CITY OF ALBUQUERQUE

Planning Department
David Campbell, Director

Mayor Timothy M. Keller

December 20, 2018

Richard Stevenson, E.I.T.
Tierra West, LLC
5571 Midway Park Place NE
Albuquerque, NM 87109

RE: Williams Residence
9716 Greenbrier Rd NE
Grading and Drainage Plan
Engineer's Stamp Date: 12/14/18
Hydrology File: E21D034

Dear Mr. Stevenson:

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

This letter is to acknowledge that the Hydrology Section has received your submittal on 12/14/2018 for the Grading and Drainage Plan of the above referenced project. Attached is a letter from the City dated March 22, 2018 which addresses the City's position on the requirements for review by the Hydrology Section at that time. Based on the current Amended Drainage Ordinance signed September 27, 2018, the City will only require a grading plan if the proposed development meets one of these criteria:

- 500 cubic yards of grading
- 1,000 square feet of proposed building
- Or 10,000 square feet of proposed paving

This current project does not meet any of the above three criteria, so the City of Albuquerque will not impose our drainage requirements of first flush basins or require a grading plan for our approval. This does not imply that the homeowner's association cannot impose their own more stringent criteria on this project.

Per the Master Drainage Plan for Tanoan, this lot is allowed free discharge onto the Tanoan golf course. The Grading and Drainage Plan does not violate this Master Drainage Plan and it does follow the City's Design Procedure Manual (DPM).

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

Sincerely,

Renée C. Brissette

Renée C. Brissette, P.E. CFM
Senior Engineer, Hydrology
Planning Department

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

DRAINAGE REPORT REV 1

Williams Residence
9716 Greenbrier Rd NE
Albuquerque, NM 87111

Prepared by:

Tierra West, LLC
5571 Midway Park Place NE
Albuquerque, New Mexico 87109

December 14, 2018

I certify that this report was prepared under my supervision, and I am a registered Professional Engineer in the State of New Mexico in good standing.

Ronald R. Bohannan
PE # 7868

Job No. 2018019

Table of Contents

Appendices

Location and Purpose

The residential property is located 9716 Greenbrier Rd NE, Albuquerque, NM 87111 within the Tanoan Community, west of Eubank Boulevard in Albuquerque's far Northeast Heights. Currently, the site is undergoing major renovations to the existing structure with additions and internal and external development of the property. The property falls within the Zone Atlas Map E-21 and contains approximately ±0.287 acres.

The purpose of this report is to provide an update to the previously submitted drainage analysis and management plan for the proposed residential development adopting, where applicable, the City of Albuquerque Ordinance and adhering to, where applicable, provisions listed in the *Tanoan Planning and Architectural Committee Rules and Requirements,* the *Tanoan Communities Master Restrictions*, and the *November 13, 1981 Revised Planning Committee Rules for Fairway Estates.* The revised report also details the modifications to the structural walls as required by the agreed and executed letter agreement dated October 17, 2018 between the Property Owners and The Tanoan Community Association, Inc. Once the placement of the walls and heights are confirmed with the Tanoan Architectural Review Committee, the structural calculations will be submitted to the Building Department of the City.

Project Due Diligence

In order to comprehend the current status of the project and gain an understanding of the project's problems, the homeowner's representative provided a number of building and engineering plans, which were considered when preparing the revised grading and drainage plan. The information provided was reviewed to develop a final plan that was in compliance with the City of Albuquerque Drainage Ordinance and with the goal to remedy the noted concerns from the Tanoan Community Association, Inc and the adjacent neighbors'.

The list of documents provided that were reviewed includes:

1. Topographical Survey prepared in March of 2018 by A. Harris, NMPS #11463.
2. Site Development Plans by Tomenstock, LLC., showing retaining walls and stairs, approved by the City on June 29, 2017, November 9, 2017, and March 22, 2018.
3. Wall permit approved by the City on November 9, 2017.
4. Plan of project showing proposed drainage and retention ponding areas, certified by Mr. Levi Valdez, P.E. #5693, and stamped by the City on November 9, 2017.
5. Decision letter from Tanoan Community Association, dated January 26, 2017.
6. Landscape Plans prepared by Red Shovel Landscape.

