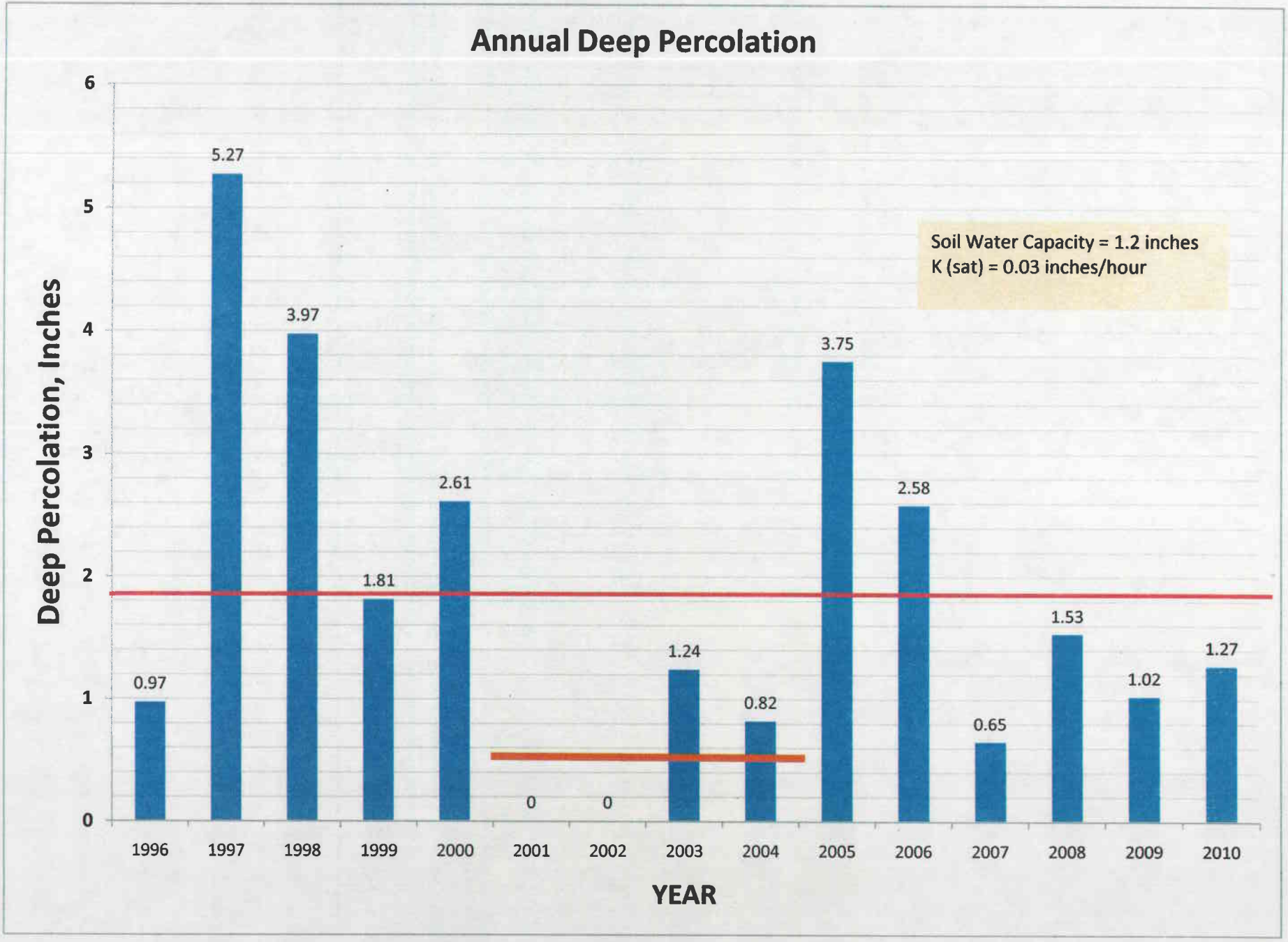
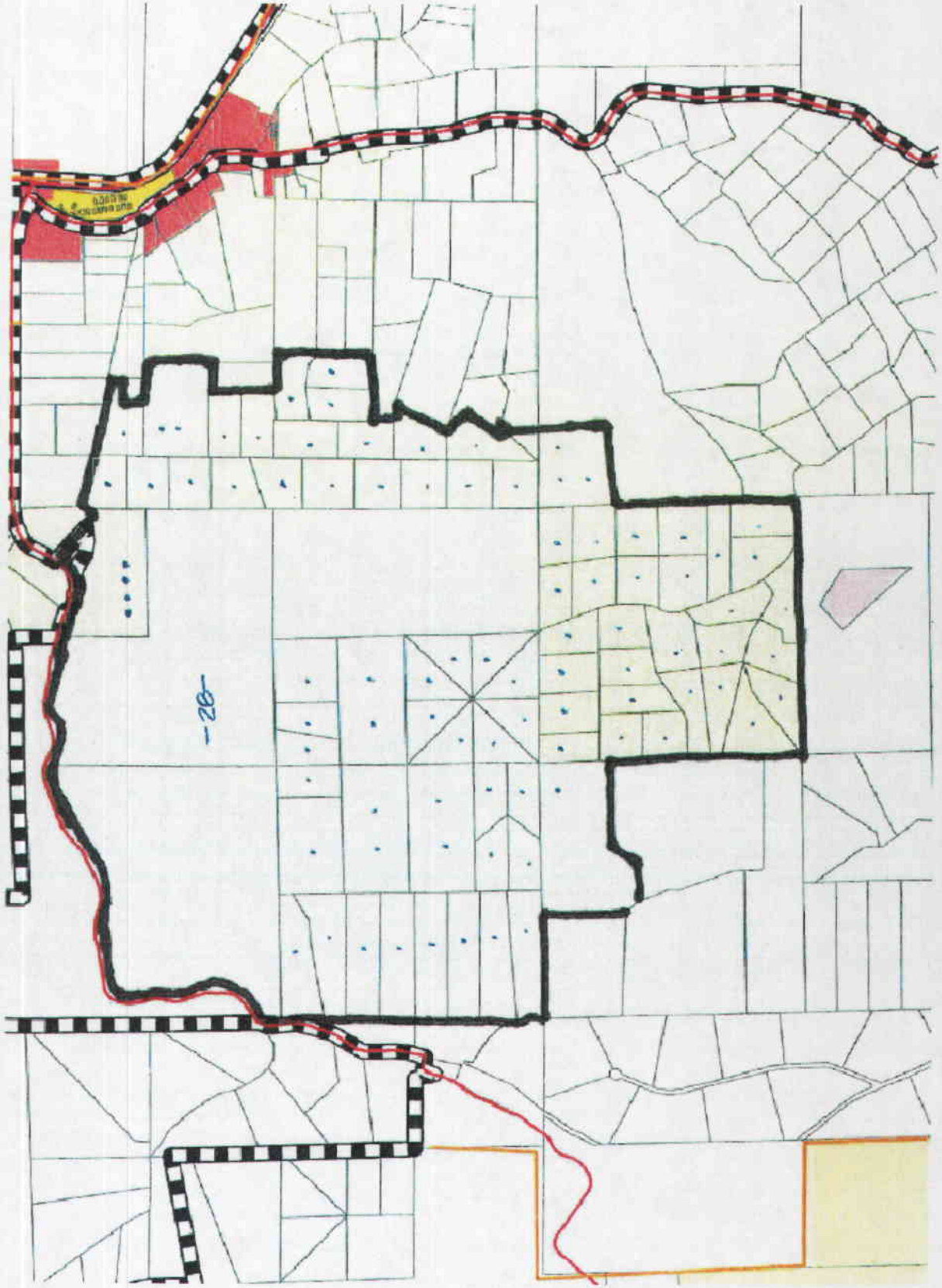


10-1327.1.1

(Distributed at meeting by Bill Bennett)

PC 11/18/10 #11



10-1327.I.2

PC 11/18/10
#11

Bill Bennett
4180 Misty Creek Court
Pilot Hill, CA 95664
(530) 823-7079

November 14, 2010

RECEIVED
10 NOV 15 PM 3:47
PLANNING DEPARTMENT

El Dorado County Planning Commission
c/o Development Services Department
2850 Fairlane Court, Building C
Placerville, CA 95667

RE: **Sundance Subdivision: Z07-0040 /TM07-1454/S09-0012**
Groundwater Impacts:

Gentlemen:

In the previous hearing and submittals, we pointed out a number of deficiencies with the water studies that were performed to analyze the impacts of the Sundance development. These included:

- The water supply study failed to include parcels beyond the boundaries of the subdivision
- The study did not look at drought years
- The groundwater analysis used storm rainfall probabilities to assess rainfall pattern even though historical records are available.
- The study did not quantify the groundwater storage in the area
- The groundwater study failed to obtain any records for exiting residents that are located around the proposed development or groundwater information on existing surrounding wells.

To help verify and quantify the development's impacts on groundwater, we have performed the enclosed engineering study that updates the previous work by using actual rainfall and soils information particular to the Sundance area and including surrounding properties within the analysis.

This report concludes the annual recharge of the fractured rock foundation varies significantly year to year. A long term average recharge may not properly exhibit significant periods of low annual recharge that exist and can lead to a critical over-estimation of available groundwater supplies, especially for areas where groundwater storage cannot be quantified. For some 4-year periods of historical conditions there is not enough recharge from rain falling on the area to support the annual water needs of Sundance and the surrounding properties at build out.

Thank you for your consideration. As always, you can reach me by e-mail or contact me at (530) 823-7079 if you have questions or if I can clarify any details

Sincerely,

Bill Bennett

Bill Bennett

Enclosures

Analysis of Groundwater Availability and Recharge in the Sundance Project Area

Pilot Hill, California

Submitted to: El Dorado County Planning Commission

Date: November 12, 2010
By: Bill Bennett, CE, GE

10-1327.I.5

Table of Contents

Abbreviations and Acronyms

a-ft	acre-feet
BOS	El Dorado County Board of Supervisors
CDEC	California Data Exchange Center
CIMIS	California Irrigation Management Information System
Commission	El Dorado County Planning Commission
DWR	California Department of Water Resources
GDPUD	Georgetown Divide Public Utilities District
GDRCD	Georgetown Divide Resource Conservation District
in	inches
NRCS	Natural Resources Conservation Service
Planning	El Dorado County Planning Department

Executive Summary

The Sundance Subdivision is a proposed development of 28 lots on approximately 300 acres near the area of Pilot Hill, El Dorado County, California. The development requires a rezone for the change in current land use as well as approval of the development's tentative map and environmental documentation (Mitigated Negative Declaration) by the County. These items are currently in front of the County Planning Commission and will subsequently go to the El Dorado County Board of Supervisors at a later date. **(Rezone Z07-0040/ Tentative Map TM07-1454/ Special Use Permit S09-0012/ Sundance Subdivision).**

As part of the effort to evaluate the potential impact of the development on the water resources in the area and environment, the developer engaged a hydrogeologist to investigate the long term viability of using groundwater for the development (*Hydrogeologic Investigation Assessment Report, Sundance Subdivision, Holdrege & Kull, October 28, 2008*). This groundwater study attempted to quantify the theoretical groundwater recharge from normal annual precipitation on the site and compare that with the potential needs of the subdivision. However, there were several assumptions and detailed calculations in this particular analysis that raised questions. Addressing these concerns could substantially affect the conclusions of the *Hydrogeologic Investigation Assessment Report*.

The report that follows presents a revised groundwater recharge analysis for the Sundance area based on additional available rainfall and soils data and updated assumptions that are more in line with the physical characteristics of the site and conventional analysis.

Additional Available Data

Additional data is available to refine the previous groundwater availability analysis. The rainfall gage at Pilot Hill (PIH) provides hourly precipitation data for 15 years. Soils information is on-line and can be compiled into a report specific to a designated property (Web Soil Survey). Evapotranspiration information is available statewide by zone.

Analysis

Groundwater storage can be calculated by accounting for the inflow and outflow of water to the soil/rock/landscape system. In the updated analysis, actual rainfall measurements were used to produce a time-step water balance calculation, estimating the water available for deep percolation or groundwater recharge on a daily basis for the Sundance site for the years 1995 through 2010. Soil permeabilities and available soil water capacities for the time-step analysis were derived from site specific soils information. The calculated groundwater recharge was summarized on an annual basis for comparison with projected water needs for the proposed subdivision and the surrounding parcels.

Findings

Groundwater recharge is not necessarily proportional to the annual precipitation.

For site specific soil characteristics, the average calculated recharge for all 15 years rainfall record is about 1.8 inches. However, the plotted data also shows the recharge varies significantly from year to year. There are many consecutive years where the recharge is much lower than the average. For example, during the period 2001 through 2004, the deep percolation averages only 0.5 inches and obviously much lower if one were to look only at 2001 and 2002 where nearly zero recharge was calculated. Over the last 4 years recharge has only been 60% of the long term average.

We can calculate a factor of safety to compare the available groundwater with the future water demand. A factor of safety of 1.0 means that there is just enough groundwater to satisfy the water demand for the area. Looking at the period of 2001 through 2004, the factor of safety for groundwater use would be:

$$FS = \frac{(0.5 \text{ inches} / 12 \text{ in/foot}) \times 895 \text{ ac}}{0.75 \text{ a-ft/unit} \times 117 \text{ units}} = \text{~~0.34~~ } 0.43$$

Conclusions

1. Existing rainfall records for the Pilot Hill gage provides 15 years of hourly data that can be used to calculate the time distribution of groundwater recharge in the Sundance and surrounding area.
2. It is important to include the parcels surrounding Sundance in the analysis of groundwater availability since both Sundance and the surrounding properties are dependent of the same groundwater source, storage, and recharge processes. Most parcels in the surrounding area are smaller and probably rely disproportionally on the existing Sundance property to aid in replenishment of groundwater supplies.
3. Annual variations in groundwater recharge can be significant. A long term average recharge may not properly exhibit significant periods of low annual recharge that exist and can lead to a critical over-estimation of available groundwater supplies, especially for areas where groundwater storage cannot be quantified.
4. Based on the groundwater recharge estimated for the period 2001 through 2004 for Sundance and the surrounding area, there is not enough recharge from rain falling on the area to support the annual water needs of Sundance and the surrounding properties at build out. The factor of safety of supply to demand for this 4-year period is ~~0.34~~ 0.43.
5. The Sundance development as currently proposed will significantly impact the groundwater supply for neighboring properties and existing residents.

