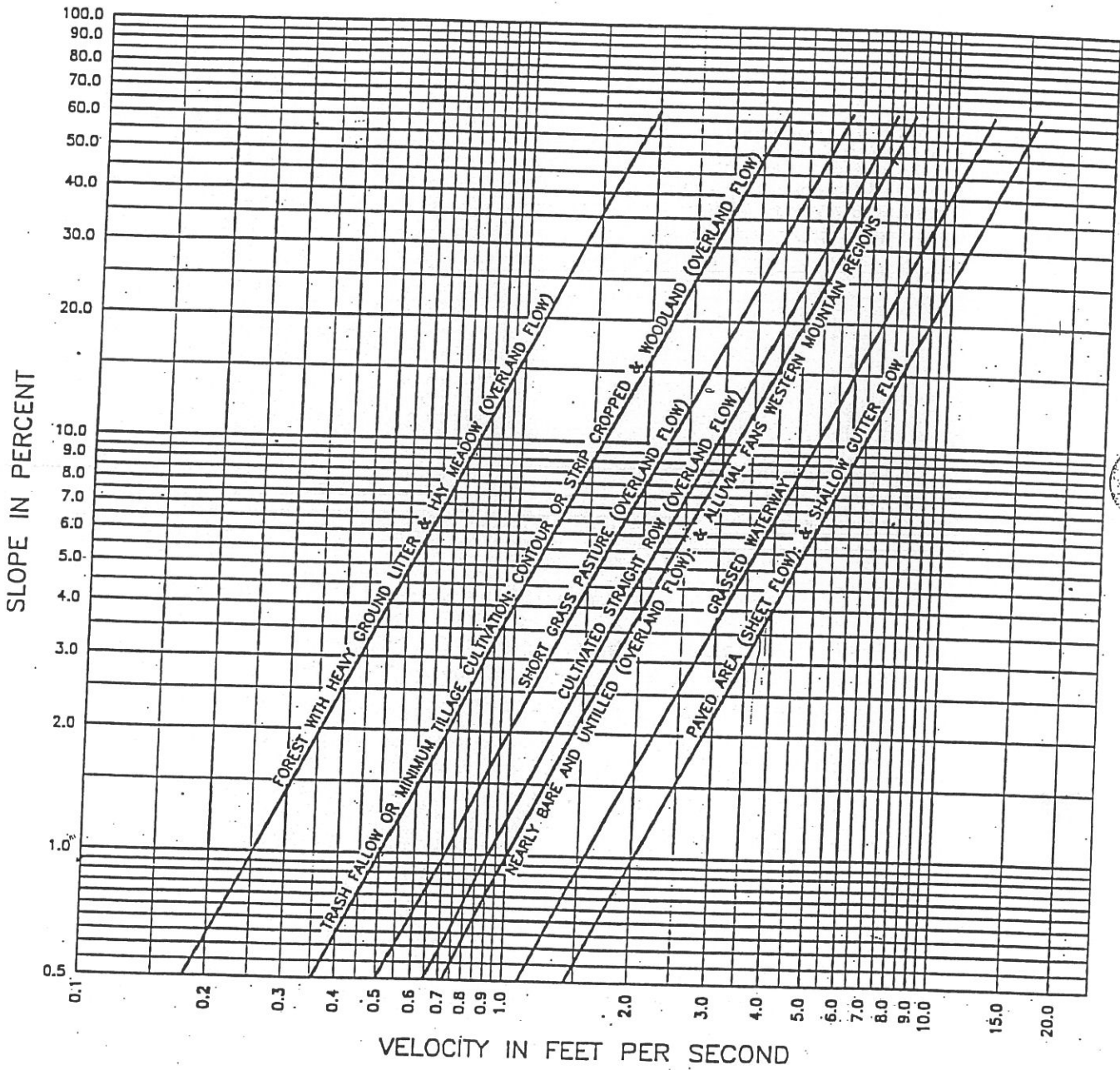
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[US Department of Commerce](#)  
[National Oceanic and Atmospheric Administration](#)  
[National Weather Service](#)  
[National Water Center](#)  
1325 East West Highway  
Silver Spring, MD 20910  
Questions?: [HDSC.Questions@noaa.gov](mailto:HDSC.Questions@noaa.gov)

[Disclaimer](#)

# TRAVEL TIME VELOCITY



**NOTES TO USERS**

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the **Flood Profiles and Floodway Data** and/or **Summary of Stillwater Elevations** tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

**Coastal Base Flood Elevations** shown on this map apply only landward of 0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was State Plane Nevada West FIPS Zone 2703. The horizontal datum was NAD 83, GRS80. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services  
 NOAA, NNGS12  
 National Geodetic Survey  
 SSMC-3, #9202  
 1315 East-West Highway  
 Silver Spring, Maryland 20910-3282  
 (301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

**Base map** road centerline information shown on this FIRM was provided by the Washoe County GIS Program. This data, dated 2005 or later, was provided in digital format, at a scale of 1:1,200 in urban areas and 1:2,400 in rural areas.

