

Drainage Reports

Abbreviated Water & Sewer Need Reports

Water Study

Wastewater Study

Stormwater Waiver Application

PRELIMINARY SEWER CAPACITY REPORT

La Via

16001 N. Scottsdale Road
Scottsdale, AZ

 **FILE COPY**

Prepared For:



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EXPIRES 12-31-17



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Project Number: 170377

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Plan Check No.: TBD

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1. INTRODUCTION

1.1 SUMMARY OF PROPOSED DEVELOPMENT:

This project is a redevelopment of the land occupied by the Cracker Jax Family Fun Amusement Park at the NEC of Scottsdale Road and East Tierra Buena Lane in Scottsdale, AZ. Proposed development is conceptualized to be a mixed use consisting of 700,000 SF of office space, 60,000 SF of retail/restaurant, 40,000 SF of grocery, 130,000 SF of hotel/spa, a 200-seat theater and 837 residential units. Refer to **FIGURE 5** for a concept site plan.

1.2 LEGAL DESCRIPTION:

The project property consists of two parcels of land located at the NEC of East Tierra Buena Lane and North Scottsdale Road in Scottsdale, AZ. The site is further bound by East Paradise Lane to the north and North 73rd Street to the east. It is located in a portion of Section 2, Township 3 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona.

- Arizona Parcel ID numbers APN: 215-44-002D and 215-44-002F.
- Street Address is 16001 N. Scottsdale Road, Scottsdale, AZ 85254

Refer to **FIGURE 1 - Vicinity Map** for the project's location with respect to major cross streets.

1.3 EXISTING AND PROPOSED SITE ZONING AND LAND USES:

The parcel is zoned C-4 and is currently occupied with an amusement park consisting of one main building, an existing parking lot, a driving range and amusement attractions. The site will be totally demolished for the redevelopment into a multi-use development.

1.4 REFERENCES:

The project is located in the Scottsdale Airpark area and falls within Mixed-Use Neighborhoods conceptual land use district of the City's General Plan.

2. DESIGN DOCUMENTATION

2.1 DESIGN COMPLIANCE:

Analysis of the proposed onsite sewer collection system will be done in compliance with Chapter 7 – Wastewater, of the City of Scottsdale 2010 Design Standards & Policies Manual (DS&PM). Design flow calculations for the on-site system will be based on the recommendations in Section 7-1.403 of the DS&PM.

Off-site flow analysis will be consistent with the methods presented in the City's 2012 Water Reuse Master Plan Update.

3. EXISTING CONDITIONS

3.1 EXISTING ZONING & LAND USE:

Land ownership, as defined by ALTA/NSPS Land Title Survey prepared by Superior Surveying Services, Inc, includes 1,207,543 Sq. Ft. (27.72 acres) of Amusement Facility, 27.94 ac. total), commercially developed land. City of Scottsdale zoning map designates this parcel as C-4 district.

3.2 EXISTING TOPOGRAPHY, VEGETATION AND LANDFORM FEATURES:

The north parcel of the site has never been fully developed but has been maintained as a driving range and tee structure. The south parcel of the site has been fully developed with the amusement park and parking lot. Both parcels are currently still in operation. The topography generally slopes from the north-northeast to the southwest corner at approximately one-percent with a change in elevation of approximately twenty (20) feet. Refer to **FIGURE 2** for an aerial of the overall project existing conditions.

FIRM Map Number 04013C1320L dated October 16, 2013 indicates this site is designated as **Zone "X" shaded**. As such, it is determined to be outside the 100-year flood hazard zone. Zone "X" shaded is defined as areas of 0.2-percent-annual-chance flood; areas of 1-percent-annual-chance-flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1-percent-annual-chance-flood. Refer to **FIGURE 3** for the FIRM.

3.3 EXISTING UTILITIES: Refer to **FIGURE 4** for the City quarter section map (QS 35-45)

- An 8" VCP sanitary sewer is available approximately twelve (12) feet south of the centerline on East Paradise Lane. Two manholes with a stub to the site is located 400' and 800' west of the intersection with North 73rd Street. Depth to invert is approximately 11'.
- A 10" VCP sanitary sewer is located approximately 5' west of the centerline of North 73rd Street. Three manholes with a stub to the site exist at approximately 330', 660', and 990' north of the intersection with East Tierra Buena Lane. The invert elevations of the services are 9', 10' and 11' respectively from the East Tierra Buena Lane intersection.
- An 8" VCP sanitary sewer is available approximately 13' south of the centerline of East Tierra Buena Lane. Two manholes with stub to the site exist at 400' and 800' west of the intersection with North 73rd Street. The invert elevations of the services are 11' and 8' in order from the North 73rd Street intersection. In addition, the existing development connects to this sewer line approximately 450' west of the North 73rd Street intersection but it is not indicated that it is connected through a manhole. The size of this service line to the existing building is not indicated on the quarter section maps.
- There is no sewer line indicated in North Scottsdale Road adjacent to the site frontage.
- The 10" sewer in 73rd Street extends to Hayden Greenway connecting to an 18" sewer.

4. PROPOSED CONDITIONS

4.1 **SITE PLAN:** Refer to **FIGURES 5** for proposed site layout and land use.

The property is proposed to be re-developed from 2 parcels into one property, with new use configurations conceptualized to be a mixed use consisting of 700,000 SF of office space, 60,000 SF of retail/restaurant, 40,000 SF of grocery, 130,000 SF of hotel/spa, a 200-seat theater and 837 residential units. Development will include 24' wide roads with rolled curbs and underground parking to be incorporated into the project boundaries and included as part of the development.

4.2 **PROPOSED SEWER SYSTEM:** Refer to **APPENDIX II** for the Preliminary Utility Plan.

For the purposes of this preliminary report, it is assumed that on-site sewer will consist of 8" pipe at a minimum slope of 0.53% to maintain access to the public sewer to the south and east.

4.3 **MAINTENANCE RESPONSIBILITIES:**

The on-site sewer line for the proposed development will be public and located within rights-of-way or easements dedicated to the City of Scottsdale. Therefore, the on-site and off-site sanitary sewer will be maintained by the City.

5. OFF-SITE SANITARY SEWER SYSTEM CALCULATIONS

5.1. **General:** Refer to **APPENDIX III** for Basin Areas

This project is 28+/- acres of a 152-acre sewer service area flowing to a 10" pipe in 73rd Street. The 18" sewer in Hayden-Greenway has a service area of 528 acres. The capacities of the 73rd Street and Hayden-Greenway sewers will be analyzed based on the demands shown in the City of Scottsdale's 2012 Water Reuse Master Plan Update for the present-day flow and compared to the respective maximum day flows obtained from flow monitoring. Capacity of the two sewers will then be analyzed for the ultimate planned buildout based on the land uses shown in the city's General Plan.

5.2. **Demand Loads from City's Master Plan:**

Table 1: Wastewater Unit Loads Per Land Use Category			
Use	High GPAPD	Existing Devel. Multiplier	Future Devel. Multiplier
Mixed Use	1447	1.4	2
Mixed Use High Rise	3000	1.4	2
Industrial	1574	1.4	2

5.5. PROPOSED FLOW CALCULATIONS TO THE 73rd STREET SEWER: Refer to APPENDIX III Basin Areas

Table 4: Potential Future Sewer Flows to 73rd Street Monitoring Location Using Master Plan Demands						
AREA ID	Use	Area (ac)	Unit Demand (gpad)	Development Multiplier	Avg. Day Flow(GPD)	Future Max. Daily Flow (GPD)
1 (Promenade)	Mixed-Use	62.70	1,447	2.0	90,727	181,454
2	Mixed-Use	11.78	1,447	2.0	17,046	34,091
3	Mixed-Use	15.96	1,447	2.0	23,094	46,188
4	Mixed-Use	20.48	1,447	2.0	29,635	59,269
5	Mixed-Use	5.97	1,447	2.0	8,639	17,277
6	Mixed-Use	6.43	1,447	2.0	9,304	18,608
7 (La Via)	Mixed-Use	28.20	3,000	2.0	84,600	169,200
Total					263,044	526,088
GPM					183	365

Refer to Appendix I for the pipe hydraulic calculations showing capacity of the 73rd Street sewer.

5.6. FLOWS TO THE HAYDEN-GREENWAY SEWER LINE: Refer to APPENDIX III for Basin Areas

Table 5: Potential Future Flows to Monitored Manhole in Hayden Greenway						
AREA ID	Use	Area (ac)	Unit Demand (gpad)	Development Multiplier	Avg. Day Flow(GPD)	Future Max. Daily Flow (GPD)
Flows From Table 4					263,044	526,088
8	Mixed-Use	382.55	1,447	2.0	553,550	1,107,100
Total					816,594	1,633,188
GPM					567	1,134

5.7. MONITORING RESULTS FOR THE HAYDEN-GREENWAY SEWER: Refer to **APPENDIX III** for Location.

Table 6: Maximum Monitored Flows in Hayden-Greenway Loop			
Tuesday		25-Jul-17	
Site	Id:	40085260	
Description:	Greenway	2	
	Level (in)	Vel. (fps)	Flow (gpm)
Minimum:	1.7	1.9	68.8
Maximum:	4.4	3.7	333.0
Average:	2.5	2.7	190.9

Refer to **Appendix I** for the pipe hydraulic calculations showing capacity of the Hayden-Greenway sewer.

6. ON-SITE SANITARY SEWER SYSTEM CALCULATIONS

6.1. : DEMAND TABLES:

DS&PM, Chapter 7 Section 7-1.403.B - Wastewater, Figure 7.1-2 Average Day Sewer Demand in Gallons and required Peaking Factors as shown in the following table:

Table 7: Average Day Sewer Demand		
Land Use	Demand	Peaking Factor
Commercial/Retail	0.5 per sq. ft.	3
Office	0.4 per sq. ft.	3
High Density Condominium	140 per room	4.5
Resort Hotel (includes site amenities)	380 per room	4.5
School	30 per student	6.0

6.2. VARIANCE FROM STATED DESIGN FLOWS:

Stated design flows for the on-site system will be used as recommended.

6.3. ON-SITE SEWER CAPACITY CALCULATIONS

On-site sewer demands are calculated in accordance with the DS&PM, Chapter 7 requirements. Based on the flow criteria presented, the following table provides a summary of the projected average daily and peak on-site flows for the proposed project. Refer to **FIGURE 5** for an exhibit of the proposed land uses **APPENDIX III** for the Sanitary Sewer Service Area Map.

Table 8: Proposed Condition Contributions (East Tierra Buena Lane and North 73rd Street)

Parcel Number	Use	area or rooms	Average Daily Flow	Peaking Factor	Avg. Day Flow(GPD)	Max. Daily Flow (GPD)
215-44-002D 215-44-002F	Office	700,000	0.4	3.0	280,000	840,000
215-44-002D 215-44-002F	Grocery	40,000	0.5	3.0	20,000	60,000
215-44-002D 215-44-002F	Retail	40,000	0.5	3.0	20,000	60,000
215-44-002D 215-44-002F	Restaurant	20,000	1.2	6.0	24,000	144,000
215-44-002D 215-44-002F	Theater	200	30.0	6.0	6,000	36,000
215-44-002D 215-44-002F	Hotel/Spa (Including Site Amenities)	180	380.0	4.5	68,400	307,800
215-44-002D 215-44-002F	High Density Condo	837	140.0	4.5	117,180	527,310
					535,580	1,975,110

Land uses within the La Via development will characterize two separate daily peak demand curves. The Condos, Hotel/Spa and Restaurant will generally coincide to produce one peak demand and the commercial components including the office, grocery, retail and theater another peak daily demand.

Peak flow from the Restaurant, Hotel/Spa and Condo use is 979,110 gpd or 680 gpm.

Peak flow from the Office, Grocery, Retail and Theater use is 996,000 gpd or 692 gpm.

La Via proposes to construct a new 10" sewer in 73rd paralleling the existing 10" sewer and connecting to the 18" sewer in Hayden-Greenway Loop with a new manhole.

Sewer capacity calculations for the proposed and existing sewers are included in **Appendix I**.

Sanitary building lead locations are not known at this time. Once known, the on-site sewers will be designed based on the above flows appropriately grouped per building contributions. On-site public mains will be minimum 8" diameter.

7. SUMMARY

7.1 SUMMARY OF PROPOSED IMPROVEMENTS:

- The proposed wastewater improvement was designed based on the current City of Scottsdale's design standards and policies.
- La Via proposes to construct a new 10" sewer main from Monte Cristo Avenue south to Hayden-Greenway along 73rd Street to support the proposed site development and potentially provide additional capacity for future development.
- The on-site systems will be designed with subsequent design reports.

7.2 PROJECT SCHEDULE:

As a mixed-use development, the infrastructure is proposed to be constructed in a single phase. The dwelling units may be phased based on consumer demand.

8. SUPPORTING MAPS

8.1 CONCEPTUAL SITE PLAN

Refer to **FIGURE 5** for a Concept Site Plan

8.2 PRELIMINARY UTILITY PLAN

Refer to **APPENDIX III** for a Preliminary Utility Plan

9. REFERENCES

1. *COS QS Sewer Plan number 35-45*
2. *City of Scottsdale Design Standards & Policies Manual, 2010 (Chapter 7 – Wastewater)*
3. *City of Scottsdale 2012 Water Reuse Master Plan Update*



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FIGURES

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FIGURE 1
VICINITY MAP



FIGURE 2
AERIAL

NOTES TO USERS

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

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

Coastal Base Flood Elevations shown on this map apply only to landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

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

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

The projection used in the preparation of this map was Arizona State Plane Central zone (FIPSZONE 0202). The horizontal datum was NAD 83 HARN, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988 (NAVD 88). These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. Map users wishing to obtain flood elevations referenced to the National Geodetic Vertical Datum of 1929 (NGVD 29) may use the following Maricopa County website application: <http://www.fot.maricopa.gov/Map/gis/maps/app/gisdata/application/index.cfm>

This web tool allows users to obtain point-specific datum conversion values by zooming in and hovering over a VERTCON checkbox on the layers menu on the left side of the screen. The VERTCON grid referenced in this web application was also used to convert existing flood elevations from NGVD 29 to NAVD 88.

To obtain current elevation, description, and/or location information for National Geodetic Survey bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>. To obtain information about Geodetic Densification and Cadastral Survey bench marks produced by the Maricopa County Department of Transportation, please visit the Flood Control District of Maricopa County website at: <http://www.fot.maricopa.gov/Map/gis/maps/app/gisdata/application/index.cfm>

Base map information shown on this FIRM was derived from multiple sources. Aerial imagery was provided in digital format by the Maricopa County Department of Public Works, Flood Control District. The imagery is dated October 2009 to November 2009. Additional National Aeronautics and Space Administration (NASA) imagery was provided by the Arizona State Land Department (ALD) and is dated 2007. The coordinate system used for the production of the digital FIRM is State Plane Arizona Central NAD83 HARN, International Feet.

The profile base line depicted on this map represents the hydraulic modeling baselines that match flood profiles in the FIS report. As a result of improved topographic data, the profile base line, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

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

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

For information on available products associated with this FIRM, visit the **FEMA Map Service Center (MSC)** website at <http://www.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

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



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHA) SUBJECT TO FLOODING BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zone A, AE, AO, AH, AR, and V. The base flood elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A: No Base Flood Elevations determined.

ZONE AE: Base Flood Elevations determined.

ZONE AH: Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO: Flood depths of 1 to 3 feet (usually sheet flow or sloping terrain); average depths determined; for areas of sheet flow or sloping terrain, also determined.

ZONE AR: Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently encroached. Zone AR indicates that the former flood control system is being removed to provide protection from the 1% annual chance or greater flood.

ZONE ARH: Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V: Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE: Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X: Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with change areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X: Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D: Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Highway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Areas of different base flood elevations, flood depths or flood velocities

Base Flood Elevation line and value; elevation in feet

Base Flood Elevation value where different from BFE elevation in feet

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

Coastal barrier line

Transect line

Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)

1000-meter Universal Transverse Mercator grid lines, zone 12

5000-foot grid lines; Arizona State Plane coordinate system, central zone (FIPSZONE 0202); Transverse Mercator

Bench mark (see explanation in Notes to Users section of the FIS report)

Water Mile

MAP REPOSITORIES

Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

April 15, 1988

EFFECTIVE DATES OF REVISIONS TO THIS PANEL

October 3, 1987 - September 30, 1987 - July 15, 2001 - September 30, 2005

October 10, 2013 - to add base flood elevation, to add special flood hazard areas, to incorporate boundary changes of map repository, to update corporate limits, to change floodway, to advance suffix, to change base flood elevations, and to add floodway

For community map repository history prior to community mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6425.



