



August 4, 2023

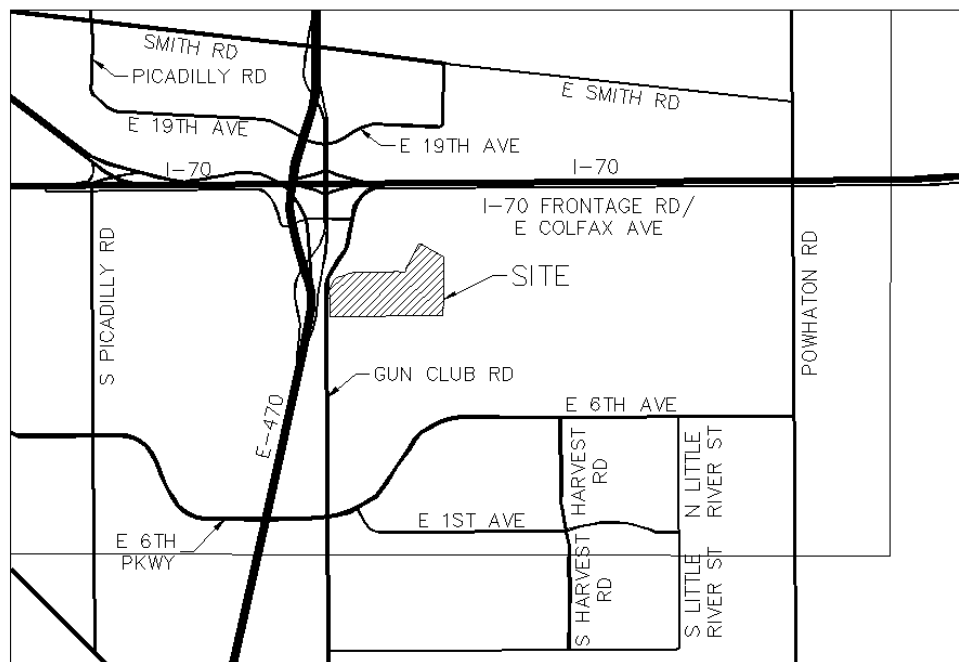
City of Aurora  
15151 E Alameda Pkwy  
Aurora, CO 80012

RE: Project Number - #1697968  
Project Name: Gun Club Road Data Center – Phase 2

**Subject: Gun Club Road Data Center – Phase 2  
Utility Conformance Letter**

***RE: Gun Club Road Data Center – Phase 2 – Utility Conformance Letter***

The intent of this letter is to provide an analysis of the impact of the proposed Gun Club Road Data Center – Phase 2 (the “Project”) on the Aurora Crossroads Utility Infrastructure Master Report (EDN: 221029). The Project consists of two 231,397 square-foot data center buildings, as well as private drives, surface parking lots and landscaping. The project includes two main site access points: one access point is off East 10<sup>th</sup> Avenue and will be used for emergency access purposes. The other access point is located at the northeast side of the property off Gun Club Road and will serve as the main access point to the site.



**VICINITY MAP**

1"=3000'

The Project is located southeast of the corner of E-470 and Gun Club Road in Section 6, Township 4 South, Range 65 West of the 6<sup>th</sup> Principal Meridian, City of Aurora, County of Arapahoe, State of Colorado. The Project is bounded by East Colfax Avenue to the north, State Highway E-470 to west and East 10<sup>th</sup> Avenue to the south.

The Project is within the Aurora Crossroads Filing No. 1 master utility infrastructure report (EDN: 221029) and is referred to as Planning Area 5 (PA-5). *Aurora Crossroads Filing No. 1 Master Utility Infrastructure Report* ("Master Report") was prepared by Martin/Martin and approved by the City of Aurora (the "City") on March 15, 2022. Compliance with the Master Report is explained in this letter. This letter is submitted in conjunction with the Site Plan which can be referenced for on-site utility design.