7. Pool design plans prepare by Pelican Pools LLC
8. Executed letter agreement dated October 17, 2018 between the Property Owners and Tanoan Community Association, Inc.
9. Additional site visits to inspect the property and redesign of the retaining structural walls
10. Preliminary wall design plans prepared by Tierra West LLC for review by the Property Owners, adjacent neighbors and The Tanoan Community Association, Inc.

Existing Drainage Conditions

The site is currently developed with the major additions to the original dwelling completed; however the landscaping and external improvements to the property are unfinished. The original dwelling had a footprint of approximately ±3052.3 sq. feet. The remodeled dwelling footprint increased to ±4026.9 sq. feet, an increase of 974.6 sq. feet. Historically, all residential dwellings within the subdivision are under a free discharge condition draining to the Tanoan Golf Course before runoff eventually consolidates downstream in the South Pino Arroyo. Historically, the runoff from the property sheet flowed towards the golf course before continuing west into the larger natural drainage channels. Historically, the residential lot was landscaped with considerable lawn areas that sloped to the south towards the golf course, established vegetation and mature trees. Initial precipitation would infiltrate, however the runoff from a major storm event would sheet flow off the property to the south and drain to the golf course, away from the structures.

Free discharge from the lots and draining away from the structures is noteworthy for this subdivision due to the band of collapsible soils below the dwellings. There are a number of recorded cases within Tanoan where structural damage occurred due to a loss of vertical support beneath the dwelling footprint. One cause of soil hydrocompaction is a result of infiltration from surface runoff. This band of collapsible soil varies in depth below the surface with previous geotechnical investigations revealing the band itself is 20 to 30 feet deep and typically comprises of loose, dry, low density with fine to medium grain sediments that compacts and settles upon wetting as the moisture lubricates the clay and silt aggregates that bond the larger sand particles together. A geotechnical investigation is not justified for the remodeling of the property; however it is essential to note the risks associated with retaining any stormwater runoff on the property and allowing infiltration.

A drainage plan was previously developed by a New Mexico registered Professional Engineer who is no longer involved in the project. The previous drainage plan identified four retention ponds to capture the first flush runoff from the impervious areas on the property. From discussions with the

homeowner's representative it is understood the previous plan was designed in consultation with City Hydrology staff, and was premised on an understanding that the property should retain the runoff, pursuant to a recently adopted Drainage Ordinance update. However, the Drainage Ordinance and corresponding first flush is not required under the City of Albuquerque's Drainage Ordinance for residential lots as the proposed development does not meet the criteria that warrants adhering to all drainage requirements listed in the Ordinance. Included in Appendix A, is a statement from the City Hydrology Department outlining the criteria for the Drainage Ordinance in regards to the development. That coupled with the historic nature of collapsible soils in the Tanoan area relieves any requirement to pond any drainage on site. The first flush is the stormwater runoff during the first stages of a storm equal to or less than runoff from a 90th Percentile Storm Event that can deliver a potentially high concentration of pollutants due to the washing effect of runoff from impervious areas directly connected to the storm drainage system. From the time the original drainage plan was prepared, elements of the project have developed and caused issues to where the Tanoan Community Association, Inc. now requests the owner provides a revised Drainage Report and Plan detailing satisfactory drainage improvements and techniques. This report replaces the previous drainage plan for the property.

Flood Plain

The site is located on FIRM map 35001C0141 G dated 9/26/2008 and is shown in Appendix B. The map delineates the boundary of the flood plain and shows the golf course falls within a 100-year flood plain to a depth of 2 feet. The flood plain does not encroach into the property with the boundary of the flood plain being the resident's southern property line. It was likely the continuous 2- foot sump block wall at the boundary of the properties that align with the flood plain boundary was built to block any risk from overflow during a high water level event, in addition to the design requirement set forth in the Planning Committee Rules.

