

**MASTER DEVELOPMENT DRAINAGE PLAN FOR
LOT 1177 WOODMEN HILLS FILING #10
EL PASO COUNTY, COLORADO**

OCTOBER 2020

Prepared For:

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Please feel free to email/call me to set-up
a meeting if you'd like to discuss any of the
comments provided.

TNE Job No. 2015.00
County Job No. SKP-20-003

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EL PASO COUNTY, COLORADO**

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**MASTER DEVELOPMENT DRAINAGE PLAN FOR
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EL PASO COUNTY, COLORADO**

CERTIFICATION STATEMENT:

Engineers Statement

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

Dane Frank, P.E. 50207

Seal

Developers Statements

I, Phillip Buford and Mary Jean Berg Buford, the developer have read and will comply with all of the requirements specified in this drainage report and plan.

Phillip Buford and Mary Jean Berg Buford

Business Name

By: _____

Title: _____

Address: _____

El Paso County Approval:

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

Jennifer Irvine,
County Engineer / ECM Administrator

Date

Conditions:

**MASTER DEVELOPMENT DRAINAGE PLAN FOR
LOT 1177 WOODMEN HILLS FILING #10
EL PASO COUNTY, COLORADO**

PURPOSE

The purpose of this Master Development Drainage Plan (MDDP) is to identify major drainageways; ponding/detention areas; locations of culverts, bridges, and open channels; and drainage areas which are tributary to the proposed development.

DBPS

The site lies within the Bennett Ranch Drainage Basin and is covered by the Bennett Ranch Pilot Project Drainage Basin Planning Study, dated November, 2001.

GENERAL DESCRIPTION

This MDDP for “LOT 1177 WOODMEN HILLS FILING #10” is an analysis of approximately 31.29 acres located in Section 32, Township 12 South, Range 64 West of the Sixth Principal Meridian, City of Colorado Springs, CO. The site is at 8507 Eastonville Road, on the east corner of the intersection of Judge Orr Road and Eastonville Road. This lot is planned for commercial development.

The site is bounded on the west by Eastonville Road, on the south by Judge Orr Road, on the east by an unplatted parcel (undeveloped), and on the north by Lot 1179 Woodmen Hills Filing # 10 (residential).

The site has previously been studied in the following reports:

“Master Development Drainage Plan, Bennett Ranch, El Paso County, Colorado”, by URS, dated August 11, 2000

“Preliminary Drainage & Erosion Control Report For Woodmen Hills Subdivision Filing 10, El Paso County, Colorado”, by URS, dated September 6, 2000

“Final Drainage & Erosion Control Report For Woodmen Hills Subdivision Filing 10, El Paso County, Colorado”, by URS, dated April 3, 2001

The August 11, 2000 MDDP shows the area of the site as a portion of a basin, with little else in details. The September 6, 2000 PDR shows the area of the site as a portion of a basin with a pond on the site. The April 3, 2001 FDR shows the area of the site as a portion of a basin, with a pond on the site, and four storm pipes discharging into the swale on the west side of the site.

Soils in the study area are shown as mapped by the S.C.S. in the “Soils Survey of El Paso County Area” (see appendix). Soils for this project are 100% Columbine gravelly sandy loam 19 (HSG A).

The site lies within the Bennett Ranch Drainage Basin and runoff ultimately flows into the West Fork of Squirrel Creek.

The study area consists of undeveloped land that has existing vegetation consisting of established native grasses and some shrubs/trees in the existing drainage channels. The site drains from north to south overland, with drainage channels on three sides, and into the Bennett Ranch Drainageway with average slopes of ~4%.

Please indicate in the narrative what these combined flows are.

EXISTING DRAINAGE CONDITIONS

There are three existing offsite basins that surface drain onto the site, and the site itself is composed of three basins that drains from north to south. There are also four storm sewers that discharge into the swale on the west side of the site. The Bennett Ranch Drainageway runs along the east side of the site, and a swale runs along the west and south sides of the site. The combined flows from the site, drainage channel, and swale leave the site at the southeast corner.

Offsite Basin OS-Z’s 0.48 acres consists of a landscaping area on an adjacent developed parcel that flows onto the site. Runoff ($Q_5 = 0.4$ cfs, $Q_{100} = 1.5$ cfs) channel flows southwest into the swale on Basin EX-A.

Offsite Basin OS-Y’s 3.84 acres consists of residential land (single house). Runoff ($Q_5 = 2.8$ cfs, $Q_{100} = 10.7$ cfs) sheet/channel flows south onto Basin EX-B and then continues south overland and along a path that loosely resembles a swale.

Offsite Basin OS-X’s 0.93 acres consists of a strip of land between the curb and the property line.

Please provide excerpts of the portions of this report that describes the flow that is conveyed to these 4 storm sewers on this page. Otherwise describe in your narrative these offsite tributary areas/flows that are impacting your site.

Runoff ($Q_5 = 0.4$ cfs, $Q_{100} = 2.9$ cfs) sheet flows east or north into the swale in Basin EX-A and then follows the channel south or east.

There are four storm sewers that discharge into the swale on the west side of the site and Basin EX-A. These storm sewer networks and the basins they drain are shown and described in the maps/pages from the Woodmen Hills Subdivision Filing 10 FDR.

Runoff ($Q_5 = 0.8$ cfs, $Q_{100} = 4.8$ cfs) from Basin EX-A's 6.30 acres sheet flows into a swale and then channel flows along the west and south sides of the site. Design Point A is located near the southeast corner of the site where the swale flows into the Bennett Ranch Drainageway.

Runoff ($Q_5 = 5.2$ cfs, $Q_{100} = 34.1$ cfs) from Basin EX-B's 21.1 acres sheet flows south across undeveloped land and into the swale in Basin EX-A. Design Point B is located in the southeast corner of the basin.

Runoff ($Q_5 = 0.7$ cfs, $Q_{100} = 4.5$ cfs) from Basin EX-C's 3.91 acres is the portion of Bennett Ranch Drainageway on the site. The drainageway flows from north to south on the eastern edge of the site. Design Point C is located at the southeast corner of the site where the drainageway leaves the site and passes under Judge Orr Road in a culvert.

The Bennett Ranch Drainageway flowlines extends at least 3.4 miles upstream from the site, with multiple forks. The tributary area is primarily residential subdivision and golf course land. There appear to be multiple ponds along the flowlines, with the nearest pond approximately 0.3 mile upstream of the site. The flows entering the site in the Bennett Ranch Drainageway are roughly $Q_5 = 420$ cfs and $Q_{100} = 1,860$ cfs per the Bennett Ranch DBPS. The portion of the drainageway near the site is vegetated (grasses mostly) and roughly trapezoidal. There are riprap structures and some areas are covered with riprap (such as at culvert ends). Water from the drainageway eventually reaches the Arkansas River, with two ponds approximately one mile downstream of the site.

Wetlands have been identified in the drainage channels on three sides of the site. The areas are shown on the drainage maps (see appendix).

Please identify whether the installed channel meets the requirements laid out in the DBPS. Also please identify what DBPS improvements have been installed and if what is installed is different, please verify whether it is adequate/sufficient and any changes/improvements that are anticipated to be needed.

The Bennett Ranch DBPS calls out a new channel where the channel crosses the site and new box culverts at the Judge Orr Road crossing. The proposed channel changes in the DBPS include a new channel cross section and check structures (roughly four on the site). The DBPS shows new check structures every 234 feet, which is a different spacing than the check structures currently built. Based on the existing riprap check dams in the channel, the new channel has been in place since at least 2006. The Judge Orr Road culvert crossing was improved between 2017 and 2019, with the new culvert being double 12'x8' concrete box culverts. Based on this, the DBPS channel improvements on or adjacent to the site appear to have been previously completed. It is not known if all of the recommended improvements in the DBPS were installed.

Please identify if the installed box culvert is what was indicated in the DBPS

PROPOSED DRAINAGE CONDITIONS

The site is planned for commercial development. In the proposed condition the swale and drainageway onsite will remain largely unchanged, and the central portion of the site will be developed. There are currently no specific plans for development of the site. A possible layout for interior roads has been shown on the proposed drainage map, but this is only for a visual aid of how the site could be developed. A swale is proposed along the north property line to divert offsite runoff east to the drainageway, rather than having it flow across the entire site. A possible location and rough footprint for a full spectrum detention stormwater pond has also been shown near the southeast corner of the site. It is expected that the general runoff patterns for the developed site will continue to direct runoff to the southeast corner of the site.

Offsite Basin OS-Z's 0.48 acres consists of a landscaping area on an adjacent developed parcel that flows onto the site. Runoff ($Q_5 = 0.4$ cfs, $Q_{100} = 1.5$ cfs) channel flows southwest into the swale on Basin EX-A.

Offsite Basin OS-Y's 3.84 acres consists of residential land (single house). Runoff ($Q_5 = 2.8$ cfs, $Q_{100} = 10.7$ cfs) sheet/channel flows south onto Basin PR-1 and will then be diverted east in a swale to the Bennett Ranch Drainageway. The diversion swale may require armoring in steep sections and energy dissipation at the outfall will likely be needed.

Offsite Basin OS-X's 0.93 acres consists of a strip of land between the curb and the property line. Runoff ($Q_5 = 0.4$ cfs, $Q_{100} = 2.9$ cfs) sheet flows east or north into the swale in Basin EX-A and then

Please elaborate on your discussion of the existing swale. What is the width of this swale, slope, V or trapezoidal, etc. Was this swale/channel designed/sized to convey these offsite flows and this sites flows?

follows the channel south or east.

Also please provide the flows(Q) that this swale is receiving from offsite areas in your narrative and also provide the cumulative flow in this basin(basin EX-A).

Basin EX-A will remain the same in the proposed condition. Runoff ($Q_5 = 0.8$ cfs, $Q_{100} = 4.8$ cfs) from Basin EX-A's 6.30 acres sheet flows into a swale and then channel flows along the west and south sides of the site. Design Point A is located near the southeast corner of the site where the swale flows into the Bennett Ranch Drainageway.

Please provide discussion on this discrepancy. It appears that you are indicating that the installed culvert does not have sufficient capacity. The EPC memo indicates a LOMR as the source of their flows. Is this flow more accurate than the DBPS. Please analyze/discuss in your narrative.

The existing swale on the west and south side of the site in Basin EX-A is currently heavily vegetated and appears to be in good condition. Hydraulic analysis will be required to determine the capacity of this swale, which will be included in the final drainage report.

You may fully analyze the flow at this location and determine which flow (Q) is accurate or the full analysis of this Q may be determined at the preliminary/final drainage report. If you choose the latter, please state in your narrative that this will be further analyzed with the prelim/final drainage report. Discussion regarding the discrepancy shall still be provided.

Basin EX-C will remain the same in the proposed condition. Runoff ($Q_5 = 0.7$ cfs, $Q_{100} = 4.5$ cfs) from Basin EX-C's 3.91 acres is the primary source of flow into the Drainageway. The Drainageway flows from north to south on the eastern edge of the site. Design Point C is located at the southeast corner of the site where the drainageway leaves the site and passes under Judge Orr Road in a culvert. Per the County's May 2017 drainage memo, this culvert is designed to convey the future 100 year storm event ($Q_{100} = 1,073$ cfs). This is roughly 58% of the developed 100 year flow in the Bennett Ranch DBPS. This culvert was designed to convey the $Q_{100} = 1,073$ cfs with two feet of internal freeboard.

Please include "and detention"

Basin PR-1's 21.1 acres consists of the central portion of the site. A percent impervious of 95% was assumed for this basin in the developed condition. Runoff ($Q_5 = 89.2$ cfs, $Q_{100} = 177.3$ cfs) is expected to flow south to Design Point 1. It is likely a stormwater treatment facility will be constructed near Design Point 1.

The southeast corner of the site is the low point of the site, so it's the most likely location for an onsite stormwater treatment facility. Based on basin PR-1 runoff a stormwater pond was roughly sized to have a footprint of 70,000 square feet (shown as 200'x350' on the drainage map). This assumes the entire basin will be treated at a single location.

Please discuss the anticipated outfall of the pond as concentrated flow will outfall to either of the drainageways. Does the existing box culvert meet the definition of a suitable outfall location per ECM section 3.2.4.

