LOS DIAMANTES SUBDIVISION
RAINBOW TRIBUTARY
CONDITIONAL LETTER
OF MAP REVISION

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APPROVALS

City of Rio Rancho

_____ _____

Development Services *Date*
Engineering Division

I, Christopher R. Hittle, a New Mexico registered professional engineer, do hereby certify that the accompanying report was prepared by me or under my supervision and is true and correct to the best of my knowledge.

_____5/19/2021__

Registered Professional Engineer *Date*

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EXECUTIVE SUMMARY

General Project Location

The proposed Los Diamantes Subdivision is located in the City of Rio Rancho, Sandoval County, New Mexico. The project is located approximately one mile south of Southern Boulevard SW, one mile west of Unser Boulevard SE, one half mile east of Rainbow Boulevard SE, and 1,900 feet north of the Calabacillas Arroyo. The regional pond and storm drain project is within Southern Sandoval County Arroyo Flood Control Authority (SSCAFCA) jurisdiction just north of the line between Sandoval County and Bernalillo County. The regional pond outfall structure at the Calabacillas Arroyo is within Bernalillo County and under the Albuquerque Metropolitan Arroyo Flood Control Authority's (AMAFCA) jurisdiction. The purpose of the report herein is in support of a Conditional Letter of Map Revision (CLOMR) from the Federal Emergency Management Agency (FEMA). The CLOMR is for a portion of Rainbow Tributary as impacted by the proposed Los Diamantes Subdivision project. The project location can be seen in Figure 1 below.

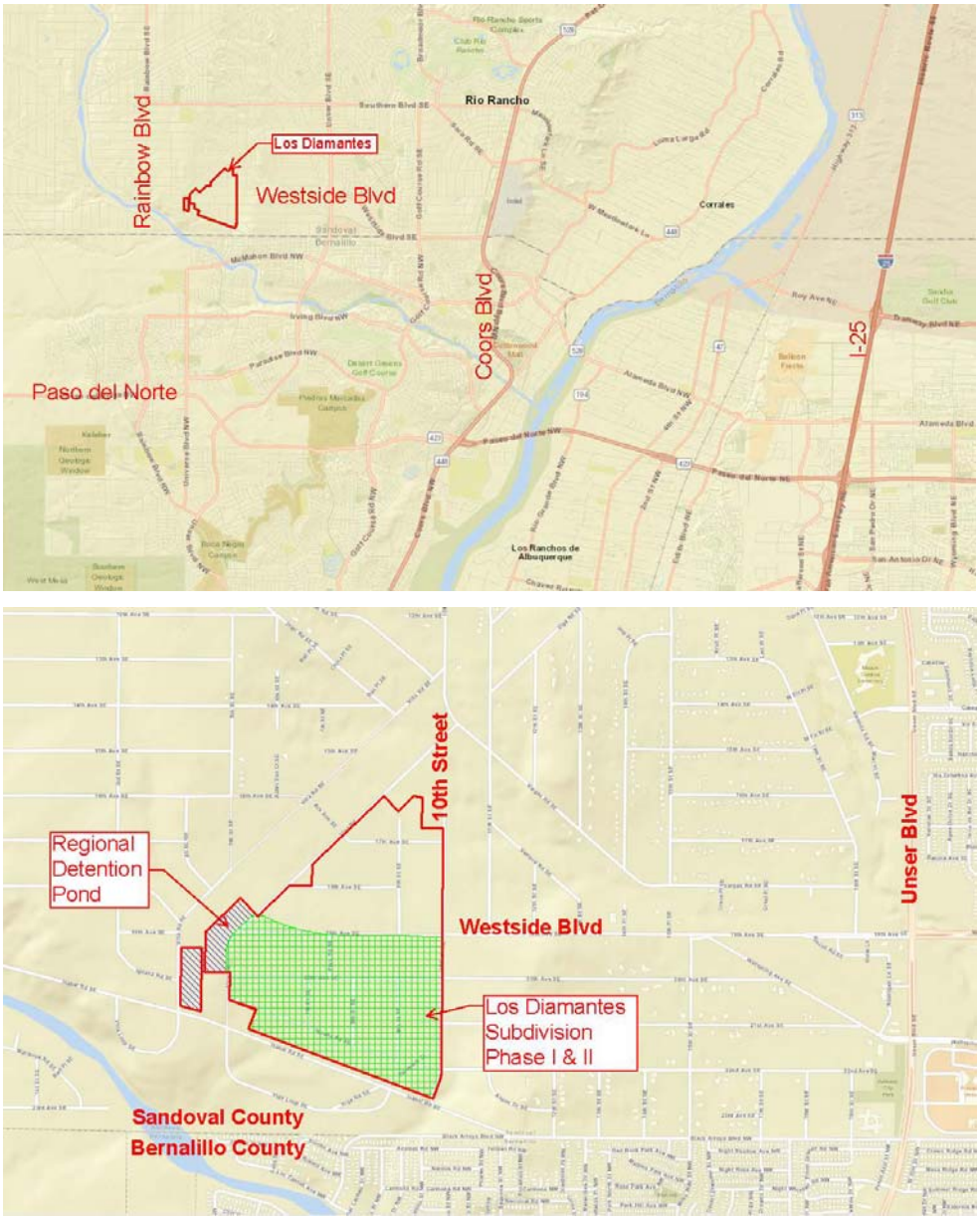

Figure 1: Location Map

Development Concept for the Site

The Los Diamantes Master Plan (Mark Goodwin & Associates, 2015) includes:

- 63 acres of Business Park
- 109 acres of zoned Residential (R-3), and
- 8 acres of Pond.