Drainage Criteria and Calculations

The Weighted E method from the "City of Albuquerque Development Process Manual Volume 11 – Design Criteria, 1997 Revision" was used to calculate the runoff and volume for the site. The 100-year, 24 hour and the 10-year, 6 hour storm events were investigated. The existing and developed conditions and the associated volume and flow increase are presented in Appendix B.

Drainage Management Plan

The drainage plan for the project is shown in Appendix B. The intent for the drainage management is to capture all runoff from impervious basins, and as much as practical from the pervious

landscape basins into a stormdrain conveyance system. The City of Albuquerque Drainage Ordinance was used to size the storm drain pipes for the 10-year, 6-hour event. The site is divided into four drainage basins for the purpose sizing the drainage storm pipes with all drainage being adequately conveyed using a 4-inch diameter PVC or equivalent drainage pipe. A combination of slotted surface pool trench drains and French drains (subsurface drains) are proposed to capture the runoff and convey to the southern boundary of the property before freely discharging to the golf course drainage region. Three outlet locations are proposed on the south side of the existing southern boundary wall to allow the controlled runoff to enter directly to the golf course drainage basin.

The placement of the slotted surface pool trench drains were strategic in order to capture all runoff from the impervious areas, such as the pool deck and hot-tub area which are impervious with pavers. The slotted surface pool drains will require maintenance to prevent clogging especially during the fall seasons to ensure they are clear of debris and other matter.

The proposed French drain is a four inch, perforated HDPE pipe surrounded by poly-rock and wrapped in a geotextile fabric that is designed to take water out of the soil and convey it to a suitable discharge point. Water that infiltrates the pervious area runs into the rock/gravel trench and into the perforated pipe which collects the water which is then directed into the stormdrain network and safely discharged. The French drains are aligned purposely perpendicular to the direction of sheet flow and infiltration to capture as effectively as possible the runoff.

Both types of drains proposed are not visible by the neighbors or the general public nor require the use of ponding to capture the runoff. The drains are considered low impact to the property and permit the professionally designed landscaping proposed. The outlets at the boundary of the property will be integrated into the xeriscape landscape and suitable rock rundowns are detailed to avoid the washout of the existing landscape bank.

The revised drainage plan considers the modifications to the structural retaining walls as required by the agreement between the Association and the Property owners. The site is required to drain all of the runoff to the rear property line and achieves this with the proposed solutions and configuration of the modified walls.

This drainage plan provides the corrections necessary to the previous drainage plan to ensure surface runoff is safely conveyed away from the structures and freely discharges to the golf course area as is conventional in the Tanoan subdivision.

Summary

This report is a revision to the previously submitted drainage plan for the property undergoing major renovations at 9716 Greenbrier Rd NE, Albuquerque, NM 87111. The design reduces the risk of infiltration and collapsing of soils below the structures by capturing the runoff in slotted and subsurface drains. The storm drains ensures surface runoff is safely conveyed away from the structures and freely discharges to the golf course area as is conventional in the Tanoan subdivision. The City of Albuquerque Drainage Ordinance was used to size the storm drain pipes for the 10 year 6 hour event.

APPENDIX A - COA HYDROLOGY DEPARTMENT LETTER

CITY OF ALBUQUERQUE

Timothy M. Keller, Mayor

March 22, 2018

Richard Stevenson, E.I.T.
Tierra West, LLC
5571 Midway Park Place NE
Albuquerque, NM 87109

RE: 9716 Greenbrier Rd NE
Hydrology File: E20D009

Dear Mr. Stevenson:

As per our meeting, this letter outlines the City's position on the Grading and Drainage requirements of the City of Albuquerque. First, this lot is part of an existing subdivision which has historically been allowed free discharge onto the Tanoan golf course. The City will only require a grading plan if the proposed development meets one of these criteria:

- 500 cubic yards of grading
- 1,000 square feet of proposed building
- Or 2,000 square feet of proposed paving

This current project does not meet any of the above three criteria as outlined in the City's Drainage Ordinance, so the City of Albuquerque will not impose our drainage requirements of first flush basins or require a grading plan for our approval. This does not imply that the homeowner's association cannot impose their own more stringent criteria on this project.