The Bennett Ranch Drainageway currently receives runoff from the site and carries it south. There are multiple existing ponds downstream of the site and the Bennett Ranch DBPS proposed many

such as? Please identify what has been installed.

downstream facilities (check structures and culverts primarily). Some of the proposed facilities have been installed, but it is not known if all of them have been installed. Since the County drainage criteria will require runoff leaving the site be treated to release at predevelopment levels, development of the site is not expected to add any additional flows to the drainageway.

Any new roads on the site are expected to cross the existing drainageway and **presumably** require new culverts at the crossing locations.

It is not clear what those problems are from the text above. Please elaborate and clearly identify the anticipated drainage problems and solutions. This can be summarized in your conclusion.

No drainage problems are anticipated for the proposed development, other than those discussed above.

The Bennett Ranch DBPS appears to assume a future land use for the site area of 4DU/AC and 40% impervious (Figure 2-4). This is substantially different from the proposed commercial use with assumed 95% imperviousness.

Since the site is commercial with 95% impervious there may not be many venues for reducing the runoff but there are some that could be implemented such as maximizing the vegetated/landscape areas along roadways or throughout lots to minimize directly connected impervious areas, providing LID's etc. The intent is to identify general ways to reduce runoff in this commercial development.

In an effort to protect receiving water bodies from the diverse impacts of urbanization" this site was analyzed in the following manner:

1. Reduce Runoff- As no details of the proposed development have been provided and the site plan has only possible development features shown, it is not known if/how runoff would be reduced.
2. Stabilize Drainageways- As no details of the proposed development have been provided and hydraulic calculations are not available, it is not currently known if drainageway stabilization will be necessary for this development.

based on your analysis of the existing drainageways is it anticipated that stabilization would be needed? you may also discuss any anticipated development to the swale/drainageway in this section. Please revise this section accordingly.

3. Provide Water Quality Capture Volume (WQCV)- A possible location for an extended detention basin has been shown on the proposed drainage map, that could provide WQCV.

As no details of the proposed development have been provided, it is not currently known if this location will be used or what form of water quality treatment will be used.

4. Consider Need for Industrial and Commercial BMPs- The proposed development is for commercial land. As no details of the proposed development have been provided, it is not currently known if commercial BMPs will be warranted, or what form they could take.

Please remove the highlighted sentence. It is understood that details of the development are not known but a possible solution for the required permanent water quality for a development such as this is the EDB that you have mentioned. Identifying that and/or other methods for water quality will suffice.

[9]

Provide general examples of the commercial BMPs that may be needed for a commercial development with 95% impervious.

HYDROLOGIC CALCULATIONS

Hydrologic calculations were performed using the El Paso County Storm Drainage Design Criteria Manual - Volumes 1 & 2, latest editions. The Rational Method was used to estimate storm water runoff anticipated from design storm with a return period of 100 years.

Connecting a new roadway may not raise objection but how will the floodplain be mitigated so that it is not a problem for the new roadway? Is it anticipated that the drainageway/swale will be regraded to contain the floodplain? Additionally having the floodplain on a lot would limit the development of that lot. The floodplain being within the pond location can create problems. Discuss the problems the floodplain can cause to the development and provide solutions.

FLOODPLAIN STATEMENT

A portion of this site is within a designated F.E.M.A. floodplain, as determined by Flood Insurance Rate Map No. 08041C0544 G dated December 7, 2018 (see appendix). The floodplain is shown on the drainage maps.

such as?

A new road will very likely be built in the floodplain and there may be other development in the floodplain. The existing Judge Orr Road is already in the mapped floodplain, so connecting a new road to it in the floodplain is not expected to raise significant objections. Additional regulatory/administrative requirements are expected. Other types of development in the floodplain could raise major issues, but these issues would depend on the details of what is done. Development in the floodplain may require a LOMR or CLOMR be prepared.

DRAINAGE FEES

It is expected that the County will require drainage fees be paid when this site is platted for commercial use.

the intent of DCM 4.2, is to identify anticipated drainage problems associated with the development of the site and provide solutions.

SUMMARY

The site is planned for commercial development. The concepts presented in this MDDP are preliminary in nature and will need to be refined in the future final drainage report(s). The existing drainageway that crosses the site already carries runoff from the site.

PREPARED BY:
TERRA NOVA ENGINEERING, INC.

Dane Frank, P.E.
Project Engineer
Jobs/2015.00/Drainage/201500 MDDP.doc

BIBLIOGRAPHY

“El Paso County Drainage Criteria Manual-Volumes 1 & 2”, latest edition

“El Paso County Board Resolution No 15-042” (Adoption of Chapter 6 and Section 3.2.1 Chapter 13 of the City of Colorado Springs Drainage Criteria Manual dated May 2014, Hydrology and Full Spectrum Detention)

“Bennett Ranch Pilot Project Drainage Basin Planning Study”, by Stormwater & Environmental Consultants, Inc., dated November, 2001

“Master Development Drainage Plan, Bennett Ranch, El Paso County, Colorado”, by URS, dated August 11, 2000

“Preliminary Drainage & Erosion Control Report For Woodmen Hills Subdivision Filing 10, El Paso County, Colorado”, by URS, dated September 6, 2000

“Final Drainage & Erosion Control Report For Woodmen Hills Subdivision Filing 10, El Paso County, Colorado”, by URS, dated April 3, 2001

“Memo: Judge Orr Road Culvert at Bennett Ranch Creek – Drainage, CDOT Project #: ER C040-047, SA 21422, El Paso County Project #: 152626”, by El Paso County Department of Public Works, dated May 2017

SCS Soils Map for El Paso County

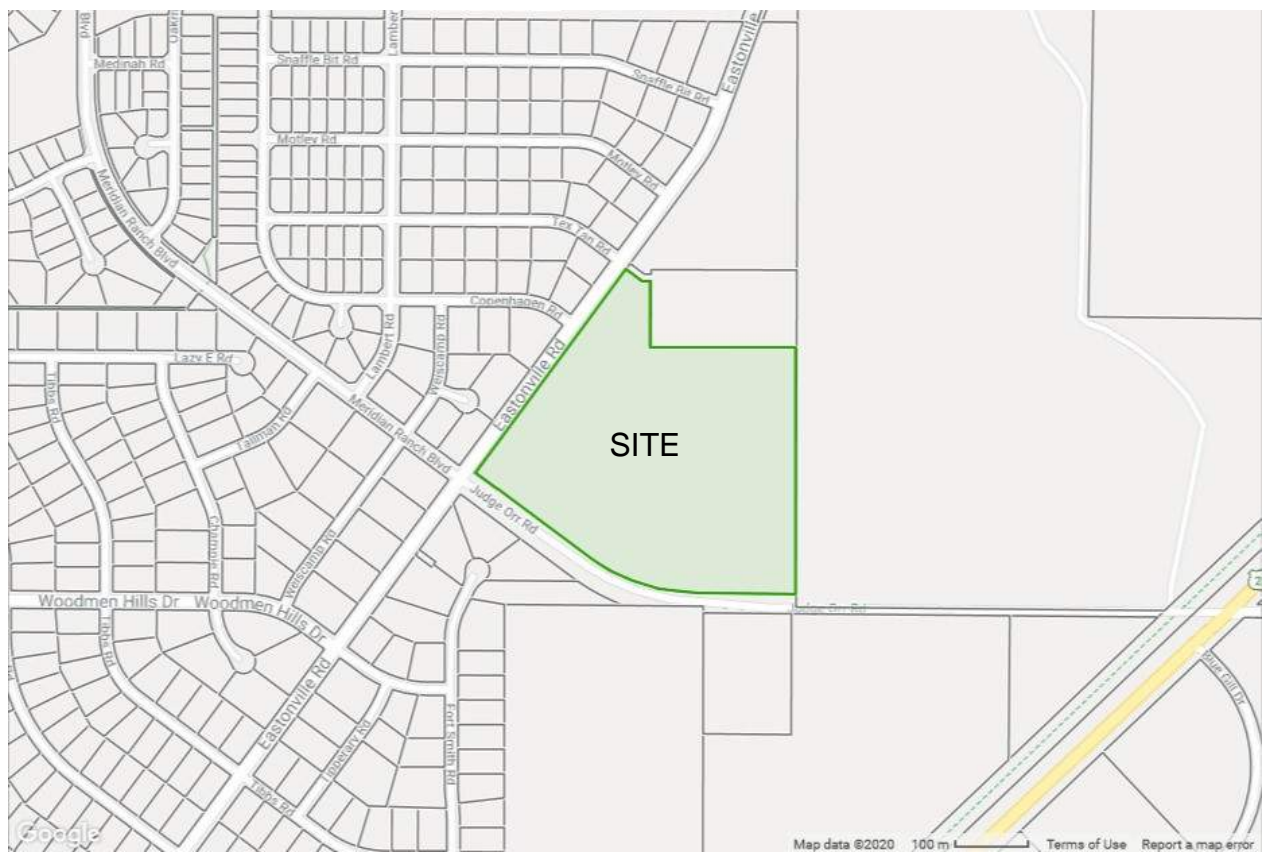
FEMA Floodplain Map

VICINITY MAP

El Paso County - Community: Property Search

Schedule Number: 4232302003

8507 Eastonville Road
Vicinity Map



North is up ^^

8507 Eastonville Road

Image Dated Oct 2019



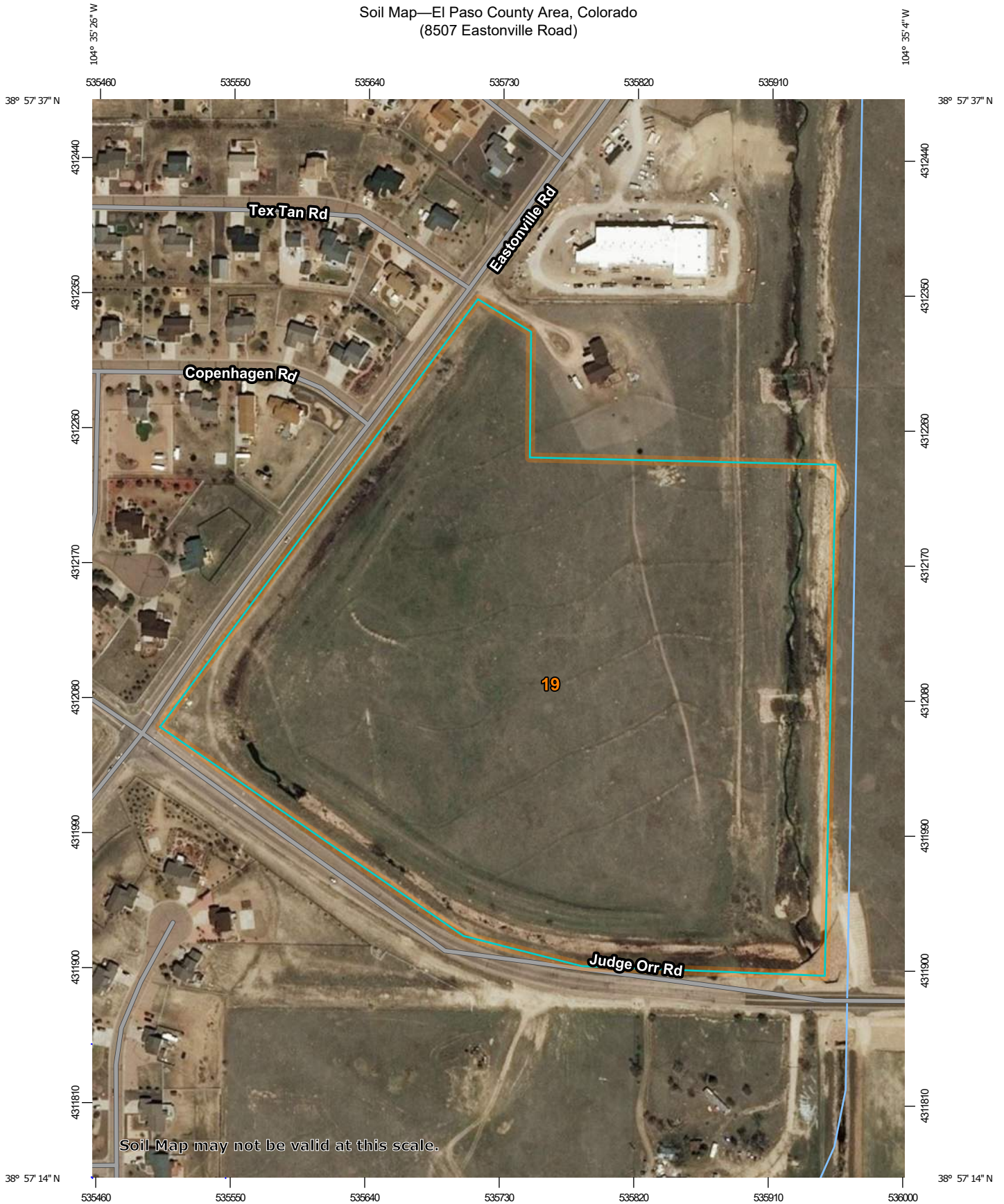
SITE



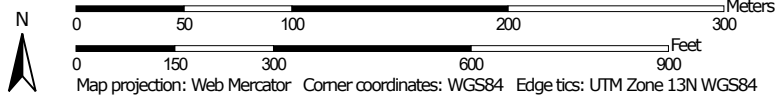
900 ft

S.C.S. SOILS MAP

Soil Map—El Paso County Area, Colorado
(8507 Eastonville Road)



Map Scale: 1:3,500 if printed on A portrait (8.5" x 11") sheet.



