Draft

STORMWATER STUDY, MADRID, NM

EMNRD PSA 11-521-0620-0002
WORK ASSIGNMENT #001

March 25, 2011

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URS

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LIST OF ACRONYMS

AC	Acres
AML	Abandoned Mine Land
CFS	Cubic Feet per Second
CN	Curve Number
D/P/S	Dekker/Perich/Sabatini
EMNRD	Energy, Minerals, and Natural Resources Department
GIS	Geographic Information Systems
HEC-HMS	Hydrologic Engineering Center Hydrologic Model System
HEC-RAS	Hydrologic Engineering Center River Analysis System
NAIP	National Agriculture Imagery Program
NM	New Mexico
NCDC	National Climatic Data Center
NOAA	National Oceanic and Atmospheric Administration
NRCS	National Resources Conservation Service
SEDCAD	Sediment Erosion Discharge by Computer Aided Design
SG	Specific Gravity
Tc	Time of Concentration
TR-55	Urban Hydrology for Small Watersheds (Technical Release 55)
USACE	United States Army Corps of Engineers

1. INTRODUCTION

The Madrid Mining Landscape Project represents the New Mexico Abandoned Mine Land (AML) Program's continuing commitment to the legacy of coal mining in Madrid, New Mexico. For the past thirty years, the AML program has removed dangerous structures, closed mine adits, mitigated erosion problems, and responded to community problems and requests on a case-by-case basis. Now, AML leaders are addressing mineral mining issues in Madrid holistically, by developing a community-based plan that addresses the historic impact and secondary effects of past mineral mining and processing practices.

A planning team led by Dekker/Perich/Sabatini (D/P/S) was hired by AML to conduct a community-based planning effort in Madrid, NM. The project was divided into three tasks:

- Task 1: Document research data, identify key issues, and develop a community-based planning process.
- Task 2: Conduct the planning process and develop the community plan.
- Task 3: Compile the plan report.

Stormwater drainage and sediment transport issues within Madrid were identified during Task 1 and Task 2. URS has been asked to identify stormwater problem areas and to develop alternatives to alleviate flooding and reduce the amount of sediment transport caused by runoff.

2. REVIEW OF EXISTING INFORMATION

Reports completed by D/P/S and Kleinfelder West, Inc. under additional Task Orders of the Madrid Mining Landscape Project were provided to URS. These reports are summarized below.

2.1. DEKKER/PERICH/SABATINI

The Task 1 report indicates that the erosion following major storm events results in deep rilling in unpaved roads, areas of ponding water, and sediment carried onto roadways. This negatively affects access roads, driveways and State Highway 14 (NM 14). Residents have also reported water backing up in undersized drainage structures, and flooding of backyards and parking areas. The erosion and sedimentation issues have been associated with the gob piles above and to the east of Ice House Road. The AML reclamation projects in the area have had some success in addressing the erosion issues, but have not fully addressed long-term perennial erosion.

Flooding due to stormwater runoff during major storm events has led to property damage of the residents living in Madrid. The damage is typically due to sediment being loaded into basements and out-structures. Most of this damage has occurred in buildings on the east side of town, which is below the slope that was most disturbed by mining activity. It has been suggested that the surface water controls instituted by the mining companies have been degraded and contribute to the flooding and property damage experienced by the residents of Madrid.

The Task 2 report includes several interviews with residents regarding stormwater and erosion problems identified in Madrid. These interviews are documented in Section 4 of this report.

2.2. KLEINFELDER WEST, INC.

URS has not received the report from Kleinfelder West, Inc.

3. PUBLIC MEETING

A public meeting was held in Madrid on February 9, 2011 with community residents and AML, D/P/S, Kleinfelder West, and URS staff. The objective of the meeting was to discuss the stormwater study and understand the residents' concerns and recent experiences regarding stormwater runoff of the area. During the meeting residents provided information regarding areas that experience flooding and expressed their preferred alternatives to deal with runoff. Additional information collected at the meeting may be found in **Appendix A**.

4. STORMWATER PROBLEM LOCATIONS

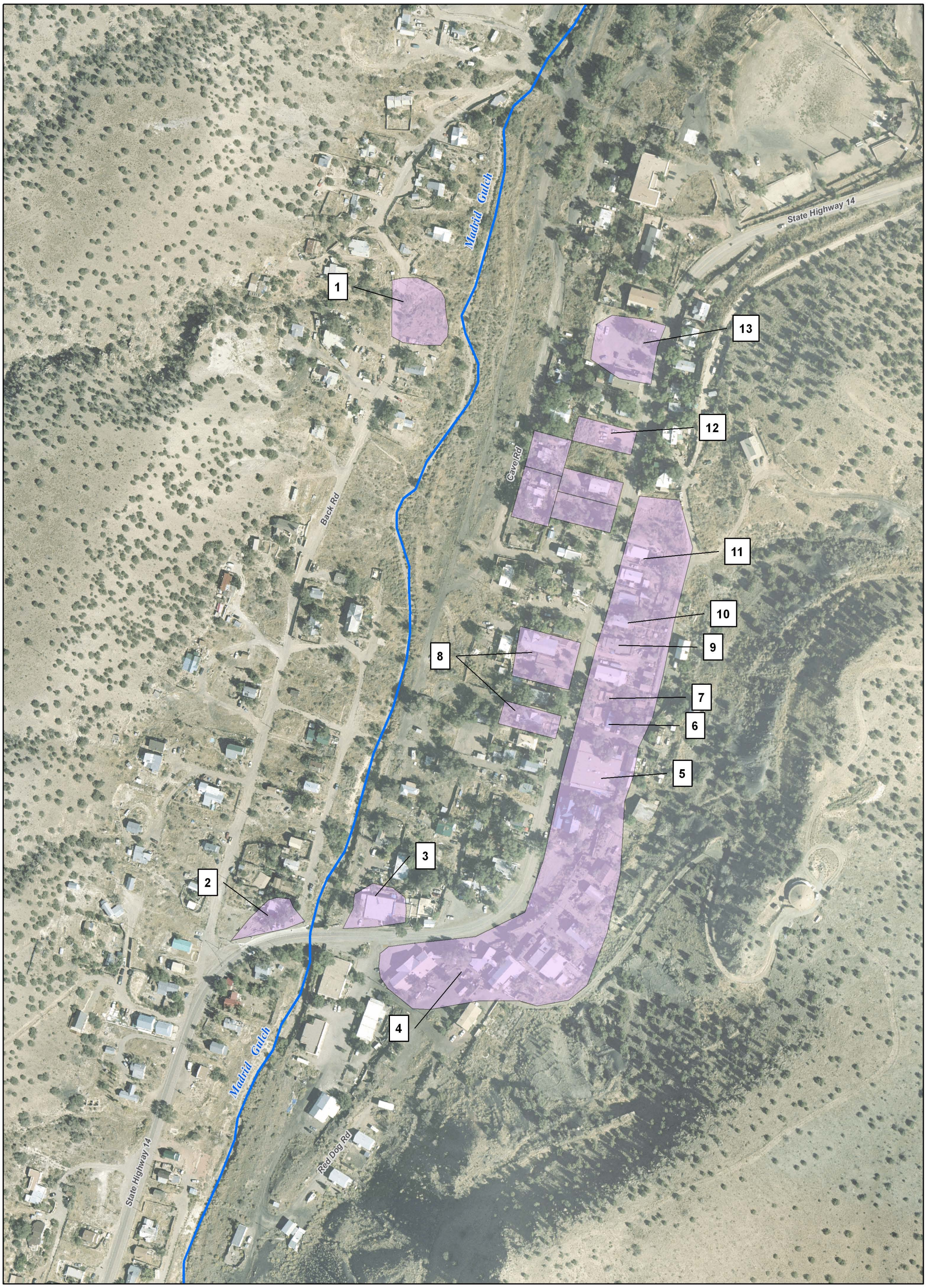
Stormwater issues in Madrid were identified as part of the Task 1 and Task 2 projects completed by D/P/S. Specific areas of impact were determined through interviews conducted by D/P/S and URS personnel. Precipitation runoff from the east slope was mentioned by several residents as the primary reason for flooding. Sediment accumulation in basements was also described as a common occurrence during storm events. **Table 1** provides locations and encountered problems.

Table 1 - Stormwater Problem Locations

Location	Address	Problems Encountered
1	24 Back Road	Resident noted an old drainage ditch that conveyed water across Back Road into Madrid Gulch has been filled in and creates pooling on Back Road between 24 and 26 Back Road.
2	2839 NM 14 (Chumani Gallery)	The Chumani Gallery was previously flooded from runoff coming from the west slope and NM 14. A spillway was installed to divert runoff away from the property and into Madrid Gulch. The gallery driveway was regraded as part of the spillway installation.
3	2843 NM 14	Residents note that the storm drain under the Mineshaft Tavern backs up during significant storm events. This drain passes under the property and discharges into the "old" Madrid Gulch channel. The original channel conveyed flow through the area where buildings now stand. The channel was filled in and buildings were constructed after Madrid Gulch was re-routed. Runoff still flows down the natural water course during storm events, and previously flooded the property before the installation of a storm drain in front of the property.
4	2846 NM 14 (Mineshaft Tavern and Museum)	Sediment and stormwater runoff flows from the east slope and sediment has piled up against buildings. The Mineshaft Tavern kitchen previously flooded during all storm events, leading to the creation of a berm that diverts a majority of the runoff from this area. Runoff flows across the back access road and floods the properties west of NM 14.
5	2860 NM 14	Redbone Gallery: Runoff from the east slope has infiltrated through the foundation wall and into the basement at the east side of the building. There has been up to 5 inches of flooding in the basement. Soda Fountain: Store owner indicated that the property floods at least twice each year. Water seeps through rock retaining walls and into the property. It was noted that a building behind the property (part of the Mineshaft Museum) has a large sink hole that has filled with water and has leaked into the property.
6	2864 NM 14	Residents have had runoff from Ice House Road seep onto the property.
7	2866 NM 14	Residents indicated that flooding occurs along the highway and properties to the north.
8	2867 NM 14	Runoff from the east slope has crossed NM 14 and floods the property along with the adjacent property.
9	2870 NM 14	Resident indicated that Ice House Road causes drainage issues to many of the buildings below it.
10	2872 NM14	Residents have had flooding due to runoff from Ice House Road. Landscaping efforts have been made to divert the runoff away from the building.

Location	Address	Problems Encountered
11	2878 NM 14	Resident noted that properties to the south have had significant flooding issues from Ice House Road. Resident installed a ditch to route the runoff to an adjacent inlet. If the ditch were not present, this property would also experience flooding.
12	2883 NM 14	The property has flooded from runoff from the east slope.
13	2885 NM 14 (Boarding House Mercantile)	Employees indicated that flooding from the east slope flows into the parking lot adjacent to the building. The inlets south of the property fill up and have standing water after every storm event.

Figure 1 shows the identified areas of flooding. Additional information regarding interviews with residents may be found in **Appendix B**.



Madrid Gulch

Area of Flooding

N

0 100 200 300 Feet

Stormwater Study - Madrid Mining Area

New Mexico Energy, Minerals and Natural Resources Department

Abandoned Mine Land Program

Santa Fe County, Madrid, NM

Figure 1: Identified Areas of Flooding

5. EXISTING STORMWATER SYSTEM

The community of Madrid lies within the Madrid Gulch watershed, which is a tributary of the Galisteo River. Based on records from the Turquoise (NCDC Station # 299193), weather station, (the nearest weather station to Madrid that maintains temperature data), the average maximum temperatures range from 45.8 degrees Fahrenheit (º F) in January, to 90.1º F in July. The average minimum temperature ranges from 17.6º F in January, to 55.1º F in August. The average precipitation is approximately 12.8 inches and the average snowfall is 22.9 inches per year at the town of Turquoise; north of Madrid. At the town of Golden, south of Madrid, the average precipitation is approximately 13.8 inches and the average snowfall is 23.5 inches per year.

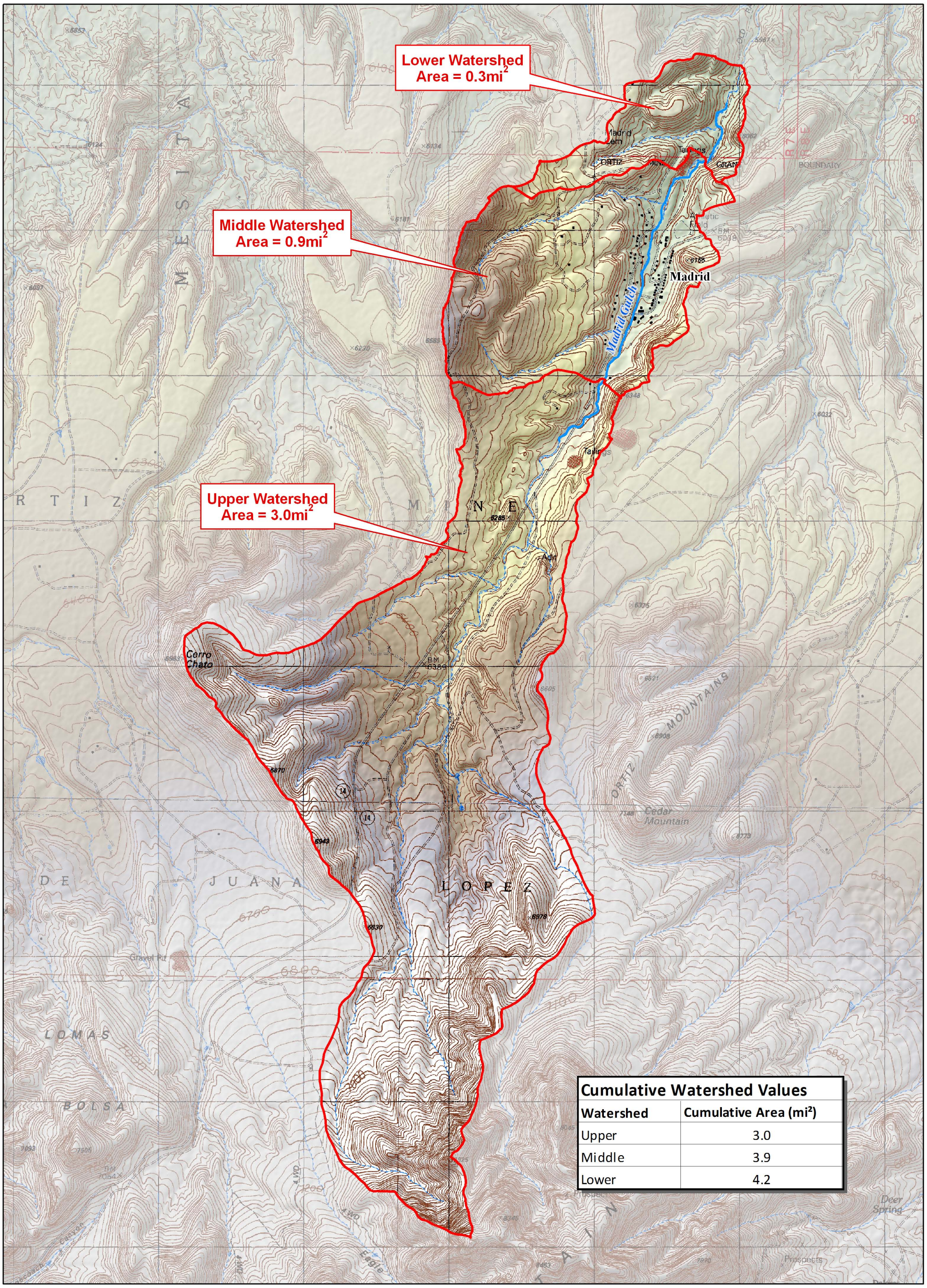
Most of the stream flow in Madrid Gulch is produced by runoff resulting from heavy summer thunderstorms. These intense thunderstorms may cause local flash floods. Additionally, the previous mining operations that took place along the East slope within Madrid may contribute to the flooding that has been reported by resident. For the purposes of this study Madrid Gulch and the East Slope were analyzed to determine the extents of flooding within Madrid.

5.1. HYDROLOGY

Hydrology was conducted on the Madrid Gulch Watershed as part of this study to develop flow rates for the channel running through the community of Madrid. These flow rates would be used in subsequent hydraulic calculations to determine erosion potentials and water surface elevations. The National Resources Conservation (NRCS) TR-55 method was used to estimate peak discharges at the project site, in accordance with the scope of work. The watershed area for Madrid Gulch was delineated into three cumulative subareas (see **Figure 2** for Madrid Gulch Watershed).

Table 2 - Madrid Gulch Cumulative Drainage Areas

Drainage Area Name	Drainage Area (Square Miles)
Upper	3.0
Middle	3.9
Lower	4.2



Cumulative Watershed Values	
Watershed	Cumulative Area (mi²)
Upper	3.0
Middle	3.9
Lower	4.2

Stormwater Study - Madrid Mining Area

New Mexico Energy, Minerals and Natural Resources Department

Abandoned Mine Land Program

Santa Fe County, Madrid, NM

Figure 2: Madrid Gulch Watersheds

Precipitation information was obtained from the National Oceanic and Atmospheric Administration's (NOAA) Atlas 14 online database, located at http://dipper.nws.noaa.gov/hdsc/pfds/sa/nm_pfds.html. See **Appendix C** for the NOAA precipitation estimate. Based on information from the NOAA Atlas 14, the 100-year, 24-hour storm event produces 3.19 inches of precipitation for the Madrid area. The New Mexico modified NRCS Type II-70 24-hour synthetic rainfall distribution was used for this analysis.

The runoff curve numbers (CN value) for each watershed are estimated, based on the New Mexico GIS land cover and hydrologic soil group data base, accessed on February 15, 2011. See **Appendix C** for CN value calculations.

Table 3 - Madrid Gulch CN Values

Drainage Area Name	CN Values
Upper	75
Middle	77
Lower	78

The transform method chosen was the NRCS Unit Hydrograph, with lag time being the input parameter. See **Appendix C** for Lag Time Calculations. The lag times for each watershed are shown in **Table 4** below.

Table 4 - Madrid Gulch Lag Times

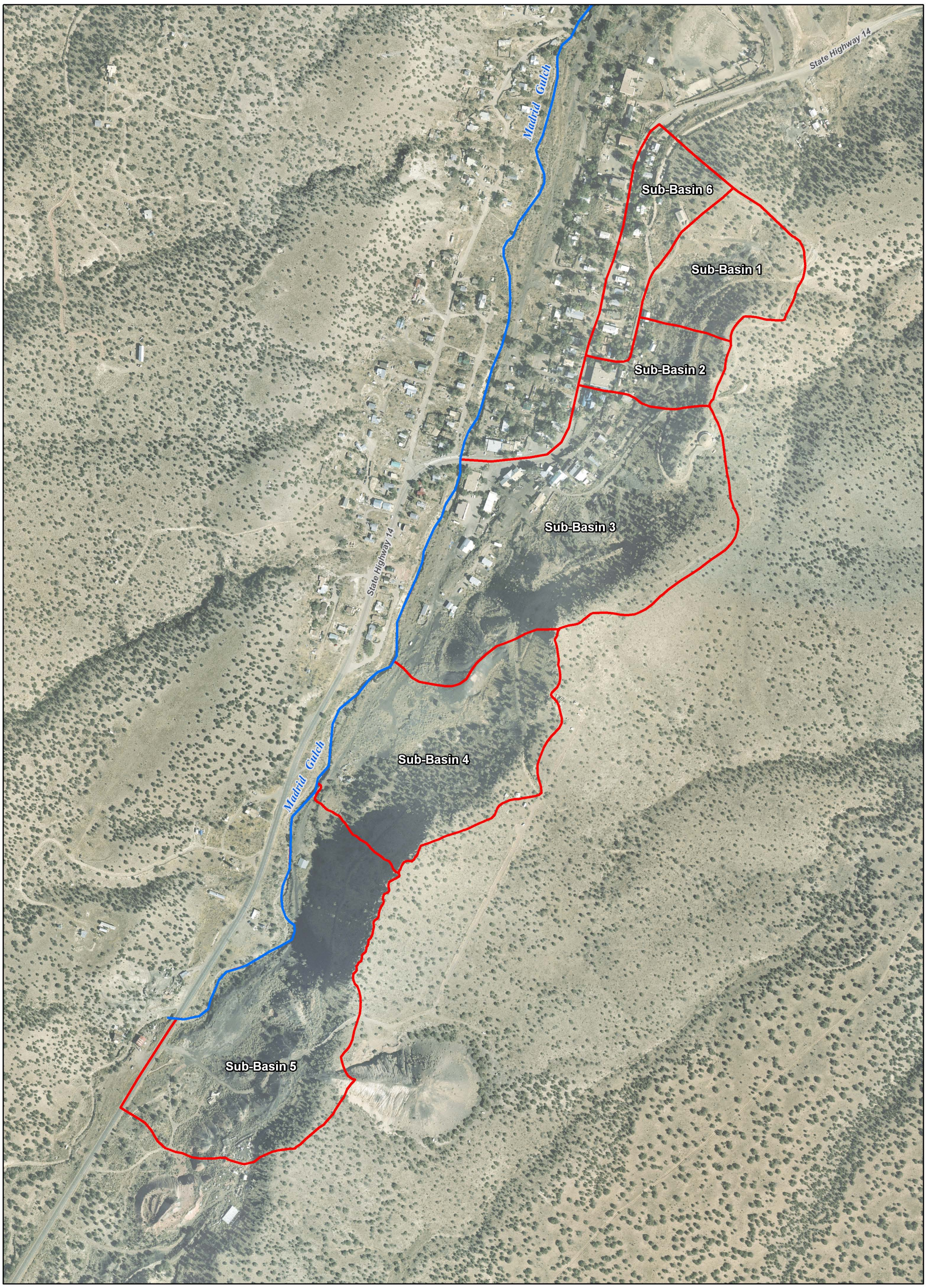
Drainage Area Name	Lag Time (minutes)
Upper	18.5
Middle	23.4
Lower	25.8

A detailed hydrologic analysis was completed using the Hydraulic Engineering Center's Hydrologic Modeling System (HEC-HMS) Version 3.4 developed by the United States Army Corps of Engineers (USACE). The program is applicable to this modeling effort, as it has the capability to synthesize watersheds, using a variety of methods for basin characteristics, hydrograph transformation and storm events. The peak flows for the 100-year, 24-hour storm events in each of the three subareas are shown in **Table 5** below.

Table 5 - Madrid Gulch 100-Year, 24-Hour Peak Flows

Drainage Area Name	100-year 24-hour Peak Flow (cubic feet per second)
Upper	2099.2
Middle	2637.1
Lower	3015.4

The Middle and Upper Madrid Gulch drainage basins were divided into six sub-basins along the East Slope within Madrid based on topographic data and resident interviews regarding known flooding issues that may be a result of previous mining operations. These sub-basins are shown in **Figure 3**.



Madrid Gulch

Sub-Basin

N

0 200 400 600

Feet

Stormwater Study - Madrid Mining Area

New Mexico Energy, Minerals and Natural Resources Department

Abandoned Mine Land Program

Santa Fe County, Madrid, NM

Figure 3: East Slope Sub-Basins

Each sub-basin was analyzed for the following storm events: the 10-year, 24-hour; 25-year, 24-hour; and the 100-year, 24-hour. CN values and Time of Concentration (Tc) calculations were determined for each sub-basin and are shown in **Table 6**.

Table 6 - East Slope Input Summary

Sub-Basin	Area (ac)	CN	Tc (min)
1	7.4	82	10
2	4.1	92	10
3	28.1	89	10
4	16.9	91	10
5	22.1	94	10
6	6.1	76	10

PondPack version 10.0, a stormwater modeling program produced by Bentley Systems, Inc., was used to model the hydrology for the sub-basins, using the NRCS method. PondPack model results are shown in **Table 7**.

Table 7 - East Slope Summary of Discharges

Sub-Basin	Area (ac)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{100} (cfs)
1	7.4	8.1	11.2	16.5
2	4.1	8.1	10.2	13.4
3	28.1	53.0	67.8	91.3
4	16.9	32.0	40.5	54.1
5	22.1	48.5	59.8	77.6
6	6.1	5.0	7.5	11.7

5.2. HYDRAULICS

Standard hydraulic study methods were used to determine flood extent boundaries within the Madrid watersheds. The hydraulic analysis implements the results from the hydrologic analysis explained in Section 5.1. Flood events of such a magnitude that they are expected to be equaled or exceeded once (on the average) during any 100-year period (recurrence interval), were selected for analysis in accordance with the scope of work for this project. This event is commonly termed, the 100-year flood and has a one percent (1%) chance of being equaled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The analysis reported herein reflects flooding potential based on conditions in the community when this study was completed.

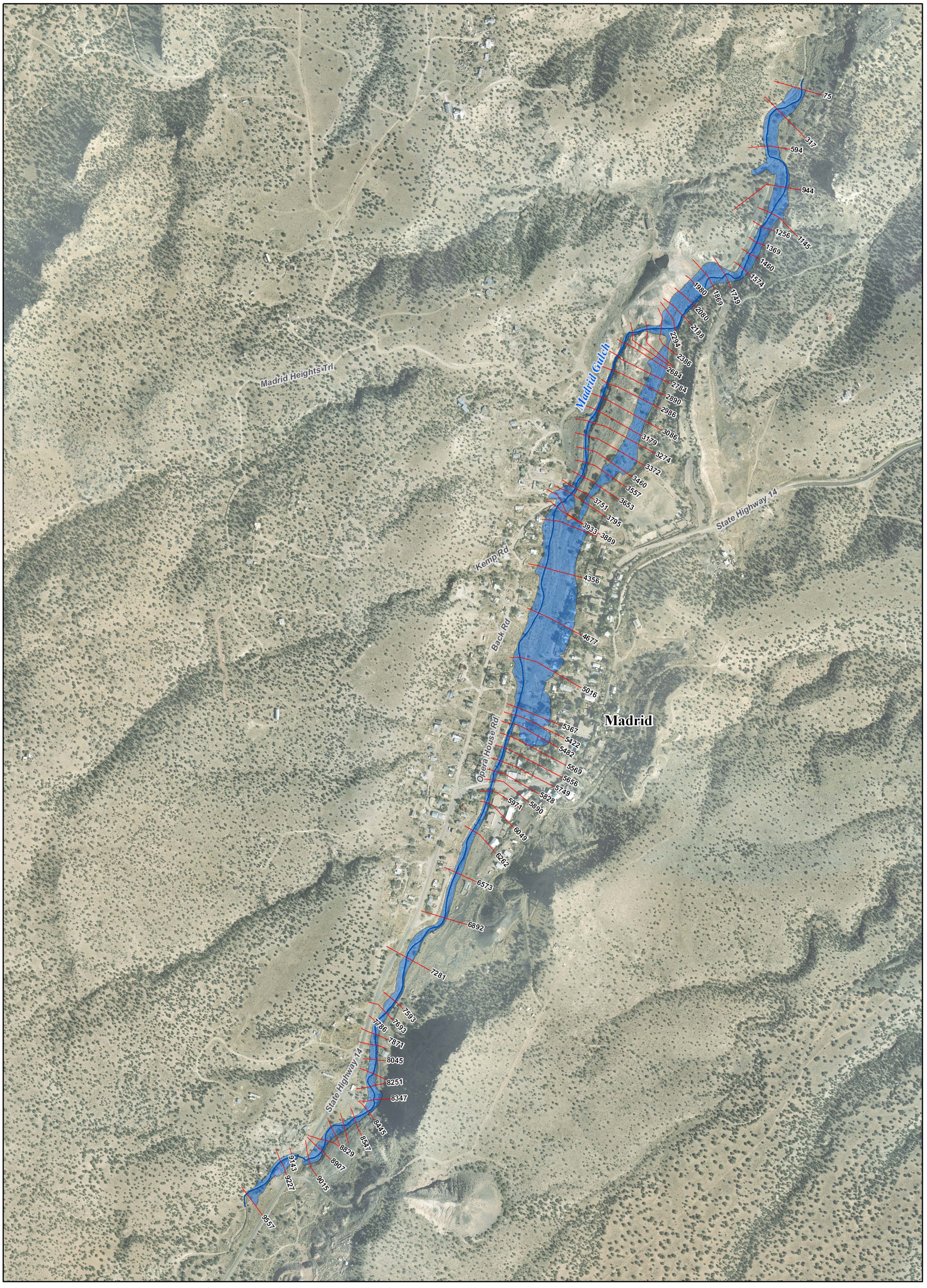
The USACE Hydraulic Engineering Center's River Analysis Program (HEC-RAS) v4.1 was selected to analyze channel hydraulic capacity and to determine the water surface profile. The HEC-RAS program is a one-dimensional model that uses the standard step method to calculate the height of flooding in a channel cross section. The program also employs bridge and culvert hydraulic routines to assess the capacity of these structures. In addition, HEC-GeoRAS, an ArcGIS based pre- and post-processor, was used to spatially orient the hydraulic model, provide cross-section geometry from the available topographic data, and display the hydraulic model results.

The Madrid Gulch topographic data was collected by Bohannon-Huston, Inc., in 2002. The imagery was collected in 2009 as part of the National Agriculture Imagery Program (NAIP).

The topographic data was supplemented with a field survey, performed during February 2011, to collect bridge geometry and ground truth channel cross-section data. All data used in this analyses was supplemented with site visits and investigation of aerial photography to identify flow paths, culvert and bridge locations, and to estimate friction values to use in the modeling effort.

Roughness coefficients (Manning's "n" values) for water-surface profile computations were based on field inspection of stream channels and overbank areas, and adjusted based upon land use and ground cover determined from aerial photography. These values, when coupled with the use of blocked obstructions in the cross sections, provide an accurate estimation of the flood conveyance through the overbank areas.

Please refer to **Figure 4** for the Madrid Gulch 100-year inundation mapping.



Study Reach

HEC-RAS Cross Section

100yr Floodzone

N

0 300 600 900

Feet

Stormwater Study - Madrid Mining Area

New Mexico Energy, Minerals and Natural Resources Department

Abandoned Mine Land Program

Santa Fe County, Madrid, NM

Figure 4: Madrid Gulch Floodzone

5.3. SEDIMENT TRANSPORT

SEDCAD 4, a sediment analysis program from Civil Software Design was used to determine the sediment runoff from the sub-basins within Madrid. Each sub-basin was analyzed for the following storm events: the 10-year, 24-hour; the 25-year, 24-hour; and the 100-year, 24-hour. NRCS storm data and CN values used for the PondPack hydrology were also used for the SEDCAD model. Muskingum routing parameters were based on land flow conditions and sub-basin slopes. For the Madrid area, nearly bare and untilled and alluvial valley fan land flow conditions were selected, based on field reconnaissance and comparison of orthophotography. The SEDCAD model was run using the TR-55 emulator unit hydrograph response shape. The TR-55 emulator uses a single triangle dimensionless unit hydrograph shape, whereas the NRCS TR-55 program uses a single gamma function type curve. Use of the single triangle in SEDCAD creates a higher peak flow than the NRCS TR-55 program. PondPack hydrology uses the NRCS TR-55 unit hydrograph shape. This difference in hydrograph response shape between the two models was minor as the outputs produced were similar. **Table 8** shows the difference in flows between PondPack and SEDCAD.

