CITY OF ALBUQUERQUE

Planning Department
Brennon Williams, Director

Mayor Timothy M. Keller

October 5, 2022

Scott Eddings, PE
Huitt-Zollers Inc.
6561 Americas Parkway NE
Albuquerque, NM 87110

RE: MDS - Montage Subdivision Unit 7 on Bobby Foster
Grading and Drainage Submittal for Preliminary Plat and Grading Permit
Engineer's Stamp Date: 6/30/22
Hydrology File: R16D100A

Dear Mr. Eddings,

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

Based upon the information provided in your submittal received 8/16/22, the application is incomplete and can't be approved for Preliminary Plat or Grading Permit until the following comments are addressed.

1. The Grading Plan was missing and is required. Include typical section of streets, alleys, retaining walls, etc. Show both existing and proposed storm pipes and inlets with sizes.
2. The only thing received was a Drainage Report that provided onsite hydrology analysis splitting the site into two large basins. More detailed sub-basin analysis will be required prior to approval of the Infrastructure List (IL) and Preliminary Plat (PP). Proration may be used instead of AHYMO models for each sub-basin.
3. As proposed, this entire site will drain to Newhall Drive. The site must demonstrate adequate downstream capacity per § 14-5-2-12(G) of the Albuquerque Code of Ordinances. Detailed hydraulic analysis of surface and subsurface conveyance systems of the existing downstream street is required prior to approval for PP.
4. The analysis of the Bobby Foster project, hydrology # R16D100 must be updated to reflect the as-built condition where most of Basin "BF" drains down Diebenkorn Dr. and Newhall Dr. to "Pond 1"instead of draining down Sagan Lp. to "Pond 2A" as planned in the original drainage report for Bobby Foster, hydrology file # R16D100. The drainage design and infrastructure for Montage Subdivision Unit 7 is highly dependent on the Bobby Foster Subdivision, so the stormwater quality volume SWQV calculations for the areas draining to "Pond 1" must be tabulated and the "Pond 1" volume and outfall hydraulic calculations must be added. The AHYMO file shows 2 acre-feet retention below elevation 5300 and says the outfall structure is an 18" pipe but doesn't provide volume and hydraulic calculations. They must be provided along with a detail of the outfall structure. The outfall structure was omitted from the WO plans but that condition isn't modeled in AHYMO. This analysis must be updated and approved prior to review of this Grading and Drainage Plan.

5. The existing and proposed storm pipes and inlets with sizes and hydraulic analysis were missing from the basin map in the drainage report. The analysis is required prior to approval for this PP.
6. Hydraulic grade line calculations and pipe profiles will be required prior to drainage report approval for (WO).
7. Provide surface drainage analysis demonstrating that the 100-year HGL remains at/below top of curb, and the 100-year EGL remains within the ROW for the onsite streets and alleys and the adjacent streets that receive drainage from this site. The report has only one surface analysis (for a 32' street at 0.5% slope with 6" curbs, gutter depression is missing and location is missing). Identify the location of each analysis point and account for the effects of local gutter depression.
8. An Engineer's Certification of the compacted pad and grading (Pad Certification), per the DPM Chapter 22.7: *Engineer's Certification Checklist for Non-Subdivision*, is required prior to issuing Building Permit (BP).
9. As a reminder, if the project total area of disturbance (including the staging area and any work within the adjacent Right-of-Way) is 1 acre or more, then an Erosion and Sediment Control (ESC) Plan and Owner's certified Notice of Intent (NOI) is required to be submitted to the Stormwater Quality Engineer (Doug Hughes, PE, CPESC, jhughes@cabq.gov , 924-3420) 14 days prior to any earth disturbance.

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

If you have any questions, please contact me at 924-3995 or Doug Hughes jhughes@cabq.gov.

Sincerely,

Shahab Biazar, P.E.
City Engineer, Planning Dept.
Development Review Services

C: file

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 11/2018)

Project Title: Montage 7 Building Permit #: _____ Hydrology File #: _____

DRB#: 2020-004138 EPC#: _____ Work Order#: _____

Legal Description: Tracts A-1-A-5-C Mesa del Sol Innovation Park

City Address: UPC: 101505151712840301

Applicant: Huitt-Zollars, Inc Contact: Scott Eddings

Address: 333 Rio Rancho Blvd, NE Suite 101

Phone#: 505-235-7211 Fax#: _____ E-mail: seddings@huitt-zollars.co

Owner: DR Horton Contact: Brent Lesley

Address: 8440 Wyoming Blvd Suite A, Albuquerque NM 87113

Phone#: 505-797-4245 Fax#: _____ E-mail: pblesley@drhorton.com

TYPE OF SUBMITTAL: X (57) PLAT (___# OF LOTS) ____ RESIDENCE ____ DRB SITE ____ ADMIN SITE

IS THIS A RESUBMITTAL?: _____ Yes X No

DEPARTMENT: _____ TRAFFIC/ TRANSPORTATION X HYDROLOGY/ DRAINAGE

Check all that Apply:

TYPE OF SUBMITTAL:

____ ENGINEER/ARCHITECT CERTIFICATION
____ PAD CERTIFICATION
____ CONCEPTUAL G & D PLAN
X GRADING PLAN
____ DRAINAGE MASTER PLAN
X DRAINAGE REPORT
____ FLOODPLAIN DEVELOPMENT PERMIT APPLIC
____ ELEVATION CERTIFICATE
____ CLOMR/LOMR
____ TRAFFIC CIRCULATION LAYOUT (TCL)
____ TRAFFIC IMPACT STUDY (TIS)
____ OTHER (SPECIFY) _____
Y PRE-DESIGN MEETING?

TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

____ BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY
X PRELIMINARY PLAT APPROVAL
____ SITE PLAN FOR SUB'D APPROVAL
____ SITE PLAN FOR BLDG. PERMIT APPROVAL
____ FINAL PLAT APPROVAL
____ SIA/ RELEASE OF FINANCIAL GUARANTEE
____ FOUNDATION PERMIT APPROVAL
X GRADING PERMIT APPROVAL
____ SO-19 APPROVAL
____ PAVING PERMIT APPROVAL
____ GRADING/ PAD CERTIFICATION
____ WORK ORDER APPROVAL
____ CLOMR/LOMR
____ FLOODPLAIN DEVELOPMENT PERMIT
____ OTHER (SPECIFY) _____

DATE SUBMITTED: 18JUL22 By: Scott Eddings

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____

MONTAGE 7 SUBDIVISION AT MESA DEL SOL
DRAINAGE STUDY

CITY OF ALBUQUERQUE

PREPARED FOR:

PREPARED BY:

HUITT-ZOLLARS
333 RIO RANCHO BLVD., SUITE 101
RIO RANCHO, NEW MEXICO 87124

JUNE 2022

HZI Project No. R315530.01

Montage 7 – Mesa Del Sol
Drainage Study

I, Nina Leung-Villa, being first duly sworn upon my oath, state that I am a registered professional engineer, qualified in civil engineering and that the accompanying report was prepared by me or under my supervision and is true and correct to the best of my knowledge and belief.

TABLE OF CONTENTS

INTRODUCTION

This drainage report addresses the proposed infrastructure required to convey the storm water runoff from a proposed subdivision in Mesa Del Sol. Existing and proposed conditions have been analyzed to determine infrastructure requirements for the proposed development. This report will also demonstrate that the development of this project complies with the City of Albuquerque ordinances and policies.

PROJECT LOCATION

Montage 7 is proposed to be a residential subdivision within the Mesa Del Sol Subdivision in Albuquerque. It is located on Bobby Foster Rd. between Newhall Dr. and Sagan Loop. The project site will house 57 residential detached units on 7.5 acres of land.

FLOOD HAZARD ZONE

The proposed site does not lie within a flood zone as shown on Flood Insurance Rate Map Number 35001C0555H, effective date August 16, 2012. See **Appendix A** for the FEMA Flood Insurance Rate Map.

RELATED REPORTS

This report references the Drainage Study for Bobby Foster Rd. and University Blvd. by Huitt-Zollars, Inc., dated November 2020. That report provided analysis for this project site and the surrounding area. All hydrology calculations were completed for the 100-year, 6-hour storm.

JURISDICTIONS OF PUBLIC AGENCIES

This project is located entirely within the City of Albuquerque (CoA) Municipal Limits and is therefore within their jurisdiction and must comply with the City's development requirements.

METHODOLOGY

This drainage report follows procedures outlined in the City of Albuquerque Development Process Manual (DPM). This report will utilize AHYMO for hydrology modeling to match modeling from the Bobby Foster Rd. and University Blvd. report. See **Appendix B** for the AHYMO input and output files. The precipitation data has been updated according to NOAA Atlas Point Precipitation Frequency Estimates (**Appendix B**).