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 17, Sep 13, 2019

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

Date(s) aerial images were photographed: Sep 8, 2018—May 26, 2019

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	31.9	100.0%
Totals for Area of Interest		31.9	100.0%

El Paso County Area, Colorado

19—Columbine gravelly sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 367p
Elevation: 6,500 to 7,300 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Columbine and similar soils: 97 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Columbine

Setting

Landform: Flood plains, fan terraces, fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 14 inches: gravelly sandy loam
C - 14 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
***Hydrologic Soil Group:* A**
Ecological site: Gravelly Foothill (R049BY214CO)
Hydric soil rating: No

Minor Components

Fluvaquentic haplaquolls

Percent of map unit: 1 percent

Landform: Swales
Hydric soil rating: Yes

Other soils

Percent of map unit: 1 percent
Hydric soil rating: No

Pleasant

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 17, Sep 13, 2019

FEMA FIRM MAP

NOTES TO USERS

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

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

Coastal Base Flood Elevations shown on this map apply only to landward of 0.0' North American Vertical Datum of 1988 (NAVD88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

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

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

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) zone 13. The horizontal datum was NAD83, GRS80 spheroid. Differences in datum, horizontal projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. Those differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the **North American Vertical Datum of 1988 (NAVD88)**. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NGS-15
National Geodetic Survey
SSM-C-3, #5202
1315 East-West Highway
Silver Spring, MD 20910-3282

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

Base Map information shown on this FIRM was provided in digital format by El Paso County, Colorado Springs Utilities, City of Fountain, Bureau of Land Management, National Oceanic and Atmospheric Administration, United States Geological Survey, and Anderson Consulting Engineers, Inc. These data are current as of 2006.

This map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. The profile baselines depicted on this map represent the hydraulic modeling baselines that match the flood profiles and Floodway Data Tables if applicable, in the FIS report. As a result, the profile baselines may deviate significantly from the new base map channel representation and may appear outside of the floodplain.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels in which each community is located.

Contact **FEMA Map Service Center (MSC)** via the FEMA Map Information eXchange (FMIX) 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The MSC may also be reached by Fax at 1-800-358-9620 and its website at <http://www.msc.fema.gov/>.

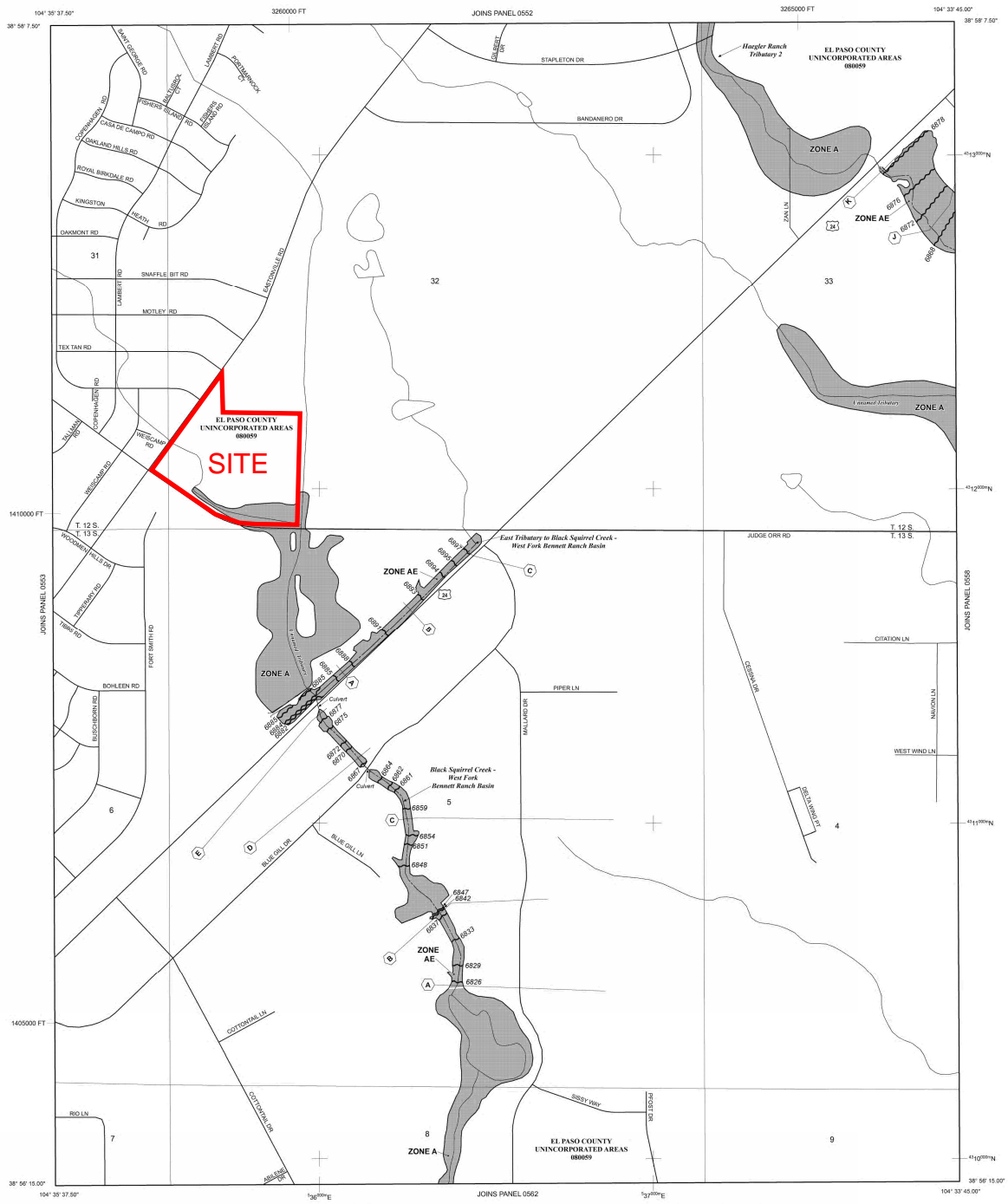
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/>.

El Paso County Vertical Datum Offset Table

Flooding Source	Vertical Datum Offset (ft)
REFER TO SECTION 3.3 OF THE EL PASO COUNTY FLOOD INSURANCE STUDY FOR STREAM-BY-STREAM VERTICAL DATUM CONVERSION INFORMATION	

This Digital Flood Insurance Rate Map (DFIRM) was produced through a Cooperating Technical Partner (CTP) agreement between the State of Colorado Water Conservation Board (CWCB) and the Federal Emergency Management Agency (FEMA).

Additional Flood Hazard information and resources are available from local communities and the Colorado Water Conservation Board.



NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 12 SOUTH, RANGE 64 WEST, AND TOWNSHIP 13 SOUTH, RANGE 64 WEST.

LEGEND

- SPECIAL FLOOD HAZARD AREAS (SFHAS) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD**
- ZONE A**: No Base Flood Elevations determined.
- ZONE AE**: Base Flood Elevations determined.
- ZONE AO**: Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AR**: Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently identified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE AV9**: Area to be protected from 1% annual chance flood by a Federal Flood protection system under construction; no Base Flood Elevations determined.
- ZONE V**: Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE**: Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.
- FLOODWAY AREAS IN ZONE AE**
- OTHER FLOOD AREAS**
- ZONE X**: Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot in wet ground areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- UTTER AREAS**
- ZONE X**: Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D**: Areas in which flood hazards are undetermined, but possible.
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**
- OTHERWISE PROTECTED AREAS (OPAs)**
- CBRS areas and OPAs** are normally located within or adjacent to Special Flood Hazard Areas.
- Floodplain boundary**
- Floodway boundary**
- Zone D boundary**
- CBRS and OPA boundary**
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities**
- Base Flood Elevation line and value; elevation in feet¹**
- Base Flood Elevation value where uniform within zone; elevation in feet¹**
- Referenced to the North American Vertical Datum of 1988 (NAVD 88)**
- 23**: Cross section line
- 23**: Transect line
- Geographic coordinates** referenced to the North American Datum of 1983 (NAD 83)
- 100-meter Universal Transverse Mercator grid ticks, zone 13**
- 5000-foot grid ticks**: Colorado State Plane coordinate system; central zone 10 (PROJCODE 020).
- Lambert Conformal Conic Projection**
- Bench mark** (See explanation in Notes to Users section of this FIRM paper)
- M1.5**: River Mile
- MAP REPOSITORIES**: Refer to Map Repositories list on Map Index
- EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP**: MARCH 17, 1997
- EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL**: DECEMBER 1, 2011. In update corporate limits, change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.
- For community map revision history prior to countywide mapping, refer to the Community Map History Table located in the Flood Insurance Study report for this jurisdiction.
- To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0554G

FIRM FLOOD INSURANCE RATE MAP EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 554 OF 1300
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

COUNTY	COMMUNITY	NUMBER	PANEL	SUFFIX
EL PASO COUNTY		0554G	054	6

Map Scale 1" = 500'

Map Number 08041C0554G

Map Revised December 7, 2018

Federal Emergency Management Agency

HYDROLOGIC CALCULATIONS

**LOT 1177 WOODMEN HILLS FILING #10
AREA RUNOFF COEFFICIENT (C) SUMMARY**

EXISTING

BASIN	TOTAL AREA	DEVELOPED			UNDEVELOPED			WEIGHTED		WEIGHTED CA	
	(Acres)	AREA (Acres)	C5	C100	AREA (Acres)	C5	C100	C5	C100	CA5	CA100
<i>OS-Z</i>	0.48	0.48	0.20	0.44	0.00	0.09	0.36	0.20	0.44	0.10	0.21
<i>OS-Y</i>	3.84	3.84	0.20	0.44	0.00	0.09	0.36	0.20	0.44	0.77	1.69
<i>OS-X</i>	0.93	0.93	0.09	0.36	0.00	0.09	0.36	0.09	0.36	0.08	0.33
<i>EX-A</i>	6.30	0.00	0.09	0.36	6.30	0.09	0.36	0.09	0.36	0.57	2.27
<i>EX-B</i>	21.1	0.00	0.09	0.36	21.10	0.09	0.36	0.09	0.36	1.90	7.60
<i>EX-C</i>	3.91	0.00	0.90	0.96	3.91	0.09	0.36	0.09	0.36	0.35	1.41