Table 8 - Flow Comparison

Sub-Basin	Area (ac)	PondPack			SEDCAD		
		Q_{10} (cfs)	Q_{25} (cfs)	Q_{100} (cfs)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{100} (cfs)
1	7.4	8.1	11.2	16.5	9.6	13.0	18.6
2	4.1	8.1	10.2	13.4	8.9	11.1	14.6
3	28.1	53.0	67.8	91.3	53.3	68.3	92.3
4	16.9	32.0	40.5	54.1	35.4	44.6	59.1
5	22.1	48.5	59.8	77.6	52.9	64.9	83.6
6	6.1	5.0	7.5	11.7	5.3	7.8	12.0

Particle size distribution used for sediment analysis was determined from field reconnaissance. The size of the coal particles on the site was determined to be similar to medium silt particles and this particle size range (0.031 – 0.016 mm) was used to complete the sediment analysis. The specific gravity (SG) of broken anthracite coal was used for the SEDCAD model. Laboratory tests were not conducted on the gob piles, but may be considered at a later point in time. Soil erodibility (K) factors were taken from available NRCS soil property data. Factor K_w considers the whole soil and factor K_f considers materials less than 2.0 mm in diameter. The Madrid area soils located at the gob piles were considered similar to fine-earth soils and were assigned K_f factors. The remaining portions of each sub-basin were assigned K_w factors. Canopy, surface cover and surface roughness are represented by a C factor. For the Madrid sub-basins the C factors for Permanent Pasture, Rangeland, Idle Land, and Grazed Woodlands Table provided in the SEDCAD program was used. Based on field reconnaissance, the vegetal canopy was identified as a canopy of tall weeds or short brush with a 25% canopy cover. The overall ground cover was determined to be 40% and provides a C factor of 0.130.

The P factor accounts for specific support practices such as contouring, terracing, and deposition at the base segment of a concave slope. It also accounts for sediment control barriers such as grass buffer strips, straw bales, gravel or filter barriers, and stiff-grass hedges. A P value of 1.0 is the default value when no control practices are used. This value (1.0) was selected, as no

evidence of support practices was encountered during field reconnaissance. **Table 9** provides data regarding the sediment yield for each sub-basin under the specified storm event.

Table 9 - Sediment Runoff

Sub-Basin	Area (ac)	10-Year Storm Event Sediment Runoff (tons)	25-Year Storm Event Sediment Runoff (tons)	100-Year Storm Event Sediment Runoff (tons)
1	7.4	9.8	13.9	21.1
2	4.1	36.6	47.3	64.8
3	28.1	233.2	310.0	438.4
4	16.9	47.8	62.3	86.3
5	22.1	54.5	69.2	93.0
6	6.1	30.7	47.1	77.2
Total	84.7	412.6	549.7	780.9

6. ALTERNATIVES CONSIDERED

To be completed at a later date.

7. RECOMMENDED ALTERNATIVES

To be completed at a later date.

8. REFERENCES

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APPENDIX A

PUBLIC MEETING

New Mexico Energy, Minerals and Natural Resources Department

MINING AND MINERALS DIVISION
ABANDONED MINE LAND PROGRAM

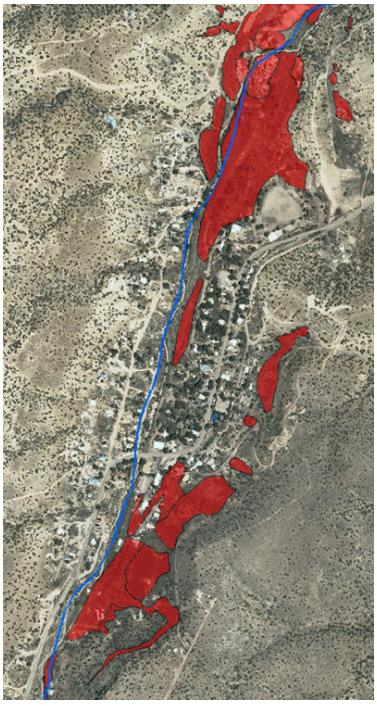
PUBLIC INVOLVEMENT MEETING ANNOUNCEMENT
MADRID STORMWATER STUDY

The New Mexico Energy Minerals and Natural Resources Department, Mining and Minerals Division, as part of their Abandoned Mine Land Program, will be holding a public involvement meeting to inform the public about the Madrid Stormwater Study project background, previous reclamation efforts, and to present project concepts and progress to-date.

Date: February 9, 2011

Time: 6:30 to 8:30 P.M.

Location: Madrid Fire Hall, Madrid, NM



Agenda: Sign-in, 6:30 P.M.
Presentation, 6:45 P.M.
Q&A/Discussion/Homeowner Interviews, 7:15 to 8:30 P.M.

This project consists of survey and field investigations to calculate the coal pile and ditch slopes, structure locations, invert elevation and other key information and existing data with the study area to verify the feasibility of potential stormwater improvement projects with the Madrid community.

Meeting topics will include:

- Madrid Planning Status
- Geotechnical Study on East Slope
- Preliminary Flood Plain Study
- Stormwater Study Progress and the Development of Alternatives
- Home owner interviews and/or interview scheduling

If you are unable to attend the meeting and have questions or concerns regarding the project, please contact the NM ENMRD point of contact, Lloyd Moiola, Archeologist at (505) 476-3427

Written comments will be accepted at the meeting or can be sent to Beverley Frieday, at URS Corporation, 6501 Americas Parkway, Suite 900, Albuquerque, NM 87110, 505-855-7555 (fax), beverley_frieday@urscorp.com.

Directions: from the south take Hwy 14 north to Madrid, turn right just before the Mine Shaft Tavern and go to the second building on the right. From the north take Hwy 14 south to Madrid, turn left into the lane on the south side of the Mine Shaft Tavern and go to the second building on the right.

New Mexico Energy, Minerals and Natural Resources Department

MADRID PUBLIC MEETING SIGN-IN

Madrid Fire House

February 9, 2011, 6:30 P.M.

Name	Title	Organization	Phone	Email
Nicole Friedt	Project Engineer	URS	505.855.7500	nicole_friedt@urscorp.com
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GAVIN F. STRATHDEE	PRESIDENT, MADRID WATER CO-OP.		505 471-7296	—
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Elizabeth Davis	"		424 0929	reddog2farm@msn.com

New Mexico Energy, Minerals and Natural Resources Department

MADRID PUBLIC MEETING SIGN-IN

Madrid Fire House

February 9, 2011, 6:30 P.M.

	Name	Title	Organization	Phone	Email
	DIANA DOMROW		MLA MMA MCP	471-1054	djofm@yahoo.MATL
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New Mexico Energy, Minerals and Natural Resources Department

Mining and Minerals Division
Abandoned Mine Land Program
MADRID SURFACE HYDROLOGY STUDY
Public Involvement Meeting
February 9, 2011

Agenda Topics

- Introductions & Project Overview
- Dekker/Perich/Sabatini Madrid Mining Landscape Project
- Kleinfelder Geotechnical Study
- URS Surface Hydrology Study
    - Preliminary Floodplain Mapping
    -
    - Stormwater Study Progress
    -
    - Stormwater Alternatives
- Madrid Resident Interview s Purpose and Need
- Questions and Comments

URS

Project: **Madrid Stormwater Study**
Date: **February 9, 201**
Purpose: **Public Involvement Meeting #1**
Place: **Madrid Fire House**
Copies to: **AML for posting**

Public Involvement Meeting Notes: The meeting began at 6:30 P.M. with sign-in and a presentation followed at approximately 6:40 P.M. with a welcome and introductions from John Kretzmann from the Abandoned Mine Land Program (AML). The presentation followed the agenda with questions allowed throughout. An additional question and answer period followed the formal presentation. Attendees were asked to remain to participate in an interview concerning their knowledge of flooding effects on the community. Many participants stayed to talk with AML staff and other contract staff from Dekker/Perich/Sabatini (DPS), Kleinfelder, and URS. The meeting ended at 8:00 P.M. when all of the community participants had left.

The formal presentation included the following:

Ken Romig with DPS:

- Task 1 is completed
- Task 2 has reached a compromise
- Currently working on Task 3 (engineering services)

Joel Metcalf with Kleinfelder

- Kleinfelder was working on the geotechnical survey for the AML and whether or not the old mine workings have an influence on the local drainage.
- They determined that Site #2 does currently have an underground opening.
- They also determined that subsurface mine workings and openings do not have an influence on current day stormwater drainage.

Nicole Friedt with URS

- Working on modeling stormwater flow, and the alternatives. More details will be provided at the next meeting.

Beverley Frieday with URS

- Introduced that field staff that are responsible for interviewing residents concerning stormwater and flooding issues in the community.

URS Corporation
One Park Square
6501 Americas Parkway NE, Ste. 900
Albuquerque, NM 87110
Tel: 505.855.7500
Fax: 505.855.7555

Questions from Local Participants

Paul Dickson: The Ice House Road keeps getting higher and muddier; will the county be performing the maintenance on this road?
AML: This road is going to be included as part of the engineering solution, which is the purpose of this study.
Paul: There has been discussion of using the stormwater for gardens.
URS: We will try to maximize the ability to collect stormwater, but it's going to depend on maintenance.
AML: Within the county there is a range of possibility for stormwater harvesting, but it needs to be coordinated with the county.

Gavin Strathdee: There is a culvert beneath N-14, which is currently blocked. Is this culvert going to be cleaned, additionally, this culvert flows across private property onto Cave Rd.
AML: This is an issue that needs to be looked into.

Clinton Anderson: What about the west slope?
AML: Most of the mining impact is on the east slope, some work may be performed on the west slope, but the primary focus of this study is going to be on the east slope.

Gavin: What about the utilities?
AML: No utilities have been mapped at this time
Paul: All of the phone lines are located in a central place.
(?): The waterline runs along the old RR embankment down the Madrid Gulch.
AML: We are concentrating on the east slope at the moment. Any utility information provided and available will be taken into account during the alternative development.

Lori Lindsey: The town would like to try and use the water before it gets to the arroyo, are you looking at harvesting?
URS: You can capture water from the roof, but water rights are a very complicated topic.
Lori: It is my understanding that we have a certain timeframe to use it. The town would rather have water from the sky than from the Earth. The water quality in Madrid is pretty poor.
URS: Our task for AML is to address flooding as a primary goal, but we will try to incorporate other community concerns into the alternatives where feasible.
Lori: How can we interface with the Office of the State Engineer (OSE) in order to get the maximum benefit from this project?
AML: Rooftop harvesting is legal, but the AML can't fund a rainwater capture program.
Lori: Is anyone trying to coordinate with the OSE?
AML: We haven't asked URS to do this; this is something AML will have to discuss.
Elizabeth Davis: The County asked a community to dam a gulch in order to capture stormwater.
Amanda Bramble: The community is in favor of community gardens, and we know this is going to take work within the community.
DPS: There are many organizations out there that would be able to help us fund this.
Lori: Will your organization determine how much water can be captured?
URS: Yes. We can compute a volume that can be captured. Our alternatives for flooding issues will quantify a peak runoff, runoff volume, and a contingency for sediments accumulation will be determined.

DPS: Is anybody looking into what the OSE will or will not allow us to do?
AML: We have not asked URS to do this, but this will be coordinated.

Lana Paolillo: Where are we now and where are we headed?
URS: We are currently collecting all of the required data, and after this is done we will work with the state to determine key items before coming up with the alternatives.
AML: We still need to finish the archeological survey and perform the NEPA work. This project is about a year and half down the road. Also, the DOT and the County need to be involved.

(?): The town of Madrid is concerned that the County will not maintain the structures.
AML: We are currently working with the County and possibly the DOT to obtain a Memorandum of Understanding to perform the maintenance. Features that require low maintenance are being looked at, however; there are always limitations.

New Mexico Energy, Minerals and Natural Resources Department

MINING AND MINERALS DIVISION ABANDONED MINE LAND PROGRAM

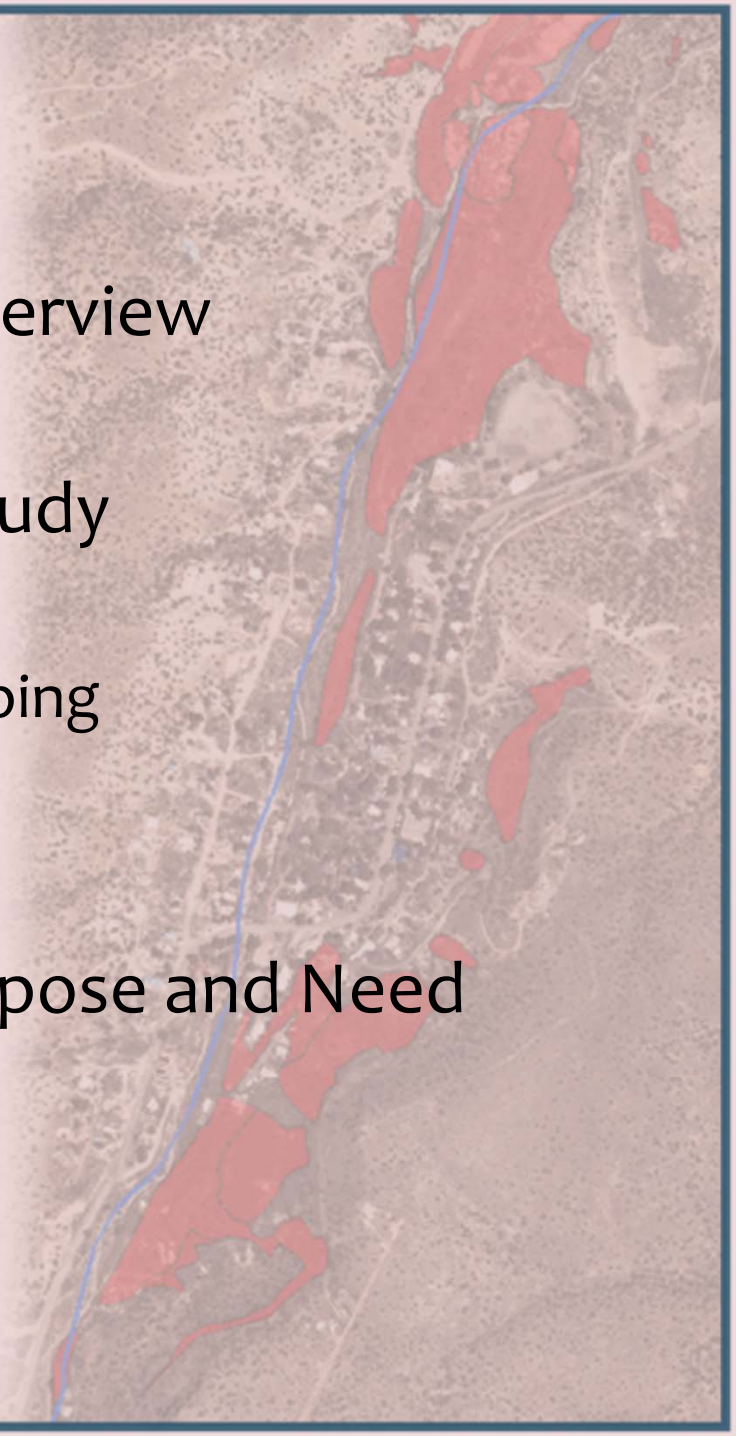
MADRID SURFACE HYDROLOGY STUDY

Mining and Minerals Division
Abandoned Mine Land Program
Community-Based Planning Project

Public Meeting
February 9, 2011

URS

Presentation Agenda



- Introductions & Project Overview
- Madrid Planning Status
- East Slope Geotechnical Study
- Surface Hydrology Study
  - Preliminary Floodplain Mapping
  - Stormwater Study Progress
  - Stormwater Alternatives
- Homeowner Interview Purpose and Need
- Questions and Comments

Introductions & Project Overview

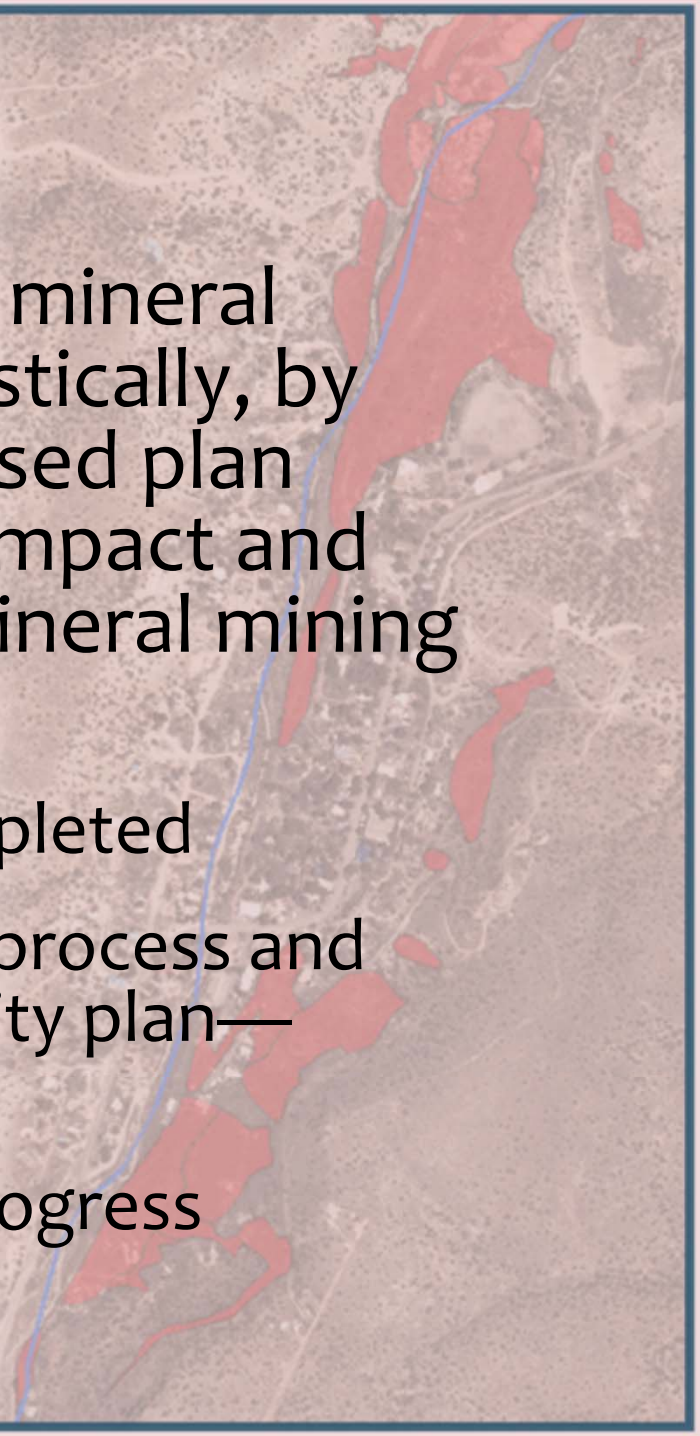
Introductions

- NM EMNRD, AML Staff
- Dekker/Perish/Sabatini Staff
- Kleinfelder Staff
- URS Corp Staff

Project Purpose

AML leaders are addressing mineral mining issues in Madrid holistically, by developing a community-based plan that addresses the historic impact and secondary effects of past mineral mining and processing practices.

- Task 1: Documentation—completed
- Task 2: Conduct the planning process and development of the community plan—completed
- Task 3: Produce report—in progress



Current Implementation

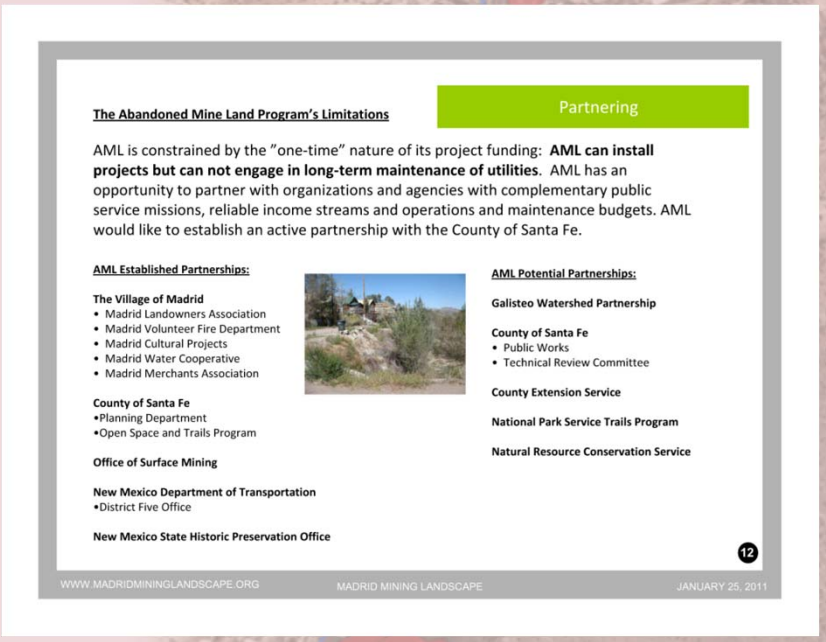
Engineering Services to:

- Perform preliminary engineering
- Mapping
- Geotechnical Studies
- Drainage Analysis

Gob Pile from East

Madrid Mining Landscape Project

Presentation to Santa Fe Board of County Commissioners- January 25, 2011

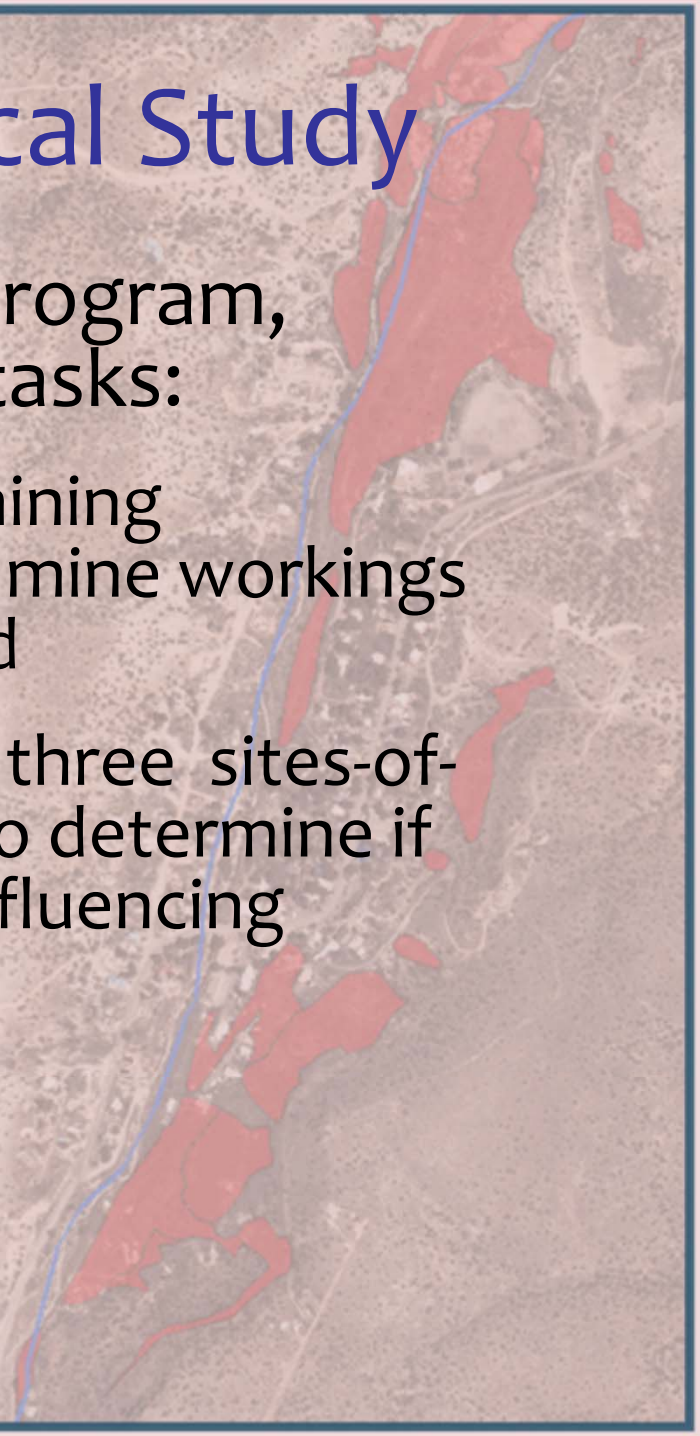


Final Plan in progress, draft for review available by February 25

Kleinfelder Geotechnical Study

At the request of the AML Program, Kleinfelder performed two tasks:

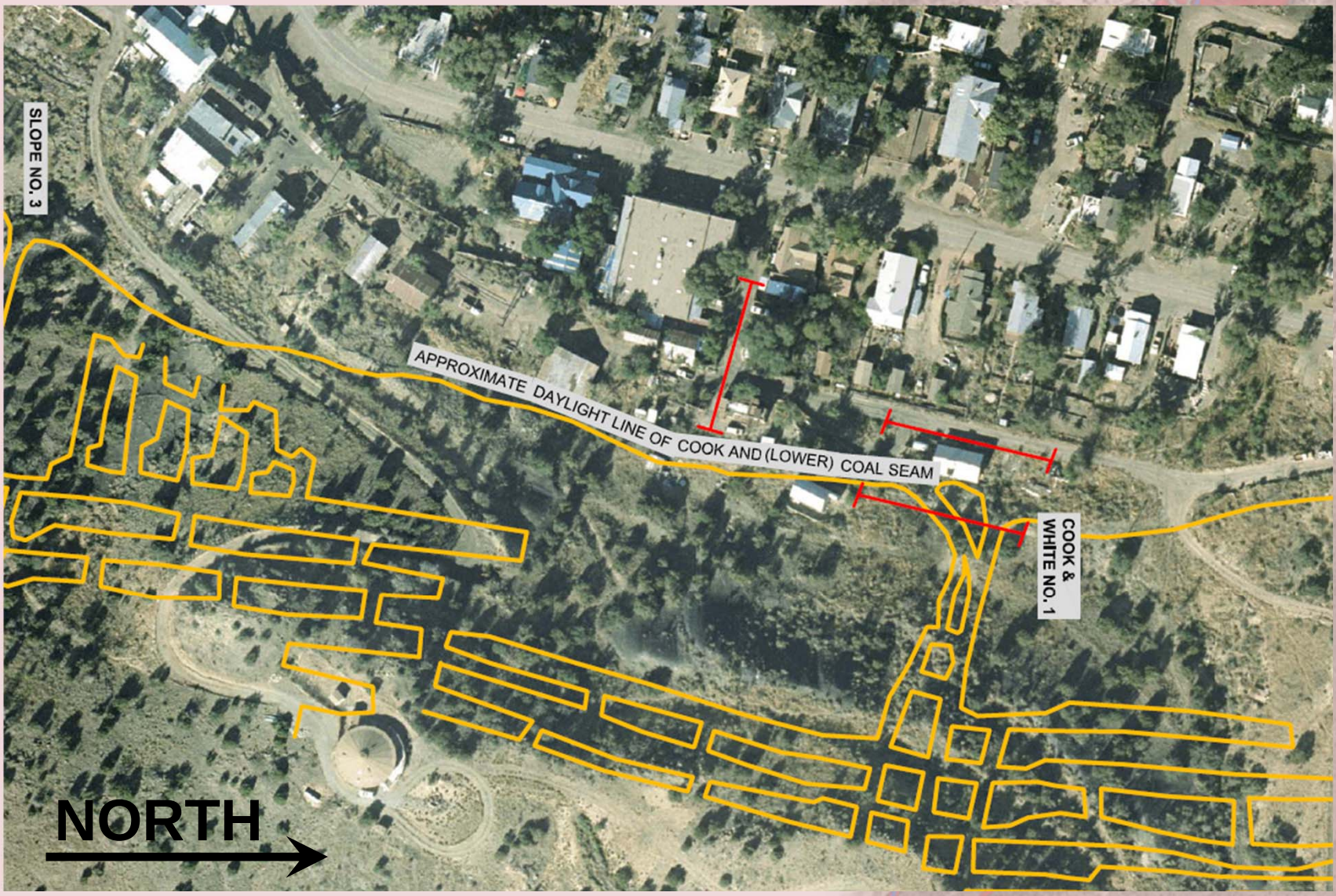
1. Review available historical mining documents to locate former mine workings along the east side of Madrid
2. Conduct field assessment of three sites-of-concern identified by AML to determine if former mine workings are influencing surface drainage



Historical Mine Workings

upper seam

Historical Mine Workings



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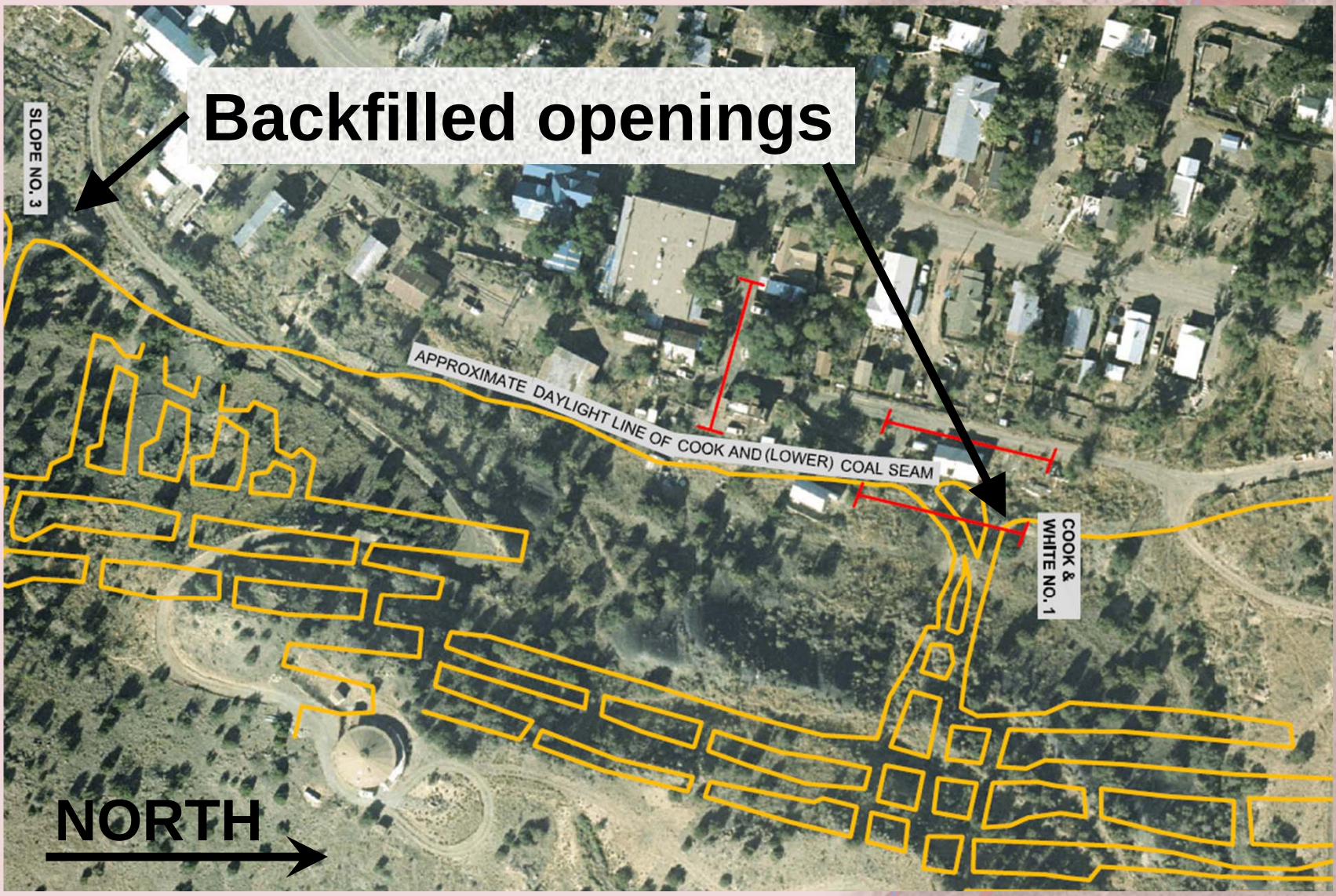
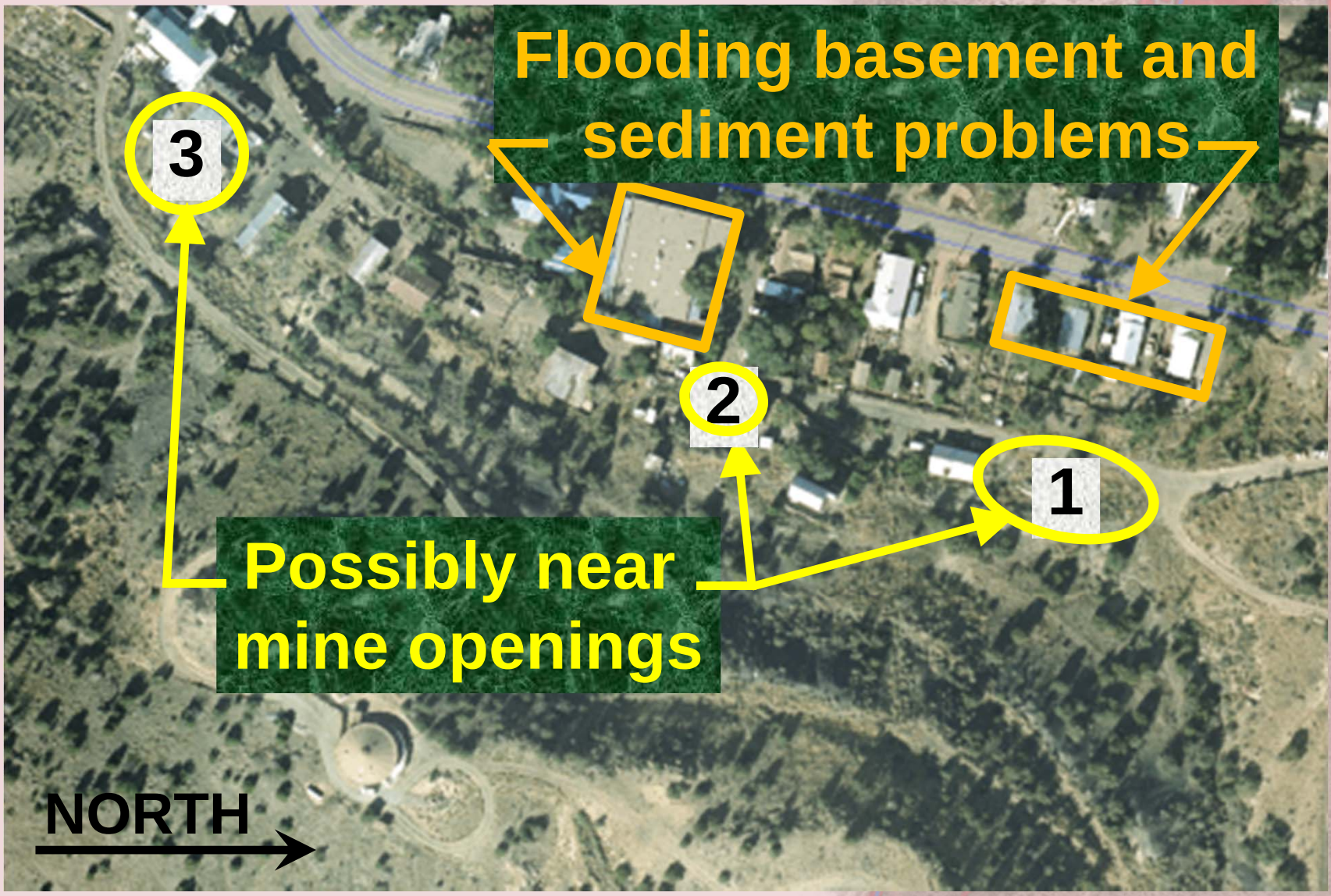
Historical Mine Workings

