

Watson High Desert Logistics-East

A 152-acre Industrial Development
In the Town of Apple Valley

Sanitary Sewer Feasibility Study

Developer:

Watson Land
22010 Wilmington Avenue
Carson, CA. 90745

Consultant:

KEC ENGINEERS, INC.

13201 9th Street
Chino, CA. 91710
(714) 401-4695

April 2024
(Edited Jan. 2025)



Watson High Desert Logistics – East, Sanitary Sewer Feasibility Study

Town of Apple Valley

ACRONYMS AND ABBREVIATIONS

AVWD	Apple Valley Water District
d/D	depth over diameter
DI	ductile iron
du	dwelling units
EDU	equivalent dwelling unit
EIR	Environmental Impact Report
fps	feet per second
gpd	gallons per day
gpm	gallons per minute
JPA	Joint Powers Authority
LF	linear Feet
LS	lift Station
MBR	membrane bioreactor
MG	million gallon
n	Manning's Roughness Coefficient
NAVISP	North Apple Valley Industrial Specific Plan
PVC	polyvinyl chloride
R-M	multi-family residential
sf	square foot
SSMP	Sewer System Management Plan
SSO	sanitary sewer overflow
URS	URS Corporation
VCP	vitriified clay pipe
VVWRA	Victor Valley Wastewater Reclamation Authority

Watson High Desert Logistics – East, Sanitary Sewer Feasibility Study

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Introduction:

Watson High Desert Logistics-East proposes the development of two warehouse buildings on a 152-acre site in the Town of Apple Valley. This site is located in the North Apple Valley Industrial Specific Plan (NAVISP) which was adopted by the Town Council on October 24, 2006. The EIR for the NAVISP was certified on October 10, 2006.

The project site is bounded by Johnson Road to the north, Central Road to the east, Kensington Street to the south, and Navajo Road to the west. The approximately 152-acre site would be developed with two industrial cross-dock warehouse buildings totaling 2,832,600 square feet.

PROPOSED NEW DEVELOPMENT:

Project Name:

Watson High Desert Logistics-East
In the Town of Apple Valley

Developer/Owner:

Watson Land Company
22010 Wilmington Ave.
Carson, CA 90745

Project Architect:

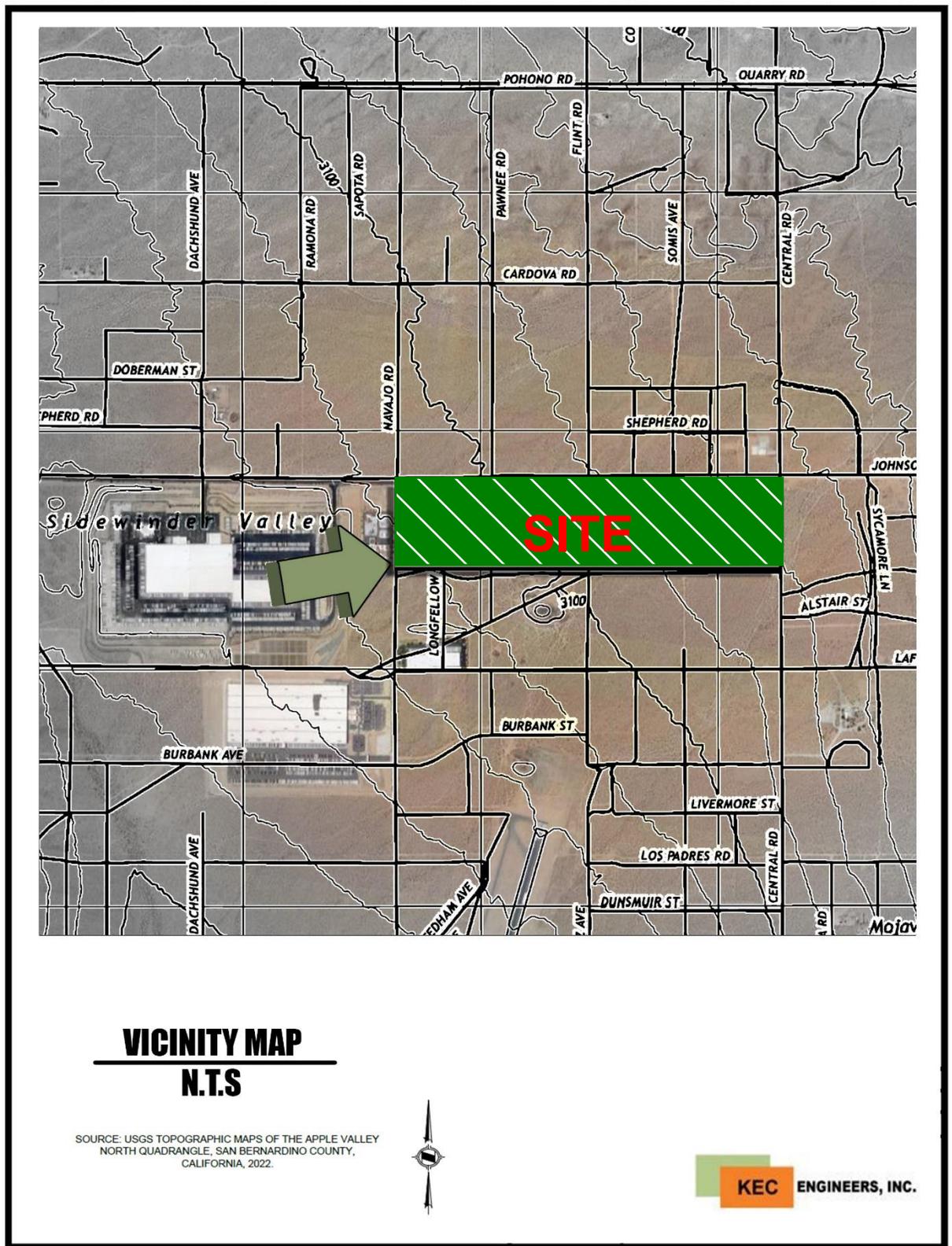
RGA Office of Architectural Design
15231 Alton Parkway, Suite #100
Irvine, CA. 92618
Tel: (949) 341-0920