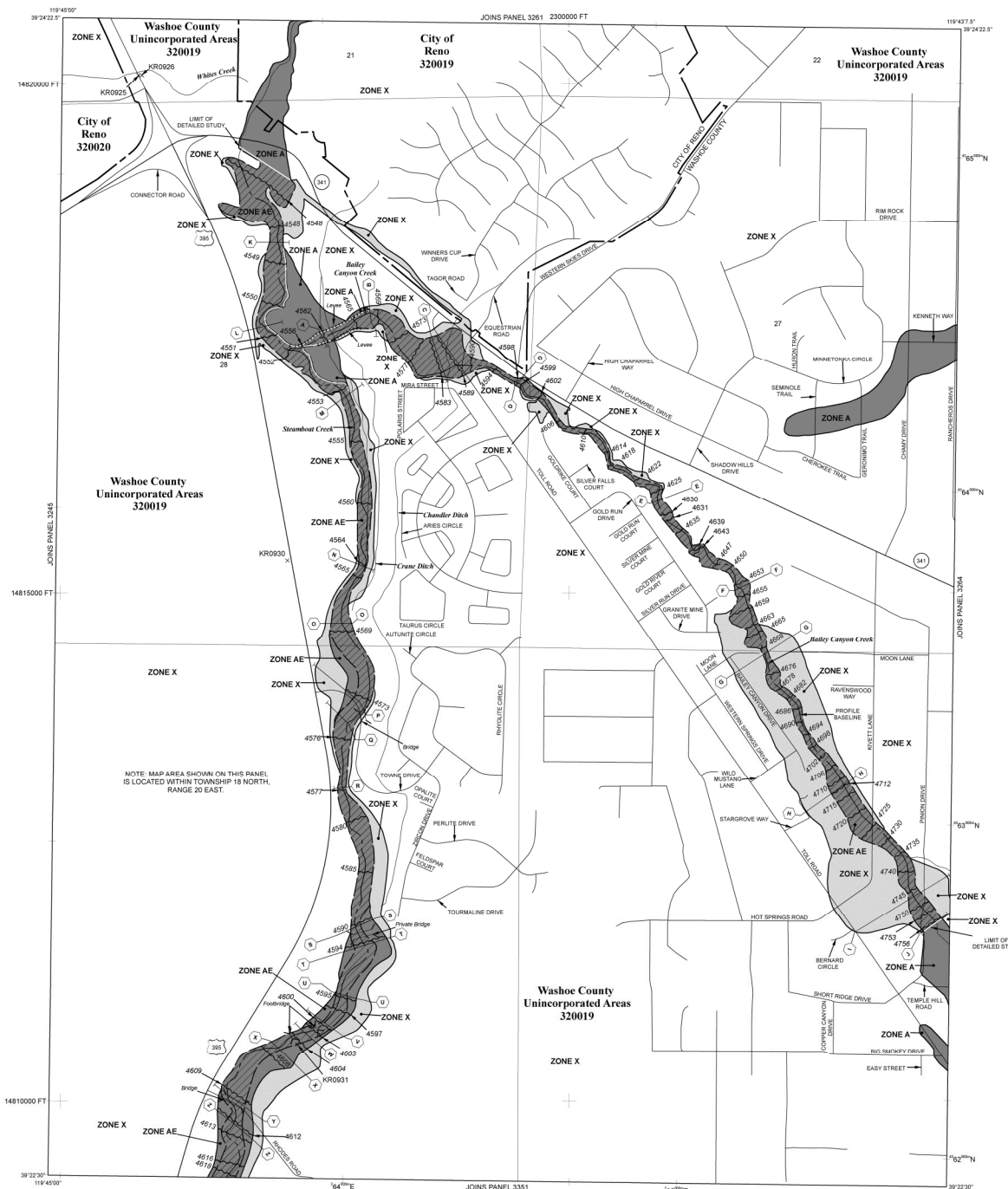
This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

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Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://msc.fema.gov>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov>.



