

MEMORANDUM

TO: Hamid Heidary

FROM: Ryan T. Hansen, P.E., Principal

SUBJECT: Sanitary Sewer Capacity Study
2565 Grant Street
Calistoga, California

This memorandum is provided to study the capacity of the existing 8" sewer that ends south of the Grant Street bridge and flows southeast along Centennial Circle. The proposed project at 2565 Grant Street would discharge into an existing manhole via a force main in order to connect to the City's system.

SANITARY SEWER

Existing Facilities

According to City base maps provided by the City, the site is currently has no sanitary sewer lateral service to the property or main within Grant Street beyond the Garrett Creek bridge. The nearest sanitary sewer manhole is located at the intersection of Grant Street and Garnett Creek Court. Sewer flow continues southeast along Grant Street for roughly 384' where the 8" sanitary sewer main connects to another existing manhole at the intersection of Grant Street and Centennial Circle. The sewer continues along Centennial Circle for roughly 305' connecting to a first manhole then roughly 451' to a second manhole and then and eventually connecting to a third existing manhole roughly for 361'. The existing 8" sanitary main in Centennial Circle believed to be at a depth of roughly 5' to 7' based on available survey information. Please see attachment 1 for City's base maps.

Project Capacity Impact Analysis

In order to evaluate the potential impact to the existing system, the following net capacity calculations have been provided to understand potential increase in wastewater flow when comparing the existing areas land uses, increase of single-family residential land use for the proposed project and potential single-family development in the same vicinity of the proposed project based on the General Plan land use. The existing 8" sewer main just downstream of the

proposed project at 2565 Grant Street will be evaluated based on available slopes and main size from surveyed pipe information.

The Average Daily Dry Weather Flows (ADWF) for these calculations are from generation rates of 200 gpd for 3-bedroom single-family homes and 285 gpd for 4-bedroom single family homes and 370 for 5-bedroom homes per attached City Resolution 2015-029, attachment 2.

There are 36 existing single-family homes in the tributary area of the downstream 8” section of sewer main being evaluated. All assumed to be 3-bedroom. Based on available property ---- and relative home size. The proposed 35 single-family project will consist of 4 to 5-bedroom units, so for this study 5-bedrooms will be assumed. Using the 1unit/acre requirement from the City’s General Plan for Rural Residential (RR) Zoning the only undeveloped parcel upstream of the Grant Street sewer was assumed a potential future unit count of 17 4-bedroom single-family homes.

Existing Capacity

- 1. Existing ADWF: $36 \times 200\text{gpd} = 7,200 \text{ gpd}$
- 2. Proposed ADWF: $35 \times 370 \text{ gpd} = 12,950 \text{ gpd}$
- 3. Future Buildout ADWF: $17 \times 285 \text{ gpd} = 4,845 \text{ gpd}$

In order to determine the Peak Wet Weather Flow (PWWF), a peaking factor of 7, which is a conservative assumption based on previous sewer studies completed by the City’s consultants. The peaking factor accounts for the rainfall dependent infiltration and inflow.

- | | |
|---------------------------|--|
| Existing PWWF = | Existing ADWF x Peaking Factor |
| 1. Existing PWWF = | $7,200 \text{ gpd} \times 7$ |
| Existing PWWF = | $50,400 \text{ gpd}$ |
| Proposed PWWF = | Proposed ADWF x Peaking Factor |
| 2. Proposed PWWF = | $(12,950 \text{ gpd} \times 7) + 50,400\text{gpd}$ |
| Proposed PWWF = | $141,050 \text{ gpd}$ |
| Future Buildout PWWF = | Proposed ADWF x Peaking Factor |
| 3. Future Buildout PWWF = | $(4,845 \text{ gpd} \times 7) + 141,050 \text{ gpd}$ |
| Future Buildout PWWF = | $174,965 \text{ gpd}$ |

- | | |
|-------------------------------|---|
| Net Increase Proposed = | $141,050 \text{ gpd} - 50,400 \text{ gpd} = 90,650 \text{ gpd}$ |
| Net Increase Future Buildout= | $174,965 \text{ gpd} - 50,400 \text{ gpd} = 124,565\text{gpd}$ |

The full flow capacity of the existing 8” sanitary sewer was calculated using surveyed invert data as well as using a Manning’s “n” value of 0.011.