MAP SCALE 1" = 1000'

0 1000 2000 FEET

0 1000 2000 METERS

NFIP

PANEL 1320L

FIRM
FLOOD INSURANCE RATE MAP
MARICOPA COUNTY,
ARIZONA
AND INCORPORATED AREAS

PANEL 1320 OF 4425

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COUNTY: MARICOPA COUNTY

CITY: PHOENIX, CITY OF

SCOTTSDALE, CITY OF

NUMBER: 040051

PANEL: 1320

SUFFIX: L

FIGURE 3

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

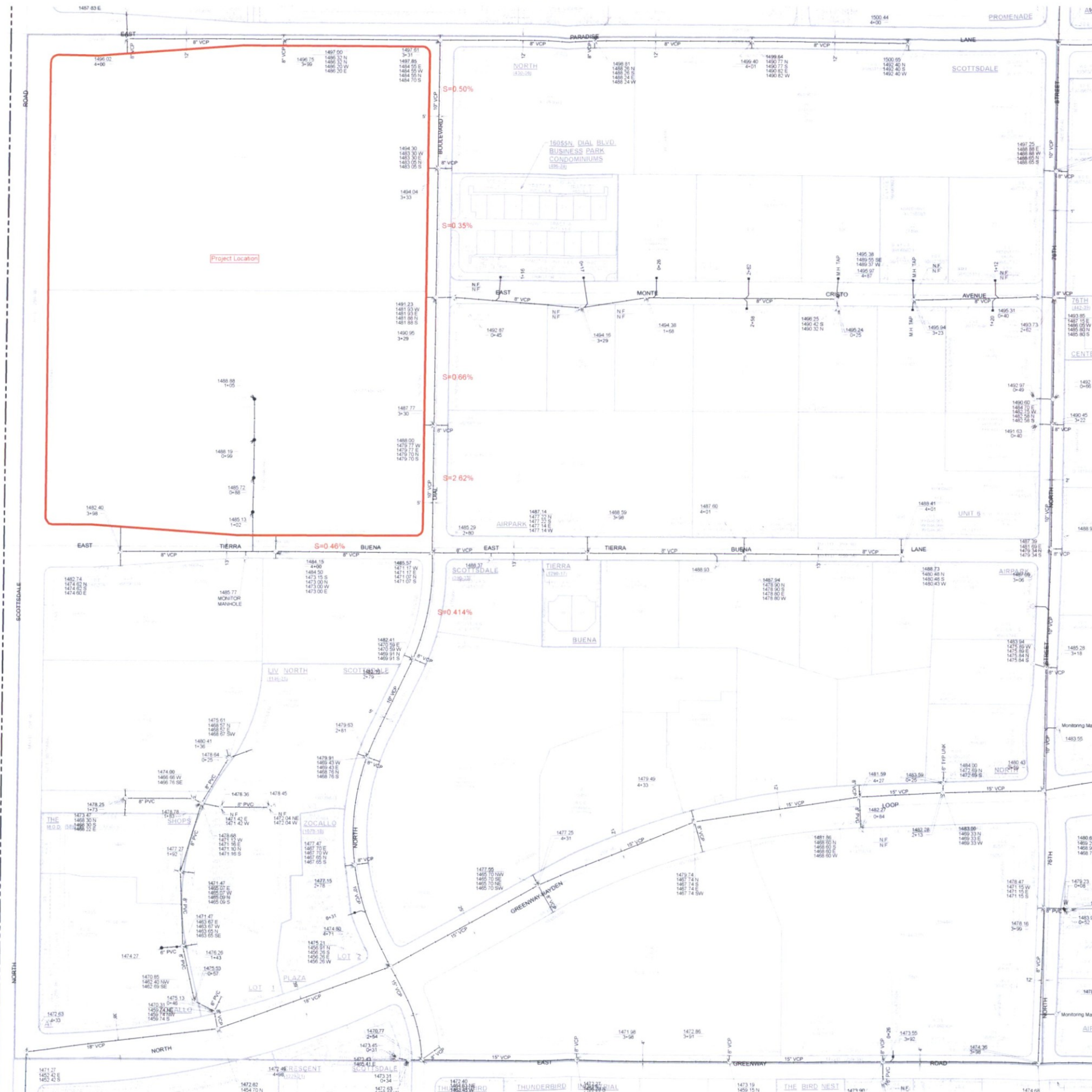
MAP NUMBER

04013C1320L

MAP REVISED

OCTOBER 16, 2013

Federal Emergency Management Agency



N O T I C E

THIS DOCUMENT IS PROVIDED FOR GENERAL INFORMATION PURPOSES ONLY. THE CITY OF SCOTTSDALE DOES NOT WARRANT ITS ACCURACY, COMPLETENESS OR SUITABILITY FOR ANY PARTICULAR PURPOSE. IT SHOULD NOT BE RELIED UPON WITHOUT FIELD VERIFICATION.

THE CITY OF SCOTTSDALE

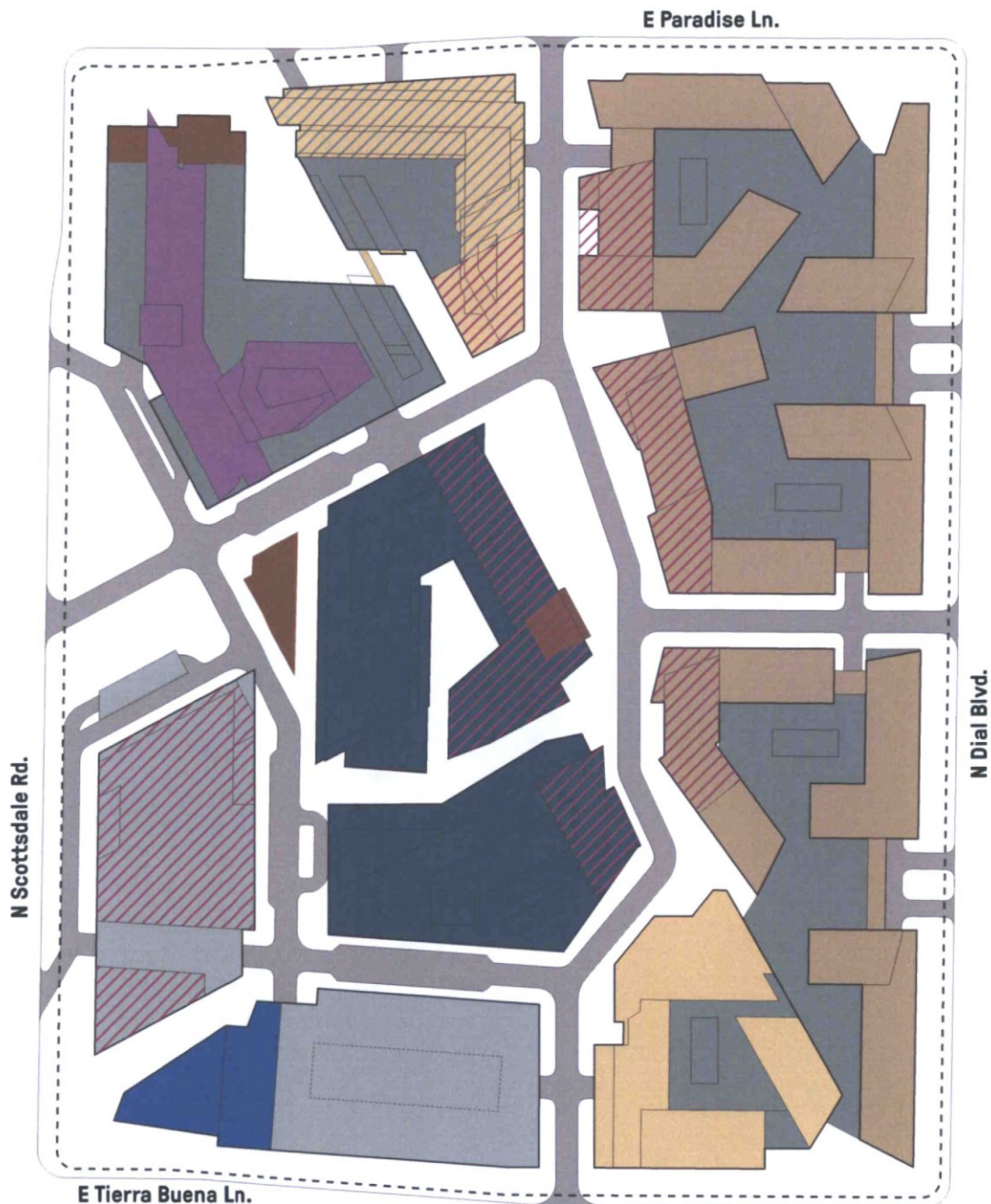
CITY OF SCOTTSDALE  **SCOTTSDALE GEOGRAPHIC INFORMATION SYSTEMS**
3629 North Drinkwater Boulevard
Scottsdale, Arizona 85251

Land Use By Building Plan

Land Use By Building Plan:
La Via has a variety of land uses. Scottsdale Rd. has the civic, hospitality and business components while the residential portions are along N. Dial Blvd. Retail is wrapped around the central plaza in the center of La Via and links the various uses together.

LEGEND:

-  Office
-  Ground-floor Retail
-  Ground-floor Parking
-  Retail/F&B
-  Residential - Condo
-  Residential - Rental
-  Hotel
-  Civic
-  Parking
-  Podium Parking



LA VIA DEVELOPMENT MIX

USE	AREA (S.F.)	PARKING REQ.	SPACES
OFFICE	700,000	1/325 S.F.	2,333
RETAIL/RESTAURANTS	60,000	1/250 S.F.	240
GROCERY	40,000	1/300 S.F.	133
RESIDENTIAL - RENTAL (AVG 900 S.F.)	550,000	1.5/U	975
RESIDENTIAL - CONDO (AVG 2,200 S.F.)	450,000	2/U	375
HOTEL (180 ROOMS) + FITNESS	130,000	1 RM*1.25	225
THEATER (200 SEATS)	10,000	1/2.5 SEATS	80
TOTAL	1,940,000		4,361

FIGURE 5



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APPENDICIES

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Sustainability Engineering Group

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FOR GENERAL INFORMATION PURPOSES ONLY. THE CITY OF
WARRANT ITS ACCURACY, COMPLETENESS OR SUITABILITY FOR ANY
T SHOULD NOT BE RELIED UPON WITHOUT FIELD VERIFICATION.

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APPENDIX I
73rd Street Sewer Capacity Calculations

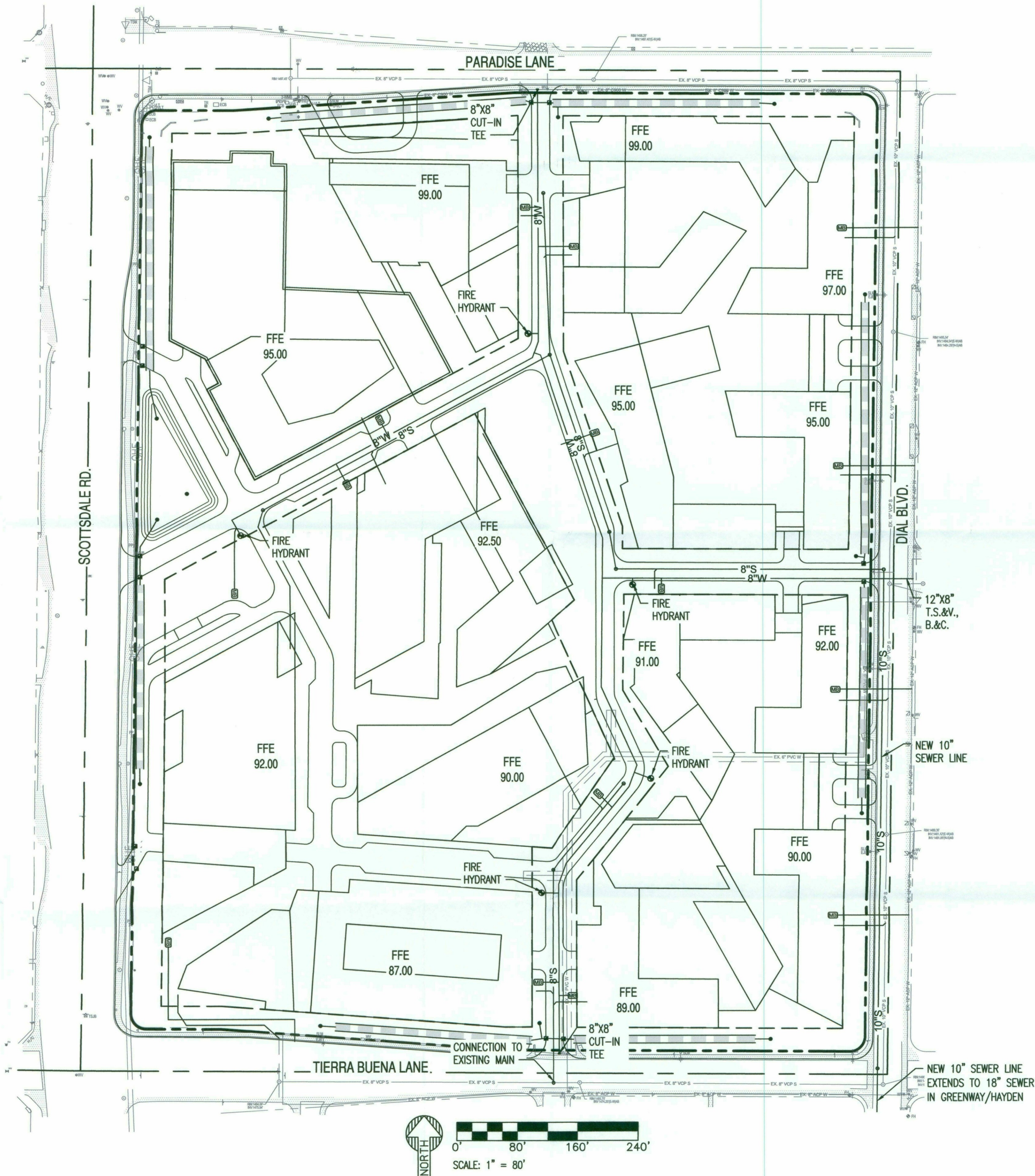
Existing 10" Sanitary Sewer Calculations							
Location	Pipe Dia	Slope	D/d	Q	Velocity	Exist. Q	Avail. Q
	(inches)	(%)		(gpm)	(ft/s)	(gpm)	(gpm)
MH-A to B	18	0.33%	0.70	2267	0.65	768	1499
MH-B to C	10	3.86%	0.65	1461	0.65	249	1212
MH-C to D	10	0.40%	0.65	470	0.65	249	221
MH-D to E	10	0.41%	0.65	476	0.65	249	227
MH-E to F	10	0.41%	0.65	476	0.65	186	290
MH-F to G	8	0.46%	0.65	236	0.65	40	196
MH-F to H	10	2.62%	0.65	1211	0.65	126	1085
MH-H to I	10	0.66%	0.65	604	0.65	126	478

Proposed 10" Sanitary Sewer Calculations							
Location	Pipe Dia	Slope	D/d	Q	Velocity	Prop. Q	Avail. Q
	(inches)	(%)		(gpm)	(ft/s)	(gpm)	(gpm)
MH-B to F (parallel)	10	1.00%	0.65	744	0.65	692	52
MH-F to I (parallel)	10	1.50%	0.65	911	0.65	692	219

APPENDIX I

CRACKERJAX REDEVELOPMENT
SEC SCOTTSDALE ROAD AND PARADISE LANE.
PRELIMINARY UTILITY PLAN

APPENDIX II



- PROPOSED LEGEND:**
- 8"S — PROPOSED 8" SEWER
 - 8"W — PROPOSED 8" WATER
 - SEWER MANHOLE
 - FIRE HYDRANT

- EXISTING LEGEND:**
- EX. 8" VCP S — EXISTING 8" VCP SEWER
 - EX. 10" VCP S — EXISTING 10" VCP SEWER
 - EX. 8" C900 W — EXISTING 8" C900 WATER
 - EX. 8" DIP W — EXISTING 8" DIP WATER
 - EX. 8" ACP W — EXISTING 8" ACP WATER
 - EX. 12" ACP W — EXISTING 12" ACP WATER

NOTE: EXISTING UTILITIES SHOWN
FROM AVAILABLE PLANS

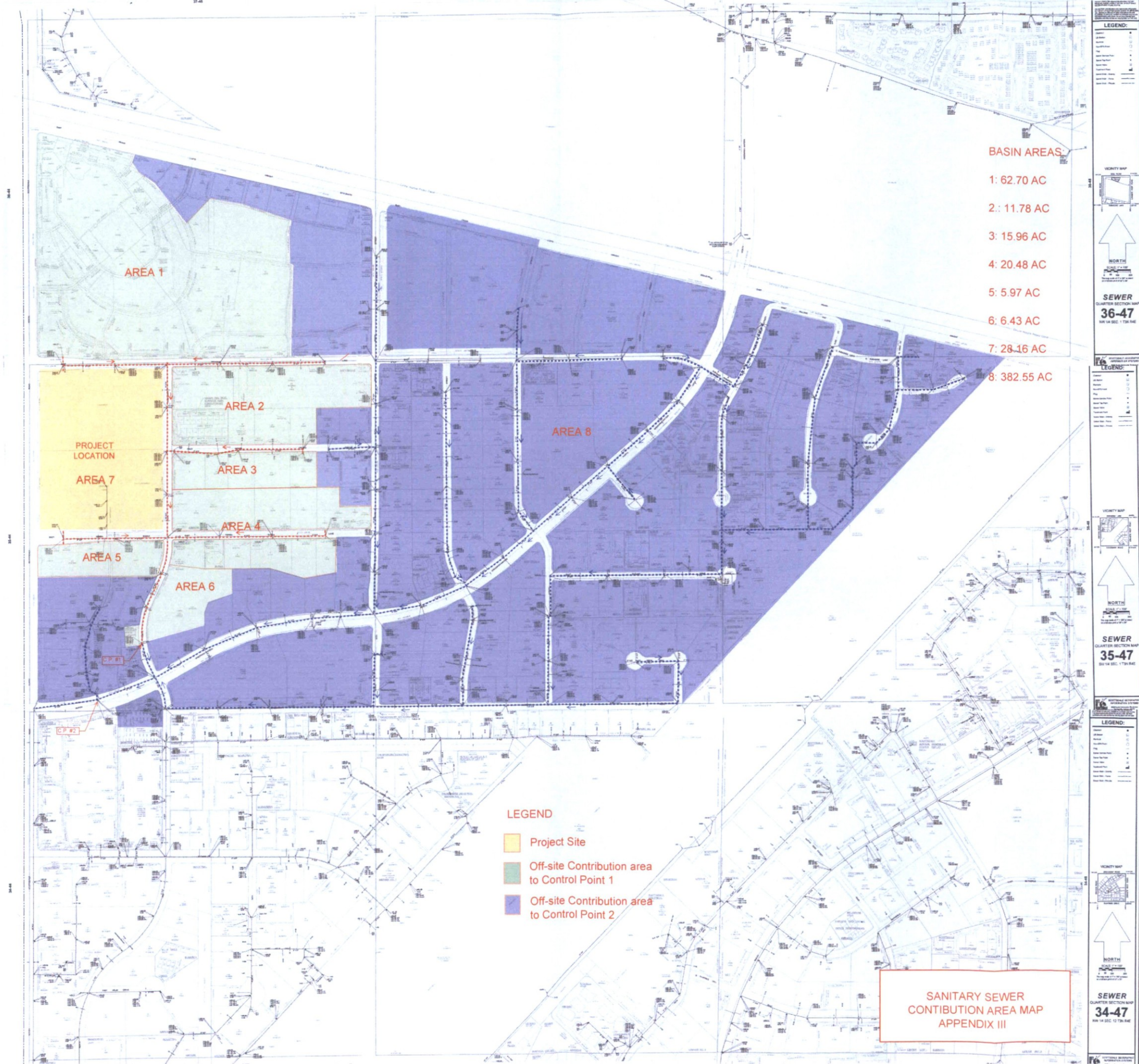


SEG
SUSTAINABILITY
ENGINEERING
GROUP

8280 E GELONG DR #101, SCOTTSDALE, ARIZONA 85260
WWW.AZSEG.COM TEL. 480.588.7228

PROJECT	CRACKERJAX REDEVELOPMENT	LOCATION	SEC SCOTTSDALE ROAD AND PARADISE LN SCOTTSDALE, AZ 85254
DRAWN	POUNDS	DESIGNED	POUNDS
CHECKED	COUNSELL	PROJ. MGR.	FAKIH
DATE:	09/22/17	ISSUED FOR:	OWNER REVIEW
REVISION NO.:		DATE:	
△			
△			
△			
△			
JOB NO.:	170377	SHEET TITLE:	PRELIMINARY UTILITY PLAN
SHEET NO.:	C4.00		

