

Please revise to
"Drainage Letter"

~~FINAL~~
DRAINAGE LETTER

PONDEROSA PINE ESTATES
A REPLAT OF LOTS 1 AND 2, MORGAN SUBDIVISION NO. 1
18810 and 18820 CLOVEN HOOF DRIVE

VR2324

PCD File: 

December 7, 2023

prepared for
Joiner Construction Company, Inc.
1270 Fawnwood Road
Monument, CO 80132

Oliver E. Watts, Consulting Engineer, Inc.
Colorado Springs, Colorado

OLIVER E. WATTS, PE-LS
OLIVER E. WATTS, CONSULTING ENGINEER, INC.
CIVIL ENGINEERING AND SURVEYING
614 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907
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olliewatts@aol.com

Celebrating over 44 years in business

December 7, 2023

El Paso County Planning and Community Development
2880 International Circle
Colorado Springs, CO 80910

ATTN: *Joshua Palmer, P.E.*

SUBJECT: Drainage Letter
Ponderosa Pine Estates

Gentlemen

Transmitted herewith for your review and approval is the drainage letter for the Ponderosa Pine Estates, which is a replat of Lots 1 and 2, Morgan Subdivision Filing No. 1.

There will be minor increases in the approved runoff as a result of this subdivision. Please contact our office if we may provide any further information.

Oliver E. Watts, Consulting Engineer, Inc.

BY: _____
Oliver E. Watts, President

Encl:

Drainage Letter 2 pages
Computations, 2 pages
Soils Map and Interpretation Sheet
Backup Information
FEMA Flood Panel 08041C0257G, December 7, 2018
Drainage Plan, Dwg 23-5960-05

1. ENGINEER'S STATEMENT:

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the County for drainage reports and said report is in conformity with the applicable master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

Oliver E. Watts, Consulting Engineer, Inc.

Oliver E. Watts Colo. PE-LS No. 9853

2. OWNERS / DEVELOPER'S STATEMENT:

I the owner / developer have read and will comply with all of the requirements specified in this drainage report and plan.

Joiner Construction Company, Inc.

By: _____
Clifford A. Joiner
1270 Fawnwood Road
Monument, CO 80132
719-481-6196

3. EL PASO COUNTY:

Filed in accordance with the requirements of the El Paso Land Development Code, Drainage Criteria Manual Volumes 1 and 2, and the Engineering Criteria Manual, as amended.

Joshua Palmer, P.E.
County Engineer / ECM Administrator

date

Conditions:

4. LOCATION AND DESCRIPTION:

The Ponderosa Pine Subdivision is located northwest of the intersection of Highway 105 and Cloven Hoof Drive, northwest of the Town of Palmer Lake, in El Paso County, as shown on the enclosed site plan. The addresses are 18810 and 18820 Cloven Hoof Drive. It is a replat of Lots 1 and 2, Morgan Subdivision No. 1, in a portion of the Section 9, Township 11 South, Range 67 West of the 6th P.M. in El Paso County, Colorado. El Paso County Assessors Parcel numbers are; 71090-02-018 for Lot 1, and 71090-02-019 for Lot 2. The original subdivision contains 3 lots. The total size of the subdivision is 3.07 acres. Four lots are proposed: Lots 1A and 1B on the existing Lot 1, and Lots 2A and 2B on the existing Lot 2, with minor adjustments to accommodate the resubdivision. Basically Lot 2 is currently developed and has two dwelling units. Lot 1 is undeveloped. Two lots are proposed, along with a proposed new access road on current Lot 1. This is a residential subdivision, having a number of “no-build” areas due to steepness of slope (over 30%). The sites are heavily vegetated; lots of pine trees. It lies in the Palmer Lake drainage basin, which is unstudied.

5. FLOOD PLAIN STATEMENT:

This subdivision is not within the limits of a designated flood plain or flood hazard area, as identified on FEMA panel no. 08041C0257 G, dated December 7, 2018, a copy of which is enclosed for reference.

Please revise statement as it can't be assumed that a drainage report was approved by the county since a report can not be found.

6. DESCRIPTION OF RUNOFF:

As stated above, this Site was previously platted as the Morgan subdivision No. 1 in 1975. **At that time a drainage report was submitted and approved by El Paso County, Colorado.** We were unable to find a copy of said report in the County files. Due to changes in criteria over the years we are submitting a drainage letter for this replat. Four basins have been designated on the enclosed drainage plan. Enclosed is a SCS soils map of the area with an interpretation sheet. The subdivision is in the Kettle soils type, which is in hydrologic group “B”

Drainage basis A is a small undeveloped area in the northwest portion draining westerly into unplatted property. About half of a building site exists on the easterly boundary. The historic runoff of 0.1 cfs / 0.8 cfs (5-year \ 100-year runoffs) is anticipated to increase to 0.3 cfs / 0.9 cfs after completion of construction. This increase is negligible, compared to the distance to westerly parcels.

Drainage basin B is a small north facing slope in the northwest corner of the subdivision, and is essentially un-buildable due to predominate slopes, the existing runoff of 0.2 cfs / 0.9 cfs should remain unchanged.

Drainage basin C most of existing lot 1 and should have the remaining half of the building site in basin A, an additional site in the northwest corner and the new driveway to provide access to Lot 1A. The existing runoff of 0.6 cfs \ 3.00 cfs is contained in a swale adjacent to Highway 105, terminating in the upper encl of Cloven Hoof Drive. The new construction should increase the runoff to 1.2 cfs / 3.8 cfs. These increases are of no danger to the existing road; it's termination at Highway 105, or the large vacant parcel to the east.

Please break the report into existing conditions and proposed conditions sections.

