

STORMWATER REPORT

Taco Bell – Scottsdale, AZ
7901 E. McDowell Rd.
Scottsdale, AZ 85257

Prepared For:
Taco Bell

Civil Designer:
Ellie Hamman

Project Manager:
Ken Bukowski

Design Date:
August 3, 2023
Revised Date:

Project Number:
2023188.01

Case #: 5-DR-2018

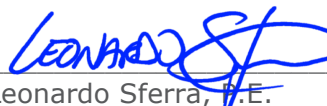
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Leonardo Sferra, P.E. Expires 06/30/2026

08/04/2023
Date



Table of Contents

Section 1:

- Project Background
- Stormwater Runoff Control Analysis
- Water Quality Control Analysis
- Soil Erosion and Sediment Control Analysis

Section 2:

- NRSC Web Soil Survey
- NOAA Precipitation Data
- Infiltration/ Percolation Testing Results
- Flood Insurance Rate Map
- Pre-Developed and Post Developed Drainage Maps



Section 1



Project Background

The following report includes stormwater management calculations as required by the City of Scottsdale, Maricopa County and the State of Arizona. This report accompanies the site development plans.

The project area is located within a 0.66 and a 0.08 acre parcel, located at 7901 E. MacDowell Rd., Scottsdale, AZ 85257. The property is bordered by residential properties to the south, N. 79th St. to the west, E. McDowell Rd. to the north, and Walgreens to the east. The existing property contains two existing asphalt drives and parking which will be demolished. Additionally, there was a building and parking lot demoed in 2021.

The existing project site is 23% impervious. Currently, the site drains to the adjacent streets, and an existing retention basin on the north and south side of the property. The initial receiving water is Mckellips Lake, and the subsequent receiving water is the Salt River Basin. These drainage patterns were unchanged from pre-developed to post-developed conditions.

The proposed project site is approximately 57% impervious surface. The proposed project site includes a Taco Bell restaurant with a drive-thru, parking lot, concrete sidewalk, landscaping, all appurtenant utility connections, and two retention systems.

A National Resources Conservation Service (NRCS) web soil survey was performed for the property to determine the soil type(s) that underlie the existing site. The soil types and their respective hydrologic soil group (HSG) ratings were determined to be Laveen Loam. An HSG rating of 'B' was also utilized. The soil map including a more detailed description of the previously mentioned soil type can be found in Section 2 of this report.

Stormwater retention will be part of this project.

Stormwater Runoff Control Analysis

Per the requirements of the City of Scottsdale and Maricopa County, two retention basins have been designed to retain and infiltrate the 100-year, 2-hour storm volume. Calculations for the required storage volume can be found below. Additionally, see Section 2 for Pre-Developed and Post Developed Drainage Maps.

| City of Scottsdale Volume Calculations | | |
|--|---|-------------------|
| $V_r = C(R/12) * A$ | | |
| Vr | Required Storage Volume in cubic-feet | |
| C | Weighted average runoff coefficient over disturbed area | |
| R | Precipitation Amount in inches (Appendix 4-1C or the NOAA website) | |
| A | Area in square feet of total disturbed area attributable to the development | |
| | Retention Basin 1 | Retention Basin 2 |
| Vr | 1717 | 2969 |
| C | 0.79 | 0.83 |
| R (2.15 from NOAA Chart) | 2.15 | 2.15 |
| A | 12124 | 19965 |
| Provided Volume | 1776 | 3034 |

Using the Rational Method, the uncontrolled flow on the site compared to existing conditions can be found below. As demonstrated, the flow has been drastically reduced. See Section 2 - Pre-Developed and Post Developed Drainage Maps for the source of the quantities in the below calculation.

| Uncontrolled Rational Method Calculations | | |
|---|----------|----------|
| $Q = CiA$ | | |
| | Existing | Proposed |
| C, Rational Runoff Coefficient | 0.59 | 0.6 |
| I, Rainfall Intensity, in/hr | 1.08 | 1.08 |
| A, Drainage Area, acres | 0.67 | 0.18 |
| Q, Peak Discharge, cfs | 0.43 | 0.12 |

Water Quality Control Analysis

Per the City of Scottsdale Design Standards and Policies Manual, "a storage facility shall not detain or retain standing water longer than thirty-six hours unless the facility is designed and constructed to be a permanent body of water with appropriate health, safety, and water quality measures."

Both retention basins drain within the required timeframe. See the calculations below.

See Section 2 - Infiltration/ Percolation Testing Results for the source of the Design percolation value. A factor of safety of 0.5 was utilized per Table 6.16 of the Maricopa County Drainage Policies and Standards.

| City of Scottsdale Drain Time Calculations | | |
|--|--|-------------------|
| Td = (V)/ (Ap*(Pd/12)) | | |
| | | |
| Td | Retention basin drain time in hours, | |
| Ap | Percolation Area (Basin Bottom), in square feet | |
| Pd | Design percolation rate, in inches/hour, and | |
| V | Retention basin design storage volume. In cubic-ft | |
| | | |
| | Retention Basin 1 | Retention Basin 2 |
| Td | 23 | 22 |
| Ap | 1248 | 1302 |
| Pd | 0.75 | 1.25 |
| V | 1717 | 2969 |

Soil Erosion and Sediment Control

The proposed construction will disturb approximately 0.88 acres of the project site.

The proposed development provides erosion and sedimentation control measures as detailed on the site improvement plans. It is the contractor's responsibility during construction to always maintain all sedimentation and stormwater pollution prevention items which includes regular removal and disposal of accumulated debris. Until the site is stabilized, all erosion and sediment controls must be maintained properly. Maintenance must include inspections of all erosion and sediment controls after each runoff event and on a weekly basis. All preventative and remedial maintenance work, including clean out, repair, replacement, regrading, reseeding, remulching must be performed immediately. If erosion and sediment controls fail to perform as expected replacement controls or modifications of those installed will be required.



Section 2

Soil Map—Eastern Maricopa and Northern Pinal Counties Area, Arizona
(Scottsdale, AZ-Taco Bell)



Soil Map—Eastern Maricopa and Northern Pinal Counties Area, Arizona
(Scottsdale, AZ-Taco Bell)

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Eastern Maricopa and Northern Pinal Counties Area, Arizona

Survey Area Data: Version 16, Aug 26, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 7, 2020—May 21, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|------------------------------------|------------------------------------|--------------|----------------|
| LaA | Laveen loam, 0 to 1 percent slopes | 1.3 | 100.0% |
| Totals for Area of Interest | | 1.3 | 100.0% |

Hydrologic Soil
Group: B per Map
Unit Description.

Eastern Maricopa and Northern Pinal Counties Area, Arizona

LaA—Laveen loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 1sp4

Elevation: 1,100 to 1,700 feet

Mean annual precipitation: 6 to 9 inches

Mean annual air temperature: 72 to 74 degrees F

Frost-free period: 240 to 300 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Laveen and similar soils: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Laveen

Setting

Landform: Stream terraces, alluvial fans

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Tread

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Mixed alluvium

Typical profile

Ap - 0 to 14 inches: loam

Bk - 14 to 60 inches: loam

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water

(Ksat): Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 35 percent

Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 1

Land capability classification (nonirrigated): 7c

Hydrologic Soil Group: B

Ecological site: R040XB207AZ - Limy Fan 7"-10" p.z.

Hydric soil rating: No

Data Source Information

Soil Survey Area: Eastern Maricopa and Northern Pinal Counties Area, Arizona

Survey Area Data: Version 16, Aug 26, 2022



NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.46°, Longitude: -111.91°
Elevation: 1214 ft**

* source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps_&_aerials](#)