Project Civil Engineer:

Westland Group
4150 Concourse, Suit 100
Ontario, CA. 91764

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Sanitary Sewer Feasibility Study Objectives:

The Town of Apple Valley is responsible for knowing the project's additional wastewater flows which, at a point or time, could cause capacity constraint or could substantially or incrementally exceed the future scheduled capacity of their existing sewer trunk line or interceptors. Furthermore, the Town of Apple Valley is required to coordinate and collaborate with the Victor Valley Wastewater Reclamation Authority that under contract treats the Town's sewer flow. This report will also be used as a reference by the Developer and the Town of Apple Valley to assess the availability of the existing sewer collection system (gravity and/or force main) and the nearest functional connection point. The Sewer Feasibility Study is the official process for properly sizing the sanitary sewer for each catchment (tributary) area and their flow impact on the sewer trunk line and the interceptors. The completed Sewer Feasibility Study must address and analyze the sewer capacity in the existing system and must include mitigation measures.

Town of Apple Valley Sewer System Master Plan Update:

The latest available Sewer Master Plan for the Town of Apple Valley was updated by URS Corporation in August 2013. The sewer hydraulic modeling prepared during the preparation of the sewer master plan was not available for our review. We are not certain if the hydraulic modeling would contain highly accurate information that may be relied on 10 years later, as there have been significant changes in the Town of Apple Valley in the past 10 years. Victor Valley Wastewater Reclamation Authority, which is responsible for the expansion of the wastewater treatment plants in this region, was aware of the overloading of the VVWRA interceptor during buildout. The 2013 Sewer Master Plan pointed out the fact that the VVWRA sewer needed upgrading or construction of a subregional treatment plant near Dale Evens Parkway and Otoe Road which was necessary to alleviate the projected overtaxing of VVWRA interceptor. Subsequently, the Sewer System Analysis of August 2013 was the catalyst for the construction of a 1-MG subregional membrane bioreactor (MBR) wastewater treatment plant. The Watson High Desert Logistics-East is tabled to discharge its sanitary sewer flow to this 1-MG subregional treatment plant.

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VICINITY MAP



N.T.S.

Sewer System Management Plan (SSMP):

The latest Town of Apple Valley Sewer System Management Plan (SSMP), which was completed in 2019, intended to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system.

Additionally, it outlined a protocol to help reduce and prevent sanitary sewer overflows (SSO) as well as mitigate any SSOs that do occur. The Town uses the San Bernardino County Special Districts Department Standards for Sanitary Sewer as the basis for designing the sewer improvement plans. The required design standards detail the pipe sizing for sufficient sewer capacity to handle the current and future baseflow, including peak and wet weather flow.