**LEGEND**

- SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD**
- ZONE AE** No Base Flood Elevations determined; Base Flood Elevations determined.
  - ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
  - ZONE AD** Flood depths of 1 to 3 feet (usually sheet flow on existing terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
  - ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently described. Zone AR indicates that former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
  - ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
  - ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
  - ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.
- FLOODWAY AREAS IN ZONE AE**
- The floodway is the channel of a stream plus any adjacent floodplains that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.
- OTHER FLOOD AREAS**
- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- OTHER AREAS**
- Areas determined to be outside the 0.2% annual chance floodplain.
  - Areas in which flood hazards are undetermined, but possible.
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**
- OTHERWISE PROTECTED AREAS (OPAs)**
- CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- Floodplain boundary
  - Floodway boundary
  - Zone D boundary
  - CBRS and OPA boundary
  - Boundary dividing Special Flood Hazard Area zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities
  - Base Flood Elevation line and value, elevation in feet
  - Base Flood Elevation value where uniform within zone, elevation in feet (EL. 987)
- \* Referenced to the North American Vertical Datum of 1988
- Transsect Line
  - Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
  - 1000-meter Universal Transverse Mercator grid values, zone 11
  - 5000-foot grid ticks: Nevada State Plane coordinate system, West zone (FIPSZONE 2703), Transverse Mercator projection
  - Bench mark (see explanation in Notes to Users section of this FIRM panel)
  - River Mile
- MAP REPOSITORY**
- Refer to listing of Map Repositories on Map Index.
- EFFECTIVE DATE OF COUNTRYWIDE FLOOD INSURANCE RATE MAP**
- September 30, 1994
- EFFECTIVE DATES (OF REVISIONS) TO THIS PANEL**
- March 16, 2009 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas to update map panels, to add rates and reat rates, and to incorporate previously issued Letters of Map Revision.
- For community map revision history prior to countywide mapping, refer to the Community Map History tables located in the Flood Insurance Study report for this jurisdiction.
- To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

**NFIP**

**PANEL 3263G**

**FIRM**

**FLOOD INSURANCE RATE MAP**

**WASHOE COUNTY, NEVADA AND INCORPORATED AREAS**

**PANEL 3263 OF 3475**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS	COMMUNITY	NUMBER	PANEL	SUFFIX
	WASHOE COUNTY	3263G	3263	G

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the insured community.