PF tabular

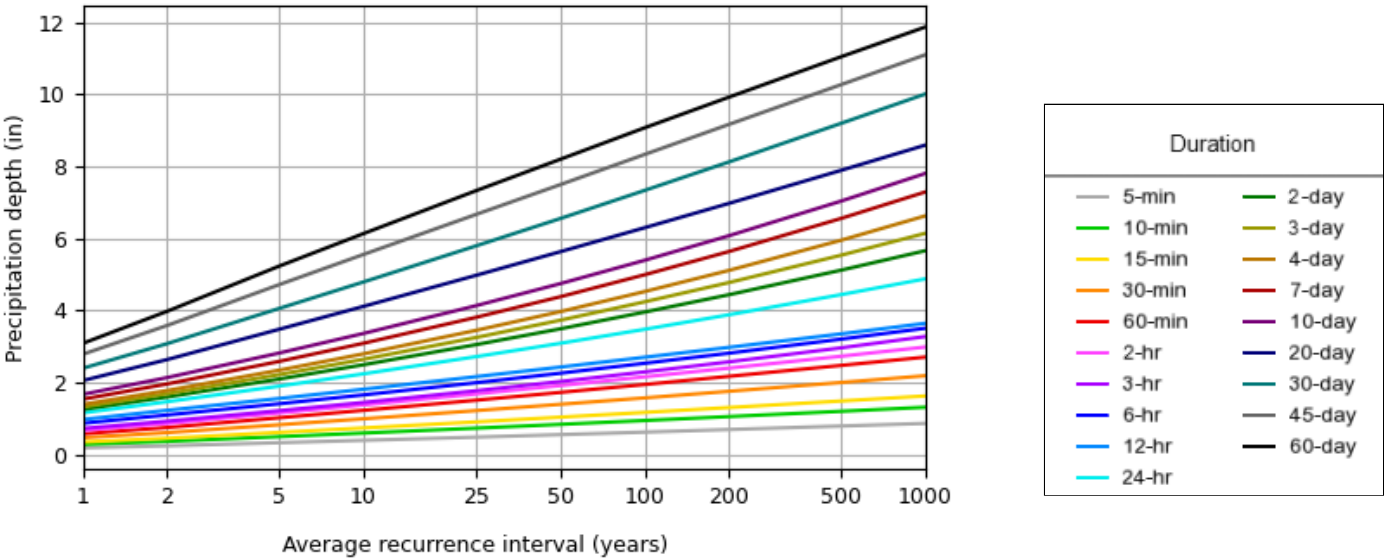
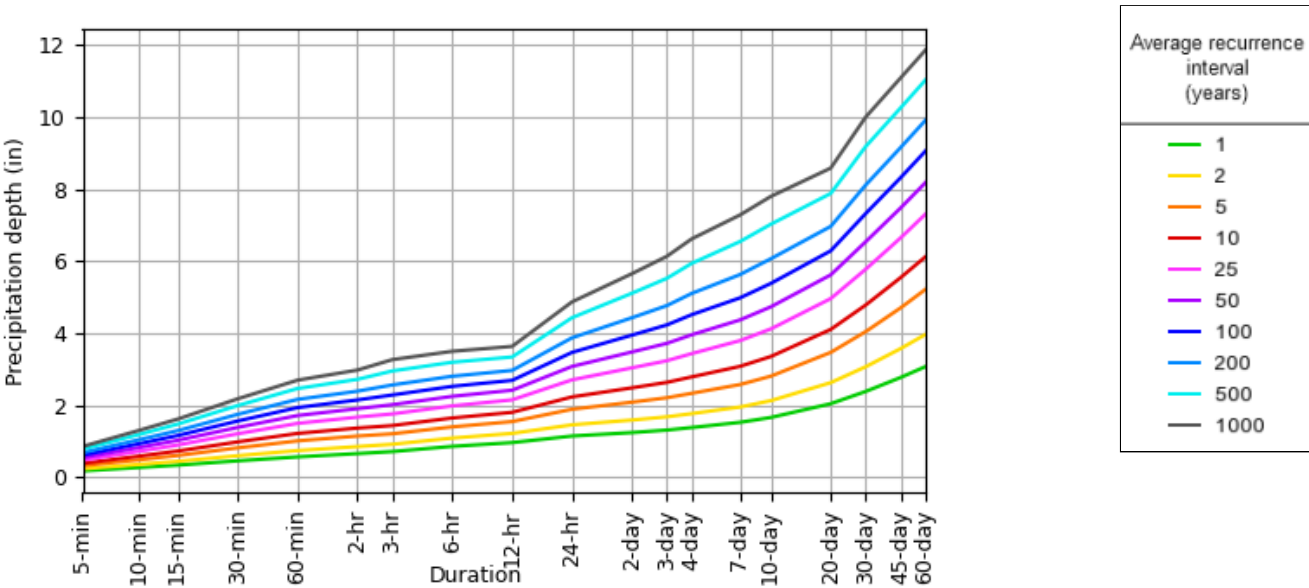
| PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹ | | | | | | | | | | |
|--|--|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|------------------------------|
| Duration | Average recurrence interval (years) | | | | | | | | | |
| | 1 | 2 | 5 | 10 | 25 | 50 | 100 | 200 | 500 | 1000 |
| 5-min | 0.181 (0.153-0.220) | 0.237 (0.200-0.288) | 0.323 (0.271-0.390) | 0.389 (0.324-0.467) | 0.477 (0.392-0.572) | 0.547 (0.443-0.652) | 0.617 (0.490-0.733) | 0.689 (0.538-0.818) | 0.786 (0.598-0.933) | 0.859 (0.641-1.02) |
| 10-min | 0.276 (0.232-0.335) | 0.361 (0.305-0.439) | 0.491 (0.412-0.594) | 0.591 (0.493-0.711) | 0.726 (0.596-0.870) | 0.832 (0.674-0.992) | 0.939 (0.746-1.12) | 1.05 (0.819-1.24) | 1.20 (0.909-1.42) | 1.31 (0.975-1.56) |
| 15-min | 0.342 (0.288-0.416) | 0.447 (0.378-0.543) | 0.609 (0.511-0.736) | 0.733 (0.611-0.881) | 0.900 (0.739-1.08) | 1.03 (0.835-1.23) | 1.16 (0.925-1.38) | 1.30 (1.02-1.54) | 1.48 (1.13-1.76) | 1.62 (1.21-1.93) |
| 30-min | 0.461 (0.388-0.560) | 0.603 (0.509-0.732) | 0.821 (0.688-0.991) | 0.987 (0.823-1.19) | 1.21 (0.995-1.45) | 1.39 (1.12-1.66) | 1.57 (1.24-1.86) | 1.75 (1.37-2.08) | 2.00 (1.52-2.37) | 2.18 (1.63-2.60) |
| 60-min | 0.570 (0.480-0.693) | 0.746 (0.630-0.906) | 1.02 (0.851-1.23) | 1.22 (1.02-1.47) | 1.50 (1.23-1.80) | 1.72 (1.39-2.05) | 1.94 (1.54-2.30) | 2.17 (1.69-2.57) | 2.47 (1.88-2.93) | 2.70 (2.02-3.22) |
| 2-hr | 0.662 (0.566-0.788) | 0.857 (0.733-1.02) | 1.15 (0.978-1.36) | 1.37 (1.15-1.62) | 1.68 (1.39-1.97) | 1.91 (1.57-2.24) | 2.15 (1.74-2.52) | 2.40 (1.90-2.81) | 2.72 (2.11-3.20) | 2.98 (2.25-3.52) |
| 3-hr | 0.718 (0.611-0.861) | 0.921 (0.787-1.11) | 1.21 (1.03-1.45) | 1.44 (1.21-1.72) | 1.76 (1.46-2.09) | 2.02 (1.65-2.39) | 2.29 (1.84-2.70) | 2.57 (2.03-3.03) | 2.96 (2.26-3.49) | 3.27 (2.44-3.87) |
| 6-hr | 0.863 (0.750-1.01) | 1.09 (0.953-1.28) | 1.40 (1.22-1.64) | 1.65 (1.42-1.92) | 1.99 (1.69-2.30) | 2.25 (1.88-2.60) | 2.53 (2.08-2.92) | 2.81 (2.26-3.25) | 3.20 (2.51-3.71) | 3.50 (2.69-4.08) |
| 12-hr | 0.967 (0.848-1.12) | 1.22 (1.07-1.42) | 1.55 (1.36-1.79) | 1.81 (1.57-2.08) | 2.16 (1.85-2.47) | 2.42 (2.05-2.77) | 2.70 (2.25-3.09) | 2.97 (2.45-3.41) | 3.34 (2.69-3.86) | 3.64 (2.87-4.23) |
| 24-hr | 1.15 (1.04-1.28) | 1.46 (1.32-1.63) | 1.89 (1.70-2.11) | 2.24 (2.00-2.48) | 2.71 (2.41-3.01) | 3.08 (2.73-3.41) | 3.47 (3.05-3.85) | 3.88 (3.38-4.30) | 4.44 (3.82-4.92) | 4.88 (4.16-5.42) |
| 2-day | 1.24 (1.12-1.39) | 1.59 (1.44-1.78) | 2.09 (1.88-2.33) | 2.49 (2.23-2.77) | 3.04 (2.71-3.38) | 3.48 (3.08-3.88) | 3.95 (3.48-4.40) | 4.43 (3.87-4.95) | 5.11 (4.41-5.72) | 5.66 (4.83-6.35) |
| 3-day | 1.32 (1.19-1.47) | 1.68 (1.52-1.88) | 2.21 (1.99-2.46) | 2.64 (2.37-2.94) | 3.24 (2.89-3.60) | 3.72 (3.30-4.13) | 4.24 (3.72-4.71) | 4.77 (4.16-5.31) | 5.53 (4.76-6.16) | 6.14 (5.23-6.86) |
| 4-day | 1.39 (1.25-1.54) | 1.77 (1.60-1.98) | 2.34 (2.10-2.60) | 2.79 (2.50-3.10) | 3.44 (3.07-3.81) | 3.96 (3.51-4.39) | 4.52 (3.97-5.01) | 5.11 (4.45-5.67) | 5.94 (5.11-6.60) | 6.62 (5.63-7.37) |
| 7-day | 1.53 (1.38-1.70) | 1.96 (1.77-2.18) | 2.58 (2.32-2.87) | 3.08 (2.77-3.43) | 3.80 (3.39-4.22) | 4.37 (3.88-4.85) | 4.99 (4.39-5.53) | 5.63 (4.92-6.25) | 6.55 (5.64-7.27) | 7.29 (6.21-8.11) |
| 10-day | 1.66 (1.50-1.85) | 2.13 (1.92-2.37) | 2.81 (2.53-3.12) | 3.36 (3.01-3.72) | 4.12 (3.68-4.56) | 4.74 (4.20-5.23) | 5.39 (4.75-5.95) | 6.07 (5.31-6.72) | 7.03 (6.07-7.79) | 7.80 (6.67-8.66) |
| 20-day | 2.05 (1.85-2.27) | 2.63 (2.38-2.92) | 3.47 (3.13-3.84) | 4.11 (3.70-4.54) | 4.97 (4.45-5.49) | 5.62 (5.02-6.22) | 6.29 (5.59-6.96) | 6.97 (6.16-7.72) | 7.89 (6.90-8.76) | 8.59 (7.45-9.55) |
| 30-day | 2.39 (2.16-2.64) | 3.07 (2.78-3.40) | 4.05 (3.66-4.47) | 4.79 (4.32-5.28) | 5.78 (5.19-6.37) | 6.55 (5.85-7.21) | 7.33 (6.52-8.07) | 8.12 (7.19-8.96) | 9.19 (8.07-10.2) | 10.0 (8.72-11.1) |
| 45-day | 2.78 (2.52-3.07) | 3.58 (3.24-3.96) | 4.71 (4.26-5.21) | 5.55 (5.01-6.13) | 6.66 (5.99-7.34) | 7.49 (6.71-8.27) | 8.33 (7.43-9.20) | 9.16 (8.14-10.1) | 10.3 (9.05-11.4) | 11.1 (9.72-12.3) |
| 60-day | 3.08 (2.80-3.39) | 3.97 (3.60-4.38) | 5.22 (4.73-5.76) | 6.13 (5.54-6.76) | 7.32 (6.59-8.06) | 8.19 (7.35-9.02) | 9.07 (8.11-10.0) | 9.92 (8.84-10.9) | 11.0 (9.78-12.2) | 11.9 (10.4-13.2) |

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](#)

