

October 14, 2022

**RE: Tropical Smoothie Cafe
Water Supply Test and Site Flow Analysis
Scottsdale, AZ**

The requested water supply test and site flow analysis for the subject project is detailed in the attached report.

Flow Test Results:

Date Performed: October 11, 2022. Fire Hydrant Flow Test Effective Point: At the gauge hydrant connection to the 8-inch water main, located approximately 205-ft west of 90 th Street. Static = 85 psi; Residual = 75 psi @ 1,126 gpm Available Flow @ 20 psi (At test hydrant) = 3,095 gpm, exceeds required flow rate of 1500 gpm
Static Pressure @ BOR: 71.5 psi Available Pressure @ 250 gpm hose allowance and 350 gpm at the BOR after BFP = 39.0 psi 10% Safety Factor = -8.5 psi Ames 2000SS Double Check Valve used to calculate Backflow Preventer Frictional Losses Test Elevation relative to BOR: The test effective point elevation (1,347 Ft. AMSL) is even with the assumed finished floor elevation (1,347 Ft. AMSL)

A fire pump WILL NOT be required.

Backflow Prevention Requirements: Double check valve, located above ground at the property line
Device assumed for deduct in calculations: 3-inch, Ames 2000SS, double check valve

This needs to be approved by the Civil Engineer. This is for recommendation only and **NOT** to be used for construction or exact main locations.
Should you have any questions regarding this matter, do not hesitate to contact me.

Sincerely,

Robert Gehrke
Fire Protection Consultant

ATTACHMENTS:

- Attachment #1 – Site Sketch
- Attachment #2 – Water Supply Graph – Fire Sprinkler Calculations
- Attachment #3 – Water Supply Graph – Fire Flow Calculations
- Attachment #4 – Site Utility Plan

Attachment #1 - Site Sketch



Static/Residual Hydrant
Effective Point (EP)
1,347' AMSL



3-inch Fire Line
(assumed)

Double Check Valve
Backflow Assembly
(above ground)



0 20'

8" ACP



SAN VICTOR
DRIVE

IRRIGATION TAP

(#) = Hydraulic Node

Notes by: Robert Gehrke
Flow test performed by Telgian
E&C
10/11/2022 @ 7:30 AM
85 psi / 1126 gpm / 75 psi

Witnessed by Vince Cusumano
from City of Scottsdale

Note: This drawing is for
informational purposes only.
It is not intended to be used
for construction and/or exact
main locations.