**MAP NUMBER**  
32031C3263G

**MAP REVISED**  
MARCH 16, 2009

**Federal Emergency Management Agency**

**NOTES TO USERS**

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 NOAA, NNGS12  
 National Geodetic Survey  
 SSMC-3, #6202  
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 Silver Spring, Maryland 20910-3282  
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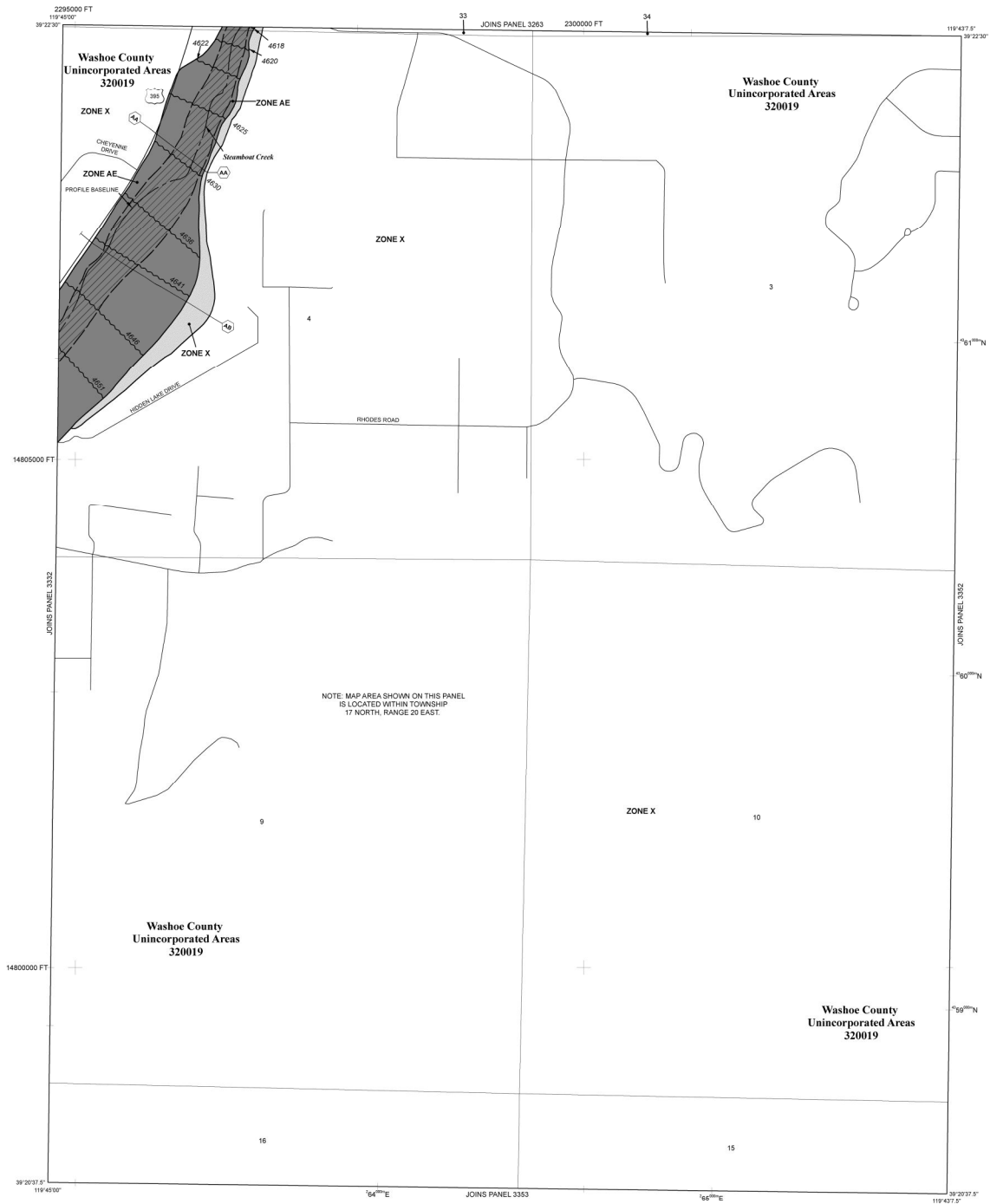
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NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 17 NORTH, RANGE 20 EAST.

**LEGEND**

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

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

- ZONE A**  
No Base Flood Elevations determined.
- ZONE AE**  
Base Flood Elevations determined.
- ZONE AH**  
Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AD**  
Flood depths of 1 to 3 feet (usually sheet flow on existing terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR**  
Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently derelict. Zone AR indicates that former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99**  
Areas to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V**  
Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE**  
Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

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

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

**OTHER AREAS**  
**ZONE D**  
 Areas determined to be outside the 0.2% annual chance floodplain.  
**ZONE O**  
 Areas in which flood hazards are undetermined, but possible.

**COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**  
**OTHERWISE PROTECTED AREAS (OPAs)**  
 CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Bench mark (see explanation in Notes to Users section of this FIRM panel)
- Base Flood Elevation line and value, elevation in feet
- Base Flood Elevation value where uniform within zone, elevation in feet (E1, 987)

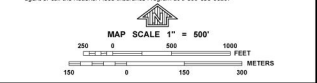
\* Reference to the North American Vertical Datum of 1988  
 Cross section line  
 Transsect line  
 87°07'45", 32°22'30"

76°10'N  
 600000 FT  
 Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere  
 1000-meter Universal Transverse Mercator grid values, zone 11  
 5000-foot grid ticks: Nevada State Plane coordinate system, West zone (FIPSZONE 2703), Transverse Mercator projection  
 DX5510  
 Bench mark (see explanation in Notes to Users section of this FIRM panel)  
 River Mile  
 M1.5

MAP REPOSITORY  
 Refer to listing of Map Repositories on Map Index.  
 EFFECTIVE DATE OF COUNTRY-WIDE FLOOD INSURANCE RATE MAP  
 September 30, 1994

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL  
 March 16, 2009: to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas to update map format, to add rates and rest names, and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History tables located in the Flood Insurance Study report for this jurisdiction.  
 To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.