Please discuss off-site flows and their impact to the development.

Drainage basin D consists of the two existing dwellings in the subdivision. It drains to the southwest corner of the subdivision where a new access to Cloven Hoof Drive is proposed, with a runoff of 1.0 cfs / 3.7 cfs. This runoff should remain unchanged due to the relocation of the driveway, since the impervious area and the outfall point are basically unchanged.

Discuss whether or not WQ treatment is required based on ECM Appendix I and the County's MS4 Permit. State proposed acreage of disturbance and any applicable water quality treatment exclusions.

7. FEES:

This Site has been previously platted; therefore fees are computed on the basis of a computed increase in impervious cover. The following is a summary of the computations:

Historic 100-year composite curve no. = 0.3601 = 1.9761 % total impervious area = 0.0615 ac.

Developed 100-year composite curve no. = 0.4016 = 10.0957 % total impervious area = 0.3143 ac.

Increase = 0.2528 acres

Drainage fee 0.2528 acres @ \$18,219.00 = \$ 4605.09

Bridge fee 0.2528 acres @ \$660.00 = \$ 166.85

Please revise drainage fees. The property is located in the Palmer Lake Drainage Basin. The fees for this basin are \$17,210 (drainage fee) and \$0 (bridge fee).

Please state the increase in impervious cover and runoff. Please confirm the proposed development will not adversely impact adjacent properties and if improvements are required.

Please provide a cost estimate for improvements if proposed.

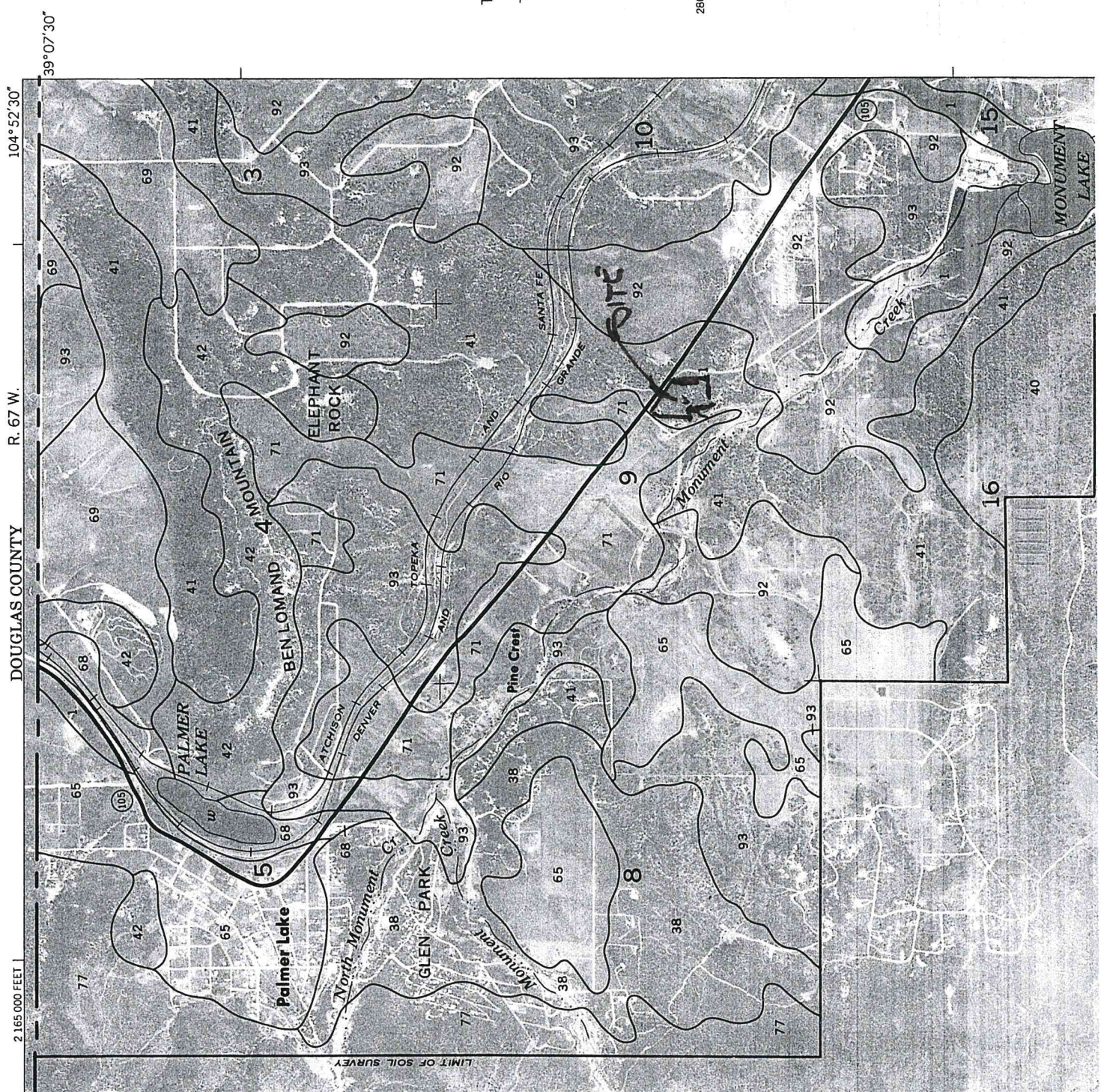
MAJOR BASIN	SUB BASIN	AREA		BASIN		T _c MIN	I in./hr.		SOIL GRP	DEV. TYPE	C		FLOW		RETURN PERIOD -years-	
		PLANIM READ	ACRES	LENGTH -FT.-	HEIGHT -FT.-								5-ry	100-yr		
													qp -CFS-	qp -CFS-		
Palmer Lake Historic	A	COGO	0.279	100	17	7	4.7	7.9	B	FOREST	0.08	0.33	0.1	0.8	5	100
	B	COGO	0.295	95	23	6	5.0	8.9	B	FOREST	0.08	0.33	0.2	0.9	5	100
	C	COGO	1.100	100	32	6			B	FOREST	0.08	0.35				
		C=5	0.076	+295	34	+2				GRAVEL	0.59	0.70				
		V=1.8	1.176			8	4.5	7.5		MIX	0.113	0.335	0.6	3.0	5	100
	D	COGO	1.1365	100	36	5.6			B	FOREST	0.08	0.35				
		C=5	0.132	+355	38	+3.6				GRAVEL	0.59	0.70				
		V=1.6	0.023			9	4.2	7.1		PAVED	0.90	0.96				
			0.073							ROOF	0.73	0.81				
			1.363						MIX	0.178	0.386	1.0	3.7	5	100	