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PRELIMINARY DRAINAGE REPORT

La Via

16001 N. Scottsdale Road
Scottsdale, AZ

Prepared For:



2400 East Arizona Biltmore Circle
Phoenix, AZ 85016
Phone: 602.955.3441

Prepared by:



EXPIRES 12-31-17

*Superseded
by revised
site plan/report
sealed
9/21/18*



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Project Number: 170377

Submittal Date: October 2017

Stormwater Review By:

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E-MAIL randerson@ScottsdaleAZ.gov
Review Cycle _____ Date 11/15/17

Approved

Case No.: 473-PA-2017

Plan Check No.: TBD

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APPENIDX II	-	Calculations
APPENIDX III	-	Preliminary Grading Plan
APPENIDX IV	-	Preliminary Drainage Report for Crackerjax Site

1. INTRODUCTION

This 50% Preliminary Drainage Report represents the storm water analysis for the proposed disturbed area (redevelopment) for a proposed mixed use commercial project, being a redevelopment of the land currently occupied by the Cracker Jax Family Fun Amusement Park at the NEC of North Scottsdale Road and East Tierra Buena Lane. The purpose of this report is to provide the hydrologic and hydraulic analyses, required by the City of Scottsdale, to support the proposed site plan. This report includes discussions and calculations defining the storm water management concepts for collection, conveyance, and detention systems necessary to comply with the drainage requirements of the City of Scottsdale and Maricopa County. Preparation of this report has been done in accordance with the requirements of the City of Scottsdale Design Standards & Policies Manual (DS&PM) 2010 ¹, and the Drainage Design Manuals for Maricopa County, Arizona, Volumes I² and Volume II³.

2. LOCATION AND PROJECT DESCRIPTION

2.1 LOCATION:

The project property consists of two parcels of land located in a portion of Section 2, Township 3 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona; Parcel ID numbers are APN: 215-44-002D and 215-44-002F. The property address is 16001 N. Scottsdale Road.

The project is located at the NEC of East Tierra Buena Lane and North Scottsdale Road in Scottsdale, AZ. The site is further bound by East Paradise Lane to the north and North 73rd Street on the west. Refer to **FIGURE 1 - Vicinity Map** for the project's location with respect to major cross streets.

2.2 EXISTING AND PROPOSED DEVELOPMENTS SURROUNDING THE SITE:

Existing site context related to surrounding developments is as follows:

- North: East Paradise Lane is directly adjacent to the north with the Promenade developed retail directly across. Zoning is PRC.
- West: North Scottsdale Road is directly adjacent to the west and is the boundary line between Scottsdale and Phoenix. Directly west of North Scottsdale Road is Kierland Parcels 3, 4C & 6B which are developed office. Zoning is PCD.
- South: East Tierra Buena Lane is directly adjacent to the south with developed office/retail and motel directly across. Zoning is C-3.
- East: North 73rd Street (Dial Boulevard) is directly adjacent to the east with the North Scottsdale Air Park Unit 6 directly across with Industrial Flex Warehouse Buildings. Zoning is I-2.

2.3 EXISTING SITE DESCRIPTION:

Land ownership, as defined by ALTA/NSPS Land Title Survey prepared by Superior Surveying Services, Inc, includes 1,207,543 Sq. Ft. (27.72 acres) of Amusement Facility commercially developed land. City of Scottsdale zoning map designates this parcel as C-4.

The north parcel of the site has never been fully developed but has been maintained as a driving range and tee structure. The south parcel of the site has been fully developed with the amusement park and parking lot. Both parcels are currently still in operation. The topography generally slopes from the north-

northeast to the southwest corner at approximately one-percent with a change in elevation of approximately twenty (20) feet. Refer to **FIGURE 2** for an aerial of the overall project existing conditions.

2.4 PROPOSED SITE DEVELOPMENT:

This project is a redevelopment of the land currently occupied by the Cracker Jax Family Fun Amusement Park at the NEC of North Scottsdale Road and East Tierra Buena Lane in Scottsdale, AZ. Proposed development is conceptualized to be a mixed use consisting of 700,000 SF of office space, 60,000 SF of retail/restaurant, 40,000 SF of grocery, 130,000 SF of hotel/spa, a 200-seat theater and 837 residential units. Refer to **FIGURE 5** for a concept site plan.

2.5 FLOOD HAZARD ZONE:

As defined by the Flood Insurance Rate Map (FIRM) for Maricopa County, Arizona, and Incorporated Areas, Community number 045012, Panel 1320 of 4425, as shown on Map Number 04013C1320L dated October 16, 2013, this site is designated as **Zone "X" shaded**. As such, it is determined to be outside the 100-year flood hazard zone. Zone "X" shaded is defined as areas of 0.2-percent-annual-chance flood; areas of 1-percent-annual-chance-flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1-percent-annual-chance-flood. Refer to **FIGURE 3** for the FIRM map.

3. EXISTING DRAINAGE CONDITIONS

3.1 OFF-SITE DRAINAGE PATTERNS:

This site is bound by improved street sections on all four sides with curb and gutter. The general street flows are west on East Paradise Lane and East Tierra Buena Lane and south on North 73rd Street and North Scottsdale Road. No off-site flows impact the subject parcel. Refer to **FIGURE 4** for the COS QS 35-45 Contour Map indicating existing conditions.

3.2 ON-SITE DRAINAGE:

The site is the Cracker Jax Family Fun Amusement Park, which is currently in operation, and is a commercial property with slopes approximately 1% from north-northeast to the southwest corner of the site. Existing driveways from East Tierra Buena Lane and North 73rd Street access the subject parcel to a large parking lot in the southeast corner of the parcel. A small retention basin is located in the southeast corner which retains the existing parking lot located in that area. Runoff from the parcel generally flows overland to existing retention basins, one separates the driving range on the north parcel from the amusement park on the south parcel. All current retention is above ground. Any offsite storm water is diverted around the parcel within the existing improved streets. A search of ADEQ drywell database did not reveal any registered drywells at this location. However, the Crackerjax Preliminary Drainage report in Appendix IV indicates the driving range portion of the site was design with four (4) drywells. Two have been located on topographic survey.

3.3 EXISTING STORM SEWER SYSTEMS:

No underground storm pipes are evident on site. There is an underground storm drain system located in North Scottsdale Road along the east curb line.

- There are two catch basins located at the southeast corner of the intersection of North Scottsdale Road and East Paradise Lane. One catch basin is located on North Scottsdale Road and one on East Paradise Lane.
- There are two catch basins located at the northeast corner of the intersection of North Scottsdale Road and East Tierra Buena Lane. One catch basin is located on North Scottsdale Road and one on East Tierra Buena Lane.
- No additional underground storm drain systems were observed on the remainder of East Paradise Lane and East Tierra Buena Lane in addition to North 73rd Street along the subject parcels frontage.

4. PROPOSED STORM WATER MANAGEMENT

4.1 DESIGN INTENT:

On-site drainage will be handled within street sections, underground storm systems, onsite channels, or retention basins where necessary. This is a re-development of existing commercial land, therefore, the City of Scottsdale specifies that on-site retention shall be provided to store the difference between the pre vs. post development runoff from the 100-year 2-hour storm event while providing the greater of first flush storage and maintaining existing storage, if any.

If required, on-site retention will be provided as allowed by site configuration within underground retention and/or open space and have total discharge of the storm water within thirty-six hours. The ultimate outfall remains the historical outlet over the sidewalk/curb at the southwest corner of the site with an elevation of approximately 1482.

In general, the project will be graded toward the perimeters of the site into landscape areas adjacent to the roadways. Underground storage and/or Open retention basins may be designed in these landscape areas in accordance with COS design requirements. Where storage depths of open basins are greater than twelve (12) inches, percolation testing will be performed and drywells provided as required if positive bleed-off to existing storm systems are not possible.

Refer to Section 5 below for a discussion on proposed finished floor elevations. Refer to **Appendix III** for the Preliminary Grading & Drainage Plan.

4.2 DESIGN STORM REQUIREMENTS:

In accordance with City of Scottsdale requirements, stormwater storage for the 100-year 2-hour storm event based on pre-development versus post development C values.

4.3 CHARACTERISTICS OF BASINS:

The proposed drainage areas are comprised of mixed use buildings and associated parking areas, drives and landscape areas. Based on Figure 4.1-4 of the DS&PM, runoff coefficients for the 100 year storm event used are as follows:

- C=0.30 for grassed areas

- C=0.45 for desert landscaping
- C=0.95 for impervious areas.

HYDROLOGIC ANALYSIS: The hydrologic analysis is determined using the procedures in the City of Scottsdale Design Standards & Policies Manual and the Drainage Design Manual for Maricopa County, Arizona, Volume I. The Rational Method was utilized to compute the on-site peak discharges. The following established the Rational Method equation and the basic input data required:

$$Q = C_{wt}IA$$

Where: C_{wt} = The runoff coefficient relating runoff to rainfall
 I = Average rainfall intensity in inches/hour, lasting for T_c
 T_c = The time of concentration (minutes)
 A = The contributing drainage area in acres

C_{wt} CALCULATIONS:

➤ Pre-development (Existing Conditions) (Refer to Crackerjax report in Appendix IV)

- Driving Range: 10.33 Ac. @ C=0.75
- Miniature Golf Area: 6.89 Ac. @ C=0.60
- Parking Lots: 3.42 Ac. @ C= 0.95

C_{wt} : *20.64 Ac. @ $C_{wt} = 0.73$

➤ Post-development (Proposed Conditions) (Refer to EXHIBIT "B" in Appendix II)

- Landscape area (Desert): 8.27 Ac. @ C=0.50
- Impervious Ares (Roof / Pavement): 19.45 Ac. @ C=0.95

C_{wt} : 27.72 Ac. @ $C_{wt} = 0.82$

*The reference drainage report does not provide information concerning the 1.32-acre difference in area compared to the current ALTA survey. For the purposes of this report the calculated pre-development C_{wt} is used.

4.4 OFF-SITE FLOW :

No off-site flows contribute to this site.

4.5 STORMWATER RETENTION:

Stormwater storage will be provided based on the difference between existing conditions vs proposed development conditions with the minimum storage being the greater of first flush or existing retention volume plus additional required.

4.5.1 REQUIRED STORAGE

Based on Pre vs Post:

Stormwater storage required is calculated In accordance with the COS – DS&PM. Required Retention (Acre-Feet) = $(P/12) * A * (C_{post} - C_{pre})$

Where: P = 100 Yr. 2 Hr. Precipitation in Inches (Ref: NOAA Atlas 14 in Appendix I)
A = Area (Acres)
C = Cpost – Cpre

C post = 0.82

C pre = 0.73

$$V_{\text{Required}} = (2.25/12) * 27.72 \text{ Ac} * (0.82 - 0.73) = 0.468 \text{ ac-ft or } \underline{20,386 \text{ c.f.}}$$

Based on First Flush:

$$V_{\text{Required}} = (0.5/12) * 27.72 \text{ Ac} * 0.82 = 0.947 \text{ ac-ft or } \underline{41,256 \text{ c.f.}}$$

Check full 100-yr, 2-hr storage requirement:

$$V_{\text{Required}} = (2.25/12) * 27.72 \text{ Ac} * 0.82 = 4.262 \text{ ac-ft or } \underline{185,653 \text{ c.f.}}$$

Based on existing storage volume: Refer to the "Preliminary Drainage Report for Use Permit – Cracker Jax Site" excerpts in Appendix IV. The following table is a summary of preliminary design stormwater storage volume on site.

Table 1: Existing Retention Volume Calculations

Driving Range:	79,313 cf
Miniature Golf:	42,300 cf
Parking Lots:	33,264 cf
TOTAL:	154,877 cf

Based on the above calculations, the minimum required retention volume is based on the existing retention plus existing versus proposed conditions. $V_{\text{req}} = 154,877 \text{ CF} + 20,386 \text{ CF} = \underline{175,263 \text{ CF}}$.

4.5.2 CONCEPTUAL AVAILABLE STORAGE:

It is intended that required storage will be provided in retention areas within landscape areas around the perimeter of the development. These areas will store the runoff in underground storage pipes or in maximum one (1) foot deep basins without drywells, or maximum three (3) foot deep basins with drywells or positive outlets. Runoff will be conveyed to these basins by overland flow and through curb openings or storm pipe systems.

The volume for open basins is calculated using the area – sum volume method based on design contours. Storage within underground pipes is calculated using the following equation: $V_R = PI * R^2 * L$

Approximate storage volume available in available open retention area on the west side is summarized below.

Basin A				
ELEV.	AREA	DEPTH	AVG VOLUME	SUM VOLUME
(FT)	(SF)	(FT)	(CF)	(CF)
1286.00	7,075			0.00
		1.00	7,936.00	
1287.00	8,797			7,936.00
		1.00	9,708.50	
1288.00	10,620			17,644.50
		1.00	11,582.00	
1289.00	12,544			29,226.50

Based on the above summary, additional retention volume is required for **175,263 cf – 29,227 cf = 146,036 cf**. This is proposed to be placed in 10' dia. csp pipe.

The approximate length of pipe required is: $L = 146,036 / 3.1415 * 5^2 = 1,859$ LF.

The minimum required pipe (assuming basin not used) is: $L = 175,263 / 3.1415 * 5^2 = 2,232$ LF.

Refer to the Preliminary Grading and Drainage Plan in **Appendix III**, for locations of potential stormwater storage basins.

4.5.3 STORAGE DISCHARGE:

Discharge will be designed to release the retained volume within 36 hours using drywells or by direct bleed-off to the existing public storm system in Scottsdale Road limited to 1.0 cfs. Emergency overflow from the basins will occur over the top of curb and into the existing storm system(s) adjacent to the site.

The calculation for dry-well requirements is as follows:

- Minimum percolating rate of a drywell (for planning purposes) = 0.1 cfs
- Volume to be drained in 36 hours = 0.1 cfs * 36 hours * 3600 sec/hour = 12,960 cf = 0.298 acre-feet

Overall required storage = **175,263 cf**

175,263 cf / 12,960 cf per drywell = 13.5 = 14 drywells required maximum.

4.6 STREET CAPACITY CALCULATIONS:

These calculations will be provided in the Final Drainage Report

4.7 STORM DRAIN INLET CALCULATIONS:

These calculations will be provided in the Final Drainage Report

5. FLOOD SAFETY FOR DWELLINGS

5.1 FINISHED FLOOR ELEVATIONS

The ultimate outfall for this project is located at the southwest corner of the parcel at an elevation of approximately 1482 (per COS QC 35-45). The lowest conceptual finished floor elevation is 1487. All

building finished floor elevations will be set a minimum of 14 inches above emergency overflow points, and a minimum of 12 inches above the 100-year high-water elevation of any adjacent streets and drainage paths. This will ensure that each building will be well above the 100-year storm water surface elevation.

6. CONCLUSIONS

6.1 OVERALL PROJECT:

1. Off-site storm water does not impact this project
2. The finish floor elevations will be designed a minimum of 12 inches above the 100-year storm water surface elevation in adjacent streets and drainage paths and a minimum of 14 inches above the low top of curb of the lot.
3. Proposed retention basins will be above ground when possible but may also include underground storm water retention if necessary.
4. Storm water storage will be provided to, as a minimum, maintain existing conditions and discharge within 36 hours in accordance with City of Scottsdale requirements.

6.2 PROJECT PHASING:

This development is anticipated to be constructed in a phases based on consumer demand.

7. WARNING AND DISCLAIMER OF LIABILITY

RE: following page.

8. REFERENCES

1. *Design Standards & Policies Manual, City of Scottsdale – January 2010*
2. *Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology, Flood Control District of Maricopa County, Fourth Edition, November 18, 2009 amended through February 10, 2011*
3. *Drainage Design Manual for Maricopa County, Arizona, Volume II, Hydraulics, Flood Control District of Maricopa County, January 28, 1996*
4. *Preliminary Drainage Report for Use Permit, Cracker Jax Site, NE Corner of Scottsdale Rd & Tierra Buena, prepared by Gilbertson Associates, Inc., dated July 9, 1992.*



WARNING & DISCLAIMER OF LIABILITY

The Drainage and Floodplain Regulations and Ordinances of the City of Scottsdale are intended to "minimize the occurrence of losses, hazards and conditions adversely affecting the public health, safety and general welfare which might result from flooding caused by the surface runoff of rainfall" (Scottsdale Revised Code §37-16).

As defined in S.R.C. §37-17, a flood plain or "*Special flood hazard area* means an area having flood and/or flood related erosion hazards as shown on a FHBM or FIRM as zone A, AO, A1-30, AE, A99, AH, or E, and those areas identified as such by the floodplain administrator, delineated in accordance with subsection 37-18(b) and adopted by the floodplain board." It is possible that a property could be inundated by greater frequency flood events or by a flood greater in magnitude than a 100-year flood. Additionally, much of the Scottsdale area is a dynamic flood area; that is, the floodplains may shift from one location to another, over time, due to natural processes.

