

**TOWN OF GRANITE FALLS
WATER RESOURCES
WATER AND WASTEWATER
TREATMENT PLANTS
2014 ANNUAL REPORT**

WATER TREATMENT PLANT

TO: Town of Granite Falls Town Council

FROM: Town of Granite Falls
Water Treatment Facility

SUBJECT: 2014 Annual Report

DATE: January 19, 2015

ITEM #1

AMOUNT OF WATER TREATED IN 2014

MONTH	AMOUNT IN MILLION GALLONS	MAXIMUM AMOUNT	MINIMUM AMOUNT	AVERAGES
JANUARY	36,262,000	2,004,000	787,000	1,169,000
FEBRUARY	30,878,000	1,334,000	882,000	1,102,000
MARCH	31,885,000	1,384,000	602,000	1,028,000
APRIL	32,671,000	1,696,000	752,000	1,089,000
MAY	37,455,000	1,870,000	862,000	1,208,000
JUNE	36,474,000	1,987,000	658,000	1,215,000
JULY	39,173,000	1,674,000	909,000	1,263,000
AUGUST	37,389,000	2,329,000	843,000	1,206,000
SEPTEMBER	35,393,000	1,730,000	807,000	1,179,000
OCTOBER	36,975,000	1,924,000	814,000	1,192,000
NOVEMBER	38,789,000	1,693,000	982,000	1,292,000
DECEMBER	33,127,000	1,675,000	602,000	1,068,000
TOTALS:	426,471,000	21,300,000	9,500,000	14,011,000
AVERAGES:	35,539,000	1,775,000	792,000	1,168,000

ITEM #2**AMOUNT OF CHEMICALS USED IN 2014**

CHEMICAL	AMOUNT USED
Activated Carbon	0 lbs.
Aluminum Sulfate	19,690 gals.
Chlorine	20,755 lbs.
Fluoride	22,524 lbs.
Lime Slurry	24,030 gals.
Polymer	714 lbs.
Potassium Permanganate	1,137 lbs.

ITEM #3**INFORMATION/REGULATIONS**

All water analyses conducted by our in house laboratory, Water Tech Labs or other subcontracted laboratories are in compliance with the Department of Environmental Health and Natural Resources (DEHNR) regulations. Water Tech Labs maintains a computer file for us to help assist and assure that we continue to complete all scheduled analyses in the proper time frame, as directed by DEHNR. The Continuing Education Rule that was implemented January 1, 1999, states that all certified operators must obtain six contact hours of continuing education each year to prevent their certification from being revoked. Every certified operator employed at the water treatment facility successfully completed those continuing education requirements for 2014. The Consumer Confidence Report (CCR), which was designed to inform the consumer about the quality of water and services we provide, was completed and delivered on or before July 1, 2014, as required by the Environmental Protection Agency (EPA). All subsequent reports must be completed and delivered to each customer on or before July 1st each year. This Consumer Confidence Report gives us an opportunity to put forth a positive public relation image for our water treatment system.

ITEM #4**IMPROVEMENTS MADE IN 2014**

1. Replaced outdated Streaming Current Monitor (this update/purchase will soon pay for itself in chemical cost savings and continues to ensure that the operators stay "ahead of the game" in optimal coagulate chemical adjustments)
2. Replaced backwash valves on filters #2 & #3
3. Rebuilt flocculators #1-#3
4. Painted exterior walls of sedimentation basins
5. Repaved existing and added new asphalt to grounds surrounding facility
6. Made repair to pipe and flooring in old pipe galley
7. Performed motor rewinds on raw water pumps located in old and new pump stations
8. Updated lighting in old filter galley and operator areas
9. Replaced effluent actuator for filter #5

REMARKS:

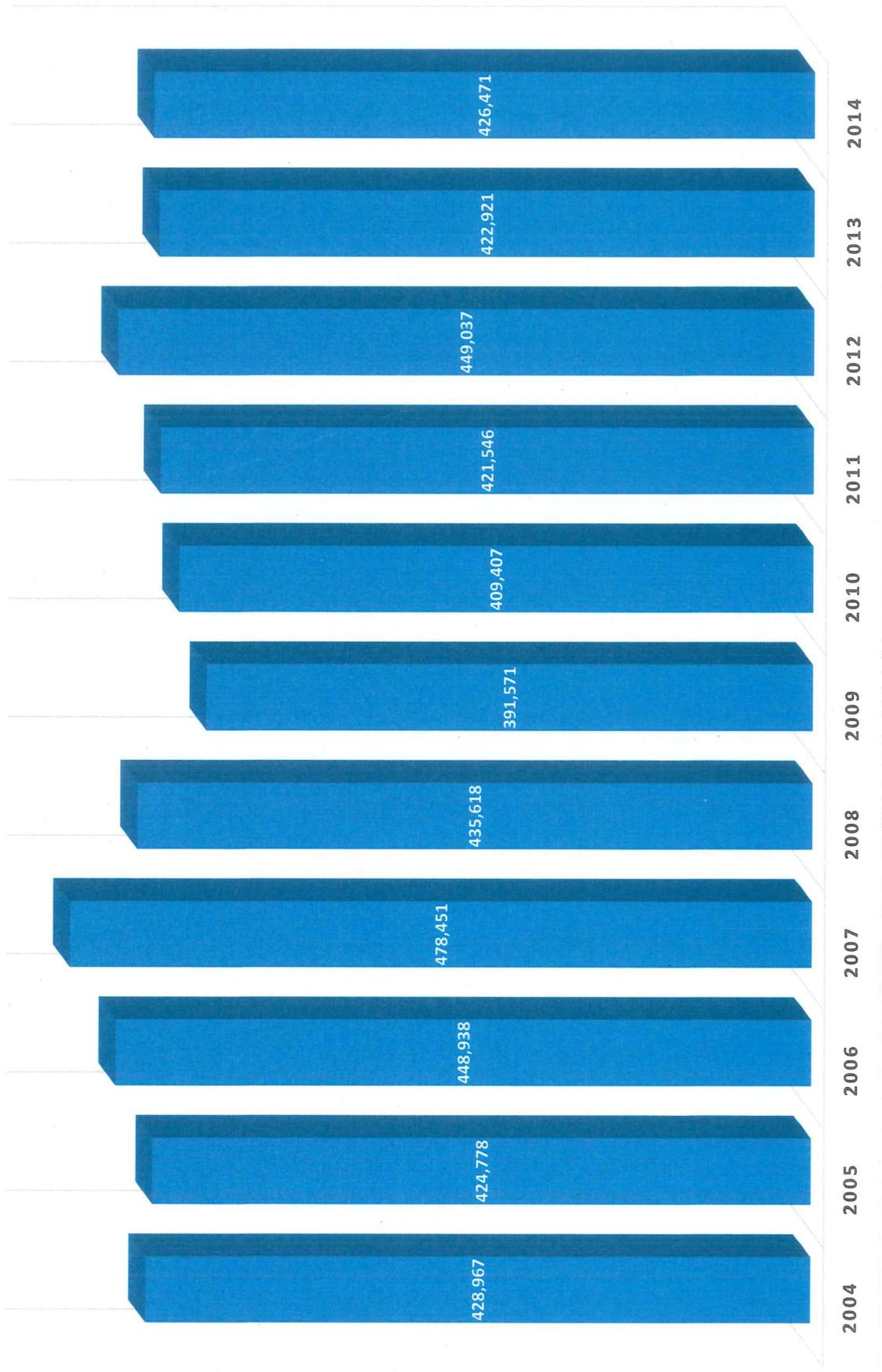
Water quality is excellent and is in compliance with all DEHNR regulations. Even though the Town of Granite Falls and its residents were under no kind of water restrictions or conservation program during 2014, we still continue to participate in the Catawba-Wateree Water Drought Management Group, with the water treatment facility's supervisor attending regular meets to assure that measures are in place to combat problems that may occur with any future drought. With any improvements we find necessary during the coming year, we hope to upgrade and update our seventy year old facility so we can continue to meet the needs of our community well into the future. We will continue to do our best to provide the best quality of water and services possible for the residents of the Town of Granite Falls.