The Master Plan is shown in Figure 2 below.

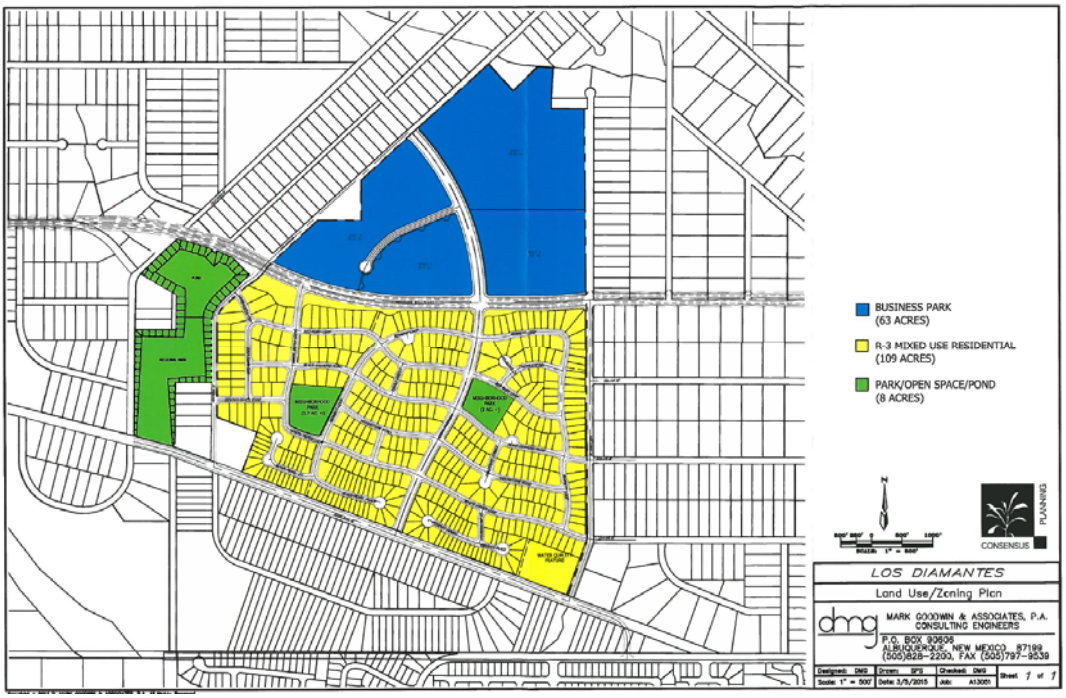

Figure 2: Los Diamantes Zoning Map

Drainage Concept for the Site

The objectives of this Drainage Report are to:

1. Provide a regional stormwater detention pond that will serve to mitigate the increased runoff to the Rainbow Tributary and Calabacillas Arroyo due to the impacts of development from the Lost Diamantes Subdivision as well as other future development within the Rainbow Tributary watershed.

The key locations where the flow rates are compared between existing and proposed conditions are RA_106_J, RA_107_J, RA_107A_J, RA_108_J, and LD-POND. RA_106_J, RA_107_J, and RA_107A_J are located upstream of the proposed regional detention pond while RA_108C_J is the junction located at the inlet of the existing 102" RCP immediately north of the Sandoval County line along the 10th Street alignment. These locations can be seen on Plates 3, 6, and 9.

Table 1: Summary of 100-Year Discharges

HEC-HMS Node	HEC-RAS Station	Existing	Revised Existing	Proposed
RA_106_J	7061	760	472	472
RA_107_J	4696	773	529	-
RA_107A_J	6862	-		490
RA_108_J / RA_108C_J	2237	785	579	678
LD-POND	-	-	-	155.2

As seen in the table above, the peak 100-year flow rates in the proposed are decreased from the SSCAFCA CAWMP existing conditions. The following is a brief description of what each scenario represents:

- Existing Condition: this model utilizes the CAWMP Existing model as a base, but replaces the portion of the watershed upstream of the Rainbow Pond just north of Inca Road. This portion of the CAWMP model was replaced by the existing conditions model prepared by CH2M Hill as part of the Rainbow Pond design.
- Revised Existing Condition: this model utilizes the existing condition model as a base but adds the now existing Rainbow Pond that was commissioned and constructed by SSCAFCA in 2018.
- Proposed Condition: the proposed condition represents the scenario in which only the residential portion of the Los Diamantes Subdivision is developed. This scenario includes the construction of the Los Diamantes Regional Pond and outfall pipe to the Calabacillas Arroyo.

How Offsite Flow Will Be Handled

Offsite flows within Rainbow Tributary upstream of the project will be intercepted by the proposed regional detention pond and diverted through a storm drain to the Calabacillas Arroyo. Where necessary, upstream offsite flows will be intercepted and conveyed through the Los Diamantes Subdivision in a storm drain south to the existing 102" Saltillo Outfall, represented by node RA_108C_J in the HEC-HMS model.