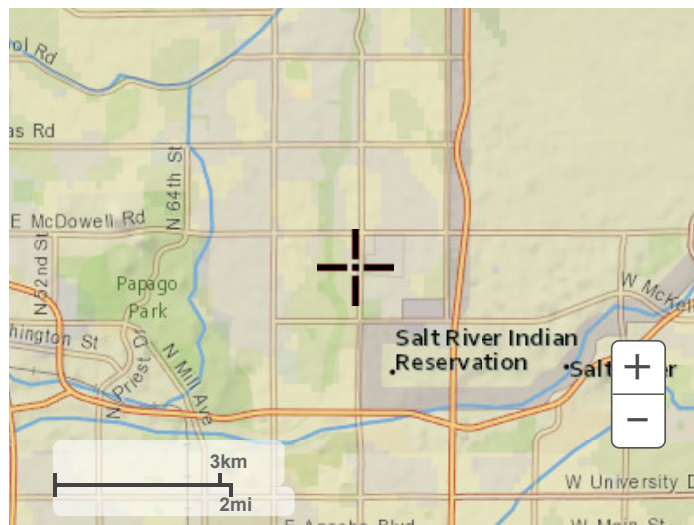
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 33.4600°, Longitude: -111.9100°



Maps & aerals

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



[Back to Top](#)

[US Department of Commerce](#)
[National Oceanic and Atmospheric Administration](#)
[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: 33.46°, Longitude: -111.91°
Elevation: 1214 ft**

* source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps_&_aerials](#)

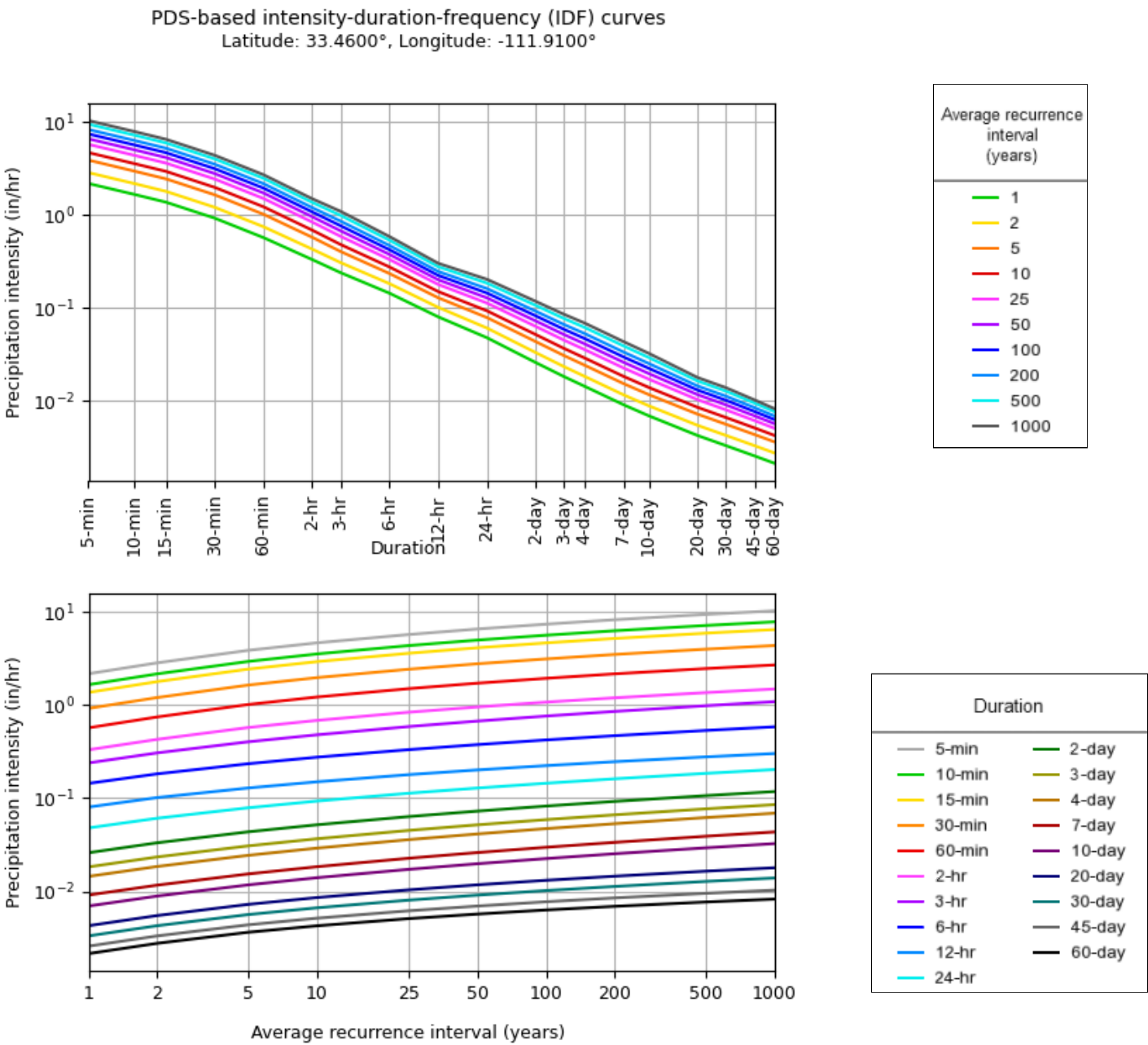
PF tabular

| PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)¹ | | | | | | | | | | |
|---|--|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Duration | Average recurrence interval (years) | | | | | | | | | |
| | 1 | 2 | 5 | 10 | 25 | 50 | 100 | 200 | 500 | 1000 |
| 5-min | 2.17 (1.84-2.64) | 2.84 (2.40-3.46) | 3.88 (3.25-4.68) | 4.67 (3.89-5.60) | 5.72 (4.70-6.86) | 6.56 (5.32-7.82) | 7.40 (5.88-8.80) | 8.27 (6.46-9.82) | 9.43 (7.18-11.2) | 10.3 (7.69-12.3) |
| 10-min | 1.66 (1.39-2.01) | 2.17 (1.83-2.63) | 2.95 (2.47-3.56) | 3.55 (2.96-4.27) | 4.36 (3.58-5.22) | 4.99 (4.04-5.95) | 5.63 (4.48-6.70) | 6.29 (4.91-7.46) | 7.17 (5.45-8.52) | 7.85 (5.85-9.34) |
| 15-min | 1.37 (1.15-1.66) | 1.79 (1.51-2.17) | 2.44 (2.04-2.94) | 2.93 (2.44-3.52) | 3.60 (2.96-4.32) | 4.13 (3.34-4.92) | 4.66 (3.70-5.53) | 5.20 (4.06-6.17) | 5.92 (4.51-7.04) | 6.48 (4.84-7.72) |
| 30-min | 0.922 (0.776-1.12) | 1.21 (1.02-1.46) | 1.64 (1.38-1.98) | 1.97 (1.65-2.37) | 2.43 (1.99-2.91) | 2.78 (2.25-3.31) | 3.13 (2.49-3.72) | 3.50 (2.74-4.16) | 3.99 (3.04-4.74) | 4.37 (3.26-5.20) |
| 60-min | 0.570 (0.480-0.693) | 0.746 (0.630-0.906) | 1.02 (0.851-1.23) | 1.22 (1.02-1.47) | 1.50 (1.23-1.80) | 1.72 (1.39-2.05) | 1.94 (1.54-2.30) | 2.17 (1.69-2.57) | 2.47 (1.88-2.93) | 2.70 (2.02-3.22) |
| 2-hr | 0.331 (0.283-0.394) | 0.428 (0.366-0.511) | 0.574 (0.489-0.682) | 0.685 (0.577-0.812) | 0.837 (0.696-0.986) | 0.954 (0.783-1.12) | 1.08 (0.868-1.26) | 1.20 (0.949-1.40) | 1.36 (1.05-1.60) | 1.49 (1.13-1.76) |
| 3-hr | 0.239 (0.203-0.286) | 0.306 (0.262-0.368) | 0.403 (0.342-0.483) | 0.479 (0.403-0.572) | 0.587 (0.487-0.696) | 0.672 (0.550-0.794) | 0.762 (0.612-0.899) | 0.855 (0.675-1.01) | 0.984 (0.753-1.16) | 1.09 (0.813-1.29) |
| 6-hr | 0.144 (0.125-0.169) | 0.182 (0.159-0.214) | 0.234 (0.203-0.274) | 0.275 (0.237-0.321) | 0.331 (0.281-0.384) | 0.376 (0.314-0.434) | 0.422 (0.347-0.487) | 0.469 (0.378-0.543) | 0.534 (0.419-0.619) | 0.585 (0.449-0.680) |
| 12-hr | 0.080 (0.070-0.092) | 0.101 (0.088-0.117) | 0.128 (0.112-0.148) | 0.150 (0.130-0.172) | 0.178 (0.153-0.205) | 0.201 (0.170-0.229) | 0.223 (0.187-0.256) | 0.246 (0.203-0.283) | 0.277 (0.223-0.320) | 0.302 (0.238-0.350) |
| 24-hr | 0.047 (0.043-0.053) | 0.060 (0.054-0.067) | 0.078 (0.071-0.087) | 0.093 (0.083-0.103) | 0.112 (0.100-0.125) | 0.128 (0.113-0.142) | 0.144 (0.127-0.160) | 0.161 (0.140-0.179) | 0.184 (0.159-0.205) | 0.203 (0.173-0.225) |
| 2-day | 0.025 (0.023-0.028) | 0.033 (0.029-0.037) | 0.043 (0.039-0.048) | 0.051 (0.046-0.057) | 0.063 (0.056-0.070) | 0.072 (0.064-0.080) | 0.082 (0.072-0.091) | 0.092 (0.080-0.103) | 0.106 (0.091-0.119) | 0.117 (0.100-0.132) |
| 3-day | 0.018 (0.016-0.020) | 0.023 (0.021-0.026) | 0.030 (0.027-0.034) | 0.036 (0.032-0.040) | 0.045 (0.040-0.049) | 0.051 (0.045-0.057) | 0.058 (0.051-0.065) | 0.066 (0.057-0.073) | 0.076 (0.066-0.085) | 0.085 (0.072-0.095) |
| 4-day | 0.014 (0.013-0.016) | 0.018 (0.016-0.020) | 0.024 (0.021-0.027) | 0.029 (0.026-0.032) | 0.035 (0.031-0.039) | 0.041 (0.036-0.045) | 0.047 (0.041-0.052) | 0.053 (0.046-0.059) | 0.061 (0.053-0.068) | 0.069 (0.058-0.076) |
| 7-day | 0.009 (0.008-0.010) | 0.011 (0.010-0.012) | 0.015 (0.013-0.017) | 0.018 (0.016-0.020) | 0.022 (0.020-0.025) | 0.026 (0.023-0.028) | 0.029 (0.026-0.032) | 0.033 (0.029-0.037) | 0.038 (0.033-0.043) | 0.043 (0.036-0.048) |
| 10-day | 0.006 (0.006-0.007) | 0.008 (0.008-0.009) | 0.011 (0.010-0.012) | 0.013 (0.012-0.015) | 0.017 (0.015-0.019) | 0.019 (0.017-0.021) | 0.022 (0.019-0.024) | 0.025 (0.022-0.028) | 0.029 (0.025-0.032) | 0.032 (0.027-0.036) |
| 20-day | 0.004 (0.003-0.004) | 0.005 (0.004-0.006) | 0.007 (0.006-0.008) | 0.008 (0.007-0.009) | 0.010 (0.009-0.011) | 0.011 (0.010-0.012) | 0.013 (0.011-0.014) | 0.014 (0.012-0.016) | 0.016 (0.014-0.018) | 0.017 (0.015-0.019) |
| 30-day | 0.003 (0.002-0.003) | 0.004 (0.003-0.004) | 0.005 (0.005-0.006) | 0.006 (0.005-0.007) | 0.008 (0.007-0.008) | 0.009 (0.008-0.010) | 0.010 (0.009-0.011) | 0.011 (0.009-0.012) | 0.012 (0.011-0.014) | 0.013 (0.012-0.015) |
| 45-day | 0.002 (0.002-0.002) | 0.003 (0.003-0.003) | 0.004 (0.003-0.004) | 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 (0.008-0.010) | 0.010 (0.009-0.011) |
| 60-day | 0.002 (0.001-0.002) | 0.002 (0.002-0.003) | 0.003 (0.003-0.003) | 0.004 (0.003-0.004) | 0.005 (0.004-0.005) | 0.005 (0.005-0.006) | 0.006 (0.005-0.006) | 0.006 (0.006-0.007) | 0.007 (0.006-0.008) | 0.008 (0.007-0.009) |