Respectfully Submitted by,
Kim Y. Prestwood, Supervisor
Town of Granite Falls
Water Treatment Facility

AMOUNT OF WATER TREATED
(IN MILLION GALLONS)
FROM 2004-2014

MONTH	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
JAN.	35,354	33,382	35,266	35,635	37,660	31,867	35,889	30,780	36,355	37,582	36,262
FEB.	34,029	30,432	30,556	32,633	32,952	28,513	27,956	28,095	32,011	31,497	30,878
MAR.	34,947	32,809	35,130	35,466	34,678	30,988	31,362	31,778	35,133	34,229	31,885
APR.	35,284	32,571	37,603	35,811	35,554	31,132	32,480	30,372	37,811	31,748	32,671
MAY	38,826	34,741	41,512	48,234	39,903	33,179	35,215	41,316	39,782	34,695	37,455
JUNE	36,660	32,994	43,181	47,162	43,547	34,205	35,080	39,427	38,578	32,475	36,474
JULY	38,240	34,843	40,746	46,195	38,686	34,699	37,755	37,863	38,767	32,066	39,173
AUG.	38,434	38,901	39,470	52,191	36,717	36,429	35,193	38,810	37,802	36,350	37,389
SEPT.	34,969	38,807	36,947	39,292	35,963	32,498	35,962	33,321	38,034	38,753	35,393
OCT.	36,763	36,300	39,105	37,870	35,080	32,563	36,156	38,952	40,701	43,020	36,975
NOV.	32,167	36,325	34,231	33,821	33,694	32,806	31,782	36,113	37,535	36,228	38,789
DEC.	33,294	42,673	35,191	34,141	31,184	32,692	34,577	34,719	36,528	34,278	33,127
TOTAL:	428,967	424,778	448,938	478,451	435,618	391,571	409,407	421,546	449,037	422,921	426,471

AMOUNT OF WATER TREATED
(IN MILLION GALLONS)
FROM 2004-2014



WASTEWATER TREATMENT PLANT

TOWN OF GRANITE FALLS WASTEWATER TREATMENT PLANT ANNUAL OPERATIONAL REPORT FOR THE YEAR 2014

2014 Summary

Town of Granite Falls Wastewater Treatment Operational Status: The Granite Falls Wastewater Treatment Plant treated 111,305,000 gallons of wastewater meeting all of the Limitations of NPDES permit NC0021890. This amount reflects a 20% decrease compared to 2013. Weather conditions, industrial and commercial use practices along with collection system issues are factors that contribute to the amount of wastewater treated. The treatment plant achieved a 97% combined removal rate of BOD/TSS and is operating at 34% of permitted capacity. The treatment facility was inspected by the North Carolina Division of Water Quality on October 21, 2014. No major compliance issues were noted. The application for renewal of NPDES Permit NC0021890 was submitted to the North Carolina Division of Water Resources on June 19, 2014. A draft permit will be issued in spring of 2015. The draft permit will include a 30 day review period to allow for questions, comments, and requests for changes before the final Permit is issued. NPDES permits are issued for a five year period. The current permit expires on January 31, 2015.

Land Application of Bio-Solids: Bio-solids totaling 286,000 gallons were applied to permitted farm land in October and November of 2014. Field maintenance was performed on permitted land which included tractor work/mowing , pH adjustment with lime addition, fence repair and access road work. The application for renewal of Land Application Permit WQ0001618 was submitted to the North Carolina Division of Water Resources on December 23, 2014. The current permit expires on March 31, 2015. Land application permits are normally issued for a five year period.

Alum Sludge Application: Alum sludge residuals generated by the water treatment facility were land applied along with wastewater bio-solids under land application permit WQ0001618. Residuals totaling 275,000 gallons were applied.

Alum Sludge Facility Water Treatment Plant: The application for renewal of NPDES Permit NC0025846 which allows the discharge of treated backwash and sedimentation water was submitted to the North Carolina Division of Water Quality on July 03, 2014. The current permit expires on February 28, 2015 and is renewed on a five year cycle.

Maintenance and Improvements: Schedule preventive maintenance was performed on all treatment process equipment. A new type of non-clog chopper motive fluid pump was installed in the oxidation ditch system which has reduced pump failure events due to clogging from twice monthly to removing the pump yearly for inspection. Replacement of five existing pumps are planned when they reach the end of their operating lives. General and unscheduled maintenance on facility equipment, buildings and grounds was performed as needed. A new truck was purchased under state contract pricing to replace the 28 year old truck used at the treatment plant.

Wastewater Treatment Plant Laboratory Analysis: Field laboratory analysis is being conducted by the treatment plant staff. The treatment plant has been certified by the North Carolina Division of Water Resources to conduct field analysis. All other required wastewater analysis is being contracted to independent laboratories. Contracting to independent laboratories and conducting field analysis in house has resulted in cost savings as opposed to operating a certified wastewater laboratory.

Upcoming Wastewater Improvements: Assistant Water Resources Director Chris Graybeal will present the funding and engineering schedule on the upcoming wastewater treatment/collection system improvements and the alum sludge storage tank improvements projects.

FLOW AND PRODUCTION RATES 2014 GRANITE FALLS WASTEWATER TREATMENT PLANT

	Average Flow (Million Gallons)	High Flow (Million Gallons)	Low Flow (Million Gallons)	TOTAL FLOW (Million Gallons)
January	0.384	0.982	0.250	11.904
February	0.318	0.431	0.261	9.222
March	0.342	0.577	0.272	10.602
April	0.327	0.914	0.267	9.810
May	0.264	0.435	0.234	8.184
June	0.262	0.337	0.234	7.890
July	0.254	0.341	0.184	7.874
August	0.312	0.843	0.236	9.672
September	0.295	0.534	0.190	8.850
October	0.270	0.511	0.171	8.370
November	0.324	0.954	0.231	9.720
December	0.304	0.623	0.255	9.207
AVERAGE:	0.305	0.624	0.232	0.305

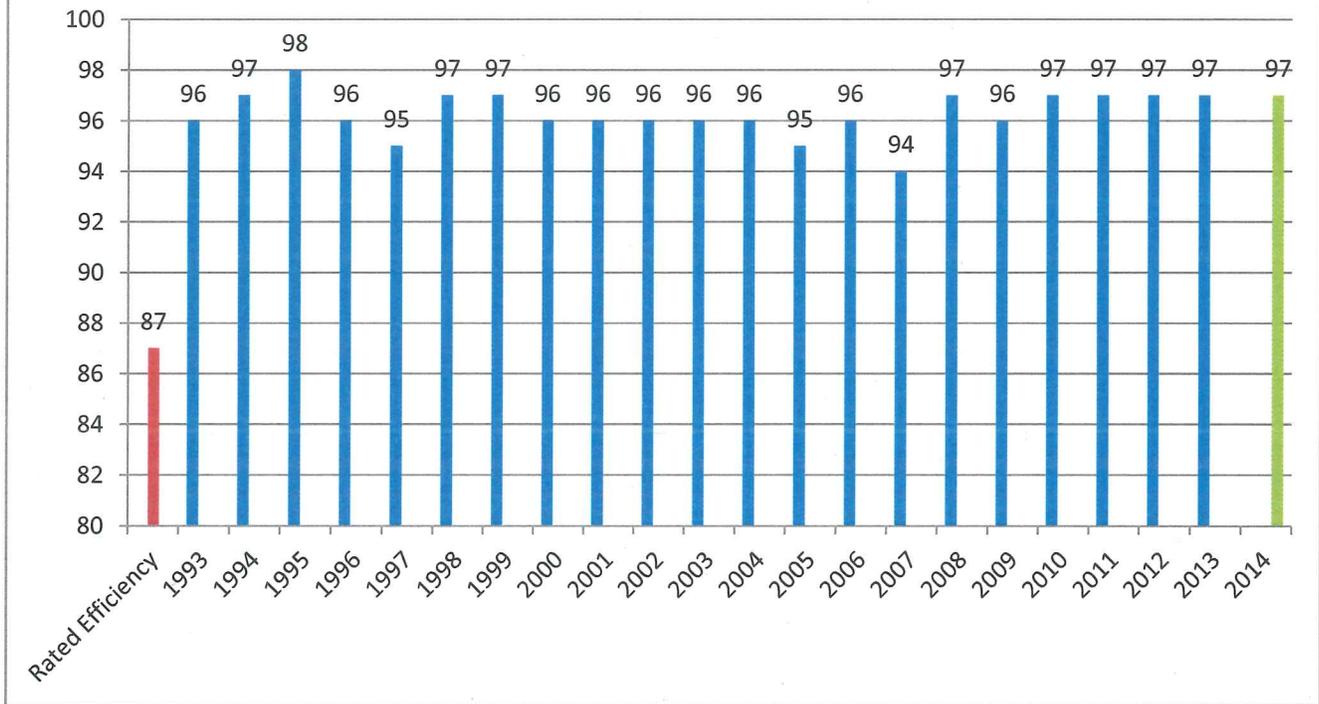
TOTAL GALLONS TREATED 2003	173,321,000	TOTAL GALLONS TREATED 2004	156,414,000
TOTAL GALLONS TREATED 2002	157,142,000	TOTAL GALLONS TREATED 2005	159,568,000
TOTAL GALLONS TREATED 2001	145,747,000	TOTAL GALLONS TREATED 2006	144,697,000
TOTAL GALLONS TREATED 2000	162,674,000	TOTAL GALLONS TREATED 2007	128,720,000
TOTAL GALLONS TREATED 1999	165,332,000	TOTAL GALLONS TREATED 2008	126,039,000
TOTAL GALLONS TREATED 1998	185,600,000	TOTAL GALLONS TREATED 2009	129,638,000
TOTAL GALLONS TREATED 1997	176,841,000	TOTAL GALLONSTREATED 2010	116,415,000
TOTAL GALLONS TREATED 1996	176,521,000	TOTAL GALLONS TREATED 2011	117,293,000
TOTAL GALLONS TREATED 1995	175,210,000	TOTAL GALLONS TREATED 2012	112,578,000
TOTAL GALLONS TREATED 1994	177,660,000	TOTAL GALLONS TREATED 2013	139,233,000
TOTAL GALLONS TREATED 1993	174,105,000	TOTAL GALLONS TREATED 2014	111,305,000
TOTAL GALLONS TREATED 1992	144,470,000	AVERAGE GALLONS TREATED 2014	305,000
TOTAL GALLONS TREATED 1991	139,680,000	% CHANGE FROM 2013	- 20%
TOTAL GALLONS TREATED 1990	148,660,000	% CHANGE FROM 1987	+ 5%
TOTAL GALLONS TREATED 1989	151,178,000		
TOTAL GALLONS TREATED 1988	120,300,000		
TOTAL GALLONS TREATED 1987	106,190,000		

GALLONS OF LIQUID BIO-SOLIDS APPLIED TO AREA FARM LAND 286,000

AVERAGE BOD & TSS RESULTS 2014			GRANITE FALLS WASTEWATER TREATMENT PLANT		
	INFLUENT BOD	INFLUENT TSS	EFFLUENT BOD	EFFLUENT TSS	
	mg/l	mg/l	mg/l	mg/l	
JANUARY	299.9	151.6	7.06	8.82	
FEBRUARY	413.7	182.5	10.37	7.98	
MARCH	345.7	174.5	10.65	8.71	
APRIL	523.4	224.2	14.31	14.74	
MAY	417.0	210.0	10.05	9.07	
JUNE	345.2	226.3	9.33	10.09	
JULY	269.6	184.5	4.73	6.84	
AUGUST	281.8	180.3	5.12	12.68	
SEPTEMBER	317.6	186.4	3.96	9.24	
OCTOBER	345.2	220.6	3.22	7.28	
NOVEMBER	320.5	194.3	3.66	7.58	
DECEMBER	327.6	186.9	7.93	7.98	
AVERAGE INFLUENT BOD FOR 2014	350.6				
AVERAGE INFLUENT TSS FOR 2014	193.5				
AVERAGE EFFLUENT BOD FOR 2014	7.53		PERMIT LIMIT	25 / 30 mg/l	
AVERAGE EFFLUENT TSS FOR 2014	9.25		PERMIT LIMIT	30 mg/l	
OVERALL TREATMENT PLANT EFFICIENCY (ACTUAL)		97%			
RATED EFFICIENCY OF TREATMENT PLANT (DESIGN)		87%			