### EXISTING SITE CONDITIONS

The total project area for the Project is +/- 67 acres. The phase 1 part of this Project got approval on Gun Club Road Data Center – Phase 1 (EDN: 222024). The phase 1 project area was +/- 25 acres, including a singular Data Center building. The remaining 42 acres of the Project is currently vacant, undeveloped land. The public water and sanitary sewer mains that will ultimately serve the Project in Gun Club Road are existing utilities.

### DEVELOPED CONDITIONS

Public water main loop and sanitary sewer main will be routed through the Site within proposed public easements, located primarily within private drives. The water main will have three points of connection: one connection will be in East 10<sup>th</sup> Avenue at the southwest portion of the property, another connection will be tie into the existing Phase 1 water main that ultimately ties into a larger water main running through Gun Club Road and the last connection is at the northern property line where the water loop will connect to the existing stub provided from Gun Club Road. All sanitary sewer will flow via gravity (no lift stations proposed within the Project) to the public sanitary sewer stub provided off Gun Club Road.

The Project consists of adding two 231,397 square-foot data center buildings. Both buildings will have a dedicated domestic water service with meter and fire service stemming from the on-site public water main. Both buildings will also have a dedicated sanitary sewer service connecting to the public sanitary sewer main.

This letter is written to include the existing flows from Phase 1 and the additional flows from the buildings for Phase 2.

### SANITARY SEWER

The Project is compliant with the proposed sanitary sewer design found in the Master Report. The Master Report shows that PA-5 will have a total peak flow + infiltration of 0.64 cfs coming from the Project. However, the projected sanitary sewer loading from the project is anticipated to be 0.01 cfs. This value was assumed using the loading calculation of 20 gallons per person per CDPHE-Reg 43, Table 6-2. Refer to **Appendix E** for Table 6-2 from CDPHE-Reg 43. The number of peak time employees was used to determine the total population for the project. The site owner has confirmed

an estimate for 12 people for each building for two twelve-hour shifts. That totals 72 employees to factor into the sanitary sewer demand. The daily demand per person multiplied by the number of employees equals 1,440 gpd of average daily flow. We included infiltration flows that accounts for 10% of the average daily flows, so infiltration accounts for 144 gpd with a peaking factor of 4.0. Altogether, the total peak hour flow coming from the project is 5,904 gpd or 0.01 cfs. The proposed peak hour flows from the project are 0.63 cfs less than the anticipated loading from the Martin/Martin Utility Master Study.

The original Utility Master Study utilizes nodes, A, C, E and G to capture flows from the Project. In **Appendix B** you will see the anticipated sanitary sewer loading from the Master Study totals 0.64 cfs. The new calculated loading was assumed using the number of peak time employees and anticipated loading value per CDPHE-Reg 43, table 6-2.

The calculated peak hour flow rate is shown to be in compliance with the Master Utility Study per calculations in **Appendix A**. See **Appendix B** for original Master Utility Report calculations.

## WATER

The Project is generally compliant with the proposed water study found in the Master Report. However, the Master Report proposed that the land use would serve as commercial; this current use type is industrial. I have included the water usage for an industrial project in **Appendix C** along with the actual assumed flows from the Project. The Project will be a Data Center and the water uses for the three data center buildings will be used for drinking water and cleaning only. The cooling equipment for the generators will be electrically cooled; therefore, no processed water is being utilized for cooling by this Project.

The Master Report calculates the max hour demand to be 439,290 gpm. The Project used peak time employees' numbers per building, per discussions with the client. The Project assumes two twelve-hour shifts for a total of 72 employees utilizing fifty gallons per person. The average day demand was calculated assuming 72 total employees are using 50 gallons which equates to 3,600 gpd/ac. The max day and max hour demands were calculated utilizing the average day demand of 3,600 gpd/ac. The calculated max hour demand for the Project is 16,204.92 gpd/ac. The calculated max hour demand is 423,085 gpd/ac less than what was anticipated to come from the Project.