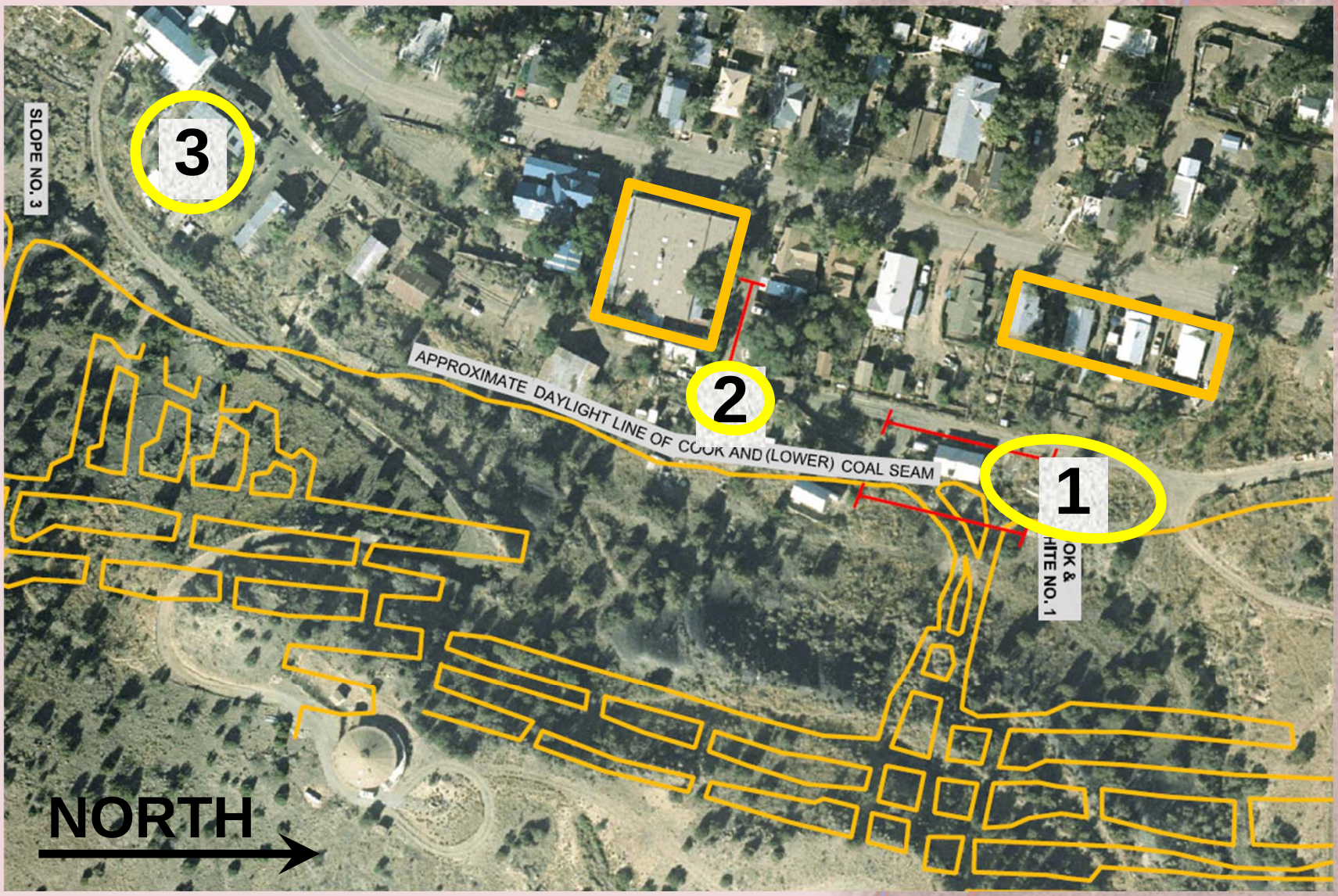


lower seam

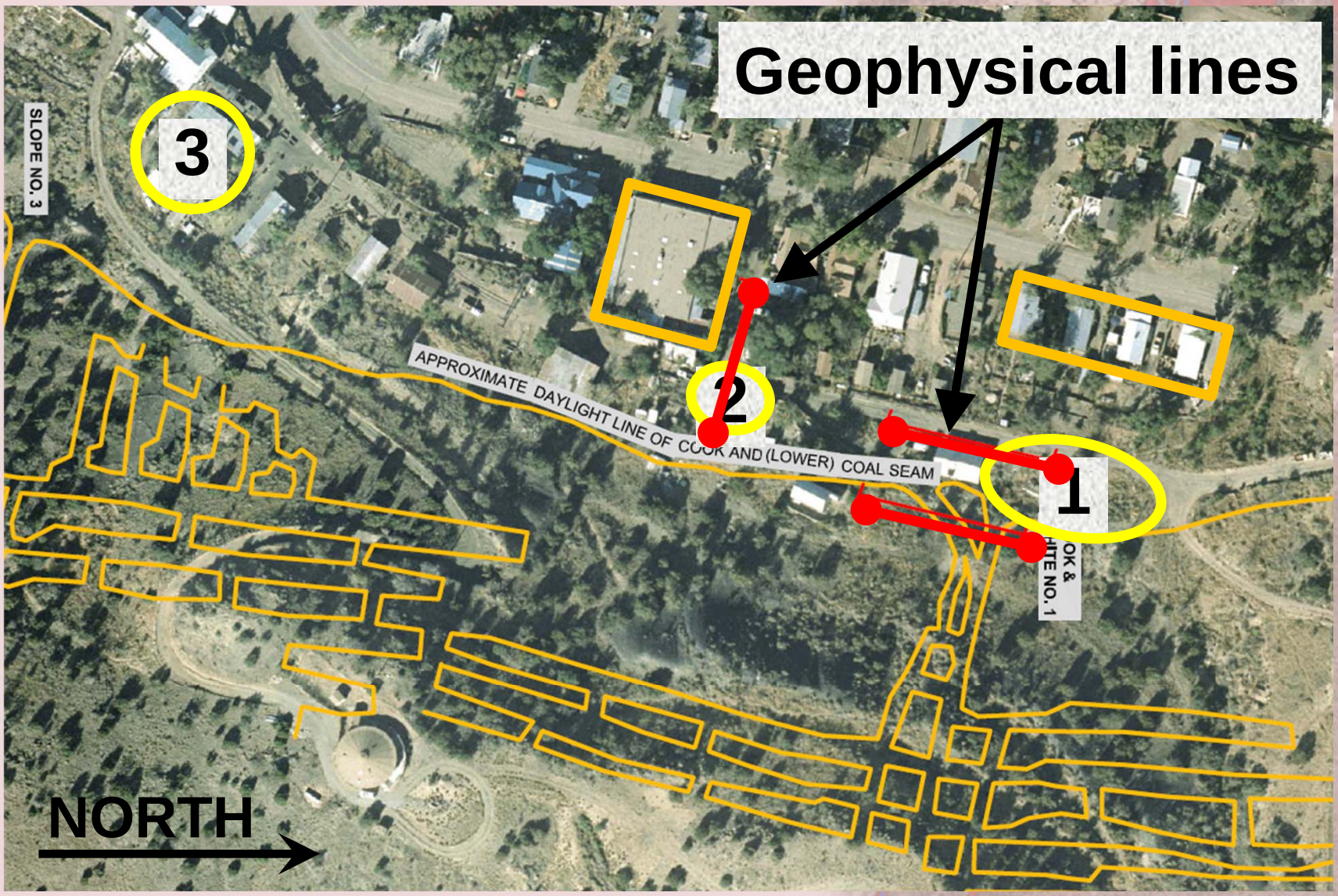
3 Sites of Concern



Lower Coal Seam Mine Openings



Geophysical Surveys



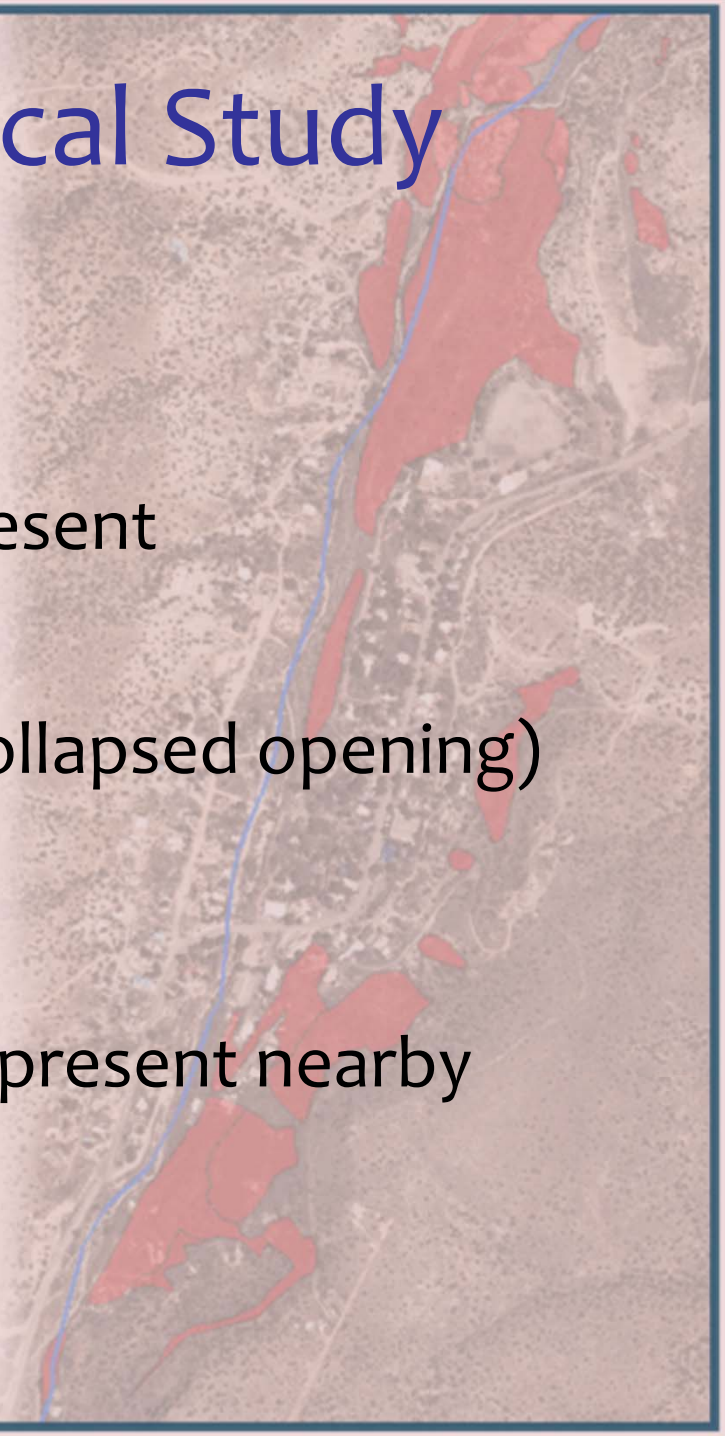
Kleinfelder Geotechnical Study

Results:

Site 1
A backfilled mine opening is present

Site 2
An underground opening (or collapsed opening) is present

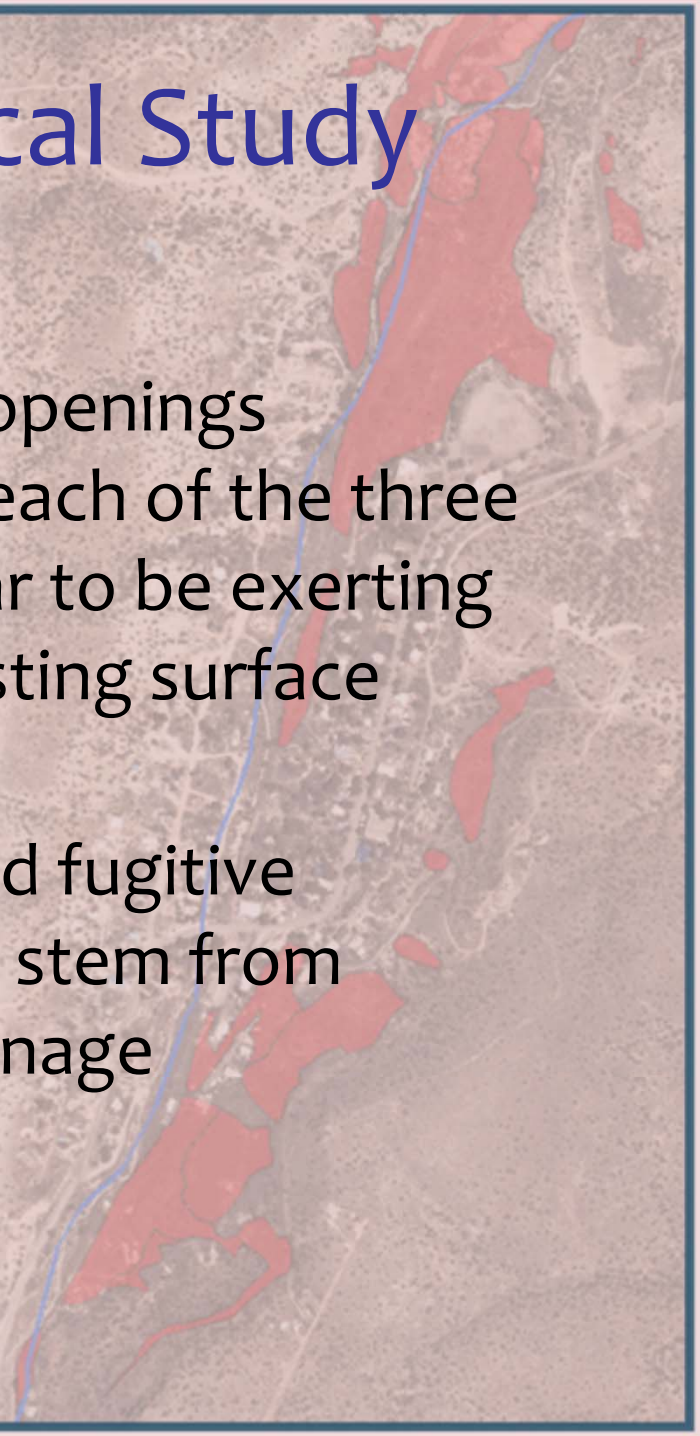
Site 3
A buried mine opening may be present nearby



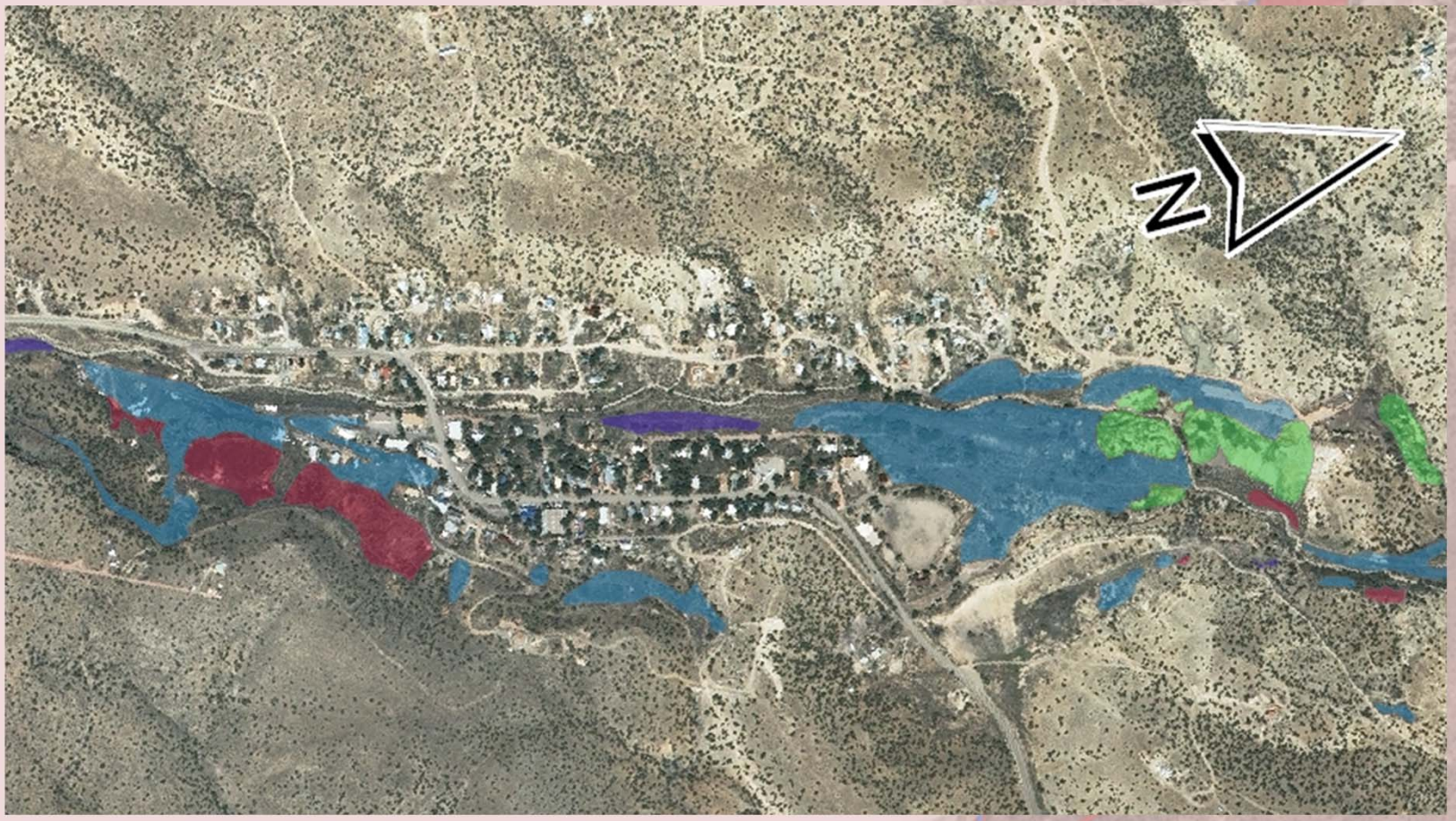
Kleinfelder Geotechnical Study

Conclusions:

- Mining-related underground openings present (or likely present) at each of the three sites-of-concern do not appear to be exerting a significant effect on the existing surface water drainage
- Nearby basement flooding and fugitive sediment problems appear to stem from poorly-controlled surface drainage



Surface Stormwater Project Location & Study Limits

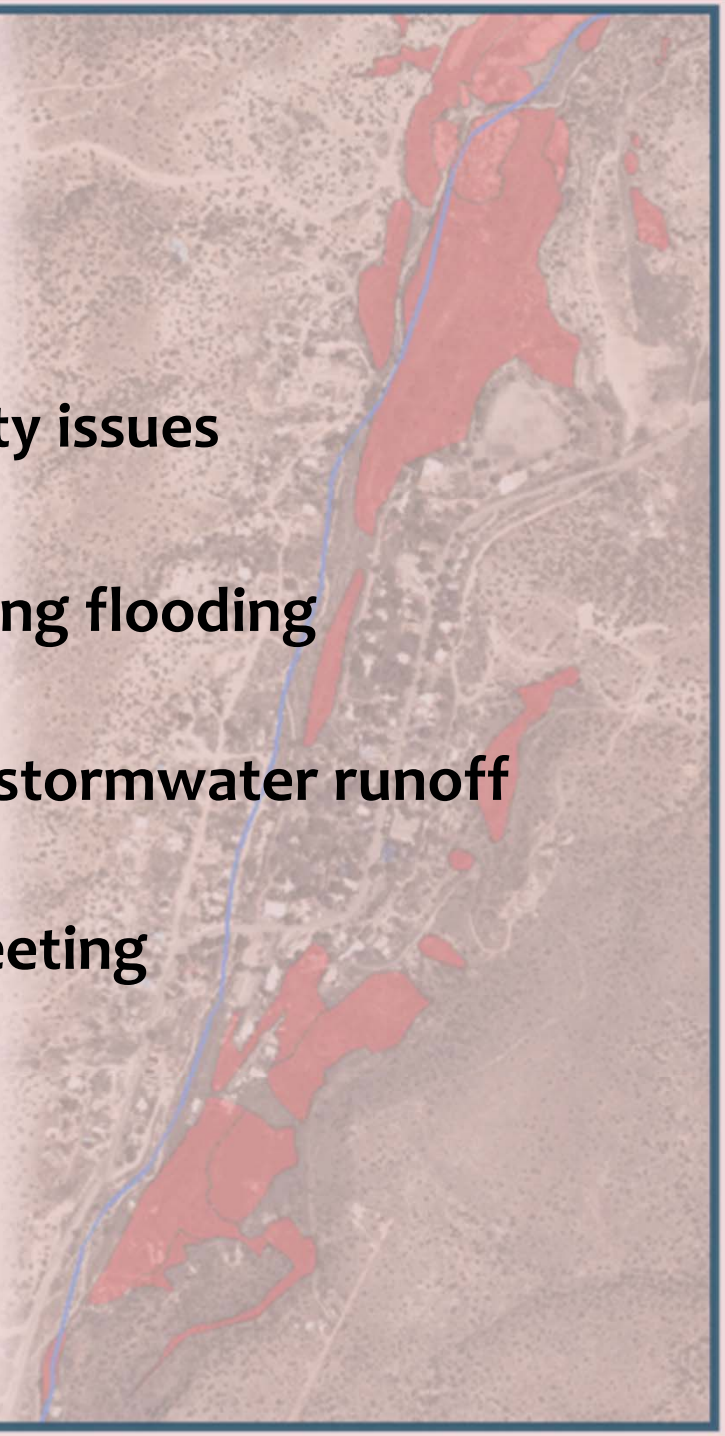


Surface Stormwater Study

- Ground Survey and Field Study
- Existing Stormwater Issues
- Hydrologic Analysis
  - Madrid Gulch
  - Runoff from GOB Piles
- Stormwater Runoff & Flooding
  - Flooding associated Madrid Gulch
  - Flooding resulting from GOB Pile Runoff
  - Stormwater Quality
- Possible Stormwater Alternatives
  - Channel Restoration
  - Sediment Capture
  - Erosion Reduction
  - Stormwater Conveyance

Next Steps

- Identify flooding issues
- Identify stormwater runoff quality issues
- Determine flooding sources
- Develop alternatives for addressing flooding attributed to GOB Pile runoff
- Incorporate features to improve stormwater runoff quality.
- Present Alternatives at Public Meeting
- Finalize Alternative selection
- Develop Final Stormwater Study



Comments

- Write comments on comment form
- Mail or fax comments to address on comment form
- Send e-mail to beverley_frieday@urscorp.com

Questions and Comments

- State your name clearly before asking your question or making your comment for the meeting notes.
- Speak loud and clear
- Thank you for attending

APPENDIX B

INTERVIEWS WITH RESIDENTS

Public Involvement Meeting

Madrid Surface Hydrology Study
New Mexico Energy, Minerals and Natural Resources Department
Abandoned Mine Land Program

Comment Sheet
(Please Print)

Please submit your comments by February 25, 2011.

Flooding coming from Icehouse Rd.
Bldg shows water damage.
-Landscaping ~~shows~~ deflects flow

Mail To:
URS Corp.
Attn: Beverley Frieday
6501 Americas Pkwy. NE/ Suite 900
Albuquerque, NM 87110
(505) 855-7500
(505) 855-7555FAX
E-mail To: beverley_frieday@urscorp.com

Your Name: Barbara Amith
Address: 7872 Hwy 14
Phone: 424-4467
E-Mail:

Public Involvement Meeting

Madrid Surface Hydrology Study
New Mexico Energy, Minerals and Natural Resources Department
Abandoned Mine Land Program

Comment Sheet
(Please Print)

Please submit your comments by February 25, 2011.

Color and Light Business
Flooding by Resources Gallery, water comes in at all storm events.
Chumani Gallery has had flooding (5 yrs ago) from W. Bank
(County maintenance helped w/ clean up)
Mo's property fills w/ water (W. side)

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E-mail To: beverley_frieday@urscorp.com

Your Name: Susan Kelly
Address:
Phone:
E-Mail:

Public Involvement Meeting

Madrid Surface Hydrology Study
New Mexico Energy, Minerals and Natural Resources Department
Abandoned Mine Land Program

Comment Sheet
(Please Print)

Please submit your comments by February 25, 2011.

FLOODING ON LOT 35 SC
" 37

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Your Name: _____
Address: _____
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Phone: _____
E-Mail: _____

Public Involvement Meeting

Madrid Surface Hydrology Study
New Mexico Energy, Minerals and Natural Resources Department
Abandoned Mine Land Program

Comment Sheet
(Please Print)

Please submit your comments by February 25, 2011.

Red Bone Gallery

Water coming in through foundation, comes right off of E. slope. Foundation deteriorating, major runoff.

Also noted runoff at center of town in galleries.

Any rain or snowmelt infiltrates basement. 5" of pooling encountered.

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E-mail To: beverley_frieday@urscorp.com

Your Name: Corey
Address:
Phone:
E-Mail:

Received: by 10.223.74.129 with HTTP; Sun, 6 Mar 2011 13:42:04 -0800 (PST)
Date: Sun, 6 Mar 2011 14:42:04 -0700
Message-ID: <AANLkTimYU+C7BoyuF67HqsT52NZbPdiu= KcL09AX4SHP@mail.gmail.com >
Subject: Madrid survey
From: Rebecca Nafey < areba51@gmail.com >
To: beverly_frieday@urscorp.com
Content-Type: multipart/mixed; boundary=000e0cd3ff92025833049dd740ea

Hi Beverly

Sorry this is a little late, hope you can still use it. Our basement problem has been ongoing for many years now and only when there is runoff from the hill behind the house.

Thank you,
Rebecca Nafey

--
Qualifying Broker
Sea Properties, Ltd.
2883 NM 14
Madrid, NM 87010
505-438-7330

--
Qualifying Broker
Sea Properties, Ltd.
2883 NM 14
Madrid, NM 87010
505-438-7330

Public Involvement Meeting

Madrid Surface Hydrology Study
New Mexico Energy, Minerals and Natural Resources Department
Abandoned Mine Land Program

Comment Sheet
(Please Print)

Please submit your comments by February 25, 2011.

N. most gallery
- neighbors have flooding issues
- ditch that leads to drainage (added by owner)
- drtch has failed in past
- if ditch not present, gallery would also flood

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(505) 855-7555FAX
E-mail To: beverley_frieday@urscorp.com

Your Name: Paul Dicksoin
Address: 2878 HWY 14
Phone:
E-Mail:

Public Involvement Meeting

Madrid Surface Hydrology Study
New Mexico Energy, Minerals and Natural Resources Department
Abandoned Mine Land Program

Comment Sheet
(Please Print)

Please submit your comments by February 25, 2011.

Mineshaft

Added berm to divert flooding from kitchen (During significant events)
Water coming down back access road and flooding properties W of 14
Lots of sediment washing down E. slope
Flowpath exists S. of Chrysler bldg.

Drainage on N end of kitchen, has since been covered to alleviate flooding.

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Your Name: Jeff
Address:
Phone:
E-Mail:

Public Involvement Meeting

Madrid Surface Hydrology Study
New Mexico Energy, Minerals and Natural Resources Department
Abandoned Mine Land Program

Comment Sheet
(Please Print)

Please submit your comments by February 25, 2011.

Soda Fountain
Bldg. floods twice a year, several inches deep on S. side of property, seaps into septic tank.
Water seaps through rocks into property.
Sump pump installed to alleviate flooding.
Water and sediment coming through and into gallery.
Bldg. behind store fills w/ water, has leaked into adjacent businesses. Bldg. is part of museum (deep pit in bldg.)

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Your Name: Mickel Baker
Address:
Phone:
E-Mail:

Public Involvement Meeting

Madrid Surface Hydrology Study
New Mexico Energy, Minerals and Natural Resources Department
Abandoned Mine Land Program

February 9, 2011

Comment Sheet
(Please Print)

Please submit your comments by February 25, 2011.

Ancient West slope drainage ditch for water to run across Back Rd & down to the arroyo was filled in about 5 years ago. This creates the water pooling on Back Rd. just north of #24's driveway. The filled in old ditch in between #24 & #26 on the property #2 owned by William Surles.