Wastewater Collection System Design Criteria:

In compliance with having a sewer collection system that is compatible with other municipalities and meets practical and achievable design standards for proper operation and maintenance; URS Corporation, in their 2013 Sewer Master Plan for the Town of Apple Valley, developed the sewer design criteria as a tool for future sewer collection system design. The recommended design standards require the new sewer lines to be of polyvinyl chloride (PVC) pipes. In addition, there are other minimum requirements which are identified in the following tables:

(Tables from Final Report Sewer System Master Plan Update, Town of Apple Valley, CA by URS Corporation)

Table 2-1: d/D Criteria

Ratio	<15 inches	>15 inches
d/D	0.5	0.75

Table 2-2: Velocity Criteria

Criteria	Velocity (fps)
Minimum	2
Desired	3-5
Maximum	10

Table 2-3: Manning’s Roughness Coefficient (n)

Material	n
PVC	0.009
DI	0.013
VCP	0.011

Table 2-4: Slope and Flow Depths Criteria

Sewer Pipe Size (in)	Slope (ft/ft)	Design Flow Depths at Peak Flow (%)
6	0.0060	50
8	0.0040	50
10	0.0029	75
12	0.0022	75
15	0.0016	75
18	0.0012	75
21	0.0010	75
24 or larger	0.0008	75

(Table from Final Report Sewer System Master Plan Update, Town of Apple Valley, CA by URS Corporation)

Sewer flow capacity and discharge analysis:

One of the most challenging issues in designing a sewer collection system and sewer treatment facility is the technique, sizing, and timing of the required infrastructure to be constructed to handle the sewer flow from minimum development to the ultimate build out. The assessment of the existing wastewater treatment capacity to handle the waste discharge from Watson High Desert Logistics - East (152-acre Industrial Development) is not within the scope of this study. However, as indicated earlier in this report, the Victor Valley Wastewater Reclamation Authority in collaboration with the Town of Apple Valley and other entities within the High Desert Region manages the overall sewer treatment plant expansions and interceptors discharging into the treatment plants. VVWRA has constructed a 1-MG subregional membrane bioreactor (MBR) treatment plant in the vicinity of Dale Evans Parkway and Otoe Road to handle the waste discharge from the North Apple Valley Industrial Specific Plan (NAVISP). Based on the flow monitoring data measured in 2013, the 1-MG subregional MBR plant has enough capacity to handle the proposed Watson High Desert Logistics-East Project.

North Apple Valley Industrial Specific Plan:

In accordance with the Certified EIR (November 1, 2006) for the North Apple Valley Industrial Specific Plan, the total project site including developed and undeveloped lands, encompasses 4,937.5 acres with a total commercial square

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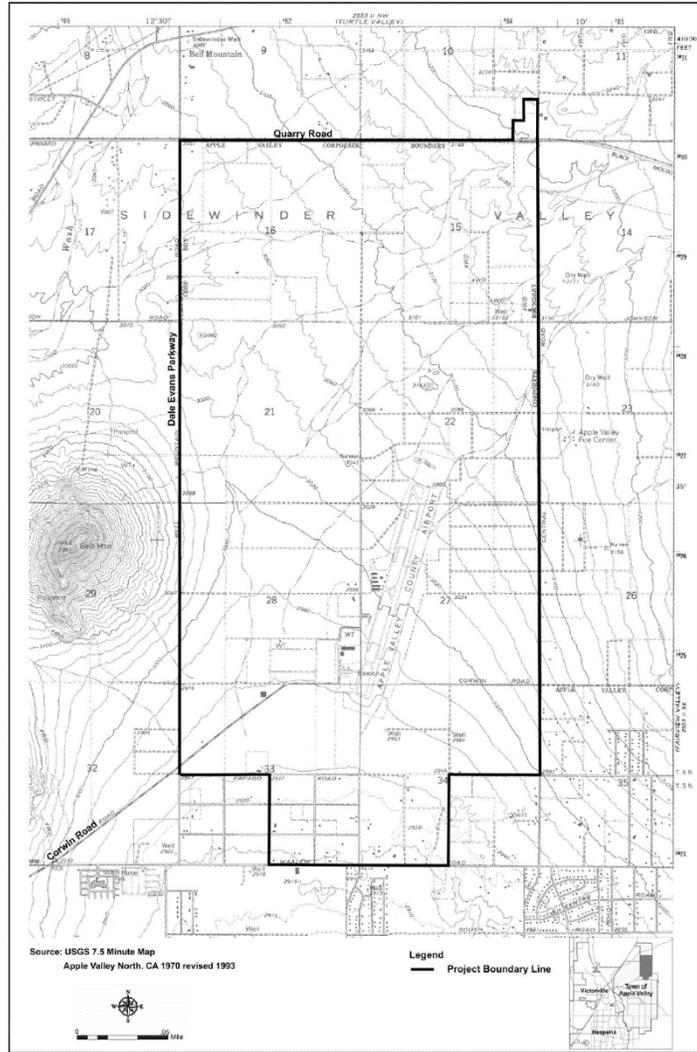
Town of Apple Valley