How Onsite Flow Will Be Handled

Runoff from onsite streets and storm drains will be conveyed to the onsite stormwater quality pond located in the southeast corner of the Phase I development. The storm drains are designed to remove a portion of the surface drainage from the streets as necessary to limit the peak 100 year flow depths in the streets to the top of curb and to limit the energy grade elevations so they do not exceed the right of way elevations at the back of sidewalk.

Impacts On or Requirements of other Jurisdictions

The CLOMR will be subject to the approval of the City of Rio Rancho.

Approvals Being Requested in Conjunction with this Submittal

This report contains the final design and analysis of the off-site stormwater runoff that impacts the Los Diamantes Subdivision. This includes design of the proposed regional pond along Rainbow Tributary immediately upstream of the subdivision. The approval being requested from FEMA is for the hydrologic and hydraulic analysis associated with Rainbow Tributary and the impacts of the proposed regional pond thereon. The necessary MT-2 forms have been provided in Appendix A.

PROJECT DESCRIPTION

Location

The site is generally bounded on the east by 10th St., on the north and west by Viga Rd., and on the south by Isabel Rd. The project is located approximately one mile south of Southern Boulevard SW, one mile west of Unser Boulevard SE, one half mile east of Rainbow Boulevard SE, and 1,900 feet north of the Calabacillas Arroyo. The project location can be seen on the vicinity map below from the City of Rio Rancho Vision View mapping site. The proposed residential subdivision portion of Los Diamantes (Phases I and II) is located south of Westside Boulevard.

Vicinity Map

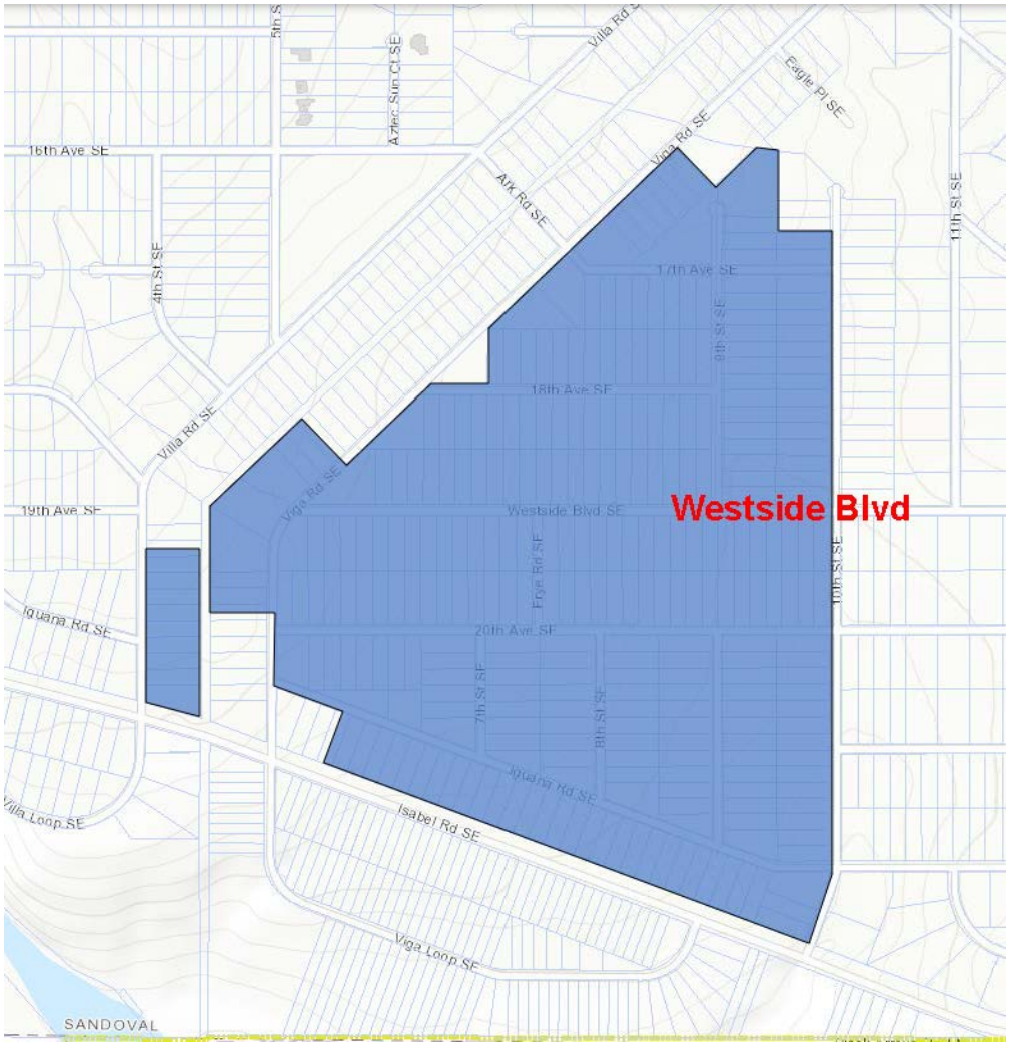

Figure 3: Vicinity Map

Legal Description

The legal description for the Los Diamantes Subdivision is: A tract of land within the Town of Alameda Grant, City of Rio Rancho, Sandoval County, New Mexico being all of Tract 1, Los Diamantes Subdivision, Rio Rancho Estates, Unit 10, as the same is shown and designated on said plat, filed for record in the office of the county clerk of Sandoval County, New Mexico on 09/27/2019 in Rio Rancho Estates Plat Book 3, Page 4441, and containing 117.5705 acres more or less. The project location can be seen in Figure 3.