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



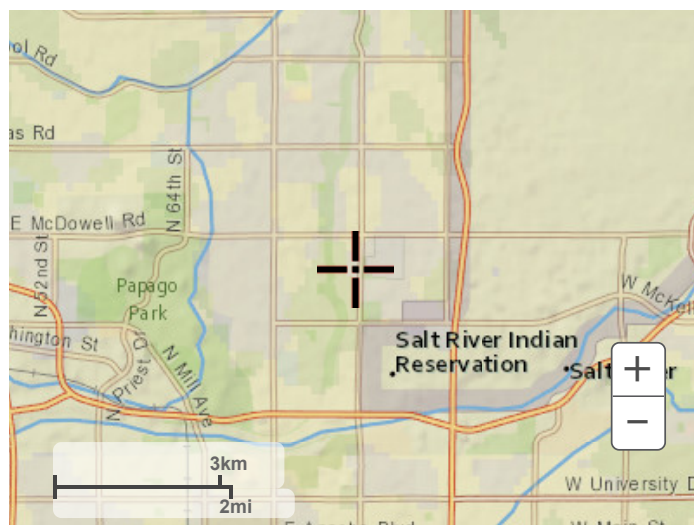
NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Fri Jul 7 15:59:39 2023

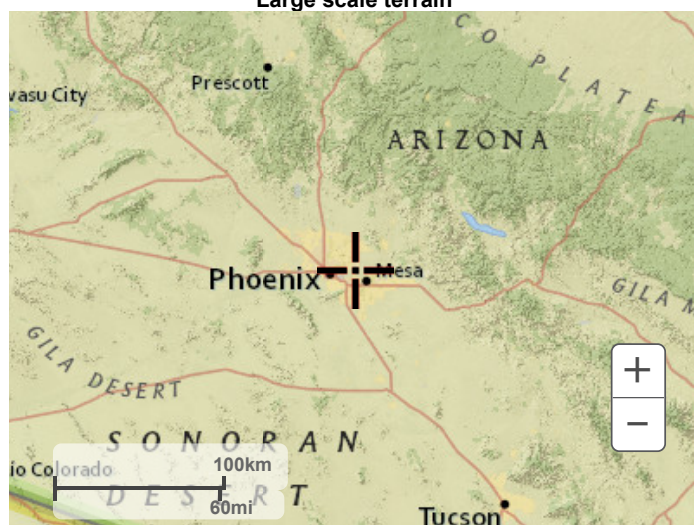
[Back to Top](#)

Maps & aerials

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



[Back to Top](#)

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1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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June 19, 2023

Joshua Graber, P.E.
GPD Group
1801 Watermark Drive, Suite 210
Columbus, OH 43215

**RE: Taco Bell
7901 East McDowell Road
Scottsdale, Arizona
Project No. 230640SA
Percolation Tests**

Mr: Graber

This letter presents the results of our percolation test for the proposed retention basins at the above-referenced site. Speedie and Associates, LLC (S&A) has re-visited the site and conducted the infiltration/percolation testing as requested.

The percolation test was conducted by following Double Ring Infiltrometer falling head methods in the bottom of a test pit excavated in the areas of the proposed retention basins to the north and south of the proposed structures. The double rings were embedded approximately 3 inches into the soil at the test location. The subsoils generally consisted of sandy lean clay. The soils were in a 'dry to moist' state at the time of testing. The actual test readings and chart showing the infiltration rate over time is attached. The following stabilized percolation rates were achieved from the inner ring:

Double Ring Infiltration Test Results

| Location | Soil Type | Installation Depth from Grade (feet) | Stabilized Percolation Rate | | |
|----------|-----------------|---|-------------------------------------|----------------------------------|--------------------------------------|
| | | | Infiltration Rate inches/hour | Percolation Rate minutes/inch | cu ft/hour/sq ft of drainage area |
| P-1 | Sandy Lean Clay | 2 | 2.50 | 24.0 | 0.208 |
| P-2 | Sandy Lean Clay | 1 | 1.50 | 40.0 | 0.125 |
| P-3 | Sandy Lean Clay | 2 | 1.25 | 48.0 | 0.104 |
| P-4 | Sandy Lean Clay | 2.5 | 2.50 | 24.0 | 0.208 |

Notes: Rates shown represent the lowest stabilized value obtained in the inner ring. These rates represent the actual rates obtained in the field and a proper factor of safety should be applied. Refer to the attachments for detailed information regarding the test data.

Maricopa Drainage Regulation 6.10.12 and any City of Scottsdale requirements should be followed for determination of the design percolation rate for the ASTM D3385 tests to allow for future working conditions in the retention system. For higher capacity, drywell(s) may need to be considered.

This addendum should be attached to the original report and made a part thereof. If there are any further questions please call.

If there are any further questions, please call.

Respectfully submitted,
SPEEDIE & ASSOCIATES, LLC.



Keith R. Gravel, P.E.