HYDROLOGICAL COMPUTATION – BASIC DATA
 PROJ: PONDEROSA PINE ESTATED BY: O.E. WATTS
 RATIONAL METHOD DATE: 12/7/23December 8, 2023

OLIVER E. WATTS, CONSULTING ENGINEER, INC.
 614 ELKTON DRIVE COLORADO SPRINGS, CO 80907

MAJOR BASIN	SUB BASIN	AREA		BASIN		T _c MIN	I in./hr.		SOIL GRP	DEV. TYPE	C		FLOW		RETURN PERIOD -years-		
		PLANIM READ	ACRES	LENGTH -FT.-	HEIGHT -FT.-								5-ry	100-yr			
													qp -CFS-	qp -CFS-			
PALMER LAKE DEVELOPED	A	COGO	0.036	100	17	7	4.7	7.9	B	ROOF	0.73	0.81			5	100	
			0.020								PAVED	0.90	0.96				
			0.223								FOREST	0.08	0.35				
			0.279								MIX	0.223	0.421	0.3	0.9	5	100
	B	NO	CH.	SEE	P1								0.2	0.9	5	100	
	C	COGO	0.861	100	32	6			B	FOREST	0.08	0.35					
0.225			+255	34	+2				GRAVEL	0.59	0.70						
0.049					8	4.5	7.5		ROOF	0.73	0.81						
0.041									PAVED	0.90	0.96						
1.176									MIX	0.233	0.428	1.2	3.8	5	100		
	D	N	CH.	SE	P1								1.0	3.7	5	100	
HYDROLOGICAL COMPUTATION – BASIC DATA														PAGE 2			
PROJ: PONDEROSA PINE ESTATES BY: O.E. WATTS							OLIVER E. WATTS, CONSULTING ENGINEER, INC.							OF			
RATIONAL METHOD DATE: 12/7/23							614 ELKTON DRIVE COLORADO SPRINGS, CO 80907							2			

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE



T. 16 S.
T. 17 S.

280 000 FEET

OLIVER E. WATTS
CONSULTING ENGINEER, INC.
COLORADO SPRINGS

11/2000

PONDEROSA PINE ESTATES
SCS SOILS MAP
1"=2000'

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			Bedrock		Potential frost action
		Frequency	Duration	Months	Depth	Hardness	
Elbeth: Pring part-----	B	None-----	---	---	In >60	---	Moderate.
Ellicott: 28-----	A	Frequent-----	Brief-----	Mar-Jun	>60	---	Low.
Fluvaquentic Haplaquolls: 29-----	B/D	Frequent-----	Brief-----	Mar-Jul	>60	---	High.
Fort Collins: 30, 31-----	B	None to rare	---	---	>60	---	Moderate.
Fortwingate: 132: Fortwingate part-----	C	None-----	---	---	20-40	Hard	Low.
Rock outcrop part-----	D	---	---	---	---	---	---
Heldt: 33-----	C	None-----	---	---	>60	---	Moderate.
Holderness: 34, 35, 36-----	C	None-----	---	---	>60	---	Moderate.
Jarre: 37-----	B	None-----	---	---	>60	---	Moderate.
138: Jarre part-----	B	None-----	---	---	>60	---	Moderate.
Tecolote part--	B	None-----	---	---	>60	---	Moderate.
Keith: 39-----	B	None-----	---	---	>60	---	High.
Kettle: 40, 41-----	B	None-----	---	---	>60	---	Moderate.
142: Kettle part-----	B	None-----	---	---	>60	---	Moderate.
Rock outcrop part-----	D	---	---	---	---	---	---
Kim: 43-----	B	None-----	---	---	>60	---	Moderate.
Kutch: 44, 45-----	C	None-----	---	---	20-40	Rippable	Moderate.
Kutler: 146: Kutler part-----	C	None-----	---	---	20-40	Rippable	Low.
Broadmoor part-	C	None-----	---	---	20-40	Rippable	Low.
Rock outcrop part-----	D	---	---	---	---	---	---
Limon: 47-----	C	Occasional-----	Brief-----	May-Sep	>60	---	Moderate.
Louviers: 48-----	D	None-----	---	---	10-20	Rippable	Moderate.
49-----	D	None-----	---	---	10-20	Rippable	Low.

See footnote at end of table.