WARNING AND DISCLAIMER OF LIABILITY PURSUANT TO S.R.C §37-22

"The degree of flood protection provided by the requirements in this article is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Floods larger than the base flood can and will occur on rare occasions. Floodwater heights may be increased by man-made or natural causes. This article (Chapter 37, Article II) shall not create liability on the part of the city, any officer or employee thereof, or the federal government for any flood damages that result from reliance on this article or any administrative decision lawfully made thereunder."

Compliance with Drainage and Floodplain Regulations and Ordinances does not insure complete protection from flooding. The Floodplain Regulations and Ordinances meet established local and federal standards for floodplain management, but neither this review nor the Regulations and Ordinances take into account such flood related problems as natural erosion, streambed meander or man-made obstructions and diversions, all of which may have an adverse affect in the event of a flood. You are advised to consult your own engineer or other expert regarding these considerations.

I have read and understand the above. If I am an agent for an owner I have made the owner aware of and explained this disclaimer.

Plan Check No.

Owner or Agent

Date



FIGURE 1
VICINITY MAP



FIGURE 2
AERIAL

NOTES TO USERS

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

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

Coastal Base Flood Elevations shown on this map apply only to landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

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

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

The projection used in the preparation of this map was Arizona State Plane Central zone (NAD 83/SPZ02). The horizontal datum was NAD 83 HARN, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988 (NAVD 88). These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. Map users wishing to obtain flood elevations referenced to the National Geodetic Vertical Datum of 1929 (NGVD 29) may use the following Maricopa County website application: <http://www.fdm.maricopa.gov/Maps/gmaps/app/gisdata/application/index.cfm>

This web tool allows users to obtain point-specific datum conversion values by zooming in and hovering over a VERTCON checkbox on the layers menu on the left side of the screen. The VERTCON grid referenced in this web application was also used to convert existing flood elevations from NGVD 29 to NAVD 88.

To obtain current elevation, description, and/or location information for National Geodetic Survey bench marks shown on this map please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>. To obtain information about Geodetic Certification and Cadastral Survey bench marks produced by the Maricopa County Department of Transportation, please visit the Flood Control District of Maricopa County website at: <http://www.fdm.maricopa.gov/Maps/gmaps/app/gisdata/application/index.cfm>

Base map information shown on this FIRM was derived from multiple sources. Aerial imagery was provided in digital format by the Maricopa County Department of Public Works, Flood Control District. The imagery is dated October 2009 to November 2009. Additional National Aerial Imagery Program (NAIP) imagery was provided by the Arizona State Land Department (ALRIS) and is dated 2007. The coordinate system used for the production of the digital FIRM is State Plane Arizona Central NAD83 HARN, International Feet.

The profile base line depicted on this map represents the hydraulic modeling baselines that match flood profiles in the FIS report. As a result of improved topographic data, the profile base line, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

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

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

For information on available products associated with this FIRM, visit the **FEMA Map Service Center (MSC)** website at <http://mfc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

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

MARICOPA COUNTY
UNINCORPORATED AREAS
040037



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHA) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AC, AR, AH, V, and VE. The base flood elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No base flood elevations determined.
- ZONE AE** Base flood elevations determined. Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- ZONE AC** Flood depths of 1 to 3 feet (usually short flow on sloping terrain); average depths determined. For areas of elevated flow, flood depths are determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently abandoned. Zone AR indicates that the former flood control system is being replaced to provide protection from the 1% annual chance or greater flood.
- ZONE AH** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no base flood elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of obstruction so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with change areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE D Areas determined to be outside the 0.2% annual chance floodplain. Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different base flood elevations, flood depths or flood velocities
- Base flood elevation line and value; elevation in feet
- Base flood elevation value where different within SFHA; elevation in feet

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

State section line

Transect line

Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)

100-meter universal Transverse Mercator grid zone, 12

5000-foot grid zone, Arizona State Plane coordinate system, central zone (NAD83/SPZ02), Transverse Mercator

BM 5610 Bench mark (see explanation in Notes to Users section of this FIRM panel)

Blue Pile

MAP REPOSITORIES

Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

April 15, 1988

EFFECTIVE DATES OF REVISIONS TO THIS PANEL

December 3, 1987 - September 30, 1988 - July 15, 2001
October 16, 2013 - to add base flood elevation, to add special flood hazard areas, to update corporate limits, to change floodway, to advance suffix, to change base flood elevations, and to add floodway

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-438-6428.



MAP SCALE 1" = 1000'

0 1000 2000 FEET

0 1000 2000 METERS

NFIP

PANEL 1320L

FIRM
FLOOD INSURANCE RATE MAP
MARICOPA COUNTY,
ARIZONA
AND INCORPORATED AREAS

PANEL 1320 OF 4425
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS	COMMUNITY	REVISION	PANEL	DATE
MARICOPA COUNTY	040037	1320	L	
INCORPORATED CITY OF	040037	1320	L	
SCOTTSDALE CITY OF	045012	1320	L	

FIGURE 3

Notice to User: The Map Manager should inform should be used when placing map orders. The Community Number shown above should be used in insurance applications for the subject community.



MAP NUMBER
04013C1320L

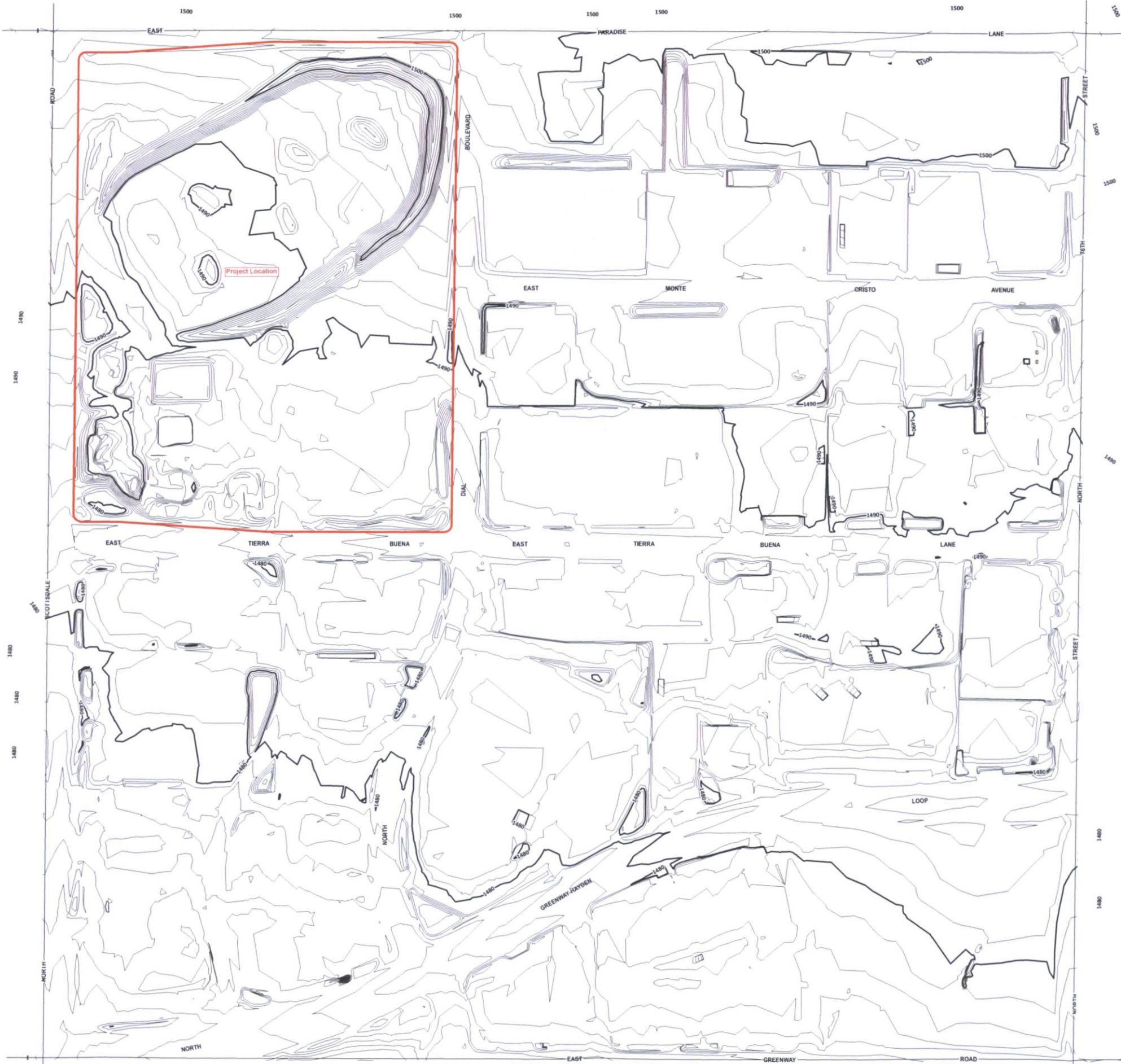
MAP REVISED
OCTOBER 16, 2013

Federal Emergency Management Agency

NOTICE
THIS DOCUMENT IS PROVIDED FOR GENERAL INFORMATION PURPOSES ONLY. THE CITY OF SCOTTSDALE DOES NOT WARRANT ITS ACCURACY, COMPLETENESS OR SUITABILITY FOR ANY PARTICULAR PURPOSE. IT SHOULD NOT BE RELIED UPON WITHOUT FIELD VERIFICATION.
THE CITY OF SCOTTSDALE

28-APR-14

35-44



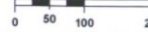
GENERAL NOTES:
* THIS IS A COMPUTER GENERATED DRAWING. FOR ANY REVISIONS PLEASE CONTACT THE CITY OF SCOTTSDALE GAS DEPARTMENT AT (480) 312-7792.
* THE SECTION LINE BEARING AND DISTANCES ARE BASED ON THE CITY OF SCOTTSDALE GPS SURVEY OF SEPTEMBER 1991. BEARINGS ARE IN DEGREES AND DISTANCES ARE FLATTENED TO GROUND WHERE NO CORNER WAS FOUND. THE DIMENSIONS ARE GIVEN TO CALCULATED SECTION CORNERS AND ARE NOTED AS CALCULATED ON THE MAP.

LEGEND:

VICINITY MAP



SCALE: 1" = 100'



The map scale of 1" = 100' is based on a full size print of 30" x 36"

CONTOUR
QUARTER SECTION MAP

35-45

SW 1/4 SEC. 2 T3N R4E

FIGURE 4

CITY OF SCOTTSDALE
SCOTTSDALE GEOGRAPHIC
INFORMATION SYSTEMS
3629 North Drinkwater Boulevard
Scottsdale, Arizona 85251

Land Use By Building Plan

Land Use By Building Plan: La Via has a variety of land uses. Scottsdale Rd. has the civic, hospitality and business components while the residential portions are along N. Dial Blvd. Retail is wrapped around the central plaza in the center of La Via and links the various uses together.

LEGEND:

- Office
- Ground-floor Retail
- Ground-floor Parking
- Retail/F&B
- Residential - Condo
- Residential - Rental
- Hotel
- Civic
- Parking
- Podium Parking



LA VIA DEVELOPMENT MIX

USE	AREA (S.F.)	PARKING REQ.	SPACES
OFFICE	700,000	1/325 S.F.	2,333
RETAIL/RESTAURANTS	60,000	1/250 S.F.	240
GROCERY	40,000	1/300 S.F.	133
RESIDENTIAL - RENTAL (AVG 900 S.F.)	550,000	1.5/U	975
RESIDENTIAL - CONDO (AVG 2,200 S.F.)	450,000	2/U	375
HOTEL (180 ROOMS) + FITNESS	130,000	1 RM*1.25	225
THEATER (200 SEATS)	10,000	1/2.5 SEATS	80
TOTAL	1,940,000		4,361

FIGURE 5

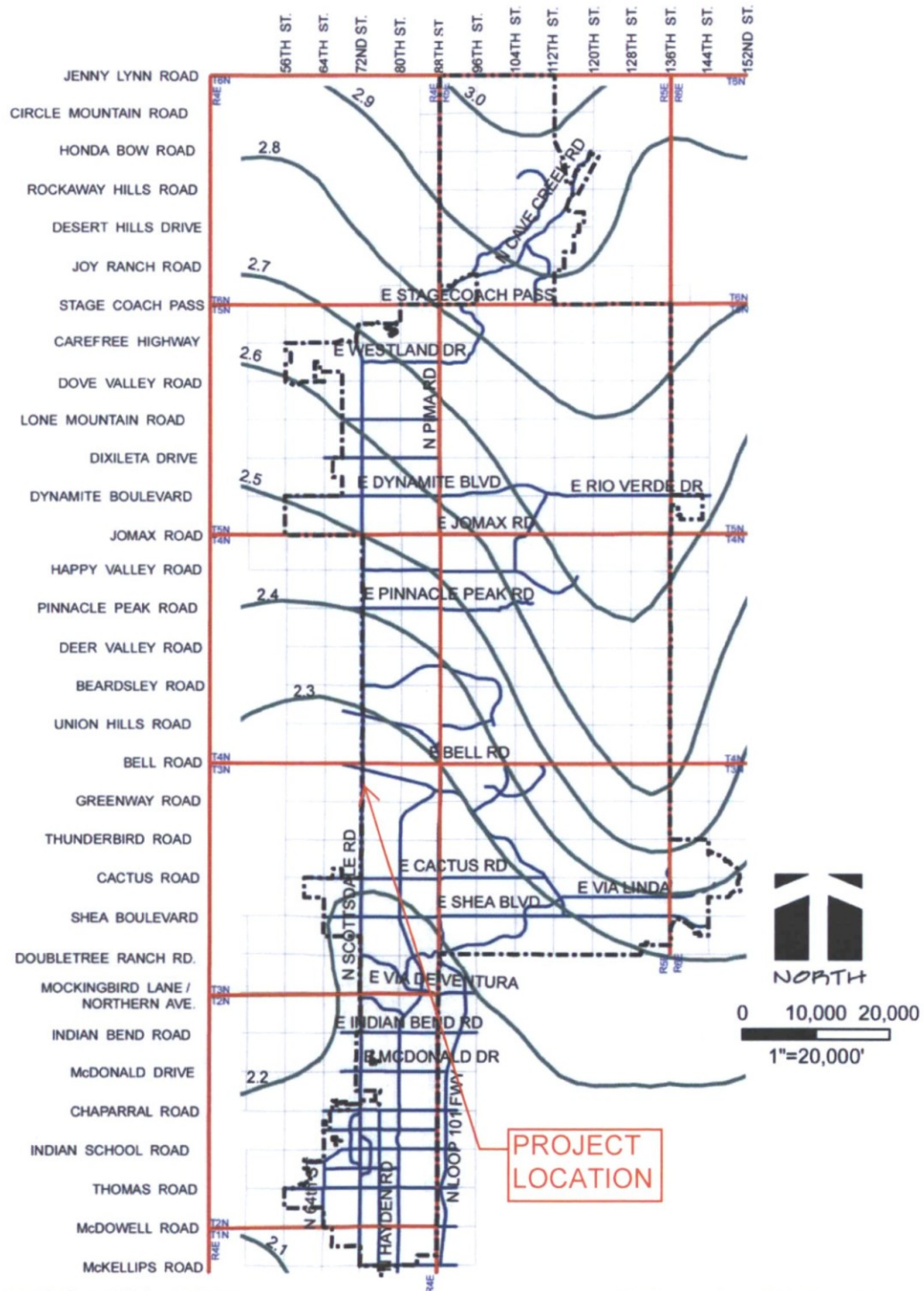


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APPENDIX I

Rainfall Data

100 Year 2 Hour Precipitation in Inches



Map Produced By: Geographic Information Systems
04/03/2009

Rainfall Data From NOAA Atlas 14 Vol. 1



NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.6224°, Longitude: -111.9238°
Elevation: 1462.62 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 Bonnini, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerals](#)