footage of 2,500,257 and a total industrial square footage of 36,938,444. However, the Sanitary Sewer Master Plan Update of August 2013 states that the total area in North Apple Valley Specific Plan is to be 6,221 acres (See Table 5-10, North Apple Valley Specific Plan land use Designation Buildout Summary) which includes the Airport Influence Area, the Dry Lake Flood Area, the Apple Valley Village Area located west of Central Avenue, Highway 18 Improvement Area, the I-15 Corridor, and the Bear Valley Road Improvement Area. They defined the specific plan area to be bounded by Langley Road on the north, Waalew Road on the south, Dale Evans Parkway on the west, and Joshua Road on the east.



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Table 5-10: North Apple Valley Specific Plan Land Use Designation Buildout Summary

Designation	Vacant Acres	Developed Acres	Total Acres	Existing Sq. Footage ⁵	Potential Sq. Footage ⁶	Total Sq. Footage
General Commercial	265.7	4.9	270.6	46,958	2,546,256	2,593,214
Industrial -	329.5	410.6	740.1	N/A	N/A	N/A
Airport Industrial - Specific Plan	4445.2	343.3	4788.5	3,287,037	42,599,240	45,886,277
Industrial-General	334	6.1	340.1	58,458	3,200,789	3,259,246
High Desert Corridor	73.7	8	81.7	N/A	N/A	N/A
Total	5,448.1	772.9	6,221	3,392,453	48,346,285	51,738,737

(Table from Final Report Sewer System Master Plan Update, Town of Apple Valley, CA by URS Corporation)

The Town of Apple Valley Planning Department sewer generation criteria is based on:

1 EDU = 210 gallons per day per household

The 210 gpd/household is derived from the Multi-Family Residential (R-M) land use densities which is based on 2 to 20-du/1 acre. Thus, the total sewer flow from the North Apple Valley Industrial Specific Plan is calculated by multiplying the vacant land by 210-gpd.

Table 5-4: General Plan's Residential Land Use Densities

Residential Designation	Maximum Density
Very Low Density Residential (R-VLD)	1 du/5 or more acres
Residential Agriculture (R-A)	1 du/2.5 or more acres
Low Density Residential (R-LD)	1 du/2.5 to 5 gross acres
Estate Residential (R-E)	1 du/1 to 2.5 gross acres
Equestrian Residential (R-EQ)	1 du/0.4 to 0.9 net acre
Single Family Residential (R-SF)	1 du/0.4 to 0.9 net acre
Multi-Family Residential (R-M)	2 to 20 du/1 acre

Table 5-13: Build Out Summary of EDUs for Areas Designated as Specific Plan

Land Designation	Bridle Path Estates	Deep Creek Estates	Jess Ranch	LCER	Meadowbrook	North Apple Valley Industrial	North Pointe	Golden Triangle
Low Density Residential	-	-	25	-	-	-	-	-
Medium Density Residential	-	-	-	-	-	-	-	10.4
Estate Residential	-	-	-	-	-	-	-	1.5
Equestrian Residential	194	81	-	-	-	-	-	-
Single Family Residential	904	55	-	-	92	-	518	-
Commercial	-	-	344	-	24	334	46	3,692
Industrial	-	-	-	-	-	9,864	-	-
Public Facilities/School	-	-	-	86	1	-	-	-
Senior Living	-	-	1,966	-	250	-	-	-
Mixed Used	-	-	-	-	-	-	290	9
Total EDUs	1,098	136	2,335	86	367	10,198	854	3,713
Total Flow (gpd)	230,580	28,560	254,379	18,000	47,472	2,141,531	179,322	779,655

(Table from Final Report Sewer System Master Plan Update, Town of Apple Valley, CA by URS Corporation)

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Applying the same criteria to calculate the flow generation from Watson High Desert Logistics-East, we get:

Proposed warehouse buildings = 2,832,600 S.F.