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

Sincerely,

Renée C Brissette

Renée C. Brissette, P.E. CFM
Senior Engineer, Hydrology
Planning Department

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

Orig: Drainage File

APPENDIX B - FLOOD PLAIN MAP

National Flood Hazard Layer FIRMette

FEMA

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

1:6,000

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
- Regulatory Floodway *Zone AE, AO, AH, VE, AR*

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

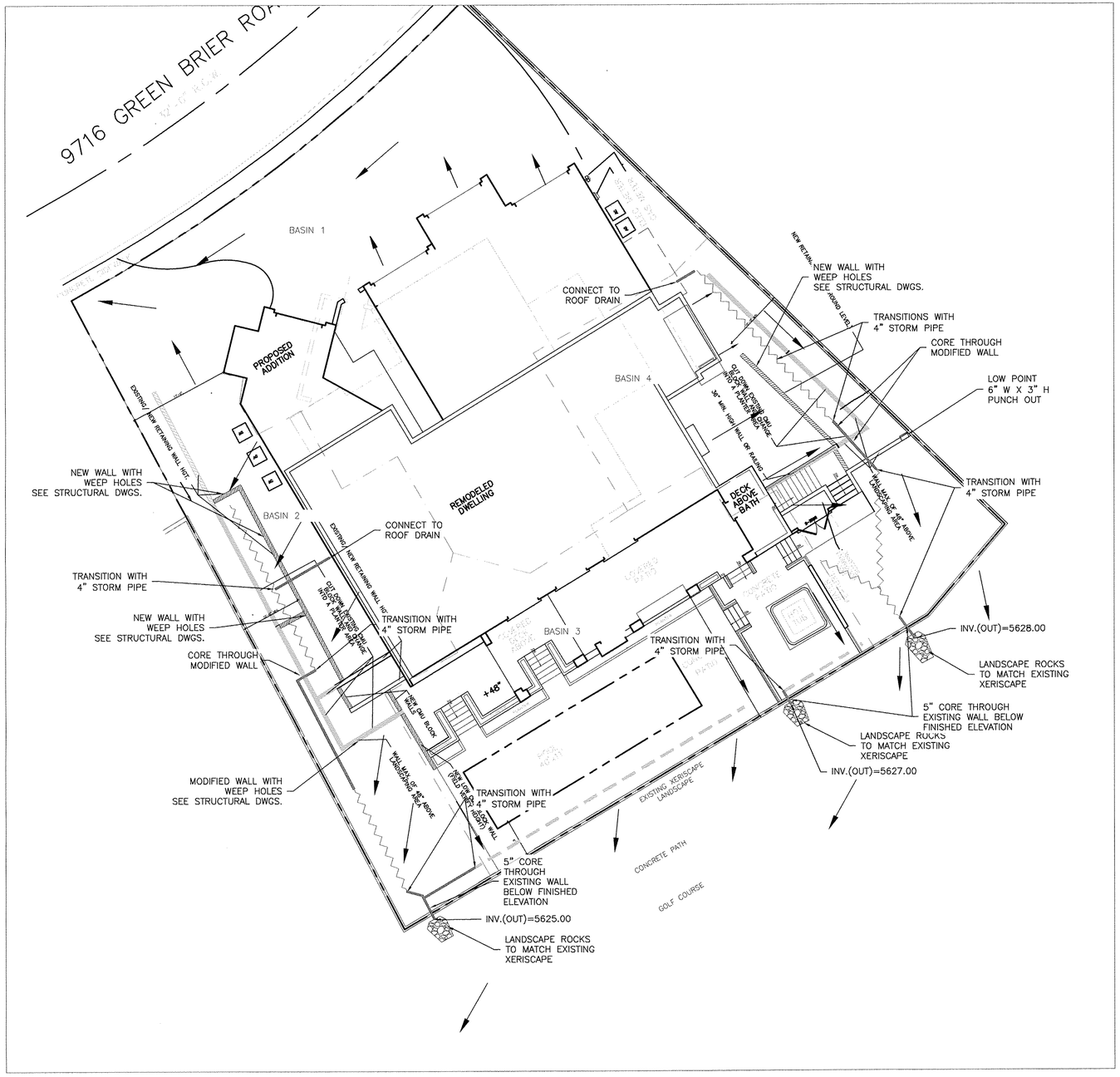
N

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/21/2018 at 11:46:12 AM 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: base map 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.