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	0.191 (0.158-0.232)	0.249 (0.209-0.304)	0.335 (0.278-0.408)	0.403 (0.332-0.488)	0.493 (0.400-0.595)	0.561 (0.451-0.672)	0.633 (0.500-0.757)	0.703 (0.546-0.840)	0.800 (0.605-0.957)	0.872 (0.647-1.05)
10-min	0.290 (0.241-0.354)	0.379 (0.318-0.463)	0.511 (0.423-0.621)	0.613 (0.506-0.742)	0.750 (0.609-0.906)	0.854 (0.687-1.02)	0.963 (0.760-1.15)	1.07 (0.831-1.28)	1.22 (0.921-1.46)	1.33 (0.984-1.59)
15-min	0.360 (0.298-0.439)	0.470 (0.394-0.573)	0.633 (0.525-0.770)	0.759 (0.628-0.920)	0.929 (0.755-1.12)	1.06 (0.851-1.27)	1.19 (0.943-1.43)	1.33 (1.03-1.59)	1.51 (1.14-1.81)	1.65 (1.22-1.97)
30-min	0.485 (0.402-0.591)	0.633 (0.530-0.772)	0.852 (0.707-1.04)	1.02 (0.845-1.24)	1.25 (1.02-1.51)	1.43 (1.15-1.71)	1.61 (1.27-1.93)	1.79 (1.39-2.13)	2.03 (1.54-2.43)	2.22 (1.64-2.66)
60-min	0.600 (0.498-0.732)	0.784 (0.656-0.955)	1.05 (0.875-1.28)	1.26 (1.05-1.53)	1.55 (1.26-1.87)	1.76 (1.42-2.12)	1.99 (1.57-2.38)	2.21 (1.72-2.64)	2.52 (1.90-3.01)	2.74 (2.03-3.29)
2-hr	0.702 (0.592-0.836)	0.909 (0.769-1.08)	1.21 (1.01-1.43)	1.44 (1.20-1.70)	1.76 (1.45-2.07)	1.99 (1.62-2.34)	2.24 (1.79-2.62)	2.48 (1.95-2.91)	2.82 (2.17-3.30)	3.08 (2.31-3.61)
3-hr	0.782 (0.660-0.958)	1.00 (0.848-1.24)	1.31 (1.10-1.60)	1.55 (1.29-1.88)	1.89 (1.55-2.28)	2.16 (1.75-2.59)	2.44 (1.94-2.93)	2.74 (2.14-3.27)	3.14 (2.38-3.75)	3.47 (2.57-4.14)
6-hr	0.944 (0.811-1.12)	1.19 (1.02-1.42)	1.52 (1.29-1.80)	1.78 (1.50-2.10)	2.14 (1.78-2.51)	2.42 (1.98-2.82)	2.71 (2.19-3.15)	3.00 (2.38-3.50)	3.40 (2.63-3.96)	3.72 (2.81-4.34)
12-hr	1.05 (0.904-1.25)	1.33 (1.14-1.57)	1.67 (1.43-1.97)	1.94 (1.65-2.28)	2.31 (1.94-2.71)	2.59 (2.15-3.03)	2.88 (2.36-3.36)	3.18 (2.57-3.70)	3.57 (2.81-4.17)	3.87 (2.99-4.56)
24-hr	1.23 (1.07-1.44)	1.56 (1.36-1.83)	2.01 (1.74-2.35)	2.37 (2.04-2.76)	2.86 (2.45-3.33)	3.26 (2.76-3.77)	3.67 (3.08-4.26)	4.09 (3.39-4.74)	4.68 (3.81-5.43)	5.15 (4.12-6.00)
2-day	1.31 (1.13-1.53)	1.67 (1.44-1.95)	2.18 (1.87-2.54)	2.58 (2.21-2.99)	3.14 (2.66-3.64)	3.57 (3.00-4.14)	4.04 (3.36-4.69)	4.51 (3.72-5.26)	5.18 (4.19-6.05)	5.70 (4.55-6.69)
3-day	1.41 (1.23-1.63)	1.80 (1.57-2.08)	2.36 (2.05-2.72)	2.81 (2.44-3.24)	3.45 (2.97-3.97)	3.96 (3.38-4.55)	4.50 (3.81-5.19)	5.07 (4.25-5.86)	5.87 (4.84-6.80)	6.52 (5.30-7.58)
4-day	1.51 (1.32-1.73)	1.93 (1.69-2.21)	2.55 (2.23-2.91)	3.05 (2.66-3.48)	3.76 (3.27-4.30)	4.35 (3.75-4.96)	4.97 (4.25-5.68)	5.63 (4.77-6.46)	6.57 (5.48-7.55)	7.34 (6.05-8.47)
7-day	1.70 (1.49-1.96)	2.17 (1.90-2.50)	2.88 (2.51-3.31)	3.45 (3.00-3.96)	4.26 (3.68-4.89)	4.92 (4.22-5.64)	5.63 (4.79-6.46)	6.38 (5.38-7.36)	7.45 (6.19-8.61)	8.32 (6.83-9.65)
10-day	1.84 (1.61-2.11)	2.35 (2.06-2.70)	3.11 (2.72-3.56)	3.73 (3.24-4.26)	4.59 (3.97-5.23)	5.29 (4.55-6.03)	6.03 (5.14-6.89)	6.82 (5.76-7.81)	7.93 (6.61-9.11)	8.83 (7.27-10.2)
20-day	2.27 (2.00-2.60)	2.93 (2.58-3.34)	3.87 (3.40-4.41)	4.59 (4.01-5.21)	5.56 (4.84-6.32)	6.31 (5.47-7.18)	7.08 (6.10-8.07)	7.87 (6.74-9.00)	8.93 (7.57-10.3)	9.76 (8.21-11.3)
30-day	2.67 (2.34-3.04)	3.43 (3.02-3.92)	4.53 (3.97-5.15)	5.37 (4.69-6.09)	6.50 (5.65-7.38)	7.37 (6.38-8.36)	8.27 (7.12-9.38)	9.18 (7.85-10.4)	10.4 (8.83-11.9)	11.4 (9.56-13.0)
45-day	3.09 (2.73-3.51)	3.98 (3.52-4.52)	5.25 (4.63-5.95)	6.20 (5.45-7.02)	7.45 (6.53-8.44)	8.40 (7.33-9.53)	9.37 (8.12-10.6)	10.3 (8.91-11.8)	11.6 (9.94-13.3)	12.6 (10.7-14.5)
60-day	3.42 (3.03-3.87)	4.41 (3.91-4.99)	5.81 (5.14-6.55)	6.83 (6.02-7.70)	8.16 (7.17-9.21)	9.16 (8.01-10.3)	10.2 (8.84-11.5)	11.1 (9.66-12.6)	12.5 (10.7-14.2)	13.4 (11.5-15.4)

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

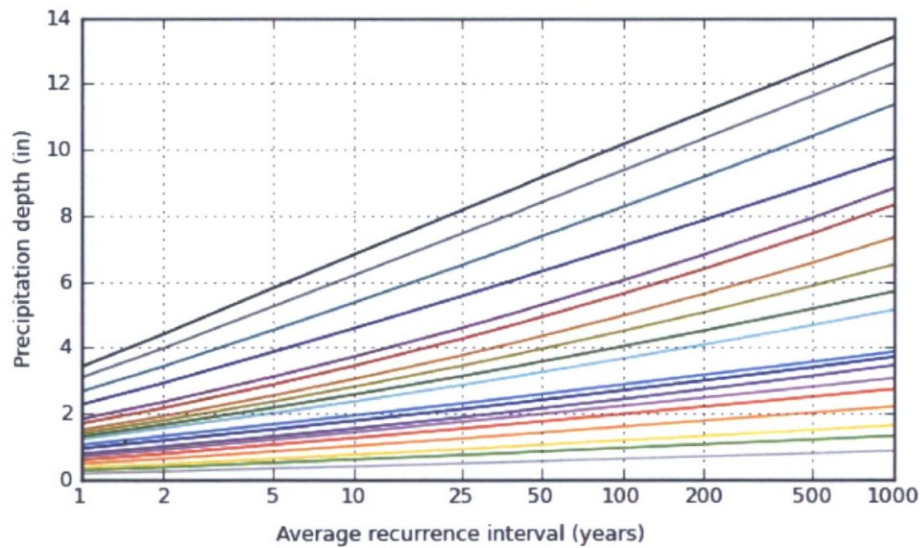
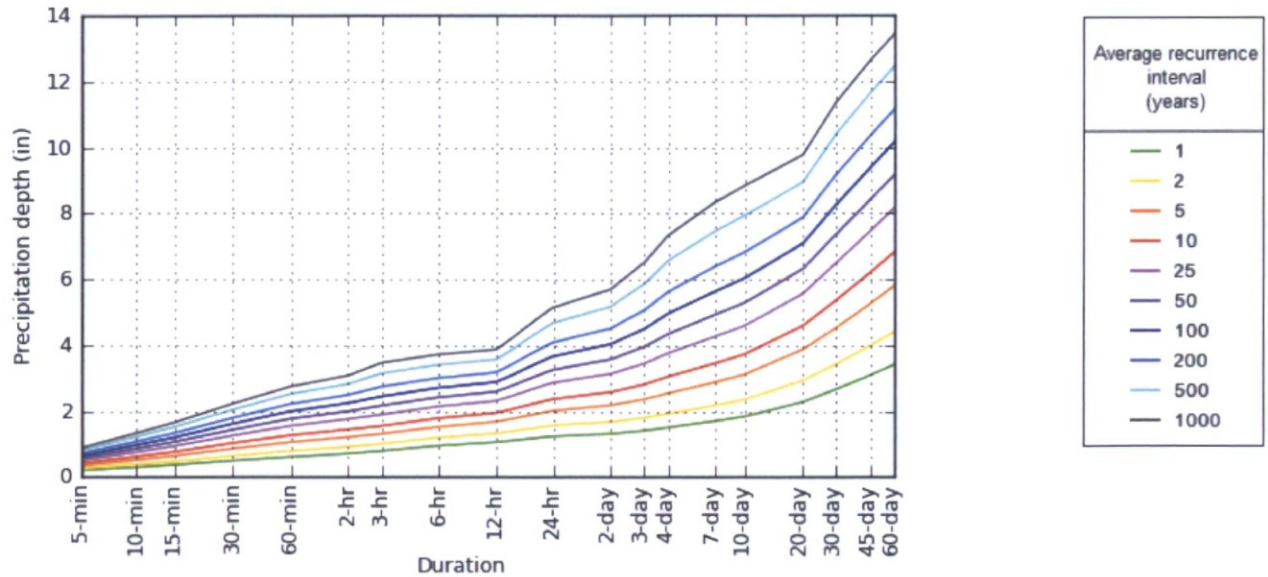
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper 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.

[Back to Top](#)

PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 33.6224°, Longitude: -111.9238°



Maps & aerials

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



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[National Weather Service](#)
[National Water Center](#)
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

[Disclaimer](#)



NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.6224°, Longitude: -111.9238°
Elevation: 1462.62 ft**
* source: ESRI Maps
** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

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NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerals](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	2.29 (1.90-2.78)	2.99 (2.51-3.65)	4.02 (3.34-4.90)	4.84 (3.98-5.86)	5.92 (4.80-7.14)	6.73 (5.41-8.06)	7.60 (6.00-9.08)	8.44 (6.55-10.1)	9.60 (7.26-11.5)	10.5 (7.76-12.5)
10-min	1.74 (1.45-2.12)	2.27 (1.91-2.78)	3.07 (2.54-3.73)	3.68 (3.04-4.45)	4.50 (3.65-5.44)	5.12 (4.12-6.14)	5.78 (4.56-6.92)	6.42 (4.99-7.67)	7.30 (5.53-8.74)	7.97 (5.90-9.55)
15-min	1.44 (1.19-1.76)	1.88 (1.58-2.29)	2.53 (2.10-3.08)	3.04 (2.51-3.68)	3.72 (3.02-4.49)	4.23 (3.40-5.08)	4.77 (3.77-5.72)	5.30 (4.12-6.34)	6.04 (4.56-7.22)	6.58 (4.88-7.89)
30-min	0.970 (0.804-1.18)	1.27 (1.06-1.54)	1.70 (1.41-2.07)	2.04 (1.69-2.48)	2.50 (2.03-3.02)	2.85 (2.29-3.42)	3.21 (2.54-3.85)	3.57 (2.77-4.27)	4.06 (3.07-4.86)	4.43 (3.29-5.31)
60-min	0.600 (0.498-0.732)	0.784 (0.656-0.955)	1.05 (0.875-1.28)	1.26 (1.05-1.53)	1.55 (1.26-1.87)	1.76 (1.42-2.12)	1.99 (1.57-2.38)	2.21 (1.72-2.64)	2.52 (1.90-3.01)	2.74 (2.03-3.29)
2-hr	0.351 (0.296-0.418)	0.454 (0.384-0.542)	0.604 (0.508-0.716)	0.719 (0.598-0.852)	0.878 (0.724-1.03)	0.994 (0.810-1.17)	1.12 (0.893-1.31)	1.24 (0.977-1.45)	1.41 (1.08-1.65)	1.54 (1.16-1.81)
3-hr	0.260 (0.220-0.319)	0.334 (0.282-0.411)	0.435 (0.367-0.533)	0.515 (0.429-0.627)	0.629 (0.516-0.760)	0.720 (0.583-0.863)	0.813 (0.646-0.974)	0.912 (0.712-1.09)	1.05 (0.793-1.25)	1.15 (0.854-1.38)
6-hr	0.158 (0.135-0.188)	0.199 (0.170-0.237)	0.254 (0.216-0.300)	0.298 (0.251-0.350)	0.357 (0.298-0.419)	0.403 (0.331-0.471)	0.452 (0.365-0.525)	0.501 (0.398-0.585)	0.568 (0.439-0.662)	0.621 (0.469-0.725)
12-hr	0.087 (0.075-0.103)	0.110 (0.094-0.130)	0.139 (0.119-0.163)	0.161 (0.137-0.190)	0.192 (0.161-0.225)	0.215 (0.178-0.251)	0.239 (0.195-0.279)	0.264 (0.213-0.307)	0.296 (0.233-0.346)	0.321 (0.248-0.378)
24-hr	0.051 (0.045-0.060)	0.065 (0.057-0.076)	0.084 (0.073-0.098)	0.099 (0.085-0.115)	0.119 (0.102-0.139)	0.136 (0.115-0.157)	0.153 (0.128-0.177)	0.170 (0.141-0.197)	0.195 (0.159-0.226)	0.214 (0.172-0.250)
2-day	0.027 (0.024-0.032)	0.035 (0.030-0.041)	0.045 (0.039-0.053)	0.054 (0.046-0.062)	0.065 (0.055-0.076)	0.074 (0.063-0.086)	0.084 (0.070-0.098)	0.094 (0.078-0.110)	0.108 (0.087-0.126)	0.119 (0.095-0.139)
3-day	0.020 (0.017-0.023)	0.025 (0.022-0.029)	0.033 (0.029-0.038)	0.039 (0.034-0.045)	0.048 (0.041-0.055)	0.055 (0.047-0.063)	0.063 (0.053-0.072)	0.070 (0.059-0.081)	0.082 (0.067-0.094)	0.091 (0.074-0.105)
4-day	0.016 (0.014-0.018)	0.020 (0.018-0.023)	0.027 (0.023-0.030)	0.032 (0.028-0.036)	0.039 (0.034-0.045)	0.045 (0.039-0.052)	0.052 (0.044-0.059)	0.059 (0.050-0.067)	0.068 (0.057-0.079)	0.076 (0.063-0.088)
7-day	0.010 (0.009-0.012)	0.013 (0.011-0.015)	0.017 (0.015-0.020)	0.021 (0.018-0.024)	0.025 (0.022-0.029)	0.029 (0.025-0.034)	0.034 (0.029-0.038)	0.038 (0.032-0.044)	0.044 (0.037-0.051)	0.050 (0.041-0.057)
10-day	0.008 (0.007-0.009)	0.010 (0.009-0.011)	0.013 (0.011-0.015)	0.016 (0.014-0.018)	0.019 (0.017-0.022)	0.022 (0.019-0.025)	0.025 (0.021-0.029)	0.028 (0.024-0.033)	0.033 (0.028-0.038)	0.037 (0.030-0.042)
20-day	0.005 (0.004-0.005)	0.006 (0.005-0.007)	0.008 (0.007-0.009)	0.010 (0.008-0.011)	0.012 (0.010-0.013)	0.013 (0.011-0.015)	0.015 (0.013-0.017)	0.016 (0.014-0.019)	0.019 (0.016-0.021)	0.020 (0.017-0.023)
30-day	0.004 (0.003-0.004)	0.005 (0.004-0.005)	0.006 (0.006-0.007)	0.007 (0.007-0.008)	0.009 (0.008-0.010)	0.010 (0.009-0.012)	0.011 (0.010-0.013)	0.013 (0.011-0.014)	0.014 (0.012-0.016)	0.016 (0.013-0.018)
45-day	0.003 (0.003-0.003)	0.004 (0.003-0.004)	0.005 (0.004-0.006)	0.006 (0.005-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.010 (0.008-0.011)	0.011 (0.009-0.012)	0.012 (0.010-0.013)
60-day	0.002 (0.002-0.003)	0.003 (0.003-0.003)	0.004 (0.004-0.005)	0.005 (0.004-0.005)	0.006 (0.005-0.006)	0.006 (0.006-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.007-0.010)	0.009 (0.008-0.011)

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

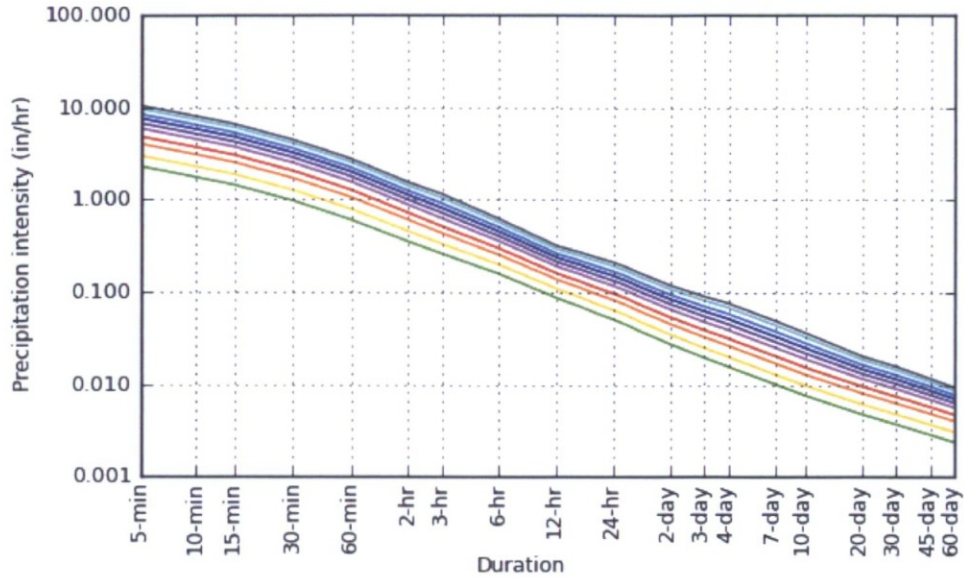
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper 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.