1 Introduction

The Sundance Subdivision is a proposed development of 28 lots on approximately 300 acres near the area of Pilot Hill, El Dorado County, California. Figure 1 shows the location of the development. It was proposed several years ago and has been reviewed by the county planning department in various forms over that time. The development requires a rezone for the change in current land use as well as approval of the development's tentative map and environmental documentation (Mitigated Negative Declaration) by the County. These items are currently in front of the County Planning Commission and will subsequently go to the El Dorado County Board of Supervisors at a later date. **(Rezone Z07-0040/ Tentative Map TM07-1454/ Special Use Permit S09-0012/ Sundance Subdivision).**

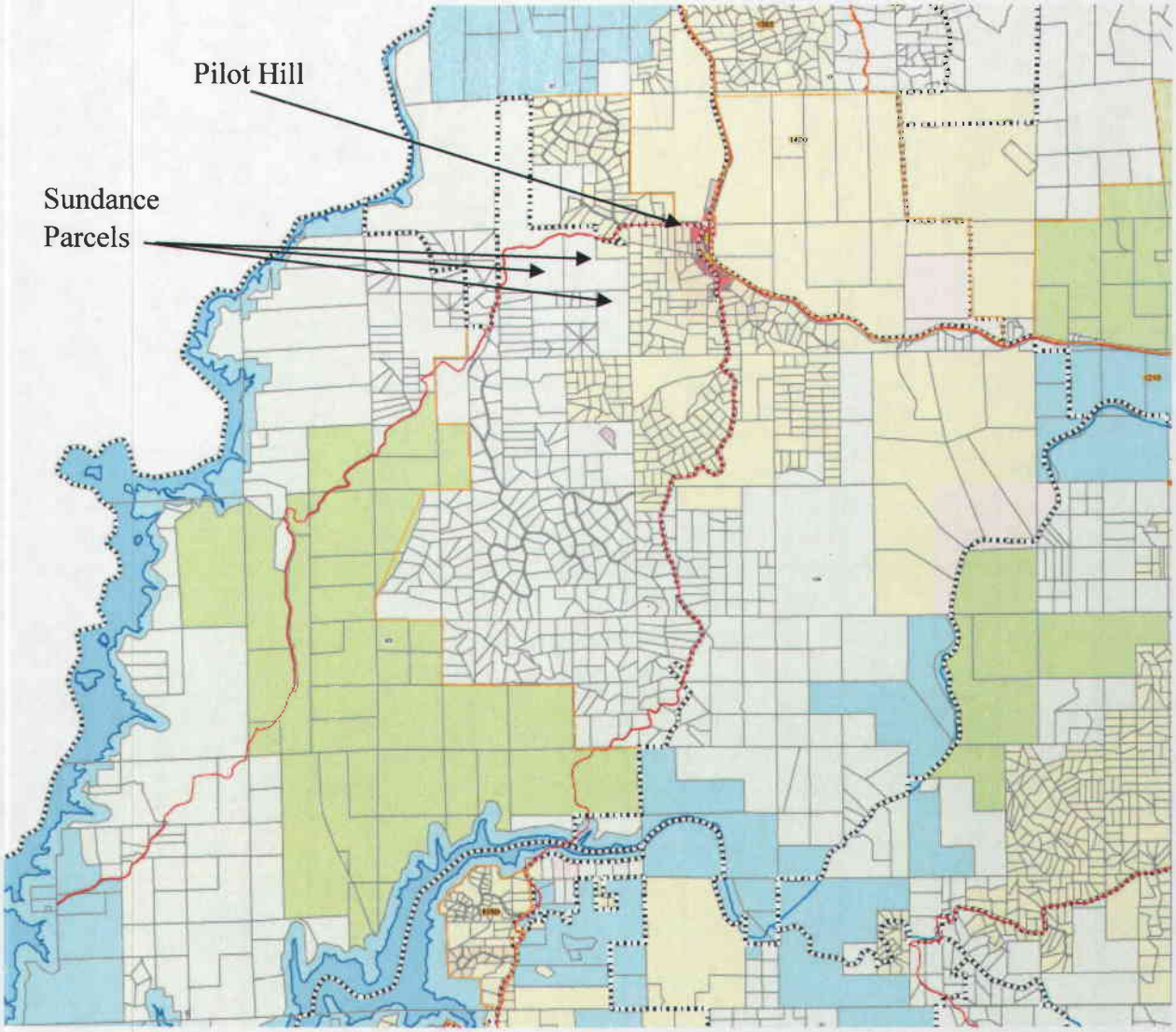
When the project was initially proposed, the developer planned about 29 lots using groundwater. After hearing from neighbors about their troubles with wells and their concerns about the project impacting their existing groundwater supply, the developer proposed increasing the number of lots but obtaining public water (Georgetown Divide Public Utilities District). Plans were resubmitted to the county with this updated configuration. However, later, the developer abandoned the plan of bringing in GDPUD water and went back to a 28 lot configuration again supplied by groundwater (2008-2009).

As part of the effort to evaluate the potential impact of the development on the water resources in the area and environment, the developer engaged a hydrogeologist to investigate the long term viability of using groundwater for the development (*Hydrogeologic Investigation Assessment Report, Sundance Subdivision, Holdrege & Kull, October 28, 2008*). This groundwater study attempted to quantify the theoretical groundwater recharge from normal annual precipitation on the site and compare that with the potential needs of the subdivision.

This general study approach used in the *Hydrogeologic Investigation Assessment Report* has been used by others in the past to estimate the amount of groundwater recharge that might occur on a property. However, there were several assumptions and detailed calculations in this particular analysis that raised questions. Rainfall information, for example, was synthesized instead of using actual records. The effect of the parcels surrounding the development was also ignored. A number of concerns were addressed in previous correspondence with the Commission, (*Letter of February 18, 2010, Comments on the Sundance Subdivision by Bill Bennett*). Addressing these concerns could substantially affect the conclusions of the *Hydrogeologic Investigation Assessment Report*.

The report that follows presents a revised groundwater recharge analysis for the Sundance area based on additional available rainfall and soils data and updated assumptions that are more in line with the physical characteristics of the site and conventional analysis. Because this work is technical in nature, it has been packaged in a report format.

Figure 1 Sundance Location



1.1 Previous Study Shortcomings

The *Hydrogeologic Investigation Assessment Report* had several shortcomings:

1. The study used rainfall probability estimates to calculate a theoretical annual average rainfall distribution instead of using actual rainfall data to determine rainfall distribution. Storm probability estimates are generally not used for water supply studies since they are theoretical and existing historical records are generally available. This probabilistic approach ignores drought and critical rainfall years in the analysis.

2. The study assumed an arbitrary annual runoff percentage (30%) as an input variable instead of calculating the runoff based on actual site soil properties.

3. The study ignored surrounding parcels beyond the boundaries of the subdivision and their current and future needs and impacts on the proposed development's water availability. Surrounding lands have generally smaller parcels. There are many 5-acre parcels that surround the site or that could be developed under current zoning. Dwellings on small parcels would theoretically use more water than they would receive from precipitation falling on and infiltrating into the ground on their property.

4. The study only estimated an overall **average annual** groundwater recharge (deep percolation) for the development and failed to look at the variability of the recharge over different hydrologic year types such as critical (drought), below average, above average, and wet.

5. The study did not consider the effect of drought years such as 1976-77.

6. The study did not quantify the available groundwater storage within the fractured rock foundation to know whether there was adequate water storage to carry over enough water to service residents and neighbors in a set of predictable critical or drought years. There is no extensive aquifer. Groundwater in a fractured rock medium is dependent of the water stored in fissures and cracks. Since the development is located on a hill, there is even less water storage available than in flat terrain. One cannot assess whether there is enough groundwater unless one determines if there is enough storage to carry the users through dry year cycles. The water supply report fails to do that.

7. The study did not include any information on wells surrounding the site, including those that had gone dry, those that required additional storage tanks, and those with low recoveries. Failure of at least 7 wells in the area has been reported over the past few years. Well production on existing parcels may indicate limited groundwater storage in the area.

1.2 Additional Available Data

Three pieces of information were readily available on the Internet to improve the groundwater recharge analysis conducted in the previous study:

1. The rainfall gage at Pilot Hill (PIH), cooperatively maintained by the California Department of Forestry and Fire Protection, provides hourly precipitation data. Currently 15 years of this information from 1995 to 2010 is available on the California Data Exchange Center (CDEC) website. (http://cdec.water.ca.gov/)

2. The Natural Resources Conservation Service (NRCS) currently provides online soil survey information which can be downloaded in the form of a report, specific to a defined property or site (Web Soil Survey). The survey report characterizes the soils at the site and provides representative permeabilities and water holding capacities of the soils on the site which can be used for estimating infiltration specifically for the site. (http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm)

3. Monthly evapotranspiration reference data has been compiled by regional zone by the California Department of Water Resources (DWR) under their California Irrigation Management Information System (CIMIS) Program. Figure 2 provides the Daily Average Reference Evapotranspiration by ETo Zone (inches/day) which can be used to closely approximate the daily water loss from the ground and vegetation to the atmosphere. (http://wwwcimis.water.ca.gov/cimis/welcome.jsp)

In addition to on-line references, the detailed mean annual precipitation distribution for El Dorado County was recently updated for the county by noted hydrologist, Jim Goodridge. Figure 3 shows that updated map. It verifies the mean annual precipitation for the Sundance development site is 32 inches per year. This map can also be obtained from the Georgetown Divide Resource Conservation District (GDRCD).

Figure 2

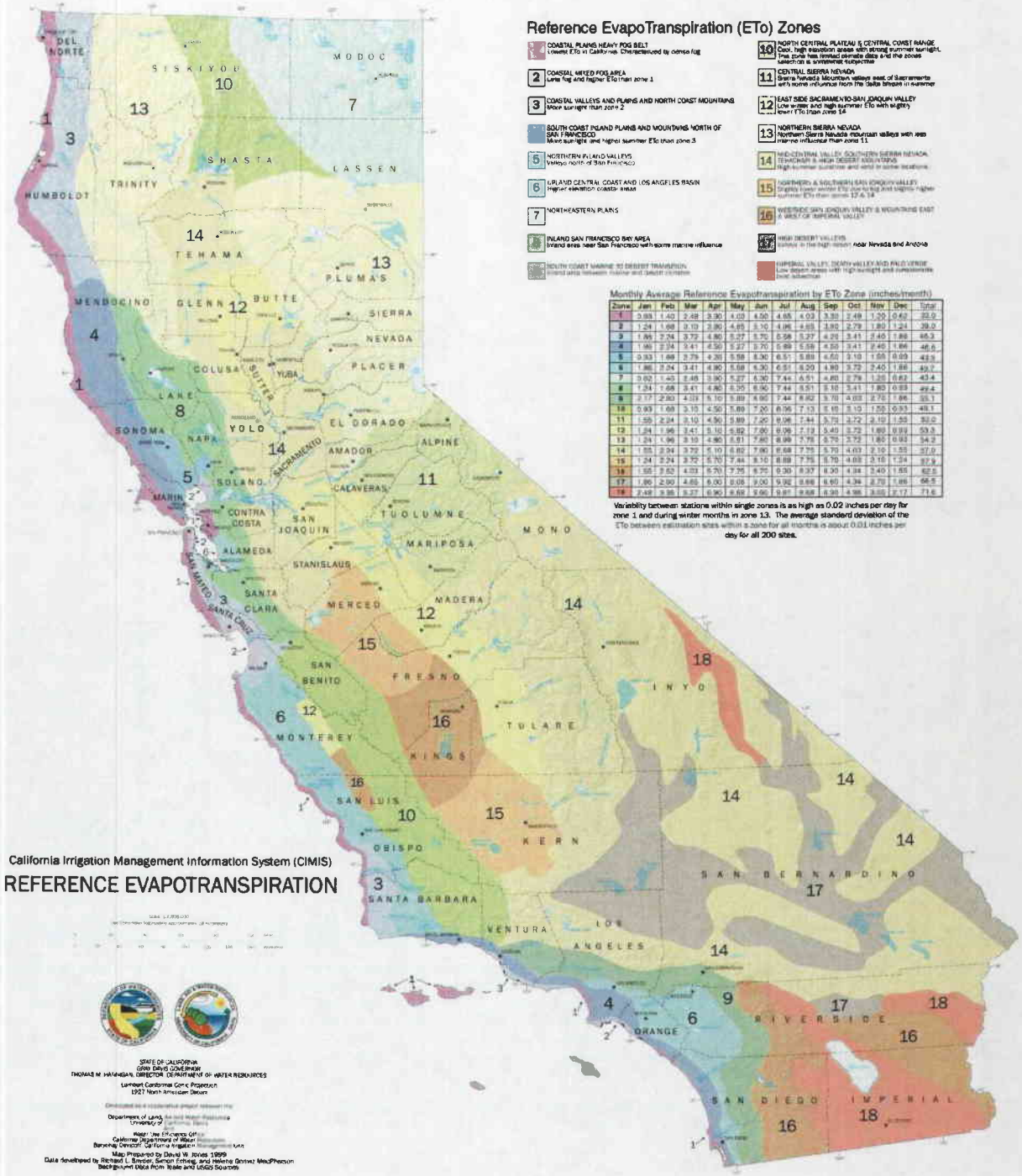
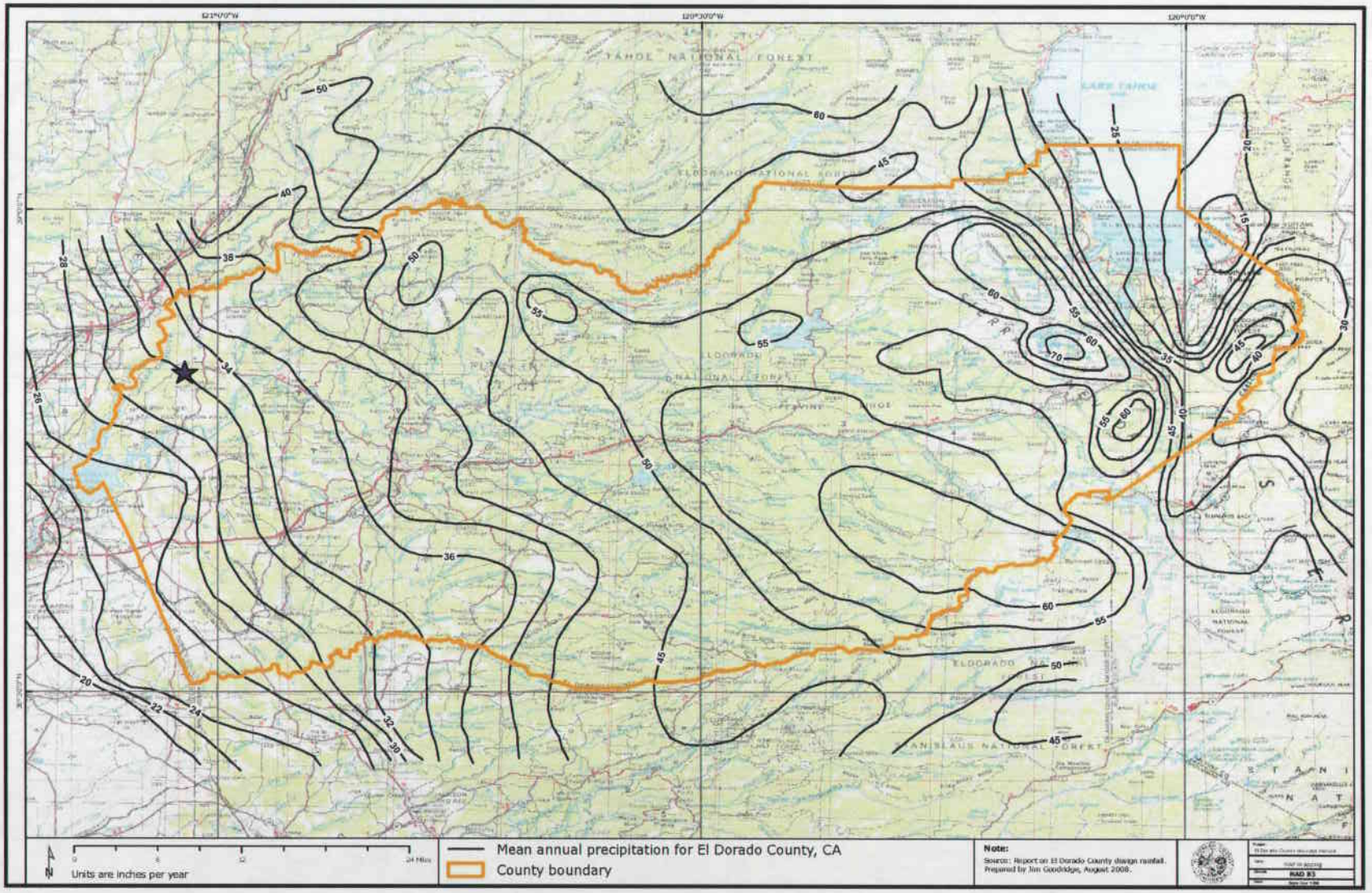