Attachments: Percolation Location Plan, Percolation Test Results



- APPROXIMATE SOIL BORING LOCATIONS
 - APPROXIMATE PERCOLATION TEST LOCATIONS



DR: JS

REV: NJV

DATE: 04/21/23

PROJECT NO.: 230640SA

SHEET: 1 OF 1

**SOIL BORING
LOCATION PLAN**

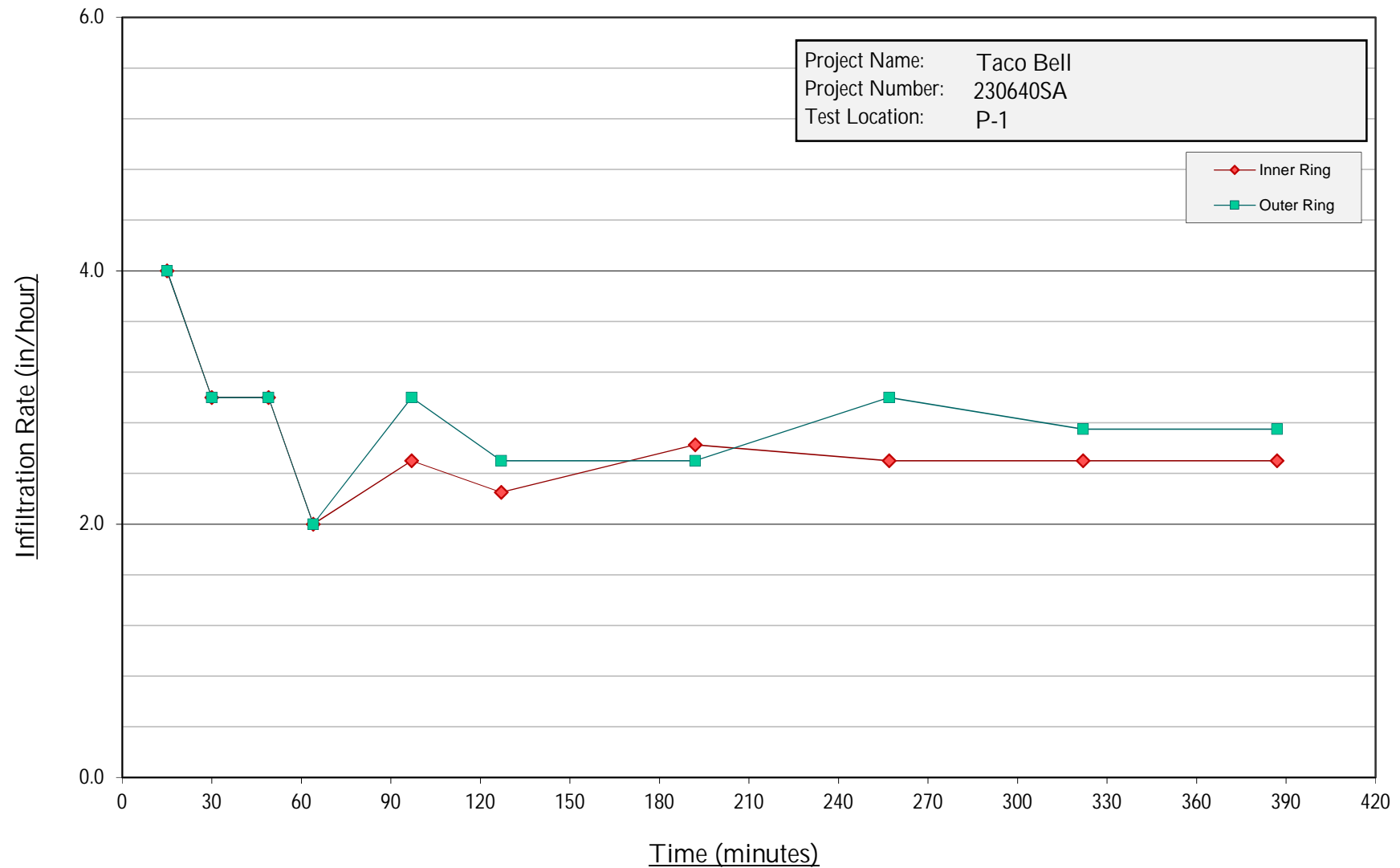
TAGO BELL
7901 EAST MCDOWELL ROAD
SCOTTSDALE, ARIZONA

**SPEEDIE
AND ASSOCIATES**
A UES Company

DOUBLE RING INFILTRATION TEST RESULTS

| | | | | | | | | | | | | | | |
|---------------------------|------------|-------------|-------------|------------------------------|----------------------------------|-----------------------|-------------------------|---|---------------------------------------|--------------------------------|----------------------------------|-------------------------|--------------|--|
| Project Name: | | Taco Bell | | | Constants | Area in2 | Depth of Liquid (inch) | <div><div><div>SPEEDIE</div><div>ANDASSOCIATES</div><div>Geotechnical • Environmental • Materials Engineers</div></div><div>A UES Company</div></div> | | | | | | |
| Project Number: | | 230640SA | | | | | | | | | | | | |
| Test Location: | | P-1 | | | | | | | | | | | | |
| Liquid Used: | | H2O | | | | | | | | | | | | |
| Tested By: | | G. Carrillo | | | Installation Depth from Grade: | | 2' | | | | | | | |
| ASTM Soil Classification: | | 0 | | | Penetration Depth of Outer Ring: | | 3" | | | | | | | |
| Trial # | Start/End | Date | Time HR:MIN | Elapsed Time Chg/(Total) Min | Flow Readings | | | | Inner Ring Drainage Rate ft^3/hr/ft^2 | Infiltration Rate | | Percolation Rate Min/in | | Remarks |
| | | | | | Inner Ring Drop - in | Inner Ring Flow - in3 | Annular Space Drop - in | Annular Space Flow - in3 | | Inner Infiltration Rate - in/h | Annular Infiltration Rate - in/h | Inner Ring | Annular Area | Weather conditions, Refill of Mariotte Tubes, Etc... |
| 1 | Start Test | 6/12/2023 | 8:38 | 0:15 | 1.00 | 113 | 1.00 | 339 | 0.333 | 4.00 | 4.00 | 15.0 | 15.0 | |
| | End Test | 6/12/2023 | 8:53 | 0:15 | | | | | | | | | | |
| 2 | Start Test | 6/12/2023 | 8:53 | 0:15 | 0.75 | 85 | 0.75 | 254 | 0.250 | 3.00 | 3.00 | 20.0 | 20.0 | |
| | End Test | 6/12/2023 | 9:08 | 0:30 | | | | | | | | | | |
| 3 | Start Test | 6/12/2023 | 9:12 | 0:15 | 0.75 | 85 | 0.75 | 254 | 0.250 | 3.00 | 3.00 | 20.0 | 20.0 | |
| | End Test | 6/12/2023 | 9:27 | 0:49 | | | | | | | | | | |
| 4 | Start Test | 6/12/2023 | 9:27 | 0:15 | 0.50 | 57 | 0.50 | 170 | 0.167 | 2.00 | 2.00 | 30.0 | 30.0 | |
| | End Test | 6/12/2023 | 9:42 | 1:04 | | | | | | | | | | |
| 5 | Start Test | 6/12/2023 | 9:45 | 0:30 | 1.25 | 141 | 1.50 | 509 | 0.208 | 2.50 | 3.00 | 24.0 | 20.0 | |
| | End Test | 6/12/2023 | 10:15 | 1:37 | | | | | | | | | | |
| 6 | Start Test | 6/12/2023 | 10:15 | 0:30 | 1.13 | 127 | 1.25 | 424 | 0.188 | 2.25 | 2.50 | 26.7 | 24.0 | |
| | End Test | 6/12/2023 | 10:45 | 2:07 | | | | | | | | | | |
| 7 | Start Test | 6/12/2023 | 10:50 | 1:00 | 2.63 | 297 | 2.50 | 848 | 0.219 | 2.63 | 2.50 | 22.9 | 24.0 | |
| | End Test | 6/12/2023 | 11:50 | 3:12 | | | | | | | | | | |
| 8 | Start Test | 6/12/2023 | 11:55 | 1:00 | 2.50 | 283 | 3.00 | 1018 | 0.208 | 2.50 | 3.00 | 24.0 | 20.0 | |
| | End Test | 6/12/2023 | 12:55 | 4:17 | | | | | | | | | | |
| 9 | Start Test | 6/12/2023 | 13:00 | 1:00 | 2.50 | 283 | 2.75 | 933 | 0.208 | 2.50 | 2.75 | 24.0 | 21.8 | |
| | End Test | 6/12/2023 | 14:00 | 5:22 | | | | | | | | | | |
| 10 | Start Test | 6/12/2023 | 14:05 | 1:00 | 2.50 | 283 | 2.75 | 933 | 0.208 | 2.50 | 2.75 | 24.0 | 21.8 | |
| | End Test | 6/12/2023 | 15:05 | 6:27 | | | | | | | | | | |
| 11 | Start Test | | | | | | | | | | | | | |
| | End Test | | | | | | | | | | | | | |
| 12 | Start Test | | | | | | | | | | | | | |
| | End Test | | | | | | | | | | | | | |
| 13 | Start Test | | | | | | | | | | | | | |
| | End Test | | | | | | | | | | | | | |
| 14 | Start Test | | | | | | | | | | | | | |
| | End Test | | | | | | | | | | | | | |
| 15 | Start Test | | | | | | | | | | | | | |
| | End Test | | | | | | | | | | | | | |