The calculated max hour demand is shown to be in compliance with the Master Utility Study per calculations in **Appendix C**. See **Appendix D** for original Master Utility Report calculations.

## CONCLUSION

It is our conclusion that the Site is in conformance with the design and assumptions within the Master Utility Report. Should you have any questions or concerns please do not hesitate to contact me at [Stephen.litsas@kimley-horn.com](mailto:Stephen.litsas@kimley-horn.com) or 720-647-6231.

Sincerely,



Stephen Litsas, P.E.  
Kimley-Horn and Associates, Inc.

## Appendices:

### **Appendix A**

Sanitary Sewer Calcs

### **Appendix B**

Original Master Utility Report Sanitary Sewer Calcs

### **Appendix C**

Water Calcs

### **Appendix D**

Original Master Utility Report Water Calcs

### **Appendix E**

CDPHE- Regulation 43, Table 6-2

APPENDIX A

PROJECT: Gun Club Road Data Center - Phase

COMPUTED BY: CPW  
REVIEWED BY: SAL  
DATE: 8/4/2023

COA PROJECT NO: DA-2231-09

SHEET: 1 OF 1

BASIN	AVG. FLOW	EQUIVALENT POPULATION PER ACRE	TOTAL AREA	TOTAL POPULATIO N	AVG. DAILY FLOW	INFLOW/INFILTRATION	PEAKING FACTOR	PEAK HOUR FLOW	PEAK HOUR FLOW
	GPD/AC.		ACRES		GPD				CFS
PA-5 (REV) Master Study	1,500	22.00	67.41	1,483	101,115	10,112	4.00	414,571.50	0.64
Proposed Flows from Project	N/A	N/A	N/A	72	1,440	144	4.00	5,904.00	0.01

Notes:

1. Peak Flow Calculations are based on Section 5.03 of the Aurora Water, Sanitary Sewer & Storm Drainage Infrastructure Standards and Specifications

2. Assumed value of 20 for GDP (gallons a day per person) of wastewater use per CDPHE-Reg 43, table 6-2

3. Assumed 72 employees based on peak time employees on two shifts for three buildings

AURORA CROSSROADS  
SANITARY SEWER AVERAGE FLOWS AND POPULATION

NON-RESIDENTIAL (MGD)

Basin	Area (Ac)	Type of Development	Avg. Daily Flow/Ac (gpd)	Avg. Daily Flow (MGD)	Equivalent Population /Ac	Population
PA-1	30.05	MIXED COMM	**	**	22	661.10
PA-4	11.49	COMMERCIAL	1500	0.017	22	252.78
PA-5	67.41	COMMERCIAL	1500	0.101	22	1483.02

\* PA-1 FLOW CALCULATED PER CITY AND COUNTY OF DENVER CRITERIA

**AURORA CROSSROADS  
SANITARY SEWER PEAK FLOW CALCULATIONS**

Node	Basins Added to System	Total Avg. Daily Flow @ Node (MGD)	Total Upstream Population	Peaking Factor = $5/p^{0.167}$	Peak Flow (MGD)	Infiltration (MGD)	Peak Flow + Infiltration (MGD)	Peak Flow + Infiltration (cfs)
A	25% PA-5	0.025	370.76	4.00	0.101	0.003	0.104	0.160
C	20% PA-5	0.020	296.60	4.00	0.081	0.002	0.083	0.128
D	NODE A+NODE C	0.046	667.36	4.00	0.182	0.005	0.187	0.289
E	15% PA-5	0.015	222.45	4.00	0.061	0.002	0.062	0.096
F	NOED D+NODE E	0.061	889.81	4.00	0.243	0.006	0.249	0.385
G	40% PA-5	0.040	593.21	4.00	0.162	0.004	0.166	0.257
H	NODE F+NODE G	0.101	1483.02	4.00	0.404	0.010	0.415	0.641
J	60% PA-1	0.068	396.66	4.00	0.271	0.007	0.278	0.430
K	NODE H+NODE J	0.169	1879.68	4.00	0.676	0.017	0.693	1.072
L	40% PA-1	0.045	264.44	4.00	0.181	0.005	0.185	0.287
M	NODE K+NODE L+PA-4	0.231	2144.12	4.00	0.925	0.023	0.949	1.468