**WATER SUPPLY SITE SURVEY
FIRE SPRINKLER DEMAND**

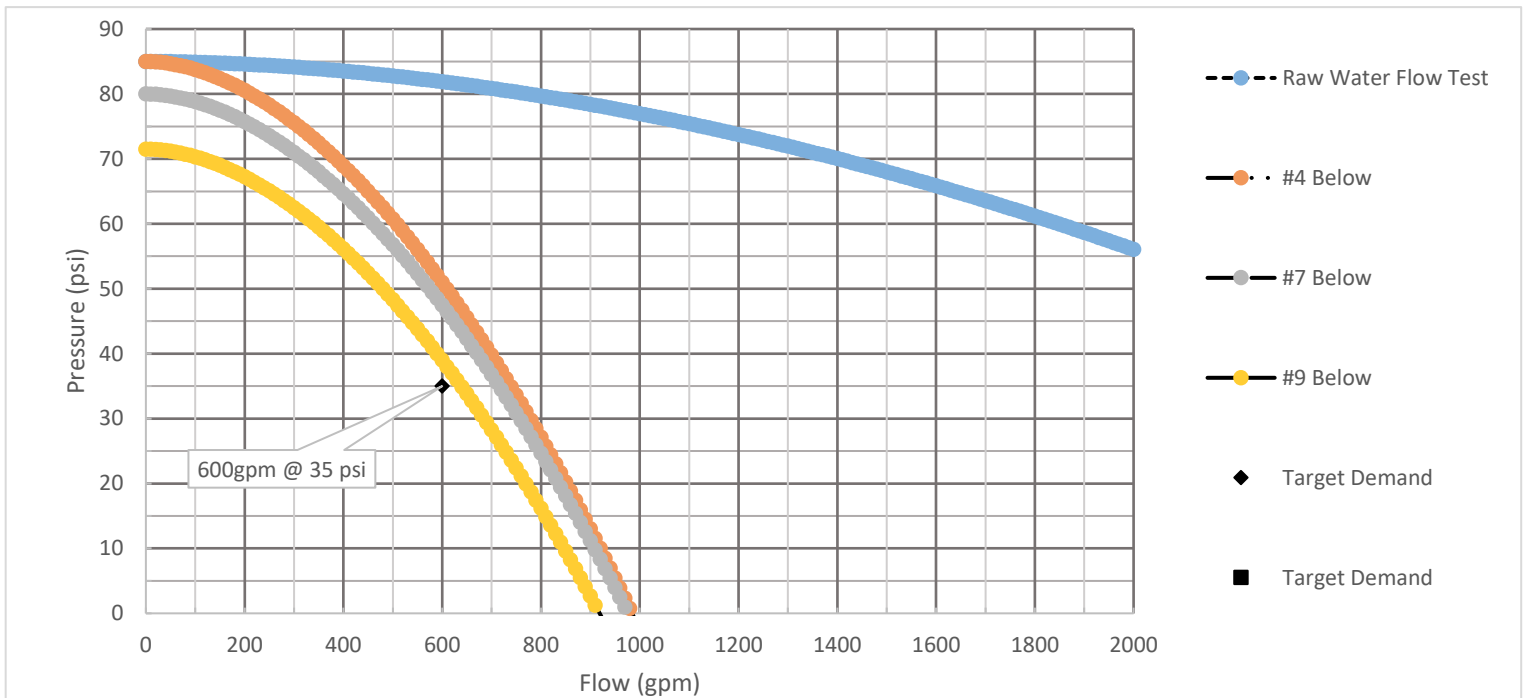
PROJECT: Tropical Smoothie Cafe
LOCATION: 8999 E. San Victor Drive
CITY/STATE: Scottsdale, AZ 85258

Static (psi)	Residual (psi)	Flow (gpm)
85	75	1126

Gauge Hydrant Elevation (ft)	Building FFE (ft)
1347	1347

Outlet Diameter #1 (in)	Hydrant Coefficient #1	Pitot #1 (psi)	Outlet Diameter #2 (in)	Hydrant Coefficient #2	Pitot #2 (psi)	Outlet Diameter #3 (in)	Hydrant Coefficient #3	Pitot #3 (psi)	Outlet Diameter #4 (in)	Hydrant Coefficient #4	Pitot #4 (psi)
2.5	0.9	45									

Gauge Hydrant Location:	Located along the north side of San Victor Drive, approximately 205-feet west of 90th Street.		
Flow Hydrant Location:	Located in front of Sun Devel Auto along the south side of San Victor Dr, approximately 315-feet west of 90th St.		
Test By:	Robert Gehrke - Telgian E & C	Date:	10/11/2022
Time:	7:30AM		
Backflow Prevention:	Size: 3-inch	Type: Double Check	Mfg: Ames
			Model: 2000SS
Water Meter:	Size: None	Mfg:	Model:



	Flow Rate (gpm)	Flow Rate (gpm)	
		0	600
	Static (psi)	Residual (psi)	
1. Pressure available at test	85	82.0	
2. Elevation Adjustment	0	Included in Calcs	
3. Pressure loss due to friction	0	Included in Calcs	
4. Pressure at base of riser upstream of BFP & meter	85	51	
5. BFP loss/preload	-5	-3.5	
6. Water meter loss	0	0	
7. Pressure at base of riser downstream of BFP & meter	80	47.5	
8. Adjustment for low public pressure	-8.5	-8.5	
9. Total base of riser pressure	71.5	39	