Flood Hazard Zone

According to FEMA's Flood Insurance Rate Maps, see below, Numbers 35043C2101D and 35043C2102D, Effective March 18, 2008, Flood Zone 'A' runs west to east through the middle and south along the east side of the site as shown in Figure 4 below. Also see Exhibits 2a and 2b in the Exhibits appendix. This CLOMR has been submitted to FEMA to remove the Zone A floodplain through the Los Diamantes Subdivision project area due to the stormwater being intercepted and conveyed through the regional pond and storm drain system. A Letter of Map Revision will be submitted in the near future to update the remaining portion of Rainbow Tributary upstream of the regional pond to a detailed, Zone AE floodplain.

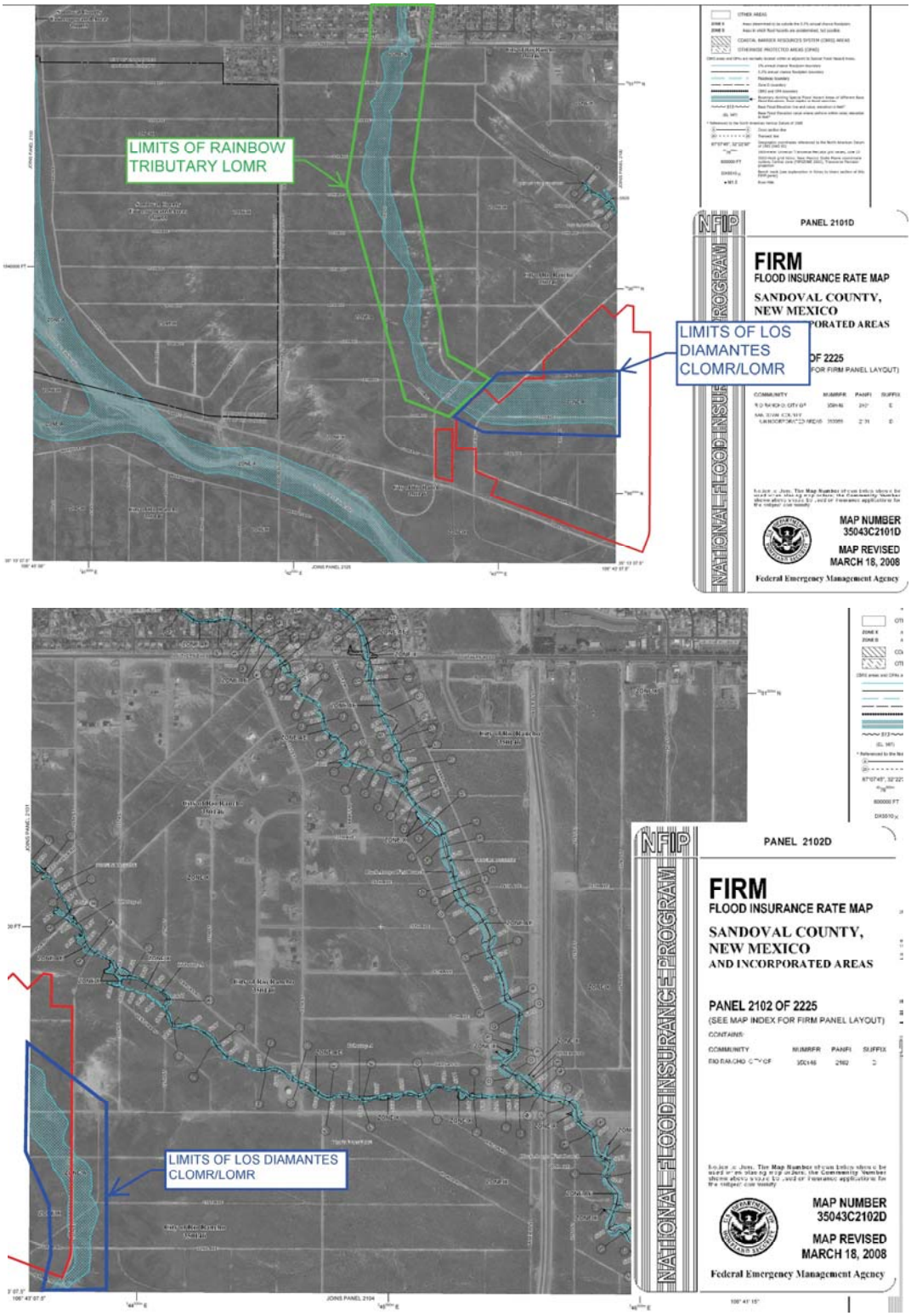

Figure 4: Effective FEMA FIRMs

Watershed

Under existing conditions, the majority of the project site is located within the Rainbow Tributary / Calabacillas Arroyo watershed. Under existing conditions, a small portion at the north end of the project drains toward the Black Arroyo.