**PA-5 = NODES A + C + E + G = 0.64 CFS**

**AURORA CROSSROADS  
SANITARY SEWER ROUTING CALCULATIONS**

From Node:	To Node:	Basins Added to System	Total Flow Flow (cfs)	Total Flow Flow (MGD)	Required Pipe Size (in)	Minimum Slope* (%)	Maximum Slope* (%)	Percentage Full (%)
*(see note below)								
A	D	25% PA-5	0.160	0.104	8	0.45	4.94	27.6
C	D	20% PA-5	0.128	0.083	8	0.54	4.94	23.6
D	F	45% PA-5	0.289	0.187	8	0.40	4.94	38.9
E	F	15% PA-5	0.096	0.062	8	0.67	4.94	19.4
F	H	60% PA-5	0.385	0.249	8	0.40	4.94	45.6
G	H	40% PA-5	0.257	0.166	8	0.40	4.94	36.5
H	K	100% PA-5	0.641	0.415	8	0.40	3.67	62.2
J	K	60% PA-1	0.430	0.278	8	0.40	3.67	48.4
K	M	PA-5+60% PA-1	1.072	0.693	10	0.40	2.87	58.9
L	M	40% PA-1	0.287	0.185	8	0.40	4.94	38.6
M	N	PA-1+PA-5+PA-4	1.468	0.949	10	0.40	2.87	73.9

\* Note: Minimum slopes were determined as the greater of 0.40% as required by the City of Aurora or the slope required to achieve a minimum velocity of 2.0 ft/sec and a maximum percent full capacity of 75% for pipes 12" and smaller or 80% for pipes larger than 12".

Maximum slopes were determined based on a velocity of 10 ft/sec for full or half pipe conditions.

Refer to attached Flow Master analysis sheets for slope calculations





# APPENDIX C

PROJECT: Gun Club Road Data Center - Phase

COMPUTED BY: CPW

REVIEWED BY: SAL

DATE: 8/4/2023

COA PROJECT NO: DA-2231-09

SHEET: 1 OF 1

BASIN	AVG DAY DEMAND (GPD/AC)	TOTAL AREA	AVG DAY DEMAND (GPD/AC)	AVG DAY DEMAND (GPM)	MAX DAY DEMAND (GPD/AC)	MAX DAY DEMAND (GPM)	MAX HOUR DEMAND (GPD/AC)	MAX HOUR DEMAND (GPD/AC)
		ACRES						
PA-5 (REV) Master Study (COMMERCIAL)	1,500.00	65.08	97,620	4,200	273,336	190.00	6,750.00	439,290.00
ANTICIPATED FLOWS FROM INDUSTRIAL PROJECT	1,200.00	65.08	78,096	3,360	218,669	152.00	5,400.00	351,432.00
ASSUMED FLOWS FROM THE PROJECT	N/A	65.08	3,600	155	10,087	7.01	249.00	16,204.92