Reference EvapoTranspiration (ETo) Zones
1 COASTAL PLAINS HEAVY FOG BELT
Lowest ETo in California. Characterized by dense fog
2 COASTAL MIXED FOG AREA
Less fog and higher ETo than zone 1
3 COASTAL VALLEYS AND PLAINS AND NORTH COAST MOUNTAINS
More sunlight than zone 2
SOUTH COAST INLAND PLAINS AND MOUNTAINS NORTH OF SAN FRANCISCO
More sunlight and higher summer ETo than zone 3
5 NORTHERN INLAND VALLEYS
Valleys north of San Francisco
6 INLAND CENTRAL COAST AND LOS ANGELES BASIN
Higher elevation coastal areas
7 NORTHEASTERN PLAINS
INLAND SAN FRANCISCO BAY AREA
Inland area near San Francisco with some marine influence
SOUTH COAST MARINE TO DESERT TRANSITION
10 NORTH CENTRAL PLATEAU & CENTRAL COAST RANGE
Cool, high elevation areas with strong summer sunlight. This zone has limited climate data and the zones selection is somewhat subjective
11 CENTRAL SIERRA NEVADA
Sierra Nevada Mountain valleys east of Sacramento with some influence from the Delta breeze in summer
12 EAST SIDE SACRAMENTO-SAN JOAQUIN VALLEY
Low winter and high summer ETo with slightly lower ETo than zone 14
13 NORTHERN SIERRA NEVADA
Northern Sierra Nevada mountain valleys with less marine influence than zone 11
14 MID-CENTRAL VALLEY, SOUTHERN SIERRA NEVADA FOOTHILLS & HIGH DESERT MOUNTAINS
High summer sunshine and wind in some locations
15 NORTHERN & SOUTHERN SAN JOAQUIN VALLEY
Slightly lower winter ETo due to fog and slightly higher summer ETo than zones 12 & 14
16 WESTSIDE SAN JOAQUIN VALLEY & MOUNTAINS EAST & WEST OF IMPERIAL VALLEY
17 HIGH DESERT VALLEYS
Valleys in the high desert near Nevada and Arizona
18 IMPERIAL VALLEY, DEATH VALLEY AND PALO VERDE
Low desert areas with high sunlight and consistently low advection
Monthly Average Reference Evapotranspiration by ETo Zone (inches/month)
Zone Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Total
1 0.93 1.40 2.48 3.90 4.03 4.00 4.65 4.03 3.30 2.48 1.20 0.62 32.0
2 1.24 1.68 3.10 3.90 4.65 5.10 4.96 4.65 3.60 2.79 1.80 1.24 39.0
3 1.86 2.24 3.72 4.80 5.27 5.70 5.58 5.27 4.20 3.41 2.40 1.86 46.3
4 1.86 2.24 3.41 4.50 5.27 5.70 5.89 5.58 4.50 3.41 2.40 1.86 46.6
5 0.93 1.68 3.79 4.20 5.58 6.30 6.51 5.89 4.50 3.10 1.55 0.93 45.5
6 1.86 2.24 3.41 4.80 5.58 6.30 6.51 6.20 4.80 3.72 2.40 1.86 49.7
7 3.62 1.45 2.48 3.90 5.27 6.30 7.44 6.51 4.80 2.79 1.20 0.62 46.4
8 1.24 1.68 3.41 4.80 6.20 6.90 7.44 6.51 5.10 3.41 1.80 0.93 49.4
9 2.17 2.80 4.03 5.10 5.89 6.90 7.44 6.82 5.70 4.03 2.70 1.86 55.1
10 0.93 1.68 3.10 4.50 5.89 7.20 8.06 7.13 5.10 3.10 1.55 0.93 49.1
11 1.55 2.24 3.10 4.50 5.89 7.20 8.06 7.44 5.71 3.72 2.10 1.55 52.0
12 1.24 1.96 3.41 5.10 6.82 7.80 8.06 7.13 5.40 3.72 1.80 0.93 53.3
13 1.24 1.96 3.10 4.80 6.51 7.80 8.99 7.75 5.70 3.72 1.80 0.93 54.2
14 1.55 2.24 3.72 5.10 6.82 7.80 8.68 7.75 5.70 4.03 2.10 1.55 57.0
15 1.24 2.24 3.72 5.70 7.44 8.10 8.68 7.75 5.70 4.03 2.10 1.24 57.9
16 1.55 2.52 4.03 5.70 7.75 8.70 9.30 8.37 6.30 4.34 2.40 1.55 62.5
17 1.86 2.80 4.65 6.00 8.06 9.00 9.92 8.68 6.60 4.34 2.70 1.86 66.5
18 2.48 3.08 5.27 6.90 8.68 9.60 9.61 8.68 6.30 4.96 3.00 2.17 71.6
Variability between stations within single zones is as high as 0.02 inches per day for zone 1 and during winter months in zone 13. The average standard deviation of the ETo between estimation sites within a zone for all months is about 0.01 inches per day for all 200 sites.
California Irrigation Management Information System (CIMIS)
REFERENCE EVAPOTRANSPIRATION
STATE OF CALIFORNIA
GRAY DAVIS GOVERNOR
THOMAS M. HANNIGAN, DIRECTOR DEPARTMENT OF WATER RESOURCES
Lambert Conformal Conic Projection
1927 North American Datum
Map Prepared by David W. Jones 1999
Data developed by Richard L. Snyder, Sergio Eching, and Helena Gomez MacPherson
Background Data from Tiger and USGS Sources
DEL NORTE
SISKIYOU
MODOC
HUMBOLDT
TRINITY
SHASTA
LASSEN
TEHAMA
PLUMAS
MENDOCINO
GLENN
BUTTE
SIERRA
NEVADA
COLUSA
SUTTER
YUBA
PLACER
LAKE
SONOMA
NAPA
YOLO
SACRAMENTO
EL DORADO
AMADOR
ALPINE
SOLANO
CALAVERAS
MARIN
CONTRA COSTA
SAN JOAQUIN
TUOLUMNE
MONO
ALAMEDA
STANISLAUS
SAN MATEO
SANTA CLARA
SANTA CRUZ
MERCED
MADERA
SAN BENITO
FRESNO
INYO
MONTEREY
TULARE
KINGS
SAN LUIS OBISPO
KERN
SAN BERNARDINO
SANTA BARBARA
VENTURA
LOS ANGELES
ORANGE
RIVERSIDE
SAN DIEGO
IMPERIAL

Figure 3



10-1327.I.15

2 Analysis

2.1 Water Balance Equation

Groundwater storage can be calculated by accounting for the inflow and outflow of water to the soil/rock/landscape system using a water balance equation:

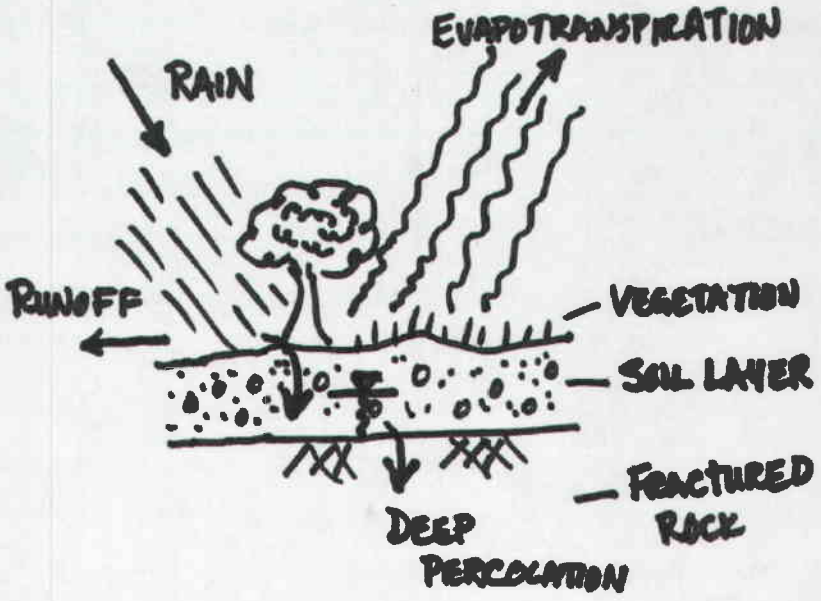
$$\Delta V = P + R_{on} - R_{off} - E - S - U$$

Where:

ΔV = change in groundwater storage
P = precipitation
R_{on} = surface water running on to the site
R_{off} = surface water running off to the site
E = evapotranspiration water loss by soil and on-site vegetation
S = water held or retained by the soil horizon
U = water pumped from wells

Figure 4 provides a simple sketch to illustrate the water behavior at in the soil/rock/landscape system.

Figure 4 Water Behavior in the Soil/rock/landscape System



Precipitation brings water to the ground surface. The rate at which water infiltrates into the soil depends on the type of soil and its permeability. If it rains hard (rain rate more than the permeability or absorption rate of the soil), a good portion of that water flows on the surface of the soil and off the site as runoff. Rainwater that runs off from adjacent lands may bring surface flows on to the site (Run –on), although in the case of Sundance where the property is essentially on a ridge top, this would be zero. Water that does not run off the site is captured by the soil horizon. Water evaporates from the soil surface and plants that take water from the soil through their root systems also return water to the atmosphere through transpiration; these effects combined make evapotranspiration, which varies throughout the year. The soil horizon retains some water, depending on the soils carrying capacity, but extra water in the soil can percolate to the fractures within the foundation rock in the Sundance area (deep percolation) and be retained in the groundwater. Wells draw water from the groundwater stored in the fractures of the bedrock.

2.2 Calculations

In the updated analysis, actual rainfall measurements were used to produce a time-step water balance calculation, estimating the water available for deep percolation or groundwater recharge on a daily basis for the Sundance site for the years 1995 through 2010. Soil permeabilities and available water capacities for the time-step analysis were derived from site specific soils information from NRCS maps. The calculated groundwater recharge was summarized on an annual basis for comparison with projected water needs for the proposed subdivision and the surrounding parcels.

2.2.1 Rainfall Data Preparation

Historical recorded rainfall information available online from CDEC for the Pilot Hill gage provides the accumulated hourly rainfall since 1994. The Pilot Hill Gage location is within a mile of the Sundance development.