$2,832,600 \div 43,560 = 65$ acres (Total building area)

$65 \times 1,500$ gpd/acre = 97,541 gpd

$97,541 \times (1\text{day}/24\text{hr} \times 1\text{hr}/60\text{min}) = 68$ gal/min.

68×1.8 (Peaking factor) ≈ 122 gpm, (peak flow per 2013 Sewer MP)

Based on our survey of large size warehouses water usage which has a direct correlation with the sewer flow generated from large size warehouses are much less than the estimated flow (1500 gpd/Acre) called out in the NAVISP document. Later in this report we will discuss the more realistic sewer flow discharge from The High Desert Logistics-East.

Apple Valley Industrial Specific Plan

Watson High Desert Logistics-East Sanitary Sewer Catchment area

Upon discussion with the Town of Apple Valley Engineering Department, and based on the flow monitoring report provided to the Town by the Victor Valley Wastewater Reclamation Authority, the average sewer flow through Comanche Road was recorded at 121,593 gpd while the average sewer flow through Dale Evans Parkway sewer line for the same period was recorded at 168,321 gpd (See Town of Apple Valley Flow Study from 6/16/23 to 7/9/23 in the Appendix).

The existing 12" sewer line in Navajo Road, upstream of the Comanche Road and Dale Evans Parkway sewer lines, begins at the intersection of Johnson and Navajo Road; traverses southerly to Needham; then Easterly to Dachshund Avenue; then southerly to Corwin Rd.; and subsequently joins the Dale Evans Parkway sewer via Comanche Rd. and Waallow, and terminates at the 1MG subregional MBR Wastewater Treatment Plant in Otoe Rd. via an 18" trunk line in Otoe Road.

The Town of Apple Valley has determined that the most southerly reach of the 10" sewer line in Dale Evans Parkway (3,000 feet) is at capacity (currently surcharging) and that the town plans to construct a parallel sewer to alleviate the surcharging problem.

Analysis of the 12” Sanitary Sewer in Navajo Road.

Manhole #2 at the intersection of Johnson Road and Navajo Rd., Station 148 + 20: (invert elevation: 3,070.22 ft.)

**Downstream Manhole #22, Sta. 81+56.10 (invert elevation: 3,000.50 ft.)
Distance = 6,666 ft.**

$$\text{Slope (S)} = (3070.22 - 3,000.50) / (6666) \rightarrow S = 0.010$$

$$\eta = 0.012 \text{ Coefficient of roughness}$$

$$A = \pi r^2$$

$$\text{Area} = \pi(6/12)^2 \rightarrow 3.14 \times (0.25) = 0.785 \text{ FT}^2$$

At 50% full: Area of the pipe (50% flow) = 0.785 ÷ 2 → Area of 1/2 full pipe 0.392FT²

$$\text{Hydraulic Radius (R)} = D/4 \rightarrow R = (12/4) \div 12 \rightarrow R = 0.25$$

$$\text{Manning Formula: } Q = \frac{1.486 (A)(R)^{2/3}(s)^{1/2}}{\eta} \rightarrow Q = \frac{1.486 (0.392)(0.25)^{2/3}(0.01)^{1/2}}{0.012}$$

$$Q = \frac{1.486 (0.392)(0.4)(0.1)}{0.012} \quad Q = 1.94 \text{ FT}^3/\text{sec. flow capacity of 12” pipe (1/2 full)}$$

Based on the above hydraulic analysis, the existing 12” VCP sewer in Navajo Road can theoretically handle an average flow of 1.94 Cu. Ft/sec or 871 gpm or 1.25 MG per day under dry weather condition with pipe flowing at 50% full.