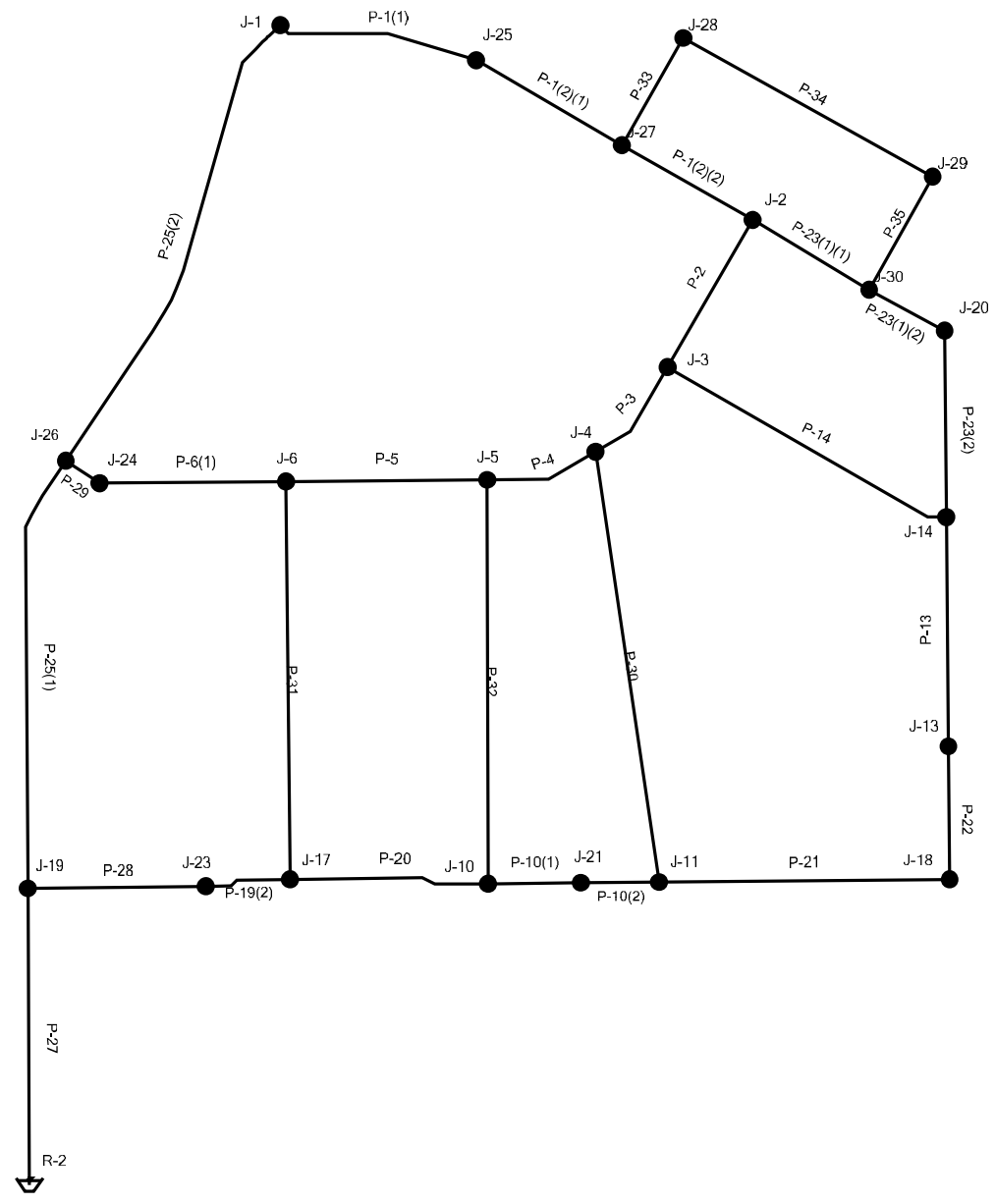
## Notes:

1. Peak Flow Calculations are based on Section 5.03 of the Aurora Water, Sanitary Sewer & Storm Drainage Infrastructure Standards and Specifications
2. Assumed 50 gallons per person for domestic flows
3. Assumed 72 employees based on peak time employees on two shifts for three buildings

AURORA CROSSROADS  
NON-RESIDENTIAL WATER CALCULATIONS  
*Average & Maximum Demand Calculation*