Table 6-6. Runoff Coefficients for Rational Method
(Source: UDFCD 2001)

Land Use or Surface Characteristics	Percent Impervious	Runoff Coefficients											
		2-year		5-year		10-year		25-year		50-year		100-year	
		HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D
Business													
Commercial Areas	95	0.79	0.80	0.81	0.82	0.83	0.84	0.85	0.87	0.87	0.88	0.88	0.89
Neighborhood Areas	70	0.45	0.49	0.49	0.53	0.53	0.57	0.58	0.62	0.60	0.65	0.62	0.68
Residential													
1/8 Acre or less	65	0.41	0.45	0.45	0.49	0.49	0.54	0.54	0.59	0.57	0.62	0.59	0.65
1/4 Acre	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
1/3 Acre	30	0.18	0.22	0.25	0.30	0.32	0.38	0.39	0.47	0.43	0.52	0.47	0.57
1/2 Acre	25	0.15	0.20	0.22	0.28	0.30	0.36	0.37	0.46	0.41	0.51	0.46	0.56
1 Acre	20	0.12	0.17	0.20	0.26	0.27	0.34	0.35	0.44	0.40	0.50	0.44	0.55
Industrial													
Light Areas	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Heavy Areas	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Parks and Cemeteries													
Playgrounds	7	0.05	0.09	0.12	0.19	0.20	0.29	0.30	0.40	0.34	0.46	0.39	0.52
Railroad Yard Areas	13	0.07	0.13	0.16	0.23	0.24	0.31	0.32	0.42	0.37	0.48	0.41	0.54
Undeveloped Areas													
Historic Flow Analysis-- Greenbelts, Agriculture	2	0.03	0.05	0.09	0.16	0.17	0.26	0.26	0.38	0.31	0.45	0.36	0.51
Pasture/Meadow	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Forest	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Exposed Rock	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Offsite Flow Analysis (when landuse is undefined)	45	0.26	0.31	0.32	0.37	0.38	0.44	0.44	0.51	0.48	0.55	0.51	0.59
Streets													
Paved	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Gravel	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Drive and Walks													
Roofs	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Lawns	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50

3.2 Time of Concentration

One of the basic assumptions underlying the Rational Method is that runoff is a function of the average rainfall rate during the time required for water to flow from the hydraulically most remote part of the drainage area under consideration to the design point. However, in practice, the time of concentration can be an empirical value that results in reasonable and acceptable peak flow calculations.

For urban areas, the time of concentration (t_c) consists of an initial time or overland flow time (t_i) plus the travel time (t_t) in the storm sewer, paved gutter, roadside drainage ditch, or drainage channel. For non-urban areas, the time of concentration consists of an overland flow time (t_i) plus the time of travel in a concentrated form, such as a swale or drainageway. The travel portion (t_t) of the time of concentration can be estimated from the hydraulic properties of the storm sewer, gutter, swale, ditch, or drainageway. Initial time, on the other hand, will vary with surface slope, depression storage, surface cover, antecedent rainfall, and infiltration capacity of the soil, as well as distance of surface flow. The time of concentration is represented by Equation 6-7 for both urban and non-urban areas.

$$t_c = t_i + t_t \quad (\text{Eq. 6-7})$$

Where:

t_c = time of concentration (min)

t_i = overland (initial) flow time (min)

t_t = travel time in the ditch, channel, gutter, storm sewer, etc. (min)

3.2.1 Overland (Initial) Flow Time

The overland flow time, t_i , may be calculated using Equation 6-8.

$$t_i = \frac{0.395(1.1 - C_5)\sqrt{L}}{S^{0.33}} \quad (\text{Eq. 6-8})$$

Where:

t_i = overland (initial) flow time (min)

C_5 = runoff coefficient for 5-year frequency (see Table 6-6)

L = length of overland flow (300 ft maximum for non-urban land uses, 100 ft maximum for urban land uses)

S = average basin slope (ft/ft)

Note that in some urban watersheds, the overland flow time may be very small because flows quickly concentrate and channelize.

3.2.2 Travel Time

For catchments with overland and channelized flow, the time of concentration needs to be considered in combination with the travel time, t_t , which is calculated using the hydraulic properties of the swale, ditch, or channel. For preliminary work, the overland travel time, t_t , can be estimated with the help of Figure 6-25 or Equation 6-9 (Guo 1999).

$$V = C_v S_w^{0.5} \quad (\text{Eq. 6-9})$$

Where:

V = velocity (ft/s)

C_v = conveyance coefficient (from Table 6-7)

S_w = watercourse slope (ft/ft)

Table 6-7. Conveyance Coefficient, C_v

Type of Land Surface	C_v
Heavy meadow	2.5
Tillage/field	5
Riprap (not buried)*	6.5
Short pasture and lawns	7
Nearly bare ground	10
Grassed waterway	15
Paved areas and shallow paved swales	20

*For buried riprap, select C_v value based on type of vegetative cover.

The travel time is calculated by dividing the flow distance (in feet) by the velocity calculated using Equation 6-9 and converting units to minutes.

The time of concentration (t_c) is then the sum of the overland flow time (t_o) and the travel time (t_t) per Equation 6-7.

3.2.3 First Design Point Time of Concentration in Urban Catchments

Using this procedure, the time of concentration at the first design point (typically the first inlet in the system) in an urbanized catchment should not exceed the time of concentration calculated using Equation 6-10. The first design point is defined as the point where runoff first enters the storm sewer system.

$$t_c = \frac{L}{180} + 10 \quad (\text{Eq. 6-10})$$

Where:

t_c = maximum time of concentration at the first design point in an urban watershed (min)

L = waterway length (ft)

Equation 6-10 was developed using the rainfall-runoff data collected in the Denver region and, in essence, represents regional "calibration" of the Rational Method. Normally, Equation 6-10 will result in a lesser time of concentration at the first design point and will govern in an urbanized watershed. For subsequent design points, the time of concentration is calculated by accumulating the travel times in downstream drainageway reaches.