Based on the August 2013 Sewer System Master Plan Update (Table 5-13), the estimated total flow from the North Apple Valley Specific Plan Area at buildout will be 2,141,531 gallons per day (gpd). This value is based on the assumption of 1,500 gpd/acre of building space, and the building space is based on 22% lot coverage. The 22% lot coverage does not apply in the Watson High Desert Logistics-East case. The total building sizes of 2,832,600 S.F. on a 152-acre lot is approximately 43% of the lot. We reached out to other municipalities with large warehouse buildings similar to Watson’s proposed High Desert Logistics-East, and found 7 warehouses to study for the lot coverage as well as the domestic water demands based on the meter reads. We learned that the majority of the buildings we studied were at over 40% lot coverage and the domestic water demands were substantially lower than 1,500 gpd per acre of the building space.

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The highest domestic water demand in our study (Survey) proved to be at 206 gdp per acre (0.0047 gpd per one S.F. of building area). It must be noted that the domestic water demand for a warehouse is the most relevant method of measuring the sewer generation flow. We are providing the meter reads we obtained for this study in Appendix of this report; however, we changed the actual name of the business, addresses, and the meter numbers for privacy purposes. If requested, we will share the detailed information of our research with the Town of Apple Valley's Officials.

The Town of Apple Valley recommended using 0.0225 gpd/sf, as the sewer flow discharge rate, this value is based on the existing actual sewer flow discharge from the Walmart facility (gpd/sf) in the Town of Apple Valley. In compliance with the Town of Apple Valley sewer discharge flow requirements, the anticipated sewer flow from Watson High Desert Logistics-East is:

$$2,832,600 \times 0.0225 \text{ gpd/s.f.} = 63,733 \text{ gpd sewer flow}$$

Conclusion:

The Project would discharge to the 1-MG subregional MBR plant located in the vicinity of Dale Evans Parkway and Otoe Road via the Town's 10-inch, 12-inch, and 15-inch collection system and the existing 18-inch interceptor in Otoe Road. The Town's existing system has adequate available capacity to service the Project with the exception of the existing 10-inch sewer in Dale Evans Parkway. This 3,000 linear feet segment of 10-inch sewer is at capacity, and the town of Apple Valley as part of their Capital Improvement Project is planning to construct a parallel sewer in the bottleneck segment of the Dale Evans Parkway sewer to alleviate the problem.

APPENDIX

Industrial Water Use (2022-2023)

<u>Customer List</u>	<u>Address</u>	<u>AF/YR</u>	<u>GPD</u>	Bldg SF	Parcel (Ac)
XYZ Inc	XYZ Drive	1.15	1,029.44	1,053,224	41.86
		4.40	3,929.14		
W.G. LLC	W.G. Street	0.29	260.23	138,784	7.79
A B S LLC	ABS Avenue	0.53	470.88	552,345	24.57
		0.97	862.43		
KMT LLC	KMT Street	1.82	1,620.96	397,927	19.1
MW Corp	MW PKWY	0.48	430.55	127,687	7.25
KMC Corp	KMC Blvd.	0.46	406.38	154,753	9.71
Best LLC	Best Road	1.49	1,326.43	573,112	32.33
		0.84	745.77		

Survey of large warehouses Potable water usage for calculating the sewer flow

<u>Customer List</u>	<u>Address</u>	<u>AF/YR</u>	<u>GPD</u>	Bldg SF	Parcel (Ac)	<u>GPD/Bldg. S.F</u>
XYZ Inc.	XYZ Drive	1.15	1,029.44	1,053,224	41.86	*0.0047
		4.40	3,929.14			
W.G. LLC	W.G. Street	0.29	260.23	138,784	7.79	0.0019
ABS LLC	ABS Avenue	0.53	470.88	552,345	24.57	0.0024
		0.97	862.43			
KMT LLC	KMT Street	1.82	1,620.96	397,927	19.1	0.0041
MW Corp	MW PKWY	0.48	430.55	127,687	7.25	0.0034
KMC Corp	KMC Blvd.	0.46	406.38	154,753	9.71	0.0026
Best LLC	Best Road	1.49	1,326.43	573,112	32.33	0.0036
		0.84	745.77			

* XYZ is a distribution center warehouse working around the clock.