Centennial Circle 8” Main at Full Capacity = 667,645 gpd at a slope of 0.51%

The existing capacity in PWWF Existing as a percentage of the full flow pipe capacity for the 8” main for the Study Area is:

- | | |
|---|---------------------|
| | Existing Percentage |
| 1. 8” Main – Centennial Circle = 50,400 gpd / 667,645 gpd | 8% |

The project net increase in PWWF Proposed as a percentage of the full flow pipe capacity for the 8” main for the Study Area is:

- | | |
|--|---------------------|
| | Proposed Percentage |
| 2. 8” Main – Centennial Circle = 141,050 gpd / 667,645 gpd | 21% |

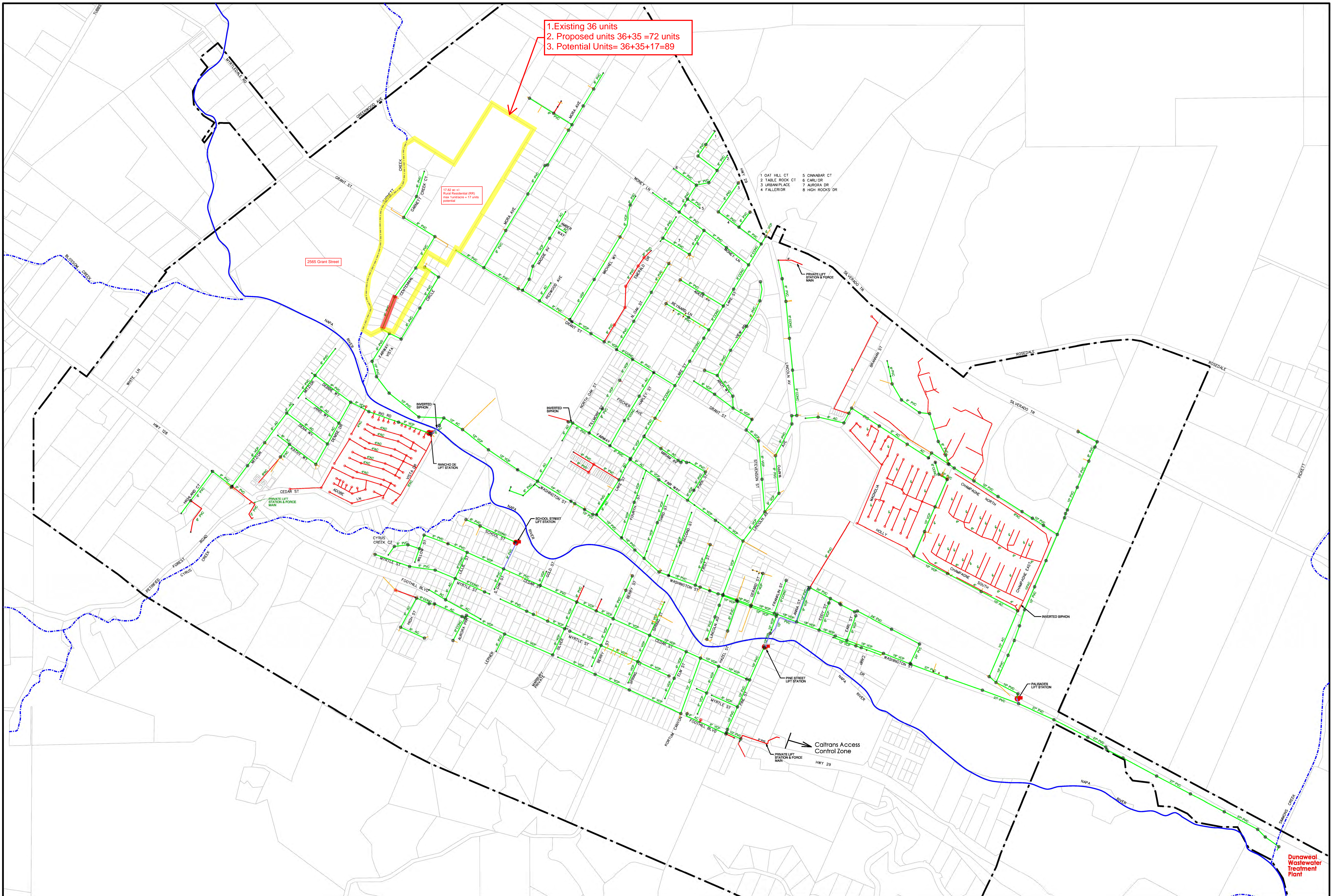
The net increase in PWWF Future Buildout as a percentage of the full flow pipe capacity for the 8” main for the Study Area is:

- | | |
|--|----------------------------|
| | Future Buildout Percentage |
| 3. 8” Main – Centennial Circle = 174,965 gpd / 667,645 gpd | 26% |

Conclusion

The capacity impact analysis was performed based on 35 existing single-family homes all assumed 5-bedroom and potential undeveloped areas assumed 17 single family-home from 1 unit per acre from the City’s General Plan. In comparing these proposed and potential densities to the defined density in the City General Plan.

Based on the full pipe capacity analysis there is an 21% net increase for the 8” main downstream of the proposed project along Centennial Circle and 26% net increase for the potential future buildout development. Total pipe capacity is not expected to exceed 26% in either scenario. Therefore, this net increase does not exceed the pipe capacity when the proposed 2565 Grant Street project and any potential future development withing the vicinity is added to the system.



Sanitary Sewer System

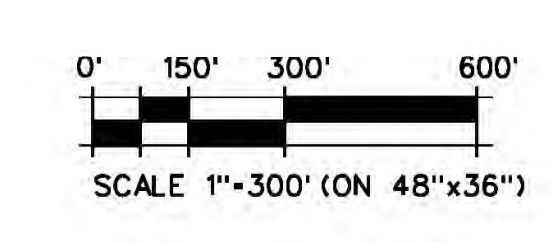
MAY 2019

Legend

- CALISTOGA CITY LIMITS
- SEWER LINE
- PRIVATE SEWER LINE
- SEWER MANHOLE
- LIFT STATION
- PRIVATE LATERAL (NOT ALL SHOWN)
- FORCE MAIN
- NAPA RIVER
- CREEK
- CLEAN-OUT/LAMP HOLES

System Inventory

TOTAL NUMBER OF CUSTOMERS = 1,370
 TOTAL PIPE LENGTH = 18.4miles
 INCLUDES 2,900LF OF FORCE MAIN
 NUMBER OF MANHOLES = 321 PUBLIC, 11 PRIVATE
 TOTAL PUBLIC LIFT STATIONS = 4



Dunwood Wastewater Treatment Plant

RESOLUTION NO. 2015-029

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CALISTOGA, COUNTY OF NAPA, STATE OF CALIFORNIA, RESCINDING RESOLUTION NO. 99-65 AND ADOPTING A REVISED STANDARDIZED USE TABLE FOR THE RESOURCE MANGEMENT SYSTEM

WHEREAS, on October 5, 1999, the City Council adopted Resolution 99-65 establishing the Standardized Use Table for the expected demand by various land uses on the City's water and wastewater treatment systems that are used to determine connection fees; and

WHEREAS, the Standardized Use Table uses the same water and wastewater use demand figures for so-called granny units – now known as second dwelling units – as it does for apartments and condominiums; and