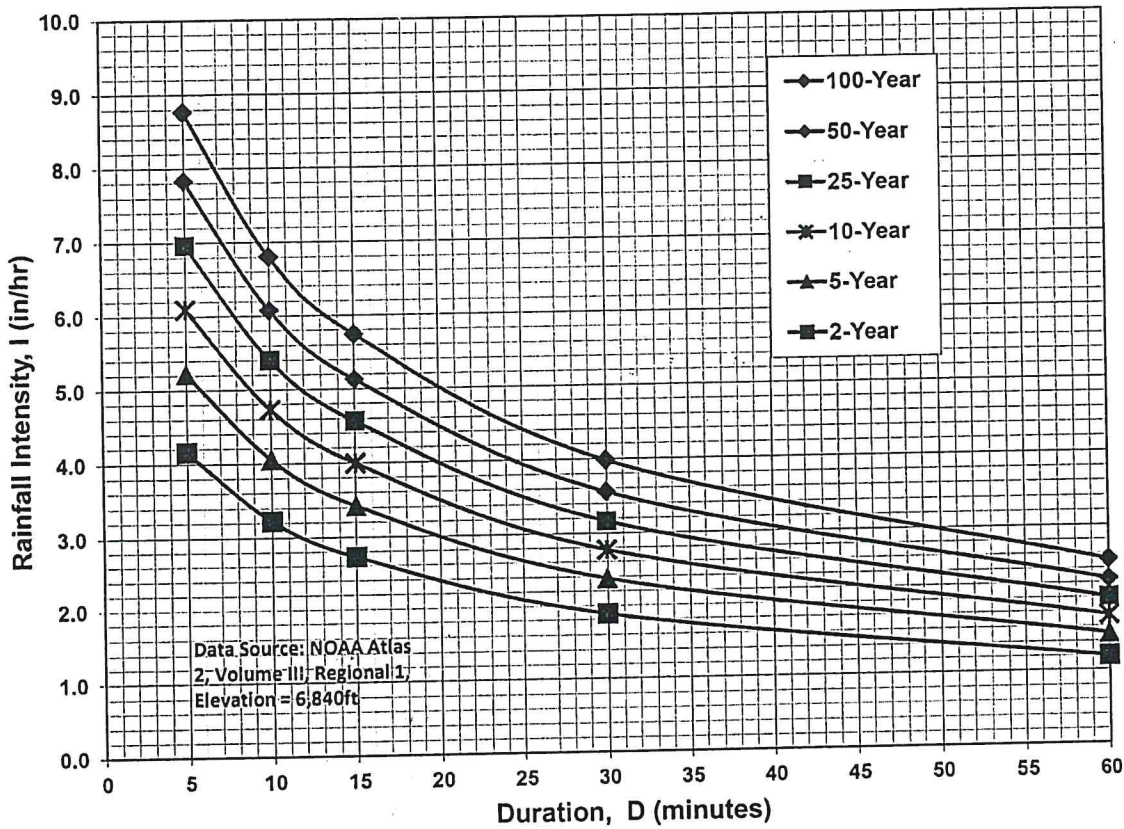
3.2.4 Minimum Time of Concentration

If the calculations result in a t_c of less than 10 minutes for undeveloped conditions, it is recommended that a minimum value of 10 minutes be used. The minimum t_c for urbanized areas is 5 minutes.

3.2.5 Post-Development Time of Concentration

As Equation 6-8 indicates, the time of concentration is a function of the 5-year runoff coefficient for a drainage basin. Typically, higher levels of imperviousness (higher 5-year runoff coefficients) correspond to shorter times of concentration, and lower levels of imperviousness correspond to longer times of