PRECIPICATION

The 100-yr, 24-hr design storm was used for this analysis. For these storms, the AHYMO Computer program requires the 1, 6, and 24-hr precipitation values. These values were obtained from the NOAA Atlas and are shown on **Table 1**. These precipitation values are consistent with current data obtained from NOAA Atlas 14 Precipitation Frequency Data Server. See **Appendix B** for site specific "Point Precipitation Frequency Estimates".

Table 1
Precipitation Values

Return Period (yrs)	24 hr Rainfall (in)	6 hr Rainfall (in)	1 hr Rainfall (in)
100	2.63	2.29	1.83

LAND TREATMENTS

The land treatments used in the AHYMO Computer model are as described by the City of Albuquerque DPM, and are summarized in **Table 2**.

Table 2
Land Treatment Classifications

Treatment	Land Condition
A	Soil uncompacted by human activity with 0 to 10% slopes. Native grasses, weeds, and shrubs in typical densities with minimal disturbance to grading, ground cover, and infiltration capacity.
B	Irrigated lawns, parks and golf courses with 0 to 10% slopes. Native grasses, weeds and shrubs, and soil uncompacted by human activity with slopes greater than 10% and less than 20%.
C	Soil compacted by human activity. Minimal vegetation. Unpaved parking, roads, trails. Most vacant lots. Gravel or rock (desert landscaping). Irrigated lawns and parks with slopes greater than 10%. Native grasses, weeds and shrubs, and soil uncompacted by human activity with slopes at 20%or greater. Native grass, weed and shrub areas with clay or clay loam soils, and other soils of very low permeability as classified by SCS Hydrologic Soil Group D.
D	Impervious areas, pavement, and roofs. Ponds, channels, and wetlands, even if seasonally dry

Since this project site is a Residential Detached Units Subdivision, the corresponding Percent of Treatment D is 70 percent. The remaining percentage points are split between Treatment B and C. The Land Treatments for Montage 7 Subdivision developed basins are as follows: %A = 0, %B = 15, %C = 15, and %D = 70.

EXISTING CONDITIONS

The project site is currently undeveloped and generally slopes from north to south towards an existing Pond 1. Due to the existing roads, there is no offsite flow that reaches the site.

A detention pond exists south of Montage 7 and is designed to accommodate the runoff from Montage 7.

PROPOSED CONDITIONS

The project site is proposed for development of detached residential units. Please refer to the Basin Map in **Exhibit 1** for basin characteristics including area, and peak flow amounts. Montage 7 exists as Basin W-3 as established with the Bobby Foster and University Blvd Basin Map. As previously studied in recent drainage reports, Pond 1 will serve as the ponding facility which will provide adequate volume to house runoff from this project.

Refer to **Table 3** below for a flowrate comparison of onsite Basin 100 and 200. Basins 100 and 200 do not exceed the allowable street capacity flowrate and will utilize the proposed street surface to drain site runoff to Newhall Dr. and existing inlet.