Business: XYZ Inc
Facility Address: XYZ Drive
Water Account Number: Not available
Meter Number: Not available

Read Date	Days	Current Reading	Consumption (CCF)
6/22/2023	34	1594.00	37.00
5/19/2023	29	1557.40	34.40
4/20/2023	30	1523.00	34.00
3/21/2023	26	1489.10	29.10
2/23/2023	29	1460.80	33.80
1/25/2023	35	1427.30	41.30
12/21/2022	29	1386.20	46.20
11/22/2022	29	1340.40	44.40
10/24/2022	31	1296.30	41.30
9/23/2022	31	1255.30	41.30
8/23/2022	28	1214.70	35.70
7/26/2022	34	1179.10	44.10
6/22/2022	0	1135.70	39.70
2 years	365	1594.00	502.30
Water Consumption (GPD)			1,029
AF/YR			1.15

Business: XYZ Inc
Facility Address: XYZ Drive
Water Account Number: N/A
Meter Number: XXXXX

Read Date	Days	Current Reading	Consumption (CCF)
5/30/2023	11	6584.90	154.90
5/19/2023	29	6542.30	112.30
4/20/2023	30	6430.90	131.90
3/20/2023	25	6299.50	97.50
2/23/2023	29	6202.50	113.50
1/25/2023	35	6089.60	146.60
12/21/2022	29	5943.80	150.80
11/22/2022	29	5793.70	152.70
10/24/2022	31	5641.10	147.10
9/23/2022	31	5494.10	148.10
8/23/2022	28	5346.60	130.60
7/26/2022	34	5216.00	155.00
6/22/2022	0	5061.10	150.10
2 years	341	6584.90	1791.10
Water Consumption (GPD)			3,929
AF/YR			4.40

Business:	W. G. LLC
Facility Address:	W.G. Street
Water Account Number:	N/A
Meter Number:	N/A

Read Date	Days	Current Reading	Consumption (CCF)
7/24/2023	32	587.60	9.60
6/22/2023	34	578.70	10.70
5/19/2023	29	568.60	9.60
4/20/2023	30	559.90	9.90
3/21/2023	26	550.80	9.80
2/23/2023	29	541.79	9.79
1/25/2023	35	532.10	10.10
12/21/2022	29	522.29	9.29
11/22/2022	29	513.10	9.10
10/24/2022	31	504.80	8.80
9/23/2022	31	496.20	10.20
8/23/2022	28	486.80	8.80
7/26/2022	0	478.60	10.60
2 years	363	587.60	126.28
Water Consumption (GPD)			260
AF/YR			0.29

Business: ABS LLC
Facility Address: ABS Avenue
Water Account Number: N/A
Meter Number: XXXX

Read Date	Days	Current Reading	Consumption (CCF)
7/24/2023	32	856.10	16.10
6/22/2023	34	840.60	17.60
5/19/2023	29	823.60	13.60
4/20/2023	30	810.50	45.50
3/21/2023	26	765.70	15.70
2/23/2023	29	750.10	16.10
1/25/2023	35	734.40	17.40
12/21/2022	29	717.00	18.00
11/22/2022	29	699.30	15.30
10/24/2022	31	684.80	16.80
9/23/2022	31	668.40	13.40
8/23/2022	28	655.00	10.00
7/26/2022	0	645.00	13.00
2 years	363	856.10	228.50
Water Consumption (GPD)			471
AF/YR			0.53

Business: ABS LLC
Facility Address: ABS Ave.
Water Account Number: N/A
Meter Number: N/A

Read Date	Days	Current Reading	Consumption (CCF)
7/24/2023	32	1593.30	32.30
6/22/2023	34	1561.30	37.30
5/19/2023	29	1524.00	29.00
4/20/2023	30	1495.50	34.50
3/21/2023	26	1461.60	29.60
2/23/2023	29	1432.30	33.30
1/25/2023	35	1399.10	37.10
12/21/2022	29	1362.50	36.50
11/22/2022	29	1326.90	37.90
10/24/2022	31	1289.70	41.70
9/23/2022	31	1248.90	38.90
8/23/2022	28	1210.90	30.90
7/26/2022	34	1180.70	38.70
2 years	397	1593.30	457.70
Water Consumption (GPD)			862
AF/YR			0.97

Business: KMT LLC
Facility Address: KMT Street
Water Account Number: N/A
Meter Number: N/A

Read Date	Days	Current Reading	Consumption (CCF)
7/24/2023	32	2199.40	26.40
6/22/2023	34	2173.30	35.30
5/19/2023	29	2138.30	43.30
4/20/2023	30	2095.90	45.90
3/21/2023	26	2050.19	39.19
2/23/2023	29	2011.80	97.80
1/25/2023	35	1914.60	111.60
12/21/2022	29	1803.30	60.30
11/22/2022	29	1743.90	66.90
10/24/2022	31	1677.80	64.80
9/23/2022	31	1613.80	65.80
8/23/2022	28	1548.20	62.20
7/26/2022	0	1486.10	67.10
2 years	363	2199.40	786.59
Water Consumption (GPD)			1,621
AF/YR			1.82