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E-mail To: beverley_frieday@urscorp.com

Your Name: LYNN McLANE
Address: 24 Back Rd. (PO Box 883 - Cerrillos)
Madrid, NM 87010

Phone: 986-1864 cell 438-874
E-Mail: LYNN McLANE@att.NET
or TUMBLEWEEDS46@att.NET

As part of the ongoing AML study, please fill out and return the provided form to indicate any areas that have been flooded due to stormwater run-off from the east slope.

t Meeting

Madrid Surface Hydrology Study
New Mexico Energy, Minerals and Natural Resources Department
Abandoned Mine Land Program

Comment Sheet
(Please Print)

Please submit your comments by February 25, 2011.

Ice House Rd causes water drainage problems to many of the houses just below it. My shop basement has not flooded for a few years, but it had been a problem in the past

Conley Studio Pottery
2870 Hwy 14

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URS Corp.
Attn: Beverley Frieday
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Albuquerque, NM 87110
(505) 855-7500
(505) 855-7555FAX
E-mail To: beverley_frieday@urscorp.com

Your Name: Lisa Conley
Address: 2870 Hwy 14
Madrid

Phone: 505-438-0782
E-Mail: lisaconley@q.com

Indigo Gallery

Jill Shwaiko Bentz
Owner

2860 D Hwy 14
Madrid, NM 87010
Fax: (505) 473-0064

(505) 438-6202
indigogallery@earthlink.net
www.indigoartgallery.com

President of merchants association

olvement Meeting

urface Hydrology Study
erals and Natural Resources Department
ed Mine Land Program

Comment Sheet

(Please Print)

Please submit your comments by February 25, 2011. Indigo Gallery

Runoff off of mountain through Ice House Road.
Flooding in basement (during time of saturation / Mud slides)
Backwall of building has cracks and sinks into ground.
Installed French drain to alleviate drainage. All attempts
to drain water has been in vain, all runoff
seems to ~~stink~~ infiltrate into soil.

Water shortage in area, asking about water catchment.

* Basement floor has numerous cracks w/ what appears
to have coal dust & calcite in them. Also was interested
in mold testing to be performed in basement area

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E-mail To: beverley_frieday@urscorp.com

Your Name: _____
Address: _____
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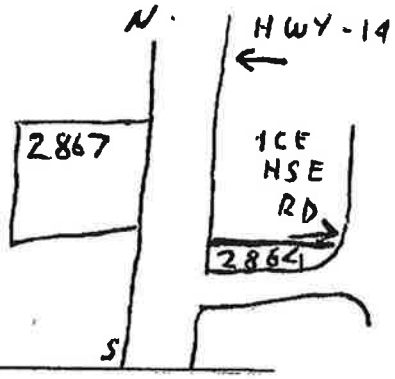
Phone: _____
E-Mail: _____

Public Involvement Meeting

Madrid Surface Hydrology Study
New Mexico Energy, Minerals and Natural Resources Department
Abandoned Mine Land Program



Comment Sheet
(Please Print)

Please submit your comments by February 25, 2011.

We own 2 properties in Madrid and both of them are affected by run-off from the east slope.
(1) 2864 Main St Ghosttown Trading Post & Ice House Rd, water build up on Ice Hse Rd and seeps into the Casita.
(2) 2867 Main St, run off from the east slope floods across the main Rd and floods the car park in front of Maggies Diner and our front yard. Some of this run-off seeps into our basement

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(505) 855-7555FAX
E-mail To: beverley_frieday@urscorp.com

Your Name: Hugh Hackett
Address: 2867 Main St Madrid
Phone: 505 471-7605
E-Mail:

Public Involvement Meeting

Madrid Surface Hydrology Study
New Mexico Energy, Minerals and Natural Resources Department
Abandoned Mine Land Program

Comment Sheet
(Please Print)

Please submit your comments by February 25, 2011.

Drainage issues all throughout town.
Flooding at center of town and all along Icehouse Rd.

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(505) 855-7500
(505) 855-7555FAX
E-mail To: beverley_frieday@urscorp.com

Your Name: Gwendolyn Zaxus
Address:
Phone:
E-Mail:

Public Involvement Meeting

Madrid Surface Hydrology Study
New Mexico Energy, Minerals and Natural Resources Department
Abandoned Mine Land Program

Comment Sheet
(Please Print)

Please submit your comments by February 25, 2011.

Grocery Store
Flooding off of E. slope sheet flows into parking lot

Have noted flooding at Main Road inlets, standing water after every event.

Floodwaters under tailings (above and below soil) poor soil quality. Lots of sediment runoff during significant events. Humate melts and adds to runoff issues.

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Phone: _____
E-Mail: _____

Public Involvement Meeting

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New Mexico Energy, Minerals and Natural Resources Department
Abandoned Mine Land Program

Comment Sheet
(Please Print)

Please submit your comments by February 25, 2011.

Existing channel remains N of Hwy 14, ditch floods.
Water still flows in this channel
Main channel has been seen as high as culvert (2C) on 14. (2x in 38 yrs)
Would like to see brush cleared from channel
SD under tavern backs up during high storm events
Groundwater still flows down natural water courses and
floods gallery. New SD grate has contained flooding of property.
Empty gas tanks below property (2).
Drain under Mineshaft goes under this property. Drains into
old channel.

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(505) 855-7555FAX
E-mail To: beverley_frieday@urscorp.com

Your Name: Dana Johnson
Address:
Phone:
E-Mail:

Public Involvement Meeting

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New Mexico Energy, Minerals and Natural Resources Department
Abandoned Mine Land Program

Comment Sheet
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Chumani Gallery

Installed spillway to alleviate floodwaters from W. slope and road.

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Public Involvement Meeting

Madrid Surface Hydrology Study
New Mexico Energy, Minerals and Natural Resources Department
Abandoned Mine Land Program

February 9, 2011

Comment Sheet
(Please Print)

Please submit your comments by February 25, 2011.

Backs onto Ice House Rd: 2466 N-14 & Bob Selby there most of the time

* No flooding there, but flooding goes down road to highway & house to North
* Doesn't want anything done to compromise no flooding
* fence on property line

Mail To:
URS Corp.
Attn: Beverley Frieday
6501 Americas Pkwy. NE/ Suite 900
Albuquerque, NM 87110
(505) 855-7500
(505) 855-7555FAX
E-mail To: beverley_frieday@urscorp.com

Your Name: _____
Address: _____
_____
_____
Phone: _____
E-Mail: _____

APPENDIX C

HYDROLOGIC DATA

POINT PRECIPITATION FREQUENCY ESTIMATES FROM NOAA ATLAS 14

New Mexico 35.40642 N 106.1528 W 6099 feet

from "Precipitation-Frequency Atlas of the United States" NOAA Atlas 14, Volume 1, Version 4
G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley
NOAA, National Weather Service, Silver Spring, Maryland, 2006

Extracted: Fri Jan 28 2011

Confidence Limits | Seasonality | Related Info | GIS data | Maps | Docs | Return to State Map

Precipitation Frequency Estimates (inches)

ARI* (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.20	0.31	0.38	0.52	0.64	0.75	0.80	0.92	1.03	1.20	1.30	1.53	1.78	1.97	2.56	3.14	3.84	4.41
2	0.26	0.40	0.50	0.67	0.83	0.96	1.02	1.16	1.29	1.49	1.63	1.90	2.21	2.45	3.19	3.89	4.75	5.46
5	0.35	0.54	0.67	0.90	1.11	1.26	1.32	1.48	1.63	1.87	2.04	2.34	2.70	3.00	3.87	4.70	5.67	6.51
10	0.42	0.64	0.79	1.06	1.32	1.50	1.57	1.74	1.90	2.16	2.35	2.69	3.08	3.44	4.39	5.29	6.33	7.26
25	0.51	0.78	0.96	1.30	1.61	1.84	1.91	2.09	2.26	2.56	2.78	3.15	3.58	4.01	5.05	6.04	7.13	8.18
50	0.58	0.89	1.10	1.48	1.83	2.10	2.18	2.36	2.54	2.87	3.12	3.51	3.96	4.45	5.53	6.57	7.67	8.80
100	0.66	1.00	1.24	1.67	2.07	2.39	2.47	2.65	2.83	3.19	3.45	3.87	4.33	4.88	6.00	7.07	8.17	9.37
200	0.73	1.12	1.39	1.86	2.31	2.68	2.77	2.95	3.13	3.51	3.80	4.22	4.70	5.31	6.44	7.55	8.61	9.87
500	0.84	1.28	1.58	2.13	2.64	3.09	3.19	3.35	3.53	3.95	4.25	4.70	5.17	5.87	6.99	8.12	9.12	10.46
1000	0.92	1.40	1.74	2.34	2.90	3.42	3.53	3.68	3.85	4.28	4.61	5.06	5.53	6.29	7.39	8.52	9.45	10.83

* These precipitation frequency estimates are based on a partial duration series. ARI is the Average Recurrence Interval.
Please refer to NOAA Atlas 14 Document for more information. NOTE: Formatting forces estimates near zero to appear as zero.

* Upper bound of the 90% confidence interval Precipitation Frequency Estimates (inches)

ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.24	0.36	0.45	0.60	0.74	0.89	0.95	1.08	1.18	1.32	1.44	1.66	1.92	2.13	2.77	3.37	4.10	4.71
2	0.31	0.47	0.58	0.78	0.96	1.14	1.20	1.36	1.49	1.66	1.80	2.07	2.39	2.65	3.44	4.18	5.08	5.83
5	0.41	0.62	0.77	1.04	1.29	1.50	1.56	1.74	1.87	2.07	2.24	2.54	2.92	3.24	4.18	5.04	6.05	6.95
10	0.49	0.74	0.92	1.24	1.53	1.78	1.85	2.03	2.18	2.39	2.58	2.91	3.32	3.70	4.73	5.67	6.74	7.74
25	0.59	0.90	1.12	1.51	1.87	2.17	2.25	2.44	2.59	2.83	3.05	3.41	3.86	4.32	5.44	6.46	7.58	8.71
50	0.68	1.03	1.27	1.72	2.12	2.48	2.57	2.76	2.91	3.17	3.41	3.79	4.26	4.78	5.95	7.02	8.15	9.36
100	0.76	1.16	1.44	1.94	2.40	2.81	2.90	3.09	3.24	3.52	3.78	4.17	4.66	5.25	6.45	7.56	8.67	9.97
200	0.85	1.29	1.60	2.16	2.67	3.15	3.25	3.43	3.58	3.87	4.16	4.56	5.06	5.71	6.93	8.07	9.14	10.52
500	0.97	1.48	1.84	2.47	3.06	3.64	3.74	3.90	4.04	4.36	4.67	5.08	5.58	6.33	7.53	8.69	9.68	11.14
1000	1.07	1.63	2.02	2.72	3.37	4.03	4.14	4.29	4.42	4.72	5.06	5.47	5.96	6.78	7.96	9.13	10.01	11.54

* The upper bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are greater than.
** These precipitation frequency estimates are based on a partial duration series. ARI is the Average Recurrence Interval.

Please refer to NOAA Atlas 14 Document for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

* Lower bound of the 90% confidence interval Precipitation Frequency Estimates (inches)

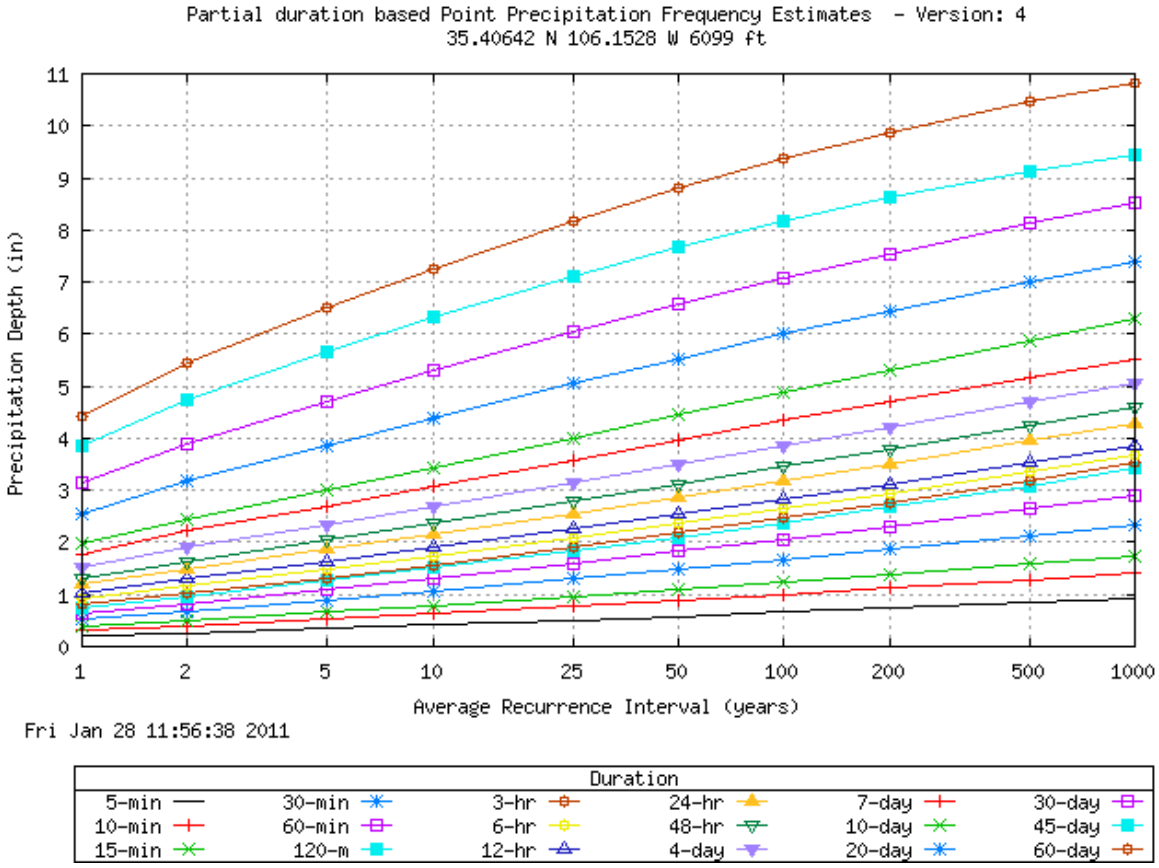
ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.17	0.27	0.33	0.45	0.55	0.64	0.69	0.80	0.90	1.09	1.19	1.41	1.65	1.83	2.38	2.92	3.59	4.13
2	0.23	0.34	0.43	0.57	0.71	0.81	0.87	1.01	1.14	1.36	1.48	1.75	2.05	2.27	2.95	3.63	4.45	5.12
5	0.30	0.46	0.57	0.77	0.95	1.07	1.13	1.29	1.43	1.69	1.85	2.16	2.50	2.79	3.59	4.38	5.31	6.12
10	0.36	0.55	0.68	0.91	1.12	1.27	1.34	1.50	1.66	1.96	2.13	2.48	2.86	3.19	4.07	4.93	5.93	6.82
25	0.43	0.66	0.82	1.10	1.37	1.54	1.62	1.79	1.97	2.31	2.52	2.90	3.32	3.72	4.68	5.62	6.67	7.68

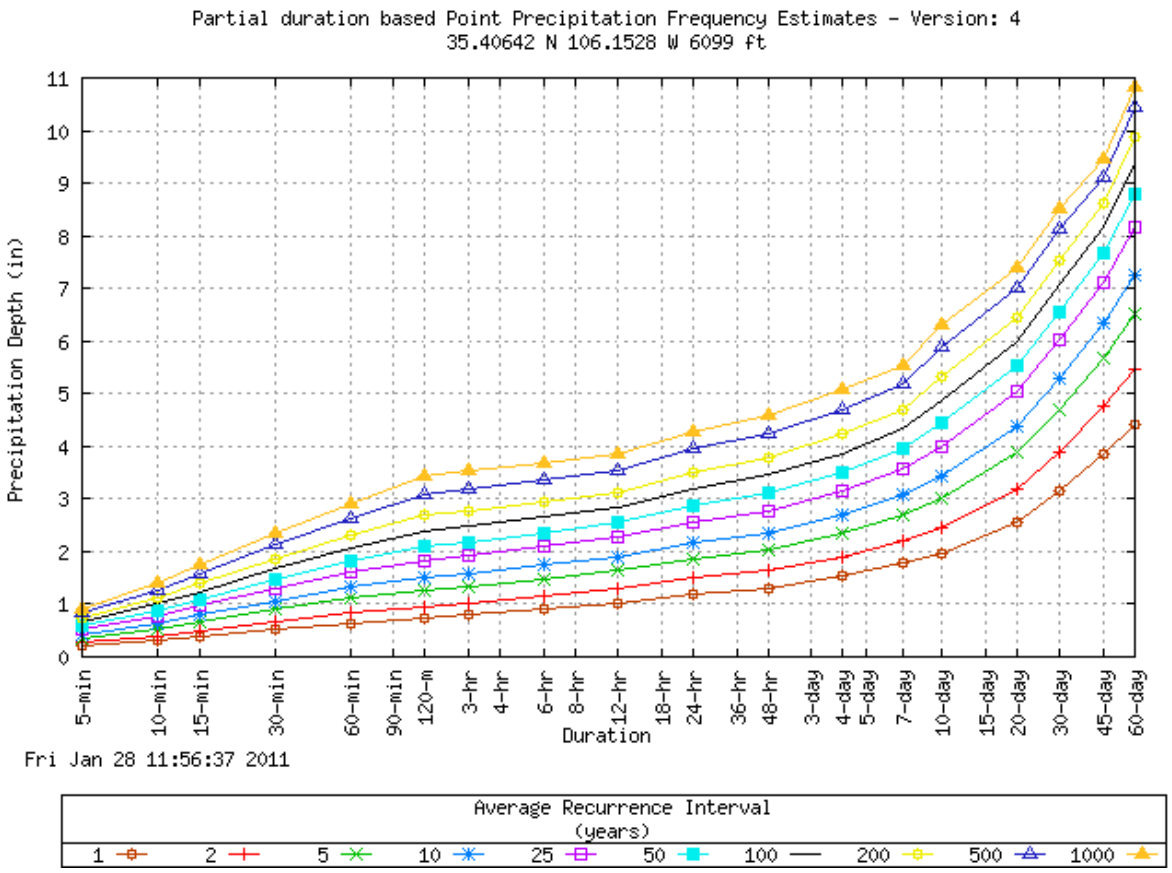
50	0.49	0.75	0.93	1.25	1.55	1.76	1.84	2.02	2.20	2.58	2.81	3.22	3.67	4.11	5.12	6.10	7.18	8.26
100	0.55	0.84	1.04	1.40	1.74	1.98	2.06	2.25	2.44	2.86	3.10	3.54	4.00	4.51	5.54	6.56	7.65	8.79
200	0.61	0.93	1.16	1.56	1.93	2.21	2.30	2.48	2.68	3.13	3.39	3.85	4.33	4.89	5.94	6.99	8.07	9.27
500	0.69	1.06	1.31	1.76	2.18	2.52	2.62	2.80	3.00	3.49	3.78	4.26	4.75	5.39	6.43	7.51	8.54	9.82
1000	0.76	1.15	1.43	1.93	2.38	2.76	2.87	3.04	3.25	3.76	4.07	4.57	5.06	5.75	6.78	7.87	8.86	10.17

* The lower bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are less than.
** These precipitation frequency estimates are based on a partial duration maxima series. ARI is the Average Recurrence Interval.

Please refer to NOAA Atlas 14 Document for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

Text version of tables





Related Information

Maps & Aerials

Click here to see topographic maps and aerial photographs available for this location from Microsoft Research Maps

Watershed/Streamflow Information

Click here to see watershed and streamflow information available for this location from the U.S. Environmental Protection Agency's site

Climate Data Sources

National Climatic Data Center (NCDC) database

Locate NCDC climate stations within:

+/-30 minutes or +/-1 degree of this location. Digital ASCII data can be obtained directly from **NCDC**.

Note: Precipitation frequency results are based on analysis of precipitation data from a variety of sources, but largely NCDC. The following links provide general information about observing sites in the area, regardless of if their data was used in this study. For detailed information about the stations used in this study, please refer to the matching documentation available at the PF Document page

Natural Resources Conservation Service's (NRCS) SNOTEL dataset

At present, there are more than 700 SNOTEL sites typically located in the mountainous regions of the Western U.S. that report daily and/or hourly precipitation, air temperture, snow water equivalent and snow depth data.

US Department of Commerce
National Oceanic and Atmospheric Administration

National Weather Service
Office of Hydrologic Development
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Madrid Gulch CN Value Computations

Upper

	Upper					
Cover	Soil Group	Area (AC)	CN	A*CN	Total	Weighted CN
Tree Cover	B	771.23	58	44731.39		
Tree Cover	C	267.62	73	19536.35		
Tree Cover	D	119.72	80	9577.855		
Barren land	B	1.74	77	133.8814		
Rock	Unknown	467.42	98	45806.68		
Sand and Gravel	A	91.44	63	5760.793		
Herbaceous cover	B	61.46	80	4916.407		
Herbaceous cover	D	144.32	93	13421.39		
		1924.94			143884.74	74.75 **75**

Middle

	Middle					
Cover	Soil Group	Area (AC)	CN	A*CN	Total	Weighted CN
Tree Cover	B	845.28	58	49026.41		
Tree Cover	C	267.62	73	19536.35		
Tree Cover	D	119.72	80	9577.855		
Barren land	B	9.17	77	706.2327		
Rock	Unknown	526.12	98	51559.96		
Sand and Gravel	A	111.09	63	6998.793		
Herbaceous cover	B	130.30	80	10423.66		
Herbaceous cover	D	484.01	93	45013.16		
		2493.32			192842.41	77.34 **77**

Lower

	Lower					
Cover	Soil Group	Area (AC)	CN	A*CN	Total	Weighted CN
Tree Cover	B	884.99	58	51329.32		
Tree Cover	C	267.62	73	19536.35		
Tree Cover	D	119.72	80	9577.855		
Barren land	B	9.17	77	706.2327		
Rock	Unknown	582.97	98	57131.41		
Sand and Gravel	A	121.55	63	7657.899		
Herbaceous cover	B	130.30	80	10423.66		
Herbaceous cover	D	560.27	93	52104.76		
		2676.59			208467.48	77.89 **78**

UNKNOWN soil groups assumed as D
CN for Rock assumed to be 98
CN for Sand and Gravel, Barren Land selected as Desert Shrub - Poor Condition
CN for Tree Cover assumed to be Pinyon-Juniper - Fair Condition

Madrid Gulch Upper

Min Tc 10

Flow	Upland Method												Stream Hydraulic Method								Calc'd T_c	T_c	Lag Time
	Overland Flow						Shallow Concentrated Flow																
	Length	Δ Elev	Slope	K	Velocity	Time	Length	Δ Elev	Slope	K	Velocity	Time	Flow Area	Wetted Perimeter	Hydraulic Radius	Length	Δ Elev	Slope	Manning's	Velocity	Time			
Q	L	ΔZ	S		V	T	L	ΔZ	S		V	T	A	P	R	L	ΔZ	S	n	V	T			
cfs	feet	feet			fps	min	feet	feet			fps	min	$feet^2$	feet	feet	feet	feet			fps	min	min	min	min
-	300	179	60%	0.7	5.4	1	793	451	57%	0.7	5.3	3	100	32	3.1	25855	1607	6%	0.05	16	27	31	31	18.5

Where gullying is evident in the majority of the watercourse time of concentration should be computed by the Kirpich Method for the entire watershed.
Source: NMDOT drainage design manual

Madrid Gulch Middle

Min Tc 10

Flow	Upland Method												Stream Hydraulic Method								Calc'd T_c	T_c	Lag Time
	Overland Flow						Shallow Concentrated Flow																
	Length	Δ Elev	Slope	K	Velocity	Time	Length	Δ Elev	Slope	K	Velocity	Time	Flow Area	Wetted Perimeter	Hydraulic Radius	Length	Δ Elev	Slope	Manning's	Velocity	Time		
Q	L	ΔZ	S		V	T	L	ΔZ	S		V	T	A	P	R	L	ΔZ	S	n	V	T		
cfs	feet	feet			fps	min	feet	feet			fps	min	$feet^2$	feet	feet	feet	feet			fps	min	min	min	min
-	300	179	60%	0.7	5.4	1	793	451	57%	0.7	5.3	3	100	32	3.1	31800	1766	6%	0.05	15	36	39	39	23.4

Where gullying is evident in the majority of the watercourse time of concentration should be computed by the Kirpich Method for the entire watershed.
Source: NMDOT drainage design manual

Madrid Gulch Lower

Min Tc 10

Flow	Upland Method												Stream Hydraulic Method								Calc'd T_c	T_c	Lag Time
	Overland Flow						Shallow Concentrated Flow																
	Length	Δ Elev	Slope	K	Velocity	Time	Length	Δ Elev	Slope	K	Velocity	Time	Flow Area	Wetted Perimeter	Hydraulic Radius	Length	Δ Elev	Slope	Manning's	Velocity	Time			
Q	L	ΔZ	S		V	T	L	ΔZ	S		V	T	A	P	R	L	ΔZ	S	n	V	T			
cfs	feet	feet			fps	min	feet	feet			fps	min	$feet^2$	feet	feet	feet	feet			fps	min	min	min	min
-	300	179	60%	0.7	5.3	1	793	451	57%	0.7	5.3	3	100	32	3.1	34545	1837	5%	0.05	15	39	43	43	25.8

Where gullying is evident in the majority of the watercourse time of concentration should be computed by the Kirpich Method for the entire watershed.
Source: NMDOT drainage design manual

==========
JOB TITLE
==========

Project Date: 2/15/2011
Project Engineer: joseph_roerkohl
Project Title: Madrid Stornwater Study
Project Comments:

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WARNING: ******** Tm > .25Tp *********
Computation increment, Tm is greater
than 1/4 Time to Peak on UNIT Hydrograph.
Tips: use bigger Tc can solve the problem.
Check SCS Summary for: BASINID1 10

Check SCS Summary for: BASINID2 10

Check SCS Summary for: BASINID4 10

Check SCS Summary for: BASINID5 10

WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
Computed peak flow = 5.32 cfs
Interp. peak flow = 5.02 cfs (5.59% difference)

Check SCS UH data for: Unit Hyd. BASINID6
Output increment for this subarea may be too large.
Use Tools --> Options --> Project Options to change increment for entire project,
or if you are running a watershed network analysis,
use the GO button to change output increment.

Check SCS Summary for: BASINID1 25

Check SCS Summary for: BASINID2 25

Check SCS Summary for: BASINID4 25

Check SCS Summary for: BASINID5 25

WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
Computed peak flow = 7.76 cfs
Interp. peak flow = 7.48 cfs (3.61% difference)

Check SCS UH data for: Unit Hyd. BASINID6
Output increment for this subarea may be too large.
Use Tools --> Options --> Project Options to change increment for entire project,
or if you are running a watershed network analysis,
use the GO button to change output increment.

Check SCS Summary for: BASINID1 100

Check SCS Summary for: BASINID2 100

Check SCS Summary for: BASINID4 100

Check SCS Summary for: BASINID5 100

WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
Computed peak flow = 12.04 cfs
Interp. peak flow = 11.74 cfs (2.53% difference)

Check SCS UH data for: Unit Hyd. BASINID6
Output increment for this subarea may be too large.
Use Tools --> Options --> Project Options to change increment for entire project,
or if you are running a watershed network analysis,
use the GO button to change output increment.