Table 3
Proposed Flow Capacity

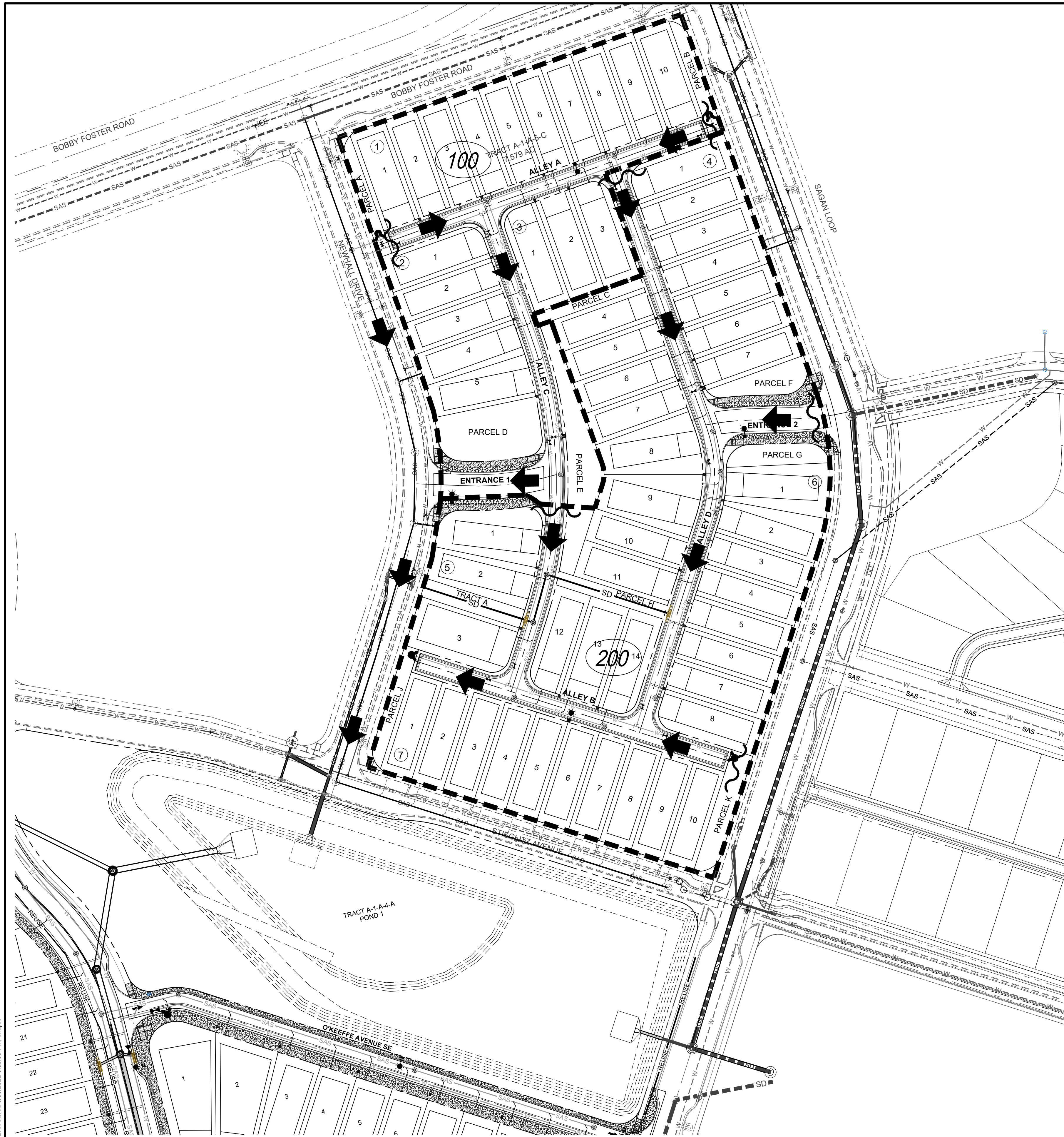
Basin ID	Allowable Street Capacity Q (CFS)	Actual Q (CFS)
100	22.4	9.9
200	22.4	19.8

Basin Montage 7, formerly named W-3 is part of a master plan and will share Pond 1 with Basins Park, T, U, V, W-1, and W-2. (Refer to Drainage study for Bobby Foster Rd. and University Blvd.) The development type for this project corresponds with the master plan, allowing Pond 1 to maintain sufficient sizing for this project. For a hydrological summary of the project site, refer to **Appendix B** and **Exhibit 1**.

Pond 1 is a detention pond that outfalls to Pond 2A. Pond 1 was designed with previous drainage studies.

CONCLUSION

The proposed buildout of Montage 7 Subdivision will not exceed the capacity of the existing storm drain system in Newhall Dr. and will discharge to Pond 1. Allowable discharge to Pond 1 is 32.4 cfs and Montage 7 Subdivision will generate 29.7 cfs. This confirms the design is suitable for the existing storm drain system. This drainage study substantially complies with the “Mesa Del Sol Master Plan” and the drainage study for “Bobby Foster Rd. and University Blvd.”



LEGEND

- DRAINAGE BASIN BOUNDARY
- DRAINAGE FLOW ARROW
- 100 DRAINAGE BASIN NUMBER
- DRAINAGE HIGH POINT

Onsite Basin Summary - Developed Conditions For Residential Detached Units Basins Drain Into Pond 1 located south of Montage 7									
Basin	Area (Acre)	Area (SQ MI)	Number of Lots	N (units/acre)	%A	%B	%C	%D	100-Year Q (CFS)
100	2.51	0.0039	18	7.2	0	15	15	70	9.9
200	4.96	0.0078	39	7.9	0	15	15	70	19.8
Total	7.5	0.0117	57	7.6	0	15	15	70	29.7

SCALE: 1" = 60'

TWO WORKING DAYS BEFORE YOU DIG CALL 811 OR 260-1990

AS BUILT INFORMATION
CONTRACTOR
WORK STAKED BY
INSPECTORS ACCEPTANCE BY
FIELD VERIFICATION BY
DRAWINGS CORRECTED BY
MICRO-FILM INFORMATION
RECORDED BY
NO.