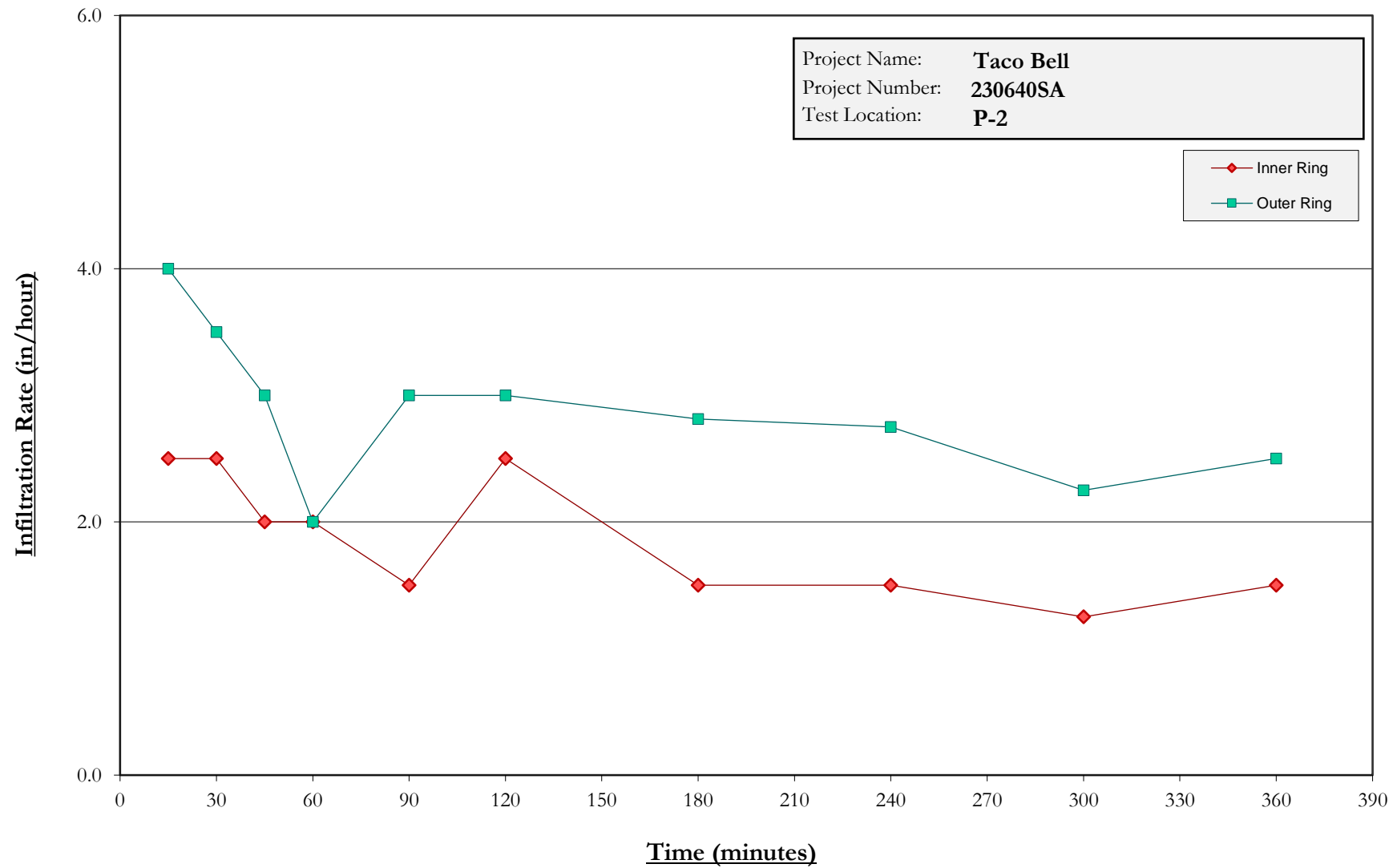
Infiltration vs. Time



DOUBLE RING INFILTRATION TEST RESULTS

| Project Name: | | Taco Bell | | | | Constants | Area in2 | Depth of Liquid (inch) | <div><div>SPEEDIE ANDASSOCIATES</div><div>Geotechnical ▪ Environmental ▪ Materials Engineers</div><div>A UES Company</div></div> | | | | | | |
|---------------------------|------------|-----------------|-------------|------------------------------|----------------------|----------------------------------|-------------------------|--------------------------|--|--------------------------------|----------------------------------|-------------------------|--------------|--|--|
| Project Number: | | 230640SA | | | | | | | | | | | | | |
| Test Location: | | P-2 | | | | Inner Ring | 113.10 | 6" | | | | | | | |
| Liquid Used: | | H20 | | | | Annular Ring | 339.29 | 6" | | | | | | | |
| Tested By: | | G. Carrillo | | | | Installation Depth from Grade: | | 1' | | | | | | | |
| ASTM Soil Classification: | | Sandy Lean Clay | | | | Penetration Depth of Outer Ring: | | 3" | | | | | | | |
| | | | | | | | | | | | | | | | |
| Trial # | Start/End | Date | Time HR:MIN | Elapsed Time Chg/(Total) Min | Flow Readings | | | | Inner Ring Drainage Rate ft^3/hr/ft^2 | Infiltration Rate | | Percolation Rate Min/in | | Remarks | |
| | | | | | Inner Ring Drop - in | Inner Ring Flow - in3 | Annular Space Drop - in | Annular Space Flow - in3 | | Inner Infiltration Rate - in/h | Annular Infiltration Rate - in/h | Inner Ring | Annular Area | Weather conditions, Refill of Mariotte Tubes, Etc... | |
| 1 | Start Test | 6/12/2023 | 8:38 | 0:15 | 0.63 | 71 | 1.00 | 339 | 0.208 | 2.50 | 4.00 | 24.0 | 15.0 | | |
| | End Test | 6/12/2023 | 8:53 | 0:15 | | | | | | | | | | | |
| 2 | Start Test | 6/12/2023 | 8:53 | 0:15 | 0.63 | 71 | 0.88 | 297 | 0.208 | 2.50 | 3.50 | 24.0 | 17.1 | | |
| | End Test | 6/12/2023 | 9:08 | 0:30 | | | | | | | | | | | |
| 3 | Start Test | 6/12/2023 | 9:08 | 0:15 | 0.50 | 57 | 0.75 | 254 | 0.167 | 2.00 | 3.00 | 30.0 | 20.0 | | |
| | End Test | 6/12/2023 | 9:23 | 0:45 | | | | | | | | | | | |
| 4 | Start Test | 6/12/2023 | 9:23 | 0:15 | 0.50 | 57 | 0.50 | 170 | 0.167 | 2.00 | 2.00 | 30.0 | 30.0 | | |
| | End Test | 6/12/2023 | 9:38 | 1:00 | | | | | | | | | | | |
| 5 | Start Test | 6/12/2023 | 9:38 | 0:30 | 0.75 | 85 | 1.50 | 509 | 0.125 | 1.50 | 3.00 | 40.0 | 20.0 | | |
| | End Test | 6/12/2023 | 10:08 | 1:30 | | | | | | | | | | | |
| 6 | Start Test | 6/12/2023 | 10:08 | 0:30 | 1.25 | 141 | 1.50 | 509 | 0.208 | 2.50 | 3.00 | 24.0 | 20.0 | | |
| | End Test | 6/12/2023 | 10:38 | 2:00 | | | | | | | | | | | |
| 7 | Start Test | 6/12/2023 | 10:38 | 1:00 | 1.50 | 170 | 2.81 | 954 | 0.125 | 1.50 | 2.81 | 40.0 | 21.3 | | |
| | End Test | 6/12/2023 | 11:38 | 3:00 | | | | | | | | | | | |
| 8 | Start Test | 6/12/2023 | 11:38 | 1:00 | 1.50 | 170 | 2.75 | 933 | 0.125 | 1.50 | 2.75 | 40.0 | 21.8 | | |
| | End Test | 6/12/2023 | 12:38 | 4:00 | | | | | | | | | | | |
| 9 | Start Test | 6/12/2023 | 12:38 | 1:00 | 1.25 | 141 | 2.25 | 763 | 0.104 | 1.25 | 2.25 | 48.0 | 26.7 | | |
| | End Test | 6/12/2023 | 13:38 | 5:00 | | | | | | | | | | | |
| 10 | Start Test | 6/12/2023 | 13:38 | 1:00 | 1.50 | 170 | 2.50 | 848 | 0.125 | 1.50 | 2.50 | 40.0 | 24.0 | | |
| | End Test | 6/12/2023 | 14:38 | 6:00 | | | | | | | | | | | |
| 11 | Start Test | | | | | | | | | | | | | | |
| | End Test | | | | | | | | | | | | | | |
| 12 | Start Test | | | | | | | | | | | | | | |
| | End Test | | | | | | | | | | | | | | |
| 13 | Start Test | | | | | | | | | | | | | | |
| | End Test | | | | | | | | | | | | | | |
| 14 | Start Test | | | | | | | | | | | | | | |
| | End Test | | | | | | | | | | | | | | |
| 15 | Start Test | | | | | | | | | | | | | | |
| | End Test | | | | | | | | | | | | | | |