MASTER DESIGN STORM SUMMARY

Network Storm Collection: Madrid Design St

Return Event	Total Depth in	Rainfall Type	RNF ID
10	2.1600	Synthetic Curve	NRCS Type-II 70
25	2.5600	Synthetic Curve	NRCS Type-II 70
100	3.1900	Synthetic Curve	NRCS Type-II 70

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
BASINID1	AREA	10	.475		6.0012	8.09		
BASINID1	AREA	25	.653		6.0012	11.22		
BASINID1	AREA	100	.955		6.0012	16.50		
BASINID2	AREA	10	.472		6.0012	8.10		
BASINID2	AREA	25	.597		6.0012	10.17		
BASINID2	AREA	100	.798		6.0012	13.44		
BASINID3	AREA	10	2.706		6.0012	53.03		
BASINID3	AREA	25	3.513		6.0012	67.79		
BASINID3	AREA	100	4.834		6.0012	91.32		
BASINID4	AREA	10	1.857		6.0012	31.95		
BASINID4	AREA	25	2.366		6.0012	40.49		
BASINID4	AREA	100	3.190		6.0012	54.06		
BASINID5	AREA	10	2.867		6.0012	48.48		
BASINID5	AREA	25	3.567		6.0012	59.80		
BASINID5	AREA	100	4.685		6.0012	77.59		

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID	Type	Return Event	HYG Vol ac-ft	Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage ac-ft
BASINID6	AREA	10	.252		6.0012	5.02		
BASINID6	AREA	25	.369		6.0012	7.48		
BASINID6	AREA	100	.578		6.0012	11.74		
*OUT 1	JCT	10	.475		6.0012	8.09		
*OUT 1	JCT	25	.653		6.0012	11.22		
*OUT 1	JCT	100	.955		6.0012	16.50		
*OUT 2	JCT	10	.472		6.0012	8.10		
*OUT 2	JCT	25	.597		6.0012	10.17		
*OUT 2	JCT	100	.798		6.0012	13.44		
*OUT 3	JCT	10	2.706		6.0012	53.03		
*OUT 3	JCT	25	3.513		6.0012	67.79		
*OUT 3	JCT	100	4.834		6.0012	91.32		
*OUT 4	JCT	10	1.857		6.0012	31.95		
*OUT 4	JCT	25	2.366		6.0012	40.49		
*OUT 4	JCT	100	3.190		6.0012	54.06		
*OUT 5	JCT	10	2.867		6.0012	48.48		
*OUT 5	JCT	25	3.567		6.0012	59.80		
*OUT 5	JCT	100	4.685		6.0012	77.59		
*OUT 6	JCT	10	.252		6.0012	5.02		
*OUT 6	JCT	25	.369		6.0012	7.48		
*OUT 6	JCT	100	.578		6.0012	11.74		

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = Madrid Design St

Storm Tag Name = 10

Data Type, File, ID = Synthetic Storm NRCS Type-II 70
Storm Frequency = 10 yr
Total Rainfall Depth= 2.1600 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1667 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
BASINID1	AREA	.475		6.0012	8.09	
BASINID2	AREA	.472		6.0012	8.10	
BASINID3	AREA	2.706		6.0012	53.03	
BASINID4	AREA	1.857		6.0012	31.95	
BASINID5	AREA	2.867		6.0012	48.48	
BASINID6	AREA	.252		6.0012	5.02	
Outfall OUT 1	JCT	.475		6.0012	8.09	
Outfall OUT 2	JCT	.472		6.0012	8.10	
Outfall OUT 3	JCT	2.706		6.0012	53.03	
Outfall OUT 4	JCT	1.857		6.0012	31.95	
Outfall OUT 5	JCT	2.867		6.0012	48.48	
Outfall OUT 6	JCT	.252		6.0012	5.02	

NETWORK SUMMARY -- LINKS
(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = Madrid Design St

Storm Tag Name = 10

Data Type, File, ID = Synthetic Storm NRCS Type-II 70
Storm Frequency = 10 yr
Total Rainfall Depth= 2.1600 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1667 hrs End= 24.0000 hrs

Link ID	Type		HYG Vol ac-ft	Trun.	Peak Time hrs	Peak Q cfs	End Points
ADDLINK 1	ADD	UN	.475		6.0012	8.09	BASINID1
		DL	.475		6.0012	8.09	
		DN	.475		6.0012	8.09	OUT 1
ADDLINK 2	ADD	UN	.472		6.0012	8.10	BASINID2
		DL	.472		6.0012	8.10	
		DN	.472		6.0012	8.10	OUT 2
ADDLINK 3	ADD	UN	2.706		6.0012	53.03	BASINID3
		DL	2.706		6.0012	53.03	
		DN	2.706		6.0012	53.03	OUT 3
ADDLINK 4	ADD	UN	1.857		6.0012	31.95	BASINID4
		DL	1.857		6.0012	31.95	
		DN	1.857		6.0012	31.95	OUT 4
ADDLINK 5	ADD	UN	2.867		6.0012	48.48	BASINID5
		DL	2.867		6.0012	48.48	
		DN	2.867		6.0012	48.48	OUT 5
ADDLINK6	ADD	UN	.252		6.0012	5.02	BASINID6
		DL	.252		6.0012	5.02	
		DN	.252		6.0012	5.02	OUT 6

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = Madrid Design St

Storm Tag Name = 25

Data Type, File, ID = Synthetic Storm NRCS Type-II 70
Storm Frequency = 25 yr
Total Rainfall Depth= 2.5600 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1667 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
BASINID1	AREA	.653		6.0012	11.22	
BASINID2	AREA	.597		6.0012	10.17	
BASINID3	AREA	3.513		6.0012	67.79	
BASINID4	AREA	2.366		6.0012	40.49	
BASINID5	AREA	3.567		6.0012	59.80	
BASINID6	AREA	.369		6.0012	7.48	
Outfall OUT 1	JCT	.653		6.0012	11.22	
Outfall OUT 2	JCT	.597		6.0012	10.17	
Outfall OUT 3	JCT	3.513		6.0012	67.79	
Outfall OUT 4	JCT	2.366		6.0012	40.49	
Outfall OUT 5	JCT	3.567		6.0012	59.80	
Outfall OUT 6	JCT	.369		6.0012	7.48	

NETWORK SUMMARY -- LINKS
(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = Madrid Design St

Storm Tag Name = 25

Data Type, File, ID = Synthetic Storm NRCS Type-II 70
Storm Frequency = 25 yr
Total Rainfall Depth= 2.5600 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1667 hrs End= 24.0000 hrs

Link ID	Type		HYG Vol ac-ft	Trun.	Peak Time hrs	Peak Q cfs	End Points
ADDLINK 1	ADD	UN	.653		6.0012	11.22	BASINID1
		DL	.653		6.0012	11.22	
		DN	.653		6.0012	11.22	OUT 1
ADDLINK 2	ADD	UN	.597		6.0012	10.17	BASINID2
		DL	.597		6.0012	10.17	
		DN	.597		6.0012	10.17	OUT 2
ADDLINK 3	ADD	UN	3.513		6.0012	67.79	BASINID3
		DL	3.513		6.0012	67.79	
		DN	3.513		6.0012	67.79	OUT 3
ADDLINK 4	ADD	UN	2.366		6.0012	40.49	BASINID4
		DL	2.366		6.0012	40.49	
		DN	2.366		6.0012	40.49	OUT 4
ADDLINK 5	ADD	UN	3.567		6.0012	59.80	BASINID5
		DL	3.567		6.0012	59.80	
		DN	3.567		6.0012	59.80	OUT 5
ADDLINK6	ADD	UN	.369		6.0012	7.48	BASINID6
		DL	.369		6.0012	7.48	
		DN	.369		6.0012	7.48	OUT 6

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = Madrid Design St

Storm Tag Name = 100

Data Type, File, ID = Synthetic Storm NRCS Type-II 70
Storm Frequency = 100 yr
Total Rainfall Depth= 3.1900 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1667 hrs End= 24.0000 hrs

Node ID	Type	HYG Vol ac-ft	Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
BASINID1	AREA	.955		6.0012	16.50	
BASINID2	AREA	.798		6.0012	13.44	
BASINID3	AREA	4.834		6.0012	91.32	
BASINID4	AREA	3.190		6.0012	54.06	
BASINID5	AREA	4.685		6.0012	77.59	
BASINID6	AREA	.578		6.0012	11.74	
Outfall OUT 1	JCT	.955		6.0012	16.50	
Outfall OUT 2	JCT	.798		6.0012	13.44	
Outfall OUT 3	JCT	4.834		6.0012	91.32	
Outfall OUT 4	JCT	3.190		6.0012	54.06	
Outfall OUT 5	JCT	4.685		6.0012	77.59	
Outfall OUT 6	JCT	.578		6.0012	11.74	

NETWORK SUMMARY -- LINKS
(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node)
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID = Madrid Design St

Storm Tag Name = 100

Data Type, File, ID = Synthetic Storm NRCS Type-II 70
Storm Frequency = 100 yr
Total Rainfall Depth= 3.1900 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1667 hrs End= 24.0000 hrs

Link ID	Type		HYG Vol ac-ft	Trun.	Peak Time hrs	Peak Q cfs	End Points
ADDLINK 1	ADD	UN	.955		6.0012	16.50	BASINID1
		DL	.955		6.0012	16.50	
		DN	.955		6.0012	16.50	OUT 1
ADDLINK 2	ADD	UN	.798		6.0012	13.44	BASINID2
		DL	.798		6.0012	13.44	
		DN	.798		6.0012	13.44	OUT 2
ADDLINK 3	ADD	UN	4.834		6.0012	91.32	BASINID3
		DL	4.834		6.0012	91.32	
		DN	4.834		6.0012	91.32	OUT 3
ADDLINK 4	ADD	UN	3.190		6.0012	54.06	BASINID4
		DL	3.190		6.0012	54.06	
		DN	3.190		6.0012	54.06	OUT 4
ADDLINK 5	ADD	UN	4.685		6.0012	77.59	BASINID5
		DL	4.685		6.0012	77.59	
		DN	4.685		6.0012	77.59	OUT 5
ADDLINK6	ADD	UN	.578		6.0012	11.74	BASINID6
		DL	.578		6.0012	11.74	
		DN	.578		6.0012	11.74	OUT 6

NETWORK RUNOFF NODE SEQUENCE

Runoff Data		Apply to Node		Receiving Link	
SCS UH	BASINID1	Subarea	BASINID1	Add Hyd	BASINID1
SCS UH	BASINID2	Subarea	BASINID2	Add Hyd	BASINID2
SCS UH	BASINID4	Subarea	BASINID4	Add Hyd	BASINID4
SCS UH	BASINID5	Subarea	BASINID5	Add Hyd	BASINID5
SCS UH	BASINID6	Subarea	BASINID6	Add Hyd	BASINID6
SCS UH	BASINID3	Subarea	BASINID3	Add Hyd	BASINID3

NETWORK ROUTING SEQUENCE

Link Operation	UPstream Node	DNstream Node
Add Hyd ADDLINK 3	Subarea BASINID3	Jct OUT 3
Add Hyd ADDLINK6	Subarea BASINID6	Jct OUT 6
Add Hyd ADDLINK 5	Subarea BASINID5	Jct OUT 5
Add Hyd ADDLINK 4	Subarea BASINID4	Jct OUT 4
Add Hyd ADDLINK 2	Subarea BASINID2	Jct OUT 2
Add Hyd ADDLINK 1	Subarea BASINID1	Jct OUT 1

Title... Project Date: 2/15/2011
Project Engineer: joseph_roerkohl
Project Title: Madrid Stornwater Study
Project Comments:

DESIGN STORMS SUMMARY

Design Storm File,ID = Madrid Design St

Storm Tag Name = 10

Data Type, File, ID = Synthetic Storm NRCS Type-II 70
Storm Frequency = 10 yr
Total Rainfall Depth= 2.1600 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1667 hrs End= 24.0000 hrs

Storm Tag Name = 25

Data Type, File, ID = Synthetic Storm NRCS Type-II 70
Storm Frequency = 25 yr
Total Rainfall Depth= 2.5600 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1667 hrs End= 24.0000 hrs

Storm Tag Name = 100

Data Type, File, ID = Synthetic Storm NRCS Type-II 70
Storm Frequency = 100 yr
Total Rainfall Depth= 3.1900 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1667 hrs End= 24.0000 hrs

DESIGN STORMS SUMMARY

Design Storm File,ID = Madrid Design St

Storm Tag Name = 10

Data Type, File, ID = Synthetic Storm NRCS Type-II 70
Storm Frequency = 10 yr
Total Rainfall Depth= 2.1600 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1667 hrs End= 24.0000 hrs

Storm Tag Name = 25

Data Type, File, ID = Synthetic Storm NRCS Type-II 70
Storm Frequency = 25 yr
Total Rainfall Depth= 2.5600 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1667 hrs End= 24.0000 hrs

Storm Tag Name = 100

Data Type, File, ID = Synthetic Storm NRCS Type-II 70
Storm Frequency = 100 yr
Total Rainfall Depth= 3.1900 in
Duration Multiplier = 1
Resulting Duration = 24.0000 hrs
Resulting Start Time= .0000 hrs Step= .1667 hrs End= 24.0000 hrs

CUMULATIVE RAINFALL FRACTIONS
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
.0000	.000	.002	.003	.005	.007
.8333	.008	.010	.012	.014	.016
1.6667	.018	.020	.022	.024	.027
2.5000	.029	.032	.034	.036	.040
3.3333	.043	.047	.050	.054	.057
4.1667	.062	.066	.071	.077	.084
5.0000	.090	.100	.111	.121	.331
5.8333	.540	.750	.774	.797	.821
6.6667	.829	.838	.847	.852	.858
7.5000	.863	.867	.871	.875	.878
8.3333	.881	.884	.887	.890	.892
9.1667	.895	.897	.899	.901	.903
10.0000	.906	.907	.909	.911	.913
10.8333	.914	.916	.918	.919	.921
11.6667	.922	.924	.925	.927	.928
12.5000	.929	.931	.932	.933	.935
13.3333	.936	.937	.939	.940	.941
14.1667	.943	.944	.945	.946	.947
15.0000	.948	.950	.951	.952	.953
15.8333	.954	.956	.957	.958	.959
16.6667	.960	.961	.962	.963	.964
17.5000	.965	.966	.967	.968	.969
18.3333	.970	.971	.972	.973	.974
19.1667	.975	.976	.977	.978	.979
20.0000	.980	.981	.982	.982	.983
20.8333	.984	.985	.986	.987	.988
21.6667	.989	.989	.990	.991	.992
22.5000	.993	.994	.994	.995	.996
23.3333	.997	.998	.998	.999	1.000

CUMULATIVE RAINFALL DEPTHS (in)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
.0000	.0000	.0035	.0071	.0106	.0140
.8333	.0175	.0210	.0253	.0294	.0337
1.6667	.0380	.0421	.0464	.0518	.0572
2.5000	.0626	.0680	.0732	.0786	.0860
3.3333	.0933	.1007	.1082	.1160	.1236
4.1667	.1335	.1434	.1534	.1672	.1810
5.0000	.1948	.2169	.2387	.2607	.7139
5.8333	1.1668	1.6200	1.6710	1.7217	1.7727
6.6667	1.7915	1.8103	1.8291	1.8408	1.8522
7.5000	1.8639	1.8725	1.8814	1.8900	1.8963
8.3333	1.9025	1.9088	1.9151	1.9213	1.9276
9.1667	1.9323	1.9371	1.9418	1.9466	1.9511
10.0000	1.9559	1.9598	1.9637	1.9675	1.9714
10.8333	1.9751	1.9790	1.9822	1.9855	1.9887
11.6667	1.9920	1.9952	1.9984	2.0012	2.0043
12.5000	2.0071	2.0101	2.0129	2.0159	2.0187
13.3333	2.0218	2.0246	2.0274	2.0304	2.0332
14.1667	2.0358	2.0384	2.0410	2.0436	2.0460
15.0000	2.0485	2.0511	2.0537	2.0563	2.0589
15.8333	2.0613	2.0639	2.0663	2.0684	2.0708
16.6667	2.0732	2.0753	2.0777	2.0799	2.0822
17.5000	2.0844	2.0868	2.0889	2.0913	2.0935
18.3333	2.0954	2.0976	2.0997	2.1017	2.1038
19.1667	2.1058	2.1079	2.1099	2.1120	2.1140
20.0000	2.1162	2.1181	2.1200	2.1220	2.1239
20.8333	2.1257	2.1276	2.1295	2.1315	2.1334
21.6667	2.1354	2.1371	2.1390	2.1408	2.1425
22.5000	2.1442	2.1460	2.1479	2.1496	2.1514
23.3333	2.1531	2.1548	2.1565	2.1583	2.1600

CUMULATIVE RAINFALL FRACTIONS
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
.0000	.000	.002	.003	.005	.007
.8333	.008	.010	.012	.014	.016
1.6667	.018	.020	.022	.024	.027
2.5000	.029	.032	.034	.036	.040
3.3333	.043	.047	.050	.054	.057
4.1667	.062	.066	.071	.077	.084
5.0000	.090	.100	.111	.121	.331
5.8333	.540	.750	.774	.797	.821
6.6667	.829	.838	.847	.852	.858
7.5000	.863	.867	.871	.875	.878
8.3333	.881	.884	.887	.890	.892
9.1667	.895	.897	.899	.901	.903
10.0000	.906	.907	.909	.911	.913
10.8333	.914	.916	.918	.919	.921
11.6667	.922	.924	.925	.927	.928
12.5000	.929	.931	.932	.933	.935
13.3333	.936	.937	.939	.940	.941
14.1667	.943	.944	.945	.946	.947
15.0000	.948	.950	.951	.952	.953
15.8333	.954	.956	.957	.958	.959
16.6667	.960	.961	.962	.963	.964
17.5000	.965	.966	.967	.968	.969
18.3333	.970	.971	.972	.973	.974
19.1667	.975	.976	.977	.978	.979
20.0000	.980	.981	.982	.982	.983
20.8333	.984	.985	.986	.987	.988
21.6667	.989	.989	.990	.991	.992
22.5000	.993	.994	.994	.995	.996
23.3333	.997	.998	.998	.999	1.000

CUMULATIVE RAINFALL DEPTHS (in)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
.0000	.0000	.0041	.0084	.0125	.0166
.8333	.0207	.0248	.0300	.0348	.0399
1.6667	.0451	.0499	.0550	.0614	.0678
2.5000	.0742	.0806	.0868	.0932	.1019
3.3333	.1106	.1193	.1283	.1375	.1464
4.1667	.1582	.1700	.1818	.1981	.2145
5.0000	.2309	.2570	.2829	.3090	.8461
5.8333	1.3829	1.9200	1.9804	2.0406	2.1010
6.6667	2.1233	2.1455	2.1678	2.1816	2.1952
7.5000	2.2090	2.2193	2.2298	2.2400	2.2474
8.3333	2.2548	2.2623	2.2697	2.2771	2.2845
9.1667	2.2902	2.2958	2.3014	2.3071	2.3124
10.0000	2.3181	2.3227	2.3273	2.3319	2.3365
10.8333	2.3409	2.3455	2.3493	2.3532	2.3570
11.6667	2.3608	2.3647	2.3685	2.3718	2.3754
12.5000	2.3788	2.3823	2.3857	2.3892	2.3926
13.3333	2.3962	2.3995	2.4028	2.4064	2.4097
14.1667	2.4128	2.4159	2.4189	2.4220	2.4248
15.0000	2.4279	2.4310	2.4340	2.4371	2.4402
15.8333	2.4430	2.4461	2.4489	2.4515	2.4543
16.6667	2.4571	2.4596	2.4625	2.4650	2.4678
17.5000	2.4704	2.4732	2.4758	2.4786	2.4812
18.3333	2.4835	2.4860	2.4886	2.4909	2.4934
19.1667	2.4957	2.4983	2.5006	2.5032	2.5055
20.0000	2.5080	2.5103	2.5126	2.5149	2.5172
20.8333	2.5193	2.5216	2.5239	2.5262	2.5285
21.6667	2.5308	2.5329	2.5352	2.5372	2.5393
22.5000	2.5413	2.5434	2.5457	2.5477	2.5498
23.3333	2.5518	2.5539	2.5559	2.5580	2.5600

CUMULATIVE RAINFALL FRACTIONS
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
.0000	.000	.002	.003	.005	.007
.8333	.008	.010	.012	.014	.016
1.6667	.018	.020	.022	.024	.027
2.5000	.029	.032	.034	.036	.040
3.3333	.043	.047	.050	.054	.057
4.1667	.062	.066	.071	.077	.084
5.0000	.090	.100	.111	.121	.331
5.8333	.540	.750	.774	.797	.821
6.6667	.829	.838	.847	.852	.858
7.5000	.863	.867	.871	.875	.878
8.3333	.881	.884	.887	.890	.892
9.1667	.895	.897	.899	.901	.903
10.0000	.906	.907	.909	.911	.913
10.8333	.914	.916	.918	.919	.921
11.6667	.922	.924	.925	.927	.928
12.5000	.929	.931	.932	.933	.935
13.3333	.936	.937	.939	.940	.941
14.1667	.943	.944	.945	.946	.947
15.0000	.948	.950	.951	.952	.953
15.8333	.954	.956	.957	.958	.959
16.6667	.960	.961	.962	.963	.964
17.5000	.965	.966	.967	.968	.969
18.3333	.970	.971	.972	.973	.974
19.1667	.975	.976	.977	.978	.979
20.0000	.980	.981	.982	.982	.983
20.8333	.984	.985	.986	.987	.988
21.6667	.989	.989	.990	.991	.992
22.5000	.993	.994	.994	.995	.996
23.3333	.997	.998	.998	.999	1.000

CUMULATIVE RAINFALL DEPTHS (in)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
.0000	.0000	.0051	.0105	.0156	.0207
.8333	.0258	.0309	.0373	.0434	.0498
1.6667	.0561	.0622	.0686	.0766	.0845
2.5000	.0925	.1005	.1081	.1161	.1270
3.3333	.1378	.1487	.1598	.1713	.1825
4.1667	.1971	.2118	.2265	.2469	.2673
5.0000	.2877	.3203	.3525	.3850	1.0543
5.8333	1.7232	2.3925	2.4678	2.5427	2.6180
6.6667	2.6458	2.6735	2.7013	2.7185	2.7354
7.5000	2.7527	2.7654	2.7785	2.7913	2.8005
8.3333	2.8098	2.8190	2.8283	2.8375	2.8468
9.1667	2.8538	2.8608	2.8678	2.8748	2.8815
10.0000	2.8885	2.8943	2.9000	2.9058	2.9115
10.8333	2.9169	2.9227	2.9275	2.9322	2.9370
11.6667	2.9418	2.9466	2.9514	2.9555	2.9600
12.5000	2.9641	2.9686	2.9728	2.9772	2.9814
13.3333	2.9858	2.9900	2.9941	2.9986	3.0027
14.1667	3.0066	3.0104	3.0142	3.0181	3.0216
15.0000	3.0254	3.0292	3.0331	3.0369	3.0407
15.8333	3.0442	3.0480	3.0516	3.0547	3.0583
16.6667	3.0618	3.0650	3.0685	3.0717	3.0752
17.5000	3.0784	3.0819	3.0850	3.0886	3.0917
18.3333	3.0946	3.0978	3.1010	3.1039	3.1071
19.1667	3.1099	3.1131	3.1160	3.1192	3.1221
20.0000	3.1252	3.1281	3.1310	3.1339	3.1367
20.8333	3.1393	3.1422	3.1450	3.1479	3.1508
21.6667	3.1536	3.1562	3.1591	3.1616	3.1642
22.5000	3.1667	3.1693	3.1721	3.1747	3.1772
23.3333	3.1798	3.1823	3.1849	3.1874	3.1900

::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: User Defined

Segment #1 Time: .1667 hrs

Total Tc: .1667 hrs

Calculated Tc < Min.Tc:
Use Minimum Tc...
Use Tc = .1667 hrs

Tc Equations used...

==== User Defined ====

Tc = Value entered by user

Where: Tc = Time of concentration

::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: User Defined

Segment #1 Time: .1667 hrs

Total Tc: .1667 hrs

Calculated Tc < Min.Tc:
Use Minimum Tc...
Use Tc = .1667 hrs

Tc Equations used...

==== User Defined ====

Tc = Value entered by user

Where: Tc = Time of concentration

::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: User Defined

Segment #1 Time: .1667 hrs

Total Tc: .1667 hrs

Calculated Tc < Min.Tc:
Use Minimum Tc...
Use Tc = .1667 hrs

Tc Equations used...

==== User Defined ====

Tc = Value entered by user

Where: Tc = Time of concentration

::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: User Defined

Segment #1 Time: .1667 hrs

Total Tc: .1667 hrs

Calculated Tc < Min.Tc:
Use Minimum Tc...
Use Tc = .1667 hrs

Tc Equations used...

==== User Defined ====

Tc = Value entered by user

Where: Tc = Time of concentration

::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: User Defined

Segment #1 Time: .1667 hrs

Total Tc: .1667 hrs

Calculated Tc < Min.Tc:
Use Minimum Tc...
Use Tc = .1667 hrs

Tc Equations used...

==== User Defined ====

Tc = Value entered by user

Where: Tc = Time of concentration

::
TIME OF CONCENTRATION CALCULATOR
::

Segment #1: Tc: User Defined

Segment #1 Time: .1667 hrs

Total Tc: .1667 hrs

Calculated Tc < Min.Tc:
Use Minimum Tc...
Use Tc = .1667 hrs

Tc Equations used...

==== User Defined ====

Tc = Value entered by user

Where: Tc = Time of concentration

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	Impervious Adjustment %UC	Adjusted CN
Arid and semiarid rangelands - Herb	82	7.372			82.00
COMPOSITE AREA & WEIGHTED CN --->		7.372			82.00 (82)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	Impervious Adjustment %UC	Adjusted CN
Arid and semiarid rangelands - Herb	92	4.064			92.00
COMPOSITE AREA & WEIGHTED CN --->		4.064			92.00 (92)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	Impervious Adjustment %UC	Adjusted CN
Arid and semiarid rangelands - Herb	89	28.066			89.00
COMPOSITE AREA & WEIGHTED CN --->		28.066			89.00 (89)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	Impervious Adjustment %UC	Adjusted CN
Arid and semiarid rangelands - Herb	91	16.886			91.00
COMPOSITE AREA & WEIGHTED CN --->		16.886			91.00 (91)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Arid and semiarid rangelands - Herb	94	22.079			94.00
COMPOSITE AREA & WEIGHTED CN --->		22.079			94.00 (94)

RUNOFF CURVE NUMBER DATA

Soil/Surface Description	CN	Area acres	Impervious Adjustment %C	%UC	Adjusted CN
Arid and semiarid rangelands - Herb	76	6.108			76.00
COMPOSITE AREA & WEIGHTED CN --->		6.108			76.00 (76)

SCS UNIT HYDROGRAPH METHOD
(Computational Notes)

DEFINITION OF TERMS: ----------

At = Total area (acres): At = Ai+Ap
Ai = Impervious area (acres)
Ap = Pervious area (acres)
CNi = Runoff curve number for impervious area
CNp = Runoff curve number for pervious area
fLoss = f loss constant infiltration (depth/time)
gKs = Saturated Hydraulic Conductivity (depth/time)
Md = Volumetric Moisture Deficit
Psi = Capillary Suction (length)
hK = Horton Infiltration Decay Rate (time^-1)
fo = Initial Infiltration Rate (depth/time)
fc = Ultimate(capacity)Infiltration Rate (depth/time)
Ia = Initial Abstraction (length)
dt = Computational increment (duration of unit excess rainfall)
Default dt is smallest value of 0.1333Tc, rtm, and th
(Smallest dt is then adjusted to match up with Tp)
UDdt = User specified override computational main time increment
(only used if UDdt is => .1333Tc)
D(t) = Point on distribution curve (fraction of P) for time step t

K = 2 / (1 + (Tr/Tp)): default K = 0.75: (for Tr/Tp = 1.67)
Ks = Hydrograph shape factor
= Unit Conversions * K:
= ((1hr/3600sec) * (1ft/12in) * ((5280ft)**2/sq.mi)) * K
Default Ks = 645.333 * 0.75 = 484

Lag = Lag time from center of excess runoff (dt) to Tp: Lag = 0.6Tc
P = Total precipitation depth, inches
Pa(t) = Accumulated rainfall at time step t
Pi(t) = Incremental rainfall at time step t
qp = Peak discharge (cfs) for 1in. runoff, for 1hr, for 1 sq.mi.
= (Ks * A * Q) / Tp (where Q = 1in. runoff, A=sq.mi.)
Qu(t) = Unit hydrograph ordinate (cfs) at time step t
Q(t) = Final hydrograph ordinate (cfs) at time step t
Rai(t)= Accumulated runoff (inches) at time step t for impervious area
Rap(t)= Accumulated runoff (inches) at time step t for pervious area
Rii(t)= Incremental runoff (inches) at time step t for impervious area
Rip(t)= Incremental runoff (inches) at time step t for pervious area
R(t) = Incremental weighted total runoff (inches)
Rtm = Time increment for rainfall table
Si = S for impervious area: Si = (1000/CNi) - 10
Sp = S for pervious area: Sp = (1000/CNp) - 10
t = Time step (row) number
Tc = Time of concentration
Tb = Time (hrs) of entire unit hydrograph: Tb = Tp + Tr
Tp = Time (hrs) to peak of a unit hydrograph: Tp = (dt/2) + Lag
Tr = Time (hrs) of receding limb of unit hydrograph: Tr = ratio of Tp

SCS UNIT HYDROGRAPH METHOD
(Computational Notes)

PRECIPITATION: ----------
Column (1): Time for time step t
Column (2): D(t) = Point on distribution curve for time step t
Column (3): Pi(t) = Pa(t) - Pa(t-1): Col.(4) - Preceding Col.(4)
Column (4): Pa(t) = D(t) x P: Col.(2) x P

PERVIOUS AREA RUNOFF (using SCS Runoff CN Method) ----------
Column (5): Rap(t) = Accumulated pervious runoff for time step t
If (Pa(t) is <= 0.2Sp) then use: Rap(t) = 0.0
If (Pa(t) is > 0.2Sp) then use:

Rap(t) = (Col.(4)-0.2Sp)**2 / (Col.(4)+0.8Sp)

Column (6): Rip(t) = Incremental pervious runoff for time step t
Rip(t) = Rap(t) - Rap(t-1)
Rip(t) = Col.(5) for current row - Col.(5) for preceding row.

IMPERVIOUS AREA RUNOFF ----------
Column (7 & 8)... Did not specify to use impervious areas.

INCREMENTAL WEIGHTED RUNOFF: ----------
Column (9): R(t) = (Ap/At) x Rip(t) + (Ai/At) x Rii(t)
R(t) = (Ap/At) x Col.(6) + (Ai/At) x Col.(8)

SCS UNIT HYDROGRAPH METHOD: ----------
Column (10): Q(t) is computed with the SCS unit hydrograph method
using R() and Qu().

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 2.1600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID1 10
Tc (Min. Tc) = .1667 hrs
Drainage Area = 7.372 acres Runoff CN= 82

==========
Computational Time Increment = .25000 hrs
Computed Peak Time = 6.0000 hrs
Computed Peak Flow = 8.11 cfs

Time Increment for HYG File = .1667 hrs
Peak Time, Interpolated Output = 6.0012 hrs
Peak Flow, Interpolated Output = 8.09 cfs
==========

DRAINAGE AREA

ID:BASINID1
CN = 82
Area = 7.372 acres
S = 2.1951 in
0.2S = .4390 in

Cumulative Runoff

.7563 in
.465 ac-ft

HYG Volume... .475 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16667 hrs (ID: BASINID1)
Computational Incr, Tm = .25000 hrs = 1.11110 Tp
WARNING: ******** Tm > .25Tp *********
Computation increment, Tm is greater
than 1/4 Time to Peak on UNIT Hydrograph.

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 24.75 cfs
Unit peak time Tp = .22500 hrs
Unit receding limb, Tr = .90001 hrs
Total unit time, Tb = 1.12501 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 2.1600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID1 10
Tc (Min. Tc) = .1667 hrs
Drainage Area = 7.372 acres Runoff CN= 82
Calc.Increment= .25000 hrs Out.Incr.= .1667 hrs
HYG Volume = .475 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
5.3344	.00	.01	1.50	4.22	8.09
6.1679	4.48	2.32	1.58	1.00	.66
7.0014	.55	.43	.35	.33	.29
7.8349	.26	.25	.21	.19	.18
8.6684	.18	.18	.18	.16	.14
9.5019	.14	.14	.14	.14	.12
10.3354	.12	.11	.11	.11	.11
11.1689	.10	.10	.10	.10	.09
12.0024	.09	.09	.09	.09	.09
12.8359	.09	.09	.09	.09	.09
13.6694	.09	.09	.09	.08	.08
14.5029	.08	.08	.08	.08	.08
15.3364	.08	.08	.08	.08	.08
16.1699	.07	.07	.07	.07	.07
17.0034	.07	.07	.07	.07	.07
17.8369	.07	.07	.07	.06	.06
18.6704	.06	.06	.06	.06	.06
19.5039	.06	.06	.06	.06	.06
20.3374	.06	.06	.06	.06	.06
21.1709	.06	.06	.06	.06	.06
22.0044	.06	.05	.05	.05	.05
22.8379	.05	.05	.05	.05	.05
23.6714	.05	.05	.05	.02	.01
24.5049	.00	.00			

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 2.5600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID1 25
Tc (Min. Tc) = .1667 hrs
Drainage Area = 7.372 acres Runoff CN= 82

==========
Computational Time Increment = .25000 hrs
Computed Peak Time = 6.0000 hrs
Computed Peak Flow = 11.25 cfs

Time Increment for HYG File = .1667 hrs
Peak Time, Interpolated Output = 6.0012 hrs
Peak Flow, Interpolated Output = 11.22 cfs
==========

DRAINAGE AREA

ID:BASINID1
CN = 82
Area = 7.372 acres
S = 2.1951 in
0.2S = .4390 in

Cumulative Runoff

1.0423 in
.640 ac-ft

HYG Volume... .653 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16667 hrs (ID: BASINID1)
Computational Incr, Tm = .25000 hrs = 1.11110 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 24.75 cfs
Unit peak time Tp = .22500 hrs
Unit receding limb, Tr = .90001 hrs
Total unit time, Tb = 1.12501 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 2.5600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID1 25
Tc (Min. Tc) = .1667 hrs
Drainage Area = 7.372 acres Runoff CN= 82
Calc.Increment= .25000 hrs Out.Incr.= .1667 hrs
HYG Volume = .653 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time hrs | Time on left represents time for first value in each row.

Time hrs					
5.3344	.00	.02	2.55	6.32	11.22
6.1679	6.16	3.14	2.10	1.32	.87
7.0014	.71	.55	.46	.43	.37
7.8349	.34	.32	.27	.24	.23
8.6684	.23	.23	.23	.20	.19
9.5019	.18	.18	.18	.18	.16
10.3354	.15	.15	.15	.14	.14
11.1689	.13	.13	.12	.12	.12
12.0024	.12	.12	.11	.11	.11
12.8359	.11	.11	.11	.11	.11
13.6694	.11	.11	.11	.10	.10
14.5029	.10	.10	.10	.10	.10
15.3364	.10	.10	.10	.10	.10
16.1699	.09	.09	.09	.09	.09
17.0034	.09	.09	.09	.09	.09
17.8369	.09	.09	.08	.08	.08
18.6704	.08	.08	.08	.08	.08
19.5039	.08	.08	.08	.08	.08
20.3374	.08	.08	.07	.07	.07
21.1709	.07	.08	.08	.07	.07
22.0044	.07	.07	.07	.07	.07
22.8379	.07	.07	.07	.07	.07
23.6714	.07	.07	.07	.03	.01
24.5049	.00	.00			

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 3.1900 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID1 100
Tc (Min. Tc) = .1667 hrs
Drainage Area = 7.372 acres Runoff CN= 82

==========
Computational Time Increment = .25000 hrs
Computed Peak Time = 6.0000 hrs
Computed Peak Flow = 16.55 cfs

Time Increment for HYG File = .1667 hrs
Peak Time, Interpolated Output = 6.0012 hrs
Peak Flow, Interpolated Output = 16.50 cfs
==========

DRAINAGE AREA

ID:BASINID1
CN = 82
Area = 7.372 acres
S = 2.1951 in
0.2S = .4390 in

Cumulative Runoff

1.5301 in
.940 ac-ft

HYG Volume... .955 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16667 hrs (ID: BASINID1)
Computational Incr, Tm = .25000 hrs = 1.11110 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 24.75 cfs
Unit peak time Tp = .22500 hrs
Unit receding limb, Tr = .90001 hrs
Total unit time, Tb = 1.12501 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 3.1900 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID1 100
Tc (Min. Tc) = .1667 hrs
Drainage Area = 7.372 acres Runoff CN= 82
Calc.Increment= .25000 hrs Out.Incr.= .1667 hrs
HYG Volume = .955 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time hrs | Time on left represents time for first value in each row.