SURVEY INFORMATION
FIELD NOTES
NO. BY DATE

ENGINEER'S SEAL
NINA LEUNG-VILLA
NEW MEXICO
25970
REGISTERED PROFESSIONAL ENGINEER

REVISIONS
NO. DATE REMARKS BY

DESIGN
DESIGNED BY: CAT DATE: June 29, 2022
DRAWN BY: CAT DATE: June 29, 2022
DWG NAME: MDS MONTAGE 7 BASINS.dwg PROJ #:
CHECKED BY: SAE DATE: June 29, 2022

Designed By:
HUITT-ZOLLARS
Huitt-Zollars, Inc. Albuquerque
6501 Americas Pkwy NE, Suite 550
Albuquerque, New Mexico 87110
Phone (505) 883-8114 Fax (505) 883-5022

JUNE 29, 2022

TITLE:

BASIN MAP
MONTAGE 7 - MESA DEL SOL

Design Review Committee	City Engineer	Mo./Day/Yr.	Mo./Day/Yr.

Last Update

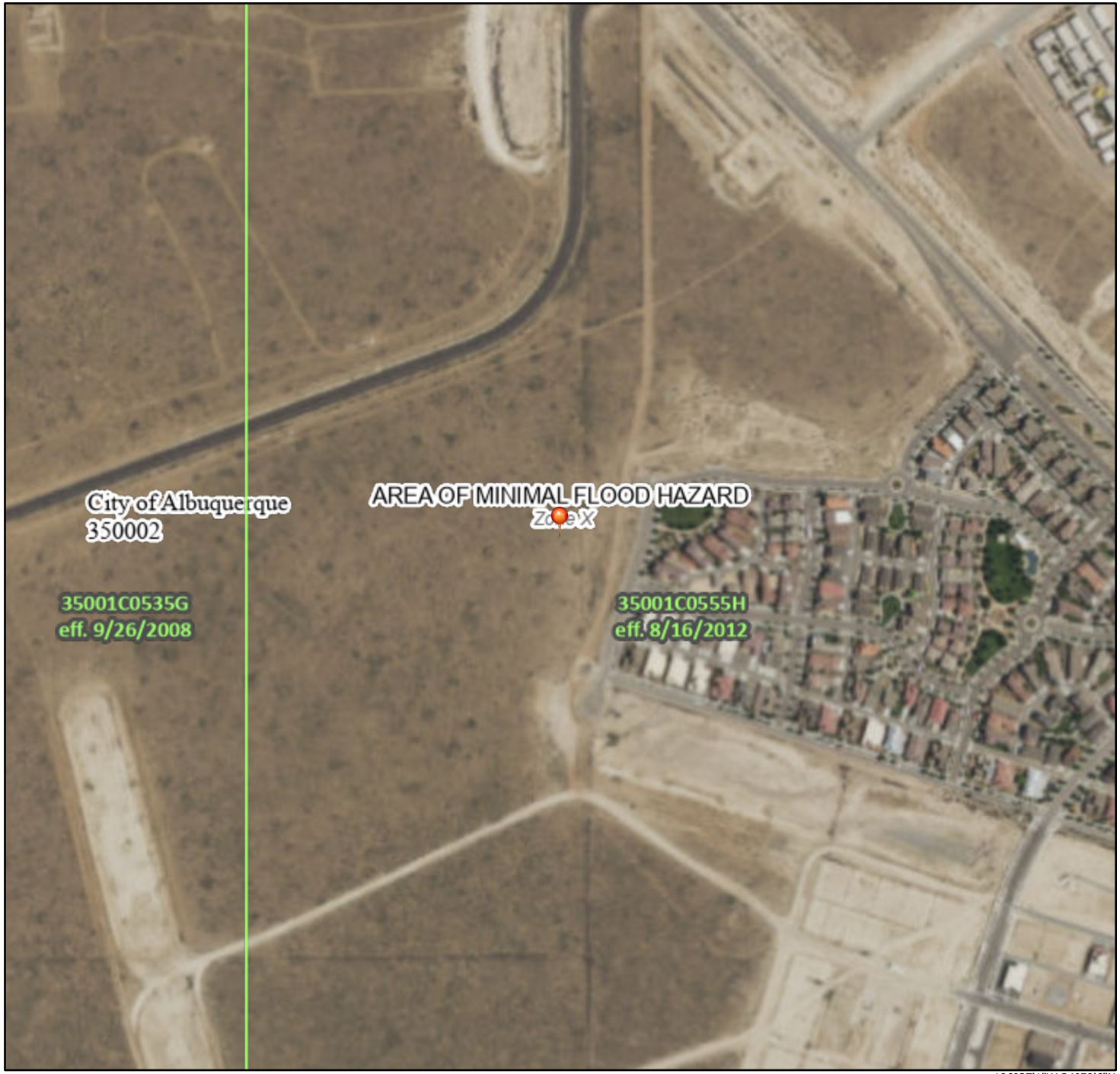
City Project No. Zone Map No. Sheet 1 Of 1