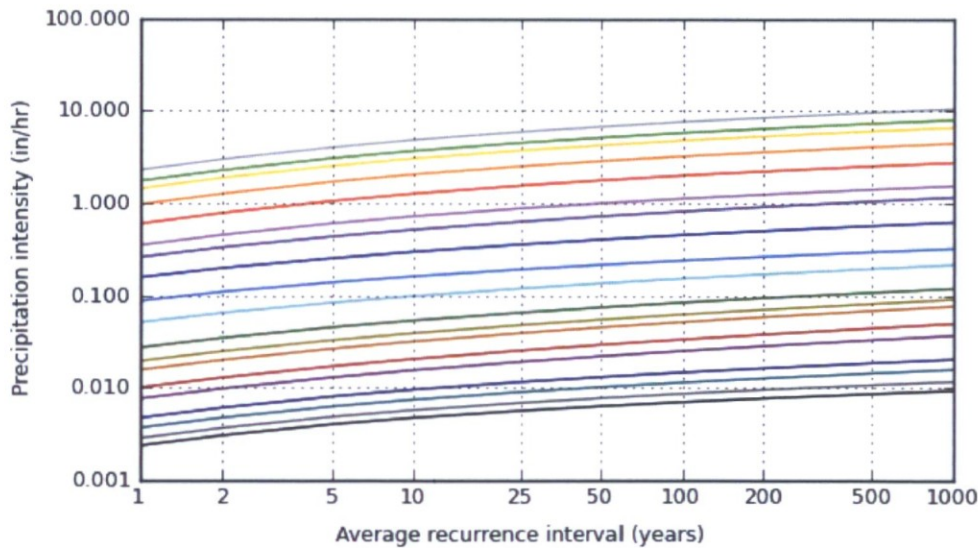
[Back to Top](#)

PF graphical

PDS-based intensity-duration-frequency (IDF) curves
Latitude: 33.6224°, Longitude: -111.9238°



Average recurrence interval (years)	
1	2
5	10
25	50
100	200
500	1000



Duration	
5-min	2-day
10-min	3-day
15-min	4-day
30-min	7-day
60-min	10-day
2-hr	20-day
3-hr	30-day
6-hr	45-day
12-hr	60-day
24-hr	

Maps & aerials

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



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Silver Spring, MD 20910
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APPENDIX II

Calculations

2. Time of Concentration

Time of concentration "Tc" is the total time of travel from the most hydraulically remote part of the watershed to the concentration point of interest. The calculation of "Tc" must follow FCDMC Hydrology Manual procedures.

***Note:** Do not add a standard set amount of time to the estimated "Tc" for lot runoff delay (such as 5 or 10 minutes). Natural land slopes are too variable in Scottsdale to add a set amount of time for lot runoff.

3. Runoff Coefficients

Use [Figure 4.1-4](#) or equivalent to obtain the runoff coefficients or "C" values. Composite "C" values for the appropriate zoning category or weighted average values calculated for the specific site are both acceptable approaches.

RUNOFF COEFFICIENTS - "C" VALUE			
Land Use	Storm Frequency		
	2-25 Year	50 Year	100 Year
Composite Area-wide Values			
Commercial & Industrial Areas	0.80	0.83	0.86
Residential Areas-Single Family (average lot size)			
R1-1-1901	0.33	0.50	0.53
R1-130	0.35	0.51	0.59
R1-70	0.37	0.52	0.60
R1-43	0.38	0.55	0.61
R1-35 (35,000 square feet/lot)	0.40	0.56	0.62
R1-18 (18,000 square feet/lot)	0.43	0.58	0.64
R1-10 (10,000 square feet/lot)	0.47	0.62	0.67
R1-7 (7,000 square feet/lot)	0.51	0.64	0.94
Townhouses (R-2, R-4)	0.63	0.74	0.94
Apartments & Condominiums (R-3, R-5)	0.76	0.83	0.94
Specific Surface Type Values			
Paved streets, parking lots (concrete or asphalt), roofs, drive-ways, etc.	0.90	0.93	0.95
Lawns, golf courses, & parks (grassed areas)	0.20	0.25	0.30
Undisturbed natural desert or desert landscaping (no impervious weed barrier)	0.37	0.42	0.45
Desert landscaping (with impervious weed barrier)	0.63	0.73	0.83
Mountain terrain – slopes greater than 10%	0.60	0.70	0.80
Agricultural areas (flood-irrigated fields)	0.16	0.18	0.20

FIGURE 4.1-4 RUNOFF COEFFICIENTS FOR USE WITH RATIONAL METHOD

Cwt = .82



EXHIBIT 'B'
Post Cwt



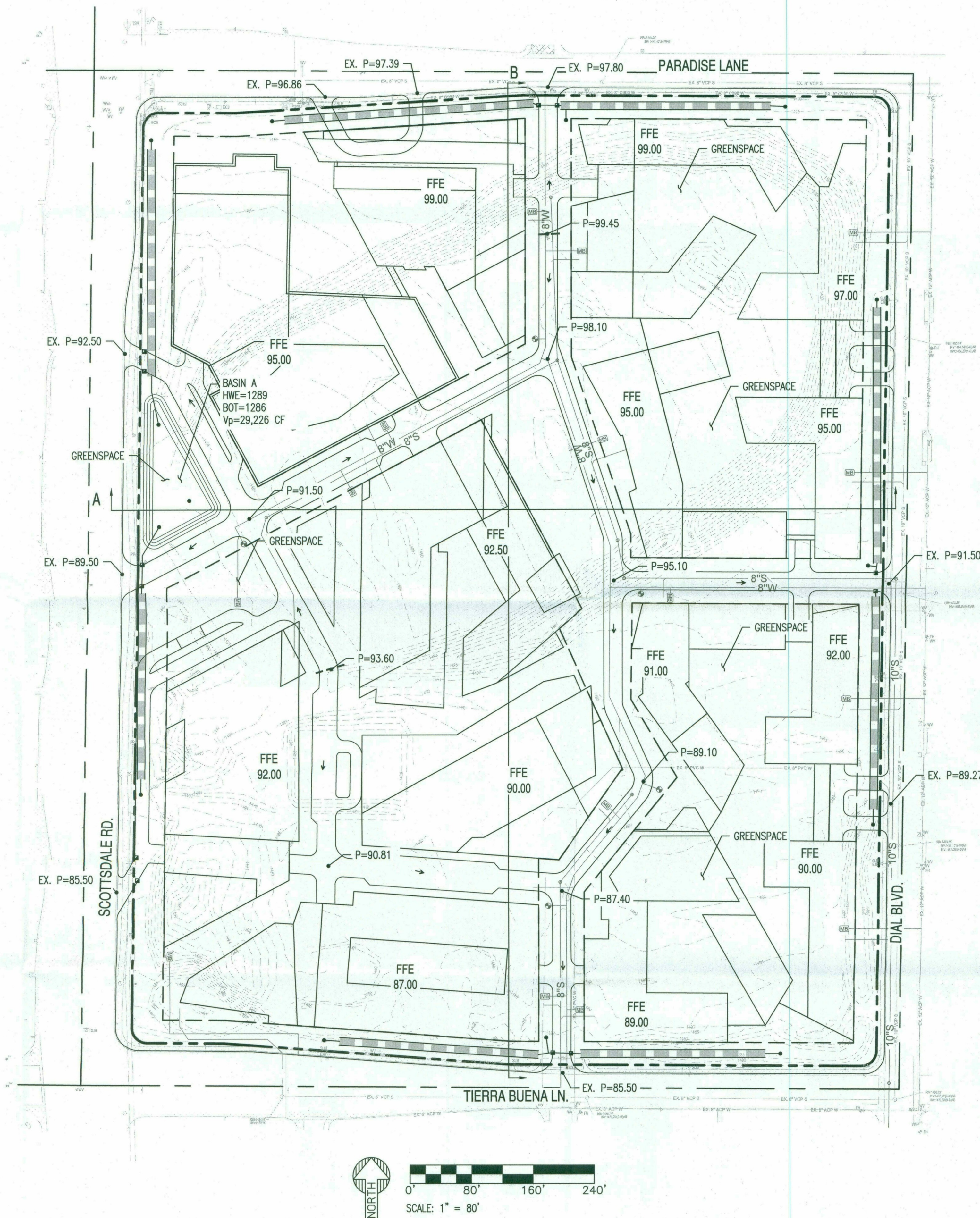
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APPENDIX III

Preliminary Grading and Drainage

8280 E. Gelding Dr., Suite 101
Scottsdale, AZ 85260

LA VIA DEVELOPMENT
SEC PARADISE LN. AND SCOTTSDALE RD.
PRELIMINARY GRADING PLAN



PROPOSED LEGEND

- PROPERTY LINE
- RIDGELINE
- CATCH BASIN
- 10' DIA CSP
- DRYWELL

Call at least two full working days before your final working day

ARIZONA 811

800-480-8111

1-800-480-8111

1-800-480-8111

NOTE TO CONTRACTOR:

THIS SET OF DRAWINGS AND DOCUMENTS IS INTENDED AS A SET OF GUIDELINES FOR THE PROJECT AND ARE INTENDED TO BE USED IN CONJUNCTION WITH A SET OF CONSTRUCTION SPECIFICATIONS TO BE SUPPLIED BY OTHER. THEY MUST BE READ TO INCORPORATE ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES INCLUDING FEDERAL A.D.A. REQUIREMENTS. THE USER ASSURES THAT THERE ARE NO UNUSUAL SOIL CONDITIONS OR WIND LOADS. THE FAILURE OF THIS CONDITION MAY REQUIRE SIGNIFICANT CHANGES TO THESE DOCUMENTS.

IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO CONFORM TO ALL APPLICABLE CODES AND TO INFORM THE SUBCONTRACTORS OF ANY QUESTIONS OR CLARIFICATIONS WHICH ARE REQUIRED. CONTRACTORS SHALL ALSO VISIT THE SITE BEFORE BIDDING. CONTRACTORS ARE REQUIRED TO KNOW ALL OBSERVABLE CONDITIONS AND APPLICABLE CODES.

SEG

SUSTAINABILITY
ENGINEERING
GROUP

8280 E BELDING DR #101, SCOTTSDALE, ARIZONA 85260
WWW.AZSEG.COM TEL. 480.588.7226

PROJECT: CRACKERJAX REDEVELOPMENT

LOCATION: SEC SCOTTSDALE ROAD AND PARADISE LN, SCOTTSDALE, AZ 85254

DRAWN: POUNDS
DESIGNED: POUNDS
CHECKED: COUNSELL
PROJ. MGR.: FAKIH

DATE: 10/06/17

ISSUED FOR: ZONING

REVISION NO.	DATE
1	
2	
3	
4	
5	

JOB NO.: 170377

SHEET TITLE: PRELIMINARY GRADING PLAN

SHEET NO.: C3.00

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APPENDIX IV

Cracker Jax Preliminary Drainage Report

8280 E. Gelding Dr., Suite 101
Scottsdale, AZ 85260

**PRELIMINARY DRAINAGE REPORT
FOR
USE PERMIT**

**CRACKERJAX SITE
N.E. CORNER OF SCOTTSDALE RD & TIERRA BUENA**

JULY, 1992



Prepared by:

**GILBERTSON ASSOCIATES, INC.
Consulting Civil Engineers
and Land Surveyors
23733 North Scottsdale Road, Suite B
Scottsdale, Arizona 85255-3465**

July 9, 1992

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Appendix A - Stormwater Detention

Appendix B - Maxwell Type IV Dry Well



1.0 INTRODUCTION

This Report addresses the proposed drainage system for the proposed CrackerJax site, at the North East corner of Scottsdale Road and ¹Tierra Buena. The site is located within an area that was previously improved through an Improvement District. To finalize the constructed storm water drainage system a report entitled " Preliminary Storm Drainage Study, Westcor Improvement District, Scottsdale Arizona" dated April, 1984 was submitted and approved by the City of Scottsdale.

The above referenced report identified that stormwater detention for each parcel was required. The volume of storage originally proposed was that associated with 50 year 24 hour storm event. Subsequently the City of Scottsdale has advised that the 100-year 2-hour storm event should be utilized for the detention calculations. This approach minimized impact downstream due to the proposed development.

2.0 METHODOLOGY

The review of the previously constructed storm drainage and roadway infrastructure identified that there is no off-site flow to this site. ¹ Paradise Lane intercepts and channelizes the flow from off-site to the existing storm drain in Scottsdale Road. Rainfall volumes were obtained from the above referenced report. Quantification of the Weighted "C" was obtained utilizing the volume of rainfall in combination with Figure 2-21 of "Drainage Report Preparation, Section 2" for the City of Scottsdale.

The calculations attached in Appendix 'A' indicates that 79,312 cubic feet of storage is required for the driving range portion of the site considering the nature of the proposed development. This retention will be provided within the driving range and will be drained by Maxwell Type IV dry wells. Appendix 'B' presents information regarding the proposed construction of these dry wells. An additional 75,564 cubic feet of storage is required for the remainder of the developed portion of the site. This detention volume will be contained in two basins and discharged to the existing storm drain along Scottsdale Road at a controlled rate of 1 cubic foot per second.

¹ Revised "Tierra Buena" to "Paradise Lane" 8/6/92

3.0 CONCLUSIONS

The three proposed detention/retention facilities can accommodate the required storage. Controlled discharge from the two smaller detention basins will be drained to the existing storm drain located on Scottsdale Road.

Total evacuation of both basins will be complete within 36 hours.

Appendix A
Stormwater Detention

**APPENDIX A
DETENTION CALCULATIONS**

VOLUME #1 (DRIVING RANGE)

$$\text{Average 'C'} = 0.75$$

$$\begin{aligned} V &= 450,000 \text{ ft.}^3 \times 0.75 \times \frac{2.82 \text{ in.}}{12} \\ &= 79,313 \text{ ft.}^3 \end{aligned}$$

Capacity of Maxwell IV Dry Well in 12 Hours

$$= 0.5 \text{ cfs} \times 60 \text{ sec/min} \times 60 \text{ min/hr} \times 12 = 21,600 \text{ ft.}^3$$

of Dry Wells Required

$$= \frac{79,313 \text{ ft.}^3}{21,600 \text{ ft.}^3} = 3.7$$

Use 4

VOLUME #2 (MINIATURE GOLF)

$$\text{Average 'C'} = 0.60$$

$$\begin{aligned} V &= 300,000 \text{ ft.}^3 \times 0.60 \times \frac{2.82 \text{ in.}}{12} \\ &= 42,300 \text{ ft.}^3 \end{aligned}$$

$$\text{Basin Drain Time} = \frac{42,300 \text{ ft.}^3}{1 \text{ ft.}^3/\text{sec}} \div 60 \text{ sec/min} \div 60 \text{ min/hr} = 11.8 \text{ hours}$$

VOLUME #3 (PARKING LOTS)

$$\text{Average 'C'} = 0.95$$

$$\begin{aligned} V &= 149,000 \text{ ft.}^3 \times 0.95 \times \frac{2.82 \text{ in.}}{12} \\ &= 33,264 \text{ ft.}^3 \end{aligned}$$

$$\text{Basin Drain Time} = \frac{33,264}{1 \text{ ft.}^3/\text{sec}} \div 60 \text{ sec/min} \div 60 \text{ min/hr} = 9.3 \text{ hours}$$



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PRELIMINARY WATER CAPACITY REPORT

La Via

16001 N. Scottsdale Road
Scottsdale, AZ

Prepared For:



2400 East Arizona Biltmore Circle
Phoenix, AZ 85016
Phone: 602.955.3441

Prepared by:



 **FILE COPY**



EXPIRES 12-31-17

Sustainability Engineering Group

8280 E. Gelding Drive, Suite 101
Scottsdale, AZ 85260
480.588.7226 www.azSEG.com

Project Number: 170377

Submittal Date: October 2017

Case No.: 473-PA-2017

Plan Check No.: TBD



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APPENDIX III	-	Preliminary Utility Plan

1. INTRODUCTION

1.1 SUMMARY OF PROPOSED DEVELOPMENT:

This project is a redevelopment of the land occupied by the Cracker Jax Family Fun and Sports Park in Scottsdale, AZ. Proposed development is conceptualized to be a mixed use consisting of office, retail, grocery, hotel, theater, and residential units. The purpose of this water capacity design report is to provide an analysis of the impact that this development will have on the City's water system.

1.2 LEGAL DESCRIPTION:

The project property consists of two parcels of land located in a portion of Section 2, Township 3 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona; Parcel ID numbers are APN: 215-44-002D and 215-44-002F. The property address is 16001 N. Scottsdale Road.

The project is located at the NEC of East Tierra Buena Lane and North Scottsdale Road in Scottsdale, AZ. The site is further bound by East Paradise Lane to the north and North 73rd Street to the east. Refer to **FIGURE 1 - Vicinity Map** for the project's location with respect to major cross streets.

1.3 EXISTING AND PROPOSED SITE ZONING AND LAND USES:

The parcel is zoned C-4 and is currently occupied with an amusement park consisting of one main building, an existing parking lot, a driving range and amusement attractions.

1.4 REFERENCES:

The project is located in the Scottsdale Airpark area and falls within Mixed-Use Neighborhoods conceptual land use district of the City's General Plan.

2. DESIGN DOCUMENTATION

2.1 DESIGN COMPLIANCE:

The proposed water system is designed to meet the criteria of the City of Scottsdale ("the City") Water Resources Department, the Arizona Department of Environmental Quality ("ADEQ"), and Maricopa County Environmental Services Department ("MCESD").

2.2 PROCEDURES, POLICIES AND METHODOLOGIES:

The general methodology used to design this public water infrastructure will consist of modeling a network of water distribution mains to meet the City's pressure, head loss, and water demand requirements during daily demands and fire events. The connection to the water system is modeled as a reservoir and pump. The pump will simulate the pressure drop and the available flow from the existing water system as depicted by the fire flow test. Refer to **APPENDIX I** for a copy of the fire flow test results.

2.3 SOFTWARE ACKNOWLEDGEMENT:

Bentley WaterCAD® Version 8i is the computer modeling tool used in this water study.

3. EXISTING CONDITIONS

3.1 EXISTING ZONING & LAND USE:

Land ownership, as defined by ALTA/NSPS Land Title Survey prepared by Superior Surveying Services, Inc, includes 1,207,543 Sq. Ft. (27.72 acres) of Amusement Facility commercially developed land. City of Scottsdale zoning map designates this parcel as C-4.

3.2 EXISTING TOPOGRAPHY, VEGETATION AND LANDFORM FEATURES:

The north parcel of the site has never been fully developed but has been maintained as a driving range and tee structure. The south parcel of the site has been fully developed with the amusement park and parking lot. Both parcels are currently still in operation. The topography generally slopes from the north-northeast to the southwest corner at approximately one-percent with a change in elevation of approximately twenty (20) feet. Refer to **FIGURE 2** for an aerial of the overall project existing conditions.

FIRM Map Number 04013C1320L dated October 16, 2013 indicates this site is designated as **Zone "X" shaded**. As such, it is determined to be outside the 100-year flood hazard zone. Zone "X" shaded is defined as areas of 0.2-percent-annual-chance flood; areas of 1-percent-annual-chance-flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1-percent-annual-chance-flood. Refer to **FIGURE 3** for the FIRM.