Time hrs					
5.3344	.00	.03	4.61	10.14	16.50
6.1679	8.97	4.48	2.93	1.84	1.20
7.0014	.98	.76	.63	.59	.51
7.8349	.46	.44	.37	.33	.32
8.6684	.32	.32	.32	.28	.25
9.5019	.24	.24	.24	.24	.22
10.3354	.20	.20	.20	.20	.20
11.1689	.18	.17	.17	.17	.17
12.0024	.17	.16	.15	.15	.15
12.8359	.15	.15	.15	.15	.15
13.6694	.15	.15	.15	.14	.14
14.5029	.13	.13	.13	.13	.13
15.3364	.13	.13	.13	.13	.13
16.1699	.13	.12	.12	.12	.12
17.0034	.12	.12	.12	.12	.12
17.8369	.12	.12	.11	.11	.11
18.6704	.11	.11	.11	.11	.11
19.5039	.11	.11	.11	.11	.11
20.3374	.10	.10	.10	.10	.10
21.1709	.10	.10	.10	.10	.10
22.0044	.10	.09	.09	.09	.09
22.8379	.09	.09	.09	.09	.09
23.6714	.09	.09	.09	.04	.01
24.5049	.00	.00	.00		

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 2.1600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID2 10
Tc (Min. Tc) = .1667 hrs
Drainage Area = 4.064 acres Runoff CN= 92

==========
Computational Time Increment = .25000 hrs
Computed Peak Time = 6.0000 hrs
Computed Peak Flow = 8.12 cfs

Time Increment for HYG File = .1667 hrs
Peak Time, Interpolated Output = 6.0012 hrs
Peak Flow, Interpolated Output = 8.10 cfs
==========

DRAINAGE AREA

ID:BASINID2
CN = 92
Area = 4.064 acres
S = .8696 in
0.2S = .1739 in

Cumulative Runoff

1.3813 in
.468 ac-ft

HYG Volume... .472 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16667 hrs (ID: BASINID2)
Computational Incr, Tm = .25000 hrs = 1.11110 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 13.64 cfs
Unit peak time Tp = .22500 hrs
Unit receding limb, Tr = .90001 hrs
Total unit time, Tb = 1.12501 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 2.1600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID2 10
Tc (Min. Tc) = .1667 hrs
Drainage Area = 4.064 acres Runoff CN= 92
Calc.Increment= .25000 hrs Out.Incr.= .1667 hrs
HYG Volume = .472 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time hrs | Time on left represents time for first value in each row.

Time hrs					
4.6676	.00	.00	.01	.03	.05
5.5011	.09	3.14	5.82	8.10	4.33
6.3346	2.09	1.31	.82	.52	.43
7.1681	.33	.28	.26	.22	.20
8.0016	.19	.16	.14	.14	.14
8.8351	.14	.14	.12	.11	.11
9.6686	.10	.10	.10	.09	.09
10.5021	.09	.08	.08	.08	.08
11.3356	.07	.07	.07	.07	.07
12.1691	.07	.06	.06	.06	.06
13.0026	.07	.06	.06	.06	.06
13.8361	.06	.06	.06	.06	.06
14.6696	.06	.06	.06	.06	.06
15.5031	.06	.06	.06	.06	.05
16.3366	.05	.05	.05	.05	.05
17.1701	.05	.05	.05	.05	.05
18.0036	.05	.05	.05	.05	.05
18.8371	.05	.05	.05	.05	.04
19.6706	.05	.05	.05	.04	.04
20.5041	.04	.04	.04	.04	.04
21.3376	.04	.04	.04	.04	.04
22.1711	.04	.04	.04	.04	.04
23.0046	.04	.04	.04	.04	.04
23.8381	.04	.04	.02	.01	.00
24.6716	.00				

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 2.5600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID2 25
Tc (Min. Tc) = .1667 hrs
Drainage Area = 4.064 acres Runoff CN= 92

==========
Computational Time Increment = .25000 hrs
Computed Peak Time = 6.0000 hrs
Computed Peak Flow = 10.20 cfs

Time Increment for HYG File = .1667 hrs
Peak Time, Interpolated Output = 6.0012 hrs
Peak Flow, Interpolated Output = 10.17 cfs
==========

DRAINAGE AREA

ID:BASINID2
CN = 92
Area = 4.064 acres
S = .8696 in
0.2S = .1739 in

Cumulative Runoff

1.7488 in
.592 ac-ft

HYG Volume... .597 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16667 hrs (ID: BASINID2)
Computational Incr, Tm = .25000 hrs = 1.11110 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 13.64 cfs
Unit peak time Tp = .22500 hrs
Unit receding limb, Tr = .90001 hrs
Total unit time, Tb = 1.12501 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 2.5600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID2 25
Tc (Min. Tc) = .1667 hrs
Drainage Area = 4.064 acres Runoff CN= 92
Calc.Increment= .25000 hrs Out.Incr.= .1667 hrs
HYG Volume = .597 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time hrs | Time on left represents time for first value in each row.

Time hrs					
4.5009	.00	.01	.02	.03	.07
5.3344	.10	.16	4.23	7.58	10.17
6.1679	5.42	2.59	1.62	1.00	.64
7.0014	.52	.40	.34	.31	.27
7.8349	.24	.23	.20	.18	.17
8.6684	.17	.17	.17	.15	.13
9.5019	.13	.13	.13	.12	.11
10.3354	.11	.10	.10	.10	.10
11.1689	.09	.09	.09	.09	.09
12.0024	.09	.08	.08	.08	.08
12.8359	.08	.08	.08	.08	.08
13.6694	.08	.08	.08	.07	.07
14.5029	.07	.07	.07	.07	.07
15.3364	.07	.07	.07	.07	.07
16.1699	.06	.06	.06	.06	.06
17.0034	.06	.06	.06	.06	.06
17.8369	.06	.06	.06	.06	.06
18.6704	.06	.06	.06	.06	.05
19.5039	.05	.06	.06	.06	.05
20.3374	.05	.05	.05	.05	.05
21.1709	.05	.05	.05	.05	.05
22.0044	.05	.05	.05	.05	.05
22.8379	.05	.05	.05	.05	.05
23.6714	.05	.05	.05	.02	.01
24.5049	.00	.00			

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 3.1900 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID2 100
Tc (Min. Tc) = .1667 hrs
Drainage Area = 4.064 acres Runoff CN= 92

==========
Computational Time Increment = .25000 hrs
Computed Peak Time = 6.0000 hrs
Computed Peak Flow = 13.49 cfs

Time Increment for HYG File = .1667 hrs
Peak Time, Interpolated Output = 6.0012 hrs
Peak Flow, Interpolated Output = 13.44 cfs
==========

DRAINAGE AREA

ID:BASINID2
CN = 92
Area = 4.064 acres
S = .8696 in
0.2S = .1739 in

Cumulative Runoff

2.3411 in
.793 ac-ft

HYG Volume... .798 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16667 hrs (ID: BASINID2)
Computational Incr, Tm = .25000 hrs = 1.11110 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 13.64 cfs
Unit peak time Tp = .22500 hrs
Unit receding limb, Tr = .90001 hrs
Total unit time, Tb = 1.12501 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 3.1900 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID2 100
Tc (Min. Tc) = .1667 hrs
Drainage Area = 4.064 acres Runoff CN= 92
Calc.Increment= .25000 hrs Out.Incr.= .1667 hrs
HYG Volume = .798 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time hrs | Time on left represents time for first value in each row.

Time hrs					
3.8341	.00	.00	.01	.02	.03
4.6676	.05	.07	.09	.15	.20
5.5011	.28	6.02	10.42	13.44	7.14
6.3346	3.38	2.09	1.30	.82	.67
7.1681	.52	.43	.40	.34	.31
8.0016	.30	.25	.23	.22	.21
8.8351	.21	.21	.19	.17	.16
9.6686	.16	.16	.16	.15	.14
10.5021	.13	.13	.13	.13	.12
11.3356	.11	.11	.11	.11	.11
12.1691	.10	.10	.10	.10	.10
13.0026	.10	.10	.10	.10	.10
13.8361	.10	.10	.09	.09	.09
14.6696	.09	.09	.09	.09	.09
15.5031	.09	.09	.09	.09	.08
16.3366	.08	.08	.08	.08	.08
17.1701	.08	.08	.08	.08	.08
18.0036	.08	.08	.07	.07	.07
18.8371	.07	.07	.07	.07	.07
19.6706	.07	.07	.07	.07	.07
20.5041	.07	.07	.06	.06	.07
21.3376	.07	.07	.07	.06	.06
22.1711	.06	.06	.06	.06	.06
23.0046	.06	.06	.06	.06	.06
23.8381	.06	.06	.03	.01	.00
24.6716	.00				

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 2.1600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID3 10
Tc (Min. Tc) = .1667 hrs
Drainage Area = 28.066 acres Runoff CN= 89

==========
Computational Time Increment = .02222 hrs
Computed Peak Time = 6.0223 hrs
Computed Peak Flow = 53.47 cfs

Time Increment for HYG File = .1667 hrs
Peak Time, Interpolated Output = 6.0012 hrs
Peak Flow, Interpolated Output = 53.03 cfs
==========

DRAINAGE AREA

ID:BASINID3
CN = 89
Area = 28.066 acres
S = 1.2360 in
0.2S = .2472 in

Cumulative Runoff

1.1620 in
2.718 ac-ft

HYG Volume... 2.706 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16667 hrs (ID: BASINID3)
Computational Incr, Tm = .02222 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 190.79 cfs
Unit peak time Tp = .11111 hrs
Unit receding limb, Tr = .44445 hrs
Total unit time, Tb = .55557 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 2.1600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID3 10
Tc (Min. Tc) = .1667 hrs
Drainage Area = 28.066 acres Runoff CN= 89
Calc.Increment= .02222 hrs Out.Incr.= .1667 hrs
HYG Volume = 2.706 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time hrs | Time on left represents time for first value in each row.

Time hrs					
5.3344	.00	.03	14.39	39.21	53.03
6.1679	19.08	7.79	6.87	3.63	2.65
7.0014	2.57	1.84	1.60	1.60	1.29
7.8349	1.22	1.20	.95	.88	.87
8.6684	.87	.87	.87	.71	.67
9.5019	.66	.66	.64	.66	.57
10.3354	.55	.54	.54	.52	.54
11.1689	.48	.46	.46	.46	.46
12.0024	.46	.41	.42	.40	.42
12.8359	.40	.42	.40	.42	.40
13.6694	.40	.42	.40	.37	.37
14.5029	.37	.37	.34	.36	.37
15.3364	.37	.37	.37	.34	.36
16.1699	.34	.31	.33	.34	.31
17.0034	.33	.31	.33	.31	.33
17.8369	.31	.33	.31	.29	.30
18.6704	.31	.28	.30	.28	.30
19.5039	.28	.30	.28	.30	.28
20.3374	.28	.28	.28	.25	.27
21.1709	.28	.28	.28	.28	.25
22.0044	.27	.25	.25	.25	.25
22.8379	.27	.25	.25	.25	.25
23.6714	.25	.25	.25	.06	.00
24.5049	.00				

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 2.5600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID3 25
Tc (Min. Tc) = .1667 hrs
Drainage Area = 28.066 acres Runoff CN= 89

==========
Computational Time Increment = .02222 hrs
Computed Peak Time = 6.0223 hrs
Computed Peak Flow = 68.11 cfs

Time Increment for HYG File = .1667 hrs
Peak Time, Interpolated Output = 6.0012 hrs
Peak Flow, Interpolated Output = 67.79 cfs
==========

DRAINAGE AREA

ID:BASINID3
CN = 89
Area = 28.066 acres
S = 1.2360 in
0.2S = .2472 in

Cumulative Runoff

1.5073 in
3.525 ac-ft

HYG Volume... 3.513 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16667 hrs (ID: BASINID3)
Computational Incr, Tm = .02222 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 190.79 cfs
Unit peak time Tp = .11111 hrs
Unit receding limb, Tr = .44445 hrs
Total unit time, Tb = .55557 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 2.5600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID3 25
Tc (Min. Tc) = .1667 hrs
Drainage Area = 28.066 acres Runoff CN= 89
Calc.Increment= .02222 hrs Out.Incr.= .1667 hrs
HYG Volume = 3.513 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time hrs | Time on left represents time for first value in each row.

Time hrs					
5.0010	.00	.00	.11	.32	22.42
5.8345	52.62	67.79	24.05	9.75	8.57
6.6680	4.52	3.30	3.20	2.29	1.99
7.5015	1.98	1.61	1.52	1.49	1.18
8.3350	1.09	1.08	1.08	1.08	1.08
9.1685	.88	.83	.82	.82	.79
10.0020	.81	.71	.68	.67	.67
10.8355	.65	.67	.59	.56	.56
11.6690	.56	.56	.56	.51	.52
12.5025	.50	.52	.50	.52	.50
13.3360	.52	.50	.49	.52	.50
14.1695	.46	.45	.45	.45	.42
15.0030	.44	.45	.45	.45	.45
15.8365	.43	.45	.42	.39	.41
16.6700	.42	.39	.41	.39	.41
17.5035	.39	.41	.39	.41	.39
18.3370	.35	.37	.38	.35	.37
19.1705	.35	.37	.35	.37	.35
20.0040	.37	.35	.34	.34	.34
20.8375	.31	.33	.34	.34	.34
21.6710	.34	.31	.33	.31	.31
22.5045	.31	.31	.33	.31	.31
23.3380	.31	.31	.31	.31	.30
24.1715	.07	.01	.00		

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 3.1900 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID3 100
Tc (Min. Tc) = .1667 hrs
Drainage Area = 28.066 acres Runoff CN= 89

==========
Computational Time Increment = .02222 hrs
Computed Peak Time = 6.0223 hrs
Computed Peak Flow = 91.39 cfs

Time Increment for HYG File = .1667 hrs
Peak Time, Interpolated Output = 6.0012 hrs
Peak Flow, Interpolated Output = 91.32 cfs
==========

DRAINAGE AREA

ID:BASINID3
CN = 89
Area = 28.066 acres
S = 1.2360 in
0.2S = .2472 in

Cumulative Runoff

2.0724 in
4.847 ac-ft

HYG Volume... 4.834 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16667 hrs (ID: BASINID3)
Computational Incr, Tm = .02222 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 190.79 cfs
Unit peak time Tp = .11111 hrs
Unit receding limb, Tr = .44445 hrs
Total unit time, Tb = .55557 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 3.1900 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID3 100
Tc (Min. Tc) = .1667 hrs
Drainage Area = 28.066 acres Runoff CN= 89
Calc.Increment= .02222 hrs Out.Incr.= .1667 hrs
HYG Volume = 4.834 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time hrs | Time on left represents time for first value in each row.

Time hrs					
4.6676	.00	.03	.13	.38	.64
5.5011	.98	36.52	74.62	91.32	31.91
6.3346	12.83	11.24	5.92	4.31	4.18
7.1681	2.99	2.60	2.59	2.10	1.98
8.0016	1.94	1.53	1.41	1.40	1.41
8.8351	1.41	1.41	1.15	1.08	1.07
9.6686	1.07	1.03	1.06	.92	.88
10.5021	.88	.88	.84	.87	.77
11.3356	.73	.73	.73	.73	.73
12.1691	.66	.67	.65	.67	.65
13.0026	.67	.65	.67	.65	.64
13.8361	.67	.65	.60	.59	.59
14.6696	.59	.55	.58	.59	.59
15.5031	.59	.59	.55	.58	.55
16.3366	.50	.53	.54	.50	.53
17.1701	.50	.53	.50	.53	.50
18.0036	.53	.50	.46	.48	.49
18.8371	.45	.48	.45	.48	.45
19.6706	.48	.45	.48	.45	.44
20.5041	.44	.44	.41	.43	.44
21.3376	.44	.44	.44	.41	.43
22.1711	.41	.40	.39	.40	.43
23.0046	.41	.40	.40	.40	.40
23.8381	.40	.39	.09	.01	.00

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 2.1600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID4 10
Tc (Min. Tc) = .1667 hrs
Drainage Area = 16.886 acres Runoff CN= 91

==========
Computational Time Increment = .25000 hrs
Computed Peak Time = 6.0000 hrs
Computed Peak Flow = 32.06 cfs

Time Increment for HYG File = .1667 hrs
Peak Time, Interpolated Output = 6.0012 hrs
Peak Flow, Interpolated Output = 31.95 cfs
==========

DRAINAGE AREA

ID:BASINID4
CN = 91
Area = 16.886 acres
S = .9890 in
0.2S = .1978 in

Cumulative Runoff

1.3046 in
1.836 ac-ft

HYG Volume... 1.857 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16667 hrs (ID: BASINID4)
Computational Incr, Tm = .25000 hrs = 1.11110 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 56.69 cfs
Unit peak time Tp = .22500 hrs
Unit receding limb, Tr = .90001 hrs
Total unit time, Tb = 1.12501 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 2.1600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID4 10
Tc (Min. Tc) = .1667 hrs
Drainage Area = 16.886 acres Runoff CN= 91
Calc.Increment= .25000 hrs Out.Incr.= .1667 hrs
HYG Volume = 1.857 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
5.0010	.00	.03	.09	.24	11.66
5.8345	22.29	31.95	17.16	8.32	5.28
6.6680	3.29	2.12	1.72	1.34	1.11
7.5015	1.04	.89	.80	.77	.65
8.3350	.58	.56	.56	.56	.55
9.1685	.48	.44	.43	.42	.42
10.0020	.42	.38	.36	.35	.34
10.8355	.34	.34	.31	.30	.29
11.6690	.29	.29	.29	.27	.26
12.5025	.26	.26	.26	.26	.26
13.3360	.26	.26	.26	.26	.26
14.1695	.24	.24	.23	.23	.23
15.0030	.23	.23	.23	.23	.23
15.8365	.23	.23	.22	.21	.21
16.6700	.21	.21	.21	.20	.20
17.5035	.20	.20	.21	.21	.20
18.3370	.19	.19	.19	.19	.19
19.1705	.18	.18	.18	.19	.19
20.0040	.19	.18	.18	.18	.17
20.8375	.17	.17	.17	.17	.18
21.6710	.17	.17	.17	.16	.16
22.5045	.16	.16	.16	.16	.16
23.3380	.16	.16	.16	.16	.15
24.1715	.07	.02	.00	.00	.00

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 2.5600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID4 25
Tc (Min. Tc) = .1667 hrs
Drainage Area = 16.886 acres Runoff CN= 91

==========
Computational Time Increment = .25000 hrs
Computed Peak Time = 6.0000 hrs
Computed Peak Flow = 40.62 cfs

Time Increment for HYG File = .1667 hrs
Peak Time, Interpolated Output = 6.0012 hrs
Peak Flow, Interpolated Output = 40.49 cfs
==========

DRAINAGE AREA

ID:BASINID4
CN = 91
Area = 16.886 acres
S = .9890 in
0.2S = .1978 in

Cumulative Runoff

1.6651 in
2.343 ac-ft

HYG Volume... 2.366 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16667 hrs (ID: BASINID4)
Computational Incr, Tm = .25000 hrs = 1.11110 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 56.69 cfs
Unit peak time Tp = .22500 hrs
Unit receding limb, Tr = .90001 hrs
Total unit time, Tb = 1.12501 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 2.5600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID4 25
Tc (Min. Tc) = .1667 hrs
Drainage Area = 16.886 acres Runoff CN= 91
Calc.Increment= .25000 hrs Out.Incr.= .1667 hrs
HYG Volume = 2.366 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time hrs | Time on left represents time for first value in each row.

Time hrs					
4.5009	.00	.00	.02	.06	.17
5.3344	.28	.49	16.00	29.39	40.49
6.1679	21.65	10.41	6.54	4.07	2.60
7.0014	2.12	1.65	1.37	1.27	1.09
7.8349	.99	.95	.80	.72	.69
8.6684	.68	.68	.68	.59	.54
9.5019	.52	.51	.51	.51	.46
10.3354	.44	.43	.42	.42	.42
11.1689	.38	.36	.36	.35	.35
12.0024	.35	.33	.32	.32	.32
12.8359	.32	.32	.32	.32	.32
13.6694	.32	.32	.32	.30	.29
14.5029	.28	.28	.28	.28	.28
15.3364	.28	.28	.28	.28	.28
16.1699	.26	.26	.25	.25	.25
17.0034	.25	.25	.25	.25	.25
17.8369	.25	.25	.24	.23	.23
18.6704	.23	.23	.23	.23	.22
19.5039	.22	.23	.23	.23	.22
20.3374	.22	.21	.21	.21	.21
21.1709	.21	.21	.21	.21	.21
22.0044	.21	.20	.19	.19	.20
22.8379	.20	.20	.19	.19	.19
23.6714	.19	.19	.19	.09	.03
24.5049	.01	.00	.00		

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 3.1900 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID4 100
Tc (Min. Tc) = .1667 hrs
Drainage Area = 16.886 acres Runoff CN= 91

==========
Computational Time Increment = .25000 hrs
Computed Peak Time = 6.0000 hrs
Computed Peak Flow = 54.24 cfs

Time Increment for HYG File = .1667 hrs
Peak Time, Interpolated Output = 6.0012 hrs
Peak Flow, Interpolated Output = 54.06 cfs
==========

DRAINAGE AREA

ID:BASINID4
CN = 91
Area = 16.886 acres
S = .9890 in
0.2S = .1978 in

Cumulative Runoff

2.2489 in
3.165 ac-ft

HYG Volume... 3.190 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16667 hrs (ID: BASINID4)
Computational Incr, Tm = .25000 hrs = 1.11110 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 56.69 cfs
Unit peak time Tp = .22500 hrs
Unit receding limb, Tr = .90001 hrs
Total unit time, Tb = 1.12501 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 3.1900 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID4 100
Tc (Min. Tc) = .1667 hrs
Drainage Area = 16.886 acres Runoff CN= 91
Calc.Increment= .25000 hrs Out.Incr.= .1667 hrs
HYG Volume = 3.190 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time hrs | Time on left represents time for first value in each row.

Time hrs					
4.0008	.00	.00	.02	.04	.11
4.8343	.18	.26	.47	.66	.96
5.6678	23.23	40.99	54.06	28.79	13.70
6.5013	8.51	5.28	3.37	2.74	2.12
7.3348	1.76	1.64	1.41	1.27	1.22
8.1683	1.03	.92	.88	.88	.88
9.0018	.87	.76	.69	.67	.66
9.8353	.66	.65	.59	.56	.55
10.6688	.54	.54	.53	.49	.47
11.5023	.46	.46	.45	.45	.43
12.3358	.41	.41	.41	.41	.41
13.1693	.41	.41	.41	.40	.40
14.0028	.40	.38	.37	.37	.36
14.8363	.36	.36	.36	.36	.36
15.6698	.36	.36	.35	.34	.33
16.5033	.33	.33	.32	.32	.32
17.3368	.32	.32	.32	.32	.32
18.1703	.31	.30	.30	.30	.29
19.0038	.29	.29	.29	.29	.29
19.8373	.29	.29	.28	.28	.28
20.6708	.27	.27	.27	.27	.27
21.5043	.27	.27	.27	.26	.25
22.3378	.25	.25	.25	.25	.25
23.1713	.25	.25	.24	.24	.24
24.0048	.24	.11	.03	.01	.00
24.8383	.00				

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 2.1600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID5 10
Tc (Min. Tc) = .1667 hrs
Drainage Area = 22.079 acres Runoff CN= 94

==========
Computational Time Increment = .25000 hrs
Computed Peak Time = 6.0000 hrs
Computed Peak Flow = 48.64 cfs

Time Increment for HYG File = .1667 hrs
Peak Time, Interpolated Output = 6.0012 hrs
Peak Flow, Interpolated Output = 48.48 cfs
==========

DRAINAGE AREA

ID:BASINID5
CN = 94
Area = 22.079 acres
S = .6383 in
0.2S = .1277 in

Cumulative Runoff

1.5466 in
2.846 ac-ft

HYG Volume... 2.867 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16667 hrs (ID: BASINID5)
Computational Incr, Tm = .25000 hrs = 1.11110 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 74.12 cfs
Unit peak time Tp = .22500 hrs
Unit receding limb, Tr = .90001 hrs
Total unit time, Tb = 1.12501 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 2.1600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID5 10
Tc (Min. Tc) = .1667 hrs
Drainage Area = 22.079 acres Runoff CN= 94
Calc.Increment= .25000 hrs Out.Incr.= .1667 hrs
HYG Volume = 2.867 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time hrs | Time on left represents time for first value in each row.

Time hrs					
4.0008	.00	.01	.03	.06	.13
4.8343	.20	.27	.47	.64	.92
5.6678	21.17	37.07	48.48	25.79	12.25
6.5013	7.59	4.71	3.00	2.44	1.89
7.3348	1.57	1.46	1.25	1.13	1.09
8.1683	.92	.82	.79	.78	.78
9.0018	.78	.68	.62	.60	.59
9.8353	.58	.58	.53	.50	.49
10.6688	.48	.48	.48	.44	.41
11.5023	.41	.41	.40	.40	.38
12.3358	.37	.36	.37	.37	.37
13.1693	.36	.36	.36	.36	.36
14.0028	.36	.34	.33	.33	.32
14.8363	.32	.32	.32	.32	.32
15.6698	.32	.32	.32	.30	.29
16.5033	.29	.29	.29	.29	.28
17.3368	.28	.28	.29	.29	.29
18.1703	.27	.27	.26	.26	.26
19.0038	.26	.26	.25	.25	.26
19.8373	.26	.26	.25	.25	.24
20.6708	.24	.24	.24	.24	.24
21.5043	.24	.24	.24	.24	.23
22.3378	.22	.22	.22	.23	.23
23.1713	.22	.22	.22	.22	.22
24.0048	.21	.10	.03	.01	.00
24.8383	.00				

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 2.5600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID5 25
Tc (Min. Tc) = .1667 hrs
Drainage Area = 22.079 acres Runoff CN= 94

==========
Computational Time Increment = .25000 hrs
Computed Peak Time = 6.0000 hrs
Computed Peak Flow = 60.00 cfs

Time Increment for HYG File = .1667 hrs
Peak Time, Interpolated Output = 6.0012 hrs
Peak Flow, Interpolated Output = 59.80 cfs
==========

DRAINAGE AREA

ID:BASINID5
CN = 94
Area = 22.079 acres
S = .6383 in
0.2S = .1277 in

Cumulative Runoff

1.9267 in
3.545 ac-ft

HYG Volume... 3.567 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16667 hrs (ID: BASINID5)
Computational Incr, Tm = .25000 hrs = 1.11110 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 74.12 cfs
Unit peak time Tp = .22500 hrs
Unit receding limb, Tr = .90001 hrs
Total unit time, Tb = 1.12501 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 2.5600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID5 25
Tc (Min. Tc) = .1667 hrs
Drainage Area = 22.079 acres Runoff CN= 94
Calc.Increment= .25000 hrs Out.Incr.= .1667 hrs
HYG Volume = 3.567 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time hrs | Time on left represents time for first value in each row.

Time hrs					
3.5007	.00	.00	.01	.04	.09
4.3342	.13	.18	.30	.40	.48
5.1677	.78	1.02	1.37	27.47	46.98
6.0012	59.80	31.73	14.98	9.22	5.71
6.8347	3.63	2.95	2.29	1.90	1.76
7.6682	1.51	1.37	1.32	1.11	.99
8.5017	.95	.94	.94	.94	.82
9.3352	.74	.72	.71	.71	.70
10.1687	.64	.60	.59	.58	.58
11.0022	.57	.53	.50	.49	.49
11.8357	.49	.49	.46	.44	.44
12.6692	.44	.44	.44	.44	.44
13.5027	.43	.43	.43	.43	.41
14.3362	.40	.39	.39	.38	.38
15.1697	.39	.39	.39	.39	.38
16.0032	.38	.36	.35	.35	.35
16.8367	.35	.35	.34	.34	.34
17.6702	.34	.35	.35	.33	.32
18.5037	.32	.32	.32	.32	.31
19.3372	.31	.31	.31	.31	.32
20.1707	.30	.30	.29	.29	.28
21.0042	.28	.29	.29	.29	.29
21.8377	.28	.28	.27	.26	.26
22.6712	.27	.27	.27	.27	.26
23.5047	.26	.26	.26	.26	.12
24.3382	.04	.01	.00	.00	

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 3.1900 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID5 100
Tc (Min. Tc) = .1667 hrs
Drainage Area = 22.079 acres Runoff CN= 94

==========
Computational Time Increment = .25000 hrs
Computed Peak Time = 6.0000 hrs
Computed Peak Flow = 77.85 cfs

Time Increment for HYG File = .1667 hrs
Peak Time, Interpolated Output = 6.0012 hrs
Peak Flow, Interpolated Output = 77.59 cfs
==========

DRAINAGE AREA

ID:BASINID5
CN = 94
Area = 22.079 acres
S = .6383 in
0.2S = .1277 in

Cumulative Runoff

2.5341 in
4.663 ac-ft

HYG Volume... 4.685 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16667 hrs (ID: BASINID5)
Computational Incr, Tm = .25000 hrs = 1.11110 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 74.12 cfs
Unit peak time Tp = .22500 hrs
Unit receding limb, Tr = .90001 hrs
Total unit time, Tb = 1.12501 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 3.1900 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID5 100
Tc (Min. Tc) = .1667 hrs
Drainage Area = 22.079 acres Runoff CN= 94
Calc.Increment= .25000 hrs Out.Incr.= .1667 hrs
HYG Volume = 4.685 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time hrs | Time on left represents time for first value in each row.

