Faciliy	Actual TN (mg/l)	Actual TP (mg/l)	Facility Assumptions	LOT 7.0 TN upgrade	LOT 7.0 TN upgrade cost/year	LOT 3.0 TN upgrade
Conrad	7	0.15	Extended aeration without chemical P precipitation. Optimized for LOT7.0TN.	N/A, currently meeting LOT	$0.00	Retrofit with anoxic zone to convert to MLE
Chinook	2.9	1.84	Oxidation ditch, optimized LOT3.0TN; no P removal.	N/A, currently meeting LOT	$0.00	N/A, currently meeting LOT
~~Hinsdale~~	~~13~~	~~1.06~~	~~Extended aeration package plant. Incomplete nitrification/denitrification; no P removal.~~	~~N/A, no RPA/WQ BELs needed~~	~~$0.00~~	~~N/A, no RPA/WQ BELs needed~~
Manhattan	8.7	0.6	Fixed film system with nitrification/denitrification; unknown P removal.	Optimization to meet LOT	$1,400	Retrofit with denitrification filters
Colstrip	unk	unk	Oxidation ditch, unknown performance.	Optimization to meet LOT	$2,400	with anoxic zone to convert
East Helena	10.6	0.53	Activated sludge plant. Pretty good nitrification, little denitrification. Good P removal.	Optimization to meet LOT	$1,800	Retrofit with denitrification filters
Stevensville	14.8	2.835	Oxidation ditch, with nitrification but limited nutrient removal. Planning for a BNR upgrade.	N/A, assume new BNR plant can meet LOT	$0.00	new plant with denitrification
Majors						
Bozeman	4.4	4.4	5-stage Bardenpho (biological N removal and EBPR). Effluent TP suggests that chemical P removal is also being used.	N/A, currently meeting LOT	$0.00	Optimization to meet LOT

Butte Silver Bow	**2.4**	**2.4**	**New MBR plant, so data is very limited. TP is reportedly around 0.2 now. Assume LOT3.0TN and LOT0.5TP currently.**	N/A, currently meeting LOT	$0.00	N/A, currently meeting LOT
Hamilton	**3.13**	**3.13**	**Well under design flow, facility appears to be biological N removal or optimized accordingly. Secondary plant with simple modifications for TP removal.**	N/A, currently meeting LOT	$0.00	N/A, currently meeting LOT and RPA/WQ BEL
Havre	**7.92**	**7.92**	**A new BNR plant is under construction. Assume new facility will meet LOT3.0TN and LOT0.5TP.**	N/A, assume new BNR plant can meet LOT	$0.00	assume new BNR plant can meet RPA/WQ
Helena	**5.58**	**5.58**	**Biological nitrogen removal plant with no specific TP removal. Plant is reportedly already optimized and needs to do some small capital improvements**	N/A, currently meeting LOT	$0.00	with denitrification filters or step feed to BNR
Kalispell	**8.4**	**8.4**	**Johannesburg process. biological N removal/EBPR. Not fully denitrifying. Excellent TP removal; mostly EBPR.**	Optimization to meet LOT	$5,600	denitrification filters or step feed to BNR
Lewistown	**2.05**	**2.05**	**Biological N removal/EBPR system. Meeting LOT3.0TN.**	N/A, currently meeting LOT	$0	N/A, currently meeting LOT
Whitefish	**24.2**	**24.2**	**TP removal. Plenty of capacity. Requires replacement to meet LOT for TN. An SBR is designed for construction in 2020 and it is assumed that it will meet**	N/A, assume new SBR plant can meet LOT	$0	Retrofit with denitrification filters
Billlings	17.6	17.6	A2/O system with UV disinfection. A2/O capable of 6-10 mg/l TN; 1-2 mg/l TP.	Optimization to meet LOT	$20,948	Replacement with 5-stage Bardenpho

*We use county levels for unemployment rate except for largest towns ( ) as that is the numbers available

LOT 3.0 TN upgrade cost/year	LOT P upgrade to 0.5 mg/L TP	LOT P upgrade to 0.5 mg/L TP cost/year	LOT P upgrage to 0.1 mg/L TP	LOT P upgrade to 0.1 mg/L TP cost/year	LOT P upgrade to 0.05 mg/L TP	LOT P upgrade to 0.05 mg/L TP cost/year
$318,310	N/A, currently meeting LOT	$0.00	Optimize chemical precipitation and solids removal	$1,800	High dosage chemical precipitation and advanced solids removal	$1,912,490
$0.00	Retrofit with EBPR	$589,378	Chemical precipitation and tertiary filtration	$993,066	chemical precipitation and advanced	$1,919,452
~~$0.00~~	~~N/A, no RPA/WQBELs needed~~	~~$0.00~~	~~N/A, no RPA/WQBELs needed~~	~~$0.00~~	~~N/A, no RPA/WQBELs needed~~	~~$0.00~~
$362,932	N/A, currently meeting LOT	$0.00	Chemical precipitation and tertiary filtration	$778,454	High dosage chemical precipitation and advanced	$1,454,864
$372,282	Retrofit with EBPR	$704,436	Chemical precipitation and tertiary filtration	$1,145,280	High dosage chemical precipitation and advanced	$2,258,232
$409,200	N/A, currently meeting LOT	$0.00	Chemical precipitation and tertiary filtration	$883,394	High dosage chemical precipitation and advanced solids removal	$1,681,482
$344,000	N/A, assume new BNR plant can meet LOT	$0.00	Chemical precipitation and tertiary filtration	$734,548	N/A, LOT is below RPA/WQBEL	$0.00

Majors

$5,200	N/A, currently meeting LOT	$0.00	Optimize chemical precipitation and solids removal	$21,400	High dosage chemical precipitation and advanced solids removal	$10,778,600

$0.00	N/A, new plant currently meeting LOT	$0.00	Optimize chemical precipitation and solids removal	$19,000	High dosage chemical precipitation and advanced solids removal	$7,609,200
$0.00	One point alum; Fermenter retrofit	$267,800	N/A, LOT is below RPA/WQBEL	$0.00	N/A, LOT is below RPA/WQBEL	$0.00
$0.00	One point alum; Fermenter retrofit	$247,400	N/A, LOT is below RPA/WQBEL	$0.00	N/A, LOT is below RPA/WQBEL	$0.00
$1,933,800	One point alum; Fermenter retrofit	$496,000	Chemical precipitation and tertiary filtration	$1,493,400	High dosage chemical precipitation and advanced solids removal	$7,372,800
$1,933,800	N/A, currently meeting LOT	$0.00	Optimize chemical precipitation and solids removal	$9,200	High dosage chemical precipitation and advanced solids removal	$7,372,800
$0.00	N/A, currently meeting LOT	$0.00	N/A, no RPA/WQBELs needed	$0.00	N/A, no RPA/WQBELs needed	$0.00
$871,200	N/A, currently meeting LOT	$0.00	Chemical precipitation and tertiary filtration	$636,428	High dosage chemical precipitation and advanced solids removal	$4,653,400
$27,196,096	Add tertiary filters	$9,609,024	Add chemical precipitation and tertiary filters	$30,374,338	High dosage chemical precipitation and advanced solids removal	$45,970,742

MHI (Data: American Community Survey (ACS) 5-year 2011-2015 Estimates)	Old current sewer bill/year	Old current % MHI	Number of households	Current sewer bill/year	Current Sewer Rate MHI	Achieving 7 mg/L TN and 0.5 mg/L TP %MHI	Achieving 7 mg/L TN and 0.1 mg/L TP %MHI
$39,063			1,003	$522	1.34	1.34	1.34
$41,974			518	$501	1.19	3.91	5.76
~~$50,625~~	-	-	~~250~~	-	~~#VALUE!~~	~~NA~~	~~NA~~
$52,135			547	$943	1.81	1.81	4.54
$84,145			783	$766	0.91	1.98	2.65
$44,828			934	$557	1.24	1.25	3.36
$32,337			818	$224	0.69	0.69	3.47
$45,729	$372	0.84%	16,573	$408	0.89	0.89	0.89

$37,686	$360	0.89%	14,798	$331	0.88	0.88	0.88
$27,907	$240	0.52%	2,371	$445	1.60	2.00	1.60
$45,146	$278	0.54%	4,048	$218	0.48	0.62	0.48
$49,852	$362	0.78%	13,095	$445	0.89	0.97	1.12
$41,097	$388	1.12%	8,608	$366	0.89	0.89	0.89
$35,990	$718	1.88%	2,681	$329	0.91	0.91	0.91
$51,122			3,032	$915	1.79	1.79	2.20
$51,012			44,092	$265	0.52	0.95	1.87

Whitefish was $505 in original

Achieving 7 mg/L TN and 0.05 mg/L TP %MHI	Achieving 3 mg/L TN and 0.5 mg/L TP %MHI	Achieving 3 mg/L TN and 0.1 mg/L TP %MHI	Achieving 3 mg/L TN and 0.05 mg/L TP %MHI	Secondary Score			
				Poverty Rate	Poverty Second score	LMI	LMI Second score
6.22	2.15	2.15	7.03	17%	2	28%	2
10.02	3.91	5.76	10.02	15%	2	25%	2
~~NA~~	~~NA~~	~~NA~~	~~NA~~	~~10%~~	~~2~~	~~16%~~	~~2~~
6.92	3.08	5.81	8.18	5%	3	11%	3
4.34	2.54	3.21	4.90	9%	2	10%	3
5.26	2.22	4.33	6.24	9%	2	24%	2
0.69	1.99	4.77	1.99	25%	2	47%	1
2.31	0.89	0.89	2.31	20%	2	30%	2

2.24	0.88	0.88	2.24	20%	2	31%	2
1.60	2.00	1.60	1.60	24%	2	38%	2
0.48	0.62	0.48	0.48	16%	2	25%	2
2.02	1.27	1.42	2.32	17%	2	23%	2
2.98	1.44	1.44	3.52	17%	2	28%	2
0.91	0.91	0.91	0.91	9%	2	23%	2
4.79	2.35	2.76	5.35	6%	2	17%	2
2.56	2.16	3.08	3.77	13%	2	23%	2

condary Score

Unemployment rate*	Unemployment score	MHI	MHI score	Taxes index	Taxes index score	Average Secondary Score	Sliding scale MHI ceiling	Current MHI	Difference
3.70%	2	$39,063	1	2.35	2	1.8	1.3	1.34	-0.04
3.70%	2	$41,974	1	3.72	1	1.6	1.1	1.33	-0.23
~~2.90%~~	~~3~~	~~$50,625~~	~~2~~	~~N/A~~	~~N/A~~	~~2.25~~	~~1.75~~	~~#VALUE!~~	
2.20%	3	$52,135	2	1.78	2	2.6	2.1	1.81	0.29
5.50%	1	$84,145	3	2.21	2	2.2	1.7	0.91	0.79
3.00%	1	$44,828	2	2.14	2	1.8	1.3	1.24	0.06
3.90%	2	$32,337	1	2.58	2	1.6	1.1	0.69	0.41
2.20%	3	$45,729	2	2.88	2	2.2	1.7	0.89	0.81

3.80%	2	$37,686	1	4.37	1	1.6	1.1	0.88	0.22
3.90%	2	$27,907	1	4.11	1	1.6	1.1	1.60	-0.50
4.20%	2	$45,146	2	1.89	2	2	1.5	0.48	1.02
3.00%	3	$49,852	2	2.86	2	2.2	1.7	0.89	0.81
4.50%	2	$41,097	1	2.55	2	1.8	1.3	0.89	0.41
3.20%	3	$35,990	1	2.5	2	2	1.5	0.91	0.59
4.50%	2	$51,122	2	6.07	1	1.8	1.3	1.79	-0.49
3.30%	2	$51,012	2	2.42	2	2	1.5	0.52	0.98

Result	Achieving 7 mg/L TN and 0.5 mg/L TP %MHI	Achieving 7 mg/L TN and 0.1 mg/L TP %MHI	Achieving 7 mg/L TN and 0.05 mg/L TP %MHI	Achieving 3 mg/L TN and 0.5 mg/L TP %MHI	Achieving 3 mg/L TN and 0.1 mg/L TP %MHI	Achieving 3 mg/L TN and 0.05 mg/L TP %MHI		Can afford 7 mg/L TN and 0.5 mg/L TP ?
Already hit limit	No	No	No	No	No	No		no
Already hit limit	No	No	No	No	No	No		no
							Do not include, they do not have RP	
	yes	no	no	yes	no	no		yes
	yes	yes	yes	yes	yes	no		no
	yes	no	no	no	no	no		yes
	yes	no	no	yes	no	no		yes
							What Percent of Assessed Group Members (<1MGD) Can Afford It?	50%
	yes	yes	yes	yes	yes	yes		yes

yes	yes	yes	yes	yes	yes		yes
yes	yes	yes	yes	yes	yes		no
yes	yes	yes	yes	yes	yes	*New BNR plant in construction, assumed it can meet LOT*	yes
yes	yes	yes	yes	yes	no		yes
yes	yes	no	no	no	no		yes
yes	yes	yes	yes	yes	no	*Do not include, they do not have RP*	
yes	yes	no	yes	yes	no		no
yes	yes	yes	yes	yes	yes		yes
						What Percent of Assessed Group Members (>1MGD) Can Afford It?	75%

Can afford 7 mg/L TN and 0.1 mg/L TP?	Can afford 7 mg/L TN and 0.05 mg/L TP?	Can afford 3 mg/L TN and 0.5 mg/L TP?	Can afford 3 mg/L TN and 0.1 mg/L TP?	Can afford 3 mg/L TN and 0.05 mg/L TP?
no	no	no	no	no
no	no	no	no	no
no	no	no	no	no
no	no	no	no	no
no	no	no	no	no
no	n/a	no	no	n/a
0%	0%	0%	0%	0%
yes	no	yes	yes	no

yes	no	yes	yes	no
no	no	no	no	no
yes	yes	yes	yes	yes
yes	no	yes	yes	no
yes	no	no	no	no
no	no	no	no	no
no	no	no	no	no
63%	13%	50%	50%	13%

Treatment Level	Percent Group Members Who Can Afford Treatment Level	
	ena, Bozemar	<1MGD
7 mg TN/L, 0.5 mg TP/L	75%	50%
3 mg TN/L, 0.5 mgTP/L	50%	0%
7 mg TN/L, 0.1 mgTP/L	63%	0%
3 mg TN/L, 0.1 mgTP/L	50%	0%
7 mg TN/L, 0.05 mg TP/L	13%	0%
3 mg TN/L, 0.05 mgTP/L (***Limits of Technology***)	13%	0%

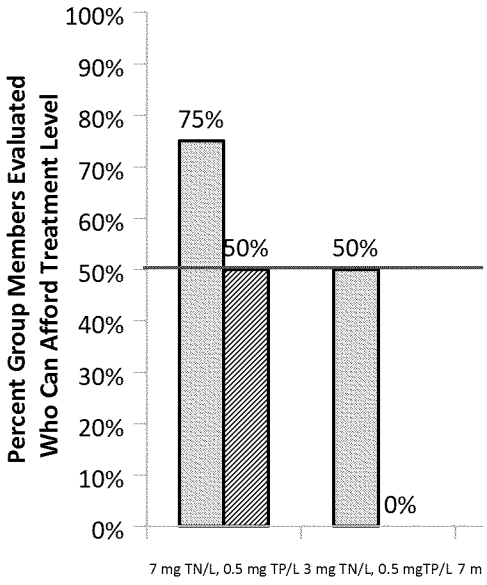
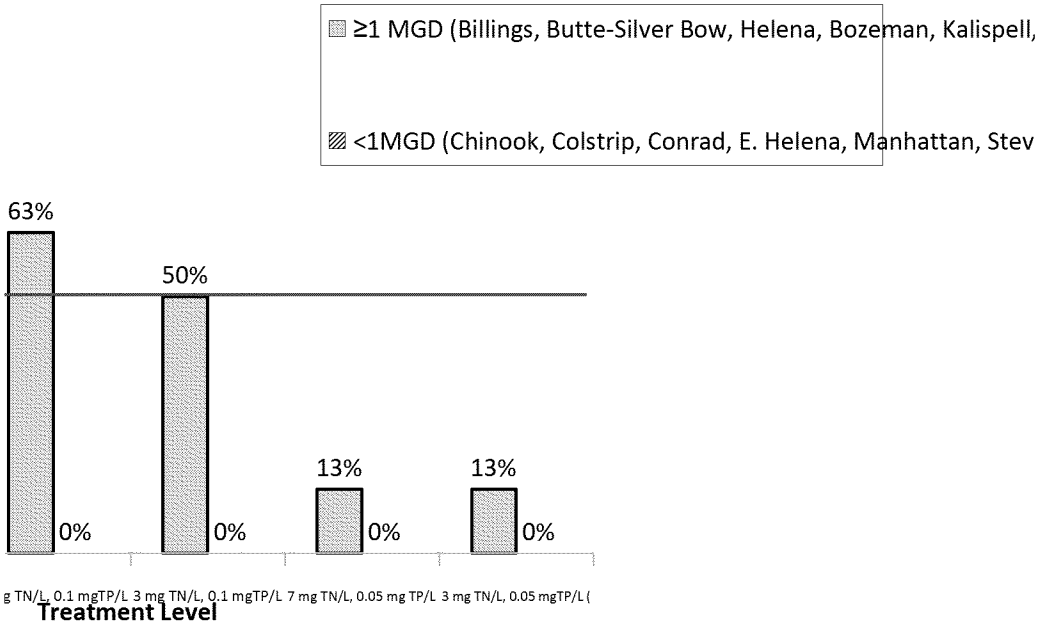


Figure X. Percent of Members in a Discharger G Specified Wastewater Treatment Level. Data on only those facilities DEQ has concluded will nee



roup (≥ 1MGD, <1MGD) Who Can Affordably Meet (Per DEQ Methods) a
ly represent group members who are POTWs and, among them,
d a variance. Costs are 100% (2X) the standard TetraTech (2016) estimates.

Faciliy	Actual TN (mg/l)	Actual TP (mg/l)	Facility Assumptions	LOT 7.0 TN upgrade	LOT 7.0 TN upgrade cost/year	LOT 3.0 TN upgrade
Conrad	7	0.15	Extended aeration without chemical P precipitation. Optimized for LOT7.0TN.	N/A, currently meeting LOT	$0.00	Retrofit with anoxic zone to convert to MLE
Chinook	2.9	1.84	Oxidation ditch, optimized LOT3.0TN; no P removal.	N/A, currently meeting LOT	$0.00	N/A, currently meeting LOT
~~Hinsdale~~	~~13~~	~~1.06~~	~~Extended aeration package plant. Incomplete nitrification/denitrification; no P removal.~~	~~N/A, no RPA/WQ BELs needed~~	~~$0.00~~	~~N/A, no RPA/WQ BELs needed~~
Manhattan	8.7	0.6	Fixed film system with nitrification/denitrification; unknown P removal.	Optimization to meet LOT	$700	Retrofit with denitrification filters
Colstrip	unk	unk	Oxidation ditch, unknown performance.	Optimization to meet LOT	$1,200	with anoxic zone to convert
East Helena	10.6	0.53	Activated sludge plant. Pretty good nitrification, little denitrification. Good P removal.	Optimization to meet LOT	$900	Retrofit with denitrification filters
Stevensville	14.8	2.835	Oxidation ditch, with nitrification but limited nutrient removal. Planning for a BNR upgrade.	N/A, assume new BNR plant can meet LOT	$0.00	new plant with denitrification
Majors						
Bozeman	4.4	4.4	5-stage Bardenpho (biological N removal and EBPR). Effluent TP suggests that chemical P removal is also being used.	N/A, currently meeting LOT	$0.00	Optimization to meet LOT

Butte Silver Bow	**2.4**	**2.4**	**New MBR plant, so data is very limited. TP is reportedly around 0.2 now. Assume LOT3.0TN and LOT0.5TP currently.**	N/A, currently meeting LOT	$0.00	N/A, currently meeting LOT
Hamilton	**3.13**	**3.13**	**Well under design flow, facility appears to be biological N removal or optimized accordingly. Secondary plant with simple modifications for TP removal.**	N/A, currently meeting LOT	$0.00	N/A, currently meeting LOT and RPA/WQ BEL
Havre	**7.92**	**7.92**	**A new BNR plant is under construction. Assume new facility will meet LOT3.0TN and LOT0.5TP.**	N/A, assume new BNR plant can meet LOT	$0.00	assume new BNR plant can meet RPA/WQ
Helena	**5.58**	**5.58**	**Biological nitrogen removal plant with no specific TP removal. Plant is reportedly already optimized and needs to do some small capital improvements**	N/A, currently meeting LOT	$0.00	with denitrification filters or step feed to BNR
Kalispell	**8.4**	**8.4**	**Johannesburg process. biological N removal/EBPR. Not fully denitrifying. Excellent TP removal; mostly EBPR.**	Optimization to meet LOT	$2,800	denitrification filters or step feed to BNR
Lewistown	**2.05**	**2.05**	**Biological N removal/EBPR system. Meeting LOT3.0TN.**	N/A, currently meeting LOT	$0	N/A, currently meeting LOT
Whitefish	**24.2**	**24.2**	**TP removal. Plenty of capacity. Requires replacement to meet LOT for TN. An SBR is designed for construction in 2020 and it is assumed that it will meet**	N/A, assume new SBR plant can meet LOT	$0	Retrofit with denitrification filters
Billlings	17.6	17.6	A2/O system with UV disinfection. A2/O capable of 6-10 mg/l TN; 1-2 mg/l TP.	Optimization to meet LOT	$10,474	Replacement with 5-stage Bardenpho

*We use county levels for unemployment rate except for largest towns ( ) as that is the numbers available

LOT 3.0 TN upgrade cost/year	LOT P upgrade to 0.5 mg/L TP	LOT P upgrade to 0.5 mg/L TP cost/year	LOT P upgrage to 0.1 mg/L TP	LOT P upgrade to 0.1 mg/L TP cost/year	LOT P upgrade to 0.05 mg/L TP	LOT P upgrade to 0.05 mg/L TP cost/year
$159,155	N/A, currently meeting LOT	$0.00	Optimize chemical precipitation and solids removal	$900	High dosage chemical precipitation and advanced solids removal	$956,245
$0.00	Retrofit with EBPR	$294,689	Chemical precipitation and tertiary filtration	$496,533	chemical precipitation and advanced	$959,726
~~$0.00~~	~~N/A, no RPA/WQBELs needed~~	~~$0.00~~	~~N/A, no RPA/WQBELs needed~~	~~$0.00~~	~~N/A, no RPA/WQBELs needed~~	~~$0.00~~
$181,466	N/A, currently meeting LOT	$0.00	Chemical precipitation and tertiary filtration	$389,227	High dosage chemical precipitation and advanced	$727,432
$186,141	Retrofit with EBPR	$352,218	Chemical precipitation and tertiary filtration	$572,640	High dosage chemical precipitation and advanced	$1,129,116
$204,600	N/A, currently meeting LOT	$0.00	Chemical precipitation and tertiary filtration	$441,697	High dosage chemical precipitation and advanced solids removal	$840,741
$172,000	N/A, assume new BNR plant can meet LOT	$0.00	Chemical precipitation and tertiary filtration	$367,274	N/A, LOT is below RPA/WQBEL	$0.00

Majors

$2,600	N/A, currently meeting LOT	$0.00	Optimize chemical precipitation and solids removal	$10,700	High dosage chemical precipitation and advanced solids removal	$5,389,300

$0.00	N/A, new plant currently meeting LOT	$0.00	Optimize chemical precipitation and solids removal	$9,500	High dosage chemical precipitation and advanced solids removal	$3,804,600
$0.00	One point alum; Fermenter retrofit	$133,900	N/A, LOT is below RPA/WQBEL	$0.00	N/A, LOT is below RPA/WQBEL	$0.00
$0.00	One point alum; Fermenter retrofit	$123,700	N/A, LOT is below RPA/WQBEL	$0.00	N/A, LOT is below RPA/WQBEL	$0.00
$966,900	One point alum; Fermenter retrofit	$248,000	Chemical precipitation and tertiary filtration	$746,700	High dosage chemical precipitation and advanced solids removal	$3,686,400
$966,900	N/A, currently meeting LOT	$0.00	Optimize chemical precipitation and solids removal	$4,600	High dosage chemical precipitation and advanced solids removal	$3,686,400
$0.00	N/A, currently meeting LOT	$0.00	N/A, no RPA/WQBELs needed	$0.00	N/A, no RPA/WQBELs needed	$0.00
$435,600	N/A, currently meeting LOT	$0.00	Chemical precipitation and tertiary filtration	$318,214	High dosage chemical precipitation and advanced solids removal	$2,326,700
$13,598,048	Add tertiary filters	$4,804,512	Add chemical precipitation and tertiary filters	$15,187,169	High dosage chemical precipitation and advanced solids removal	$22,985,371

MHI (Data: American Community Survey (ACS) 5-year 2011-2015 Estimates)	Old current sewer bill/year	Old current % MHI	Household data (Data: American Community Survey (ACS) 5-year 2011-2015 Estimates)	Current sewer bill/year	Current Sewer Rate MHI	Achieving 7 mg/L TN and 0.5 mg/L TP %MHI	Achieving 7 mg/L TN and 0.1 mg/L TP %MHI
$39,063			1,003	$522	1.34	1.34	1.34
$41,974			518	$501	1.19	2.55	3.48
~~$50,625~~	-	-	~~250~~	-	~~#VALUE!~~	~~NA~~	~~NA~~
$52,135			547	$943	1.81	1.81	3.18
$84,145			783	$766	0.91	1.45	1.78
$44,828			934	$557	1.24	1.24	2.30
$32,337			818	$224	0.69	0.69	2.08
$45,729	$372	0.84%	16,573	$408	0.89	0.89	0.89

$37,686	$360	0.89%	14,798	$331	0.88	0.88	0.88
$27,907	$240	0.52%	2,371	$445	1.60	1.80	1.60
$45,146	$278	0.54%	4,048	$218	0.48	0.55	0.48
$49,852	$362	0.78%	13,095	$445	0.89	0.93	1.01
$41,097	$388	1.12%	8,608	$366	0.89	0.89	0.89
$35,990	$718	1.88%	2,681	$329	0.91	0.91	0.91
$51,122			3,032	$915	1.79	1.79	2.00
$51,012			44,092	$265	0.52	0.73	1.19

Whitefish was $505 in original

Achieving 7 mg/L TN and 0.05 mg/L TP %MHI	Achieving 3 mg/L TN and 0.5 mg/L TP %MHI	Achieving 3 mg/L TN and 0.1 mg/L TP %MHI	Achieving 3 mg/L TN and 0.05 mg/L TP %MHI	Secondary Score			
				Poverty Rate	Poverty Second score	LMI	LMI Second score
3.78	1.74	1.74	4.18	17%	2	28%	2
5.61	2.55	3.48	5.61	15%	2	25%	2
~~NA~~	~~NA~~	~~NA~~	~~NA~~	~~10%~~	~~2~~	~~16%~~	~~2~~
4.36	2.45	3.81	5.00	5%	3	11%	3
2.63	1.73	2.06	2.91	9%	2	10%	3
3.25	1.73	2.79	3.74	9%	2	24%	2
0.69	1.34	2.73	1.34	25%	2	47%	1
1.60	0.89	0.89	1.60	20%	2	30%	2

1.56	0.88	0.88	1.56	20%	2	31%	2
1.60	1.80	1.60	1.60	24%	2	38%	2
0.48	0.55	0.48	0.48	16%	2	25%	2
1.46	1.08	1.16	1.61	17%	2	23%	2
1.93	1.16	1.16	2.21	17%	2	28%	2
0.91	0.91	0.91	0.91	9%	2	23%	2
3.29	2.07	2.28	3.57	6%	2	17%	2
1.54	1.34	1.80	2.15	13%	2	23%	2

condary Score

Unemployment rate*	Unemployment score	MHI	MHI score	Taxes index	Taxes index score	Average Secondary Score	Sliding scale MHI ceiling	Current MHI	Difference
3.70%	2	$39,063	1	2.35	2	1.8	1.3	1.34	-0.04
3.70%	2	$41,974	1	3.72	1	1.6	1.1	1.33	-0.23
~~2.90%~~	~~3~~	~~$50,625~~	~~2~~	~~N/A~~	~~N/A~~	~~2.25~~	~~1.75~~	~~#VALUE!~~	
2.20%	3	$52,135	2	1.78	2	2.6	2.1	1.81	0.29
5.50%	1	$84,145	3	2.21	2	2.2	1.7	0.91	0.79
3.00%	1	$44,828	2	2.14	2	1.8	1.3	1.24	0.06
3.90%	2	$32,337	1	2.58	2	1.6	1.1	0.69	0.41
2.20%	3	$45,729	2	2.88	2	2.2	1.7	0.89	0.81

3.80%	2	$37,686	1	4.37	1	1.6	1.1	0.88	0.22
3.90%	2	$27,907	1	4.11	1	1.6	1.1	1.60	-0.50
4.20%	2	$45,146	2	1.89	2	2	1.5	0.48	1.02
3.00%	3	$49,852	2	2.86	2	2.2	1.7	0.89	0.81
4.50%	2	$41,097	1	2.55	2	1.8	1.3	0.89	0.41
3.20%	3	$35,990	1	2.5	2	2	1.5	0.91	0.59
4.50%	2	$51,122	2	6.07	1	1.8	1.3	1.79	-0.49
3.30%	2	$51,012	2	2.42	2	2	1.5	0.52	0.98

Result	Achieving 7 mg/L TN and 0.5 mg/L TP %MHI	Achieving 7 mg/L TN and 0.1 mg/L TP %MHI	Achieving 7 mg/L TN and 0.05 mg/L TP %MHI	Achieving 3 mg/L TN and 0.5 mg/L TP %MHI	Achieving 3 mg/L TN and 0.1 mg/L TP %MHI	Achieving 3 mg/L TN and 0.05 mg/L TP %MHI		Can afford 7 mg/L TN and 0.5 mg/L TP ?
Already hit limit	No	No	No	No	No	No		no
Already hit limit	No	No	No	No	No	No		no
							Do not include, they do not have RP	
	yes	no	no	yes	no	no		yes
	yes	yes	yes	yes	yes	no		yes
	yes	no	no	no	no	no		yes
	yes	no	no	yes	no	no		yes
							What Percent of Assessed Group Members (<1MGD) Can Afford It?	67%
	yes	yes	yes	yes	yes	yes		yes

yes	yes	yes	yes	yes	yes		yes
yes	yes	yes	yes	yes	yes		no
yes	yes	yes	yes	yes	yes	*New BNR plant in construction, assumed it can meet LOT*	yes
yes	yes	yes	yes	yes	no		yes
yes	yes	no	no	no	no		yes
yes	yes	yes	yes	yes	no	*Do not include, they do not have RP*	
yes	yes	no	yes	yes	no		no
yes	yes	yes	yes	yes	yes		yes
						What Percent of Assessed Group Members (>1MGD) Can Afford It?	75%

Can afford 7 mg/L TN and 0.1 mg/L TP?	Can afford 7 mg/L TN and 0.05 mg/L TP?	Can afford 3 mg/L TN and 0.5 mg/L TP?	Can afford 3 mg/L TN and 0.1 mg/L TP?	Can afford 3 mg/L TN and 0.05 mg/L TP?
no	no	no	no	no
no	no	no	no	no
no	no	no	no	no
no	no	no	no	no
no	no	no	no	no
no	n/a	no	no	n/a
0%	0%	0%	0%	0%
yes	yes	yes	yes	yes

yes	no	yes	yes	no
no	no	no	no	no
yes	yes	yes	yes	yes
yes	yes	yes	yes	yes
yes	no	yes	yes	no
no	no	no	no	no
yes	no	yes	no	no
75%	38%	75%	63%	38%

Treatment Level	Percent Group Members Who Can Afford Treatment Level	
	ena, Bozemar	<1MGD
7 mg TN/L, 0.5 mg TP/L	75%	67%
3 mg TN/L, 0.5 mgTP/L	75%	0%
7 mg TN/L, 0.1 mgTP/L	75%	0%
3 mg TN/L, 0.1 mgTP/L	63%	0%
7 mg TN/L, 0.05 mg TP/L	38%	0%
3 mg TN/L, 0.05 mgTP/L (***Limits of Technology***)	38%	0%

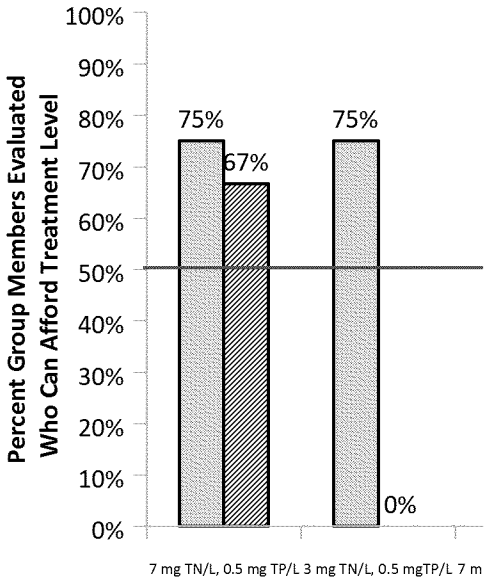
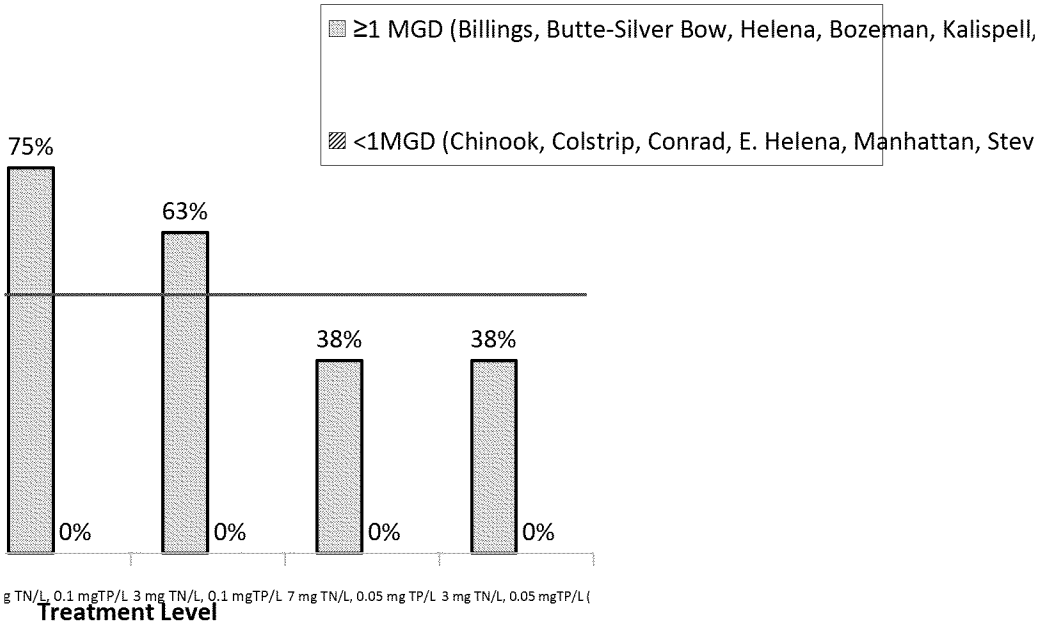


Figure X. Percent of Members in a Discharger G Specified Wastewater Treatment Level. Data on only those facilities DEQ has concluded will nee



roup (≥ 1MGD, <1MGD) Who Can Affordably Meet (Per DEQ Methods) a
ly represent group members who are POTWs and, among them,
d a variance.

Faciliy	Actual TN (mg/l)	Actual TP (mg/l)	Facility Assumptions	LOT 7.0 TN upgrade	LOT 7.0 TN upgrade cost/year	LOT 3.0 TN upgrade
Conrad	7	0.15	Extended aeration without chemical P precipitation. Optimized for LOT7.0TN.	N/A, currently meeting LOT	$0.00	Retrofit with anoxic zone to convert to MLE
Chinook	2.9	1.84	Oxidation ditch, optimized LOT3.0TN; no P removal.	N/A, currently meeting LOT	$0.00	N/A, currently meeting LOT
~~Hinsdale~~	~~13~~	~~1.06~~	~~Extended aeration package plant. Incomplete nitrification/denitrification; no P removal.~~	~~N/A, no RPA/WQ BELs needed~~	~~$0.00~~	~~N/A, no RPA/WQ BELs needed~~
Manhattan	8.7	0.6	Fixed film system with nitrification/denitrification; unknown P removal.	Optimization to meet LOT	$350	Retrofit with denitrification filters
Colstrip	unk	unk	Oxidation ditch, unknown performance.	Optimization to meet LOT	$600	with anoxic zone to convert
East Helena	10.6	0.53	Activated sludge plant. Pretty good nitrification, little denitrification. Good P removal.	Optimization to meet LOT	$450	Retrofit with denitrification filters
Stevensville	14.8	2.835	Oxidation ditch, with nitrification but limited nutrient removal. Planning for a BNR upgrade.	N/A, assume new BNR plant can meet LOT	$0.00	new plant with denitrification
Majors						
Bozeman	4.4	4.4	5-stage Bardenpho (biological N removal and EBPR). Effluent TP suggests that chemical P removal is also being used.	N/A, currently meeting LOT	$0.00	Optimization to meet LOT

Butte Silver Bow	**2.4**	**2.4**	**New MBR plant, so data is very limited. TP is reportedly around 0.2 now. Assume LOT3.0TN and LOT0.5TP currently.**	N/A, currently meeting LOT	$0.00	N/A, currently meeting LOT
Hamilton	**3.13**	**3.13**	**Well under design flow, facility appears to be biological N removal or optimized accordingly. Secondary plant with simple modifications for TP removal.**	N/A, currently meeting LOT	$0.00	N/A, currently meeting LOT and RPA/WQ BEL
Havre	**7.92**	**7.92**	**A new BNR plant is under construction. Assume new facility will meet LOT3.0TN and LOT0.5TP.**	N/A, assume new BNR plant can meet LOT	$0.00	assume new BNR plant can meet RPA/WQ
Helena	**5.58**	**5.58**	**Biological nitrogen removal plant with no specific TP removal. Plant is reportedly already optimized and needs to do some small capital improvements**	N/A, currently meeting LOT	$0.00	with denitrification filters or step feed to BNR
Kalispell	**8.4**	**8.4**	**Johannesburg process. biological N removal/EBPR. Not fully denitrifying. Excellent TP removal; mostly EBPR.**	Optimization to meet LOT	$1,400	denitrification filters or step feed to BNR
Lewistown	**2.05**	**2.05**	**Biological N removal/EBPR system. Meeting LOT3.0TN.**	N/A, currently meeting LOT	$0	N/A, currently meeting LOT
Whitefish	**24.2**	**24.2**	**TP removal. Plenty of capacity. Requires replacement to meet LOT for TN. An SBR is designed for construction in 2020 and it is assumed that it will meet**	N/A, assume new SBR plant can meet LOT	$0	Retrofit with denitrification filters
Billlings	17.6	17.6	A2/O system with UV disinfection. A2/O capable of 6-10 mg/l TN; 1-2 mg/l TP.	Optimization to meet LOT	$5,237	Replacement with 5-stage Bardenpho

*We use county levels for unemployment rate except for largest towns ( ) as that is the numbers available

LOT 3.0 TN upgrade cost/year	LOT P upgrade to 0.5 mg/L TP	LOT P upgrade to 0.5 mg/L TP cost/year	LOT P upgrage to 0.1 mg/L TP	LOT P upgrade to 0.1 mg/L TP cost/year	LOT P upgrade to 0.05 mg/L TP	LOT P upgrade to 0.05 mg/L TP cost/year
$79,578	N/A, currently meeting LOT	$0.00	Optimize chemical precipitation and solids removal	$450	High dosage chemical precipitation and advanced solids removal	$478,123
$0.00	Retrofit with EBPR	$147,345	Chemical precipitation and tertiary filtration	$248,267	chemical precipitation and advanced	$479,863
~~$0.00~~	~~N/A, no RPA/WQBELs needed~~	~~$0.00~~	~~N/A, no RPA/WQBELs needed~~	~~$0.00~~	~~N/A, no RPA/WQBELs needed~~	~~$0.00~~
$90,733	N/A, currently meeting LOT	$0.00	Chemical precipitation and tertiary filtration	$194,614	High dosage chemical precipitation and advanced	$363,716
$93,071	Retrofit with EBPR	$176,109	Chemical precipitation and tertiary filtration	$286,320	High dosage chemical precipitation and advanced	$564,558
$102,300	N/A, currently meeting LOT	$0.00	Chemical precipitation and tertiary filtration	$220,849	High dosage chemical precipitation and advanced solids removal	$420,371
$86,000	N/A, assume new BNR plant can meet LOT	$0.00	Chemical precipitation and tertiary filtration	$183,637	N/A, LOT is below RPA/WQBEL	$0.00

Majors

$1,300	N/A, currently meeting LOT	$0.00	Optimize chemical precipitation and solids removal	$5,350	High dosage chemical precipitation and advanced solids removal	$2,694,650

$0.00	N/A, new plant currently meeting LOT	$0.00	Optimize chemical precipitation and solids removal	$4,750	High dosage chemical precipitation and advanced solids removal	$1,902,300
$0.00	One point alum; Fermenter retrofit	$66,950	N/A, LOT is below RPA/WQBEL	$0.00	N/A, LOT is below RPA/WQBEL	$0.00
$0.00	One point alum; Fermenter retrofit	$61,850	N/A, LOT is below RPA/WQBEL	$0.00	N/A, LOT is below RPA/WQBEL	$0.00
$483,450	One point alum; Fermenter retrofit	$124,000	Chemical precipitation and tertiary filtration	$373,350	High dosage chemical precipitation and advanced solids removal	$1,843,200
$483,450	N/A, currently meeting LOT	$0.00	Optimize chemical precipitation and solids removal	$2,300	High dosage chemical precipitation and advanced solids removal	$1,843,200
$0.00	N/A, currently meeting LOT	$0.00	N/A, no RPA/WQBELs needed	$0.00	N/A, no RPA/WQBELs needed	$0.00
$217,800	N/A, currently meeting LOT	$0.00	Chemical precipitation and tertiary filtration	$159,107	High dosage chemical precipitation and advanced solids removal	$1,163,350
$6,799,024	Add tertiary filters	$2,402,256	Add chemical precipitation and tertiary filters	$7,593,585	High dosage chemical precipitation and advanced solids removal	$11,492,686

MHI (Data: American Community Survey (ACS) 5-year 2011-2015 Estimates)	Old current sewer bill/year	Old current % MHI	Number of households	Current sewer bill/year	Current Sewer Rate MHI	Achieving 7 mg/L TN and 0.5 mg/L TP %MHI	Achieving 7 mg/L TN and 0.1 mg/L TP %MHI
$39,063			1,003	$522	1.34	1.34	1.34
$41,974			518	$501	1.19	1.87	2.34
~~$50,625~~	-	-	~~250~~	-	~~#VALUE!~~	~~NA~~	~~NA~~
$52,135			547	$943	1.81	1.81	2.49
$84,145			783	$766	0.91	1.18	1.35
$44,828			934	$557	1.24	1.24	1.77
$32,337			818	$224	0.69	0.69	1.39
$45,729	$372	0.84%	16,573	$408	0.89	0.89	0.89

$37,686	$360	0.89%	14,798	$331	0.88	0.88	0.88
$27,907	$240	0.52%	2,371	$445	1.60	1.70	1.60
$45,146	$278	0.54%	4,048	$218	0.48	0.52	0.48
$49,852	$362	0.78%	13,095	$445	0.89	0.91	0.95
$41,097	$388	1.12%	8,608	$366	0.89	0.89	0.89
$35,990	$718	1.88%	2,681	$329	0.91	0.91	0.91
$51,122			3,032	$915	1.79	1.79	1.89
$51,012			44,092	$265	0.52	0.63	0.86

Whitefish was $505 in original

Achieving 7 mg/L TN and 0.05 mg/L TP %MHI	Achieving 3 mg/L TN and 0.5 mg/L TP %MHI	Achieving 3 mg/L TN and 0.1 mg/L TP %MHI	Achieving 3 mg/L TN and 0.05 mg/L TP %MHI	Secondary Score Poverty Rate	Poverty Second score	LMI	LMI Second score
2.56	1.54	1.54	2.76	17%	2	28%	2
3.40	1.87	2.34	3.40	15%	2	25%	2
~~NA~~	~~NA~~	~~NA~~	~~NA~~	~~10%~~	~~2~~	~~16%~~	~~2~~
3.09	2.13	2.81	3.40	5%	3	11%	3
1.77	1.32	1.49	1.91	9%	2	10%	3
2.25	1.49	2.01	2.49	9%	2	24%	2
0.69	1.02	1.71	1.02	25%	2	47%	1
1.25	0.89	0.89	1.25	20%	2	30%	2

1.22	0.88	0.88	1.22	20%	2	31%	2
1.60	1.70	1.60	1.60	24%	2	38%	2
0.48	0.52	0.48	0.48	16%	2	25%	2
1.18	0.99	1.02	1.25	17%	2	23%	2
1.41	1.03	1.03	1.55	17%	2	28%	2
0.91	0.91	0.91	0.91	9%	2	23%	2
2.54	1.93	2.03	2.68	6%	2	17%	2
1.03	0.93	1.16	1.33	13%	2	23%	2

condary Score

Unemployment rate*	Unemployment score	MHI	MHI score	Taxes index	Taxes index score	Average Secondary Score	Sliding scale MHI ceiling	Current MHI	Difference
3.70%	2	$39,063	1	2.35	2	1.8	1.3	1.34	-0.04
3.70%	2	$41,974	1	3.72	1	1.6	1.1	1.33	-0.23
~~2.90%~~	~~3~~	~~$50,625~~	~~2~~	~~N/A~~	~~N/A~~	~~2.25~~	~~1.75~~	~~#VALUE!~~	
2.20%	3	$52,135	2	1.78	2	2.6	2.1	1.81	0.29
5.50%	1	$84,145	3	2.21	2	2.2	1.7	0.91	0.79
3.00%	1	$44,828	2	2.14	2	1.8	1.3	1.24	0.06
3.90%	2	$32,337	1	2.58	2	1.6	1.1	0.69	0.41
2.20%	3	$45,729	2	2.88	2	2.2	1.7	0.89	0.81

3.80%	2	$37,686	1	4.37	1	1.6	1.1	0.88	0.22
3.90%	2	$27,907	1	4.11	1	1.6	1.1	1.60	-0.50
4.20%	2	$45,146	2	1.89	2	2	1.5	0.48	1.02
3.00%	3	$49,852	2	2.86	2	2.2	1.7	0.89	0.81
4.50%	2	$41,097	1	2.55	2	1.8	1.3	0.89	0.41
3.20%	3	$35,990	1	2.5	2	2	1.5	0.91	0.59
4.50%	2	$51,122	2	6.07	1	1.8	1.3	1.79	-0.49
3.30%	2	$51,012	2	2.42	2	2	1.5	0.52	0.98

Result	Achieving 7 mg/L TN and 0.5 mg/L TP %MHI	Achieving 7 mg/L TN and 0.1 mg/L TP %MHI	Achieving 7 mg/L TN and 0.05 mg/L TP %MHI	Achieving 3 mg/L TN and 0.5 mg/L TP %MHI	Achieving 3 mg/L TN and 0.1 mg/L TP %MHI	Achieving 3 mg/L TN and 0.05 mg/L TP %MHI		Can afford 7 mg/L TN and 0.5 mg/L TP ?
Already hit limit	No	No	No	No	No	No		no
Already hit limit	No	No	No	No	No	No		no
							Do not include, they do not have RP	
	yes	no	no	yes	no	no		yes
	yes	yes	yes	yes	yes	no		yes
	yes	no	no	no	no	no		yes
	yes	no	no	yes	no	no		yes
							What Percent of Assessed Group Members (<1MGD) Can Afford It?	67%
	yes	yes	yes	yes	yes	yes		yes

yes	yes	yes	yes	yes	yes		yes
yes	yes	yes	yes	yes	yes		no
yes	yes	yes	yes	yes	yes	*New BNR plant in construction, assumed it can meet LOT*	yes
yes	yes	yes	yes	yes	no		yes
yes	yes	no	no	no	no		yes
yes	yes	yes	yes	yes	no	*Do not include, they do not have RP*	
yes	yes	no	yes	yes	no		no
yes	yes	yes	yes	yes	yes		yes
						What Percent of Assessed Group Members (>1MGD) Can Afford It?	75%

Can afford 7 mg/L TN and 0.1 mg/L TP?	Can afford 7 mg/L TN and 0.05 mg/L TP?	Can afford 3 mg/L TN and 0.5 mg/L TP?	Can afford 3 mg/L TN and 0.1 mg/L TP?	Can afford 3 mg/L TN and 0.05 mg/L TP?
no	no	no	no	no
no	no	no	no	no
no	no	no	no	no
yes	no	yes	yes	no
no	no	no	no	no
no	n/a	yes	no	n/a
17%	0%	33%	17%	0%
yes	yes	yes	yes	yes

yes	no	yes	yes	no
no	no	no	no	no
yes	yes	yes	yes	yes
yes	yes	yes	yes	yes
yes	no	yes	yes	no
no	no	no	no	no
yes	yes	yes	yes	yes
75%	50%	75%	75%	50%

Treatment Level	Percent Group Members Who Can Afford Treatment Level	
	ena, Bozemar	<1MGD
7 mg TN/L, 0.5 mg TP/L	75%	67%
3 mg TN/L, 0.5 mgTP/L	75%	33%
7 mg TN/L, 0.1 mgTP/L	75%	17%
3 mg TN/L, 0.1 mgTP/L	75%	17%
7 mg TN/L, 0.05 mg TP/L	50%	0%
3 mg TN/L, 0.05 mgTP/L (***Limits of Technology***)	50%	0%

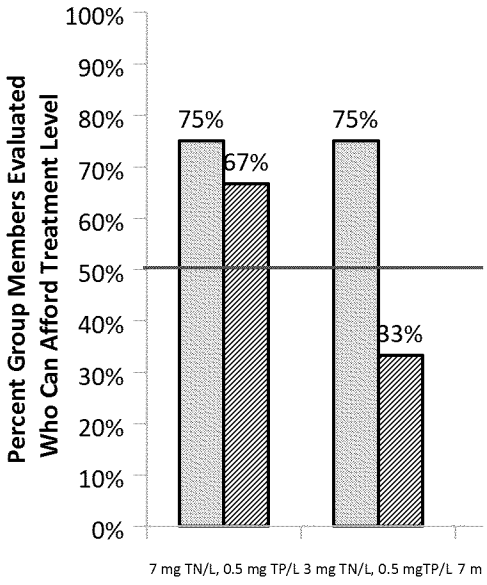
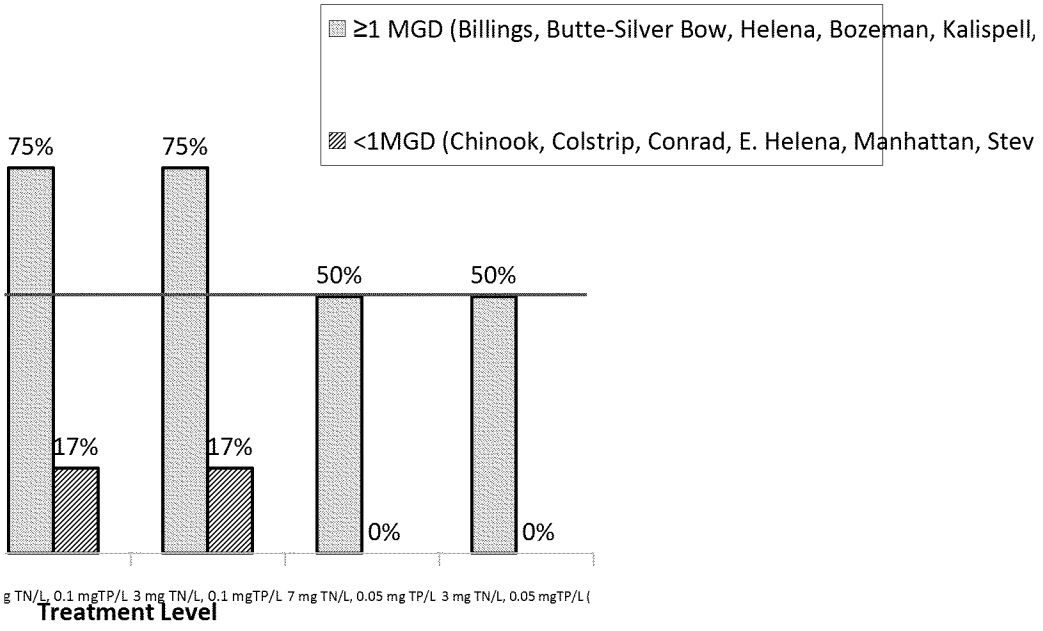


Figure X. Percent of Members in a Discharger G Specified Wastewater Treatment Level. Data on only those facilities DEQ has concluded will nee



roup (≥ 1MGD, <1MGD) Who Can Affordably Meet (Per DEQ Methods) a
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d a variance.