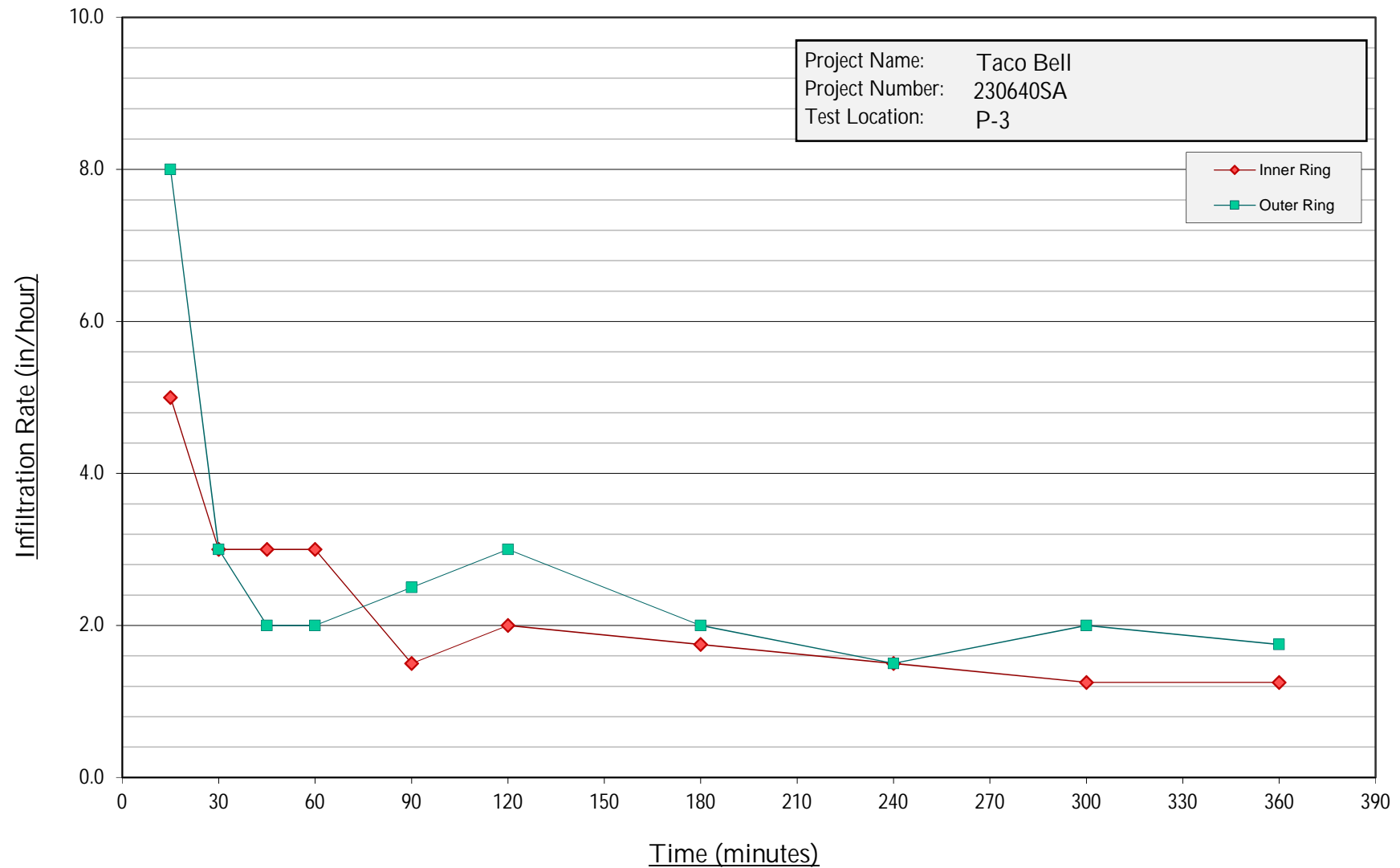
Infiltration vs. Time



DOUBLE RING INFILTRATION TEST RESULTS

| Project Name: | | Taco Bell | | | | Constants | Area in2 | Depth of Liquid (inch) | <div><div>SPEEDIE ANDASSOCIATES</div><div>Geotechnical • Environmental • Materials Engineers</div><div>A UES Company</div></div> | | | | | |
|---------------------------|------------|-------------|-------------|------------------------------|----------------------|----------------------------------|-------------------------|--------------------------|--|--------------------------------|----------------------------------|-------------------------|--------------|--|
| Project Number: | | 230640SA | | | | | | | | | | | | |
| Test Location: | | P-3 | | | | Inner Ring | 113.10 | 6" | | | | | | |
| Liquid Used: | | H2O | | | | Annular Ring | 339.29 | 6" | | | | | | |
| Tested By: | | G. Carrillo | | | | Installation Depth from Grade: | | 2' | | | | | | |
| ASTM Soil Classification: | | 0 | | | | Penetration Depth of Outer Ring: | | 3" | | | | | | |
| Trial # | Start/End | Date | Time HR:MIN | Elapsed Time Chg/(Total) Min | Flow Readings | | | | Inner Ring Drainage Rate ft^3/hr/ft^2 | Infiltration Rate | | Percolation Rate Min/in | | Remarks |
| | | | | | Inner Ring Drop - in | Inner Ring Flow - in3 | Annular Space Drop - in | Annular Space Flow - in3 | | Inner Infiltration Rate - in/h | Annular Infiltration Rate - in/h | Inner Ring | Annular Area | Weather conditions, Refill of Mariotte Tubes, Etc... |
| 1 | Start Test | 6/12/2023 | 9:15 | 0:15 | 1.25 | 141 | 2.00 | 679 | 0.417 | 5.00 | 8.00 | 12.0 | 7.5 | |
| | End Test | 6/12/2023 | 9:30 | 0:15 | | | | | | | | | | |
| 2 | Start Test | 6/12/2023 | 9:30 | 0:15 | 0.75 | 85 | 0.75 | 254 | 0.250 | 3.00 | 3.00 | 20.0 | 20.0 | |
| | End Test | 6/12/2023 | 9:45 | 0:30 | | | | | | | | | | |
| 3 | Start Test | 6/12/2023 | 9:45 | 0:15 | 0.75 | 85 | 0.50 | 170 | 0.250 | 3.00 | 2.00 | 20.0 | 30.0 | |
| | End Test | 6/12/2023 | 10:00 | 0:45 | | | | | | | | | | |
| 4 | Start Test | 6/12/2023 | 10:00 | 0:15 | 0.75 | 85 | 0.50 | 170 | 0.250 | 3.00 | 2.00 | 20.0 | 30.0 | |
| | End Test | 6/12/2023 | 10:15 | 1:00 | | | | | | | | | | |
| 5 | Start Test | 6/12/2023 | 10:15 | 0:30 | 0.75 | 85 | 1.25 | 424 | 0.125 | 1.50 | 2.50 | 40.0 | 24.0 | |
| | End Test | 6/12/2023 | 10:45 | 1:30 | | | | | | | | | | |
| 6 | Start Test | 6/12/2023 | 10:45 | 0:30 | 1.00 | 113 | 1.50 | 509 | 0.167 | 2.00 | 3.00 | 30.0 | 20.0 | |
| | End Test | 6/12/2023 | 11:15 | 2:00 | | | | | | | | | | |
| 7 | Start Test | 6/12/2023 | 11:15 | 1:00 | 1.75 | 198 | 2.00 | 679 | 0.146 | 1.75 | 2.00 | 34.3 | 30.0 | |
| | End Test | 6/12/2023 | 12:15 | 3:00 | | | | | | | | | | |
| 8 | Start Test | 6/12/2023 | 12:15 | 1:00 | 1.50 | 170 | 1.50 | 509 | 0.125 | 1.50 | 1.50 | 40.0 | 40.0 | |
| | End Test | 6/12/2023 | 13:15 | 4:00 | | | | | | | | | | |
| 9 | Start Test | 6/12/2023 | 13:15 | 1:00 | 1.25 | 141 | 2.00 | 679 | 0.104 | 1.25 | 2.00 | 48.0 | 30.0 | |
| | End Test | 6/12/2023 | 14:15 | 5:00 | | | | | | | | | | |
| 10 | Start Test | 6/12/2023 | 14:15 | 1:00 | 1.25 | 141 | 1.75 | 594 | 0.104 | 1.25 | 1.75 | 48.0 | 34.3 | |
| | End Test | 6/12/2023 | 15:15 | 6:00 | | | | | | | | | | |
| 11 | Start Test | | | | | | | | | | | | | |
| | End Test | | | | | | | | | | | | | |
| 12 | Start Test | | | | | | | | | | | | | |
| | End Test | | | | | | | | | | | | | |
| 13 | Start Test | | | | | | | | | | | | | |
| | End Test | | | | | | | | | | | | | |
| 14 | Start Test | | | | | | | | | | | | | |
| | End Test | | | | | | | | | | | | | |
| 15 | Start Test | | | | | | | | | | | | | |
| | End Test | | | | | | | | | | | | | |