Time hrs					
3.0006	.00	.00	.02	.05	.09
3.8341	.14	.18	.27	.35	.42
4.6676	.61	.76	.88	1.33	1.68
5.5011	2.16	37.64	62.81	77.59	41.05
6.3346	19.25	11.77	7.28	4.62	3.74
7.1681	2.90	2.41	2.24	1.92	1.73
8.0016	1.67	1.41	1.26	1.20	1.20
8.8351	1.19	1.19	1.03	.94	.91
9.6686	.90	.89	.89	.81	.76
10.5021	.74	.73	.73	.73	.67
11.3356	.63	.62	.62	.62	.62
12.1691	.58	.56	.55	.56	.56
13.0026	.56	.56	.55	.55	.55
13.8361	.55	.55	.52	.50	.50
14.6696	.49	.48	.48	.49	.49
15.5031	.49	.49	.48	.48	.46
16.3366	.45	.44	.44	.44	.44
17.1701	.43	.43	.43	.43	.44
18.0036	.44	.42	.40	.40	.40
18.8371	.40	.40	.39	.39	.39
19.6706	.39	.40	.40	.38	.38
20.5041	.37	.36	.36	.36	.37
21.3376	.37	.37	.36	.36	.36
22.1711	.34	.33	.33	.34	.34
23.0046	.34	.34	.33	.33	.33
23.8381	.33	.33	.15	.05	.01
24.6716	.00	.00			

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 2.1600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID6 10
Tc (Min. Tc) = .1667 hrs
Drainage Area = 6.108 acres Runoff CN= 76

==========
Computational Time Increment = .02222 hrs
Computed Peak Time = 6.0446 hrs
Computed Peak Flow = 5.32 cfs

Time Increment for HYG File = .1667 hrs
Peak Time, Interpolated Output = 6.0012 hrs
Peak Flow, Interpolated Output = 5.02 cfs
WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
==========

DRAINAGE AREA

ID:BASINID6
CN = 76
Area = 6.108 acres
S = 3.1579 in
0.2S = .6316 in

Cumulative Runoff

.4985 in
.254 ac-ft

HYG Volume... .252 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16667 hrs (ID: BASINID6)
Computational Incr, Tm = .02222 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 41.52 cfs
Unit peak time Tp = .11111 hrs
Unit receding limb, Tr = .44445 hrs
Total unit time, Tb = .55557 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 10 year storm
Duration = 24.0000 hrs Rain Depth = 2.1600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID6 10
Tc (Min. Tc) = .1667 hrs
Drainage Area = 6.108 acres Runoff CN= 76
Calc.Increment= .02222 hrs Out.Incr.= .1667 hrs
HYG Volume = .252 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time hrs | Time on left represents time for first value in each row.

Time hrs					
5.5011	.00	.01	1.92	5.02	2.10
6.3346	.93	.85	.45	.33	.33
7.1681	.24	.21	.21	.17	.16
8.0016	.16	.12	.11	.11	.11
8.8351	.11	.11	.09	.09	.09
9.6686	.09	.09	.09	.08	.07
10.5021	.07	.07	.07	.07	.06
11.3356	.06	.06	.06	.06	.06
12.1691	.06	.06	.05	.06	.05
13.0026	.06	.05	.06	.05	.05
13.8361	.06	.05	.05	.05	.05
14.6696	.05	.05	.05	.05	.05
15.5031	.05	.05	.05	.05	.05
16.3366	.04	.05	.05	.04	.05
17.1701	.04	.05	.04	.05	.04
18.0036	.05	.04	.04	.04	.04
18.8371	.04	.04	.04	.04	.04
19.6706	.04	.04	.04	.04	.04
20.5041	.04	.04	.04	.04	.04
21.3376	.04	.04	.04	.04	.04
22.1711	.04	.03	.03	.03	.04
23.0046	.04	.03	.03	.03	.03
23.8381	.03	.03	.01	.00	

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 2.5600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID6 25
Tc (Min. Tc) = .1667 hrs
Drainage Area = 6.108 acres Runoff CN= 76

==========
Computational Time Increment = .02222 hrs
Computed Peak Time = 6.0223 hrs
Computed Peak Flow = 7.76 cfs

Time Increment for HYG File = .1667 hrs
Peak Time, Interpolated Output = 6.0012 hrs
Peak Flow, Interpolated Output = 7.48 cfs
WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
==========

DRAINAGE AREA

ID:BASINID6
CN = 76
Area = 6.108 acres
S = 3.1579 in
0.2S = .6316 in

Cumulative Runoff

.7311 in
.372 ac-ft

HYG Volume... .369 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16667 hrs (ID: BASINID6)
Computational Incr, Tm = .02222 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 41.52 cfs
Unit peak time Tp = .11111 hrs
Unit receding limb, Tr = .44445 hrs
Total unit time, Tb = .55557 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 25 year storm
Duration = 24.0000 hrs Rain Depth = 2.5600 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID6 25
Tc (Min. Tc) = .1667 hrs
Drainage Area = 6.108 acres Runoff CN= 76
Calc.Increment= .02222 hrs Out.Incr.= .1667 hrs
HYG Volume = .369 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
5.5011	.00	.14	3.59	7.48	2.99
6.3346	1.30	1.17	.62	.46	.45
7.1681	.32	.28	.28	.23	.22
8.0016	.21	.17	.16	.15	.16
8.8351	.16	.16	.13	.12	.12
9.6686	.12	.12	.12	.10	.10
10.5021	.10	.10	.09	.10	.09
11.3356	.08	.08	.08	.08	.08
12.1691	.07	.08	.07	.08	.07
13.0026	.08	.07	.08	.07	.07
13.8361	.08	.07	.07	.07	.07
14.6696	.07	.06	.07	.07	.07
15.5031	.07	.07	.06	.07	.06
16.3366	.06	.06	.06	.06	.06
17.1701	.06	.06	.06	.06	.06
18.0036	.06	.06	.05	.06	.06
18.8371	.05	.06	.05	.06	.05
19.6706	.06	.05	.06	.05	.05
20.5041	.05	.05	.05	.05	.05
21.3376	.05	.05	.05	.05	.05
22.1711	.05	.05	.05	.05	.05
23.0046	.05	.05	.05	.05	.05
23.8381	.05	.05	.01	.00	

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 3.1900 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID6 100
Tc (Min. Tc) = .1667 hrs
Drainage Area = 6.108 acres Runoff CN= 76

==========
Computational Time Increment = .02222 hrs
Computed Peak Time = 6.0223 hrs
Computed Peak Flow = 12.04 cfs

Time Increment for HYG File = .1667 hrs
Peak Time, Interpolated Output = 6.0012 hrs
Peak Flow, Interpolated Output = 11.74 cfs
WARNING: The difference between calculated peak flow
and interpolated peak flow is greater than 1.50%
==========

DRAINAGE AREA

ID:BASINID6
CN = 76
Area = 6.108 acres
S = 3.1579 in
0.2S = .6316 in

Cumulative Runoff

1.1451 in
.583 ac-ft

HYG Volume... .578 ac-ft (area under HYG curve)

***** SCS UNIT HYDROGRAPH PARAMETERS *****

Time Concentration, Tc = .16667 hrs (ID: BASINID6)
Computational Incr, Tm = .02222 hrs = 0.20000 Tp

Unit Hyd. Shape Factor = 483.432 (37.46% under rising limb)
K = 483.43/645.333, K = .7491 (also, K = 2/(1+(Tr/Tp))
Receding/Rising, Tr/Tp = 1.6698 (solved from K = .7491)

Unit peak, qp = 41.52 cfs
Unit peak time Tp = .11111 hrs
Unit receding limb, Tr = .44445 hrs
Total unit time, Tb = .55557 hrs

SCS UNIT HYDROGRAPH METHOD

STORM EVENT: 100 year storm
Duration = 24.0000 hrs Rain Depth = 3.1900 in
Rain Dir = T:\05_Analysis and Engineering\East Slope\
Rain File -ID = - NRCS Type-II 70
Unit Hyd Type = Default Curvilinear
HYG Dir = T:\05_Analysis and Engineering\East Slope\
HYG File - ID = - BASINID6 100
Tc (Min. Tc) = .1667 hrs
Drainage Area = 6.108 acres Runoff CN= 76
Calc.Increment= .02222 hrs Out.Incr.= .1667 hrs
HYG Volume = .578 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time hrs | Time on left represents time for first value in each row.

Time hrs					
5.5011	.00	.85	6.78	11.74	4.51
6.3346	1.91	1.71	.91	.67	.65
7.1681	.47	.41	.41	.33	.31
8.0016	.31	.24	.22	.22	.22
8.8351	.22	.22	.18	.17	.17
9.6686	.17	.16	.17	.15	.14
10.5021	.14	.14	.13	.14	.12
11.3356	.12	.12	.12	.12	.12
12.1691	.11	.11	.10	.11	.10
13.0026	.11	.10	.11	.10	.10
13.8361	.11	.10	.10	.10	.10
14.6696	.10	.09	.09	.10	.10
15.5031	.10	.10	.09	.09	.09
16.3366	.08	.09	.09	.08	.09
17.1701	.08	.09	.08	.09	.08
18.0036	.09	.08	.07	.08	.08
18.8371	.07	.08	.07	.08	.07
19.6706	.08	.07	.08	.07	.07
20.5041	.07	.07	.07	.07	.07
21.3376	.07	.07	.07	.07	.07
22.1711	.07	.07	.07	.07	.07
23.0046	.07	.07	.07	.07	.07
23.8381	.07	.07	.02	.00	.00

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 1

HYG Directory: T:\05_Analysis and Engineering\East Slope\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK 1	BASINID1		BASINID1	10

INFLOWS TO: OUT 1

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	BASINID1	10	.475	6.0012	8.09

TOTAL FLOW INTO: OUT 1

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	OUT 1	10	.475	6.0012	8.09

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 1
HYG Tag = 10

Peak Discharge = 8.09 cfs
Time to Peak = 6.0012 hrs
HYG Volume = .475 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
5.3344	.00	.01	1.50	4.22	8.09
6.1679	4.48	2.32	1.58	1.00	.66
7.0014	.55	.43	.35	.33	.29
7.8349	.26	.25	.21	.19	.18
8.6684	.18	.18	.18	.16	.14
9.5019	.14	.14	.14	.14	.12
10.3354	.12	.11	.11	.11	.11
11.1689	.10	.10	.10	.10	.09
12.0024	.09	.09	.09	.09	.09
12.8359	.09	.09	.09	.09	.09
13.6694	.09	.09	.09	.08	.08
14.5029	.08	.08	.08	.08	.08
15.3364	.08	.08	.08	.08	.08
16.1699	.07	.07	.07	.07	.07
17.0034	.07	.07	.07	.07	.07
17.8369	.07	.07	.07	.06	.06
18.6704	.06	.06	.06	.06	.06
19.5039	.06	.06	.06	.06	.06
20.3374	.06	.06	.06	.06	.06
21.1709	.06	.06	.06	.06	.06
22.0044	.06	.05	.05	.05	.05
22.8379	.05	.05	.05	.05	.05
23.6714	.05	.05	.05	.02	.01
24.5049	.00	.00			

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 1

HYG Directory: T:\05_Analysis and Engineering\East Slope\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK 1	BASINID1		BASINID1	25

INFLOWS TO: OUT 1

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	BASINID1	25	.653	6.0012	11.22

TOTAL FLOW INTO: OUT 1

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	OUT 1	25	.653	6.0012	11.22

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 1
HYG Tag = 25

Peak Discharge = 11.22 cfs
Time to Peak = 6.0012 hrs
HYG Volume = .653 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
5.3344	.00	.02	2.55	6.32	11.22
6.1679	6.16	3.14	2.10	1.32	.87
7.0014	.71	.55	.46	.43	.37
7.8349	.34	.32	.27	.24	.23
8.6684	.23	.23	.23	.20	.19
9.5019	.18	.18	.18	.18	.16
10.3354	.15	.15	.15	.14	.14
11.1689	.13	.13	.12	.12	.12
12.0024	.12	.12	.11	.11	.11
12.8359	.11	.11	.11	.11	.11
13.6694	.11	.11	.11	.10	.10
14.5029	.10	.10	.10	.10	.10
15.3364	.10	.10	.10	.10	.10
16.1699	.09	.09	.09	.09	.09
17.0034	.09	.09	.09	.09	.09
17.8369	.09	.09	.08	.08	.08
18.6704	.08	.08	.08	.08	.08
19.5039	.08	.08	.08	.08	.08
20.3374	.08	.08	.07	.07	.07
21.1709	.07	.08	.08	.07	.07
22.0044	.07	.07	.07	.07	.07
22.8379	.07	.07	.07	.07	.07
23.6714	.07	.07	.07	.03	.01
24.5049	.00	.00			

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 1

HYG Directory: T:\05_Analysis and Engineering\East Slope\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK 1	BASINID1		BASINID1	100

INFLOWS TO: OUT 1

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	BASINID1	100	.955	6.0012	16.50

TOTAL FLOW INTO: OUT 1

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	OUT 1	100	.955	6.0012	16.50

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 1
HYG Tag = 100

Peak Discharge = 16.50 cfs
Time to Peak = 6.0012 hrs
HYG Volume = .955 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
5.3344	.00	.03	4.61	10.14	16.50
6.1679	8.97	4.48	2.93	1.84	1.20
7.0014	.98	.76	.63	.59	.51
7.8349	.46	.44	.37	.33	.32
8.6684	.32	.32	.32	.28	.25
9.5019	.24	.24	.24	.24	.22
10.3354	.20	.20	.20	.20	.20
11.1689	.18	.17	.17	.17	.17
12.0024	.17	.16	.15	.15	.15
12.8359	.15	.15	.15	.15	.15
13.6694	.15	.15	.15	.14	.14
14.5029	.13	.13	.13	.13	.13
15.3364	.13	.13	.13	.13	.13
16.1699	.13	.12	.12	.12	.12
17.0034	.12	.12	.12	.12	.12
17.8369	.12	.12	.11	.11	.11
18.6704	.11	.11	.11	.11	.11
19.5039	.11	.11	.11	.11	.11
20.3374	.10	.10	.10	.10	.10
21.1709	.10	.10	.10	.10	.10
22.0044	.10	.09	.09	.09	.09
22.8379	.09	.09	.09	.09	.09
23.6714	.09	.09	.09	.04	.01
24.5049	.00	.00	.00		

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 2

HYG Directory: T:\05_Analysis and Engineering\East Slope\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK 2	BASINID2		BASINID2	10

INFLOWS TO: OUT 2

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	BASINID2	10	.472	6.0012	8.10

TOTAL FLOW INTO: OUT 2

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	OUT 2	10	.472	6.0012	8.10

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 2
HYG Tag = 10

Peak Discharge = 8.10 cfs
Time to Peak = 6.0012 hrs
HYG Volume = .472 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
4.6676	.00	.00	.01	.03	.05
5.5011	.09	3.14	5.82	8.10	4.33
6.3346	2.09	1.31	.82	.52	.43
7.1681	.33	.28	.26	.22	.20
8.0016	.19	.16	.14	.14	.14
8.8351	.14	.14	.12	.11	.11
9.6686	.10	.10	.10	.09	.09
10.5021	.09	.08	.08	.08	.08
11.3356	.07	.07	.07	.07	.07
12.1691	.07	.06	.06	.06	.06
13.0026	.07	.06	.06	.06	.06
13.8361	.06	.06	.06	.06	.06
14.6696	.06	.06	.06	.06	.06
15.5031	.06	.06	.06	.06	.05
16.3366	.05	.05	.05	.05	.05
17.1701	.05	.05	.05	.05	.05
18.0036	.05	.05	.05	.05	.05
18.8371	.05	.05	.05	.05	.04
19.6706	.05	.05	.05	.04	.04
20.5041	.04	.04	.04	.04	.04
21.3376	.04	.04	.04	.04	.04
22.1711	.04	.04	.04	.04	.04
23.0046	.04	.04	.04	.04	.04
23.8381	.04	.04	.02	.01	.00
24.6716	.00				

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 2

HYG Directory: T:\05_Analysis and Engineering\East Slope\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK 2	BASINID2		BASINID2	25

INFLOWS TO: OUT 2

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	BASINID2	25	.597	6.0012	10.17

TOTAL FLOW INTO: OUT 2

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	OUT 2	25	.597	6.0012	10.17

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 2
HYG Tag = 25

Peak Discharge = 10.17 cfs
Time to Peak = 6.0012 hrs
HYG Volume = .597 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
4.5009	.00	.01	.02	.03	.07
5.3344	.10	.16	4.23	7.58	10.17
6.1679	5.42	2.59	1.62	1.00	.64
7.0014	.52	.40	.34	.31	.27
7.8349	.24	.23	.20	.18	.17
8.6684	.17	.17	.17	.15	.13
9.5019	.13	.13	.13	.12	.11
10.3354	.11	.10	.10	.10	.10
11.1689	.09	.09	.09	.09	.09
12.0024	.09	.08	.08	.08	.08
12.8359	.08	.08	.08	.08	.08
13.6694	.08	.08	.08	.07	.07
14.5029	.07	.07	.07	.07	.07
15.3364	.07	.07	.07	.07	.07
16.1699	.06	.06	.06	.06	.06
17.0034	.06	.06	.06	.06	.06
17.8369	.06	.06	.06	.06	.06
18.6704	.06	.06	.06	.06	.05
19.5039	.05	.06	.06	.06	.05
20.3374	.05	.05	.05	.05	.05
21.1709	.05	.05	.05	.05	.05
22.0044	.05	.05	.05	.05	.05
22.8379	.05	.05	.05	.05	.05
23.6714	.05	.05	.05	.02	.01
24.5049	.00	.00			

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 2

HYG Directory: T:\05_Analysis and Engineering\East Slope\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK 2	BASINID2		BASINID2	100

INFLOWS TO: OUT 2

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	BASINID2	100	.798	6.0012	13.44

TOTAL FLOW INTO: OUT 2

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	OUT 2	100	.798	6.0012	13.44

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 2
HYG Tag = 100

Peak Discharge = 13.44 cfs
Time to Peak = 6.0012 hrs
HYG Volume = .798 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
3.8341	.00	.00	.01	.02	.03
4.6676	.05	.07	.09	.15	.20
5.5011	.28	6.02	10.42	13.44	7.14
6.3346	3.38	2.09	1.30	.82	.67
7.1681	.52	.43	.40	.34	.31
8.0016	.30	.25	.23	.22	.21
8.8351	.21	.21	.19	.17	.16
9.6686	.16	.16	.16	.15	.14
10.5021	.13	.13	.13	.13	.12
11.3356	.11	.11	.11	.11	.11
12.1691	.10	.10	.10	.10	.10
13.0026	.10	.10	.10	.10	.10
13.8361	.10	.10	.09	.09	.09
14.6696	.09	.09	.09	.09	.09
15.5031	.09	.09	.09	.09	.08
16.3366	.08	.08	.08	.08	.08
17.1701	.08	.08	.08	.08	.08
18.0036	.08	.08	.07	.07	.07
18.8371	.07	.07	.07	.07	.07
19.6706	.07	.07	.07	.07	.07
20.5041	.07	.07	.06	.06	.07
21.3376	.07	.07	.07	.06	.06
22.1711	.06	.06	.06	.06	.06
23.0046	.06	.06	.06	.06	.06
23.8381	.06	.06	.03	.01	.00
24.6716	.00				

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 3

HYG Directory: T:\05_Analysis and Engineering\East Slope\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK 3	BASINID3		BASINID3	10

INFLOWS TO: OUT 3

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	BASINID3	10	2.706	6.0012	53.03

TOTAL FLOW INTO: OUT 3

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	OUT 3	10	2.706	6.0012	53.03

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 3
HYG Tag = 10

Peak Discharge = 53.03 cfs
Time to Peak = 6.0012 hrs
HYG Volume = 2.706 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
5.3344	.00	.03	14.39	39.21	53.03
6.1679	19.08	7.79	6.87	3.63	2.65
7.0014	2.57	1.84	1.60	1.60	1.29
7.8349	1.22	1.20	.95	.88	.87
8.6684	.87	.87	.87	.71	.67
9.5019	.66	.66	.64	.66	.57
10.3354	.55	.54	.54	.52	.54
11.1689	.48	.46	.46	.46	.46
12.0024	.46	.41	.42	.40	.42
12.8359	.40	.42	.40	.42	.40
13.6694	.40	.42	.40	.37	.37
14.5029	.37	.37	.34	.36	.37
15.3364	.37	.37	.37	.34	.36
16.1699	.34	.31	.33	.34	.31
17.0034	.33	.31	.33	.31	.33
17.8369	.31	.33	.31	.29	.30
18.6704	.31	.28	.30	.28	.30
19.5039	.28	.30	.28	.30	.28
20.3374	.28	.28	.28	.25	.27
21.1709	.28	.28	.28	.28	.25
22.0044	.27	.25	.25	.25	.25
22.8379	.27	.25	.25	.25	.25
23.6714	.25	.25	.25	.06	.00
24.5049	.00				

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 3

HYG Directory: T:\05_Analysis and Engineering\East Slope\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK 3	BASINID3		BASINID3	25

INFLOWS TO: OUT 3

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	BASINID3	25	3.513	6.0012	67.79

TOTAL FLOW INTO: OUT 3

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	OUT 3	25	3.513	6.0012	67.79

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 3
HYG Tag = 25

Peak Discharge	67.79 cfs
Time to Peak	6.0012 hrs
HYG Volume	3.513 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
5.0010	.00	.00	.11	.32	22.42
5.8345	52.62	67.79	24.05	9.75	8.57
6.6680	4.52	3.30	3.20	2.29	1.99
7.5015	1.98	1.61	1.52	1.49	1.18
8.3350	1.09	1.08	1.08	1.08	1.08
9.1685	.88	.83	.82	.82	.79
10.0020	.81	.71	.68	.67	.67
10.8355	.65	.67	.59	.56	.56
11.6690	.56	.56	.56	.51	.52
12.5025	.50	.52	.50	.52	.50
13.3360	.52	.50	.49	.52	.50
14.1695	.46	.45	.45	.45	.42
15.0030	.44	.45	.45	.45	.45
15.8365	.43	.45	.42	.39	.41
16.6700	.42	.39	.41	.39	.41
17.5035	.39	.41	.39	.41	.39
18.3370	.35	.37	.38	.35	.37
19.1705	.35	.37	.35	.37	.35
20.0040	.37	.35	.34	.34	.34
20.8375	.31	.33	.34	.34	.34
21.6710	.34	.31	.33	.31	.31
22.5045	.31	.31	.33	.31	.31
23.3380	.31	.31	.31	.31	.30
24.1715	.07	.01	.00		

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 3

HYG Directory: T:\05_Analysis and Engineering\East Slope\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK 3	BASINID3		BASINID3	100

INFLOWS TO: OUT 3

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	BASINID3	100	4.834	6.0012	91.32

TOTAL FLOW INTO: OUT 3

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	OUT 3	100	4.834	6.0012	91.32

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 3
HYG Tag = 100

Peak Discharge = 91.32 cfs
Time to Peak = 6.0012 hrs
HYG Volume = 4.834 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
4.6676	.00	.03	.13	.38	.64
5.5011	.98	36.52	74.62	91.32	31.91
6.3346	12.83	11.24	5.92	4.31	4.18
7.1681	2.99	2.60	2.59	2.10	1.98
8.0016	1.94	1.53	1.41	1.40	1.41
8.8351	1.41	1.41	1.15	1.08	1.07
9.6686	1.07	1.03	1.06	.92	.88
10.5021	.88	.88	.84	.87	.77
11.3356	.73	.73	.73	.73	.73
12.1691	.66	.67	.65	.67	.65
13.0026	.67	.65	.67	.65	.64
13.8361	.67	.65	.60	.59	.59
14.6696	.59	.55	.58	.59	.59
15.5031	.59	.59	.55	.58	.55
16.3366	.50	.53	.54	.50	.53
17.1701	.50	.53	.50	.53	.50
18.0036	.53	.50	.46	.48	.49
18.8371	.45	.48	.45	.48	.45
19.6706	.48	.45	.48	.45	.44
20.5041	.44	.44	.41	.43	.44
21.3376	.44	.44	.44	.41	.43
22.1711	.41	.40	.39	.40	.43
23.0046	.41	.40	.40	.40	.40
23.8381	.40	.39	.09	.01	.00

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 4

HYG Directory: T:\05_Analysis and Engineering\East Slope\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK 4	BASINID4		BASINID4	10

INFLOWS TO: OUT 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	BASINID4	10	1.857	6.0012	31.95

TOTAL FLOW INTO: OUT 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	OUT 4	10	1.857	6.0012	31.95

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 4
HYG Tag = 10

Peak Discharge	31.95 cfs
Time to Peak	6.0012 hrs
HYG Volume	1.857 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
5.0010	.00	.03	.09	.24	11.66
5.8345	22.29	31.95	17.16	8.32	5.28
6.6680	3.29	2.12	1.72	1.34	1.11
7.5015	1.04	.89	.80	.77	.65
8.3350	.58	.56	.56	.56	.55
9.1685	.48	.44	.43	.42	.42
10.0020	.42	.38	.36	.35	.34
10.8355	.34	.34	.31	.30	.29
11.6690	.29	.29	.29	.27	.26
12.5025	.26	.26	.26	.26	.26
13.3360	.26	.26	.26	.26	.26
14.1695	.24	.24	.23	.23	.23
15.0030	.23	.23	.23	.23	.23
15.8365	.23	.23	.22	.21	.21
16.6700	.21	.21	.21	.20	.20
17.5035	.20	.20	.21	.21	.20
18.3370	.19	.19	.19	.19	.19
19.1705	.18	.18	.18	.19	.19
20.0040	.19	.18	.18	.18	.17
20.8375	.17	.17	.17	.17	.18
21.6710	.17	.17	.17	.16	.16
22.5045	.16	.16	.16	.16	.16
23.3380	.16	.16	.16	.16	.15
24.1715	.07	.02	.00	.00	.00

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 4

HYG Directory: T:\05_Analysis and Engineering\East Slope\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK 4	BASINID4		BASINID4	25

INFLOWS TO: OUT 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	BASINID4	25	2.366	6.0012	40.49

TOTAL FLOW INTO: OUT 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	OUT 4	25	2.366	6.0012	40.49

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 4
HYG Tag = 25

Peak Discharge = 40.49 cfs
Time to Peak = 6.0012 hrs
HYG Volume = 2.366 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
4.5009	.00	.00	.02	.06	.17
5.3344	.28	.49	16.00	29.39	40.49
6.1679	21.65	10.41	6.54	4.07	2.60
7.0014	2.12	1.65	1.37	1.27	1.09
7.8349	.99	.95	.80	.72	.69
8.6684	.68	.68	.68	.59	.54
9.5019	.52	.51	.51	.51	.46
10.3354	.44	.43	.42	.42	.42
11.1689	.38	.36	.36	.35	.35
12.0024	.35	.33	.32	.32	.32
12.8359	.32	.32	.32	.32	.32
13.6694	.32	.32	.32	.30	.29
14.5029	.28	.28	.28	.28	.28
15.3364	.28	.28	.28	.28	.28
16.1699	.26	.26	.25	.25	.25
17.0034	.25	.25	.25	.25	.25
17.8369	.25	.25	.24	.23	.23
18.6704	.23	.23	.23	.23	.22
19.5039	.22	.23	.23	.23	.22
20.3374	.22	.21	.21	.21	.21
21.1709	.21	.21	.21	.21	.21
22.0044	.21	.20	.19	.19	.20
22.8379	.20	.20	.19	.19	.19
23.6714	.19	.19	.19	.09	.03
24.5049	.01	.00	.00		

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 4

HYG Directory: T:\05_Analysis and Engineering\East Slope\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK 4	BASINID4		BASINID4	100

INFLOWS TO: OUT 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	BASINID4	100	3.190	6.0012	54.06

TOTAL FLOW INTO: OUT 4

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	OUT 4	100	3.190	6.0012	54.06

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 4
HYG Tag = 100

Peak Discharge = 54.06 cfs
Time to Peak = 6.0012 hrs
HYG Volume = 3.190 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
4.0008	.00	.00	.02	.04	.11
4.8343	.18	.26	.47	.66	.96
5.6678	23.23	40.99	54.06	28.79	13.70
6.5013	8.51	5.28	3.37	2.74	2.12
7.3348	1.76	1.64	1.41	1.27	1.22
8.1683	1.03	.92	.88	.88	.88
9.0018	.87	.76	.69	.67	.66
9.8353	.66	.65	.59	.56	.55
10.6688	.54	.54	.53	.49	.47
11.5023	.46	.46	.45	.45	.43
12.3358	.41	.41	.41	.41	.41
13.1693	.41	.41	.41	.40	.40
14.0028	.40	.38	.37	.37	.36
14.8363	.36	.36	.36	.36	.36
15.6698	.36	.36	.35	.34	.33
16.5033	.33	.33	.32	.32	.32
17.3368	.32	.32	.32	.32	.32
18.1703	.31	.30	.30	.30	.29
19.0038	.29	.29	.29	.29	.29
19.8373	.29	.29	.28	.28	.28
20.6708	.27	.27	.27	.27	.27
21.5043	.27	.27	.27	.26	.25
22.3378	.25	.25	.25	.25	.25
23.1713	.25	.25	.24	.24	.24
24.0048	.24	.11	.03	.01	.00
24.8383	.00				

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 5

HYG Directory: T:\05_Analysis and Engineering\East Slope\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK 5	BASINID5		BASINID5	10

INFLOWS TO: OUT 5

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	BASINID5	10	2.867	6.0012	48.48

TOTAL FLOW INTO: OUT 5

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	OUT 5	10	2.867	6.0012	48.48

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 5
HYG Tag = 10

Peak Discharge =	48.48 cfs
Time to Peak =	6.0012 hrs
HYG Volume =	2.867 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
4.0008	.00	.01	.03	.06	.13
4.8343	.20	.27	.47	.64	.92
5.6678	21.17	37.07	48.48	25.79	12.25
6.5013	7.59	4.71	3.00	2.44	1.89
7.3348	1.57	1.46	1.25	1.13	1.09
8.1683	.92	.82	.79	.78	.78
9.0018	.78	.68	.62	.60	.59
9.8353	.58	.58	.53	.50	.49
10.6688	.48	.48	.48	.44	.41
11.5023	.41	.41	.40	.40	.38
12.3358	.37	.36	.37	.37	.37
13.1693	.36	.36	.36	.36	.36
14.0028	.36	.34	.33	.33	.32
14.8363	.32	.32	.32	.32	.32
15.6698	.32	.32	.32	.30	.29
16.5033	.29	.29	.29	.29	.28
17.3368	.28	.28	.29	.29	.29
18.1703	.27	.27	.26	.26	.26
19.0038	.26	.26	.25	.25	.26
19.8373	.26	.26	.25	.25	.24
20.6708	.24	.24	.24	.24	.24
21.5043	.24	.24	.24	.24	.23
22.3378	.22	.22	.22	.23	.23
23.1713	.22	.22	.22	.22	.22
24.0048	.21	.10	.03	.01	.00
24.8383	.00				

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 5

HYG Directory: T:\05_Analysis and Engineering\East Slope\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK 5	BASINID5		BASINID5	25

INFLOWS TO: OUT 5

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	BASINID5	25	3.567	6.0012	59.80

TOTAL FLOW INTO: OUT 5

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	OUT 5	25	3.567	6.0012	59.80

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 5
HYG Tag = 25

Peak Discharge = 59.80 cfs
Time to Peak = 6.0012 hrs
HYG Volume = 3.567 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
3.5007	.00	.00	.01	.04	.09
4.3342	.13	.18	.30	.40	.48
5.1677	.78	1.02	1.37	27.47	46.98
6.0012	59.80	31.73	14.98	9.22	5.71
6.8347	3.63	2.95	2.29	1.90	1.76
7.6682	1.51	1.37	1.32	1.11	.99
8.5017	.95	.94	.94	.94	.82
9.3352	.74	.72	.71	.71	.70
10.1687	.64	.60	.59	.58	.58
11.0022	.57	.53	.50	.49	.49
11.8357	.49	.49	.46	.44	.44
12.6692	.44	.44	.44	.44	.44
13.5027	.43	.43	.43	.43	.41
14.3362	.40	.39	.39	.38	.38
15.1697	.39	.39	.39	.39	.38
16.0032	.38	.36	.35	.35	.35
16.8367	.35	.35	.34	.34	.34
17.6702	.34	.35	.35	.33	.32
18.5037	.32	.32	.32	.32	.31
19.3372	.31	.31	.31	.31	.32
20.1707	.30	.30	.29	.29	.28
21.0042	.28	.29	.29	.29	.29
21.8377	.28	.28	.27	.26	.26
22.6712	.27	.27	.27	.27	.26
23.5047	.26	.26	.26	.26	.12
24.3382	.04	.01	.00	.00	

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 5

HYG Directory: T:\05_Analysis and Engineering\East Slope\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK 5	BASINID5		BASINID5	100