APPENDIX C - DRAINAGE PLAN AND CALCULATIONS



LEGEND

- BOUNDARY LINE
- EASEMENT
- BUILDING
- RETAINING WALL
- FLOW ARROW
- DRAINAGE SUBBASIN
- SCH. 40 PVC 4"
- SLOTTED POOL SURFACE TRENCH DRAIN REFER POOL PLANS FOR DETAILS
- 4" FRENCH DRAIN EZ-DRAIN OR EQUIVALENT
- PERSPEX COVER

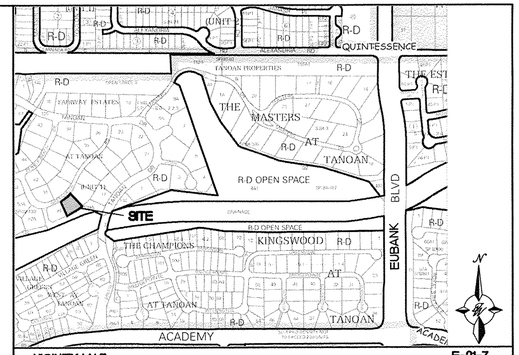
CAUTION:
ALL EXISTING UTILITIES SHOWN WERE OBTAINED FROM RESEARCH, AS-BUILTS, SURVEYS OR INFORMATION PROVIDED BY OTHERS. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO AND INCLUDING ANY EXCAVATION, TO DETERMINE THE ACTUAL LOCATION OF UTILITIES AND OTHER IMPROVEMENTS, PRIOR TO STARTING THE WORK. ANY CHANGES FROM THIS PLAN SHALL BE COORDINATED WITH AND APPROVED BY THE ENGINEER.

NOTES
1. DRAINAGE PIPE SLOPE TO BE 3% MINIMUM.
2. FINAL PLACEMENT OF DRAINS TO BE COORDINATED WITH FINAL LANDSCAPE AND POOL ENCLOSURE PLANS.
3. FINISHED SLOPE AT DWELLING TO BE SLOPED 2% MINIMUM FOR 6 FEET AWAY FROM DWELLING.
4. REFER TO SITE PLAN AND STRUCTURAL WALL DESIGN DRAWINGS FOR WALL DETAILS.

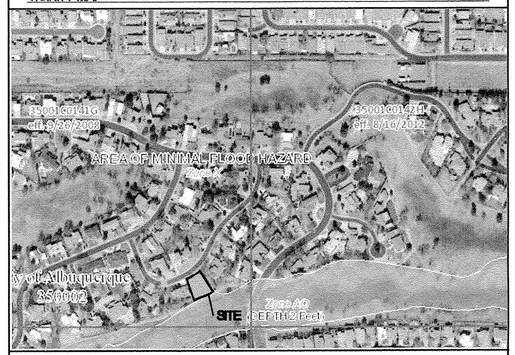
QUANTITY TAKE-OFF	
ITEM	QUANTITY
SCH. 40 PVC	80 FT.
SLOTTED POOL DRAIN	60 FT.
4" FRENCH DRAIN	120 FT.