Calculated Demands	
gpm	psi
600	35

Additional Demands	
gpm	psi

DATE: 10/14/2022TOP\TEC\HASS\TROPICAL SMOOTHIE CAFE - SCOTTSDALE, AZ .SDF
 JOB TITLE:

NFPA WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	FLOW @ (GPM)	AVAIL. PRESS. (PSI)	TOTAL @ DEMAND (GPM)	REQ'D PRESS. (PSI)
EP	85.0	75.0	1126.0	81.9	600.0	

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	600.0 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	600.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	0.0 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
1	1347.0	HOSE STREAM	81.9	250.0	Hose Allowance
2	1347.0	- - - -	81.8	- - -	
BOR	1347.0	HOSE STREAM	51.2	350.0	Base of Riser
EP	1347.0	SOURCE	81.9	600.0	

**WATER SUPPLY SITE SURVEY
FIRE HYDRANT DEMAND**

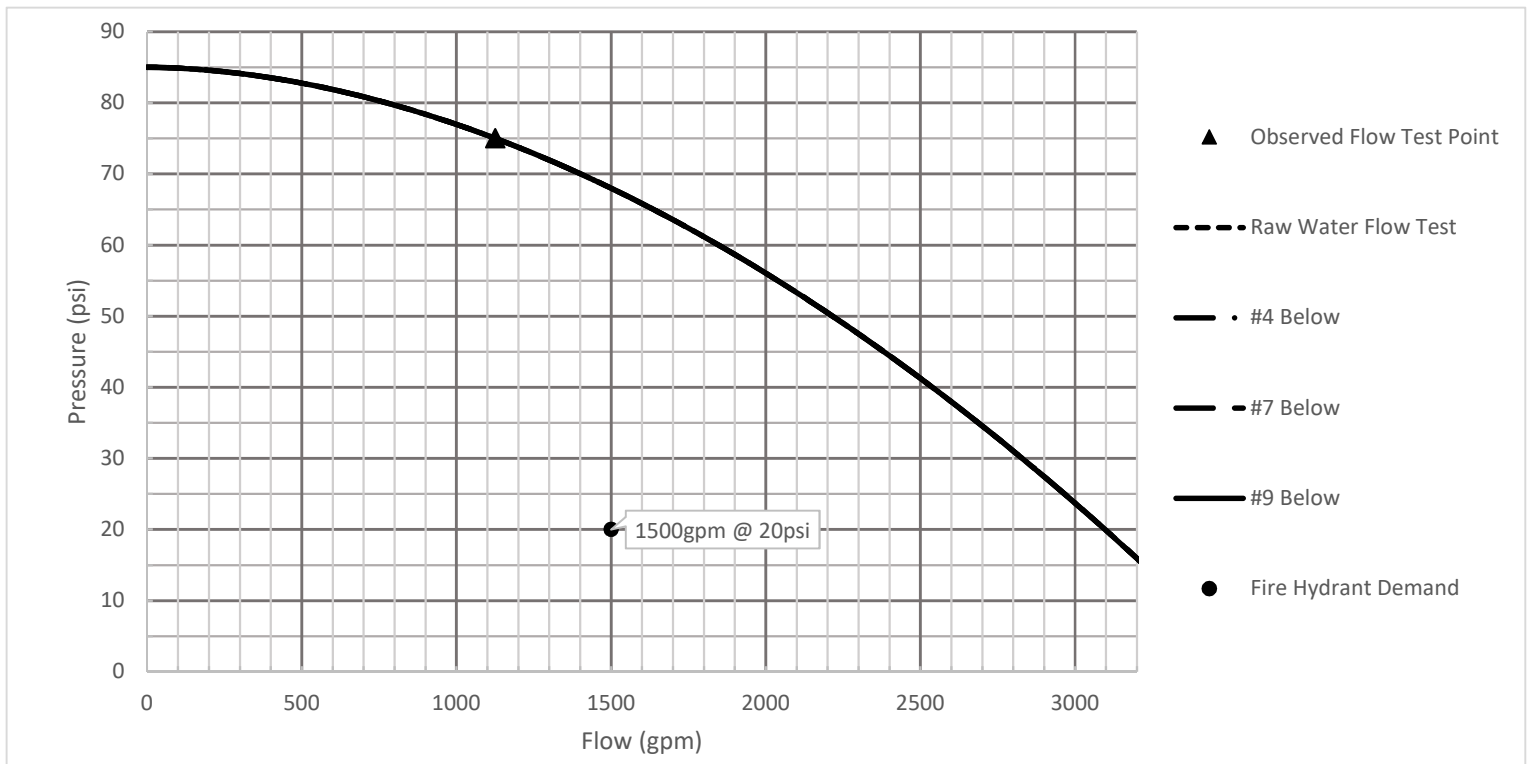
PROJECT: Tropical Smoothie Cafe
LOCATION: 8999 E. San Victor Drive
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Static (psi)	Residual (psi)	Flow (gpm)
85	75	1126