**NFIP**  
**NATIONAL FLOOD INSURANCE PROGRAM**

**PANEL 3351G**

**FIRM**  
**FLOOD INSURANCE RATE MAP**

**WASHOE COUNTY, NEVADA AND INCORPORATED AREAS**

**PANEL 3351 OF 3475**  
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS	COMMUNITY	NUMBER	PANEL	SUFFIX
	WASHOE COUNTY	320019	3351	G

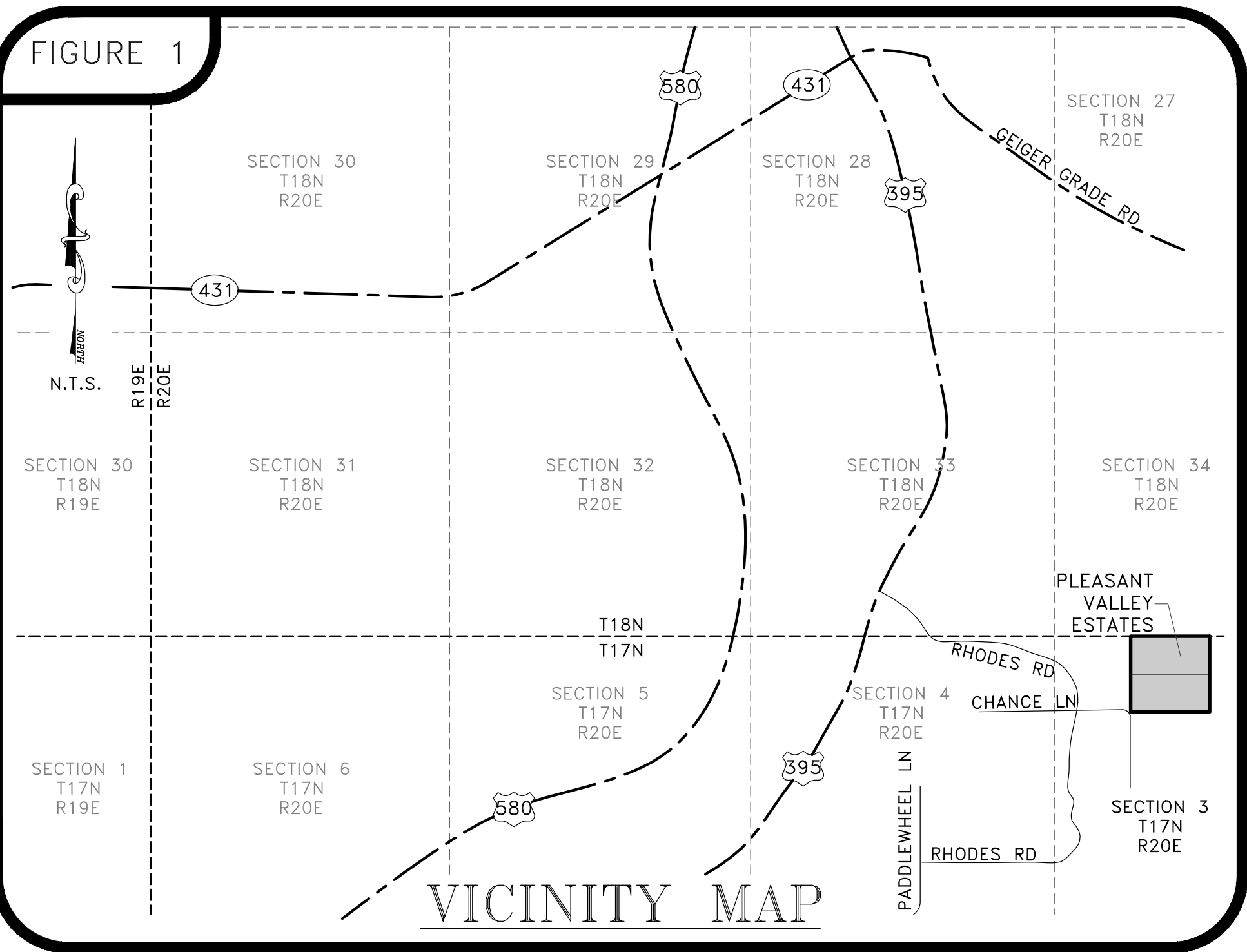
Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the insured community.