Basin	Area	Impervious	Pervious	Impervious	Pervious
Basin 1	5010.00	2643.00	2367.00	53%	47%
Basin 2	2302.00	1809.00	493.00	79%	21%
Basin 3	2920.00	2920.00	0.00	100%	0%
Basin 4	2298.00	1029.00	1269.00	45%	55%

4" STORM DRAIN CAPACITY		
N	0.010	
SLOPE	0.03	FT/FT
DIA	0.33	
DISCHARGE	0.43	CFS
VELOCITY	4.98	FT/S



VICINITY MAP: E-21-Z



FIRM MAP: 35001C0141 G

Developed Drainage Management

The intent for the drainage management is to capture all runoff from impervious basins, and as much as practical from the pervious landscape basins into a stormdrain conveyance system. The City of Albuquerque Drainage Ordinance was used to size the storm drain pipes for the 10 year 6 hour event. The site is divided into four drainage basins for the purpose sizing the drainage storm pipes with all drainage being adequately conveyed using a 4 inch diameter PVC or equivalent drainage pipe. A combination of slotted surface trench drains and French drains (subsurface drains) are proposed to capture the runoff and convey to the southern boundary of the property before freely discharging to the golf course drainage region. Three outlet locations are proposed on the south side of the existing southern boundary wall to allow the controlled runoff to enter directly to the golf course drainage basin.

The placement of the slotted surface trench drains were strategic in order to capture all runoff from the impervious areas, such as the pool deck, hot-tub area and the cobbled patio areas which are impervious basins. The pool design plans will need to be revised to detail the slotted pool surface trench drain system which will convey the surface runoff and any overflow from the pool or wash down water during maintenance. The proposed French drain is a four inch, perforated HDPE pipe surrounded by poly-rock and wrapped in a geotextile fabric that is designed to take water out of the soil and convey it to a suitable discharge point. Water that infiltrates the pervious area runs into the rock/gravel trench and into the perforated pipe which collects the water which is then directed into the stormdrain network and safely discharged. The French drains are aligned purposely perpendicular to the direction of sheet flow and infiltration to capture as effectively as possible the runoff.

Both types of drains proposed are not visible by the neighbors or the general public nor require the use of ponding to capture the runoff. The drains are considered low impact to the property and permit the professionally designed landscaping proposed. The outlets at the boundary of the property will be integrated into the xeriscape landscape and suitable rock rundowns are detailed to avoid the washout of the existing landscape bank.

The site is required to discharge all of the developed water as shown to the rear property line. The revision reflects the latest modified retaining walls across the property. The drainage plan provides the corrections necessary to the previous drainage plan to ensure surface runoff is safely conveyed away from the structures and freely discharges to the golf course area as is conventional in the Tanoan subdivision.

Proposed Conditions - Free Discharge

Basin Descriptions												100-Year, 6-Hr			10-Year, 6-Hr		
Basin ID	Area (sf)	Area (acres)	Area (sq miles)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	Weighted E (in)	Volume (ac-ft)	Flow cfs	Weighted E (in)	Volume (ac-ft)	Flow cfs
1	5,010.00	0.115	0.00018	0%	0.000	47%	0.054	5%	0.006	53%	0.061	1.748	0.017	0.47	0.995	0.010	0.28
2	2,302.00	0.053	0.00008	0%	0.000	21%	0.011	0%	0.000	79%	0.042	2.058	0.009	0.24	1.261	0.006	0.15
3	2,920.00	0.067	0.00010	0%	0.000	0%	0.000	0%	0.000	100%	0.067	2.360	0.013	0.34	1.500	0.008	0.23
4	2,298.00	0.053	0.00008	0%	0.000	55%	0.029	5%	0.003	45%	0.024	1.633	0.007	0.20	0.904	0.004	0.12
Total	**12,530.00**	**0.288**	**0.00045**		**0.000**		**0.094**		**0.008**		**0.193**		**0.046**	**1.245**		**0.027**	**0.785**

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted E * Total Area

Flow = Qa*Aa + Qb*Ab + Qc*Ac + Qd*Ad

Excess Precipitation, E (in.)		
Zone 3	100-Year	10-Year
Ea	0.66	0.19
Eb	0.92	0.36
Ec	1.29	0.62
Ed	2.36	1.50