Plotted: 6/30/2022 3:51:15 PM, By:Trujillo, Corie
H:\proj\R315530.01 - Montage Unit 7 - Mesa del Sol\05 Design\05.13 Drainage\Hydrology\MDS MONTAGE 7 BASINS.dwg
Last Saved:6/30/2022 3:50:30 PM, ctrujillo

National Flood Hazard Layer FIRMette

FEMA

106°37'38"W 34°59'36"N



106°37'1"W 34°59'6"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

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

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

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

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

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

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

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

N

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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/6/2022 at 7:03 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

NOAA Atlas 14, Volume 1, Version 5
Location name: Albuquerque, New Mexico, USA*
Latitude: 34.9893°, Longitude: -106.6223°
Elevation: 5304.6 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.179** (0.155-0.207)	**0.232** (0.200-0.268)	**0.310** (0.267-0.358)	**0.370** (0.318-0.426)	**0.453** (0.387-0.520)	**0.516** (0.439-0.593)	**0.583** (0.493-0.670)	**0.654** (0.548-0.750)	**0.748** (0.621-0.860)	**0.823** (0.679-0.946)
10-min	**0.272** (0.236-0.315)	**0.352** (0.304-0.408)	**0.472** (0.406-0.545)	**0.563** (0.484-0.648)	**0.689** (0.589-0.791)	**0.786** (0.668-0.903)	**0.888** (0.750-1.02)	**0.995** (0.833-1.14)	**1.14** (0.945-1.31)	**1.25** (1.03-1.44)
15-min	**0.338** (0.293-0.390)	**0.437** (0.377-0.506)	**0.585** (0.503-0.675)	**0.698** (0.599-0.803)	**0.854** (0.730-0.981)	**0.974** (0.829-1.12)	**1.10** (0.929-1.26)	**1.23** (1.03-1.41)	**1.41** (1.17-1.62)	**1.55** (1.28-1.79)
30-min	**0.455** (0.394-0.525)	**0.589** (0.508-0.681)	**0.787** (0.678-0.909)	**0.940** (0.807-1.08)	**1.15** (0.983-1.32)	**1.31** (1.12-1.51)	**1.48** (1.25-1.70)	**1.66** (1.39-1.90)	**1.90** (1.58-2.19)	**2.09** (1.72-2.40)
60-min	**0.563** (0.488-0.650)	**0.729** (0.629-0.842)	**0.974** (0.839-1.13)	**1.16** (0.999-1.34)	**1.42** (1.22-1.64)	**1.62** (1.38-1.86)	**1.83** (1.55-2.11)	**2.06** (1.72-2.36)	**2.35** (1.95-2.70)	**2.59** (2.13-2.98)
2-hr	**0.640** (0.553-0.753)	**0.819** (0.705-0.964)	**1.08** (0.930-1.27)	**1.29** (1.11-1.51)	**1.58** (1.34-1.84)	**1.82** (1.53-2.11)	**2.06** (1.73-2.40)	**2.32** (1.93-2.69)	**2.68** (2.20-3.11)	**2.97** (2.42-3.45)
3-hr	**0.678** (0.591-0.794)	**0.862** (0.749-1.01)	**1.13** (0.980-1.32)	**1.34** (1.16-1.56)	**1.63** (1.40-1.90)	**1.87** (1.59-2.16)	**2.12** (1.79-2.45)	**2.38** (2.00-2.76)	**2.75** (2.28-3.18)	**3.05** (2.50-3.53)
6-hr	**0.788** (0.688-0.915)	**0.991** (0.868-1.15)	**1.27** (1.12-1.48)	**1.50** (1.31-1.73)	**1.80** (1.56-2.08)	**2.04** (1.76-2.35)	**2.29** (1.96-2.64)	**2.55** (2.17-2.93)	**2.91** (2.45-3.35)	**3.20** (2.67-3.69)
12-hr	**0.875** (0.771-0.994)	**1.10** (0.973-1.25)	**1.39** (1.23-1.58)	**1.62** (1.42-1.84)	**1.93** (1.69-2.19)	**2.17** (1.89-2.45)	**2.42** (2.09-2.73)	**2.67** (2.29-3.02)	**3.01** (2.56-3.42)	**3.29** (2.77-3.74)
24-hr	**0.985** (0.879-1.11)	**1.23** (1.10-1.39)	**1.54** (1.37-1.74)	**1.79** (1.59-2.01)	**2.12** (1.88-2.38)	**2.37** (2.09-2.66)	**2.63** (2.32-2.95)	**2.90** (2.54-3.24)	**3.25** (2.83-3.65)	**3.53** (3.06-3.96)