3.3 EXISTING WATER MAIN:

Water: City of Scottsdale (QS 35-45)

- An existing 20" ACP water main under the jurisdiction of the City of Scottsdale (COS) is located in North Scottsdale Road east of the road centerline running north-south along the entire frontage.
- A 12" ACP main is located east of the centerline of North 73rd Street and runs the entire length of the frontage.
- An 8" C-900 water main is located south of the centerline in East Paradise Lane and begins approximately 250' east of the center line of North Scottsdale Road and runs east along the frontage of the site.
- An 8" water main is located both north and south of the centerline of East Tierra Buena Lane. Both begin about 270 feet east of the center line of North Scottsdale Road. The north line ends approximately 640 feet of the centerline of North Scottsdale Road and turns into the subject site. The south line continues through the frontage of the site.
- There are ten fire hydrants located on the adjacent streets around the site and one located on site adjacent to the existing building.
- A 6" main loops through the site from Tierra Buena Lane to 73rd Street.

Refer to **FIGURE 4** for COS existing QS 35-45 water and fire hydrant locations.

3.4 CERTIFIED FLOW TEST RESULTS OF EXISTING WATER SYSTEM:

Certified fire hydrant flow testing was performed on April 24, 2017 by Arizona Flow Testing LLC at 10:00 a.m. The on-site hydrant was used as the flow fire hydrant and the hydrant on the south side of

Tierra Buena Lane across from the parcel entrance was used as the pressure fire hydrants. The test recorded a static pressure of 86.0 psi and a residual pressure of 70.00 psi flowing 1,842 gpm. The calculated flow at 20 psi is 3,480 gpm with 14 psi safety factor. The actual flow test documentation is included in the **APPENDIX I**.

4. PROPOSED CONDITIONS

4.1 SITE PLAN:

The property is proposed to be re-developed with new use configurations conceptualized to be a mixed use consisting of 700,000 SF of office space, 60,000 SF of retail/restaurant, 40,000 SF of grocery, 130,000 SF of hotel/spa, a 200-seat theater and 837 residential units. Refer to **FIGURE 5** for proposed site layout.

4.2 PROPOSED WATER SYSTEM:

The water system is proposed to be an 8-inch DIP main looping within the site and tying into the existing 8" mains located in East Paradise Lane and East Tierra Buena Lane, and the 12" main in 73rd Street.

4.3 SECOND SOURCE:

The public system provides service to the site from multiple directions.

4.4 WATER REQUIREMENTS:

The City's design standards governs the fire flow rates used for all buildings per Section 6-1.500 of the City of Scottsdale's Design Standards & Policies Manual ("DS&PM"), dated January 2010. The fire flow to be used is 1,500 gpm minimum for commercial and multi-family residential properties and 2,500 gpm minimum for high rise structures, per Section 6-1.501 of the DS&PM.

4.5 MAINTENANCE RESPONSIBILITIES:

The on-site water main for the proposed development will be public and located within easements dedicated to the City of Scottsdale. Therefore, the on-site and off-site water system will be maintained by the City.

5. WATER SYSTEM COMPUTATIONS

5.1 WATER DEMANDS:

The proposed development at the site consists of office, grocery, retail, hotel/spa, theater and residential uses with units as shown in Table 1 below. Average day water demands are described in Section 6-1.205, Figure 6.1-2 of the City of Scottsdale's Design Standards & Policies Manual ("DS&PM"), dated January 2010. A summary of the total water demands for the site are presented below in Table 1.

Table 1: WATER DEMAND CALCULATIONS

	Units (Bldg SF)	Dwelling Units	ADD (gpd/sq.ft.)	Max Day Peaking Factor	Peak Hour Peaking Factor	Avg. Day Demand (GPD)	Max. Day Demand (GPD)	Peak Hour (GPD)
Office	700,000		0.6	2	3.5	420,000.0	840,000.0	1,470,000.0
Grocery	40,000		0.8	2	3.5	32,000.0	64,000.0	112,000.0
Retail	40,000		0.8	2	3.5	32,000.0	64,000.0	112,000.0
Restaurants	20,000		1.3	2	3.5	26,000.0	52,000.0	91,000.0
Hotel/Spa	130,000	180	446.3	2	3.5	80,334.0	160,668.0	281,169.0
Theater	10,000		0.8	2	3.5	8,000.0	16,000.0	28,000.0
Residential	1,000,000	837	185.3	2	3.5	155,096.1	310,192.2	542,836.4
TOTAL PROPOSED BLDG AREA:	1,940,000							
			TOTAL DEMANDS (GPD):			753,430.1	1,506,860.2	2,637,005.4
			TOTAL DEMANDS (gpm):			523.2	1,046.4	1,831.3

5.2 SOFTWARE MODELING:

Bentley WaterCAD® Version 8i will be the computer modeling tool used in this study.

Network analysis input parameters will include the following:

1. Pipe diameters (inches)
2. Pipe lengths (feet)
3. Pipes invert elevations (feet – MSL)
4. General Purpose Valve to model Water Meter and Reduce Principal Head loss
5. A reservoir and a pump to model the fire flow test performed
6. System demands (gpm)
7. Fire flows (gpm)
8. Model piping is ductile iron pipe using Hazen-Williams frictional losses (C = 130)

Output parameters included but were not limited to:

1. Pressure (psig)
2. Flow rates (gpm)
3. Velocities (fps)
4. Head loss (fee)

5.3 PRESSURE REQUIREMENTS:

The following system pressure requirements are in accordance with the City's design standards:

- Average day, maximum day and peak hour flow demands:

- Minimum pressure = 50 psig At the highest finished floor level to be served by the system pressure during normal daily operating conditions.
- Maximum pressure = 120 psig
- Maximum day plus coincident fire flow demand:
 - Minimum pressure = 30 psig at the highest ceiling level to be served by the system pressure during normal daily operating conditions.
 - Maximum pressure = 120 psig
- Daily scenario head loss shall not exceed 10 feet per 1,000 feet length of pipe.

Refer to APPENDIX II for computer modeling results.

5.4 WATER SYSTEM ANALYSIS:

A summary of the modeling results will be presented below in Table 2. Detailed WaterCAD® results will be provided in **APPENDIX II**.

Table 2 - WaterCAD® Analysis Results

Demand Scenario	Water Demand (GPM)	Pressure (PSIG)				Velocity (ft/s)	Pipe ID
		Min.	Node	Max.	Node		
Average Day	524						
Maximum Day	1,047						
Peak Hour	1832						
MDD + Fire Flow	2,500 + Max day			N/A	N/A	N/A	N/A

Based on a comparison of the fire flow test available flow (3,480 gpm) to the high-rise requirements, it appears that a booster pump will be required for the high-rise office building(s). The remainder of the development requiring a fire flow of 1,500 gpm may be supported by the existing system. Modeling will be completed once the proposed development is more accurately programed.

6. SUMMARY

6.1 SUMMARY OF PROPOSED WATER IMPROVEMENTS:

- The proposed water main will be designed in accordance with City of Scottsdale's design standards and policies² with results summarized below.
 - To be provided
- City of Scottsdale requires PRV's for all projects.

6.2 PROJECT SCHEDULE:

To Be Determined

7 SUPPORTING MAPS**7.1 SITE UTILITY PLAN**

Refer to Preliminary Utility Plan in **APPENDIX III**.

8 REFERENCES

1. *COS Water and Sewer Plan number 35-45*
2. *City of Scottsdale Design Standards & Policies Manual, 2010 (Chapter 6 – Water)*



FIGURE 1
VICINITY MAP



FIGURE 2
AERIAL

© 2016 Europa Technologies

Google Earth

Imagery Date: 10/4/2016 33°37'52.17" N 111°55'25.03" W elev 1494 ft eye alt 3494 ft

NOTES TO USERS

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

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

Coastal Base Flood Elevations shown on this map apply only to landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

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

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

The projection used in the preparation of this map was Arizona State Plane Central zone (FIPS2000 0002). The horizontal datum was NAD 83 HARN, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988 (NAVD 88). These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. Map users wishing to obtain flood elevations referenced to the National Geodetic Vertical Datum of 1929 (NGVD 29) may use the following Maricopa County website application: <http://www.fot.maricopa.gov/Map/Map.aspx?app=slac&application=index.cfm>

This web tool allows users to obtain point-specific datum conversion values by zooming in and hovering over a VERTCON checkbox on the layers menu on the left side of the screen. The VERTCON grid referenced in this web application was also used to convert existing flood elevations from NGVD 29 to NAVD 88.

To obtain current elevation, description, and/or location information for National Geodetic Survey bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>. To obtain information about Geodetic Certification and Cadastral Survey bench marks produced by the Maricopa County Department of Transportation, please visit the Flood Control District of Maricopa County website at: <http://www.fot.maricopa.gov/Map/Map.aspx?app=slac&application=index.cfm>

Base map information shown on this FIRM was derived from multiple sources. Aerial imagery was provided in digital format by the Maricopa County Department of Public Works, Flood Control District. The imagery is dated October 2009 to November 2009. Additional National Aerial Imagery Program (NAIP) imagery was provided by the Arizona State Land Department (ALRS) and is dated 2007. The coordinate system used for the production of the digital FIRM is State Plane Arizona Central NAD83 HARN, International Feet.

The profile base line depicted on this map represents the hydraulic modeling baselines that match flood profiles in the FIS report. As a result of improved topographic data, the profile base line, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

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

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

For information on available products associated with this FIRM, visit the **FEMA Map Service Center (MSC)** website at <http://mfc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

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



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHA) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, AV, and VE. The base flood elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No base flood elevations determined.
- ZONE AE** Base flood elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined; for areas of sheet flow for flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently abandoned. Zone AR indicates that the former flood control system is being removed to provide protection from the 1% annual chance or greater flood.
- ZONE AV** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no base flood elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of obstruction so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with change areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE D Areas determined to be outside the 0.2% annual chance floodplain.

ZONE S Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Areas of different base flood elevations, flood depths or flood velocities.

Base flood elevation line and value, elevation in feet

Base flood elevation value where different water ways, elevation in feet

Coastal barrier line

Transit line

Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)

1000-meter Universal Transverse Mercator grid zone, zone 12

1000-foot grid 5000 Arizona State Plane coordinate system, central zone (FIPS2000 0002), Transverse Mercator

Base map (see explanation in Notes to Users section of this FIRM panel)

Base Map

Map Repository

Refer to Map Repository list on Map Index

EFFECTIVE DATE OF COUNTRYWIDE FLOOD INSURANCE RATE MAP

April 15, 1988

EFFECTIVE DATE OF REVISIONS TO THIS PANEL

October 3, 1987 - September 30, 1987 - July 10, 2009 - September 30, 2009

October 10, 2013 - to add base flood elevation, to add special flood hazard areas, to incorporate previously issued letters of map change, to add or update corporate limits, to change floodway, to advance or retreat, to change base flood elevations, and to add floodway

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6435.



NFIP

PANEL 1320L

FIRM
FLOOD INSURANCE RATE MAP
MARICOPA COUNTY,
ARIZONA
AND INCORPORATED AREAS

PANEL 1320 OF 4425

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS	COMMUNITY	PANEL	SUFFIX
MARICOPA COUNTY	040001	1320	L
PHOENIX CITY OF	040051	1320	L
SCOTTSDALE CITY OF	045012	1320	L

FIGURE 3

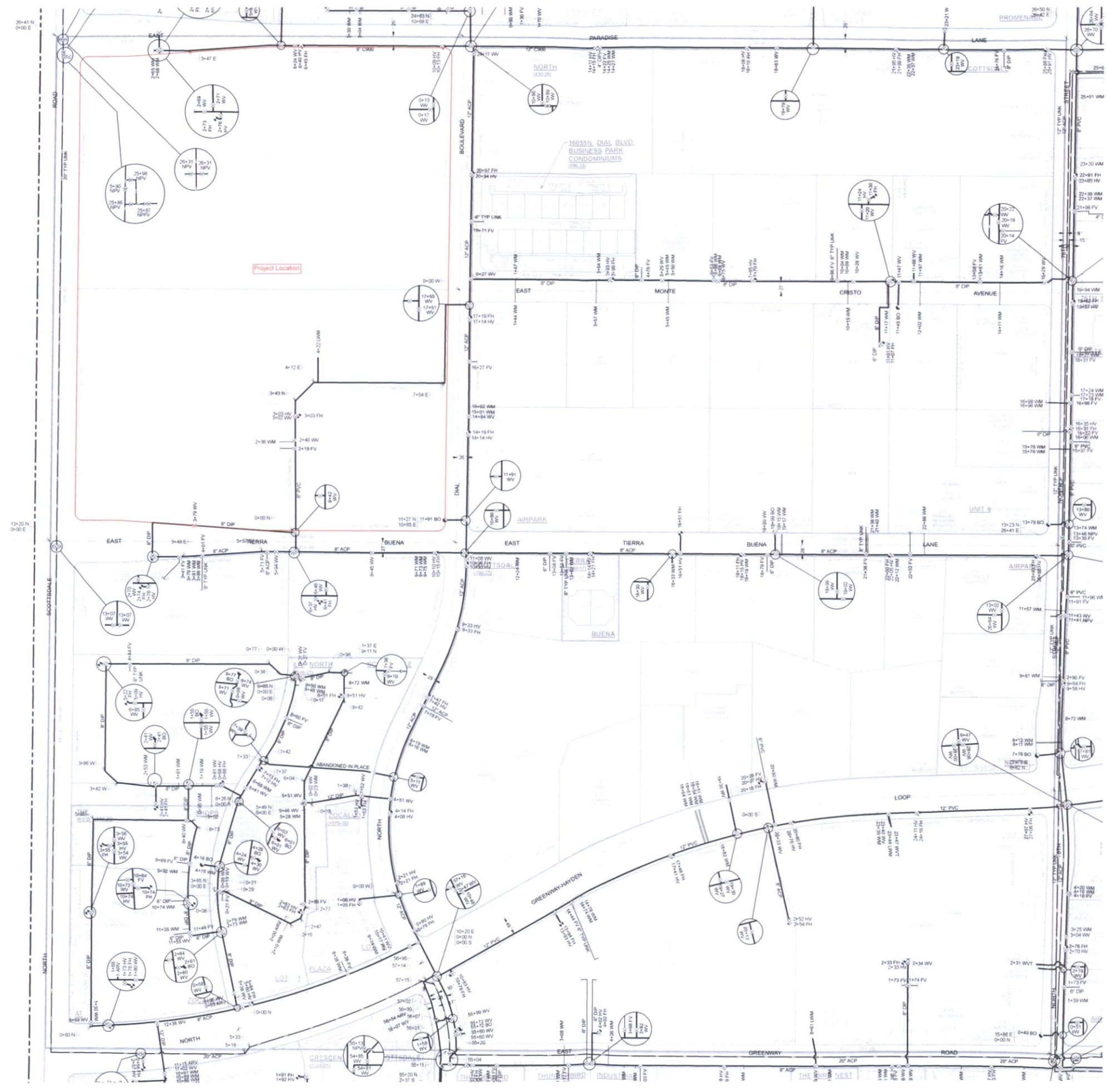
NOTES TO USER: The Map Number above should be used when placing map orders. The Community Number above should be used on insurance applications for the subject community.

MAP NUMBER
04013C1320L
MAP REVISED
OCTOBER 16, 2013



Federal Emergency Management Agency

19-MAR-17



GENERAL NOTES:

- THIS IS A COMPUTER GENERATED DRAWING. FOR ANY REVISIONS PLEASE CONTACT THE CITY OF SCOTTSDALE GIS DEPARTMENT AT (480) 312-7792
- THE SECTION LINE BEARING AND DISTANCES ARE BASED ON THE CITY OF SCOTTSDALE GPS SURVEY OF SEPTEMBER 1991. BEARINGS ARE NAD 83 GRID AND DISTANCES ARE FLATTENED TO GROUND. WHERE NO CORNER WAS FOUND THE DIMENSIONS ARE GIVEN TO CALCULATED SECTION CORNERS AND ARE NOTED AS CALCULATED ON THE MAP

LEGEND:

Air Release Valve	
Non-potable Air Release Valve	
Blowoff	
Cap	
Cathodic Protection	
Fill Drain	
Fire Hydrant	
Non-GPS Point	
Pressure Reducing Valve	
Pump	
Reducer	
Sample Station	
Water Manhole	
Non-Potable Manhole	
Well	
Valve	
Non-potable Valve	
Vault	
Water Main	
Non-Potable Main	
Fire / Private Main	
Non-Scottsdale Main	

VICINITY MAP



W 1/4 COR
SCOTTSDALE ROAD
7250 E
PARADISE LANE
CENTER
11000 E
MILLER ROAD
11400 E
GREENWAY ROAD
7000 E
E 1/4 COR

NORTH

SCALE: 1" = 100'

0 50 100 200

The map scale of 1" = 100' is based on a full size print of 30" x 36"