Peak Discharge (cfs/acre)		
Zone 3	100-Year	10-Year
Qa	1.87	0.58
Qb	2.6	1.19
Qc	3.45	2.00
Qd	5.02	3.39

N

GRAPHIC SCALE
10 5 0 5 10
SCALE: 1"=10'

ENGINEER'S SEAL
RONALD R BOHANNAN NEW MEXICO REGISTERED PROFESSIONAL ENGINEER

RONALD R. BOHANNAN
P.E. #7868

9716 GREENBRIER RD. N.E.
TANOAN
DRAINAGE PLAN

TIERRA WEST, LLC
5571 MIDWAY PARK PLACE NE
ALBUQUERQUE, NM 87109
(505) 858-3100
www.tierrawestllc.com

DRAWN BY: BJF
DATE: 12/14/2018
2018019_DRAINAGE PLAN REV1
SHEET #: C1
JOB #: 2018019

P:\2018\2018019 9716 Greenbrier RD. Tanoan\Drainage\2018019_Drainage Plan Rev1.dwg Dec 14, 2018 - 8:42am

DPM Weighted E Method

Precipitation Zone 3
Williams Residence
9716 Greenbrier Rd NE, Albuquerque, NM 87111
TWLLC **Date** 3/21/2018

Existing Conditions - Free Discharge

Basin Descriptions												100-Year, 6-Hr			10-Year, 6-Hr		
Basin ID	Area (sf)	Area (acres)	Area (sq miles)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	Weighted E (in)	Volume (ac-ft)	Flow cfs	Weighted E (in)	Volume (ac-ft)	Flow cfs
1	12,510.09	0.287	0.00045	0%	0.000	0%	0.000	75%	0.215	25%	0.072	1.558	0.037	1.10	0.840	0.020	0.67
	0.00	0.000	0.00000	0%	0.000	0%	0.000	0%	0.000	0%	0.000	0.000	0.000	0.00	0.000	0.000	0.00
Total	**12,510.09**	**0.287**	**0.00045**		**0.000**		**0.000**		**0.215**		**0.072**		**0.037**	**1.10**		**0.020**	**0.67**

Proposed Conditions - Free Discharge

Basin Descriptions												100-Year, 6-Hr			10-Year, 6-Hr		
Basin ID	Area (sf)	Area (acres)	Area (sq miles)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	Weighted E (in)	Volume (ac-ft)	Flow cfs	Weighted E (in)	Volume (ac-ft)	Flow cfs
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2	2,302.00	0.053	0.00008	0%	0.000	21%	0.011	0%	0.000	79%	0.042	2.058	0.009	0.24	1.261	0.006	0.15
3	2,920.00	0.067	0.00010	0%	0.000	0%	0.000	0%	0.000	100%	0.067	2.360	0.013	0.34	1.500	0.008	0.23
4	2,298.00	0.053	0.00008	0%	0.000	55%	0.029	5%	0.003	45%	0.024	1.633	0.007	0.20	0.904	0.004	0.12
Total	**12,530.00**	**0.288**	**0.00045**		**0.000**		**0.094**		**0.008**		**0.193**		**0.046**	**1.245**		**0.027**	**0.785**

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted E * Total Area

Flow = Qa*Aa + Qb*Ab + Qc*Ac + Qd*Ad

Excess Precipitation, E (in.)		
Zone 3	100-Year	10-Year
Ea	0.66	0.19
Eb	0.92	0.36
Ec	1.29	0.62
Ed	2.36	1.50

Peak Discharge (cfs/acre)		
Zone 3	100-Year	10-Year
Qa	1.87	0.58
Qb	2.6	1.19
Qc	3.45	2.00
Qd	5.02	3.39

4" STORM DRAIN CAPACITY		
N	0.010	
SLOPE	0.03	FT/FT
DIA	0.33	
DISCHARGE	0.43	CFS
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Basin	Area	Impervious	Pervious	Impervious	Pervious
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Basin 3	2920.00	2920.00	0.00	100%	0%
Basin 4	2298.00	1029.00	1269.00	45%	55%