EXISTING CONDITIONS

Site Investigation

The existing subbasins for the Rainbow Tributary from the Calabacillas Arroyo Watershed Park Management Plan (CAWMP) can be found in the Supplemental Data folder provided with this report. The Los Diamantes 180 acre site is mostly in basins RA_107 and RA_108. The north edge of the site is in basin 153.3 of the Black WMP 2013 Addendum. These three basins are completely undeveloped though they were subdivided by the original Rio Rancho Estates Unit 10 Plat and dirt roads were graded in the dedicated street right of ways.

Existing five foot contour interval topo developed from SSCAFCA LIDAR data is shown on the drainage area maps found on Plates 1 to 12. The existing conditions drainage area maps can be found on Plates 1-3, revised existing conditions on Plates 4-6, and proposed conditions on Plates 7-9. Generally basins RA_107 and RA_108 sheet flow non-erosively from west to east at about 2%. Concentrated drainage flows non-erosively in a wide natural swale from north to south at about 1% near the east edge of the site to where it enters a dirt road in 10th St. near the south corner of the site where it flows erosively at about 2% to the south corner of the site. Some sheet drainage exits this site across Isabel Rd. along the south boundary of the site. All of the drainage from the Rainbow Tributary ends up at the existing 102" RCP which is labeled as existing facility "CA01S" on the CAWMP watershed map found in the CAWMP report.

Runoff from the upstream off-site Rainbow Tributary Watershed, Basins RA_101 thru RA_106 and a portion of RA_107, enters this site on the west edge as concentrated sediment laden flow and is quickly spread to shallow sheet flow on the west side of the site where most of the sediment drops out. FEMA's Flood Insurance Rate Map (Exhibits 2a and 2b) shows Flood Hazard Zone 'A' crossing this site from west to east in the approximate location of the flow path of the Rainbow Tributary through this site. Existing development conditions in these upstream offsite basins is documented on page 12 of the CAWMP (SSCAFCA, 2015).

Sheet flow from a 45 acre portion off-site basin RA_107 on the map in the CAWMP report upstream of the project crosses Viga Rd. and sheet flows into the path of the Rainbow Tributary as it crosses through this site.

Additional upstream offsite drainage from a 32 acre portion of basin 153.3 enters this site as concentrated drainage in Ark Rd. and travels west to east through the site in the existing dirt road in 17th Ave. and it drains east into the Back Arroyo.

Site Evaluation

The quantitative analysis of existing conditions in this report is similar to that shown in the CAWMP. For the purposes of having the necessary models for a submittal to FEMA as well as making sure the latest information is used for those models, an updated existing conditions model has been prepared as well as a revised existing conditions model. The updated existing conditions model replaces SSCAFCA drainage subbasins RA_101, RA_102, and RA_103 with the existing conditions basins from the CH2M Hill existing conditions model for Rainbow Tributary. A copy of the CH2M HEC-HMS model provided by SSCAFCA has been included in the Supplemental Data folder. The revised existing conditions model goes one step further and adds the now existing SSCAFCA regional drainage pond immediately upstream of Inca Road on Rainbow Tributary (also included in Supplemental Data folder). The analysis is summarized in Table 1 on page 3 where the peak 100-year flow rates from all existing conditions models are compared to proposed conditions.

DEVELOPED CONDITIONS

Onsite & Offsite

General Criteria and Considerations

An onsite drainage management plan has been prepared under separate cover for Phases I and II of the Los Diamantes Subdivision. The Los Diamantes Phase I and II Drainage Management Plan was prepared in October 2019 and provides detailed calculations for developed conditions onsite, including AHYMO hydrology, street capacity, inlet capacity calculations, and preliminary storm drain design.

Upon completion of the Los Diamantes Regional Detention Pond construction with its outfall/diversion pipe the on-site FEMA Special Flood Hazard Zone A will be removed leaving no arroyos with definite bed and bank; therefore, aggradation and degradation is not of concern.

The potential for polluted storm water runoff is to be eliminated both during construction and after the development is complete by excavating the regional pond and the storm water quality pond as the first item of construction, so that all storm water runoff will be contained onsite or diverted around the site.

Quantitative Analysis and Evaluation

The drainage concept for this site is to intercept most of the upstream offsite portion of the Rainbow Tributary Watershed (1045 acres) in the Los Diamantes Regional Pond and divert it south to the Calabacillas Arroyo. The remaining watershed that will drain to the existing 102” Saltillo Outfall pipe includes: 77 acres offsite upstream, 173 acres onsite, and 110 acres offsite downstream, for a total of 360 acres that will still flow to the 102” Saltillo Outfall. In addition to the Rainbow Tributary watershed, approximately 290 acres from the Black Arroyo watershed are diverted and conveyed to the existing 102” Saltillo Outfall via underground storm drain.

Most of the Unit 10 portion of the Rainbow Tributary watershed will be allowed to discharge the developed condition 100-year peak flow rates without providing separate stormwater detention ponds. This is allowable due to the Los Diamantes Regional Detention Pond being constructed to mitigate increased flow rates that would otherwise result from new development in that portion of the watershed. The proposed 100-year peak flow rate from the Rainbow Tributary will be reduced by the Los Diamantes Regional Pond upstream of Phases I and II of Los Diamantes. The reduced flow rate will be diverted directly into the Calabacillas Arroyo instead of being conveyed through the Los Diamantes Subdivision thus eliminating the existing floodplain through the proposed subdivision. With the regional detention pond, a portion of Unit 10 in the Rainbow watershed can develop at the planned densities and the peak 100-year flow to the Calabacillas Arroyo will be less than or equal to the updated existing condition 100-year peak flow rate. As a result, detention ponds will only be necessary in a few portions of Unit 10 within the Rainbow Tributary Watershed.