WHEREAS, second dwelling units typically have no associated landscaping that requires irrigation, and CMC Section 17.37.030 limits them to one bedroom and 750 square feet in size, thereby resulting in lower water and wastewater demands than for a typical apartment or condominium; and

WHEREAS, recent water and wastewater demand studies determined that in Healdsburg and Santa Rosa, second dwelling units have actual demands of 0.165 annual acre-feet of water and 0.146 annual acre-feet of wastewater, which are significantly lower than the figures used by Calistoga; and

WHEREAS, the water usage of a continuously-occupied second dwelling unit in Calistoga averages 0.147 annual acre-feet of water, and therefore the figures contained in the above-referenced studies are appropriate for use in Calistoga; and

WHEREAS, very few second dwelling units have been constructed in Calistoga, and possible developers of such units have identified the City's water and wastewater connection fees as one of the greatest impediments to their development as potentially-affordable housing; and

WHEREAS, Housing Element Action 1.2-2 calls for the City to consider reducing the development impact fees on second dwelling units in order to encourage their construction; and

WHEREAS, on January 6, 2015, the City Council directed staff to evaluate the current water and wastewater connection charges for second units and staff concluded that lower demand figures are justified based on the above-referenced studies and actual usage; and

WHEREAS, on March 17, 2015, the City Council considered the recommended reduced water and wastewater usage figures for second dwelling units at a duly and properly-noticed public hearing and during its review, considered the public record, including the staff report, findings, and written materials and testimony presented by the public during the hearing; and


WHEREAS, the proposed amendments are exempt from the California Environmental Quality Act (CEQA) under Section 15061(b)(3) of the CEQA Guidelines, the "general rule" exemption, because it can be seen with certainty that there is no possibility that the action in question may have a significant effect on the environment.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Calistoga that Resolution No. 99-65 is hereby rescinded in its entirety.

NOW, THEREFORE, BE IT FURTHER RESOLVED by the City Council of the City of Calistoga that the Standardized Use Table attached hereto as Exhibit A, which reflects the lower demand figures for second dwelling units, is hereby adopted.

PASSED AND ADOPTED by the City Council at a duly noticed regular meeting held the **17th day of March, 2015**, by the following vote:

AYES:	Councilmembers Lopez-Ortega, Kraus and Barnes, Vice Mayor Dunsford and Mayor Canning
NOES:	None
ABSTAIN:	None
ABSENT:	None



CHRIS CANNING, Mayor

ATTEST:



KATHY FLAMSON, City Clerk

Exhibit A

Standardized Use Table for Resource Management System¹

Use Type	Water		Wastewater	
	Acre feet per year	Gallons per day	Acre feet per year	Gallons per day
Residential				
Single-family dwelling ²				
1 - 3 bedrooms	.428	382	.224	200
4 bedrooms ³	.540	482	.319	285
Apartment, condominium				
1 - 2 bedrooms	.382	341	.213	190
3 bedrooms ³	.494	441	.308	275
Mobile home	.149	133	.125	112
Second dwelling unit	.165	147	.146	130
Transient lodging - Hotel, motel, resort, B&B – per living or rental unit				
	.170	152	.150	134
Commercial - Retail, office, personal service – per 1000 sq. ft. of gross floor area				
	.110	98	.099	88
Bar – per 1000 square feet of gross floor area				
	.220	196	.198	177
Restaurant - per 1000 square feet of gross floor area				
	.580	518	.524	468

¹ The Department of Public Works may reduce the expected demand upon approval of an engineered water study demonstrating/ quantifying the site-specific water usage.

² The adoption of this resolution amending the Standardized Use Table is not intended to affect the number of bedrooms purchased through the now- defunct Leak Detection Program. All projects which purchased leak detection water shall only be vested for the original number of bedrooms purchased.

³ Each additional bedroom, add 100 gallons of water and 85 gallons of wastewater per day

