

Nina Ruiz
 El Paso County Planning & Community Development
 2880 International Circle
 Colorado Springs, CO 80910

July 19, 2017

Per the DCM add the following:
 1. Cover Sheet
 2. Standard signature blocks (attached).
 3. Drainage Map.



**RE: Woodmen Hills Metropolitan District
 Regional Water Reclamation Facility
 Drainage Letter**

The purpose of this drainage letter is to satisfy requirements of the El Paso County Drainage Criteria Manual for the proposed upgrades to the WHMD Regional Water Reclamation Facility (WRF).

Property Description:

The subject property is located in Tract K, Meridian Ranch Filing No. 1, approximately 15 miles northeast of downtown Colorado Springs and near the intersection of Stapleton Dr. and Meridian Ranch Blvd. The existing WRF consists of a lagoon system constructed in the 1980s with several upgrades being constructed in the 1990s and 2000s. The site is currently zoned PUD and has a total area of 13.62 acres. However, the upgrades will only impact 5.7 acres of the total site.

The intention of the applicant is to construct upgrades to the existing WRF in order to meet effluent requirements of a new Discharge Permit from the Colorado Department of Health & Environment (CDPHE). The upgrades will generally consist of new concrete basins for treatment of wastewater, and a building housing secondary clarifiers, pump gallery, solids dewatering equipment, solids load out facility and office space.

General Existing Drainage Characteristics:

The major drainage characteristics include the conveyance of water (via sheet-flow) southeast across the site into a swale in which then flows into existing storm drain infrastructure on Stapleton Dr. The site is entirely outside the 100-year floodplain as shown in the floodplain map included with this letter.

According to the NRCS, the native soil on the site is Columbine gravelly sandy loam, soil group A. The existing surfaces on the site consist of native material, recycled asphalt and HDPE lined basins.

The table below shows the runoff coefficients for the existing site which were taken from Table 6-6 of the Drainage Criteria Manual (DCM).

Site Composition (SF)		C ₅	C ₁₀	C ₁₀₀
Recycled Asphalt	22,600	0.59	0.63	0.7
Ponds	30,800	0	0	0
Native	194,892	0.09	0.17	0.36
Total	248,292	0.12	0.19	0.35

The following table displays the peak runoff flow rate for the existing site and the corresponding rainfall intensity used to calculate it. The runoff was calculated using the Rational Method and the time of concentration was calculated to be approximately 23.5 minutes.

	5-year	10-year	100-year
Intensity (in/hr)	2.84	3.31	4.76
Q (CFS)	2.01	3.60	9.40

Proposed Drainage Characteristics:

The proposed drainage from this site will generally remain the same as the existing drainage. The drainage swale shall be improved and the overall site slope shall be reduced. The table below contains the runoff coefficients for the proposed site improvements which were also taken from Table 6-6 of the DCM.

Site Composition (SF)		C ₅	C ₁₀	C ₁₀₀
Roof	15,500	0.73		
Pavement	1,700	0.9		
Aggregate Base	33,200	0.59		
Basins	39,300	0		
Native	158,592	0.09		
Total	248,292	0.19	0.25	0.38

Add a section for Drainage Fee.
 Identify the drainage basin (Bennett Ranch) and state that there are no drainage fees associated with site development plan application.

The following table displays the peak runoff flow rate for the proposed site and the corresponding rainfall intensity used to calculate it. The runoff was calculated using the Rational Method and the time of concentration was calculated to be approximately 28.5 minutes to the reduced slope of the proposed overland flow area.

	5-year	10-year	100-year
Intensity (in/hr)	2.56	2.99	4.19
Q (CFS)	2.75	4.19	9.40

Categorically state whether or not Water Quality storage is required and provide the justification if not required.
 Based on the grading it appears that runoff from the proposed building and parking drains to either the sludge holding basin or existing pond 2.

While these calculations project slight increases in the 5 year flow projection is less than the existing site. That is primarily due to the increased time of concentration and the increase in the area that captures 100% of the rainfall.

Based on the 100-year peak flow projections, no detention is proposed for the WRF upgrades.

Respectfully,
JDS-Hydro Consultants, Inc.