Station ID	PIH	**Elevation**	1200' ft
River Basin	AMERICAN R	**County**	EL DORADO
Hydrologic Area	SACRAMENTO RIVER	**Nearby City**	
Latitude	38.8317°N	**Longitude**	121.0092°W
Operator	CA Dept of Forestry	**Data Collection**	SATELLITE
Sensor 2	PRECIPITATION, ACCUMULATED (inches)	**(hourly)**	From 07/01/1994 to present

This on-line data was generally complete with only a few missing or null values of hourly accumulated precipitation. Most of these instances of missing data involved only one or two

hourly values of zero rainfall amounts, which were easily corrected as since the records were of cumulative rainfall and the values following the missing number include the missing rainfall value. Only one segment of missing data was significant enough to where actual rainfall distribution needed to be approximated to fill in the record. In this instance, records from a nearby station, Auburn Dam Ridge, were used to approximate the shape of the rainfall distribution at the Pilot Hill gage for four days in 1997. The rainfall total for that period did not need to be adjusted in this gap analysis, which is included as a worksheet within the calculation workbook.

Since 1995 the gage recorded the following annual rainfall:

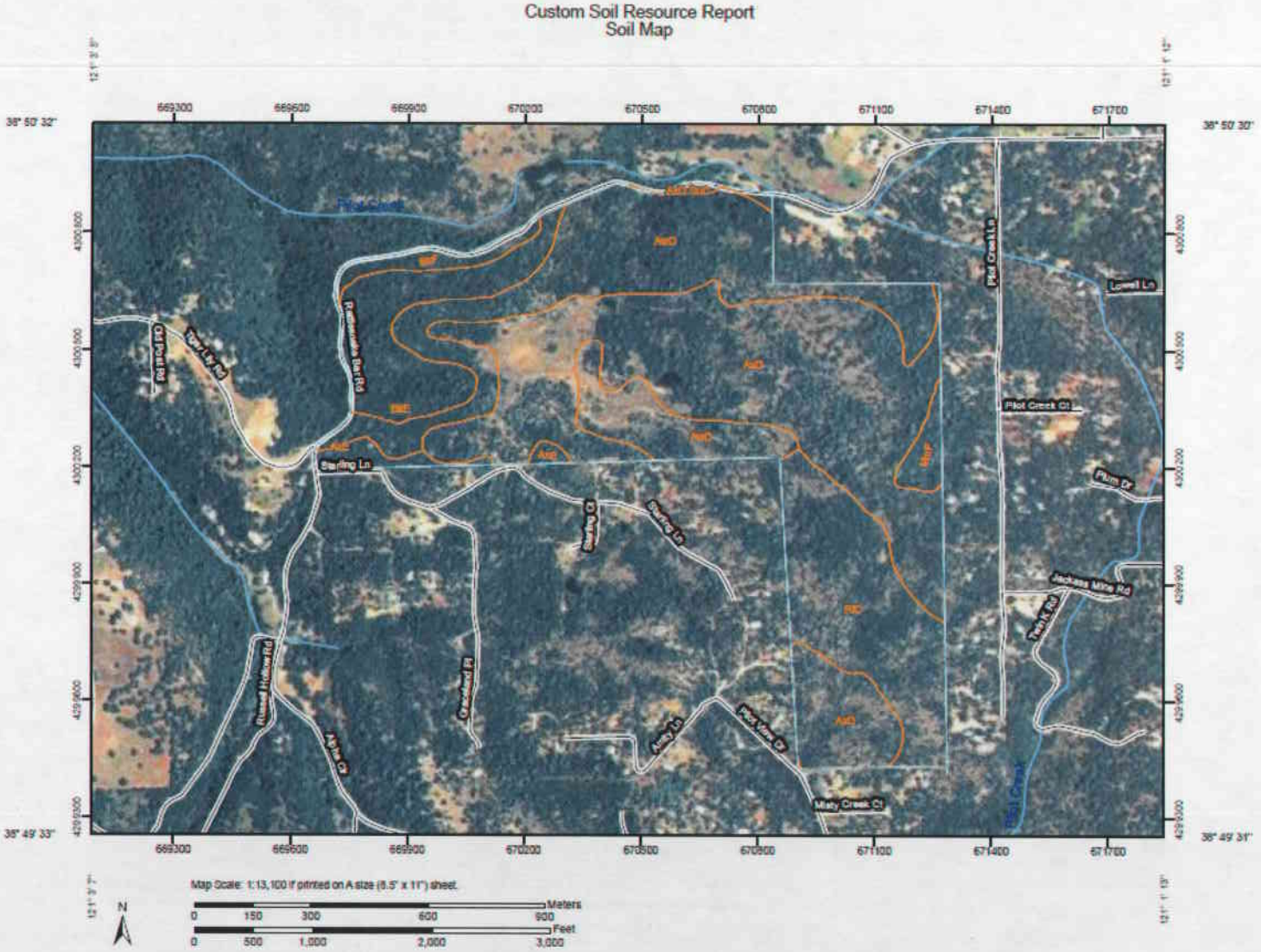
Year	Rain (inches)
1996	35.35
1997	41.39
1998	52.18
1999	31.02
2000	38.21
2001	24.3
2002	24.14
2003	19.12
2004	21.17
2005	36.53
2006	48.39
2007	22.55
2008	21.25
2009	26.97
2010	30.38
Mean	**31.53**

The mean annual rainfall of 31.5 inches over the 15 years of available record matches closely with the 32 inches indicated on the recently published El Dorado County Mean Annual Rainfall map.

2.2.2 Soil Properties

The NRCS Web Soil Survey can produce custom, site-specific maps with corresponding soil properties. A report was produced for Sundance parcels and another for the Sundance and surrounding parcels. Those reports are included in the attachments. Figure 5 shows the soils map for the Sundance parcels and Table 1 provides the soil distribution and soil properties for those parcels. Figure 6 shows the soils map and Table 2, the soil distribution, for the Sundance plus surrounding parcels.

Figure 5



10-1327.1.19

Custom Soil Resource Report

MAP LEGEND

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

Soils
- Soil Map Units

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

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

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

MAP INFORMATION

Map Scale: 1:13,100 if printed on A size (8.5" × 11") sheet.

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 10N NAD83

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

Soil Survey Area: El Dorado Area, California
Survey Area Data: Version 4, Dec 14, 2007

Date(s) aerial images were photographed: 6/30/2005

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

10-1327.1.20

Table 1 Soil Distribution and Soil Properties for the Sundance Parcels

Sundance Parcels Only	El Dorado Area, California (CA624)			Ksat	Capacity
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**	in/hr	in
AwD	Auburn silt loam, 2 to 30 percent slopes	80.2	26.7%	0-0.06	2.3
AxD	Auburn very rocky silt loam, 2 to 30 percent slopes	129.9	43.3%	0-0.06	2.3
AxE	Auburn very rocky silt loam, 30 to 50 percent slopes	5.2	1.7%	0-0.06	2.3
BkE	Boomer very rocky loam, 30 to 50 percent slopes	27.9	9.3%	0.01 - 0.57	7.1
BkF	Boomer very rocky loam, 50 to 70 percent slopes	6.1	2.0%	0.01 - 0.57	4.9
MmF	Metamorphic rock land	4.5	1.5%	0.01 - 19.98	0
RfC	Rescue very stony sandy loam, 3 to 15 percent slopes	45.2	15.1%	0-0.06	7.1
SuC	Sobrante silt loam, 3 to 15 percent slopes	1.2	0.4%	0-0.06	3.9
Totals for Area of Interest		**300.0**	**100.0%**		

Figure 6


Custom Soil Resource Report
Soil Map
669600
670000
670400
670800
671200
671600
38° 50' 46"
38° 50' 44"
38° 48' 52"
38° 48' 50"
Orchard Ct
Oak View Dr
Rattlesnake Bar Rd
Pilot Creek
Lowell Ln
Pilot Creek Ln
Pilot Creek Ct
Plum Dr
Sterling Ln
Sterling Ct
Graceland Pl
Amity Ln
Misty Creek Ct
Red Cloud Ln
Heatherview Ln
Black Dog Ct
Pleasant Hill Rd
Pilot View Ct
Oak View Ct
Sparrow Ct
Sparrow Hawk Ln
Far Horizon Trl
Map Scale: 1:16,700 if printed on A size (8.5" x 11") sheet.
Meters
0 150 300 600 900
Feet
0 500 1,000 2,000 3,000
N

Table 2 Soil Distribution for Sundance and Surrounding Parcels

Map Unit Legend

El Dorado Area, California (CA624)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
AwD	Auburn silt loam, 2 to 30 percent slopes	118.5	13.2%
AxD	Auburn very rocky silt loam, 2 to 30 percent slopes	246.2	27.5%
AxE	Auburn very rocky silt loam, 30 to 50 percent slopes	138.3	15.5%
BhD	Boomer gravelly loam, 15 to 30 percent slopes	0.0	0.0%
BkE	Boomer very rocky loam, 30 to 50 percent slopes	40.1	4.5%
BkF	Boomer very rocky loam, 50 to 70 percent slopes	6.5	0.7%
MmF	Metamorphic rock land	16.6	1.9%
PrD	Placer diggings	19.8	2.2%
RfC	Rescue very stony sandy loam, 3 to 15 percent slopes	218.3	24.4%
RfD	Rescue very stony sandy loam, 15 to 30 percent slopes	18.5	2.1%
SaF	Serpentine rock land	61.1	6.8%
SuC	Sobrante silt loam, 3 to 15 percent slopes	9.4	1.1%
SuD	Sobrante silt loam, 15 to 30 percent slopes	1.6	0.2%
Totals for Area of Interest		894.9	100.0%

As mentioned earlier, soil permeability is an important factor in determining infiltration, and thus, the rate of groundwater recharge for the site. The soil covering approximately 87 percent of the Sundance development area has a very low to moderately low permeability of from 0.00 to 0.06 inches per hour. This percentage holds for the area surrounding Sundance as well. An average permeability for the soils in the area would be about 0.03 inches per hour.

Similarly, the majority of the soils found on the Sundance parcels have a saturated water holding capacity of about 2.3 inches. Since there is a portion of the moisture of the soil horizon that will always remain in the soil and some water can be passed from the soil to the underlying rock without the soil being totally saturated, only a portion of the soil's water capacity range will be utilized during the recharge process. An effective water capacity of about half of the total saturated capacity, or 1.2 inches, would be appropriate for the recharge calculation. Increasing the capacity value in the calculation will decrease the deep percolation as more water will be used to fill the capacity of the soil.

2.2.3 Time-step Calculation and Spreadsheet Methodology

The time-step calculation spreadsheet is included in the attached disk.

The time-step calculation spreadsheet first determines the rain that occurs for each hour. The rain gage station provides the cumulative or accumulated rainfall for each hour. The difference between consecutive readings gives the rainfall that happened for that past hour.

The next calculation is whether the amount of rain exceeds the soils ability to absorb water. If that rainfall is less than or equal to the soil permeability, all that water enters the soil matrix. If it is greater than the permeability, then only an amount equal to that rate enters the soil and the remainder becomes runoff. The hourly infiltration of water to the soil matrix is totaled for each 24-hour period.

The daily infiltration of water is added to the previous water available in the soil (water in soil) and the daily evapo-transpiration determined from the DWR Daily Average Reference Evapotranspiration by ETo Zone (inches/day) is subtracted from that value (water in soil). If the water in soil matrix is greater than the effective water holding capacity of the soil, then that water becomes deep percolation. The daily deep percolation is then summed for the year.

3 Findings

3.1 Recharge

Figure 7 provides a summary of the calculated annual rainfall and calculated deep percolation for the years 1996 through 2010. Note that the groundwater recharge is not necessarily proportional to the annual precipitation. This is not surprising since the amount of infiltration and deep percolation is dependent on how the precipitation is distributed over time.