2-day	**1.05** (0.938-1.17)	**1.31** (1.18-1.46)	**1.63** (1.46-1.82)	**1.88** (1.69-2.09)	**2.22** (1.98-2.47)	**2.48** (2.21-2.76)	**2.75** (2.44-3.05)	**3.02** (2.67-3.35)	**3.38** (2.97-3.76)	**3.65** (3.20-4.07)
3-day	**1.13** (1.03-1.24)	**1.41** (1.28-1.55)	**1.74** (1.58-1.91)	**2.00** (1.82-2.19)	**2.34** (2.13-2.57)	**2.61** (2.36-2.86)	**2.88** (2.60-3.15)	**3.15** (2.83-3.45)	**3.50** (3.14-3.84)	**3.77** (3.37-4.14)
4-day	**1.22** (1.12-1.32)	**1.51** (1.39-1.64)	**1.84** (1.70-2.00)	**2.11** (1.95-2.28)	**2.47** (2.27-2.67)	**2.74** (2.52-2.96)	**3.01** (2.76-3.25)	**3.27** (2.99-3.54)	**3.63** (3.31-3.92)	**3.89** (3.54-4.22)
7-day	**1.40** (1.30-1.52)	**1.74** (1.61-1.88)	**2.11** (1.95-2.28)	**2.40** (2.22-2.59)	**2.78** (2.57-2.99)	**3.07** (2.83-3.30)	**3.35** (3.08-3.60)	**3.61** (3.33-3.89)	**3.96** (3.64-4.26)	**4.21** (3.85-4.54)
10-day	**1.54** (1.43-1.67)	**1.92** (1.77-2.07)	**2.34** (2.17-2.52)	**2.67** (2.48-2.87)	**3.11** (2.88-3.34)	**3.43** (3.17-3.69)	**3.76** (3.47-4.03)	**4.08** (3.75-4.38)	**4.49** (4.12-4.83)	**4.80** (4.38-5.16)
20-day	**1.96** (1.81-2.12)	**2.43** (2.25-2.63)	**2.95** (2.73-3.18)	**3.34** (3.10-3.59)	**3.84** (3.55-4.12)	**4.19** (3.88-4.50)	**4.54** (4.19-4.87)	**4.86** (4.48-5.21)	**5.27** (4.85-5.65)	**5.55** (5.11-5.96)
30-day	**2.34** (2.17-2.52)	**2.90** (2.69-3.12)	**3.49** (3.24-3.74)	**3.92** (3.64-4.20)	**4.46** (4.13-4.77)	**4.85** (4.48-5.18)	**5.21** (4.82-5.57)	**5.55** (5.12-5.93)	**5.95** (5.49-6.36)	**6.23** (5.74-6.66)
45-day	**2.84** (2.64-3.04)	**3.51** (3.27-3.76)	**4.18** (3.90-4.47)	**4.65** (4.34-4.97)	**5.22** (4.88-5.58)	**5.61** (5.24-5.99)	**5.96** (5.57-6.35)	**6.27** (5.85-6.67)	**6.60** (6.17-7.02)	**6.79** (6.37-7.22)
60-day	**3.28** (3.06-3.53)	**4.06** (3.78-4.36)	**4.84** (4.51-5.18)	**5.39** (5.03-5.77)	**6.05** (5.64-6.47)	**6.50** (6.07-6.95)	**6.91** (6.45-7.39)	**7.28** (6.79-7.78)	**7.68** (7.18-8.21)	**7.94** (7.43-8.48)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

```
START                TIME=0.0 CODE=0  LINES=0

*S       MESA DEL SOL MONTAGE 7     JUNE 2022   HZI NO. R315530.01
*S--------------------------------------------------------------------------------
*S--------------------------------------------------------------------------------
*S 100 - YEAR RAINFALL    ----------------------------------------------------
RAINFALL            TYPE=-1 RAIN QUAR=0.0 RAIN ONE= 1.83
                    RAIN SIX= 2.29 RAIN DAY=2.63 DT=0.0
*S---------------------------------------------------------------------
*S---------------------------------------------------------------------
*S-------THE FOLLOWING BASINS DRAIN INTO POND 1-------------------------
*S---------------------------------------------------------------------
*S---------------------------------------------------------------------
*S BASIN 100
COMPUTE NM HYD    ID=10 HYD NO=100  DA=0.0039 SQ MI
                  PER A=0.0 PER B=15.0 PER C=15.0 PER D=70.0
                     TP=-.1333 HR   MASSRAIN=-1
PRINT HYD         ID=10   CODE=1
*S---------------------------------------------------------------------
*S BASIN 200
COMPUTE NM HYD    ID=20 HYD NO=200  DA=0.0078 SQ MI
                  PER A=0.0 PER B=15.0 PER C=15.0 PER D=70.0
                     TP=-.1333 HR   MASSRAIN=-1
PRINT HYD         ID=20   CODE=1
 *S--------------------------------------------------------------------------