WATER

QUARTER SECTION MAP

35-45

SW 1/4 SEC. 2 T33N R4E

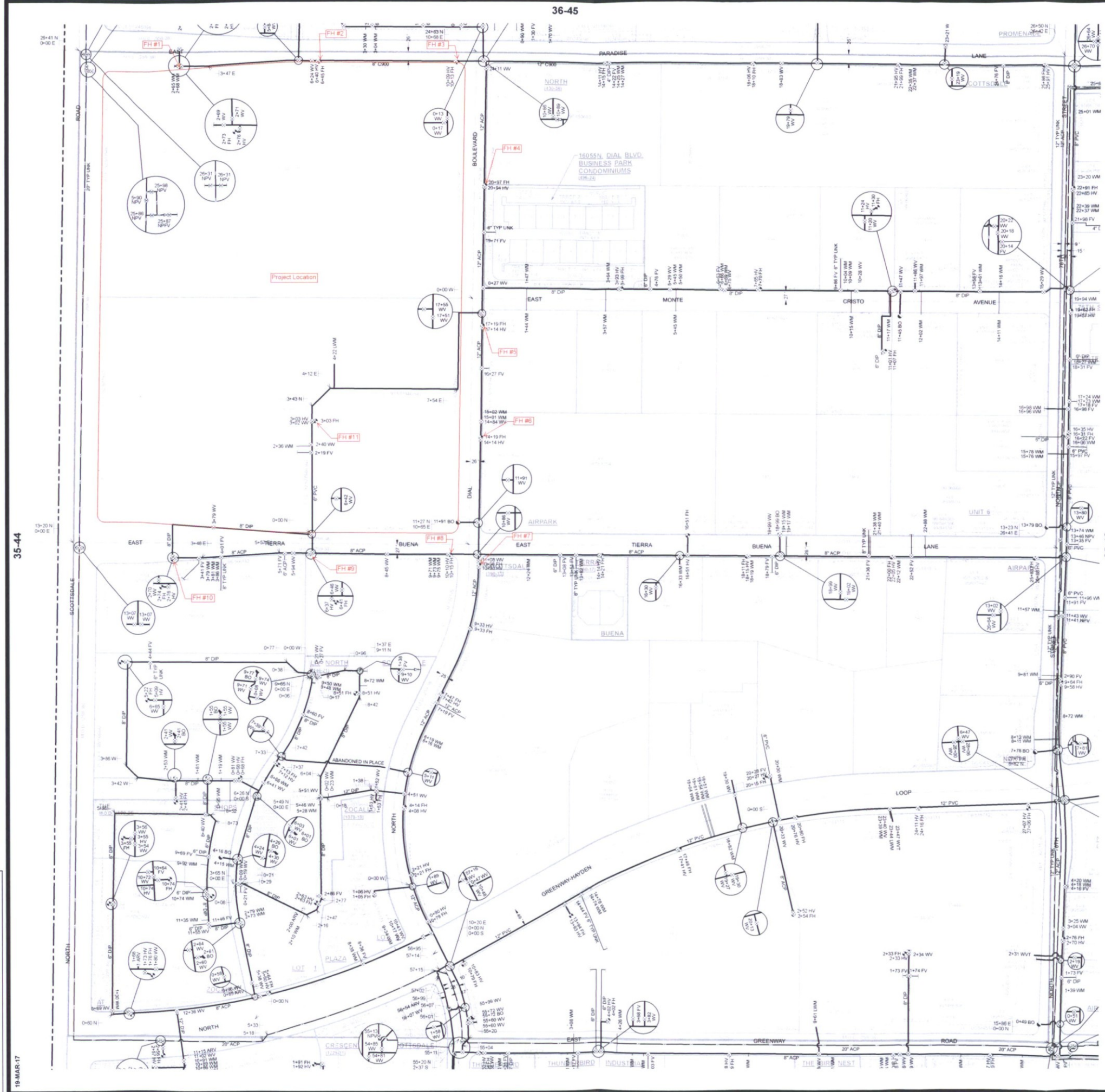
FIGURE 4

CITY OF SCOTTSDALE

SCOTTSDALE GEOGRAPHIC INFORMATION SYSTEMS

3629 North Drinkwater Boulevard
Scottsdale, Arizona 85251

N O T I C E
THIS DOCUMENT IS PROVIDED FOR INFORMATION ONLY. THE CITY OF SCOTTSDALE DOES NOT WARRANT THE ACCURACY, COMPLETENESS OR SUITABILITY FOR ANY PARTICULAR PURPOSE. IT SHOULD NOT BE RELIED UPON WITHOUT FIELD VERIFICATION.
THE CITY OF SCOTTSDALE
19-MAR-17



GENERAL NOTES:
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• THE SECTION LINE BEARING AND DISTANCES ARE BASED ON THE CITY OF SCOTTSDALE GPS SURVEY OF SEPTEMBER 1991. BEARINGS ARE MAGNETIC GRID AND DISTANCES ARE FLATTENED TO GROUND. WHERE NO CORNER WAS FOUND THE DIMENSIONS ARE GIVEN TO CALCULATED SECTION CORNERS AND ARE NOTED AS CALCULATED ON THE MAP.

LEGEND:

Air Release Valve	
Non-potable Air Release Valve	
Blowoff	
Cap	
Cathodic Protection	
Fill Drain	
Fire Hydrant	
Non-GPS Point	
Pressure Reducing Valve	
Pump	
Reducer	
Sample Station	
Water Manhole	
Non-Potable Manhole	
Well	
Valve	
Non-potable Valve	
Vault	
Water Main	
Non-Potable Main	
Fire / Private Main	
Non-Scottsdale Main	

VICINITY MAP

NORTH

SCALE: 1" = 100'
0 50 100 200
The map scale of 1" = 100' is based on a full size print of 30" x 36"

**WATER
QUARTER SECTION MAP
35-45
SW 1/4 SEC. 2 T3N R4E**

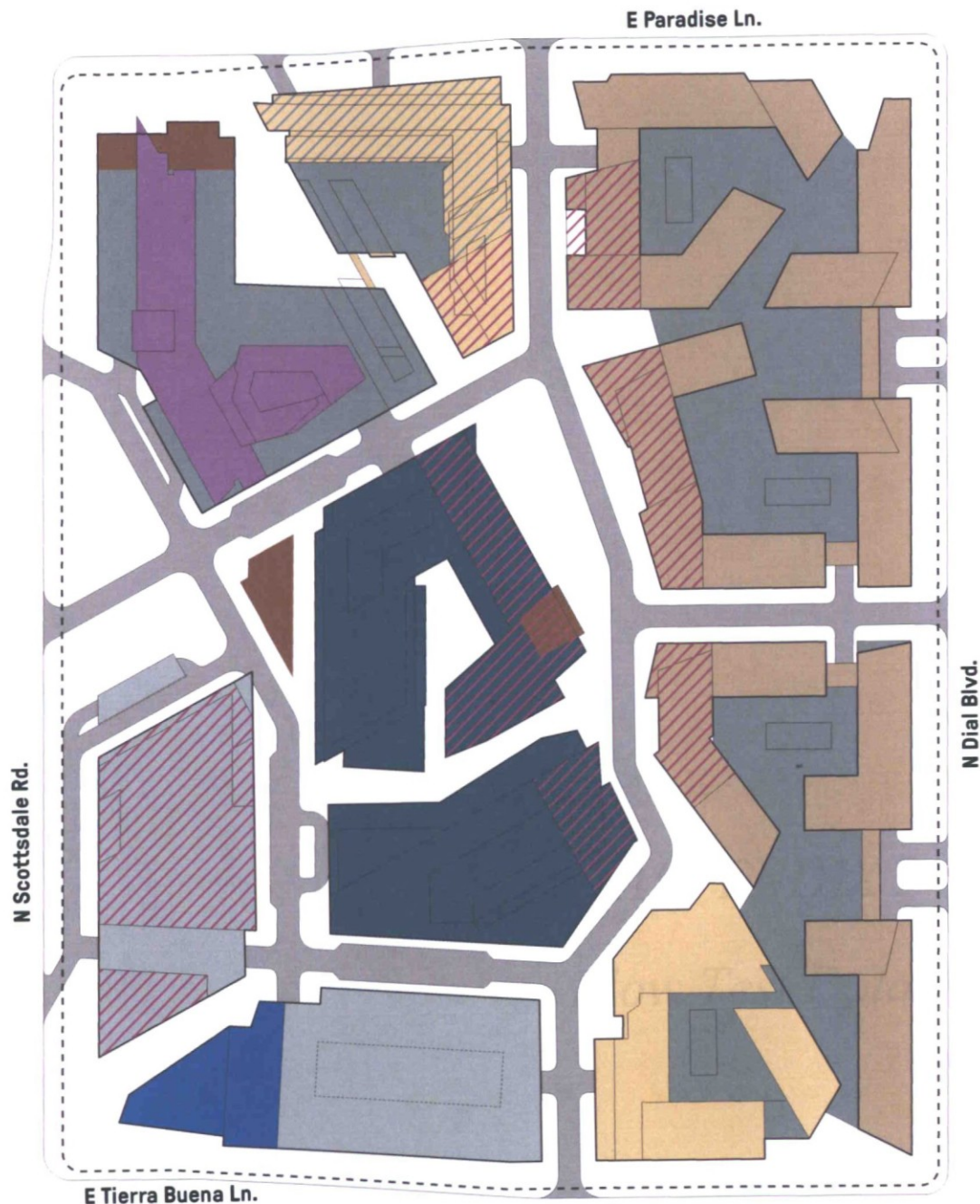
CITY OF SCOTTSDALE
SCOTTSDALE GEOGRAPHIC INFORMATION SYSTEMS
3620 North Drinkwater Boulevard
Scottsdale, Arizona 85251

Land Use By Building Plan

Land Use By Building Plan: La Via has a variety of land uses. Scottsdale Rd. has the civic, hospitality and business components while the residential portions are along N. Dial Blvd. Retail is wrapped around the central plaza in the center of La Via and links the various uses together.

LEGEND:

-  Office
-  Ground-floor Retail
-  Ground-floor Parking
-  Retail/F&B
-  Residential - Condo
-  Residential - Rental
-  Hotel
-  Civic
-  Parking
-  Podium Parking



LA VIA DEVELOPMENT MIX

USE	AREA (S.F.)	PARKING REQ.	SPACES
OFFICE	700,000	1/325 S.F.	2,333
RETAIL/RESTAURANTS	60,000	1/250 S.F.	240
GROCERY	40,000	1/300 S.F.	133
RESIDENTIAL - RENTAL (AVG 900 S.F.)	550,000	1.5/U	975
RESIDENTIAL - CONDO (AVG 2,200 S.F.)	450,000	2/U	375
HOTEL (180 ROOMS) + FITNESS	130,000	1 RM*1.25	225
THEATER (200 SEATS)	10,000	1/2.5 SEATS	80
TOTAL	1,940,000		4,361

FIGURE 5

Arizona Flow Testing LLC

HYDRANT FLOW TEST REPORT

Project Name: CrackerJax
Project Address: 16001 North Scottsdale Road, Scottsdale, Arizona 85254
Client Project No.: Not Provided
Arizona Flow Testing Project No.: 17089
Flow Test Permit No.: C52990
Date and time flow test conducted: April 24, 2017 at 10:00 AM
Data is current and reliable until: October 24, 2017
Conducted by: Floyd Vaughan – Arizona Flow Testing, LLC (480-250-8154)
Witnessed by: Phil Cipolla – City of Scottsdale-Inspector (602-828-0847)

Raw Test Data

Static Pressure: **86.0 PSI**
(Measured in pounds per square inch)

Residual Pressure: **70.0 PSI**
(Measured in pounds per square inch)

Pitot Pressure: **24.0 PSI**
(Measured in pounds per square inch)

Diffuser Orifice Diameter: One (4 inch)
(Measured in inches)

Coefficient of Diffuser: Big Boy Hose Monster

Flowing GPM: **1,842 GPM**
(Measured in gallons per minute)

GPM @ 20 PSI: **3,959 GPM**

Data with 14 PSI Safety Factor

Static Pressure: **72.0 PSI**
(Measured in pounds per square inch)

Residual Pressure: **56.0 PSI**
(Measured in pounds per square inch)

Distance between hydrants: Approx. 370 Feet

Main size: Not Provided

Flowing GPM: **1,842 GPM**

GPM @ 20 PSI: **3,480 GPM**

Scottsdale requires a maximum Static Pressure of 72 PSI for AFES Design.

Flow Test Location

North ↑





"LEED®ing and Developing Smart Projects"

APPENDIX II

WaterCAD Modeling Analysis



"LEED®ing and Developing Smart Projects"

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8280 E. Gelding Dr., Suite 101
Scottsdale, AZ 85260



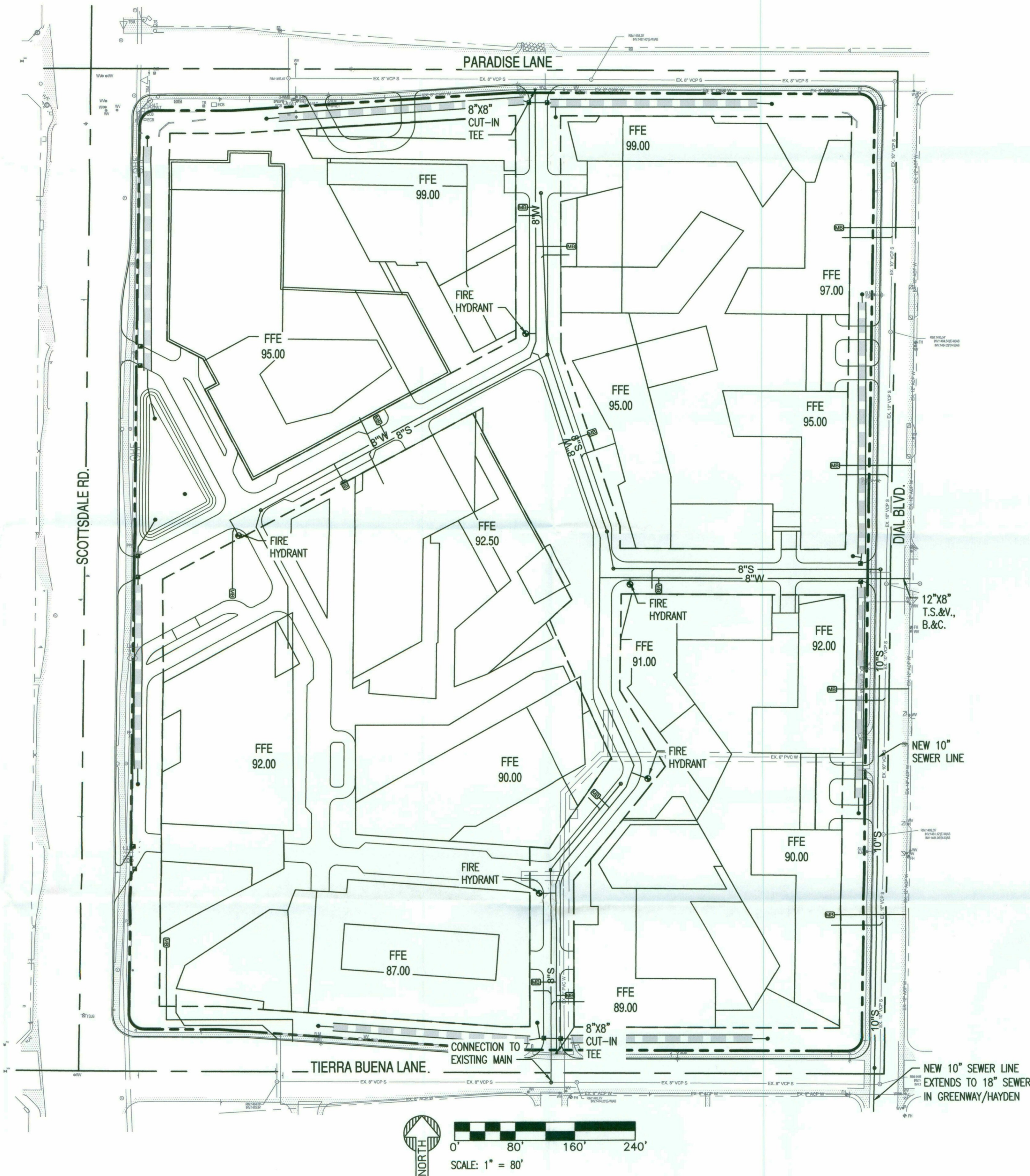
"LEED®ing and Developing Smart Projects"

APPENDIX III

Preliminary Utility Plan

8280 E. Gelding Dr., Suite 101
Scottsdale, AZ 85260

CRACKERJAX REDEVELOPMENT
SEC SCOTTSDALE ROAD AND PARADISE LANE.
PRELIMINARY UTILITY PLAN



- PROPOSED LEGEND:**
- 8"S — PROPOSED 8" SEWER
 - 8"W — PROPOSED 8" WATER
 - SEWER MANHOLE
 - FIRE HYDRANT
- EXISTING LEGEND:**
- EX. 8" VCP S — EXISTING 8" VCP SEWER
 - EX. 10" VCP S — EXISTING 10" VCP SEWER
 - EX. 8" C900 W — EXISTING 8" C900 WATER
 - EX. 8" DIP W — EXISTING 8" DIP WATER
 - EX. 8" ACP W — EXISTING 8" ACP WATER
 - EX. 12" ACP W — EXISTING 12" ACP WATER

NOTE: EXISTING UTILITIES SHOWN
FROM AVAILABLE PLANS



NOTE TO CONTRACTOR:
THIS SET OF DRAWINGS AND DOCUMENTS IS INTENDED AS A SET OF GUIDELINES FOR THE PROJECT AND ARE NOT TO BE USED IN CONJUNCTION WITH A SET OF CONSTRUCTION SPECIFICATIONS TO BE SUPPLIED BY OWNER. THEY MUST BE READ TO INCORPORATE ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES INCLUDING FEDERAL A.D.A. REQUIREMENTS. THIS SET ASSUMES THAT THERE ARE NO UNUSUAL SOIL CONDITIONS OR MINERALS. THE FAILURE OF THIS CONTRACTOR TO REQUIRE SIGNIFICANT CHANGES TO THESE DOCUMENTS OR TO REQUIRE SIGNIFICANT CHANGES TO THESE DOCUMENTS TO CONFORM TO ALL APPLICABLE CODES AND TO REPAIR THE OWNERS/ARCHITECTS OF ANY QUESTIONS OR CLARIFICATIONS WHICH ARE DESIRED, CONTRACTORS SHALL ALSO VISIT THE SITE BEFORE BEGINNING. CONTRACTORS ARE REQUIRED TO KNOW ALL ORDINANCE CONDITIONS AND APPLICABLE CODES.

SEG
SUSTAINABILITY
ENGINEERING
GROUP

8280 E GELDING DR #101, SCOTTSDALE, ARIZONA 85260
WWW.AZSEG.COM TEL. 480.588.7228

PROJECT CRACKERJAX REDEVELOPMENT	LOCATION SEC SCOTTSDALE ROAD AND PARADISE LANE SCOTTSDALE, AZ 85254
DRAWN — POUNDS DESIGNED — POUNDS CHECKED — COUNSELL PROJ. MGR. — FAKIH	DATE: 09/22/17 ISSUED FOR: OWNER REVIEW
REVISION NO.: 1 2 3	DATE:
JOB NO.: 170377	SHEET TITLE: PRELIMINARY UTILITY PLAN
SHEET NO.: C4.00	

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