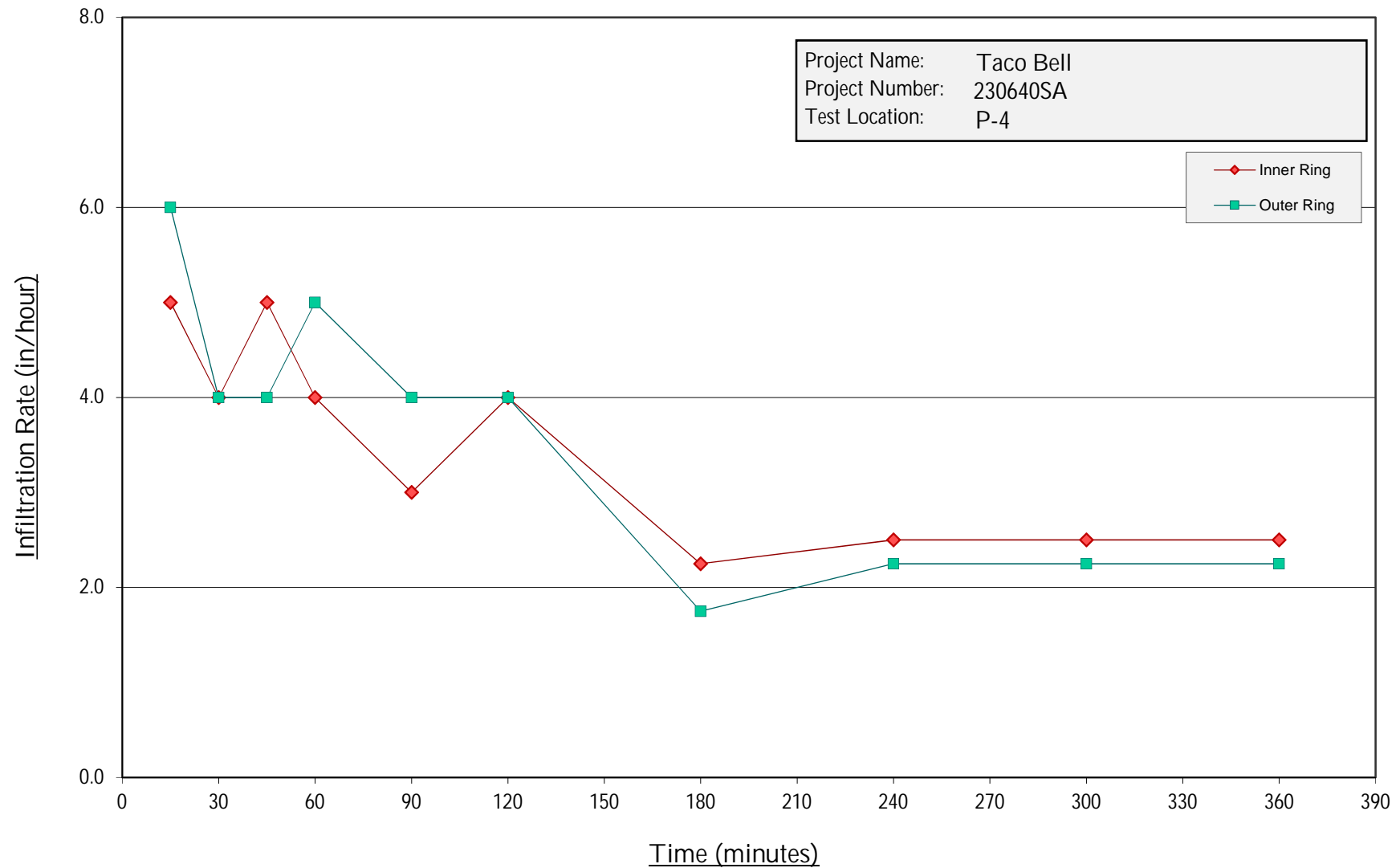
Infiltration vs. Time

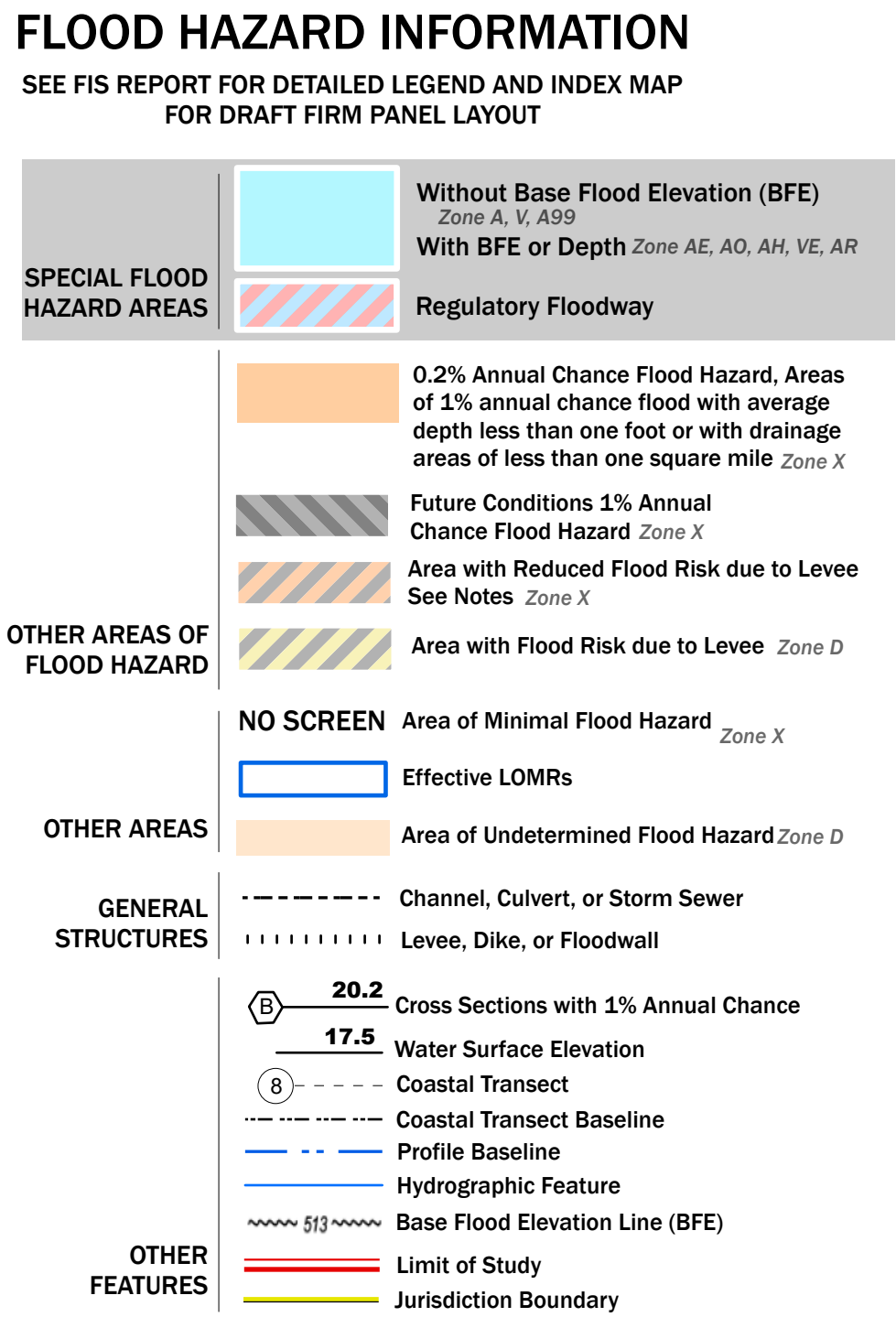


DOUBLE RING INFILTRATION TEST RESULTS

| Project Name: | | Taco Bell | | | Constants | Area in2 | Depth of Liquid (inch) | <div><div><div>SPEEDIE</div><div>ANDASSOCIATES</div><div>Geotechnical • Environmental • Materials Engineers</div></div><div>A UES Company</div></div> | | | | | | |
|---------------------------|------------|-------------|-------------|------------------------------|----------------------------------|-----------------------|-------------------------|---|---------------------------------------|--------------------------------|----------------------------------|-------------------------|--------------|--|
| Project Number: | | 230640SA | | | | | | | | | | | | |
| Test Location: | | P-4 | | | Inner Ring | 113.10 | 6" | | | | | | | |
| Liquid Used: | | H2O | | | Annular Ring | 339.29 | 6" | | | | | | | |
| Tested By: | | G. Carrillo | | | Installation Depth from Grade: | | 2.5' | | | | | | | |
| ASTM Soil Classification: | | 0 | | | Penetration Depth of Outer Ring: | | 3" | | | | | | | |
| Trial # | Start/End | Date | Time HR:MIN | Elapsed Time Chg/(Total) Min | Flow Readings | | | | Inner Ring Drainage Rate ft^3/hr/ft^2 | Infiltration Rate | | Percolation Rate Min/in | | Remarks |
| | | | | | Inner Ring Drop - in | Inner Ring Flow - in3 | Annular Space Drop - in | Annular Space Flow - in3 | | Inner Infiltration Rate - in/h | Annular Infiltration Rate - in/h | Inner Ring | Annular Area | Weather conditions, Refill of Mariotte Tubes, Etc... |
| 1 | Start Test | 6/12/2023 | 8:53 | 0:15 | 1.25 | 141 | 1.50 | 509 | 0.417 | 5.00 | 6.00 | 12.0 | 10.0 | |
| | End Test | 6/12/2023 | 9:08 | 0:15 | | | | | | | | | | |
| 2 | Start Test | 6/12/2023 | 9:08 | 0:15 | 1.00 | 113 | 1.00 | 339 | 0.333 | 4.00 | 4.00 | 15.0 | 15.0 | |
| | End Test | 6/12/2023 | 9:23 | 0:30 | | | | | | | | | | |
| 3 | Start Test | 6/12/2023 | 9:23 | 0:15 | 1.25 | 141 | 1.00 | 339 | 0.417 | 5.00 | 4.00 | 12.0 | 15.0 | |
| | End Test | 6/12/2023 | 9:38 | 0:45 | | | | | | | | | | |
| 4 | Start Test | 6/12/2023 | 9:38 | 0:15 | 1.00 | 113 | 1.25 | 424 | 0.333 | 4.00 | 5.00 | 15.0 | 12.0 | |
| | End Test | 6/12/2023 | 9:53 | 1:00 | | | | | | | | | | |
| 5 | Start Test | 6/12/2023 | 9:53 | 0:30 | 1.50 | 170 | 2.00 | 679 | 0.250 | 3.00 | 4.00 | 20.0 | 15.0 | |
| | End Test | 6/12/2023 | 10:23 | 1:30 | | | | | | | | | | |
| 6 | Start Test | 6/12/2023 | 10:23 | 0:30 | 2.00 | 226 | 2.00 | 679 | 0.333 | 4.00 | 4.00 | 15.0 | 15.0 | |
| | End Test | 6/12/2023 | 10:53 | 2:00 | | | | | | | | | | |
| 7 | Start Test | 6/12/2023 | 10:53 | 1:00 | 2.25 | 254 | 1.75 | 594 | 0.188 | 2.25 | 1.75 | 26.7 | 34.3 | |
| | End Test | 6/12/2023 | 11:53 | 3:00 | | | | | | | | | | |
| 8 | Start Test | 6/12/2023 | 11:53 | 1:00 | 2.50 | 283 | 2.25 | 763 | 0.208 | 2.50 | 2.25 | 24.0 | 26.7 | |
| | End Test | 6/12/2023 | 12:53 | 4:00 | | | | | | | | | | |
| 9 | Start Test | 6/12/2023 | 12:53 | 1:00 | 2.50 | 283 | 2.25 | 763 | 0.208 | 2.50 | 2.25 | 24.0 | 26.7 | |
| | End Test | 6/12/2023 | 13:53 | 5:00 | | | | | | | | | | |
| 10 | Start Test | 6/12/2023 | 13:53 | 1:00 | 2.50 | 283 | 2.25 | 763 | 0.208 | 2.50 | 2.25 | 24.0 | 26.7 | |
| | End Test | 6/12/2023 | 14:53 | 6:00 | | | | | | | | | | |
| 11 | Start Test | | | | | | | | | | | | | |
| | End Test | | | | | | | | | | | | | |
| 12 | Start Test | | | | | | | | | | | | | |
| | End Test | | | | | | | | | | | | | |
| 13 | Start Test | | | | | | | | | | | | | |
| | End Test | | | | | | | | | | | | | |
| 14 | Start Test | | | | | | | | | | | | | |
| | End Test | | | | | | | | | | | | | |
| 15 | Start Test | | | | | | | | | | | | | |
| | End Test | | | | | | | | | | | | | |

Infiltration vs. Time





For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at <https://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.



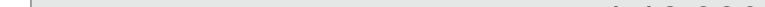
To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-368-7000.

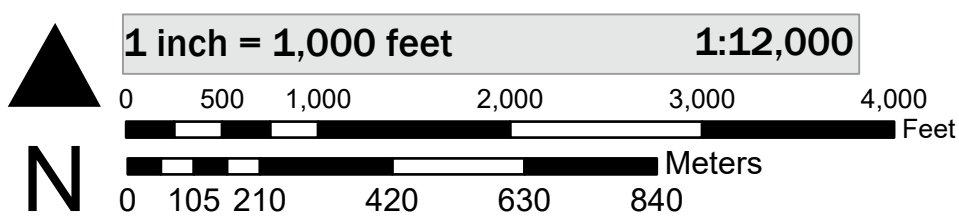
Basemap information shown on this FIRM was provided in digital format by the United States Geological Survey (USGS). The basemap shown is the USGS National Map: Orthoimagery. Last refreshed October, 2020.

THIS FINDING IS BYPRODUCT OF A NAVJAG PROBATION REPORT DATED 10/29/2013, AND IS NOT BEING ADDED TO COMPANY LOG BY SECTION 65.10 TO THE NEAR REPORT DATES. AS SUCH, THIS FINDING WILL BE REMOVED AND MAY BE ELIGIBLE TO UNDERGO DECLASSIFICATION, DETERMINATION ASSOCIATED WITH DECLASSIFICATION. THE GOOD PRACTICE OF HAZARD INSPECTION IS FOUND ON THE FBI'S SMALL BUSINESS, PUBLISHED FROM THE PRIVATE EFFECTIVE HISTORICAL FBI FOR this area, after being converted from NGVD 29 to NAVD 88.

The map complies with FEMA standards for the use of digital flood maps if it is not used as described below. One cautioning should inform users of the map as to the accuracy of the data. The map is not an estimate of the levee system's performance under any particular sea surge or surge height. The map is used to show the levee system's location and the protection it provides to the community. The map is not a flood risk map, residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit <http://www.fema.gov/national-flood-insurance-program>.

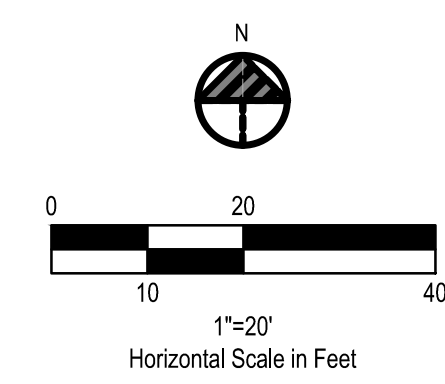
Map Projection:
GCS, Geodetic Reference System 1980;
Vertical Datum: NAVD88
For information about the specific vertical datum for elevation features, datum conversions, or vertical monuments used to create this map, please see the Flood Insurance Study (FIS) Report for your community at <https://msc.fema.gov>


1 inch = 1,000 feet **1:12,000**
 0 500 1,000 2,000 3,000 4,000 Feet

N
 0 105 210 420 630 840 Meters




| Panel Contains: | | |
|--------------------|--------|-------|
| COMMUNITY | NUMBER | PANEL |
| CITY OF SCOTTSDALE | 045012 | 223 |
| CITY OF TEMPE | 040054 | 223 |
| MARICOPA COUNTY | 040037 | 223 |
| CITY OF MESA | 040048 | 223 |

MAP NUMBER
04013C2235M
EFFECTIVE DATE
September 18, 2020



PROPOSED IMPERVIOUS AREA

PROPOSED PERVIOUS AREA

DRAINAGE AREA

TOTALS
WEIGHTED C = 0.61
A = 0.91 ACRES
T_c = 10 MIN.

[illegible]

| | |
|-----------------|------------|
| CONTRACT DATE: | - |
| BUILDING TYPE: | - |
| PLAN VERSION: | - |
| BRAND DESIGNER: | - |
| SITE NUMBER: | - |
| STORE NUMBER: | - |
| PA/PM: | EA |
| DRAWN BY.: | EH |
| JOB NO.: | 2023188.01 |

TACO BELL

7901 E. MCDOWELL RD
SCOTTSDALE, AZ 85257



EXISTING DRAINAGE PLAN

D-110

PLOT DATE:





PLOT DATE: