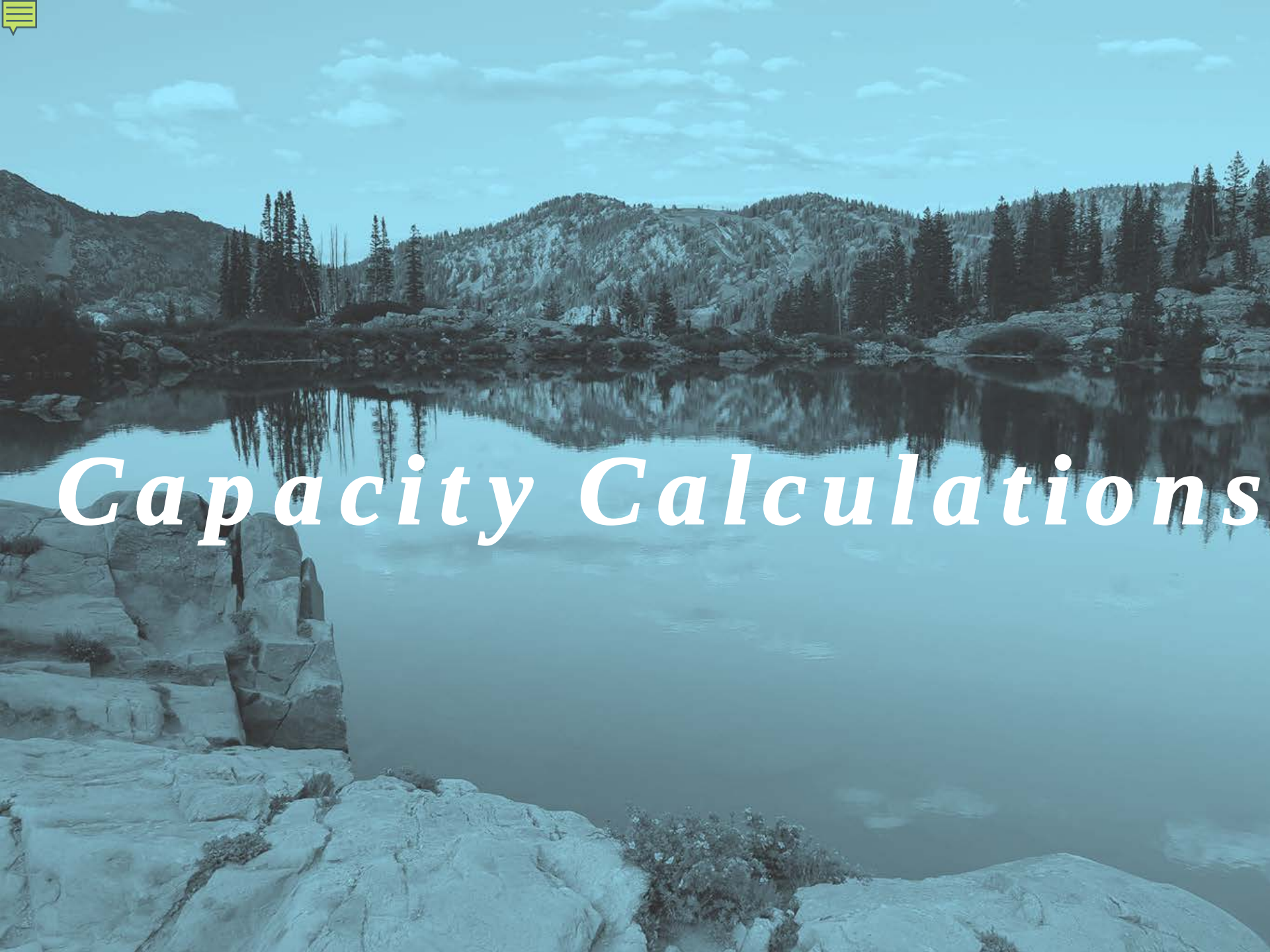
UTAH DEPARTMENT *of*
ENVIRONMENTAL QUALITY
DRINKING
WATER

Sanitary Survey


Capacity Calculations

R309-510 Minimum Sizing Requirements

Source Capacity

Storage Volume

R309-510 Minimum Sizing Requirements

Source Capacity

Storage Volume

R309-510-7 Minimum Source Sizing

Indoor + Outdoor

- **Indoor Use** (Tables 510-1 & 2)

  Residential Connection or ERC

  Peak Day Demand = _____ gpd/connection

  Avg. Yearly Demand = _____ gal/connection

- **Outdoor Use** (Table 510-3)

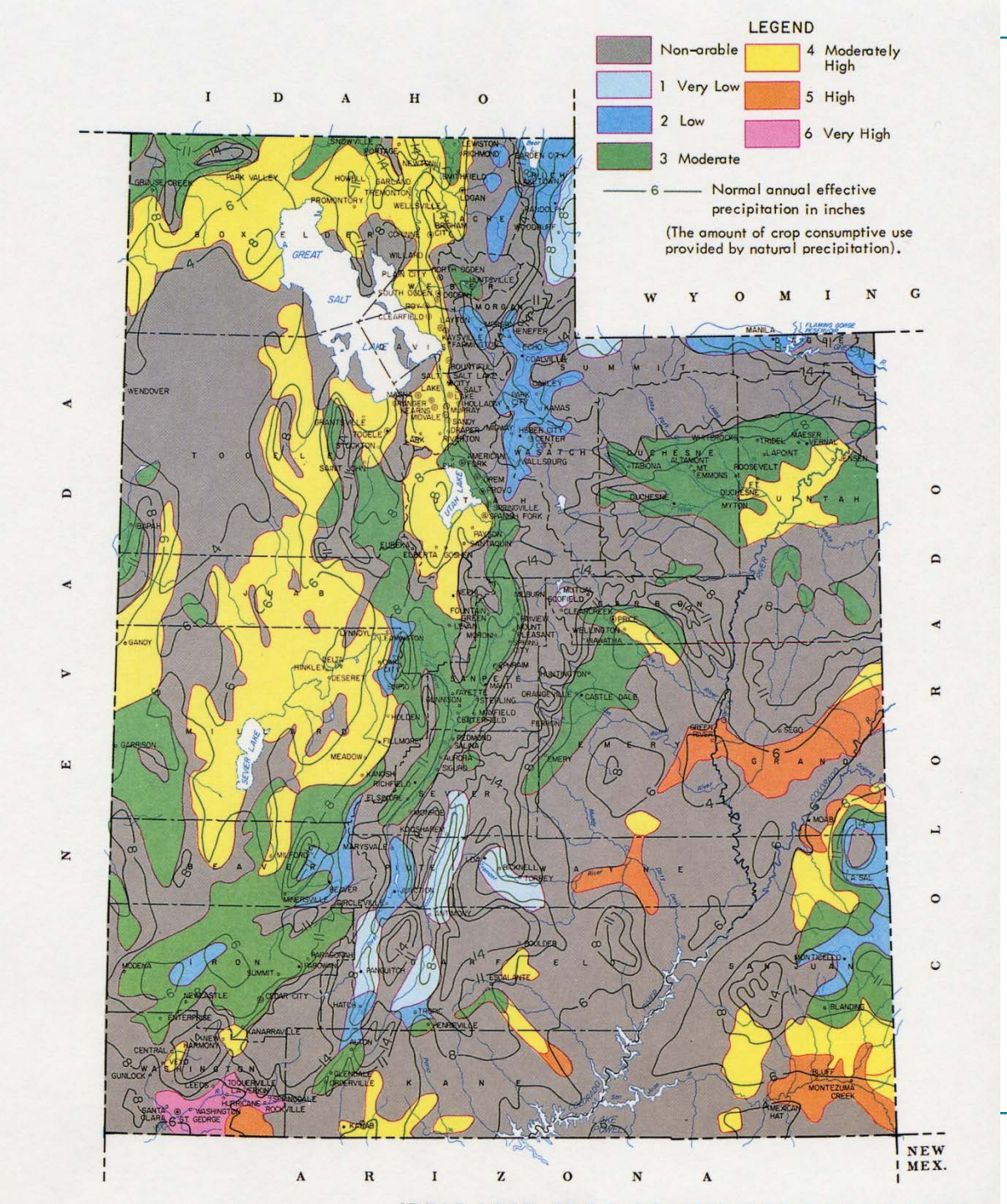
  PWS provides irrigation water in Zone 3

  Peak Day Demand = _____ gpm/irrigated acre

  Avg. Yearly Demand = ____ AF/irrigated acre

Table 510-1 Source Demand for Indoor Use		
Type of Connection	Peak Day Demand	Average Yearly Demand
Year-Round Use		
Residential	800 gpd/conn	146,000 gal./conn
ERC	800 gpd/ERC	146,000 gal./ERC
Seasonal / Non-Residential Use		
Modern Recreation Camp	60 gpd/person	(see note 1)
Semi-Developed Camp a. With pit privies b. With flush toilets	 5 gpd/person 20 gpd/person	 (See note1) (See note 1)
Hotels, Motel & Resort	150 gpd/unit	(See note1)
Labor Camp	50 gpd/person	(See note1)
Recreational Vehicle Park	100 gpd/pad	(See note1)
Roadway Rest Stop	7 gpd/vehicle	(See note1)
Recreational Home Development	400 gpd/conn	(See note1)

Table 510-3 Source Demand for Irrigation (Outdoor Use)		
Map Zone	Peak Day Demand(gpm/irrigated acre)	Average Yearly Demand(AF/ irrigated acre)
1	2.26	1.17
2	2.80	1.23
3	3.39	1.66
4	3.96	1.87
5	4.52	2.69
6	4.90	3.26


LEGEND
Non-arable
1 Very Low
2 Low
3 Moderate
4 Moderately High
5 High
6 Very High
6 Normal annual effective precipitation in inches
(The amount of crop consumptive use provided by natural precipitation).
I D A H O
W Y O M I N G
N E V A D A
C O L O R A D O
A R I Z O N A
NEW MEX.
GREAT SALT LAKE
UTAH LAKE
SEVIER LAKE

R309-510 Minimum Sizing Requirements

Source Capacity

Storage Volume

R309-510-8 Minimum Storage Sizing

Indoor + Outdoor + Fire + Emergency

- **Indoor & Outdoor Storage Volume (Tables 510-4 & 5)**
  - Residential Indoor Use = ____ gal/ERC (average day demand)
  - Outdoor Use = ____ gal/irrigated acre in Zone 3
- **Fire Suppression Storage Volume**
  - Local fire marshal requirements of flow and duration
  - Default 60,000 gal. (= 1,000 gpm x 60 min.) if no better data (R309-510-9(4)(c))
- **Emergency Storage Volume**
  - System determines need & volume.

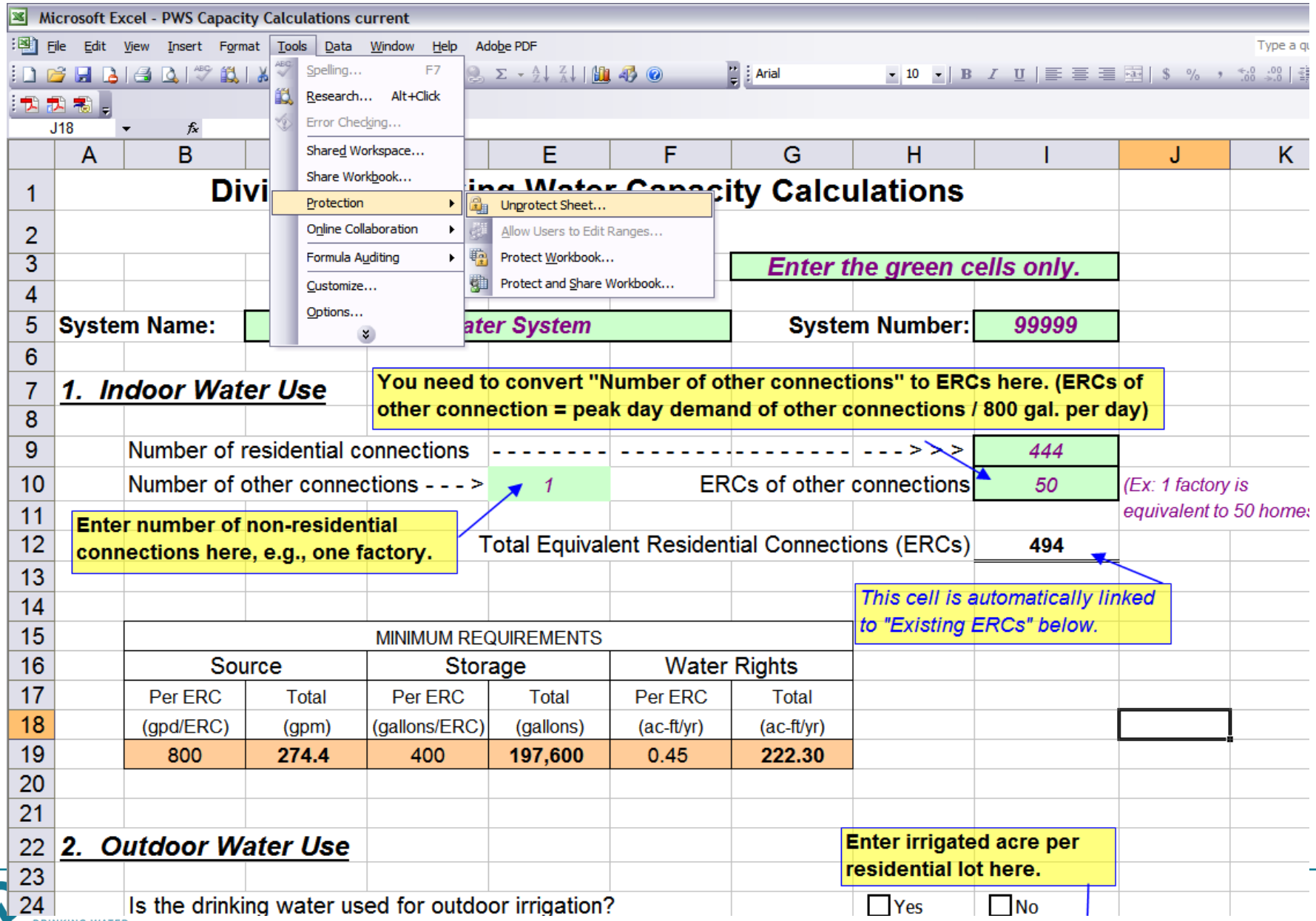
Table 510-4 Storage Volume for Indoor Use	
Type	Volume Required(gallons)
Community Systems	
Residential; per single resident service connection	400
Non-Residential; per Equivalent Residential Connection (ERC)	400
Non-Community Systems	
Modern Recreation Camp; per person	30
Semi-Developed Camp; per person a. with Pit Privies b. with Flush Toilets	 2.5 10
Hotel, Motel, & Resorts; per unit	75
Labor Camp; per unit	25
Recreational Vehicle Park; per pad	50
Roadway Rest Stop; per vehicle	3.5
Recreational Home Development; per connection	400

Table 510-5 Storage Volume for Outdoor Use	
Map Zone	Volume Required (gallons/irrigated acre)
1	1,782
2	1,873
3	2,528
4	2,848
5	4,081
6	4,964

Capacity Calculation Spreadsheet

1. Scenario 1 – Fable Haven Town
2. Scenario 2 – Copycat Company
3. Scenario 3 – Papa Bubba Cafe
4. Scenario 4 – Spirited Away CG
5. Scenario 5 – Fast & Furious Rest Stop
6. Scenario 5 – Sunrise RV Park

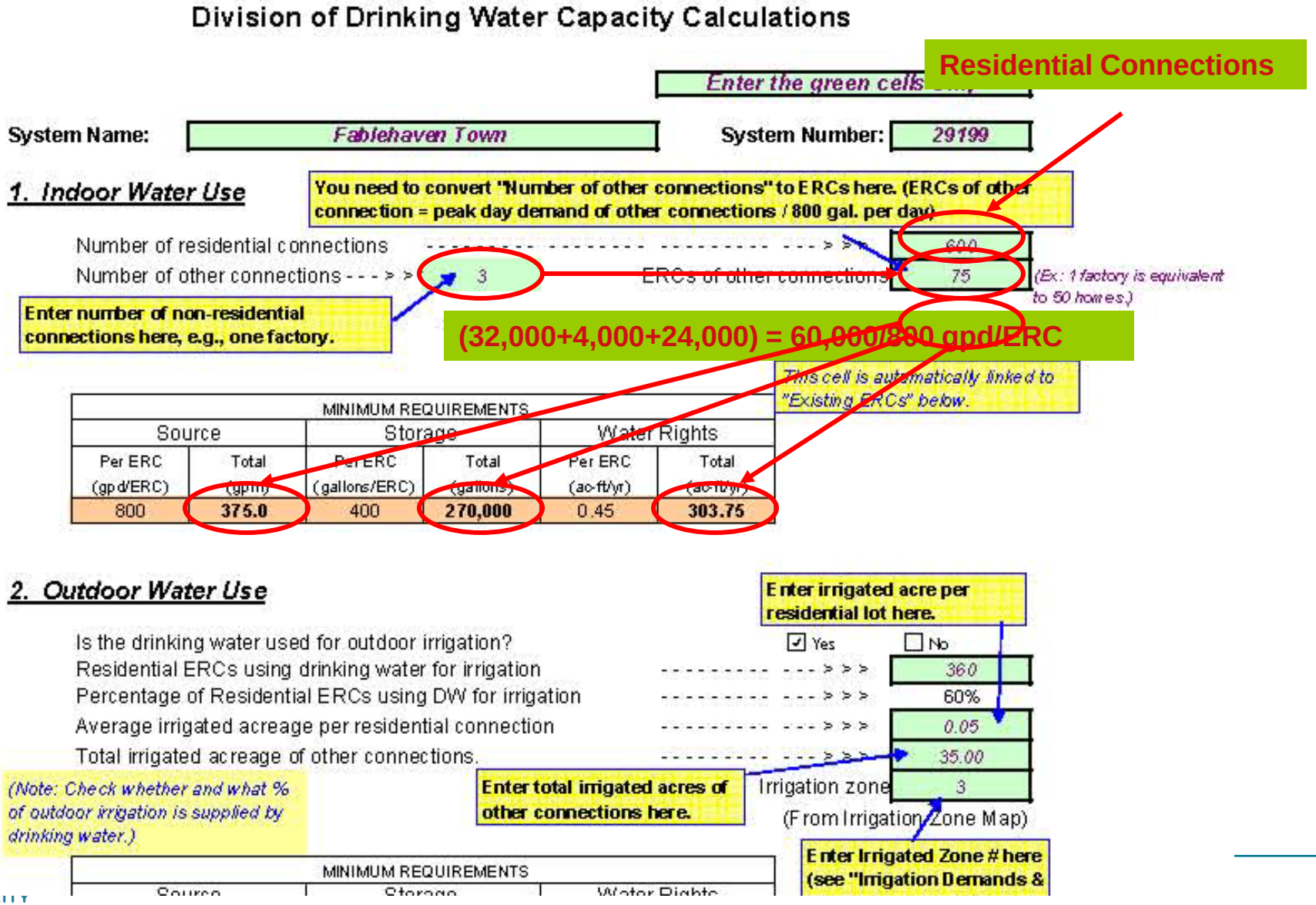
Capacity Calc Spreadsheet – Save and Unprotect



Scenario 1

- Fable Haven Town
  - System Type?
  - **COMMUNITY**

Scenario 1 – Indoor Water Use



Scenario 1 – Outdoor Water Use

Number of residential connections ---------- 600

Number of other connections - - - > > : 3 ERCs of other connections 75 (Ex.: 1 faci to 50 hom

Enter number of non-residential connections here, e.g., one factory.

Total Equivalent Residential Connections (ERCs) **675**

This cell is automatically linked to "Existing ERCs" below.

MINIMUM REQUIREMENTS					
Source		Storage		Water Rights	
Per ERC (gpd/ERC)	Total (gpm)	Per ERC (gallons/ERC)	Total (gallons)	Per ERC (ac-ft/yr)	Total (ac-ft/yr)
800	**375.0**	400	**270,000**	0.45	**303.75**

600 Res Conn /360 Outdoor connections = 60%

2. *Outdoor Water Use*

Enter irrigated acre per residential lot here.

Is the drinking water used for outdoor irrigation? ☑ Yes ☐ No

Residential ERCs using drinking water for irrigation ---------- 360

Percentage of Residential ERCs using DW for irrigation ---------- 60%

Average irrigated acreage per residential connection ---------- 0.05

Total irrigated acreage of other connections. ---------- 35.00

(Note: Check whether and what % of outdoor irr drinking wate

Enter total irrigated acres of

Irrigation Zone 3

rom Irrigation Zone Map)

10 ac (Park)+ 20 ac (schools) + 5 ac (cemetery) = 35 acres

Enter Irrigated Zone # here (see "Irrigation Demands & Map" tab on the bottom of this screen).

MINIMUM REQUIREMENTS					
Source		Storage		Water Rights	
Per ERC (gpd/ERC)	Total (gpm)	Per ERC (gallons/ERC)	Total (gallons)	Per ERC (ac-ft/yr)	Total (ac-ft/yr)
244	**180**	126	**133,984**	0.08	**87.98**

Scenario 1 – Existing Source and Storage

Fablehaven Town

Equivalent Residential Connections	
Existing ERCs	675
Obligated Future ERCs	48
Home Run Subdivision	*30*
Canyon Cove Homes	*18*
Total Projected ERC's	**723**

For projected system demand (including existing & future connections), insert this number to Cell I9 above as "Number of residential connection.

Sources		(in gallons per minute)
WS001	*A Spring*	*260*
WS005	*B Well*	*100*
WS007	*next town wholesale*	*200*
Total Source Capacity		**560**
Max. ERC allowed (indoor use only)		*1008*

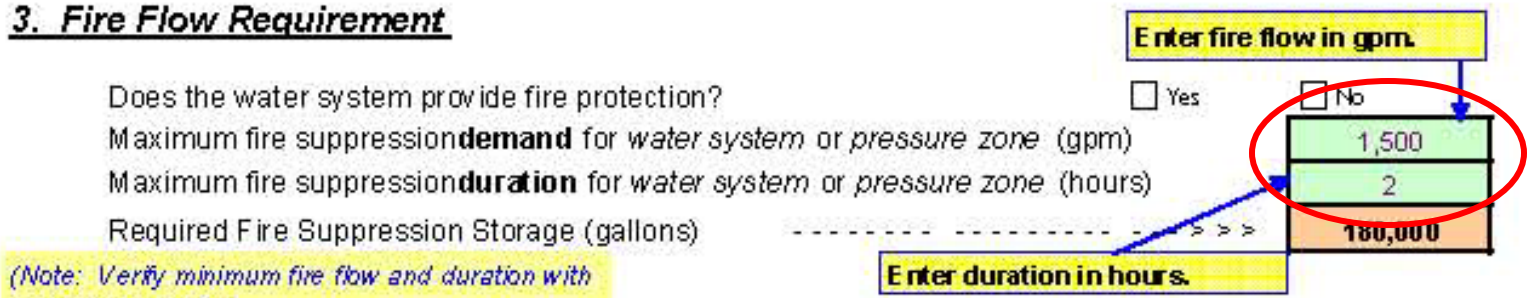
Storage		(in gallons)
ST001	*South Tank*	*120,000*
ST002	*East Tank*	*150,000*
ST003	*West Tank*	*80,000*
ST004	*North Tank*	*120,000*
ST005	*Middle Tank*	*50,000*

(Diaphragm or air pressure tank storage shall not be considered effective storage for community systems or NTNC with excessive demand.)

Total Storage Capacity	**520,000**

Located at Bottom of Spreadsheet

Scenario 1 – Fire Flow



Scenario 1 – Total System Demand

Total Water System Requirements *(= indoor use + outdoor use + fire flow demand)*

MINIMUM REQUIREMENTS					
Source		Storage		Water Rights	
Per ERC (gpd/ERC)	Total (gpm)	Per ERC (gallons/ERC)	Total (gallons)	Per ERC (ac-ft/yr)	Total (ac-ft/yr)
1,044	**555**	526	**583,984**	0.53	**391.73**

Calculated system requirements

Sum of Indoor (375 gpm) + Outdoor (180 gpm) = 555 gpm

Sum of Indoor + Outdoor + Fire Suppression = 583,984 gallons

meet peak day

Existing Sources:	560	**gpm**
Required Source Capacity:	555	**gpm**
% of Req'd Capacity:	101.0%	
Difference:	**5**	**gpm**

Automatically linked to "Total Source Capacity" below

Negative number means (1) additional source is needed and (2) IPS points should be assessed.

Does this system have adequate storage capacity per R309-510-8?

IPS points may be assessed to a system that does not have adequate storage capacity to meet average yearly flow requirements.

Existing Storage:	520,000	**gal**
Required Storage Capacity:	583,984	**gal**
% of Req'd Capacity:	**89.0%**	
Difference:	**-63,984**	**gal**

Automatically linked to "Total Storage Capacity" below

Negative number means (1) additional volume is needed and (2) IPS points should be assessed.

Other System Types

Non-Community Water Systems, ERCs for Indoor Water Use (*See R309-510, Tables 510-1, 2, and 4, for other facility type calc.)

	MINIMUM REQUIREMENTS FOR INDOOR USE						
	Source		Storage				
Facility Type	GPD/person*	Calculated GPD/site or pad	GPD/person	Gallon/site or pad	ERC/site or pad	# of Sites or pads	ERCs
Modern Recreation Camp	60	0	30	0	**0.00**	*0*	0.0
Semi-Developed Camp *w/ flush toilets*	20	0	10	0	**0.00**	*0*	0.0
Semi-Developed Camp *w/o flush toilets*	5	0	2.5	0	**0.00**	*0*	0.0
RV Park	N/A	100	N/A	50	**0.13**	*0*	0.0
*Number of people per camp site	*0*	← If applicable, enter number of people per camp site here.					

Facility Type	Source (GPD/vehicle)	Storage (Gal./vehicle)	ERC/1000 vehicles served	# of Vehicles served	ERCs
Roadway Rest Stop *w/ flushometer valves*	7	3.5	**8.75**	*0*	**0.00**

Tables 510-1, 510-2, & 510-4 list various indoor water demands for various non-community systems

Link to Capacity Calculations on DDW Website

https://deq.utah.gov/drinking-water/plan-review-program-tools

QUESTIONS