**MAP NUMBER**  
**32031C3351G**




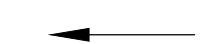

**MAP REVISED**  
**MARCH 16, 2009**

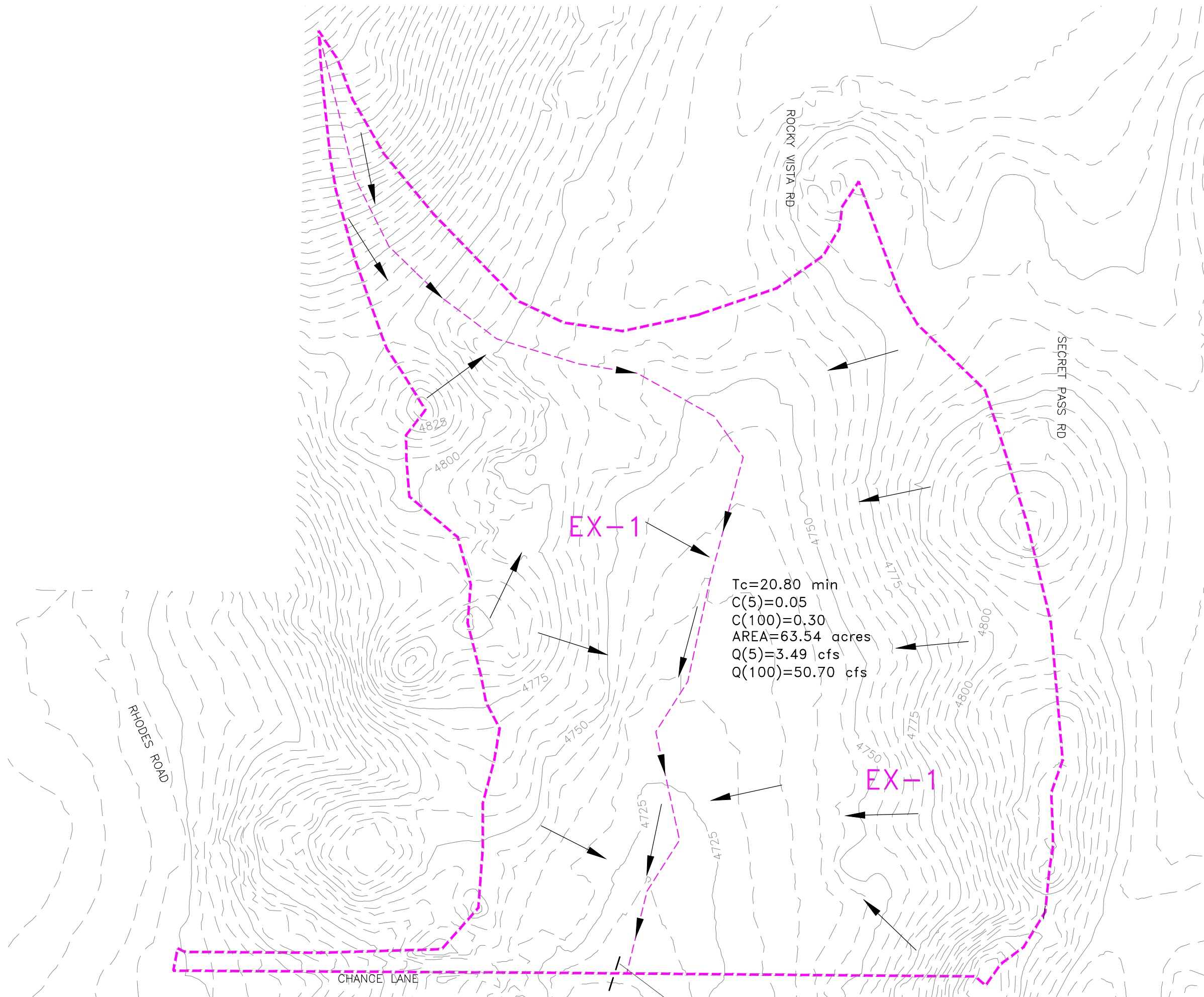
Federal Emergency Management Agency

FIGURE 1



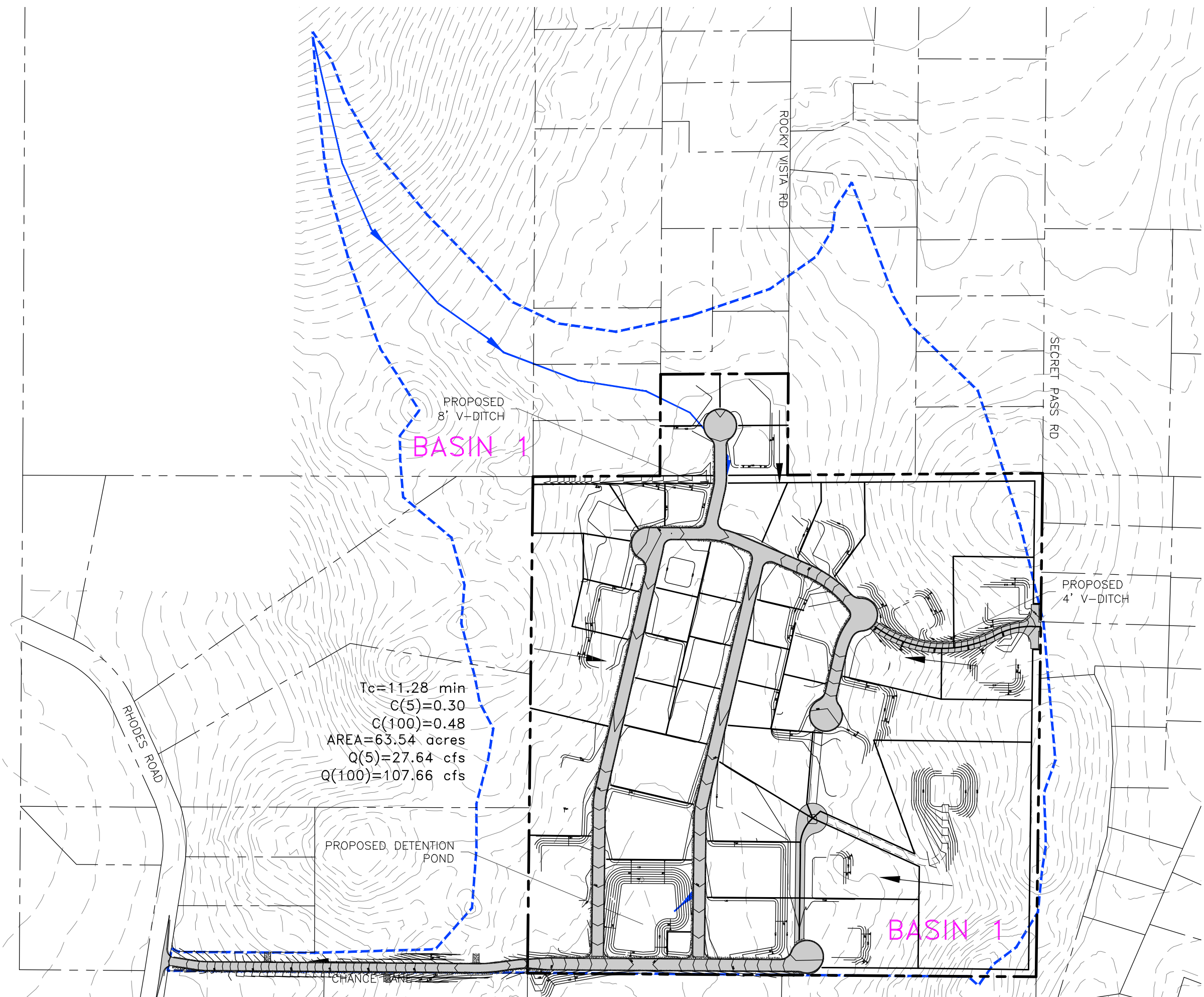
# LEGEND

-  PROJECT BOUNDARY
-  (e)CONTOURS
-  EXISTING HYDROLOGIC BASINS
-  EXISTING RUNOFF DIRECTION
-  TIME OF CONCENTRATION PATH



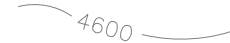







PRELIMINARY HYDROLOGY REPO  
 TO SUPPORT THE  
 PLEASANT VALLEY ESTATES  
 EXISTING DRAINAGE BASIN  
 FIGURE 2





# LEGEND

-  PROJECT BOUNDARY
-  PROPOSED LOT LINES
-  (e)CONTOURS
-  HYDROLOGIC BASIN
-  PROPOSED RUNOFF DIRECTION SUBBASINS
-  PROPOSED AC AREA
-  TIME OF CONCENTRATION PATH
-  PROPOSED PADS



PRELIMINARY HYDROLOGY REPOR  
 TO SUPPORT THE  
 PLEASANT VALLEY ESTATES  
 PROPOSED DRAINAGE BASIN  
**FIGURE 3**