Type of Development	Planning Area	Water Model Node for Applied Demand	Total Acres	AVG DAY DEMAND (GPD/AC) Based On Land Use	AVG DAY DEMAND (GPD/AC)	AVG DAY DEMAND (GPM)	MAX DAY DEMAND (GPD/AC) Based On Land Use	MAX DAY DEMAND (GPD/AC)	MAX DAY DEMAND (GPM)	MAX HOUR DEMAND (GPD/AC) Based On Land Use	MAX HOUR DEMAND (GPD/AC)	MAX HOUR DEMAND (GPM)	REQUIRED FIRE FLOW (GPM)	MAX DAY DEMAND + FIRE FLOW (GPM)
COMMERCIAL	PA-1	J-6, J-25	30.05	1,500	45,069	31.30	4,200	126,193	88	6,750	202,811	141	2500	2,588
COMMERCIAL	PA-4	J-2	11.46	1,500	17,190	12	4,200	48,132	33	6,750	77,355	54	2500	2,533
COMMERCIAL	PA-5	J-23, J-24	65.08	1,500	97,620	68	4,200	273,336	190	6,750	439,290	305	2500	2,690

AURORA CROSSROADS WATER PLAN



- (iii) Explanation and justification for the comparability of the tested facilities with the proposed facility.

5. Flow Equalization

- a. Flow equalization may be used if a facility has flows that vary from day to day by more than four times the average flow.
- b. The highest peak assumed must be at least equal to the full capacity of the facility.
- c. The stored flow must be distributed to the soil treatment area before the next greater-than-average peak.
- d. Flow equalization may be used only if:
  - (1) The facility is non-residential;
  - (2) The facility is only used for one purpose;
  - (3) Flows will follow a predictable pattern; and
  - (4) There is a long-term expectation that size and pattern of the flows will remain the same.
- e. Timed dosed pressure distribution or timed dosed NDDS must be used. The soil treatment area reduction for pressure distribution (Table 10-2) must not be used in addition to the flow equalization reduction.
- f. Contingency plans must be made for expanding the capacity of the OWTS in the event of changed use at the facility.

**TABLE 6-2 For Design Purposes, the Estimated Daily Wastewater Flow and BOD<sub>5</sub> Load Per Person Unless Otherwise Noted**

RESIDENTIAL WASTEWATER	GPD	BOD <sub>5</sub> IN POUNDS PER DAY
Single-family dwellings	75	.20
Auxiliary buildings, by fixture type		
Bath/Shower	14.7	.014
Dishwasher	1.8	.002
Kitchen sink with garbage grinder	5.8	.052
Laundry washer	19.5	.037
Lavatory	8.4	.021
Water closet (toilet)	24.8	.029
Hotels and motels per room	75	.15
Multiple-family dwellings or apartments	75	.20
Boarding and rooming houses (users absent during working hours)	50	.15
Tiny Homes <sup>3</sup> , per unit	150	.40
Mobile home	75	.20
Mobile home park per space	300	.80