CALCULATIONS

Hydrology

Hydrology calculations were performed using HEC-HMS Version 4.2.1 (see Table 1 on page 3). SSCAFCA provided the model that was used in the CAWMP. The original SSCAFCA model created in HEC-HMS v3.5 was converted to 4.2.1 and only the Rainbow Tributary watershed was extracted for use in this analysis. The hydrologic model scenarios were modified as follows.

- Existing Condition: the existing conditions model used the CAWMP existing model as a base. Subbasins RA_101, RA_102, and RA_103 were replaced with the existing conditions subbasins from the CH2M Hill Rainbow Tributary model prepared for SSCAFCA. It assumes existing development and existing drainage facilities prior to construction of the SSCAFCA regional pond immediately upstream of Inca Road.
- Revised Existing Condition: this model is the same as the existing condition model with the addition of the now existing SSCAFCA regional pond immediately upstream of Inca Road on Rainbow Trib.
- Proposed Condition: the proposed condition represents the scenario in which only the residential portion of the Los Diamantes Subdivision is developed. This scenario includes the construction of the Los Diamantes Regional Pond and the storm drain outfall pipe to the Calabacillas Arroyo.

Land treatment categories are based on Table D-3 (Figure 5 below) from the SSCAFCA Development Process Manual (DPM). The initial abstraction and uniform loss rates for the land treatments A, B, and C from Table F-4 (Table 2 below) from the SSCAFCA DPM were used to calculate a weighted average and land treatment D was input into HEC-HMS directly as the percentage of imperviousness. A summary of the subbasin parameter calculations for proposed conditions can be found in Appendix C. It should also be noted that a sediment bulking factor of 6% was utilized for developed conditions and 18% for undeveloped conditions. Drainage area maps for each of the scenarios can be found on Plates 1 – 9.

TABLE D-3 SSCAFCA TREATMENT TYPE PERCENTAGE SUMMARY					
Parcel Description	Treatments A	B	C	D	Methodology/Notes
1/8 Acre	0%	15%	15%	70%	DPM, Chapter 22.2, Table A-4 for D
1/6 Acre	0%	28%	15%	57%	Northern Meadows Master Plan
1/4 Acre	0%	30%	28%	42%	DPM, and followed SSCAFCA lead on B&C
1/2 Acre	10%	33%	30%	27%	SSCAFCA
1 Acre	43%	20%	20%	17%	SSCAFCA
Single Family Residential N=units/acre, N6					7*√((N*N) + (5*N))
Estate Lots (btwn 1- 5ac)	60%	15%	15%	10%	DPM for 2.5 acre lot
M-1 (Light Industrial)	0%	15%	15%	70%	DPM for D, split B & C
Vacant Res./Undevel.	79%	8%	8%	5%	DPM for 5 acre lot
Arroyo	100%	0%	0%	0%	DPM
Major Roads	0%	0%	10%	90%	DPM
School	10%	20%	20%	50%	DPM
Commercial/Industrial	0%	0%	15%	85%	DPM average of Heavy Industrial and Commercial
Open Space	100%	0%	0%	0%	DPM
Parks, Sports and Rec	0%	85%	0%	15%	DPM
Landfill	0%	0%	100%	0%	All disturturbed ground
Multi-Family	0%	15%	15%	70%	DPM-Multiple Unit Res. Attached
Northern Meadows	0%	28%	15%	57%	Northern Meadows Master Plan
Drainage Ponds	0%	0%	100%	0%	
County Platted (1)	18.7%	29.5%	27.0%	24.8%	(used Basin P12_104 as typical)
County Unplatted (2)	95%	5%	0%	0%	DPM

NOTES
1. County Platted area is defined as the area between CORR boundary and Rio Rancho Estates boundary.
2. County Unplatted area is defined as the area outside the city limits and the Rio Rancho Estates limits. It is considered to be existing conditions.
3. All roads are assumed to be paved.

Figure 5: SSCAFCA Land Treatment Table

Table 2: SSCAFCA Hydrologic Parameters

TABLE F-4 INITIAL AND CONSTANT LOSS PARAMETERS		
Land Treatment	Initial Abstraction (inches)	Infiltration (inches/hour)
A	0.65	1.67
B	0.50	1.25
C	0.35	0.83

The time of concentration and storage coefficient values from the CAWMP were used throughout this analysis except for where basin boundaries were revised as part of the proposed and developed conditions. For all revised subbasins, new times of concentration and storage coefficients were calculated per Sections 4.1 to 4.4 of Chapter 22 of the SSCAFCA Development Process Manual (DPM). Off-site channel routing remains unchanged, but on-site they were changed to pipes. Hydrologic calculations for proposed conditions can be found in Appendix C.