Gauge Hydrant Elevation (ft)	Building FFE (ft)
1347	1347

Outlet Diameter #1 (in)	Hydrant Coefficient #1	Pitot #1 (psi)	Outlet Diameter #2 (in)	Hydrant Coefficient #2	Pitot #2 (psi)	Outlet Diameter #3 (in)	Hydrant Coefficient #3	Pitot #3 (psi)	Outlet Diameter #4 (in)	Hydrant Coefficient #4	Pitot #4 (psi)
2.5	0.9	45									

Gauge Hydrant Location:	Located along the north side of San Victor Drive, approximately 205-feet west of 90th Street.		
Flow Hydrant Location:	Located in front of Sun Devel Auto along the south side of San Victor Dr, approximately 315-feet west of 90th St.		
Test By:	Robert Gehrke - Telgian E & C	Date:	10/11/2022
Backflow Prevention:	Size:	Type:	Mfg:
Water Meter:	Size:	Mfg:	Model:



		Distributed Fire Flows (gpm)		
		0	1500	
		Static (psi)	Residual (psi)	
1.	Pressure available at test	85	68.0	
2.	Elevation Adjustment	0	Included in Calcs	
3.	Pressure loss due to friction	0	Included in Calcs	
4.	Pressure at remote hydrants upstream of BFP & meter	85	68	
5.	BFP loss/preload	0	0	
6.	Water meter loss	0	0	
7.	Pressure at remote hydrants downstream of BFP & meter	85	68	
8.	Safety factor	0	0	
9.	Available combined pressure at Total Fire Flow Demand	85	68.0	

Total Fire Flow Demand	
gpm	psi
1500	20

DATE: 10/14/2022KTOP\TEC\HASS\TROPICAL SMOOTHIE CAFE - SCOTTSDALE, AZ.SDF
 JOB TITLE:

NFPA WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	FLOW @ (GPM)	AVAIL. PRESS. (PSI)	TOTAL @ DEMAND (GPM)	REQ'D PRESS. (PSI)
EP	85.0	75.0	1126.0	68.0	1500.0	

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	1500.0 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	1500.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	0.0 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
1	1347.0	HOSE STREAM	68.0	1500.0	Required Fire Flow
2	1347.0	- - - -	68.0	- - -	
BOR	1347.0	- - - -	68.0	- - -	
EP	1347.0	SOURCE	68.0	1500.0	

DATE: 10/14/2022KTOP\TEC\HASS\TROPICAL SMOOTHIE CAFE - SCOTTSDALE, AZ.SDF
 JOB TITLE:

NFPA WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	FLOW @ (GPM)	AVAIL. PRESS. (PSI)	TOTAL @ DEMAND (GPM)	REQ'D PRESS. (PSI)
EP	85.0	75.0	1126.0	20.1	3095.0	

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	3095.0 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	3095.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	0.0 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
1	1347.0	HOSE STREAM	20.0	3095.0	Fire Flow @ 20 psi
2	1347.0	- - - -	20.0	- - -	
BOR	1347.0	- - - -	20.0	- - -	
EP	1347.0	SOURCE	20.1	3095.0	