Figure 7

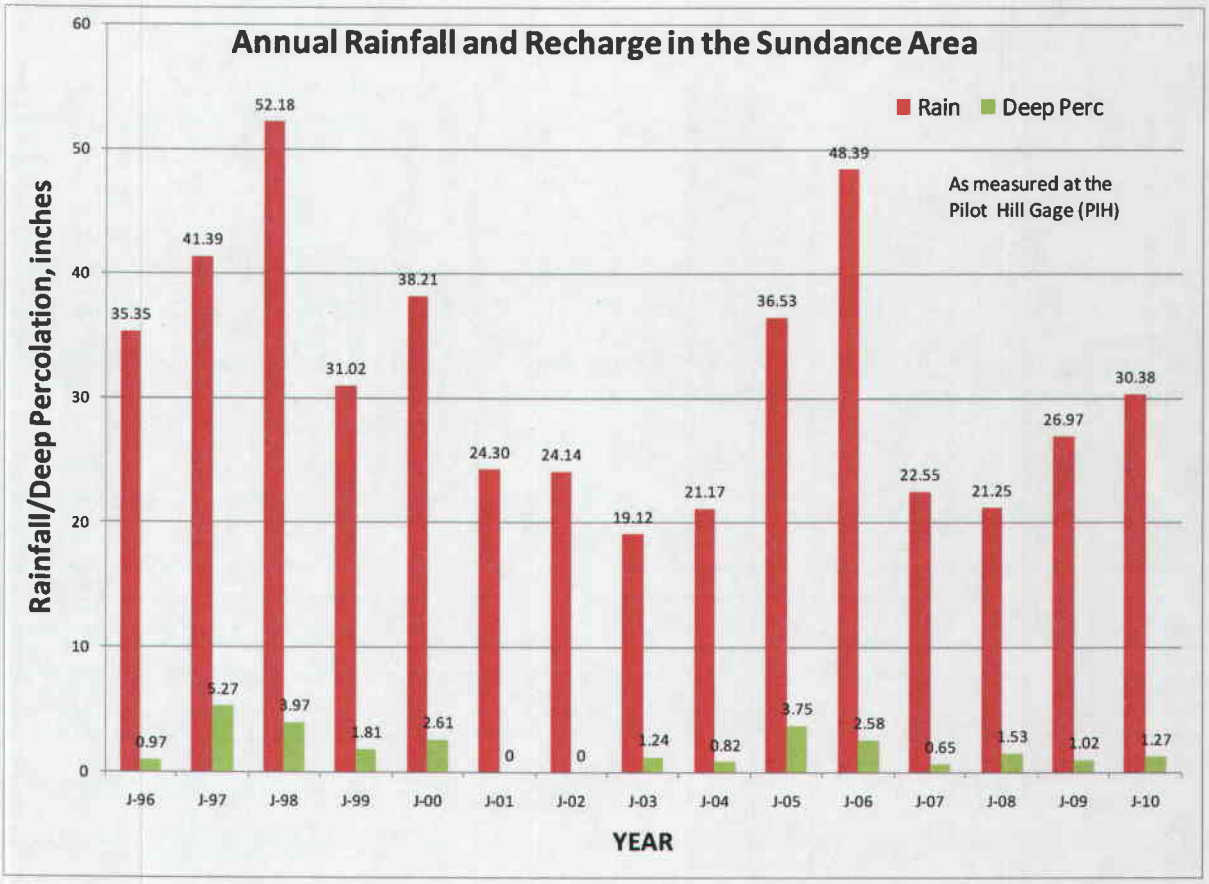
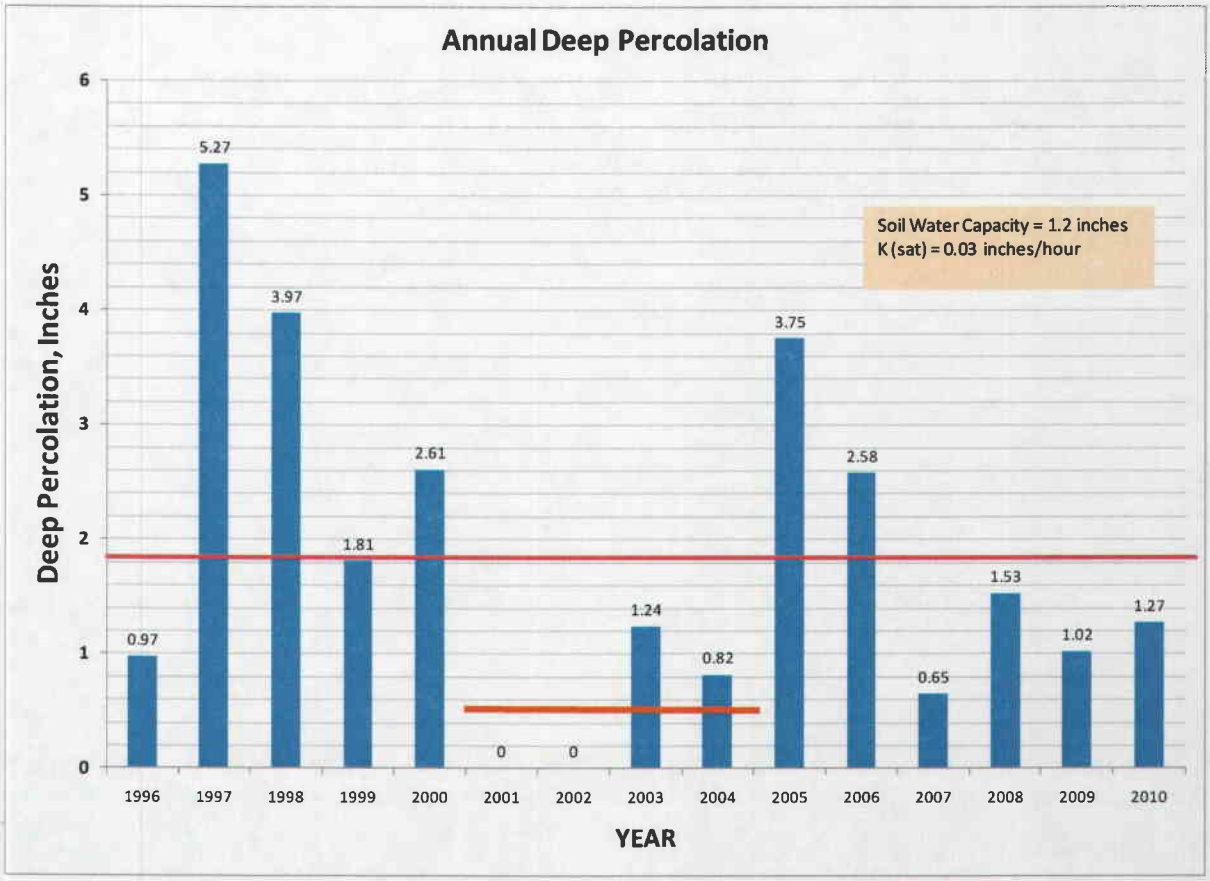


Figure 8 shows just the calculated annual deep percolation for the study period. For these soil characteristics, the average calculated recharge for all 15 years is about 1.8 inches (red line). However, the plot also shows the recharge varies significantly from year to year. There are many consecutive years where the recharge is much lower than the average. For example, during the period 2001 through 2004, the deep percolation averages only 0.5 inches

Figure 8



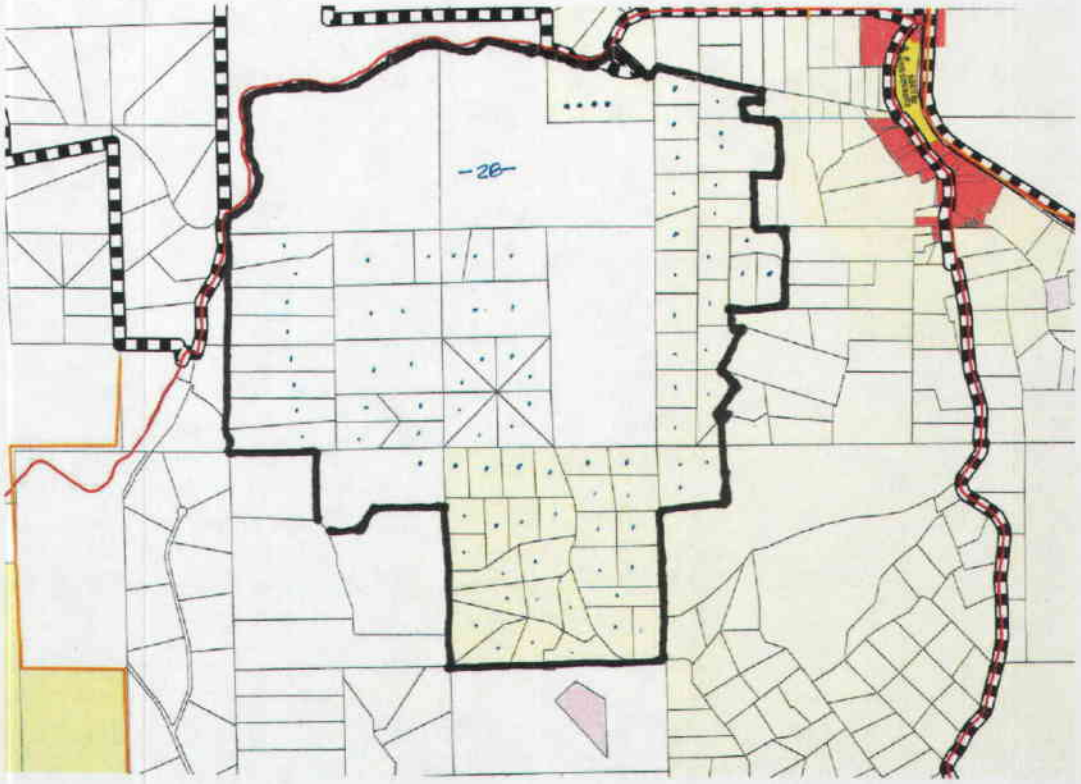
(orange line) and obviously much lower if one were to look only at 2001 and 2002. Even over the last 4 consecutive years the deep percolation has only been 60% of the long term average.

3.2 Water Availability for Sundance and Surrounding Properties

The parcels surrounding the Sundance development are either existing 5 to 10 acre parcels or are zoned Estate Residential, 5 acres and can be subdivided without rezoning or a General Plan amendment. Surrounding parcels will also rely on groundwater, and their groundwater use can impact the groundwater supply for Sundance and vice versa. The area surrounding Sundance must be analyzed together with the development in order to provide a complete picture of those potential impacts.

Figure 6 shows the Sundance and surrounding area, including the parcels on the Pilot Hill ridge. Figure 9 is a parcel map of the area that corresponds to the soil map presented in Figure 6. The current Sundance plan calls for 28 dwellings and the surrounding properties shown in the figure can accommodate another 89 primary dwellings, not including granny flats. Thus, a total of 117 primary dwellings will need to rely on groundwater in the future for this area, which has a surface area of about 895 acres.

Figure 9 Sundance and Surrounding Parcels (Analyzed Area)



We can calculate a factor of safety to compare the available groundwater with the future water demand. A factor of safety of 1.0 means that there is just enough groundwater to satisfy the water demand for the area.

Using the long term average calculated recharge (1.8 inches) and a use factor of 0.75 a-ft per dwelling, the factor of safety for groundwater use would be:

$$FS = \frac{(1.8 \text{ inches} / 12 \text{ in/foot}) \times 895 \text{ ac}}{0.75 \text{ a-ft/unit} \times 117 \text{ units}} = 1.5$$

However, as discussed earlier, the significant variation in annual recharge. There are two examples shown in Figure 8 of four year periods that have average recharge values significantly less than the long term average and of course many single years where recharge is even lower. Looking at the period of 2001 through 2004, the factor of safety for groundwater use would be:

$$FS = \frac{(0.5 \text{ inches} / 12 \text{ in/foot}) \times 895 \text{ ac}}{0.75 \text{ a-ft/unit} \times 117 \text{ units}} = \text{~~0.34~~ } 0.43$$

Without knowing the available storage within the fractured rock beneath the site, it is difficult to know whether there is enough groundwater stored to bridge multiple years of low

recharge or for a given level of recharge, how many years could be accommodated. However, it seems that there would not be enough recharge to provide groundwater for the needs of the Sundance development and surrounding neighbors given a reasonable number of low recharge years (3-4).

4 Conclusions

1. Existing rainfall records for the Pilot Hill gage provides 15 years of hourly data that can be used to calculate the time distribution of groundwater recharge in the Sundance and surrounding area.
2. It is important to include the parcels surrounding Sundance in the analysis of groundwater availability since both Sundance and the surrounding properties are dependent of the same groundwater source, storage, and recharge processes. Most parcels in the surrounding area are smaller and probably rely disproportionally on the existing Sundance property to aid in replenishment of groundwater supplies.
3. Annual variations in groundwater recharge can be significant. A long term average recharge may not properly exhibit significant periods of low annual recharge that exist and can lead to a critical over-estimation of available groundwater supplies, especially for areas where groundwater storage cannot be quantified.
4. Based on the groundwater recharge estimated for the period 2001 through 2004 for Sundance and the surrounding area, there is not enough groundwater recharge from rain falling on the area to support the annual water needs of Sundance and the surrounding properties at build out. The factor of safety of supply to demand for this 4-year period is ~~0.34~~ 0.43.
5. The Sundance development as currently proposed will significantly impact the groundwater supply for neighboring properties and existing residents.

5 References

1. *Groundwater Conditions and Well yields in Fractured Rocks,* Southwestern Nevada County, California, US Geological Survey, Report 83-4262, 1984.

2. *Hydrogeologic Investigation Assessment Report, Sundance Subdivision,* Holdrege & Kull, October 28, 2008.

3. Letter of February 18, 2010, *Comments on the Sundance Subdivision by Bill Bennett.*

4. *Planning Staff Memorandum,* Planning Commission from Jason Hade, Rezone Z07-0040/ Tentative Map TM07-1454/ Special Use Permit S09-0012/ Sundance Subdivision, September 10, 2010.

PC 11/18/10
#11

RECEIVED
10 NOV 15 AM 11:54
PLANNING DEPARTMENT

MEADOW CROFT LN
CLOVER LEAF
PEDRO HILL RD
PEDRO HILL RD
MANOR DR
STATE HWY 49
SALMON FALLS RD
SALMON FALLS RD
JACKASS MINE RD
POND VIEW RD
TWIN K RD
JACKASS MINE RD
JACKASS MINE RD
QUARTER HORSE CT
PLUM DR
PLUM DR
PILOT CREEK LN
PILOT CREEK LN
PILOT CREEK CT
TTS CREEK RD
REEK CT
SALMON FALLS OUTORF
BOULDER LN
LOWELL LN
LOWELL LN
SALMON FALLS RD
CANTINA LN
RATTLESNAKE BAR RD
RATTLESNAKE BAR RD
FARM R
PILOT CREEK LN
CREEK SIDE CT
OAK VIEW DR
OAK VIEW DR
OAK VIEW CT
STATE HWY 49
N 140
OUT 80
8"W

LEGEND

- SERVED DOMESTIC WATER CUSTOMER
- GATE VALVE
- PRESSURE REDUCING VALVE
- FIRE HYDRANT
- BLOW OFF
- AIR RELIEF VALVE
- TANK
- PUMP STATION
- ALL DASHED APPURTENANCES WERE NOT FIELD LOCATED BUT APPEAR ON GDPUD ORIGINAL WATER SYSTEM FIGURE DATED JAN 13, 2000
- WTP - WATER TREATMENT PLANT
- NC - NORMALLY CLOSED

SCALE IN FEET
0 200 400 800
N

MATCHLINE SEE SHEET ALT-4

NO.	DESCRIPTION	COUNTY APPROVAL APPROVED BY	DATE

GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT
EL DORADO COUNTY, CALIFORNIA

BENCH MARK :
DESCRIPTION :
ELEV :
DATUM :

APPROX. SCALE 1"=800'
JOB. NO. 2895-02

ABURN LAKE TRAILS
PILOT HILL

KASL ENGINEERS
7777 Greenback Lane
Suite 104
Citrus Heights, CA 95610
Tel. (916) 726-1800
Fax (916) 722-4584

10-1327.1.31

SHEET NO. ALT-5 OF 21

PC 11/18/10
#11

Cool-Pilot Hill Advisory Committee

Post Office Box 22
Pilot Hill, CA 95664

November 11, 2010

RECEIVED
PLANNING DEPARTMENT
2010 NOV 12 AM 9:45

El Dorado County Planning Commission
2850 Fairlane Court
Placerville, CA 95667

By FAX and U.S. Mail: 530.642.0508

Re: Sundance Subdivision –(Z07-0040/TM07-1454/S09-0012)

Dear Commissioners,

The Cool-Pilot Hill Advisory Committee has reviewed the revised map for the Sundance Development and we have found that the plan is essentially the same as the one submitted last year. Therefore, we would like to reiterate our comments from our February 17, 2010 letter, particularly the request for an EIR so that all of the project's impacts can be adequately reviewed and addressed.