SSCAFCA included the precipitation values for the100 year event in the HEC-HMS model that was used in the CAWMP. The 100-year, 24-hour point precipitation values vary from the 3.1" at the north end of the Calabacillas Arroyo to 2.6" at the south end of the CAWMP study area. No reduction is applied to the point precipitation values used to calculate peak flow rates along the Rainbow Tributary because the area of that watershed is only 2 sq. mi. The 10-, 50-, and 500-year precipitation values were calculated per SSCAFCA

guidelines using the SSCAFCA Design Rainfall spreadsheet and precipitation depths obtained from the National Oceanic and Atmospheric Administration (NOAA) Precipitation Frequency Data Server. The meteorological models for these additional storm events do vary depending on location due to the fact that the Rainbow Tributary spans multiple precipitation zones. However, aerial reductions on these additional storm events are not required as they are only utilized to calculate flows along Rainbow Tributary. The precipitation data and calculations utilized in this analysis can be found in Appendix B. The peak flow rates are summarized in Table 1 on page 3. Detailed output from the hydrologic model is located in Appendix E.

Hydraulics

Offsite

Offsite hydraulic modeling was prepared for Rainbow Tributary using the United States Army Corps of Engineers (USACE) backwater computation program HEC-RAS v.5.0.7. Hydraulic models were prepared for existing, revised existing, and proposed conditions. LIDAR data provided by SSCAFCA was utilized to prepare the geometry for the hydraulic models. The existing and revised existing conditions models extend from Villa Road at the upstream limit to the existing 102" RCP along the 10th Avenue alignment at the downstream end. The proposed conditions models extend from Villa Road at the upstream limit to a downstream limit located at the inlet to the proposed Los Diamantes Regional Pond.

Table 5.6 from *Open-Channel Hydraulics* by Ven Te Chow was utilized to determine Manning's n-values for the existing arroyo. For the main channel of the arroyo, a value of 0.035 was utilized representing 'Natural Streams, Minor streams, Streams on plain – Clean, straight, full stage, no rifts or deep pools, with more stones and weeds' while a value of 0.05 was utilized for the overbanks representing 'Natural Streams, Floodplains, Brush – scattered brush, heavy weeds.' Base maps for the hydraulic models can be found on Plates 10 - 13.

In the proposed conditions model the downstream limit of the HEC-RAS model is located at the entrance to the proposed baffled chute of the regional pond. Cross section 6757 is located at the throat of the chute where the 4:1 slope down to the pond begins. Cross section 6777 is located at immediately upstream of the project boundary in all models, including existing and revised existing, and reflects existing conditions topography. Due to the steep slope immediately downstream of Section 6757, the downstream boundary condition in the HEC-RAS model for proposed conditions is set to critical depth.

This CLOMR has been submitted to FEMA to remove the currently effective Zone A floodplain through the Los Diamantes Subdivision from the Regional Pond to the existing 102" Saltillo Outfall. A summary of the 100-year hydraulic modeling results can be found in Table 3 below. Refer to Plates 10 - 13 for the location of the HEC-RAS cross sections for comparison. The hydraulic analysis of the proposed pond outlet system is discussed in the Pond Design section below. Existing, revised existing, and proposed conditions HEC-RAS results can be found in Appendices F, G, and H, respectively.

Table 3: Comparison of 100-year Water Surface Elevations

HEC-RAS Cross Section	Existing Condition	Revised Existing Condition	Proposed Condition
7061	5517.07	5516.67	5516.67
6862	5513.20	5512.63	5512.68
6777	5510.56	5510.01	5510.07
6757	-	-	5509.16
6663	5508.90	5508.38	-
6492	5505.96	5505.96	-
6301	5501.61	5501.40	-
6131	5498.48	5498.13	-
5879	5492.41	5492.32	-
5605	5486.53	5486.45	-
5392	5481.87	5480.82	-
5228	5475.70	5475.69	-
4950	5468.39	5468.39	-
4696	5462.50	5462.39	-
4469	5457.08	5457.08	-
4241	5453.15	5453.15	-
4112	5449.93	5449.46	-
3947	5447.56	5447.26	-
3802	5446.51	5446.24	-
3660	5445.52	5445.28	-
3477	5443.24	5443.06	-
3300	5440.99	5440.63	-
3085	5438.11	5437.90	-
2757	5433.46	5433.20	-
2627	5432.25	5431.92	-
2237	5427.15	5426.92	-
2046	5425.48	5425.30	-
1944	5422.35	5422.08	-
1749	5418.49	5418.26	-
1502	5414.33	5414.01	-
1369	5411.92	5411.78	-
1210	5405.24	5404.95	-
1068	5393.96	5393.26	-
1000	5388.55	5387.98	-

Pond Design

The Los Diamantes Regional Pond is designed to mitigate all of the upstream developed conditions 100-year discharge that would otherwise result from the development of the Los Diamantes Subdivision and the rest of Unit 10 that drains to the existing 102" Saltillo Outfall (CA_01S in the CAWMP) including the diverted 244 acres of the Black Arroyo. The Los Diamantes Regional Pond was modeled in HEC-HMS as a storage routing feature utilizing an Elevation-Storage-Discharge outflow curve. The Elevation-Storage curve was calculated based on the pond design using drafting software. The Storage-Discharge curve was calculated based on the proposed outlet structure, which consists of a ported riser box and 48" RCP outlet pipe. The discharge curve was calculated based on the three (3) rows of orifices on the ported riser and the weir located at the top of the riser box. The orifice equation was utilized to calculate the capacity of the orifices using an orifice coefficient of 0.598. The weir equation was utilized to calculate the capacity of the weir discharge at the top of the riser box using a weir coefficient of 3.0. The weir length for the riser box was calculated using the perimeter length around the top of the three-sided riser box. Near the top of the riser box elevation, the capacity of the riser box orifice and weir combination was compared to the capacity of the 48" RCP to determine the limiting discharge. It was determined that the riser box controls the pond outflow up to an elevation of 5495.00 at which point the 48" RCP becomes the limiting outflow. At this elevation, the 48" outlet pipe controls the outflow based on inlet control calculations using the Federal Highway Administration's (FHWA) HY-8 culvert hydraulics software. The 48" RCP was modeled in HY-8 using the first section of pipe immediately downstream of the ported riser. This section has a proposed slope of approximately 0.034 ft/ft, a Manning's n-value of 0.013, and a downstream tailwater condition set to a WSEL equal to the HGL located in the proposed manhole at Station 19+15.10. The weir equation was utilized to calculate the discharge through the emergency overflow spillway using a coefficient of 2.65. The spillway consists of a 214' wide weir at an elevation of 5506.25. The overall rating curve utilized in the HEC-HMS model can be found in Table 4 below. Detailed calculations for the outlet can be found in Appendix D. Construction plans for the Regional Pond can be found in Appendix J.

Table 4: Regional Detention Pond Rating Curve

Elevation (ft)	Notes	Cumulative Volume (ac-ft)	Discharge (cfs)	Methodology
5490.00	Pond / Culvert Invert	0	0	Outlet Calcs
5490.58	First row invert	0.00	0.0	
5491.00		0.08	5.0	
5491.15	First row top	0.12	7.3	
5491.73	Second row invert	0.30	12.8	
5492.00		0.41	14.7	
5492.31	Second row top	0.57	22.7	
5492.89	Third row invert	1.00	30.2	
5493.00		1.10	31.3	
5493.46	Third row top	1.56	43.1	
5493.85	Slated top grate lowest EL (top of concrete)	2.03	50.4	
5494.00		2.23	55.3	
5494.34		2.76	72.2	
5495.00	Top of Side face slopes for grate	4.03	97	HY-8
5496.00		6.34	116	
5497.00		9.30	133	
5498.00		13.00	147	
5499.00		17.38	160	
5500.00		22.11	172	
5501.00		27.12	183	
5502.00		32.48	193	
5503.00		38.13	203	
5504.00		44.10	212	
5505.00		50.39	220	
5506.00		57.02	229	
5506.25d	Emergency spillway crest	59.07	231	HY-8 + Outlet Calcs
5507.00		64.02	605	
5508.00	Top of pond	71.30	1558	

The pond was designed as a single storage area with a bottom elevation of 5490. A 214' wide spillway is provided to convey the 500-year ultimate conditions overflow discharge. The 214' wide emergency spillway crest is at elevation 5506.25 and the top of dam elevation is 5508.0. The width of the emergency spillway is measured along the crest of the weir. According to the Rules and Regulation Governing Dam Design, Construction and Dam Safety (Bureau, 2010)Title 19, Chapter 25, Part 12, 19.25.12.7.D.(1)(a) defines a "Jurisdictional Dam" as being among other things "6' or greater in height". The height of this dam is about 2.0' measured from the crest, elevation 5506.25, to the downstream toe, elevation 5504.3. Therefore, this dam is defined as a "Non-Jurisdictional dam" according to19.25.12.7.D. (1)(b) since it does not meet the height requirement of a Jurisdictional dam. Table 5 below summarizes the proposed pond results.

Table 5: Summary of Proposed Condition Pond Results

Return Period	Inflow (cfs)	Stage (ft)	Storage (ac-ft)	Pipe Outflow (cfs)	Spillway Outflow (cfs)	Total Outflow (cfs)
100-year	490	5498.6	15.8	155.2	0	155.2
500-year	761	5501.9	32.0	192.1	0	192.1

CONCLUSION

Summary of Proposed Drainage Improvements

The Los Diamantes Regional Pond will be constructed at the upstream edge of the development and will discharge to the Calabacillas Arroyo through a 48" to 60" storm drain within a drainage easement adjacent to the existing REA easement located between Isabel Street and the Calabacillas Arroyo. The proposed pond and baffled inlet chute result in minor (<0.1') increases in 100-year WSEL immediately upstream within Rainbow Tributary. These minor increases are well within the one (1) foot rise allowed by FEMA. Local upstream offsite runoff will be conveyed in a combination of surface street drainage and storm drains to the existing 102" Saltillo Outfall at Blacks Arroyo Blvd. Onsite street flow and storm drains in the Phase I and II subdivision will convey all onsite drainage to the southeast corner of the Phase I residential tract where it will ultimately discharge into the 10th Street storm drain that will connect to the existing 102" Saltillo Outfall pipe. With these proposed improvements, this CLOMR analysis has shown that the Rainbow Tributary watershed stormwater will be captured in the regional pond and conveyed, via storm drain, south to the Calabacillas Arroyo. As a result, the effective Zone A floodplain from approximately Viga Street at the upstream end to the existing 102" RCP in Saltillo Street at the downstream end will be removed from the effective FIRM. Revised annotated FIRMs that reflect these changes can be found in Appendix I. All necessary data to initiate a request for CLOMR is contained herein. This report serves as an official request for a CLOMR for the project as presented.