COMMERCIAL WASTEWATER	GPD	BOD <sub>5</sub> IN POUNDS PER DAY
Facilities with short-term or transient visitors		
Examples: Airports or bus stations per passenger; fairgrounds per person attending; ball parks, race tracks, stadiums, theaters or auditoriums per seat	5	.02
Airport per employee	10	.06
Barber and beauty shops per chair	100	.70 <sup>1</sup>
Bowling alleys per lane - toilet wastes only	5	.03 <sup>1</sup>
Country club per member	30	.02
County club per employee	20	.06
Dentist offices per non-wet chair	50	.14 <sup>1</sup>
Doctor offices per doctor	250	.80 <sup>1</sup>
Factories and plants exclusive of industrial wastewater per employee per eight-hour shift – no showers	20	.05
Factories and plants exclusive of industrial wastewater per employee per eight-hour shift - showers provided	35	.08
Kennels per dog	30	.20
Laundries, self-service per commercial washer	400	.75
Office buildings per employee per eight-hour shift	15	.06
Service stations per toilet fixture	250	.50 <sup>1</sup>
Stores and shopping centers per square foot of retail space	.1	.01 <sup>1</sup>
Work or construction camps semi-permanent with flush toilets	50	.17
Work or construction camps semi-permanent without flush toilets	35	.02
FOOD SERVICE ESTABLISHMENT	GPD	BOD <sub>5</sub> IN POUNDS PER DAY
Restaurant open 1 or 2 meals per seat	50	.06/meal
24-hour restaurant per seat	75	.07/meal served
Restaurant with paper service only per seat	25	.01/meal served
Additional for bars and cocktail lounges per seat	30	.02
Drive-in restaurant per car space	50	.02
INSTITUTIONAL WASTEWATER WITHOUT KITCHENS UNLESS OTHERWISE NOTED	GPD	BOD <sub>5</sub> IN POUNDS PER DAY
Churches per seat; without any food service, or other uses	3.5	.01
Churches, per seat; warming kitchen only, no major food service	5	.01
Churches, per seat; with food service, per meal served <sup>4</sup>	4	.02
Hospitals per bed space	250	.20
Nursing homes; Group homes for developmentally disabled, per bed space	125	.20
Schools, Boarding per person	100	.17
Schools, Day without cafeteria, gym or showers	15	.04
Schools, Day with cafeterias, no gym or showers	20	.08
Schools, Day with cafeterias, gym and showers	25	.10
Schools, Day additional for school workers	15	.06

RECREATIONAL AND SEASONAL WASTEWATER USE	GPD	BOD <sub>5</sub> IN POUNDS PER DAY
Camps, day, no meals served	15	.12
Luxury resort	125	.17
Resort night and day	50	.12
Campground per campsite <sup>2</sup>	50	.12
Public park flush toilet per fixture per hour when park is open	36	.04 lbs./fixture
Public park urinal per fixture per hour when park is open	10	.01 lbs./fixture
Public park shower per fixture per hour when park is open	100	.10 lbs./fixture
Public park faucet per fixture per hour when park is open	15	.04 lbs./fixture
Swimming pools and bathhouses	10	.06
Travel trailer parks with individual water and sewage hookup per unit <sup>2</sup>	100	.24
Travel trailer park without individual water and sewage hookup per unit <sup>2</sup>	50	.12

- 1 BOD levels need further verification depending on the specific use of the facility.
- 2 Laundry facilities are to be calculated on a per commercial washer basis in accordance with other elements of this table.
- 3 For the purposes of this Table, a "Tiny home" is a structure (a non-recreational vehicle) that has only one bedroom and has <400 sq.ft. of livable space, including lofts. In this instance, the OWTS may be sized for only one bedroom.
- 4 For churches with food service, the 4 gal/meal must be added to the 3.5 gal/seat to determine projected design flows.

#### B. Wastewater Strength

1. Table 6-3 includes levels of treatment that can be achieved by various OWTS components, excluding the soil treatment area. Systems qualifying for these treatment levels except TL1 produced by a septic tank alone must be approved under section 43.13. of this regulation. If soil treatment area or vertical separation distance reductions are permitted, the local public health agency must have a maintenance oversight program under section 43.14.D. in place.
2. High strength waste must be reduced to at least Treatment Level TL1 quality or lower before applying to a soil treatment area. Waste strength levels defined in Tables 6-3 and 6-4 must be used to determine compliance.

**Table 6-3 Treatment Levels**

Treatment Level	BOD <sub>5</sub> (mg/L)	CBOD <sub>5</sub> <sup>1</sup> (mg/L)	TSS (mg/L)	Total Nitrogen (mg/L)
TL1 <sup>2</sup>	180	-	80	60-80
TL2	-	25	30	N/A <sup>3</sup>
TL2N	-	25	30	>50% reduction <sup>4</sup>
TL3	-	10	10	N/A <sup>3</sup>
TL3N	-	10	10	20 mg/L

Shading indicates higher treatment levels.

- 1 Requirements for CBOD<sub>5</sub> are only related to effluent samples from a higher level treatment system.