Business: MW Corp
Facility Address: MW PKWY
Water Account Number: N/A
Meter Number: N/A

Read Date	Days	Current Reading	Consumption (CCF)
7/24/2023	32	662.30	14.30
6/22/2023	34	648.00	15.00
5/19/2023	29	633.30	13.30
4/20/2023	30	620.40	15.40
3/21/2023	26	605.50	13.50
2/23/2023	29	592.10	15.10
1/25/2023	35	577.20	19.20
12/21/2022	29	558.60	18.60
11/22/2022	29	540.10	16.10
10/24/2022	31	524.50	14.50
9/23/2022	31	510.20	14.20
8/23/2022	28	496.30	13.30
7/26/2022	0	483.70	14.70
2 years	363	662.30	197.20
Water Consumption (GPD)			406
AF/YR			0.46

Business: Best LLC
Facility Address: Best Road
Water Account Number: N/A
Meter Number: N/A

Read Date	Days	Current Reading	Consumption (CCF)
7/24/2023	32	1548.70	22.70
6/22/2023	34	1526.10	23.10
5/19/2023	29	1503.40	23.40
4/20/2023	30	1480.70	23.70
3/21/2023	26	1457.00	21.00
2/21/2023	27	1436.00	26.00
1/25/2023	35	1410.90	34.90
12/21/2022	29	1376.20	29.20
11/22/2022	29	1347.50	29.50
10/24/2022	31	1318.10	32.10
9/23/2022	31	1286.20	32.20
8/23/2022	28	1254.20	29.20
7/26/2022	0	1225.90	32.90
2 years	361	1548.70	359.90
Water Consumption (GPD)			746
AF/YR			0.84

Business: Best LLC
Facility Address: Best Rd.
Water Account Number: N/A
Meter Number: N/A

Read Date	Days	Current Reading	Consumption (CCF)
7/24/2023	32	2483.60	48.60
6/22/2023	34	2435.10	46.10
5/19/2023	29	2389.10	43.10
4/20/2023	30	2346.00	48.00
3/21/2023	26	2298.90	38.90
2/23/2023	29	2260.30	51.30
1/24/2023	34	2209.70	53.70
12/21/2022	29	2156.69	50.69
11/22/2022	29	2106.90	52.90
10/24/2022	31	2054.80	51.80
9/23/2022	31	2003.40	57.40
8/23/2022	28	1946.90	43.90
7/26/2022	0	1903.50	55.50
2 years	362	2483.60	641.89
Water Consumption (GPD)			1,326
AF/YR			1.49

Town of Apple Valley Flow Study
6/16/23 to 7/9/23

Manhole Location	Dale Evans Pkwy	Comanche Rd	Difference
Date and Time	Average Flow (Gallons/Day)	Average Flow (Gallons/Day)	(Gallons/Day)
6/16/2023 14:01	137893	129261	8632
6/17/2023 14:01	173932	125032	48900
6/18/2023 14:01	136263	96666	39597
6/19/2023 14:01	149478	117223	32255
6/20/2023 14:01	168367	129086	39281
6/21/2023 14:01	153812	138494	15318
6/22/2023 14:01	151841	110859	40982
6/23/2023 14:01	168006	113571	54435
6/24/2023 14:01	163580	85409	78171
6/25/2023 14:01	153383	105281	48102
6/26/2023 14:01	112647	91266	21381
6/27/2023 14:01	143170	124568	18602
6/28/2023 14:01	202445	138126	64319
6/29/2023 14:01	256412	137869	118543
6/30/2023 14:01	215757	115306	100451
7/1/2023 14:01	158425	127677	30748
7/2/2023 14:01	155617	92309	63308
7/3/2023 14:01	171389	107266	64123
7/4/2023 14:01	143929	129663	14266
7/5/2023 14:01	157420	92208	65212
7/6/2023 14:01	170696	159263	11433
7/7/2023 14:01	259778	170424	89354
7/8/2023 14:01	194479	165276	29202
7/9/2023 14:01	140991	116133	24858
Average Flow	168321	121593	46728