*S ADD BASINS, 100, 200, 300, AND 400
ADD HYD              ID=75 HYD=SUM IDi=10 IDii=20
PRINT HYD            ID=75 CODE=1
*S---------------------------------------------------------------------
*S---------------------------------------------------------------------
FINISH
```

```
AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4)                    - Ver. S4.02a, Rel: 02a      RUN DATE (MON/DAY/YR) =06/29/2022
INPUT FILE = C:\Users\ctrujillo\Desktop\Montage 7 INPUT 2.txt                          USER NO.= AHYMO-S4TempUser05901704

                              FROM  TO                   PEAK         RUNOFF              TIME TO    CFS      PAGE =   1
                  HYDROGRAPH   ID   ID         AREA     DISCHARGE     VOLUME      RUNOFF    PEAK     PER
COMMAND       IDENTIFICATION   NO.  NO.      (SQ MI)      (CFS)       (AC-FT)    (INCHES)  (HOURS)    ACRE     NOTATION

START                                                                                                        TIME=      0.00
*S                 MESA DEL SOL MONTAGE 7     JUNE 2022   HZI NO. R315530.01
*S-------------------------------------------------------------------------------
*S-------------------------------------------------------------------------------
*S 100 - YEAR RAINFALL    ----------------------------------------------------
RAINFALL  TYPE= 1 NOAA 14                                                                                    RAIN6=    2.290
*S--------------------------------------------------------------------
*S--------------------------------------------------------------------
*S-------THE FOLLOWING BASINS DRAIN INTO POND 1------------------------
*S--------------------------------------------------------------------
*S--------------------------------------------------------------------
*S BASIN 100
COMPUTE NM HYD        100.00   -    10       0.00390         9.88       0.356      1.70914    1.530    3.960 PER IMP=  70.00
*S--------------------------------------------------------------------
*S BASIN 200
COMPUTE NM HYD        200.00   -    20       0.00780        19.75       0.711      1.70914    1.530    3.956 PER IMP=  70.00
*S ADD BASINS, 100, 200, 300, AND 400
ADD HYD               SUM 10&20  75       0.01170        29.63       1.066      1.70909    1.530    3.957
*S--------------------------------------------------------------------
*S--------------------------------------------------------------------
FINISH
```

Worksheet for Montage 7 - Street Capacity

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	0.500 %
Normal Depth	6.0 in

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.50
0+00	0.00
0+08	0.16
0+16	0.00
0+16	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.50)	(0+16, 0.50)	0.017

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Discharge	22.37 cfs
Roughness Coefficient	0.017
Elevation Range	0.0 to 0.5 ft
Flow Area	6.7 ft²
Wetted Perimeter	17.0 ft
Hydraulic Radius	4.7 in
Top Width	16.00 ft
Normal Depth	6.0 in
Critical Depth	5.7 in
Critical Slope	0.621 %
Velocity	3.33 ft/s
Velocity Head	0.17 ft
Specific Energy	0.67 ft
Froude Number	0.905
Flow Type	Subcritical

GVF Input Data

Worksheet for Montage 7 - Street Capacity

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	6.0 in
Critical Depth	5.7 in
Channel Slope	0.500 %
Critical Slope	0.621 %