CPHAC continues to be concerned about the through traffic that will result from the subdivision road linking Rattlesnake Bar with Pilot View Drive. Without a gate separating "Road A" from Pilot View Drive, the residents of Pilot View Drive will be directly and adversely impacted. These residents currently use Pilot View Drive for walking, horseback riding and bicycle riding. There are no adjacent trails or shoulders along the roadway. Allowing additional through-traffic will be a grave danger to the existing residents.

We are very concerned that there will be a significant impact in the depletion of groundwater if the project is approved as presented. Review of the very limited groundwater studies, and the indisputable presence of numerous failing or sub-standard wells on neighboring parcels, suggest that there may not be enough water available for this development and the area's existing residents, particularly in critical water years. Groundwater is already in short supply for many of the existing residents; more houses and wells will simply exacerbate the existing problem.

As you know, the property has historically been used for grazing. In fact, ghe Agriculture Commission has made the finding that the parcel has be used for grazing in the past and recommended that the site *continue to be protected* as historical grazing land. They also made the observation that the soils on the property are officially recognized as being able to sustain grazing and are suitable for grazing activity, per

the county's own soil survey. CPHAC opposes any conversion of agricultural and/or grazing lands into subdivisions when ample infill land still remains in the county. Our agricultural and grazing lands are a nonrenewable resource. Once lost to subdivision and development, they are lost forever.

Lastly, if the development proceeds, CPHAC strongly supports a non-motorized trail across the property, as recommended by the Planning Department, to link both local residences and future regional trails on the Auburn Recreation Area, the easement near the Knickerbocker Creek and the areas to the south of the Cronin Ranch.

CPHAC members voted unanimously to forward these comments, concerns and requests to your Commission. We thank you for your consideration.

Sincerely,

Larry Ring
Chair

PC 11/8/10
#11

RECEIVED
PLANNING DEPARTMENT
10 NOV 10 PM 11:35

08Nov 10

Planning Commision, Roger Trout the planner

RE: Sundance Subdivision in Pilot Hill.

I object to this project for the following reasons:

Roads - The proposed gate will be destroyed opening up Rattleshake Rd to Salmon Falls. I live on Starling Lane. We have attempted to block thru traffic from Pilot View Dr for years. A total of FIVE gates have been torn down by locals wanting to short cut through. It is a short cut for the drunks to avoid the main road. We suffer with racing cars, rolled over cars, trash, bottles, dumped furniture gate lock cutters. and trailbikes. The proposed thru road being paved will "short cut" vehicles off of Salmon Falls onto Pilot View Dr. as the new road will be faster from Cool to Folsom. The DOT traffic studies totally ignores this blatent fact.

Water - Many land owners on Starling Ln

10-0327.1.34

1

Pilot View Dr & Pilot Creek have low output wells, muliple wells, dry holes and storage tanks. Most use a "PumpTec" well controller because of low recharge rates. Even the test wells drilled on this project have "PumpTec" devices because they too are low recharge rate wells. Examples:

600 Starling Lane - the well frequntly runs dry, limiting the Richards to short showers, no outside watering etc. They cannot afford to drill deeper. During power failures I allow them to connect to my well. They love the long showers.

Starling Lane - the owner has 4 holes, 2 that are dry. Last month he re-drilled one producing well to 700 feet with no benefit.

Starling Lane - the owner has a holding tank and a well that runs dry after 30 min. filling of trying to fill the tank.

Starling Court - the owner has 2 holes, one dry.

On Amity Lane off of Pilot View Dr - One house has 3 dry wells, one has very

little water, hardly enough to even fill his holding tank.

Pilot Creek - many wells are low output using PumpTeks controllers. Four parcels adjoining this project have drilled 2 or more wells seeking water.

Oak View Dr - 4 homes truck in water. One house on Pine Ct. has a 1200 foot well, 4 dry holes and has all of 2gpm to live on.

Enviroment - Preliminary studies show that the El Dorado mule ears, an plant listed as " rare, threatened or endangered exists on this projects land. It extends from lot#8 accross Lot# 7, 6, 5, 4, 3, 24 and across the north part of my property at 607 Starling Ln. The developers application does not mention this.

See photos

Also, this project will disturb the wild life, disrup a biological corridor that extends to Folsom Lake and wipe out forever this land from agriculture.

10-1327.I.36

Historical artifacs - Whatever study the developer performed was superficial.

At Starling Lane and Rattlesnake Rd, and old stone bridge exists on lot # 10. My research shows that this was part of the original road from the mines to Folsom. It is glaringly obvious for all to see. This raises the question: How thourough was this study by the developer performed?

If any project should ever be subjected to an Enviromental Impact Report, this one is it. Road traffic reconfiguration, altered traffic patterns, substandard water reports based solely on asumptions, the severe impact on over 90 property owners, wild life, unstudied rare plants, zero historical artifact research etc. are either highly addressed or simply ignored, all for the benefit of the developer.

He does not live here. He never will. He does NOT care of the 400+ residents of Pilot Hill who will suffer from this disaster.

Nobody backs this project. Cal Fire

10-1327.I.37

Dot, the Ag board, CPAC, etc and us, the people who actually would have to live with this ALL object.

Chris bought Ag land. He knew it then. Prime grazing land according to the cattlemen I've talked to. Even Chuck Bacchi has run cattle on it. It is completely fenced. It has 3 spring fed stock ponds. It has feed cribs. If this land can be allowed to be subdivided, every ranch in El Dorado County will feel the pressure to sell and subdivide. What will be next. The El Jee? The old Strasser/ Gold Rush resort ranch?

Do not let this person from Gilroy benefit from our little town. Tell him he bought grazing land, now go raise some cows.

Kevin McNaughton
607 Starling Lane
Pilot Hill, CA 95664

Kevin McNaughton

PS- please excuse this being handwritten as I cannot afford a computer. Or drilling another well

KM

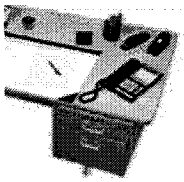
10-1327.38

(5)

10-1327.I.39


10-1327.I.40

PC 11/18/10
#11



Roger P Trout/PV/EDC
10/28/2010 04:04 PM

To Charlene M Tim/PV/EDC@TCP
cc
bcc
Subject Fw: Sundance

RECEIVED
2010 OCT 29 AM 8:04
PLANNING DEPARTMENT

Please forward to PC binders and file. Thanks.

Roger Trout
Director, Development Services Department

----- Forwarded by Roger P Trout/PV/EDC on 10/28/2010 04:03 PM -----

MARLANE GREGOIRE
<ibmarlane@wildblue.net>
10/28/2010 02:31 PM

To jason.hade@edcgov.us, roger.trout@edcgov.us, pierre.rivas@edcgov.us
cc
Subject Sundance

I am writing this as a concerned homeowner in Pilot Hill and as a member of the Cool Pilot Hill Advisory Committee and a representative of Pilot Creek Lane homeowners.

I do not understand the reluctance of the Planning Department to change items on the Environmental Checklist to "Potentially Significant to the Community" after many items have been been pointed out to you.

In general, the document contains conclusions, but very little in the way of evidence for those conclusions. Have these documents been reviewed for their accuracy and adequecy since references to documents and studies were prepared by consultants to the project applicant? Do they include substantial evidence to support the Less Than Significant conclusions? The document itself does not seem to be prepared by an objective third party.

On page 2 item 3 Population. There is an assumption of 2.8 people per household with a maximum of 157 people. How can Section 12 under Population and Housing answer that there would be no significant impact on the population when the Community of Pilot Hill only has a population of approximately 415 people? The addition
of the potential population stated in the report contradicts its own assumptions. This is POTENTIALLY SIGNIFICANT TO THE COMMUNITY why was it not marked that way?

On Page 8 discussion of item a. Regarding Air Quality Carlton Engineering states that the project "appears" to be below thresholds. What are these thresholds and what would the emissions of the project be? There needs to be discussions on the methodology for the conclusions that were reached. Did Carlton Engineering actually model the project emissions or estimate them? So why weren't they?

On page 18 of the checklist question B speaks to the depletion of the groundwater of the existing wells nearby. There are many low producing wells, and some that go dry in the summer, in the area. Many people have 2 wells and holding tanks now. None of the surrounding area or letters seem to have made an impact on Staff, why? Just because 3 test wells have been done doesn't mean there will be enough water for 26 more once pumiping starts. What about the people off Pilot View where there are 30 vacant lots that have not been built on. Why has no consideration been made for the surrounding area that has mailed in letters stating that there is a water problem? Why have we been ignored?

On page 22 question C asks about permanent increase in ambient noise levels above levels existing without the project. On page 23 it is answered that it will not result in substantial increases in noise. There is no evidence to support this conclusion. Was noise modeling done for this project?Without the information regarding noise generated by construction how can a conclusion be reached regarding the ultimate noise levels? Staff is recommending that the gate be denied to stop through traffic from Salmon Falls Road to Rattlesnake Bar Road. This item should be changed to POTENTIAL SIGNIFICANT IMPACT. Why hasnt it? A through road will obviously cause noise where there has been none. Why is this being ignored?

On page 27 regarding off-site road improvements (Rattlesnake Bar, Pilot View Drive) that would be required for the project. The document references other locations where traffic could be worsened. The locations of these areas are not identified. Consequently this document inadequately analyzes off-site impacts. There are not full disclosures of the impacts of this project! Are there potentially sensitive species on these off- site locations? This could also be a POTENTIALLY SIGNIFICANT IMPACT

This document refers to conditions in the staff report and assumes implementation of these conditions resulting in impacts that are less than significant. There is no discussion on the process as to how implementation of these conditions would be assured and how implementation of the measures would reduce impacts. It can only be concluded, therefore, that these imp[acts would remain significant unless information is presented. With the inclusionof applicant-prepared support documentation, can County Staff really recommended to the Planning Commission and the Board of Supervisors that the document "reflects the lead agency's independent judgement and analysis" as required by CEQA Guidelines section 15074(b)

It is so obvious to everyone in the Community that this project needs an EIR.

We all wonder why the County seems so adverse to requiring an EIR. It seems everything the Developer wants the Developer gets without any input from the Community being considerd.

With Pilot Hill being a small Community this is a very large project.

I would like the questions above answered please.

thank you

Marlane Gregoire
4800 Pilot Creek Lane
Pilot Hill
530 823 1640

PC 10/28/10
#8

10 OCT 26 AM 9:27
RECEIVED
PLANNING DEPARTMENT

Bill Bennett, Chairman
Pilot View Drive Zone of Benefit
Advisory Committee
4180 Misty Creek Court
Pilot Hill, CA 95664
(530) 823-7079

October 25, 2010

El Dorado County Planning Commission
c/o Development Services Department
2850 Fairlane Court, Building C
Placerville, CA 95667

RE: **Sundance Subdivision: Z07-0040 /TM07-1454/S09-0012**

Gentlemen:

Through Motorized Traffic to Pilot View Drive:

At the end of your February 28, 2010 hearing on Sundance, you directed the Applicant work with the community and revise the road plan for the development so that the development would not impact Pilot View Drive. As Chairman of the Pilot View Drive Zone of Benefit Advisory Committee, I had the opportunity to meet with Applicant's attorney, Mr. Bob Laurie on March 31, share our concerns, and suggest alternatives. Bob's summary notes and a subsequent e-mail exchange at attached. I would like to thank him for his courtesy and efforts in trying to resolve our issues.

I am not sure the present plan with a gate and boundary line adjustment that Mr. Laurie proposes is satisfactory since the Planning Department is still recommending that no gate be placed on the roadway and allowing through motor vehicle traffic to Pilot View Drive. However, I want to share two other concepts that I shared with Bob in the figures below that might be acceptable. I believe they are self explanatory, but if further details are needed I can add some discussion at the upcoming hearing or you can reach me by e-mail or at the number below. Allowing a few new parcels in the subdivision to only access Pilot View, and let Road A connect to Starling Rd. as its second access provides an added benefit of providing a direct access for current Starling residents which would shorten their route to Highway 49 and Pilot Hill and eliminate a long, narrow stretch of Rattlesnake Bar Road.