DEVELOPED

BASIN	TOTAL AREA	DEVELOPED			UNDEVELOPED			WEIGHTED		WEIGHTED CA	
	(Acres)	AREA (Acres)	C5	C100	AREA (Acres)	C5	C100	C5	C100	CA5	CA100
<i>OS-Z</i>	0.48	0.48	0.20	0.44	0.00	0.09	0.36	0.20	0.44	0.10	0.21
<i>OS-Y</i>	3.84	3.84	0.20	0.44	0.00	0.09	0.36	0.20	0.44	0.77	1.69
<i>OS-X</i>	0.93	0.93	0.09	0.36	0.00	0.09	0.36	0.09	0.36	0.08	0.33
<i>EX-A</i>	6.30	0.00	0.09	0.36	6.30	0.09	0.36	0.09	0.36	0.57	2.27
<i>PR-1</i>	21.1	21.10	0.81	0.88	0.00	0.09	0.36	0.81	0.88	17.09	18.57
<i>EX-C</i>	3.91	0.00	0.90	0.96	3.91	0.09	0.36	0.09	0.36	0.35	1.41

Calculated by: DLF

Date: 5/6/2020

Checked by: _____

**LOT 1177 WOODMEN HILLS FILING #10
RUNOFF SUMMARY**

EXISTING

BASIN	AREA TOTAL (Acres)	WEIGHTED		OVERLAND				STREET / CHANNEL FLOW				T _c	INTENSITY		TOTAL FLOWS	
		C ₅	C ₁₀₀	C ₅	Length (ft)	Slope (ft/ft)	T _t (min)	Length (ft)	Slope (%)	Velocity (fps)	T _t (min)	TOTAL (min)	I ₅ (in/hr)	I ₁₀₀ (in/hr)	Q ₅ (c.f.s.)	Q ₁₀₀ (c.f.s.)
		* For Calcs See Runoff Summary														
OS-Z	0.48	0.20	0.44	0.20	100	0.04	10.3	0	4.0%	1.0	0.0	10.3	4.0	7.0	0.4	1.5
OS-Y	3.84	0.20	0.44	0.20	100	0.02	12.9	0	2.0%	0.7	0.0	12.9	3.7	6.3	2.8	10.7
OS-X	0.93	0.09	0.36	0.09	15	0.02	5.6	0	2.0%	0.7	0.0	5.6	4.9	8.7	0.4	2.9
EX-A	6.30	0.09	0.36	0.09	50	0.21	4.7	2300	1.0%	0.5	76.7	81.4	1.3	2.1	0.8	4.8
EX-B	21.10	0.09	0.36	0.09	300	0.02	25.1	0	2.0%	0.7	0.0	25.1	2.7	4.5	5.2	34.1
EX-C	3.91	0.09	0.36	0.09	75	0.08	8.0	1100	1.0%	0.5	36.7	44.6	2.0	3.2	0.7	4.5

DEVELOPED

BASIN	AREA TOTAL (Acres)	WEIGHTED		OVERLAND				STREET / CHANNEL FLOW				T _c	INTENSITY		TOTAL FLOWS	
		C ₅	C ₁₀₀	C ₅	Length (ft)	Slope (ft/ft)	T _t (min)	Length (ft)	Slope (%)	Velocity (fps)	T _t (min)	TOTAL (min)	I ₅ (in/hr)	I ₁₀₀ (in/hr)	Q ₅ (c.f.s.)	Q ₁₀₀ (c.f.s.)
		* For Calcs See Runoff Summary														
OS-Z	0.48	0.20	0.44	0.20	100	0.04	10.3	0	4.0%	1.0	0.0	10.3	4.0	7.0	0.4	1.5
OS-Y	3.84	0.20	0.44	0.20	100	0.02	12.9	0	2.0%	0.7	0.0	12.9	3.7	6.3	2.8	10.7
OS-X	0.93	0.09	0.36	0.09	15	0.02	5.6	0	2.0%	0.7	0.0	5.6	4.9	8.7	0.4	2.9
EX-A	6.30	0.09	0.36	0.09	50	0.21	4.7	2300	1.0%	0.5	76.7	81.4	1.3	2.1	0.8	4.8
PR-I	21.10	0.81	0.88	0.81	100	0.02	4.2	0	2.0%	0.7	0.0	4.2	5.2	9.5	89.2	177.3
EX-C	3.91	0.09	0.36	0.09	75	0.08	8.0	1100	1.0%	0.5	36.7	44.6	2.0	3.2	0.7	4.5

Calculated by: DLF

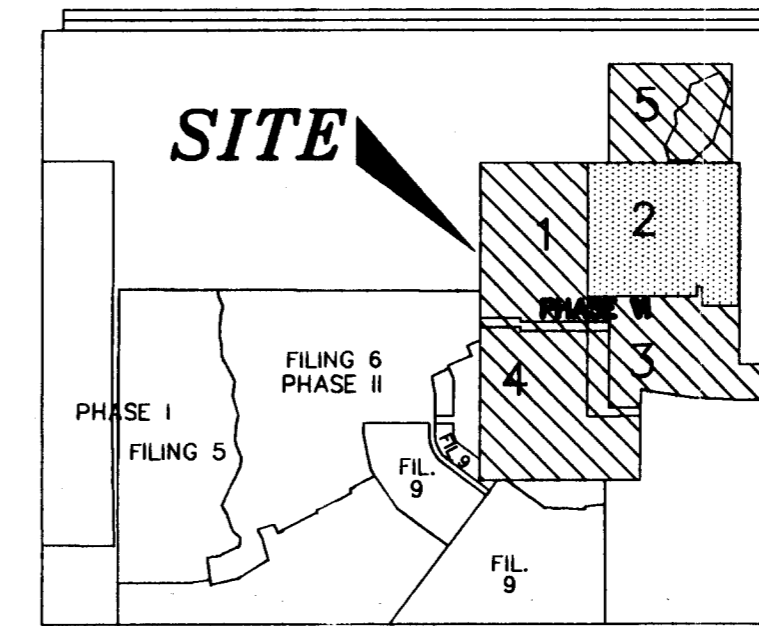
Date: 5/6/2020

Checked by:

PAGES FROM HISTORIC REPORTS

FINAL DRAINAGE PLAN

WOODMEN HILLS SUBDIVISION FILING No. 10

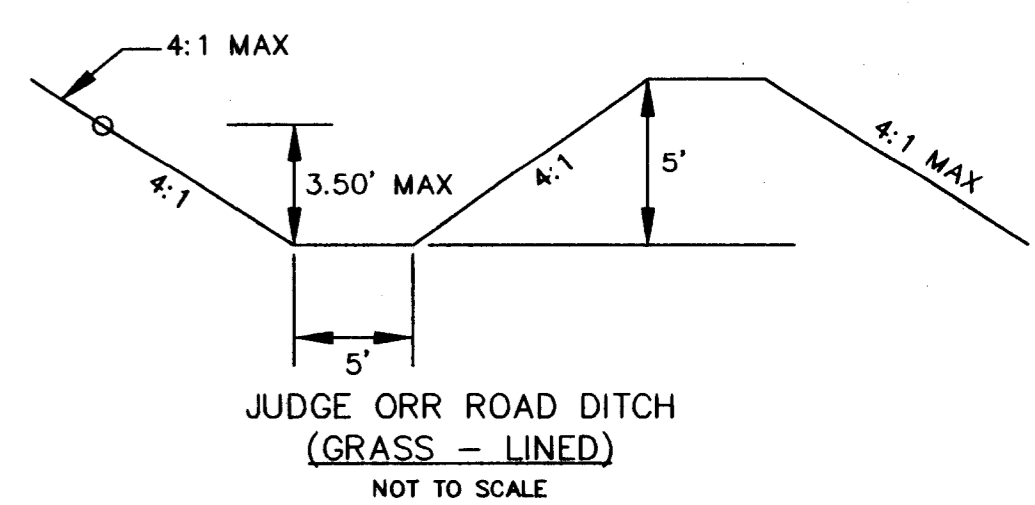
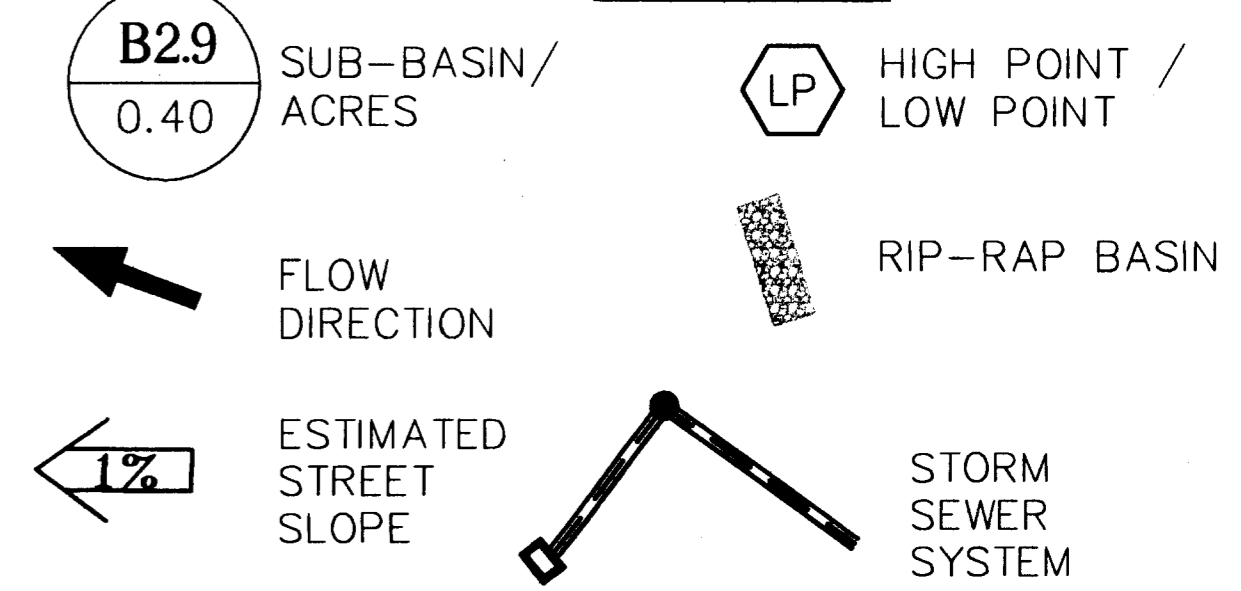