Figure 6-5. Colorado Springs Rainfall Intensity Duration Frequency



IDF Equations

$$I_{100} = -2.52 \ln(D) + 12.735$$

$$I_{50} = -2.25 \ln(D) + 11.375$$

$$I_{25} = -2.00 \ln(D) + 10.111$$

$$I_{10} = -1.75 \ln(D) + 8.847$$

$$I_5 = -1.50 \ln(D) + 7.583$$

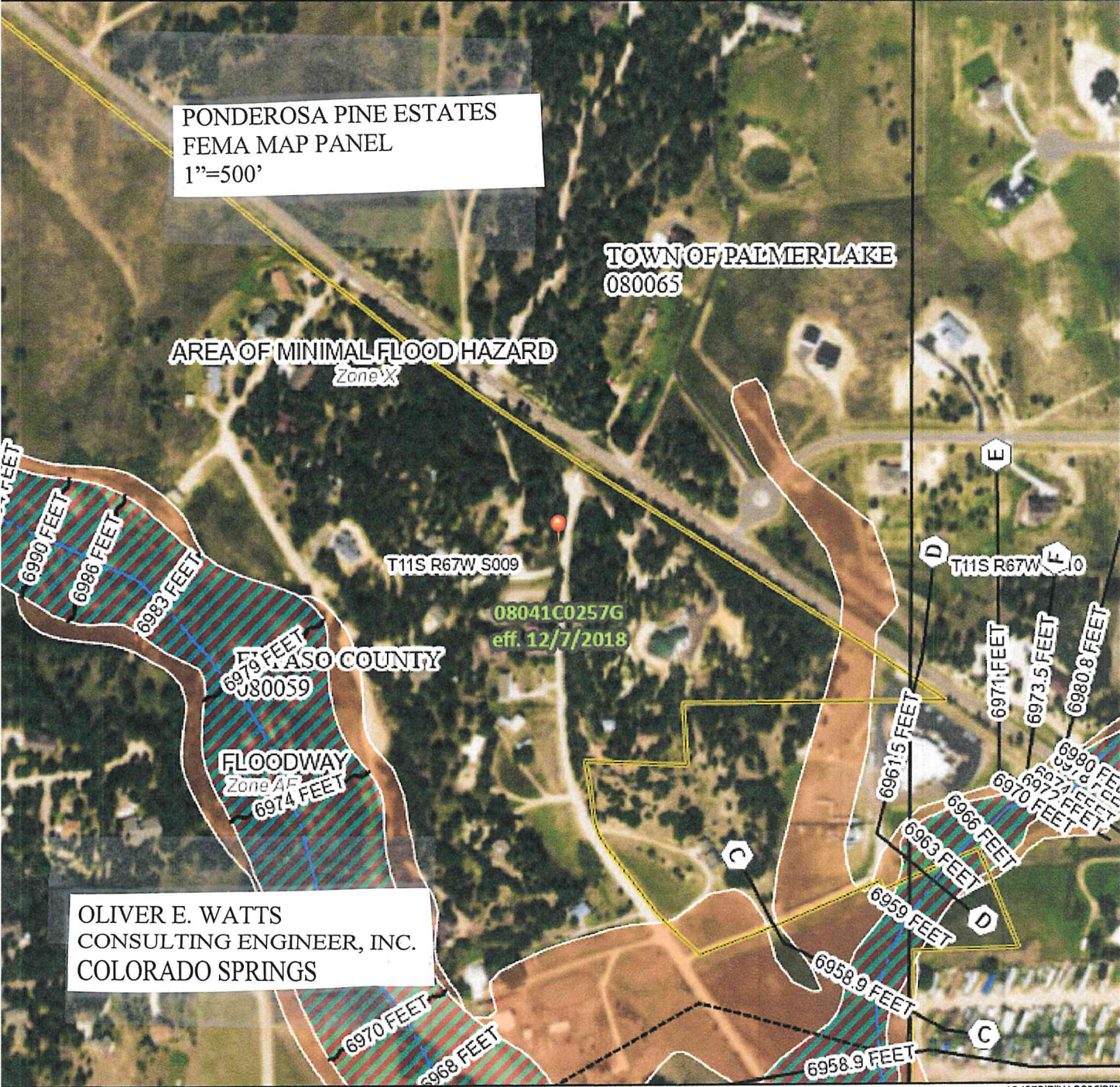
$$I_2 = -1.19 \ln(D) + 6.035$$

Note: Values calculated by equations may not precisely duplicate values read from figure.

National Flood Hazard Layer FIRMette



04°53'43"W 39°6'31"N



PONDEROSA PINE ESTATES
FEMA MAP PANEL
1"=500'

TOWN OF PALMER LAKE
080065

AREA OF MINIMAL FLOOD HAZARD
Zone X

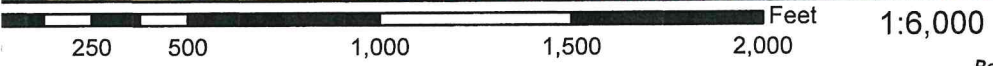
T11S R67W S009

08041C0257G
eff. 12/7/2018

WASO COUNTY
080059

FLOODWAY
Zone AF
6974 FEET

OLIVER E. WATTS
CONSULTING ENGINEER, INC.
COLORADO SPRINGS



104°53'5"W 39°6'3"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

- SPECIAL FLOOD HAZARD AREAS**
 - Without Base Flood Elevation (BFE) Zone A, V, A99
 - With BFE or Depth Zone AE, AO, AH, VE, AR
 - Regulatory Floodway

- OTHER AREAS OF FLOOD HAZARD**
 - 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
 - Future Conditions 1% Annual Chance Flood Hazard Zone X
 - Area with Reduced Flood Risk due to Levee. See Notes, Zone X
 - Area with Flood Risk due to Levee Zone D

- OTHER AREAS**
 - NO SCREEN Area of Minimal Flood Hazard Zone X
 - Effective LOMRs
 - Area of Undetermined Flood Hazard Zone I

- GENERAL STRUCTURES**
 - Channel, Culvert, or Storm Sewer
 - Levee, Dike, or Floodwall

- OTHER FEATURES**
 - Cross Sections with 1% Annual Chance Water Surface Elevation
 - Coastal Transect
 - Base Flood Elevation Line (BFE)
 - Limit of Study
 - Jurisdiction Boundary
 - Coastal Transect Baseline
 - Profile Baseline
 - Hydrographic Feature

- MAP PANELS**
 - Digital Data Available
 - No Digital Data Available
 - Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

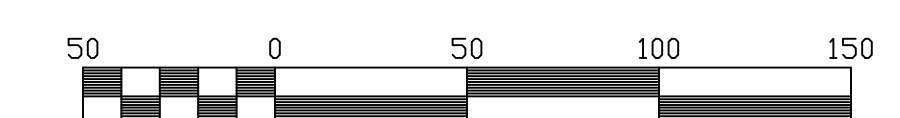
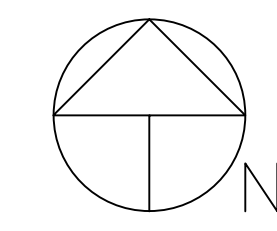
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 12/6/2023 at 3:18 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

DRAINAGE PLAN

PONDEROSA PINE ESTATES

A SUBDIVISION OF LOTS 1 AND 2, MORGAN SUBDIVISION NO. 1
SECTION 9, T.11S., R.67W. OF THE 6TH P.M.
EL PASO COUNTY, COLORADO



Scale 1" = 50'
Contour Interval: 2'

LEGEND:

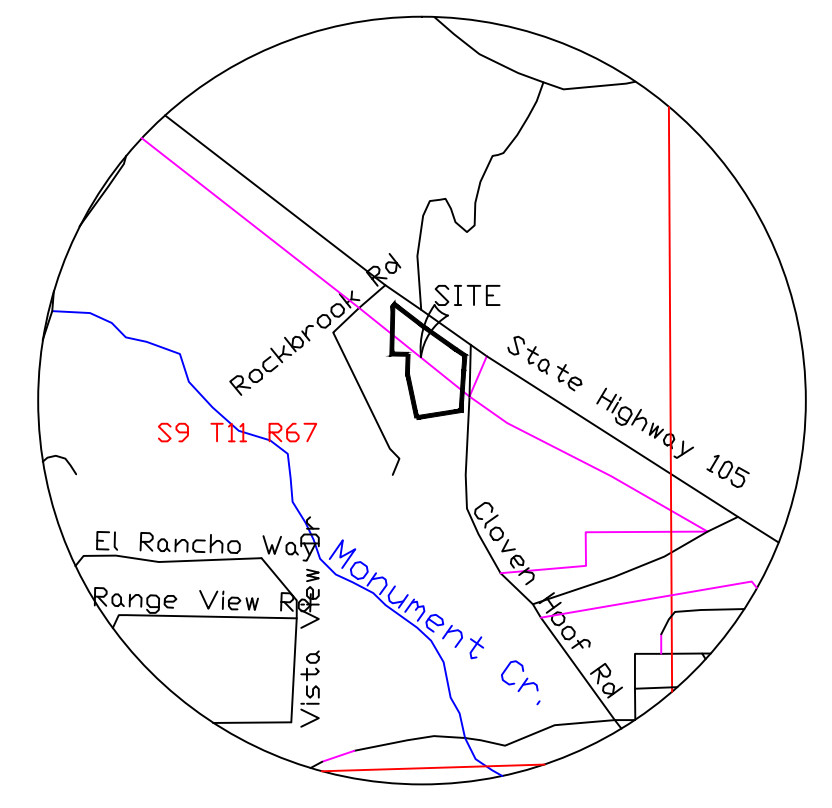
- SET YELLOW #9853 CAP ON #4 REBAR
- FOUND 1/2" IRON PIN
- ◇ FOUND #4 REBAR
- ◇ FOUND 3-1/4" AL. CAP CDOT R.D.W. MARKER
- GAS METER
- WATER MANHOLE
- × WATER VALVE
- ◇ FIRE HYDRANT
- POWER POLE
- TELEPHONE PEDESTAL



NO BUILD AREA - SLOPES OF OVER 30%

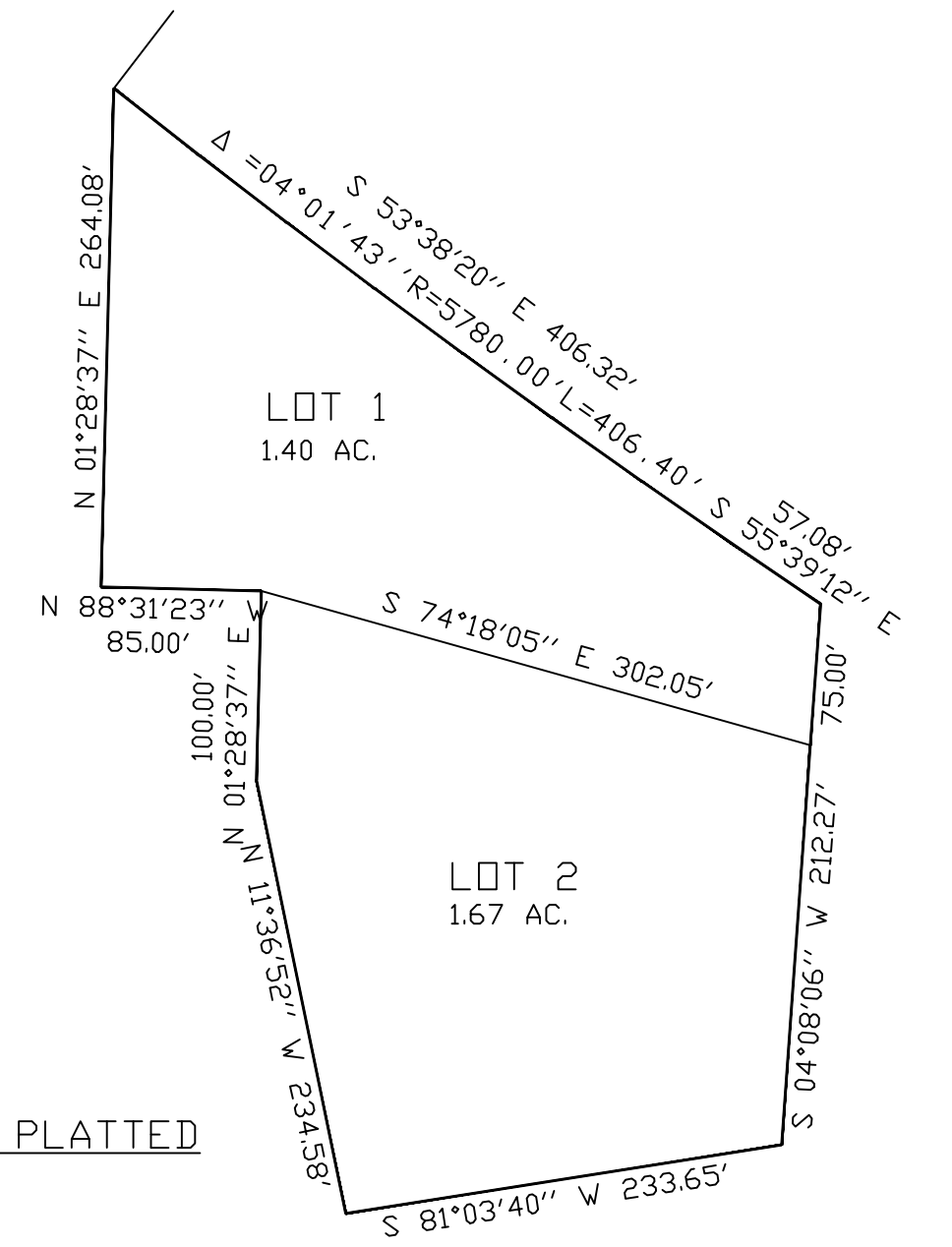
LEGEND:

- 10.5/20.4 RUNOFF IN CFS 5-YEAR/100-YEAR HISTORIC DEVELOPED
- A — LIMIT OF DRAINAGE BASIN AND DESIGNATION
- B — LIMIT OF SOILS TYPE AND GROUP

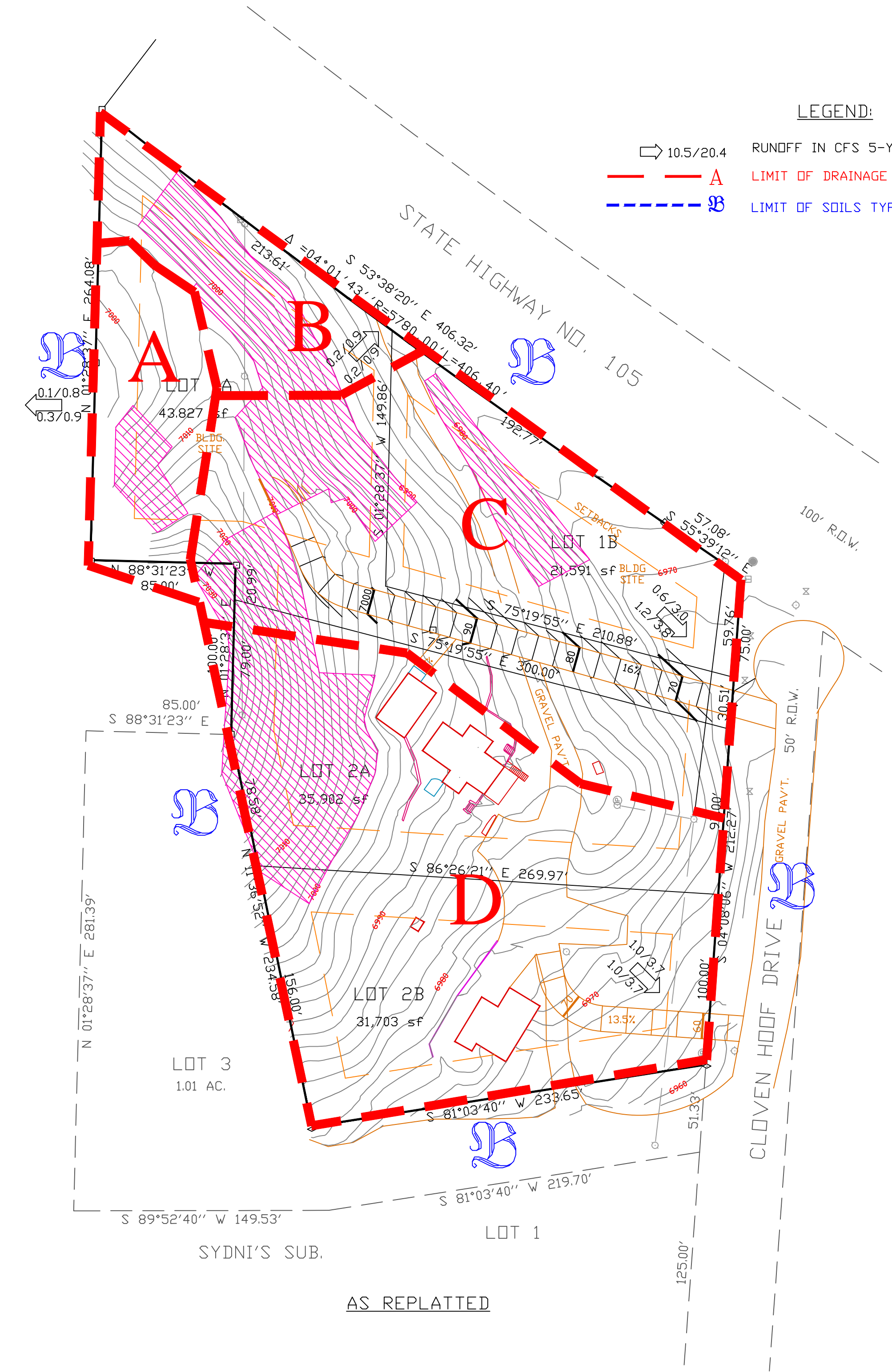


VICINITY MAP
1"=1000'

AS CURRENTLY PLATTED
1"=100'



Please label adjacent property as platted with name and filing.



DRAINAGE BASIN SUMMARY

BASIN	AREA -AC-	HISTORIC RUNOFF IN CFS		DEVELOPED RUNOFF IN CFS	
		5-YEAR	100-YEAR	5-YEAR	100-YEAR
A	0.279	0.1	0.8	0.3	0.9
B	0.295	0.2	0.9	0.2	0.9
C	1.176	0.6	3.0	1.2	3.8
D	1.363	1.0	3.7	1.0	3.7

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