Allowing through motorized traffic to Pilot View Drive would be a danger and a severe impact of the current residents. The 2006 traffic study did not study the through traffic generated from surrounding areas, only the to-and-from traffic generated by the

Figure 1

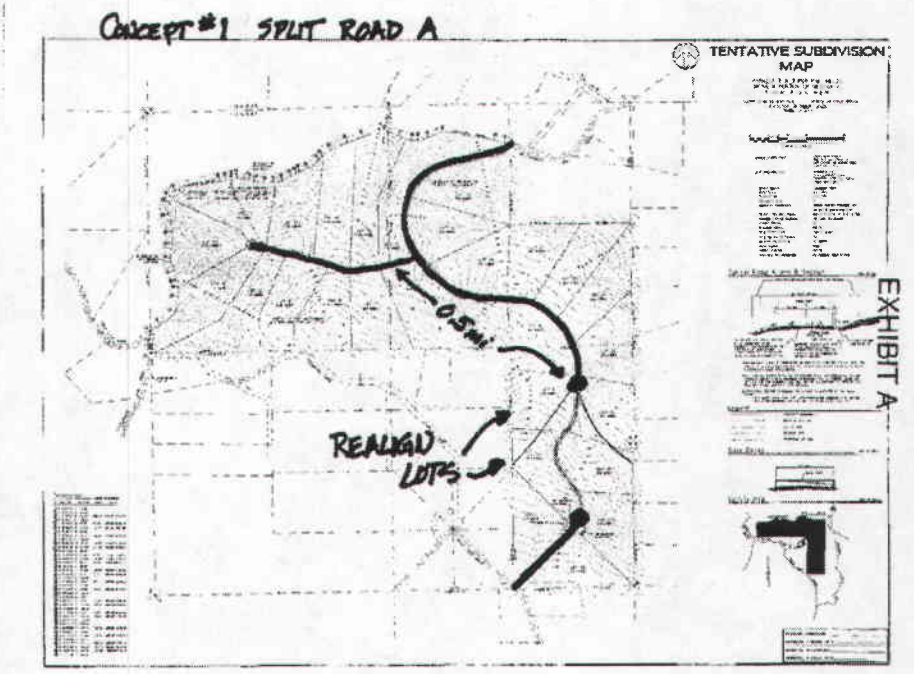
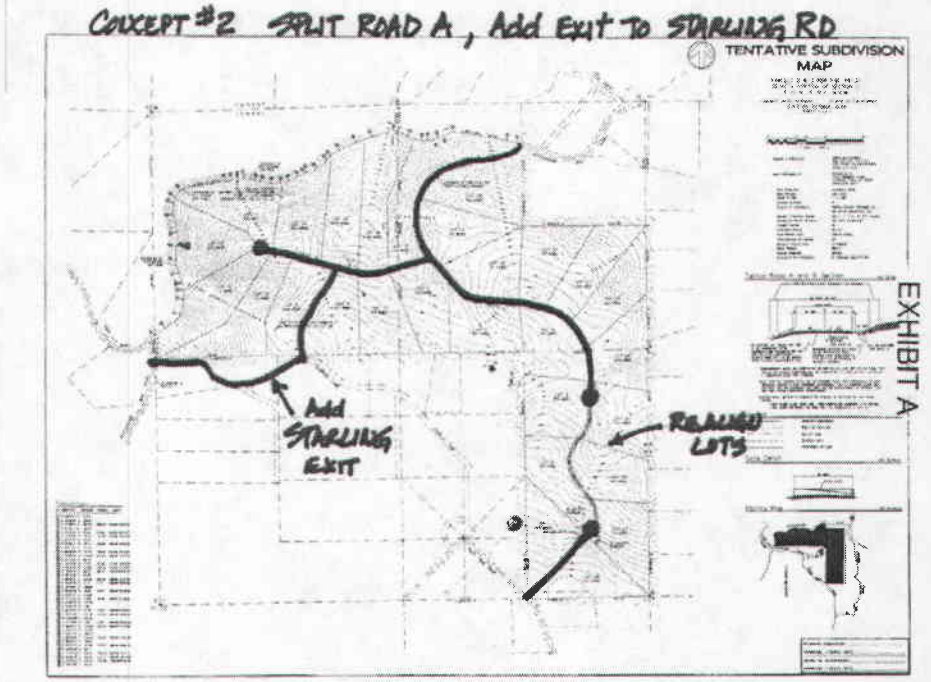


Figure 2



development. The through traffic route through Road A and Pilot View Drive would save 1 mile or more of commute and the congestion going through Pilot Hill on Salmon Falls for any one going to or from Folsom. Traffic would originate in Pilot Hill Estates, Peninsula Park, and along Rattlesnake Bar, as well as weekend recreation drivers passing through the area (i.e. motorcycles now currently on Salmon Falls). Without a gate separating Road A from Pilot View Drive, the PV Dr. Residents will be directly impacted and their safety impaired.

Residents currently use Pilot View Dr. for walking, horseback riding and bicycle riding. There are no adjacent trails or shoulders along the roadway. Allowing through vehicle traffic will endanger that walking/riding activity.

The traffic study did not look at the four sharp corners and other areas of reduced sight distance on Pilot View Drive, nor the blind driveways that feed directly to the roadway. The increased traffic will present significant hazards to existing residents as currently planned. Widening the road to 20 feet will not mitigate the dangerous parts of Pilot View Drive, such as the better-than-90-degree switchbacks and blind corners since much of that roadway is already 20-feet-wide.

Less than half of Pilot View Drive is 20 feet wide already and lacks shoulders. It is primarily an 18-foot-wide roadway with some 17.5 foot wide areas with substandard roadway section. The current roadway section is 1-1/2 inches gravel with chip and seal cover. This is well below the standards (Standard Plan 101C). It is unclear if the project will add thickness to the section, but without that, the roadway cannot meet weight load goals and the maintenance, provided solely by the residents of Pilot View Drive through a zone of benefit, will be severely impacted (potential increased maintenance).

Groundwater Impacts:

In the previous hearing and submittals, we pointed out a number of deficiencies with the water studies for the development.

- The water supply study failed to include parcels beyond the boundaries of the subdivision. Surrounding lands generally have or will have smaller parcels (5 acre) and their use of the common groundwater must be included.
- The water supply study does not look at drought years. A repeat of the 1976-1977 years would reduce the annual precipitation to about 15 inches, and thus reduce the supply to the groundwater supplying the area by more than half. Based on the water supply study, the factor of safety reduces to 0.5. This means that there would be only half the water available to supply the development and surrounding area in critical water years.
- The water supply study does not quantify the groundwater storage in the area. It has not shown that there is adequate storage to "carry over" enough water for one, two, or more dry years for current or proposed new residents. Groundwater in a fractured rock medium is dependent of the water stored in fissures and

cracks. Because the development is located on a hill, there is even less water storage available than in flat terrain. **One cannot assess whether there is enough groundwater unless one determines if there is enough storage to carry the users through dry year cycles.** The water supply report fails to do that.

- Groundwater study failed to obtain any records for exiting residents that are located around the proposed development or groundwater information on existing surrounding wells.
    - Failure of at least 7 wells in the area over the past few years.
    - Requirement that several of the properties immediately adjacent to the development to have additional storage tanks because well yields are so low.
- Another technical problem with the water supply study is that the analysis uses storm or excess rainfall probabilities to assess rain fall pattern. This is not normally done for a water supply study since existing historical records are available. The Pilot Hill Rainfall Station data (CDEC: Station PIH) for the past 15 years is available at an hourly time step and should be used for the analysis, not a theoretical storm frequency. The probability approach used in the analysis ignores drought and critical rainfall years.
- Assuming water from the Georgetown Divide Public Utilities District (GDPUD) can be brought in later if there is a shortage is not a realistic option. Since wells will go dry individually, each homeowner will end up re-drilling a deeper well on their own. The community and GDPUD could not act effectively to organize a collective response to an event that affects residents one at a time.

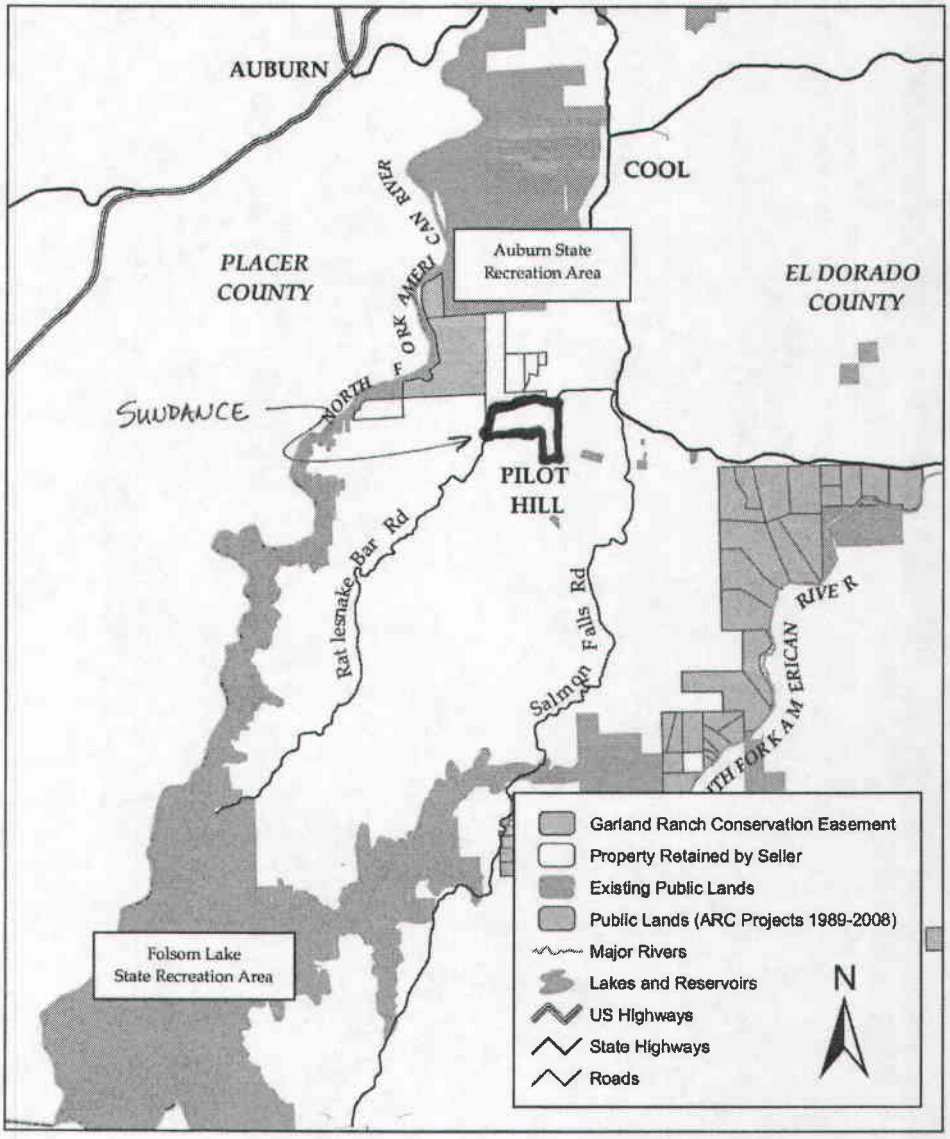
These issues suggest that there is not enough water available for the development and existing residents in critical water years.

Besides increasing the lot size, another alternative to mitigate the obvious groundwater impact is to see if at least some of the proposed lots at the lower elevations of the development could receive GDPUD water now. One reason given for not using GDPUD water was that current distribution lines do not have the pressure to reach all the parcels. Not all the parcels need be on city water but the more that are, reduce the impact to the neighborhood.

Connector Trail:

The Pilot View Drive Community is very supportive of a connector non-motorized hiking and equestrian trail between their neighborhood and Rattlesnake Bar through the development. Such a trail would connect the American River Conservancy's newly acquired easement on the Garland Ranch (North) and the American River Recreation Area, both to the north, with Pilot View Drive and potentially the South Fork American Trails to the south. Future connections to the south could possibly include Safari Estates, Gallagher Road, or the El Tee Ranch, which could connect to the public lands to the east. See map below.

Garland Ranch Conservation Easement
Project Area Map



American River Conservancy
October 21, 2008

Figure 4

10-1327.I.47

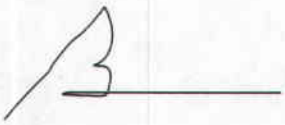
Thank you for considering our concerns:

Of the 72 parcels that are within the Pilot View Drive Zone of Benefit, there are about 50 developed parcels. With about 1/3 of our immediate neighbors yet to come, traffic and groundwater are huge worries for us and they are a big concern with this development.

Considering the current recommendations and reports before the Commission, traffic and water supply are significant impacts. Such impacts would appear to require more than a mitigated negative declaration in terms of environmental documentation.

Thank you for your consideration. As always, you can reach me by e-mail or contact me at (530) 823-7079 if you have questions or if I can clarify any details

Sincerely,



Bill Bennett

Enclosures

Note summarizing 3/31/10 meeting: from Bob Laurie:

Bill: Thank you very much for your courtesy and your time today. The purpose of this note is to briefly summarize our discussion.

I noted Chris Beauchamp's instructions to his consultant team have been to get as close to zero as possible on the project's impacts on surrounding properties. Southerly ingress and egress has been of greatest concern thus the project proposal to gate the southerly boundary. County DoT has objected primarily on the basis that the southerly portion of Chris' property is within the ZoB. There are two approaches to address this issue. One is to gate the project at the intersection of Parcels 4,5,24 and 25 which would be outside the boundaries of the ZoB. This would leave about eight parcels south of the gate that would be within the ZoB and would participate in the funding thereof.

The alternative is to do a boundary line adjustment (BLA) that would move Chris' ZoB parcel boundary to the south and incorporate only the southerly 20 acres. This would allow for a turnaround at Parcels 1, 27 and 28 (or other numbers if the lots are re-configured). This would leave only two parcels within the ZoB that would have direct access to the south. If a BLA is to be conducted, this would necessitate that the project would be taken off calendar as a BLA process takes months to accomplish.

We also discussed trails and I indicated that we have been seeking more information from the GDRD regarding their interests. You indicated that you felt that your neighbors would strongly favor some sort of recreational access that could be consistent with the overall design of Chris' project. I indicated that I would be discussing the matter with Chris.

As to timing, I indicated to you that regardless of whether we move forward with a BLA or other design modification, it is unlikely that we will be prepared to proceed on April 8th thus the likelihood of a request for continuance. I indicated that I would immediately inform you should we be making this request.

If you feel any of the above is inconsistent with your understanding of our discussion, please let me know. Again, thank you for your time.

Robert A. Laurie
BECKER RUNKLE LAURIE & NEWMAN
263 Main Street, 2d Floor
Placerville, CA 95667
530-295-6400

Beauchamp project

Bennett, Bill

From: Bob Laurie [ralaurie@sbcglobal.net]
Sent: Sunday, June 06, 2010 5:35 PM
To: Bennett, Bill
Subject: Beauchamp project

Bill-We are working on completion of map modifications. Those modifications include: a) an equestrian and pedestrian trail system along the roadways that will be dedicated to Georgetown Rec under conditions that will ensure security and maintenance and b) the map is to conditioned upon completion of a boundary line adjustment that will move the ZoB boundary to the southernmost 10 acre parcels. A gate will be placed on the roadway at that point and access to those two parcels will be from the gated side of the roadway. Thus, there should be no access through Pilot Hill Estates. Once we get drawings in place, I would be pleased to go over them with you. Questions?