INDEX MAP

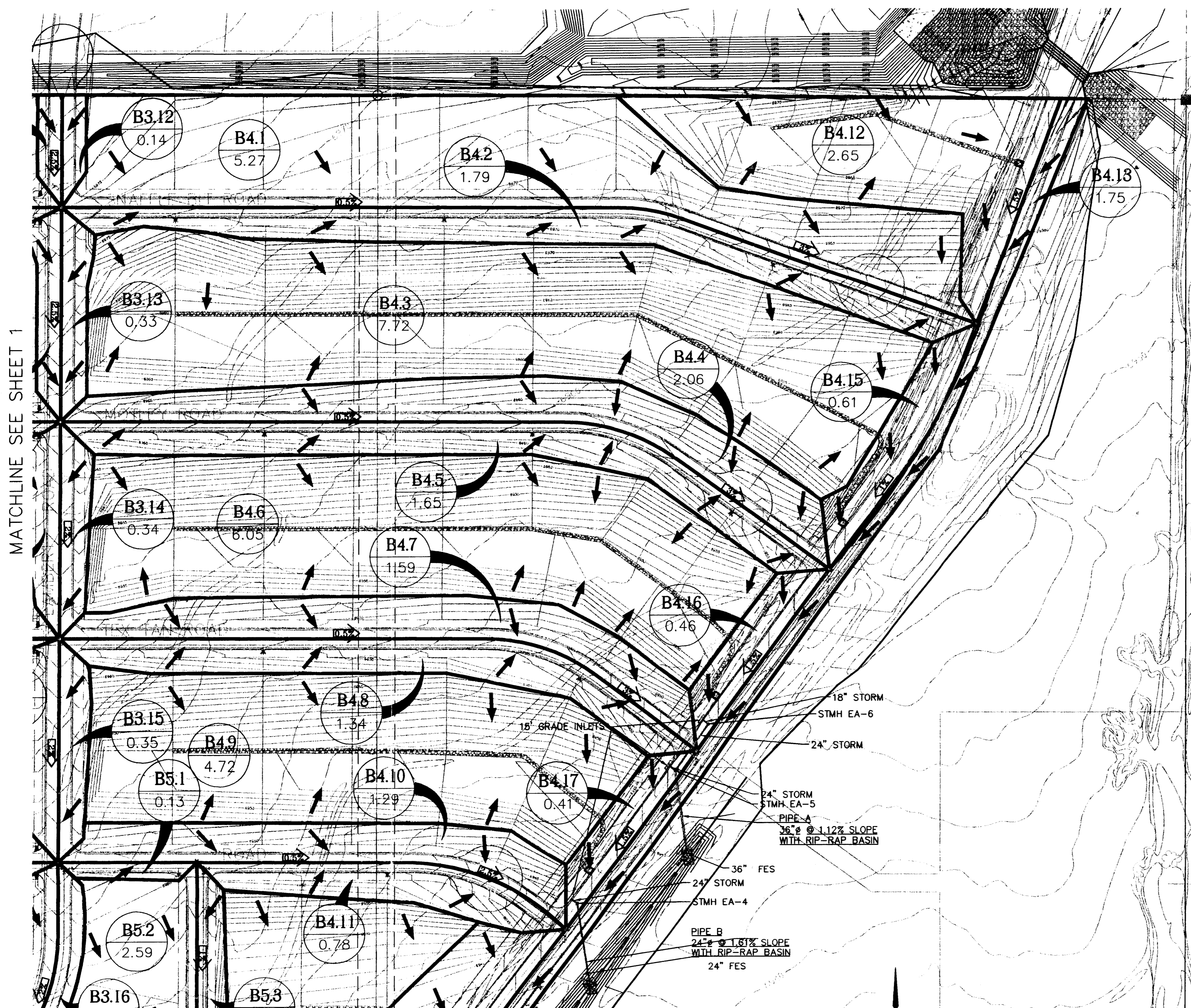
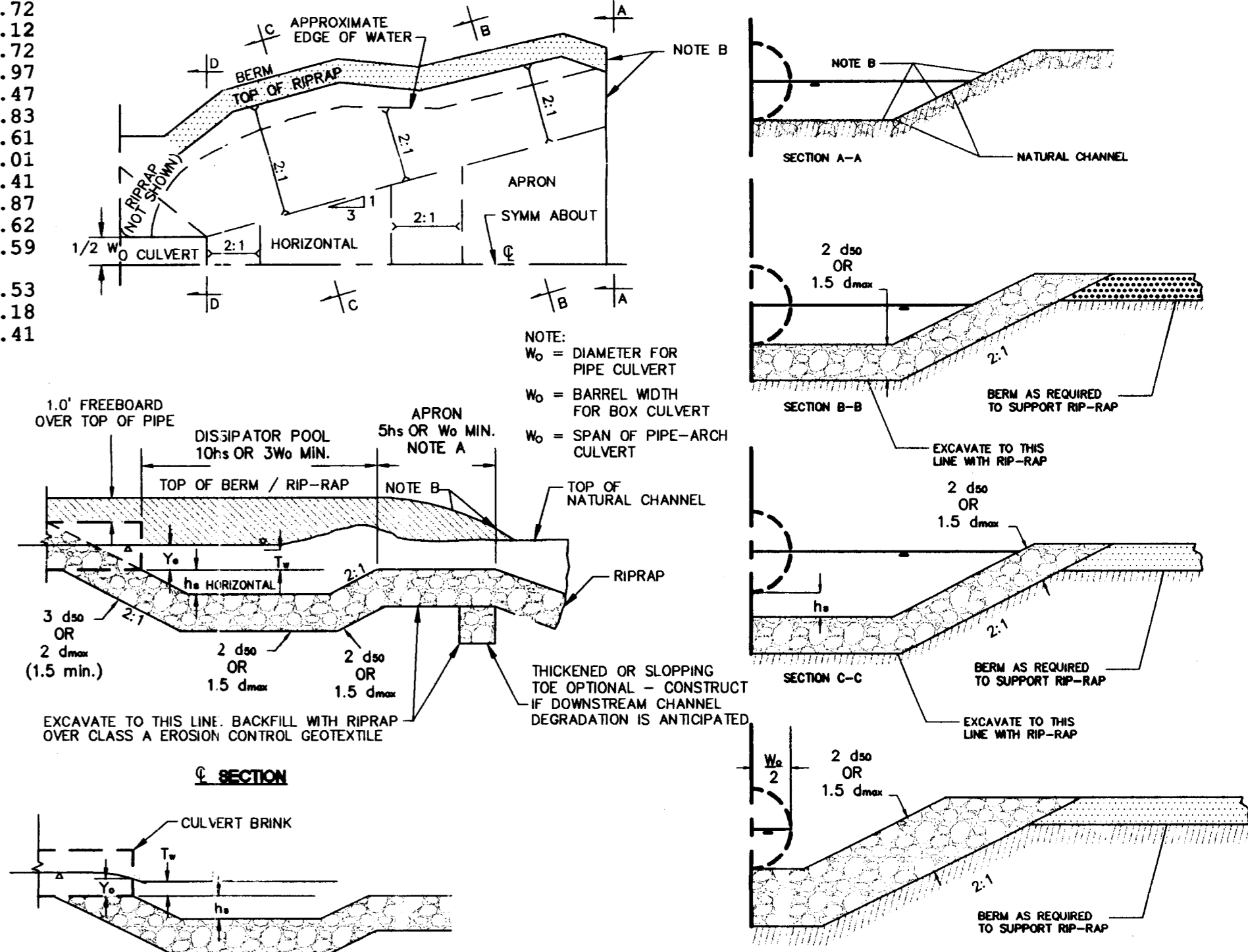
N.T.S.
 [Hatched Box] = SHEET NUMBERS
 [Numbered Box] = THIS SHEET

Basin Name	Area acres	Q5 cfs	Q100 cfs
B3.12	0.14	0.22	0.49
B3.13	0.33	0.50	1.10
B3.14	0.34	0.47	1.04
B3.15	0.35	0.50	1.11
B3.16	0.44	0.74	1.63
B4.1	5.27	5.11	11.43
B4.2	1.79	2.32	5.12
B4.3	7.72	7.32	16.36
B4.4	2.06	2.77	6.11
B4.5	1.65	2.14	4.72
B4.6	6.05	5.87	13.12
B4.7	1.59	2.14	4.72
B4.8	1.34	1.80	3.97
B4.9	4.72	4.68	10.47
B4.10	1.29	1.73	3.83
B4.11	0.78	1.18	2.61
B4.12	2.65	2.68	6.01
B4.13	1.75	1.99	4.41
B4.15	0.61	0.85	1.87
B4.16	0.46	0.73	1.62
B4.17	0.41	0.72	1.59
B5.1	0.13	0.24	0.53
B5.2	2.59	2.76	6.18
B5.3	0.38	0.64	1.41

LEGEND



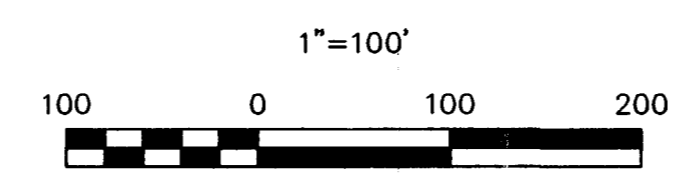
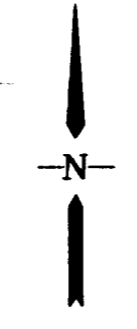
NOTE A - IF EXIT VELOCITY OF BASIN IS GREATER THAN SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS-SECTIONAL AREA AT SECTION A-A SUCH THAT $Q_{max} / (CROSS SECTION AREA AT SEC. A-A) = SPECIFIED EXIT VELOCITY$
 NOTE B - RIP-RAP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIP-RAP IN FLOOR OF BASIN SHOULD BE AT THE SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A-A



Pipe Number	Tw	Yc	Ys	T-Yc	Rip-Rap	d50	h	h/Yc	h/d50	10*h	5*h	3*d50	2*dmax	2*d50	OR 1.5*dmax
A	1.44'	2.19'	1.53'	0.76'	VL	6"	1.06'	0.69'	2.12'	10.6'	5.3'	2'		1.5'	
B	1.44'	1.68'	1.09'	1.02'	VL	6"	0.74'	0.68'	1.48'	7.4'	3.7'	2'		1.5'	
C	3.77'	3.11'	2.51'	0.94'	VL	6"	2.06'	0.82'	4.13'	20.6'	10.3'	2'		1.5'	
D	3.77'	3.63'	2.82'	0.84'	VL	6"	2.89'	1.02'	5.78'	28.9'	14.5'	2'		1.5'	

MATCHLINE SEE SHEET 1

MATCHLINE SEE SHEET 3



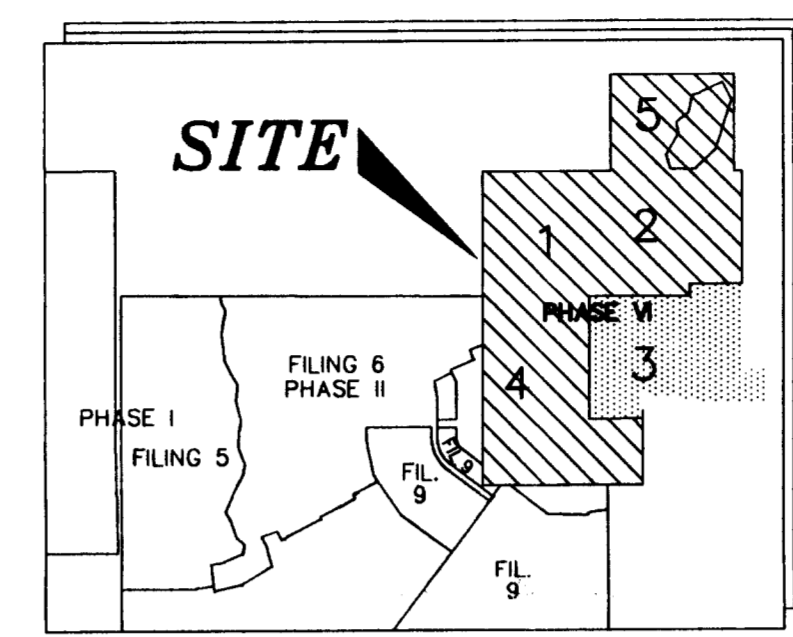
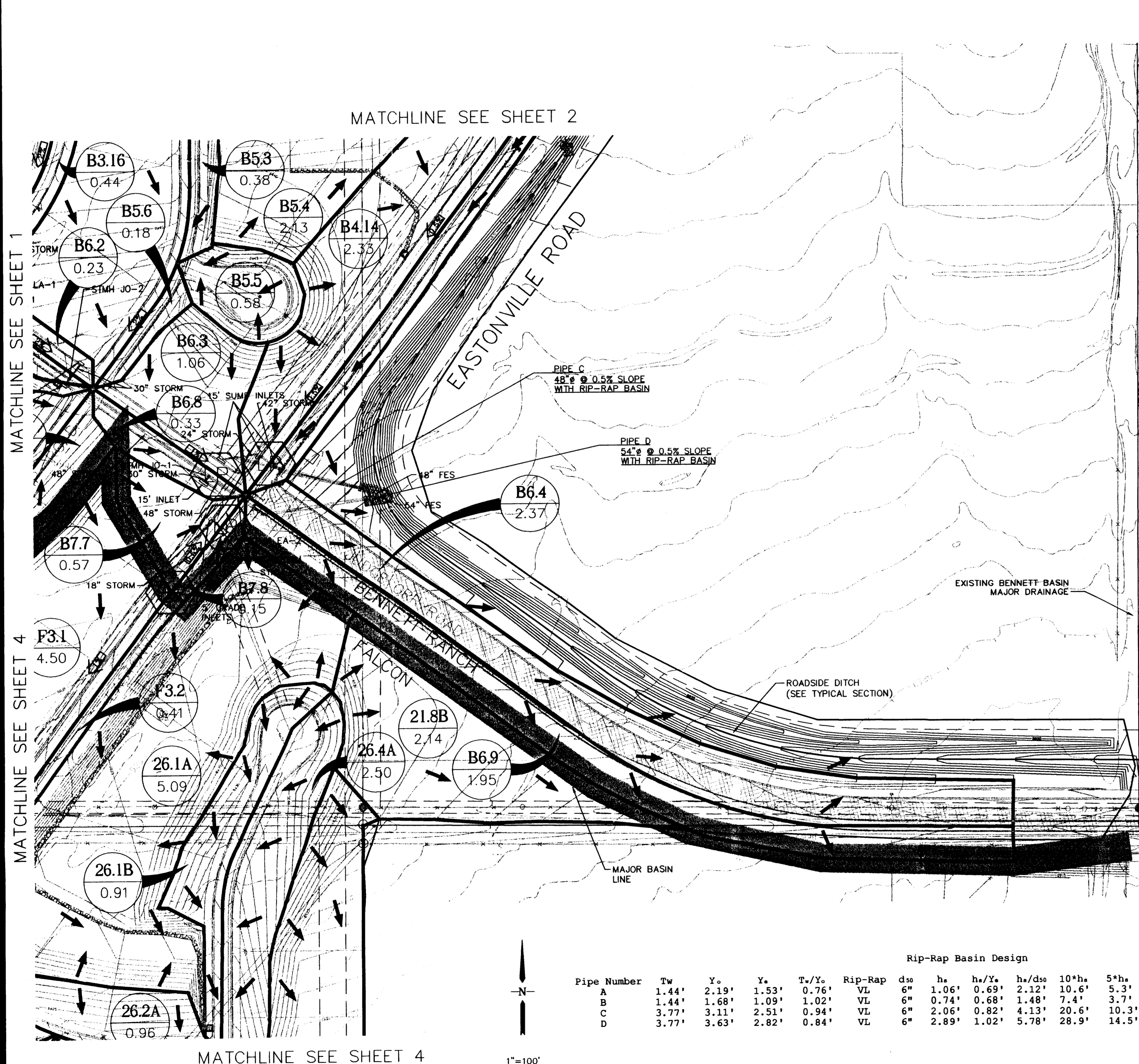
WOODMEN HILLS
ROOM TO GROW