INFLOWS TO: OUT 5

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	BASINID5	100	4.685	6.0012	77.59

TOTAL FLOW INTO: OUT 5

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	OUT 5	100	4.685	6.0012	77.59

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 5
HYG Tag = 100

Peak Discharge =	77.59 cfs
Time to Peak =	6.0012 hrs
HYG Volume =	4.685 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
3.0006	.00	.00	.02	.05	.09
3.8341	.14	.18	.27	.35	.42
4.6676	.61	.76	.88	1.33	1.68
5.5011	2.16	37.64	62.81	77.59	41.05
6.3346	19.25	11.77	7.28	4.62	3.74
7.1681	2.90	2.41	2.24	1.92	1.73
8.0016	1.67	1.41	1.26	1.20	1.20
8.8351	1.19	1.19	1.03	.94	.91
9.6686	.90	.89	.89	.81	.76
10.5021	.74	.73	.73	.73	.67
11.3356	.63	.62	.62	.62	.62
12.1691	.58	.56	.55	.56	.56
13.0026	.56	.56	.55	.55	.55
13.8361	.55	.55	.52	.50	.50
14.6696	.49	.48	.48	.49	.49
15.5031	.49	.49	.48	.48	.46
16.3366	.45	.44	.44	.44	.44
17.1701	.43	.43	.43	.43	.44
18.0036	.44	.42	.40	.40	.40
18.8371	.40	.40	.39	.39	.39
19.6706	.39	.40	.40	.38	.38
20.5041	.37	.36	.36	.36	.37
21.3376	.37	.37	.36	.36	.36
22.1711	.34	.33	.33	.34	.34
23.0046	.34	.34	.33	.33	.33
23.8381	.33	.33	.15	.05	.01
24.6716	.00	.00			

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 6

HYG Directory: T:\05_Analysis and Engineering\East Slope\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK6	BASINID6		BASINID6	10

INFLOWS TO: OUT 6

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	BASINID6	10	.252	6.0012	5.02

TOTAL FLOW INTO: OUT 6

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	OUT 6	10	.252	6.0012	5.02

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 6
HYG Tag = 10

Peak Discharge = 5.02 cfs
Time to Peak = 6.0012 hrs
HYG Volume = .252 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
5.5011	.00	.01	1.92	5.02	2.10
6.3346	.93	.85	.45	.33	.33
7.1681	.24	.21	.21	.17	.16
8.0016	.16	.12	.11	.11	.11
8.8351	.11	.11	.09	.09	.09
9.6686	.09	.09	.09	.08	.07
10.5021	.07	.07	.07	.07	.06
11.3356	.06	.06	.06	.06	.06
12.1691	.06	.06	.05	.06	.05
13.0026	.06	.05	.06	.05	.05
13.8361	.06	.05	.05	.05	.05
14.6696	.05	.05	.05	.05	.05
15.5031	.05	.05	.05	.05	.05
16.3366	.04	.05	.05	.04	.05
17.1701	.04	.05	.04	.05	.04
18.0036	.05	.04	.04	.04	.04
18.8371	.04	.04	.04	.04	.04
19.6706	.04	.04	.04	.04	.04
20.5041	.04	.04	.04	.04	.04
21.3376	.04	.04	.04	.04	.04
22.1711	.04	.03	.03	.03	.04
23.0046	.04	.03	.03	.03	.03
23.8381	.03	.03	.01	.00	

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 6

HYG Directory: T:\05_Analysis and Engineering\East Slope\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK6	BASINID6		BASINID6	25

INFLOWS TO: OUT 6

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	BASINID6	25	.369	6.0012	7.48

TOTAL FLOW INTO: OUT 6

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	OUT 6	25	.369	6.0012	7.48

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 6
HYG Tag = 25

Peak Discharge	7.48 cfs
Time to Peak	6.0012 hrs
HYG Volume	.369 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
5.5011	.00	.14	3.59	7.48	2.99
6.3346	1.30	1.17	.62	.46	.45
7.1681	.32	.28	.28	.23	.22
8.0016	.21	.17	.16	.15	.16
8.8351	.16	.16	.13	.12	.12
9.6686	.12	.12	.12	.10	.10
10.5021	.10	.10	.09	.10	.09
11.3356	.08	.08	.08	.08	.08
12.1691	.07	.08	.07	.08	.07
13.0026	.08	.07	.08	.07	.07
13.8361	.08	.07	.07	.07	.07
14.6696	.07	.06	.07	.07	.07
15.5031	.07	.07	.06	.07	.06
16.3366	.06	.06	.06	.06	.06
17.1701	.06	.06	.06	.06	.06
18.0036	.06	.06	.05	.06	.06
18.8371	.05	.06	.05	.06	.05
19.6706	.06	.05	.06	.05	.05
20.5041	.05	.05	.05	.05	.05
21.3376	.05	.05	.05	.05	.05
22.1711	.05	.05	.05	.05	.05
23.0046	.05	.05	.05	.05	.05
23.8381	.05	.05	.01	.00	

SUMMARY FOR HYDROGRAPH ADDITION
at Node: OUT 6

HYG Directory: T:\05_Analysis and Engineering\East Slope\

Upstream Link ID	Upstream Node ID	HYG file	HYG ID	HYG tag
ADDLINK6	BASINID6		BASINID6	100

INFLOWS TO: OUT 6

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	BASINID6	100	.578	6.0012	11.74

TOTAL FLOW INTO: OUT 6

HYG file	HYG ID	HYG tag	Volume ac-ft	Peak Time hrs	Peak Flow cfs
	OUT 6	100	.578	6.0012	11.74

TOTAL NODE INFLOW...
HYG file =
HYG ID = OUT 6
HYG Tag = 100

Peak Discharge = 11.74 cfs
Time to Peak = 6.0012 hrs
HYG Volume = .578 ac-ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = .1667 hrs
Time on left represents time for first value in each row.

Time hrs					
5.5011	.00	.85	6.78	11.74	4.51
6.3346	1.91	1.71	.91	.67	.65
7.1681	.47	.41	.41	.33	.31
8.0016	.31	.24	.22	.22	.22
8.8351	.22	.22	.18	.17	.17
9.6686	.17	.16	.17	.15	.14
10.5021	.14	.14	.13	.14	.12
11.3356	.12	.12	.12	.12	.12
12.1691	.11	.11	.10	.11	.10
13.0026	.11	.10	.11	.10	.10
13.8361	.11	.10	.10	.10	.10
14.6696	.10	.09	.09	.10	.10
15.5031	.10	.10	.09	.09	.09
16.3366	.08	.09	.09	.08	.09
17.1701	.08	.09	.08	.09	.08
18.0036	.09	.08	.07	.08	.08
18.8371	.07	.08	.07	.08	.07
19.6706	.08	.07	.08	.07	.07
20.5041	.07	.07	.07	.07	.07
21.3376	.07	.07	.07	.07	.07
22.1711	.07	.07	.07	.07	.07
23.0046	.07	.07	.07	.07	.07
23.8381	.07	.07	.02	.00	.00

Index of Starting Page Numbers for ID Names

Madrid Stormwater Study

10-yr event

Joe Roerkohl

General Information

Storm Information:

Storm Type:	Rainfall Event

Accumulated Time (hrs)	Accumulated Depth (in)
0.00	0.0000
0.50	0.0110
1.00	0.0210
1.50	0.0340
2.00	0.0460
2.50	0.0630
3.00	0.0790
3.50	0.1010
4.00	0.1240
4.50	0.1530
5.00	0.1950
5.50	0.2610
6.00	1.6200
6.50	1.7730
7.00	1.8290
7.50	1.8640
8.00	1.8900
8.50	1.9090
9.00	1.9280
9.50	1.9420
10.00	1.9560
10.50	1.9680
11.00	1.9790
11.50	1.9890
12.00	1.9980
12.50	2.0070
13.00	2.0160
13.50	2.0250
14.00	2.0330
14.50	2.0410
15.00	2.0490

Accumulated Time (hrs)	Accumulated Depth (in)
15.50	2.0560
16.00	2.0640
16.50	2.0710
17.00	2.0780
17.50	2.0840
18.00	2.0910
18.50	2.0980
19.00	2.1040
19.50	2.1100
20.00	2.1160
20.50	2.1220
21.00	2.1280
21.50	2.1330
22.00	2.1390
22.50	2.1440
23.00	2.1500
23.50	2.1550
24.00	2.1600

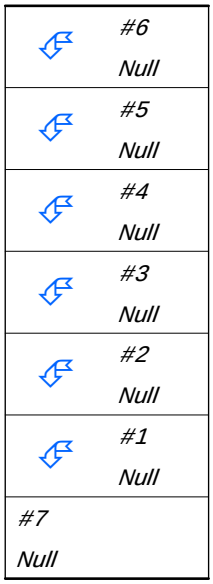
Peak 30-minute Intensity: 1.359 in/hr

Particle Size Distribution:

Size (mm)	Gob Pile
1.0000	100.000%
0.5000	95.000%
0.1250	90.000%
0.0750	70.000%
0.0500	50.000%
0.0250	10.000%
0.0150	5.000%
0.0040	0.000%

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	#7	0.052	0.342	Basin 1
Null	#2	==>	#7	0.032	0.374	Basin 2
Null	#3	==>	#7	0.075	0.341	Basin 3
Null	#4	==>	#7	0.071	0.347	Basin 4
Null	#5	==>	#7	0.051	0.369	Basin 5
Null	#6	==>	#7	0.092	0.337	Basin 6
Null	#7	==>	End	0.000	0.000	



Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	5. Nearly bare and untilled, and alluvial valley fans	13.55	95.00	701.00	3.68	0.052
#1	**Muskingum K:**					**0.052**
#2	5. Nearly bare and untilled, and alluvial valley fans	25.59	151.00	590.00	5.05	0.032
#2	**Muskingum K:**					**0.032**
#3	5. Nearly bare and untilled, and alluvial valley fans	13.45	134.00	996.00	3.66	0.075
#3	**Muskingum K:**					**0.075**
#4	5. Nearly bare and untilled, and alluvial valley fans	14.96	148.00	989.00	3.86	0.071

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#4	**Muskingum K:**					**0.071**
#5	5. Nearly bare and untilled, and alluvial valley fans	23.04	206.00	894.00	4.80	0.051
#5	**Muskingum K:**					**0.051**
#6	5. Nearly bare and untilled, and alluvial valley fans	12.41	145.00	1,168.00	3.52	0.092
#6	**Muskingum K:**					**0.092**

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc. (ml/l)	24VW (ml/l)
#6	6.108	6.108	5.30	0.26	30.7	148,117	112.88	59.89
#5	22.079	22.079	52.86	2.89	54.5	21,022	16.11	10.46
#4	16.886	16.886	35.42	1.86	47.8	29,324	22.44	14.11
#3	28.066	28.066	53.28	2.76	233.2	93,114	71.22	44.22
#2	4.064	4.064	8.93	0.47	36.6	82,777	63.38	40.66
#1	7.372	7.372	9.56	0.47	9.8	26,713	20.39	11.43
#7	0.000	84.575	160.33	8.72	412.6	55,869	42.74	25.57

Particle Size Distribution(s) at Each Structure

Structure #6 (Basin 6):

Size (mm)	In/Out
1.0000	100.000%
0.5000	100.000%
0.1250	100.000%
0.0750	79.842%
0.0500	57.030%
0.0250	11.406%
0.0150	5.703%
0.0040	0.000%

Structure #5 (Basin 5):

Size (mm)	In/Out
1.0000	100.000%
0.5000	96.845%
0.1250	91.748%
0.0750	71.359%
0.0500	50.971%
0.0250	10.194%
0.0150	5.097%
0.0040	0.000%

Structure #4 (Basin 4):

Size (mm)	In/Out
1.0000	100.000%
0.5000	98.858%
0.1250	93.655%
0.0750	72.843%
0.0500	52.030%
0.0250	10.406%
0.0150	5.203%
0.0040	0.000%

Structure #3 (Basin 3):

Size (mm)	In/Out
1.0000	100.000%
0.5000	100.000%
0.1250	95.012%
0.0750	73.898%
0.0500	52.785%
0.0250	10.557%
0.0150	5.278%
0.0040	0.000%

Structure #2 (Basin 2):

Size (mm)	In/Out
1.0000	100.000%
0.5000	98.167%
0.1250	93.001%
0.0750	72.334%
0.0500	51.667%
0.0250	10.333%
0.0150	5.167%
0.0040	0.000%

Structure #1 (Basin 1):

Size (mm)	In/Out
1.0000	100.000%
0.5000	100.000%
0.1250	98.826%
0.0750	76.865%
0.0500	54.903%
0.0250	10.981%
0.0150	5.490%
0.0040	0.000%

Structure #7:

Size (mm)	In/Out
1.0000	100.000%
0.5000	99.288%
0.1250	94.707%
0.0750	73.814%

Size (mm)	In/Out
0.0500	52.724%
0.0250	10.545%
0.0150	5.272%
0.0040	0.000%

Structure Detail:

Structure #6 (Null)

Basin 6

Structure #5 (Null)

Basin 5

Structure #4 (Null)

Basin 4

Structure #3 (Null)

Basin 3

Structure #2 (Null)

Basin 2

Structure #1 (Null)

Basin 1

Structure #7 (Null)

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#6	1	6.108	0.167	0.000	0.000	76.000	TR55	5.30	0.258
	Σ	**6.108**						**5.30**	**0.258**
#5	1	22.079	0.167	0.000	0.000	94.000	TR55	52.86	2.889
	Σ	**22.079**						**52.86**	**2.889**
#4	1	16.886	0.167	0.000	0.000	91.000	TR55	35.42	1.864
	Σ	**16.886**						**35.42**	**1.864**
#3	1	28.066	0.167	0.000	0.000	89.000	TR55	53.28	2.759
	Σ	**28.066**						**53.28**	**2.759**
#2	1	4.064	0.167	0.000	0.000	92.000	TR55	8.93	0.475
	Σ	**4.064**						**8.93**	**0.475**
#1	1	7.372	0.167	0.000	0.000	82.000	TR55	9.56	0.472
	Σ	**7.372**						**9.56**	**0.472**
#7	Σ	**84.575**						**160.33**	**8.717**

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#6	1	0.186	300.00	33.00	0.1300	1.0000	1	30.7	148,117	112.88	59.89
	Σ							**30.7**	**148,117**	**112.88**	**59.89**
#5	1	0.023	300.00	34.00	0.1300	1.0000	1	54.5	21,022	16.11	10.46
	Σ							**54.5**	**21,022**	**16.11**	**10.46**
#4	1	0.068	300.00	17.00	0.1300	1.0000	1	47.8	29,324	22.44	14.11
	Σ							**47.8**	**29,324**	**22.44**	**14.11**
#3	1	0.097	300.00	35.00	0.1300	1.0000	1	233.2	93,114	71.22	44.22
	Σ							**233.2**	**93,114**	**71.22**	**44.22**
#2	1	0.102	300.00	38.00	0.1300	1.0000	1	36.6	82,777	63.38	40.66
	Σ							**36.6**	**82,777**	**63.38**	**40.66**
#1	1	0.080	300.00	14.00	0.1300	1.0000	1	9.8	26,713	20.39	11.43

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
	Σ							9.8	26,713	20.39	11.43
#7	Σ							412.6	55,869	42.74	25.57

Madrid Stormwater Study

25-yr event

Joe Roerkohl

General Information

Storm Information:

Storm Type:	Rainfall Event

Accumulated Time (hrs)	Accumulated Depth (in)
0.00	0.0000
0.50	0.0130
1.00	0.0250
1.50	0.0400
2.00	0.0550
2.50	0.0740
3.00	0.0930
3.50	0.1190
4.00	0.1460
4.50	0.1820
5.00	0.2310
5.50	0.3090
6.00	1.9200
6.50	2.1010
7.00	2.1680
7.50	2.2090
8.00	2.2400
8.50	2.2620
9.00	2.2850
9.50	2.3010
10.00	2.3180
10.50	2.3320
11.00	2.3450
11.50	2.3570
12.00	2.3690
12.50	2.3790
13.00	2.3890
13.50	2.3990
14.00	2.4100
14.50	2.4190
15.00	2.4280

Accumulated Time (hrs)	Accumulated Depth (in)
15.50	2.4370
16.00	2.4460
16.50	2.4540
17.00	2.4620
17.50	2.4700
18.00	2.4790
18.50	2.4860
19.00	2.4930
19.50	2.5010
20.00	2.5080
20.50	2.5150
21.00	2.5220
21.50	2.5290
22.00	2.5350
22.50	2.5410
23.00	2.5480
23.50	2.5540
24.00	2.5600

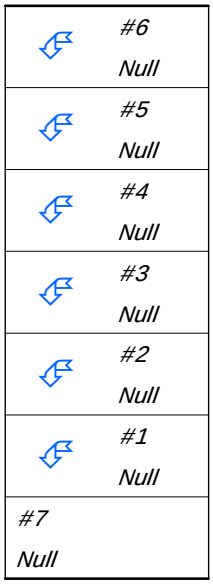
Peak 30-minute Intensity: 1.611 in/hr

Particle Size Distribution:

Size (mm)	Gob Pile
1.0000	100.000%
0.5000	95.000%
0.1250	90.000%
0.0750	70.000%
0.0500	50.000%
0.0250	10.000%
0.0150	5.000%
0.0040	0.000%

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	#7	0.052	0.342	Basin 1
Null	#2	==>	#7	0.032	0.374	Basin 2
Null	#3	==>	#7	0.075	0.341	Basin 3
Null	#4	==>	#7	0.071	0.347	Basin 4
Null	#5	==>	#7	0.051	0.369	Basin 5
Null	#6	==>	#7	0.092	0.337	Basin 6
Null	#7	==>	End	0.000	0.000	Outlet



Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	5. Nearly bare and untilled, and alluvial valley fans	13.55	95.00	701.00	3.68	0.052
#1	**Muskingum K:**					**0.052**
#2	5. Nearly bare and untilled, and alluvial valley fans	25.59	151.00	590.00	5.05	0.032
#2	**Muskingum K:**					**0.032**
#3	5. Nearly bare and untilled, and alluvial valley fans	13.45	134.00	996.00	3.66	0.075
#3	**Muskingum K:**					**0.075**
#4	5. Nearly bare and untilled, and alluvial valley fans	14.96	148.00	989.00	3.86	0.071

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#4	**Muskingum K:**					**0.071**
#5	5. Nearly bare and untilled, and alluvial valley fans	23.04	206.00	894.00	4.80	0.051
#5	**Muskingum K:**					**0.051**
#6	5. Nearly bare and untilled, and alluvial valley fans	12.41	145.00	1,168.00	3.52	0.092
#6	**Muskingum K:**					**0.092**

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc. (ml/l)	24VW (ml/l)
#6	6.108	6.108	7.76	0.38	47.1	148,433	113.23	62.55
#5	22.079	22.079	64.85	3.60	69.2	21,197	16.24	10.65
#4	16.886	16.886	44.58	2.38	62.3	29,511	22.60	14.42
#3	28.066	28.066	68.30	3.58	310.0	93,625	71.65	45.30
#2	4.064	4.064	11.14	0.60	47.3	83,313	63.81	41.46
#1	7.372	7.372	12.98	0.65	13.9	26,651	20.36	11.78
#7	0.000	84.575	204.09	11.19	549.7	56,842	43.50	26.52

Particle Size Distribution(s) at Each Structure

Structure #6 (Basin 6):

Size (mm)	In/Out
1.0000	100.000%
0.5000	100.000%
0.1250	100.000%
0.0750	78.218%
0.0500	55.870%
0.0250	11.174%
0.0150	5.587%
0.0040	0.000%

Structure #5 (Basin 5):

Size (mm)	In/Out
1.0000	100.000%
0.5000	96.290%
0.1250	91.222%
0.0750	70.950%
0.0500	50.679%
0.0250	10.136%
0.0150	5.068%
0.0040	0.000%

Structure #4 (Basin 4):

Size (mm)	In/Out
1.0000	100.000%
0.5000	97.966%
0.1250	92.810%
0.0750	72.186%
0.0500	51.561%
0.0250	10.312%
0.0150	5.156%
0.0040	0.000%

Structure #3 (Basin 3):

Size (mm)	In/Out
1.0000	100.000%
0.5000	99.171%
0.1250	93.952%
0.0750	73.073%
0.0500	52.195%
0.0250	10.439%
0.0150	5.220%
0.0040	0.000%

Structure #2 (Basin 2):

Size (mm)	In/Out
1.0000	100.000%
0.5000	97.388%
0.1250	92.262%
0.0750	71.759%
0.0500	51.257%
0.0250	10.251%
0.0150	5.126%
0.0040	0.000%

Structure #1 (Basin 1):

Size (mm)	In/Out
1.0000	100.000%
0.5000	100.000%
0.1250	97.650%
0.0750	75.950%
0.0500	54.250%
0.0250	10.850%
0.0150	5.425%
0.0040	0.000%

Structure #7:

Size (mm)	In/Out
1.0000	100.000%
0.5000	98.611%
0.1250	93.945%
0.0750	73.106%

Size (mm)	In/Out
0.0500	52.219%
0.0250	10.444%
0.0150	5.222%
0.0040	0.000%

Structure Detail:

Structure #6 (Null)

Basin 6

Structure #5 (Null)

Basin 5

Structure #4 (Null)

Basin 4

Structure #3 (Null)

Basin 3

Structure #2 (Null)

Basin 2

Structure #1 (Null)

Basin 1

Structure #7 (Null)

Outlet

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#6	1	6.108	0.167	0.000	0.000	76.000	TR55	7.76	0.378
	Σ	**6.108**						**7.76**	**0.378**
#5	1	22.079	0.167	0.000	0.000	94.000	TR55	64.85	3.599
	Σ	**22.079**						**64.85**	**3.599**
#4	1	16.886	0.167	0.000	0.000	91.000	TR55	44.58	2.379
	Σ	**16.886**						**44.58**	**2.379**
#3	1	28.066	0.167	0.000	0.000	89.000	TR55	68.30	3.579
	Σ	**28.066**						**68.30**	**3.579**
#2	1	4.064	0.167	0.000	0.000	92.000	TR55	11.14	0.601
	Σ	**4.064**						**11.14**	**0.601**
#1	1	7.372	0.167	0.000	0.000	82.000	TR55	12.98	0.650
	Σ	**7.372**						**12.98**	**0.650**
#7	Σ	**84.575**						**204.09**	**11.187**

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#6	1	0.186	300.00	33.00	0.1300	1.0000	1	47.1	148,433	113.23	62.55
	Σ							**47.1**	**148,433**	**113.23**	**62.55**
#5	1	0.023	300.00	34.00	0.1300	1.0000	1	69.2	21,197	16.24	10.65
	Σ							**69.2**	**21,197**	**16.24**	**10.65**
#4	1	0.068	300.00	17.00	0.1300	1.0000	1	62.3	29,511	22.60	14.42
	Σ							**62.3**	**29,511**	**22.60**	**14.42**
#3	1	0.097	300.00	35.00	0.1300	1.0000	1	310.0	93,625	71.65	45.30
	Σ							**310.0**	**93,625**	**71.65**	**45.30**
#2	1	0.102	300.00	38.00	0.1300	1.0000	1	47.3	83,313	63.81	41.46
	Σ							**47.3**	**83,313**	**63.81**	**41.46**
#1	1	0.080	300.00	14.00	0.1300	1.0000	1	13.9	26,651	20.36	11.78

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
	Σ							13.9	26,651	20.36	11.78
#7	Σ							549.7	56,842	43.50	26.52

Madrid Stormwater Study

100-yr event

Joe Roerkohl

General Information

Storm Information:

Storm Type:	Rainfall Event

Accumulated Time (hrs)	Accumulated Depth (in)
0.00	0.0000
0.50	0.0160
1.00	0.0310
1.50	0.0500
2.00	0.0690
2.50	0.0930
3.00	0.1160
3.50	0.1490
4.00	0.1820
4.50	0.2260
5.00	0.2880
5.50	0.3850
6.00	2.3930
6.50	2.6180
7.00	2.7010
7.50	2.7530
8.00	2.7910
8.50	2.8190
9.00	2.8470
9.50	2.8680
10.00	2.8890
10.50	2.9060
11.00	2.9230
11.50	2.9370
12.00	2.9510
12.50	2.9640
13.00	2.9770
13.50	2.9900
14.00	3.0030
14.50	3.0140
15.00	3.0250

Accumulated Time (hrs)	Accumulated Depth (in)
15.50	3.0370
16.00	3.0480
16.50	3.0580
17.00	3.0680
17.50	3.0780
18.00	3.0890
18.50	3.0980
19.00	3.1070
19.50	3.1160
20.00	3.1250
20.50	3.1340
21.00	3.1420
21.50	3.1510
22.00	3.1590
22.50	3.1670
23.00	3.1750
23.50	3.1820
24.00	3.1900

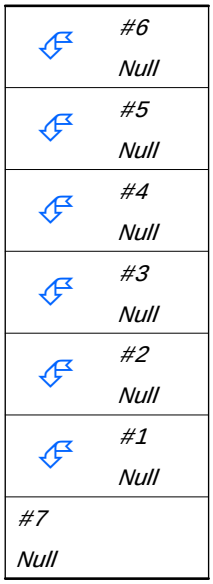
Peak 30-minute Intensity: 2.007 in/hr

Particle Size Distribution:

Size (mm)	Gob Pile
1.0000	100.000%
0.5000	95.000%
0.1250	90.000%
0.0750	70.000%
0.0500	50.000%
0.0250	10.000%
0.0150	5.000%
0.0040	0.000%

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Null	#1	==>	#7	0.052	0.342	Basin 1
Null	#2	==>	#7	0.032	0.374	Basin 2
Null	#3	==>	#7	0.075	0.341	Basin 3
Null	#4	==>	#7	0.071	0.347	Basin 4
Null	#5	==>	#7	0.051	0.369	Basin 5
Null	#6	==>	#7	0.092	0.337	Basin 6
Null	#7	==>	End	0.000	0.000	Outlet



Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	5. Nearly bare and untilled, and alluvial valley fans	13.55	95.00	701.00	3.68	0.052
#1	**Muskingum K:**					**0.052**
#2	5. Nearly bare and untilled, and alluvial valley fans	25.59	151.00	590.00	5.05	0.032
#2	**Muskingum K:**					**0.032**
#3	5. Nearly bare and untilled, and alluvial valley fans	13.45	134.00	996.00	3.66	0.075
#3	**Muskingum K:**					**0.075**
#4	5. Nearly bare and untilled, and alluvial valley fans	14.96	148.00	989.00	3.86	0.071

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#4	**Muskingum K:**					**0.071**
#5	5. Nearly bare and untilled, and alluvial valley fans	23.04	206.00	894.00	4.80	0.051
#5	**Muskingum K:**					**0.051**
#6	5. Nearly bare and untilled, and alluvial valley fans	12.41	145.00	1,168.00	3.52	0.092
#6	**Muskingum K:**					**0.092**

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc. (ml/l)	24VW (ml/l)
#6	6.108	6.108	11.98	0.59	77.2	148,282	113.22	65.39
#5	22.079	22.079	83.63	4.73	93.0	21,457	16.45	10.88
#4	16.886	16.886	59.07	3.21	86.3	29,779	22.81	14.79
#3	28.066	28.066	92.27	4.92	438.4	94,337	72.24	46.56
#2	4.064	4.064	14.63	0.80	64.8	84,091	64.43	42.43
#1	7.372	7.372	18.64	0.95	21.1	26,569	20.31	12.19
#7	0.000	84.575	274.19	15.22	780.9	58,520	44.80	27.67

Particle Size Distribution(s) at Each Structure

Structure #6 (Basin 6):

Size (mm)	In/Out
1.0000	100.000%
0.5000	100.000%
0.1250	98.630%
0.0750	76.712%
0.0500	54.794%
0.0250	10.959%
0.0150	5.479%
0.0040	0.000%

Structure #5 (Basin 5):

Size (mm)	In/Out
1.0000	100.000%
0.5000	95.717%
0.1250	90.679%
0.0750	70.528%
0.0500	50.377%
0.0250	10.075%
0.0150	5.038%
0.0040	0.000%

Structure #4 (Basin 4):

Size (mm)	In/Out
1.0000	100.000%
0.5000	97.023%
0.1250	91.916%
0.0750	71.490%
0.0500	51.065%
0.0250	10.213%
0.0150	5.106%
0.0040	0.000%

Structure #3 (Basin 3):

Size (mm)	In/Out
1.0000	100.000%
0.5000	97.980%
0.1250	92.823%
0.0750	72.196%
0.0500	51.568%
0.0250	10.314%
0.0150	5.157%
0.0040	0.000%

Structure #2 (Basin 2):

Size (mm)	In/Out
1.0000	100.000%
0.5000	96.568%
0.1250	91.485%
0.0750	71.155%
0.0500	50.825%
0.0250	10.165%
0.0150	5.083%
0.0040	0.000%

Structure #1 (Basin 1):

Size (mm)	In/Out
1.0000	100.000%
0.5000	100.000%
0.1250	96.401%
0.0750	74.978%
0.0500	53.556%
0.0250	10.711%
0.0150	5.356%
0.0040	0.000%

Structure #7:

Size (mm)	In/Out
1.0000	100.000%
0.5000	97.742%
0.1250	93.027%
0.0750	72.354%

Size (mm)	In/Out
0.0500	51.682%
0.0250	10.336%
0.0150	5.168%
0.0040	0.000%

Structure Detail:

Structure #6 (Null)

Basin 6

Structure #5 (Null)

Basin 5

Structure #4 (Null)

Basin 4

Structure #3 (Null)

Basin 3

Structure #2 (Null)

Basin 2

Structure #1 (Null)

Basin 1

Structure #7 (Null)

Outlet

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#6	1	6.108	0.167	0.000	0.000	76.000	TR55	11.98	0.592
	Σ	**6.108**						**11.98**	**0.592**
#5	1	22.079	0.167	0.000	0.000	94.000	TR55	83.63	4.734
	Σ	**22.079**						**83.63**	**4.734**
#4	1	16.886	0.167	0.000	0.000	91.000	TR55	59.07	3.213
	Σ	**16.886**						**59.07**	**3.213**
#3	1	28.066	0.167	0.000	0.000	89.000	TR55	92.27	4.921
	Σ	**28.066**						**92.27**	**4.921**
#2	1	4.064	0.167	0.000	0.000	92.000	TR55	14.63	0.805
	Σ	**4.064**						**14.63**	**0.805**
#1	1	7.372	0.167	0.000	0.000	82.000	TR55	18.64	0.954
	Σ	**7.372**						**18.64**	**0.954**
#7	Σ	**84.575**						**274.19**	**15.220**

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#6	1	0.186	300.00	33.00	0.1300	1.0000	1	77.2	148,282	113.22	65.39
	Σ							**77.2**	**148,282**	**113.22**	**65.39**
#5	1	0.023	300.00	34.00	0.1300	1.0000	1	93.0	21,457	16.45	10.88
	Σ							**93.0**	**21,457**	**16.45**	**10.88**
#4	1	0.068	300.00	17.00	0.1300	1.0000	1	86.3	29,779	22.81	14.79
	Σ							**86.3**	**29,779**	**22.81**	**14.79**
#3	1	0.097	300.00	35.00	0.1300	1.0000	1	438.4	94,337	72.24	46.56
	Σ							**438.4**	**94,337**	**72.24**	**46.56**
#2	1	0.102	300.00	38.00	0.1300	1.0000	1	64.8	84,091	64.43	42.43
	Σ							**64.8**	**84,091**	**64.43**	**42.43**
#1	1	0.080	300.00	14.00	0.1300	1.0000	1	21.1	26,569	20.31	12.19

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
	Σ							21.1	26,569	20.31	12.19
#7	Σ							780.9	58,520	44.80	27.67