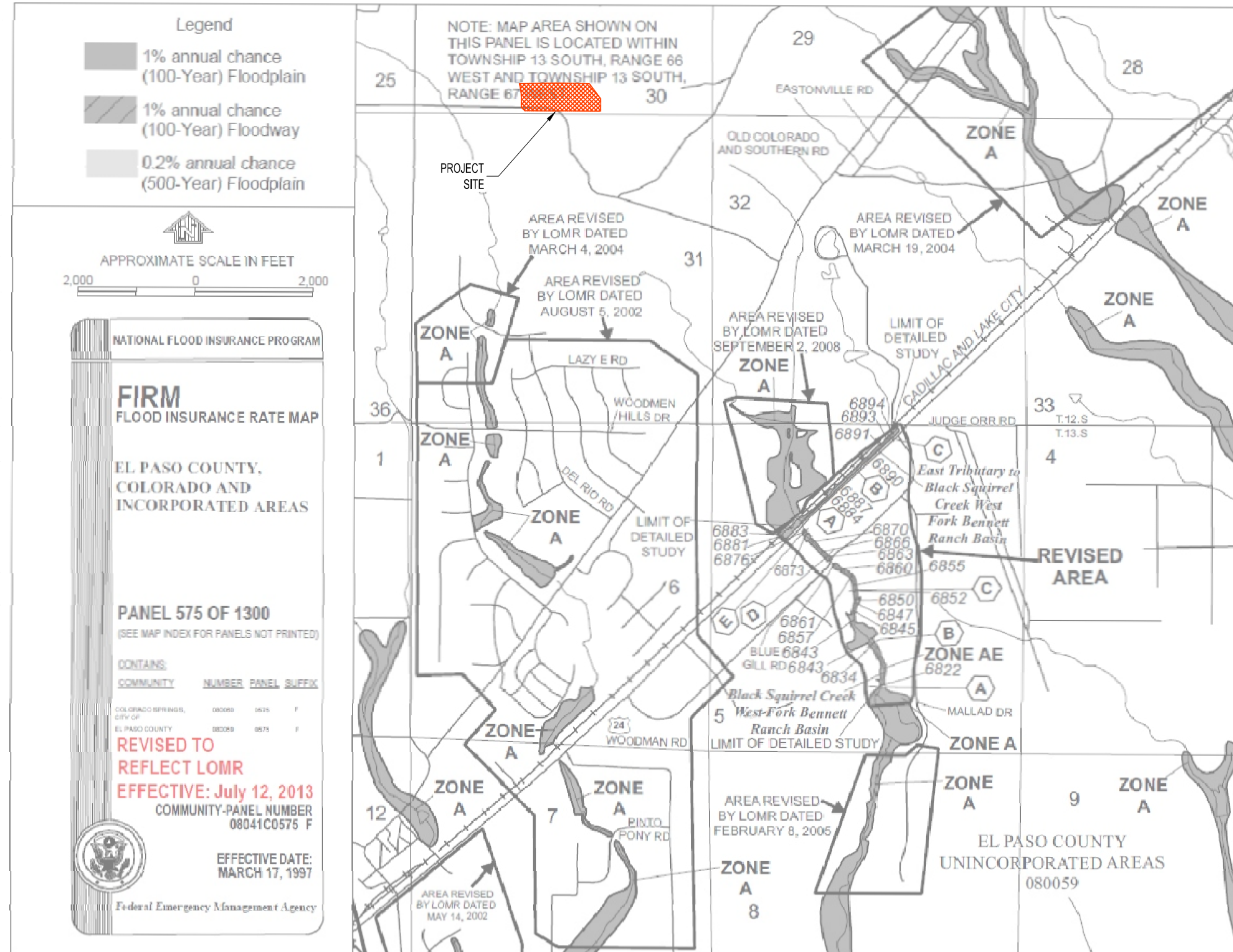
Ryan M. Mangino, P.E.



Reference the approved Final Drainage Report and state whether or not this is in compliance to said report. "Final Drainage Plan Meridian Ranch Filing 1" dated November 2002, prepared by URS. Also, categorically state whether or not there is negative impact to downstream properties.

Enclosure - Floodplain Map (FIRM)

Project No.: 112.88
 Scale: AS NOTED
 Date: 07/07/17
 Design: RMM
 Drawn: RMM
 Check: JPM
 Revised:



Markup Summary

dsdlaforce (5)

t



Subject: File Attachment
Page Label: 1
Lock: Unlocked
Author: dsdlaforce
Date: 7/24/2017 10:31:55 AM

July 19, 2017

Per the DCM add the following:
1. Cover Sheet
2. Standard signature blocks (attached).
3. Drainage Map.

ents of the El Paso County Drainage Criteria
nal Water Reclamation Facility (WRF).

Q	U
0.37	0.36
0.25	0.38

off flow rate for the proposed site and the corresponding rainfall
was calculated using the Rational Method and the result of
approximately 2.5 cfs. Categorically state whether or not Water
Quality storage is required and provide the
justification if not required.
Based on the grading it appears that runoff
from the proposed building and parking drains
to either the sludge holding basin or existing
pond 2.
cesses in the
the. That preliminary
100% of the rainfall.
ion, no detention is proposed for the WRF upgrades.



Reference the approved Final Drainage
Report and state whether or not this is in
compliance to said report. "Final
Drainage Plan Meridian Ranch Filing 1"
dated November 2002, prepared by
URS. Also, categorically state whether
or not there is negative impact to
downstream properties.

JITE 300, COLORADO SPRINGS, CO 80903

Storm Drainage Characteristics

Area	Area	Area	Area
1	2	3	4
0.37	0.36	0.37	0.36
0.25	0.38	0.25	0.38

Verify the drainage basin (Storm Drain) and
state that there are no drainage fees associated
with site development plan application.

Identify the drainage basin (Bennett
Ranch) and state that there are no
drainage fees associated with site
development plan application.

dsdlaforce

Subject: Text Box
Page Label: 1
Lock: Unlocked
Author: dsdlaforce
Date: 7/24/2017 10:32:57 AM

Per the DCM add the following:
1. Cover Sheet
2. Standard signature blocks (attached).
3. Drainage Map.

Subject: Callout
Page Label: 2
Lock: Unlocked
Author: dsdlaforce
Date: 7/25/2017 3:58:46 PM

Categorically state whether or not Water
Quality storage is required and provide
the justification if not required.
Based on the grading it appears that
runoff from the proposed building and
parking drains to either the sludge holding
basin or existing pond 2.

Subject: Text Box
Page Label: 2
Lock: Unlocked
Author: dsdlaforce
Date: 7/25/2017 3:59:37 PM

Reference the approved Final Drainage
Report and state whether or not this is in
compliance to said report. "Final
Drainage Plan Meridian Ranch Filing 1"
dated November 2002, prepared by URS.
Also, categorically state whether or not
there is negative impact to downstream
properties.

Subject: Callout
Page Label: 2
Lock: Unlocked
Author: dsdlaforce
Date: 7/24/2017 10:57:30 AM

Add a section for Drainage Fee.

Identify the drainage basin (Bennett
Ranch) and state that there are no
drainage fees associated with site
development plan application.