URS
8415 EXPLORER DRIVE, STE 110
COLORADO SPRINGS, CO 80920
(719) 531-0001

FIGURE 7
SHEET 2 OF 5

FINAL DRAINAGE PLAN

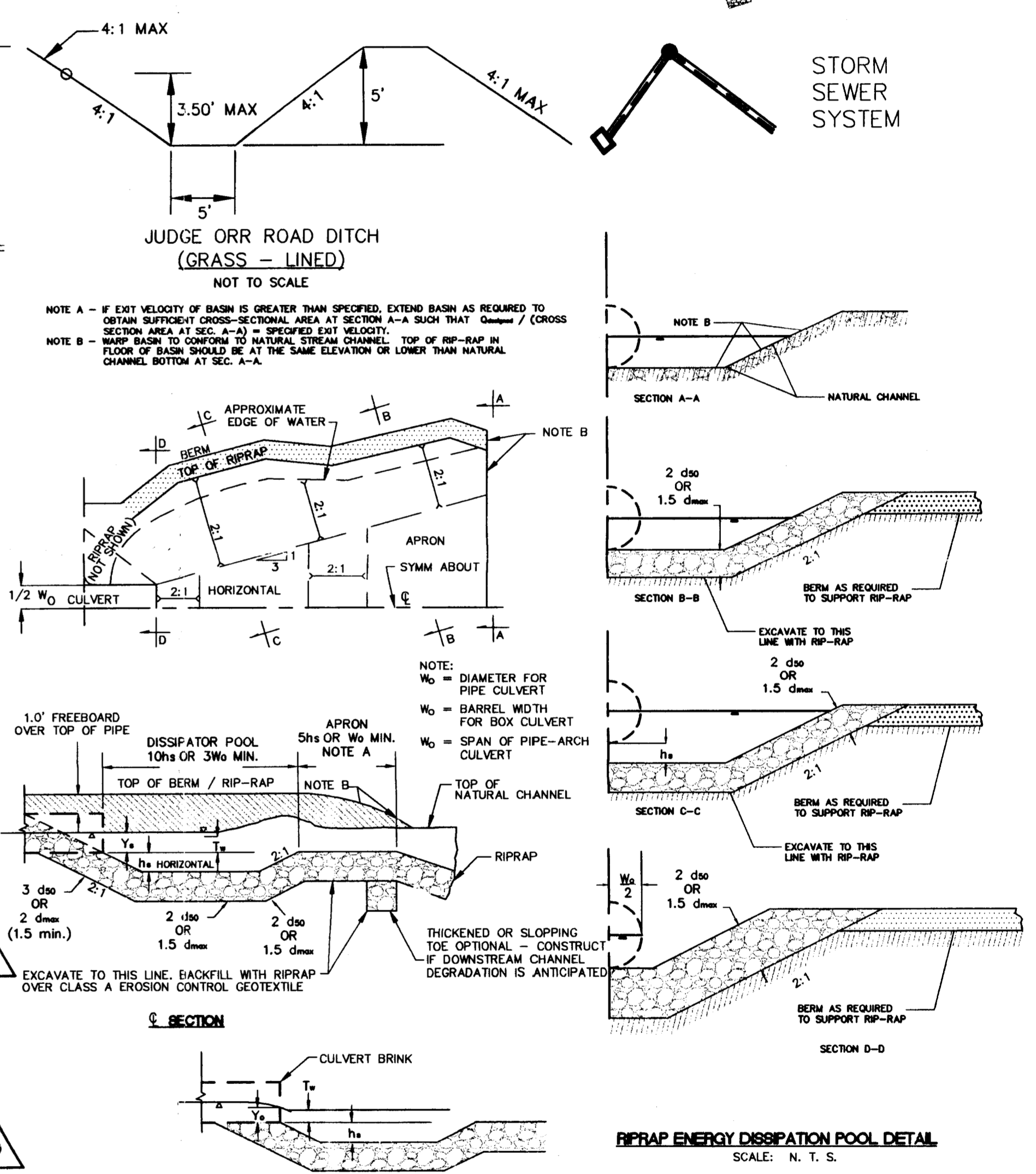
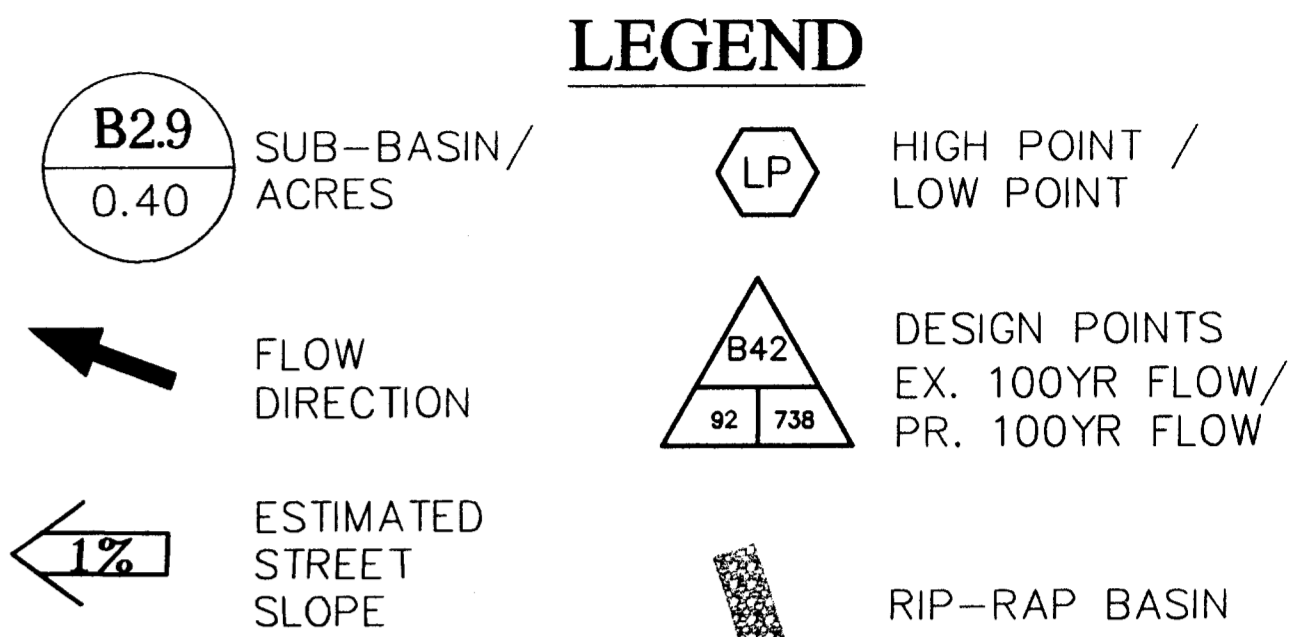
WOODMEN HILLS SUBDIVISION FILING No. 10



INDEX MAP
N.T.S.

= SHEET NUMBERS
= THIS SHEET

Basin Name	Area acres	Q5 cfs	Q100 cfs
B3.16	0.44	0.74	1.63
B4.14	2.33	2.57	5.71
B5.3	0.38	0.64	1.41
B5.4	2.13	2.50	5.51
B5.5	0.58	0.97	2.15
B5.6	0.18	0.32	0.70
B6.2	0.23	0.42	0.93
B6.3	1.06	1.28	2.81
B6.4	2.37	2.78	6.13
B6.8	0.33	0.53	1.16
B6.9	1.95	2.22	4.91
B7.7	0.15	0.17	0.38
B7.8	0.57	0.96	2.11
F3.1	4.50	4.36	9.76
F3.2	0.41	0.75	1.66
21.8B	2.14	2.21	4.96
26.1A	5.09	4.54	10.12
26.1B	0.91	1.38	3.05
26.2A	0.96	1.61	3.55
26.4A	2.50	3.36	7.41

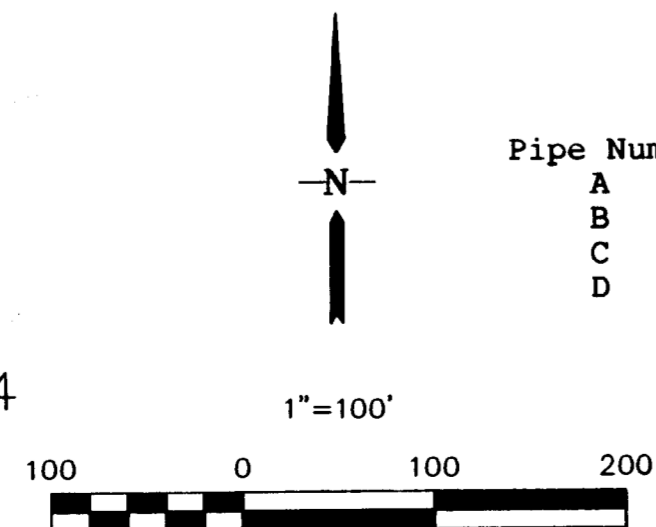


Basin Name	Area acres	Q5 cfs	Q100 cfs
B42	53	186	
B42	178	990	
B42	184	1,010	
B42	300	1,560	