Robert A. Laurie
BECKER RUNKLE LAURIE & NEWMAN
263 Main Street, 2d Floor
Placerville, CA 95667
530-295-6400

PC 10/28/10
#8

Aloha Niegel Adams
2810 Gillespie Road, P. O. Box 365
Cool, CA 95614
530-887-8848

10 OCT 26 AM 9:28
RECEIVED
PLANNING DEPARTMENT

October 25, 2010

El Dorado County Planning Commission
2850 Fairlane Court
Placerville, CA 95667

Re: Sundance Project (October 28th Agenda)

Dear members of the Planning Commission,

As a native of Cool and a strong supporter of trails on the Divide, I write to urge you to restore the requirement that a trail be required as part of this project. The project sits on open land between unconnected trails that currently extend from Sacramento to Lake Tahoe. Sundance is a missing link for trail needs of the future.

The American River Conservancy currently has an easement on property to the north and west this project. The ARC and BLM just completed a trail extending east from Salmon Falls along the South Fork of the American River. Equestrians can ride from Coloma almost to Rattlesnake Bar road and bicyclists from Sacramento can ride even further. Another trail extends westward from Cool to Rattlesnake Bar Road. But these two trails do not connect.

The goal is to connect the two parcels and the Sundance parcel is a critical link in that chain. Once connected, there would be a continuous trail all the way to Utah on connected trails. Once you are across Rattlesnake Bar Road, the trail system at Cool connects to the trails from Discovery Park in Sacramento to the Great Salt Lake via the American River Parkway, Folsom Lake to Auburn then the Western States Trail to Tahoe and the Pony Express trail from there across Nevada.

As planners, you know better than the average citizen that development proceeds parcel by parcel. El Dorado County and Placer County are growing rapidly because people interested in recreation, and especially horse recreation, are moving here from other parts of California and the nation. The Sundance development like much of western El Dorado County will likely be populated by people seeking a rural/ranch lifestyle with a heavy emphasis on recreation. Some will want to have farm animals with the most likely choice being horses. Property with acreage in this area of the County is typically

advertised as "horse property". Many of the current residents ride, run, bike, and hike on the existing trails.

I am aware that typography makes putting the proposed trail around the outer edge of the property difficult if not impossible. But a trail through the middle of this low density development would serve two purposes: it will preserve the possibility of being an important link in the chain of trails that draw people to this area, and, if the main connecting link ultimately turns out to cross a different parcel, the residents of Sundance and the surrounding area will still have a trail where they can hike, walk the dog, ride their mountain bikes or ride their horses.

We are losing many of the existing informal trails as more and more agricultural land is converted to small parcels. This makes it all the more important that as we move forward we set aside easements for potential trail routes, especially those that offer the possibility of connecting existing segments as future development occurs.

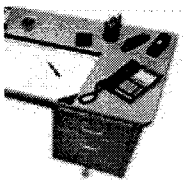
It is important that this parcel and other large parcels, when they are subdivided, include provisions for dedicated trails. I urge your commission to restore the trail requirement as part of this project.

Thank you for your consideration.

Sincerely,

Aloha N. Adams

PC 10/28/10
#8



Roger P Trout/PV/EDC
10/25/2010 08:34 AM

To Charlene M Tim/PV/EDC@TCP
cc
bcc
Subject Fw: Public Comment, Sundance Subdivision, Z07-0040

Please provide to PC and file, thanks. Roger Trout

----- Forwarded by Roger P Trout/PV/EDC on 10/25/2010 08:33 AM -----

Planning/PV/EDC
Sent by: Thomas R Purciel/PV/EDC

10/25/2010 08:22 AM

To Pierre Rivas/PV/EDC@TCP, Peter N Maurer/PV/EDC@TCP, Roger P Trout/PV/EDC@TCP
cc
Subject Fw: Public Comment, Sundance Subdivision, Z07-0040

FYI; Please forward to the appropriate staff member(s).

Thanks!

Tom

----- Forwarded by Thomas R Purciel/PV/EDC on 10/25/2010 08:16 AM -----

"Carmil Surritt" <carmilsurritt@gmail.com>
10/23/2010 08:05 PM

To <planning@edcgov.us>
cc
Subject Sundance Sub division

RECEIVED
PLANNING DEPARTMENT
10 OCT 25 AM 8:59

This is a horrible idea, I have been run off of this road with current traffic at least one dozen times in the last two years. It should not be for through traffic, twice people have been life flighted off of Pilot View Drive. Many times there have been accidents, crashes in to each other, power poles and trees.

The next problem is water, two of my neighbors have already had to re drill, dry wells an additional 250 feet just to get water. It is very scarce and hard to find. The well on the property next to me makes the property un sellable at 6 gal a min in the winter and 3 in the summer. It has been retested many times over the 17.5 years I have lived at 4211 Nashone View Lane.

If you could not rezone the area across from Rattlesnake Bar Road and Highway 49 for WATER RIGHTS INFRINGEMENTS, why is it OK to do this in an area that is already struggling with water issues.

Sincerely,

Carmil D. Surritt III
4211 Nashone View Lane
Pilot Hill CA 95664
530.888.1200

PC 10/28/10
#8

Debbie & Barry Tory
4181 Misty Creek Ct
Pilot Hill, CA 95664

RECEIVED
PLANNING DEPARTMENT
OCT 25 AM 8:21

October 20, 2010

El Dorado County Planning Commission
c/o Development Services Department
2850 Fairlane Court, Building C
Placerville CA 95667

RE: Rezone Z07-0040/ Tentative Map TM07-1454/ Special Use Permit S09-0012/ Sundance Subdivision

Dear Planning Commissioners:

I am the owner of 4181 Misty Creek Ct. off of Pilot View Drive.

I am strongly opposed to the proposed Subdivision as it is now planned and modified by the county.

Through traffic from Rattlesnake Bar to Pilot View Drive (no gate) will severely impact the traffic on Pilot View Drive and my family's safety regardless of the minor widening proposed by the County. Off-site traffic coming and going from Peninsula Park and the Rattlesnake Bar area toward Folsom was not analyzed in the traffic study and will be significant. A gate is needed.

Widening Pilot View Drive will directly and adversely affect my property.

The developer has not shown that there are adequate groundwater resources for that many parcels in a drought year. The analysis did not consider neighboring parcels, well logs of surrounding parcels or the recent failure of some existing wells in the area. The development may significantly affect my well and water supply in a drought year.

The development will adversely affect the availability of groundwater for me and my neighbors in the future.

I am concerned that the traffic (cut-through from Rattlesnake Bar) and groundwater have not been adequately studied for this project. Both of these issues will affect my safety and well being.

Sincerely,

Debbie L Tory
Barry a Tory

10-1327.I.54

PC 10/28/10
#8

Sandra L. Fleharty
4161 Misty Creek Court
Pilot Hill, CA 95664

10 OCT 26 AM 11:21
RECEIVED
PLANNING DEPARTMENT

October 20, 2010

El Dorado County Planning Commission
C/0 Development Services Department
2850 Fairlane Court, Building C
Placerville CA 95667

RE: Rezone Z07-0040/ Tentative Map TM07-1454/ Special Use Permit S09-0012/ Sundance Subdivision

Dear Planning Commissioners:

I am the owner of [4161 Misty Creek Court], APN# 104-130-05-100.

I am strongly opposed to the proposed Subdivision as it is now planned and modified by the county.

Through traffic from Rattlesnake Bar to Pilot View Drive (no gate) will severely impact the traffic on Pilot View Drive and my family's safety regardless of the minor widening proposed by the County. Off-site traffic coming and going from Peninsula Park and the Rattlesnake Bar area toward Folsom was not analyzed in the traffic study and will be significant. A gate is needed.

Widening Pilot View Drive will directly and adversely affect my property.

The developer has not shown that there are adequate groundwater resources for that many parcels in a drought year. The analysis did not consider neighboring parcels, well logs of surrounding parcels or the recent failure of some existing wells in the area. The development may significantly affect my well and water supply in a drought year.

The development will adversely affect the availability of groundwater for me and my neighbors in the future.

I am concerned that the traffic (cut-through from Rattlesnake Bar) and groundwater have not been adequately studied for this project. Both of these issues will affect my safety and well being.

Sincerely,

Sandra L. Fleharty

Sandra L. Fleharty

PC 10/28/10
#8

Richard D. Fleharty
4161 Misty Creek Court
Pilot Hill, CA 95664

10 OCT 26 AM 11:22
RECEIVED
PLANNING DEPARTMENT

October 20, 2010

El Dorado County Planning Commission
C/0 Development Services Department
2850 Fairlane Court, Building C
Placerville CA 95667

RE: Rezone Z07-0040/ Tentative Map TM07-1454/ Special Use Permit S09-0012/ Sundance Subdivision

Dear Planning Commissioners:

I am the owner of [4161 Misty Creek Court], APN# 104-130-05-100.

I am strongly opposed to the proposed Subdivision as it is now planned and modified by the county.

Through traffic from Rattlesnake Bar to Pilot View Drive (no gate) will severely impact the traffic on Pilot View Drive and my family's safety regardless of the minor widening proposed by the County. Off-site traffic coming and going from Peninsula Park and the Rattlesnake Bar area toward Folsom was not analyzed in the traffic study and will be significant. A gate is needed.

Widening Pilot View Drive will directly and adversely affect my property.

The developer has not shown that there are adequate groundwater resources for that many parcels in a drought year. The analysis did not consider neighboring parcels, well logs of surrounding parcels or the recent failure of some existing wells in the area. The development may significantly affect my well and water supply in a drought year.

The development will adversely affect the availability of groundwater for me and my neighbors in the future.

I am concerned that the traffic (cut-through from Rattlesnake Bar) and groundwater have not been adequately studied for this project. Both of these issues will affect my safety and well being.

Sincerely,

Richard D. Fleharty

PC 10/28/10
#8

Earl L. Syversen
541 Starling Ln.
Pilot Hill, CA 95664

10 OCT 21 PM 4:02
RECEIVED
PLANNING DEPARTMENT

October 20, 2010

El Dorado County Planning Commission
c/o Development Services Department
2850 Fairlane Court, Building C
Placerville, CA 95667

RE: Rezone Z07-0040/ Tentative Map YM07-1454/ Special Use Permit S09-0012/ Sundance Subdivision

Dear Planning Commissioners;

I am strongly opposed to the proposed Subdivision as it is now planned and modified by the county. The main concern at this time is that of allowing the Sundance Subdivision to join their road, unregulated, off of Rattlesnake Bar with Pilot view Drive.
We recommend the regulating of traffic on that road with an emergency gate only for the use of emergency personnel.

Through traffic from Rattlesnake Bar to Pilot View drive, with no gate, will severely impact the traffic volume on Pilot View Drive and the safety of my neighbors regardless of the minor widening proposed by the county. The widening of Pilot view Drive will directly and adversely effect the property of my neighbors as well as resulting in increased traffic flow on Starling Lane which connects to Pilot View Drive.

The second concern that we have is that the developer has been unable to show that there are adequate groundwater resources to support such a large number of parcels in the event of a drought year. The analysis did not consider the well logs of neighboring parcels and the fact that there have been recent failures of some of those wells. The development will, in all likelihood, significantly affect my well and water supply as well as those of my neighbors in a drought year.

PC 10/28/10
#8

El Dorado Equestrian Trails Foundation
P.O. Box 321, Greenwood, CA 95635

RECEIVED
2010 OCT 19 AM 11:30
PLANNING DEPARTMENT

October 16, 2010

El Dorado County Planning Commission
2850 Fairlane Court
Placerville, CA 95667

Re: Sundance Project (October 28th Agenda)

Dear members of the Planning Commission,

I write as President of the El Dorado Equestrian Trail Foundation to urge you to restore the requirement that a trail be required as part of this project. The project straddles open land between unconnected trails that currently extend from Sacramento to Lake Tahoe. Sundance isn't a missing link---YET. But it could well be if we fail to act now to insure this doesn't happen.

The American River Conservancy currently has an easement on property to the north and west this project. The ARC and BLM just completed a trail extending east from Salmon Falls along the South Fork of the American River. Equestrians can ride from Coloma almost to Rattlesnake Bar Road and bicyclists from Sacramento can ride even farther. Another trail extends westward from Cool to Rattlesnake Bar Road. But the two trails don't connect. The goal is to connect them and the Sundance parcel is one of the possible links in that chain. Once connected, there will be continuous trail all the way to Utah on connecting trails. Once you are across Rattlesnake Bar Road, the trail system at Cool connects to the trails from Discovery Park in Sacramento to the Great Salt Lake via the American River Parkway, Folsom Lake to Auburn then the Western States Trail to Tahoe and the Pony Express trail from there across Nevada.

As planners, you know better than the average citizen that development proceeds parcel by parcel. El Dorado County and Placer County are growing rapidly because people interested in recreation and especially horse recreation are moving here from other parts of California and the nation. The Sundance development like much of western El Dorado County will likely be populated by people seeking a rural/ranch lifestyle with a heavy emphasis on recreation. Some will want to have farm animals

with the most likely choice being horses. Property with acreage in this area of the County is typically advertised as "horse property". Many of the current residents ride, run, bike, and hike on the existing trails. I am aware that to pography makes putting the proposed trail around the outer edge of the property difficult if not impossible. But a trail through the middle of this low density development would serve two purposes: it will preserve the possibility of being an important link in the chain of trails that draw people to this area, and, if the main connecting link ultimately turns out to cross a different parcel, the residents of Sundance and the surrounding area will still have a trail where they can hike, walk the dog, ride their mountain bikes or ride their horses.

We are losing many of the existing informal trails as more and more agricultural land is converted to small parcels. This makes it all the more important that as we move forward we set aside easements for potential trail routes, especially those that offer the possibility of connecting existing segments as future development occurs.

For all these reasons, it is important that this parcel and other large parcels, when they are subdivided, include provisions for dedicated trails.

Thank you for considering these views.

Sincerely,

Jerry Scribner, President
El Dorado Equestrian Trails Foundation.

Home address: 5657 Hollow Lane
Greenwood, CA 95635
(916)765-7399