FILING 10 DEVELOPED BENNETT RANCH DEVELOPED COMBINED DEVELOPED HISTORIC

Rip-Rap Basin Design

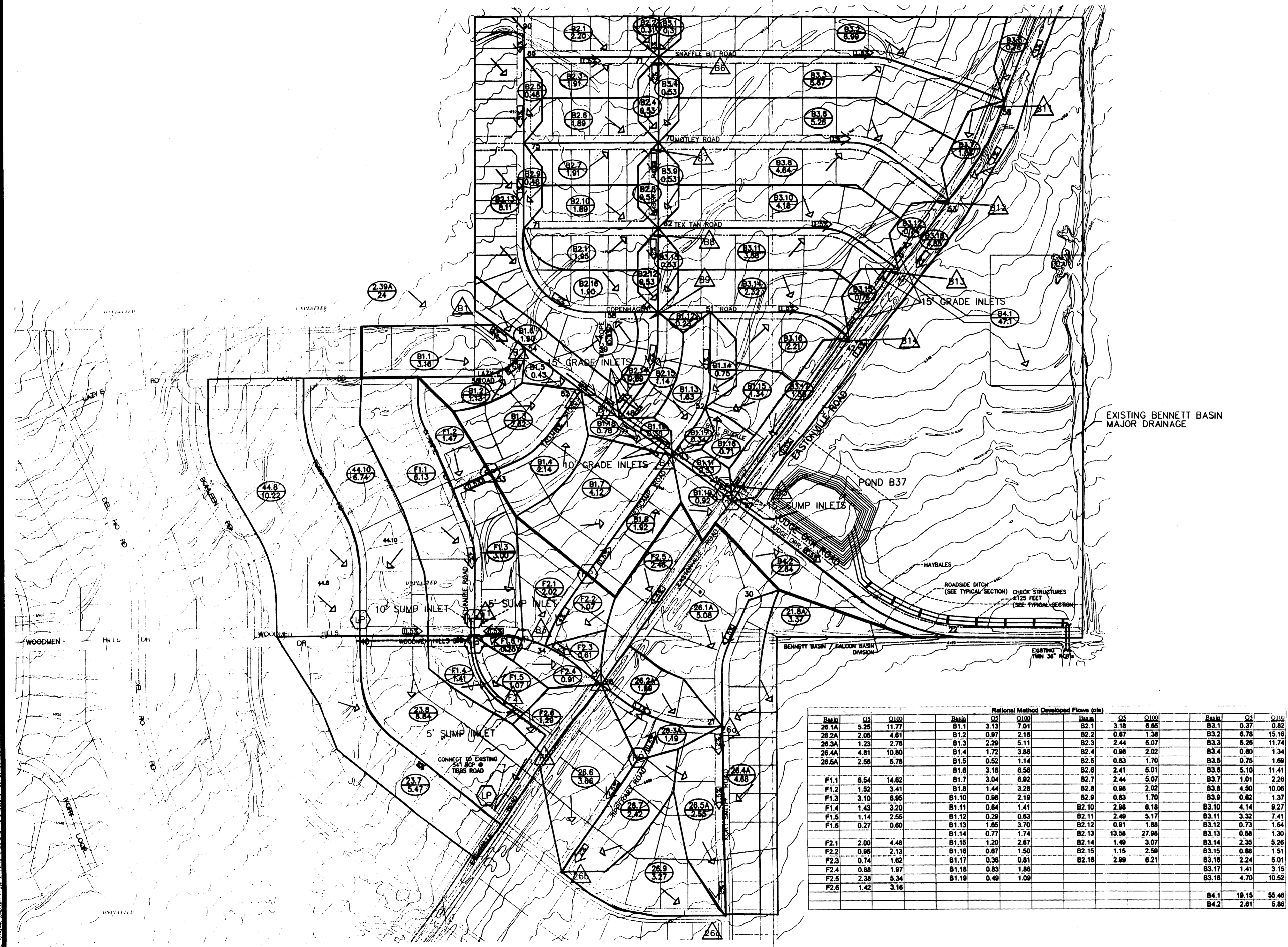
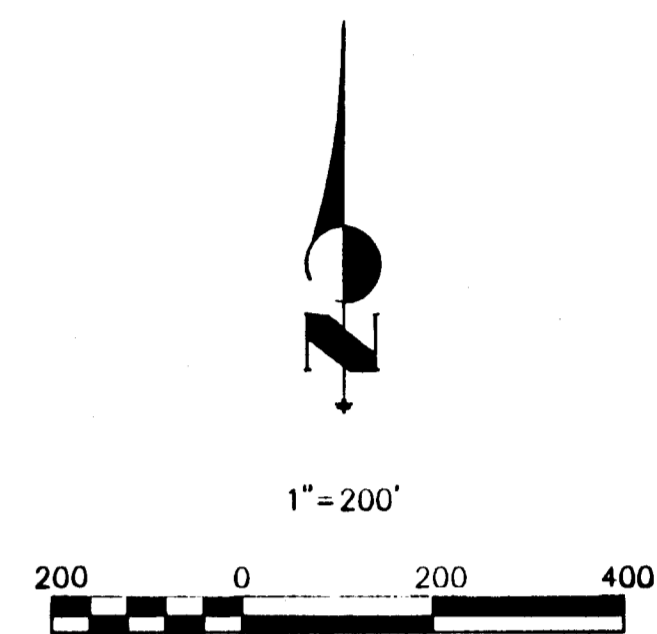
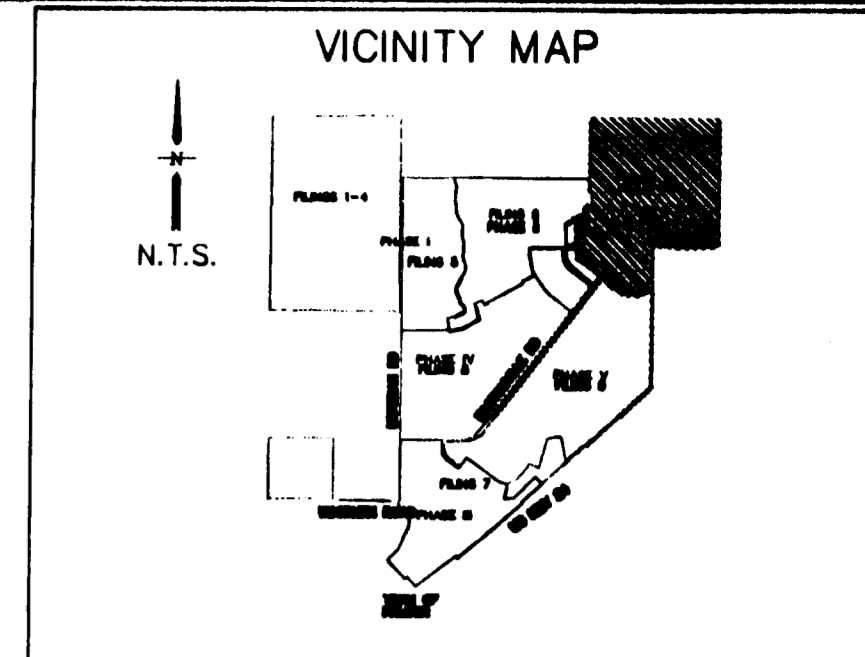
Pipe Number	Tw	Yo	Ye	T/Yo	Rip-Rap	d50	h _a	h _v /Y _o	h _v /d50	10*h _a	5*h _a	3*d50 or 2*d _{max}	2*d50 or 1.5*d _{max}
A	1.44'	2.19'	1.53'	0.76'	VL	6"	1.06'	0.69'	2.12'	10.6'	5.3'	2'	1.5'
B	1.44'	1.68'	1.09'	1.02'	VL	6"	0.74'	0.68'	1.48'	7.4'	3.7'	2'	1.5'
C	3.77'	3.11'	2.51'	0.94'	VL	6"	2.06'	0.82'	4.13'	20.6'	10.3'	2'	1.5'
D	3.77'	3.63'	2.82'	0.84'	VL	6"	2.89'	1.02'	5.78'	28.9'	14.5'	2'	1.5'



WOODMEN HILLS
ROOM TO GROW

URS
8415 EXPLORER DRIVE, STE 110
COLORADO SPRINGS, CO 80920
(719) 531-0001
FIGURE 7
SHEET 3 OF 5

FINAL DRAINAGE PLAN WOODMEN HILLS SUBDIVISION FILING No. 10



LEGEND

- B3.9
4.55 SUB-BASIN/
ACRES
- ↓ FLOW
DIRECTION
- △ DESIGN
POINTS
- LP HIGH POINT /
LOW POINT
- S ESTIMATED
STREET
SLOPE
- STORM
SEWER

WOODMEN HILLS
ROOM TO GROW

URS
8415 EXPLORER DRIVE, STE 110
COLORADO SPRINGS, CO 80920
(719) 531-0001
FIGURE 8

DRAINAGE MAPS

LOT 1177 WOODMEN HILLS FILING #10

EL PASO COUNTY, CO

EXISTING DRAINAGE MAP

OCTOBER 2020

PLAT NAME
LOT 1177 WOODMEN HILLS FIL NO 10

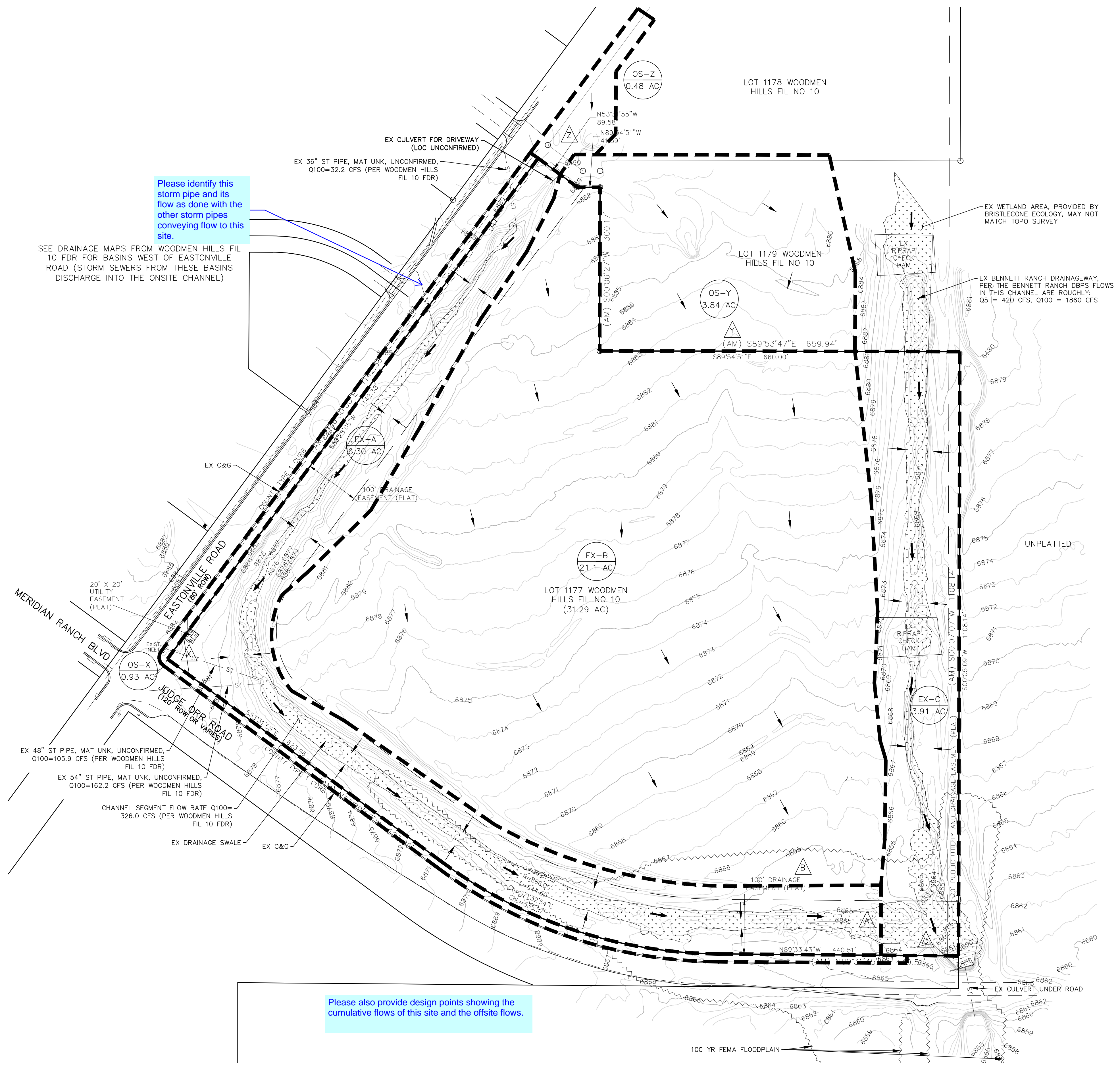
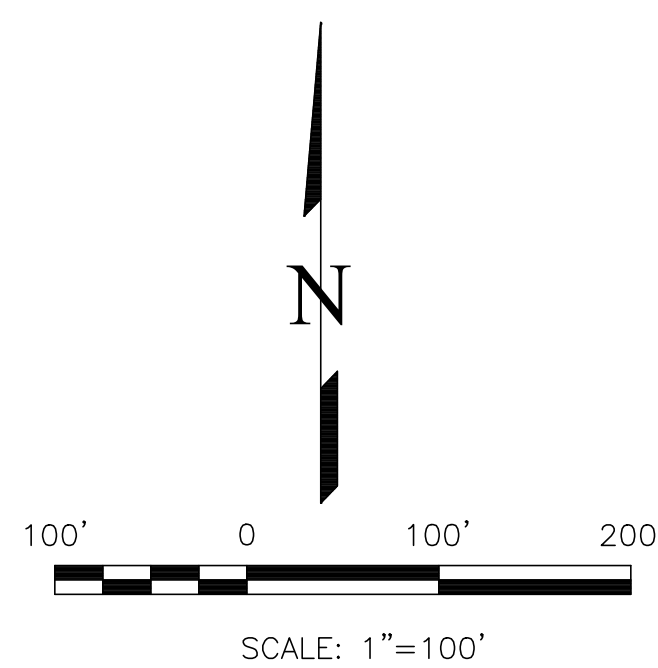
NOTES
 1. A PORTION OF THE SITE IS WITHIN A 100 YEAR FEMA FLOOD PLAIN.
 2. OFFSITE BASIN OS-X IS A STRIP OF LAND BETWEEN THE CURB AND PROPERTY LINE. THIS BASIN DRAINS INTO THE ADJACENT SWALE FOR ITS ENTIRE LENGTH.

DRAINAGE SUMMARY

DESIGN POINT	BASIN TRIBUTARY	AREA (ACRES)	FLOW	
			5 YR (cfs)	100 YR (cfs)
Z	OS-Z	0.48	0.4	1.5
Y	OS-Y	3.84	2.8	10.7
X	OS-X	0.93	0.4	2.9
A	EX-A	6.30	0.8	4.8
B	EX-B	21.1	5.2	34.1
C	EX-C	3.91	0.7	4.5

LEGEND

	BASIN DESIGNATION
	AREA IN BASIN (AC)
	DESIGN POINT
	BASIN BOUNDARY
	ROAD AND DITCH FLOW DIRECTION
	GROUND SURFACE FLOW DIRECTION
	EXISTING CONTOURS - MINOR
	EXISTING CONTOURS - MAJOR
	PROPOSED
	EXISTING
	SETBACK LINE
	UNDERGROUND GAS LINE
	UNDERGROUND ELECTRIC LINE
	BARBED WIRE FENCE
	UNDERGROUND WATER LINE
	SANITARY SEWER LINE
	STORM SEWER LINE
	SANITARY SEWER MANHOLE
	WATER VALVE
	FIRE HYDRANT
	100 YEAR FLOODPLAIN



REVISIONS	NO.	DESCRIPTION	DATE
<p>UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE ENGINEERING BOARD OF THE STATE OF COLORADO, THESE DRAWINGS ARE NOT TO BE USED FOR ANY PROJECT WITHOUT WRITTEN AUTHORIZATION.</p>			
<p>PREPARED FOR: NES, INC. ATTN: JOHN MAYNARD 619 N CASCADE AVE, #200 COLORADO SPRINGS, CO 80903 713.471.0073</p>			
<p>721 S. 29th STREET COLORADO SPRINGS, CO 80904 OFFICE: 719-635-6422 FAX: 719-635-6426 www.tneshinc.com</p>			
<p>LOT 1177 WOODMEN HILLS FILING #10</p>		<p>EXISTING DRAINAGE MAP</p>	
<p>DESIGNED BY DLF DRAWN BY DLF CHECKED BY LD</p>			
<p>H-SCALE AS NOTED V-SCALE N/A</p>			
<p>JOB NO. 2015.00 DATE ISSUED 10/30/20 SHEET NO. 1 OF 2</p>			

N:\jobs\2015.00\Drawings\201500 FDM.dwg, 10/30/2020 10:36:03 AM

NOTES

1. A PORTION OF THE SITE IS WITHIN A 100 YEAR FEMA FLOOD PLAIN.
 2. OFFSITE BASIN OS-X IS A STRIP OF LAND BETWEEN THE CURB AND PROPERTY LINE. THIS BASIN DRAINS INTO THE ADJACENT SWALE FOR ITS ENTIRE LENGTH.

LOT 1177 WOODMEN HILLS FILING #10

EL PASO COUNTY, CO

PROPOSED DRAINAGE MAP

OCTOBER 2020

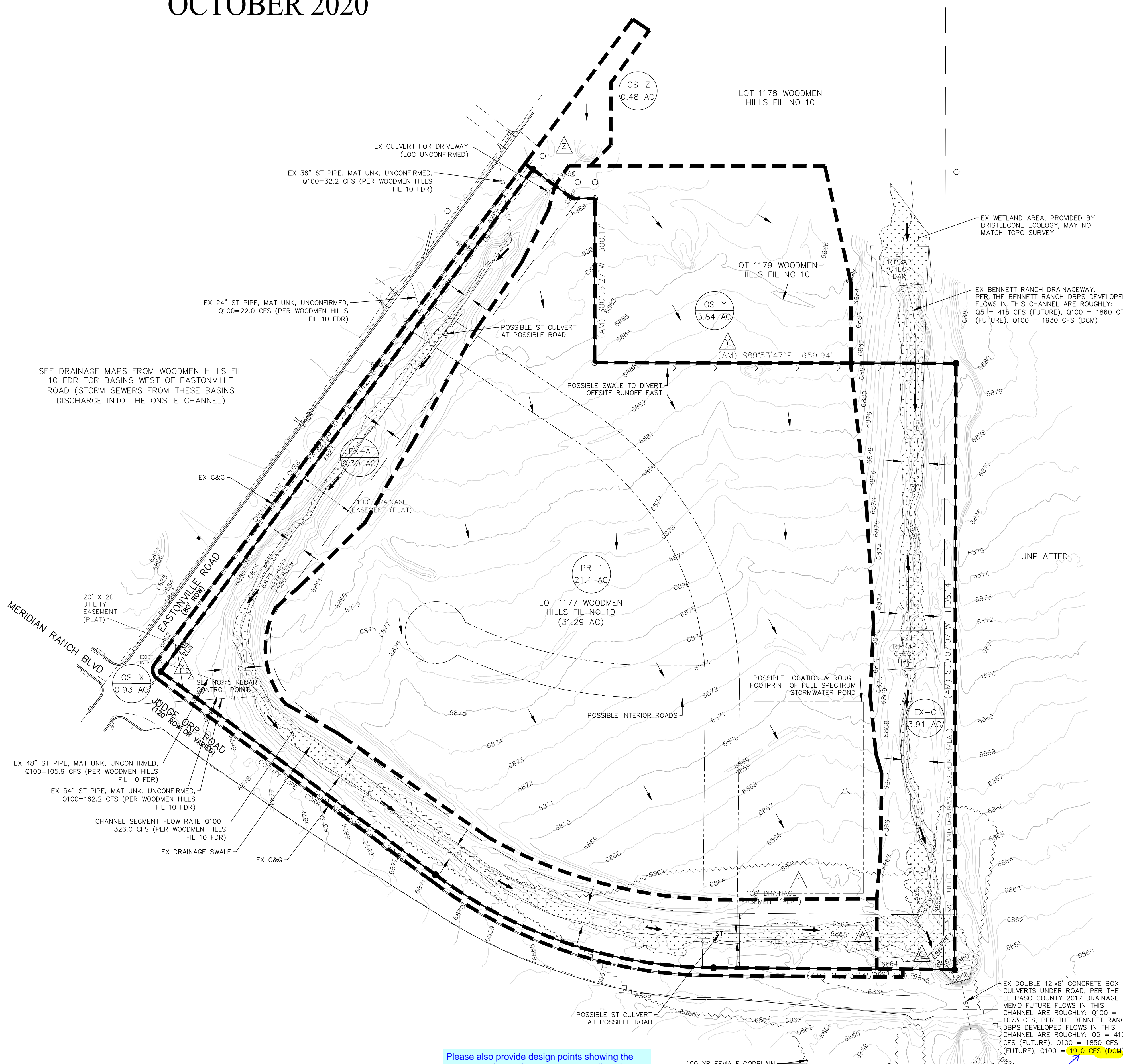
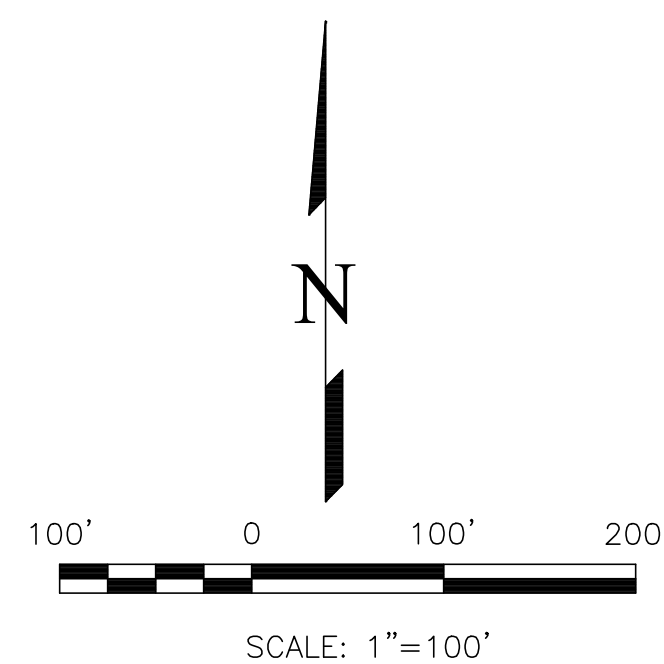
PLAT NAME
 LOT 1177 WOODMEN HILLS FIL NO 10

DRAINAGE SUMMARY

DESIGN POINT	BASIN TRIBUTARY	AREA (ACRES)	FLOW	
			5 YR (cfs)	100 YR (cfs)
Z	OS-Z	0.48	0.4	1.5
Y	OS-Y	3.84	2.8	10.7
X	OS-X	0.93	0.4	2.9
A	EX-A	6.30	0.8	4.8
1	PR-1	21.1	89.2	177.3
C	EX-C	3.91	0.7	4.5

LEGEND

- BASIN DESIGNATION
- AREA IN BASIN (AC)
- DESIGN POINT
- BASIN BOUNDARY
- ROAD AND DITCH FLOW DIRECTION
- GROUND SURFACE FLOW DIRECTION
- EXISTING CONTOURS - MINOR
- EXISTING CONTOURS - MAJOR
- PROPOSED
- EXISTING
- SETBACK LINE
- UNDERGROUND GAS LINE
- UNDERGROUND ELECTRIC LINE
- BARBED WIRE FENCE
- UNDERGROUND WATER LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- SANITARY SEWER MANHOLE
- WATER VALVE
- FIRE HYDRANT
- PROPOSED RETAINING WALL



SEE DRAINAGE MAPS FROM WOODMEN HILLS FIL NO 10 FDR FOR BASINS WEST OF EASTONVILLE ROAD (STORM SEWERS FROM THESE BASINS DISCHARGE INTO THE ONSITE CHANNEL)

Please also provide design points showing the cumulative flows of this site and the offsite flows.

Please discuss this flow shown. Is this your ultimate calculated peak-flow leaving the site?

REVISIONS NO. _____ DESCRIPTION _____ DATE _____	UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE REVIEW AGENCIES, THE REVIEW AGENCIES, THE TERRA NOVA ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PROJECT AND FOR THE DESIGN AUTHORIZED BY WRITTEN AUTHORIZATION.
PREPARED FOR: NES, INC. ATTN: JOHN MAYNARD 619 N CASCADE AVE, #200 COLORADO SPRINGS, CO 80903 713.471.0073	 Terra Nova Engineering, Inc. 721 S. 29th STREET COLORADO SPRINGS, CO 80904 OFFICE: 719-635-6422 FAX: 719-635-6426 www.tneshinc.com
LOT 1177 WOODMEN HILLS FILING #10 PROPOSED DRAINAGE MAP	DESIGNED BY DLF DRAWN BY DLF CHECKED BY LD H-SCALE AS NOTED V-SCALE N/A JOB NO. 1973.00 DATE ISSUED 10/30/20 SHEET NO. 2 OF 2

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