GALLONS OF WASHWATER DISCHARGED FROM GRANITE FALLS ALUM SLUDGE FACILITY NPDES PERMIT # NC0085246							
2014	Gallons						
January	675,000						
February	564,000						
March	645,000						
April	516,000						
May	484,000						
June	517,000						
July	484,000						
August	480,000						
September	400,000						
October	400,000						
November	559,000						
December	680,000						
TOTAL GALLONS OF WASHWATER DISCHARGED 2014					6,406,000		
AVERAGE GALLONS OF WASHWATER DISCHARGED PER EVENT					46,000		
TOTAL GALLONS OF ALUM SLUDGE APPLIED TO AREA FARM LAND					275,000		

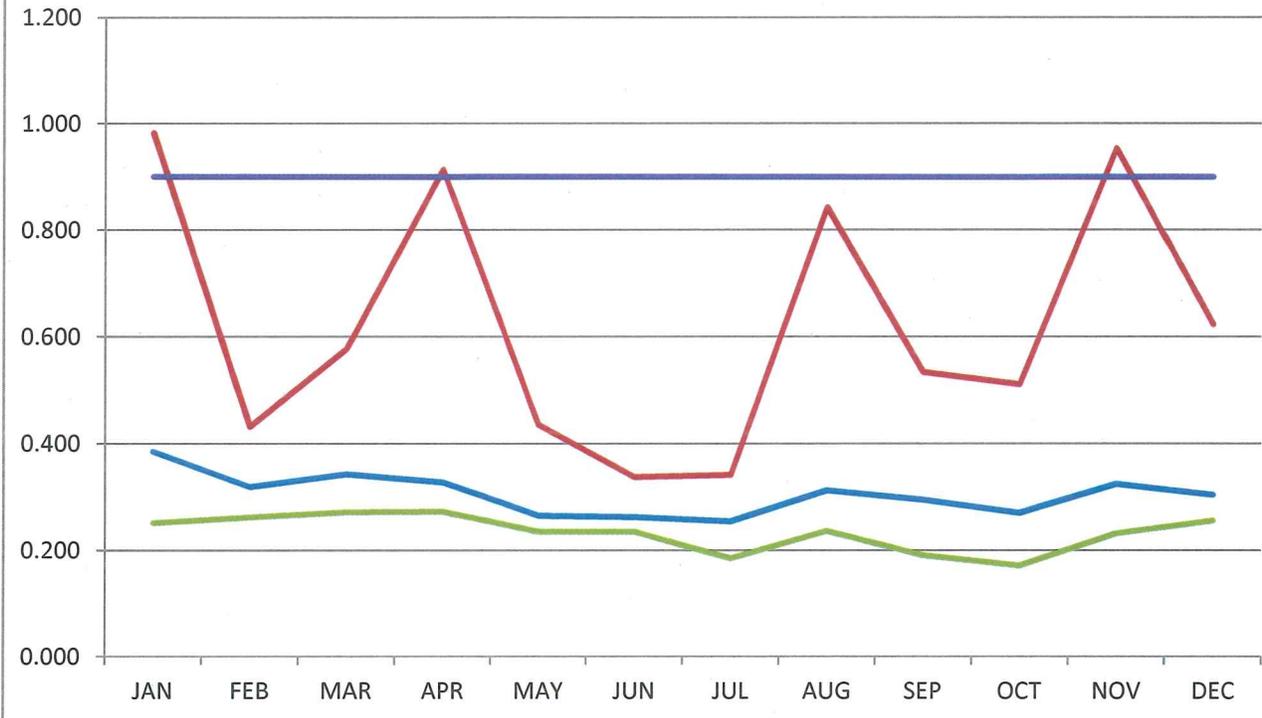
GRANITE FALLS WWTP EFFICIENCY %



DESIGN RATED EFFICIENCY 87%

ACTUAL 2014 EFFICIENCY 97%

GRANITE FALLS WWTP 2014 FLOW RATES



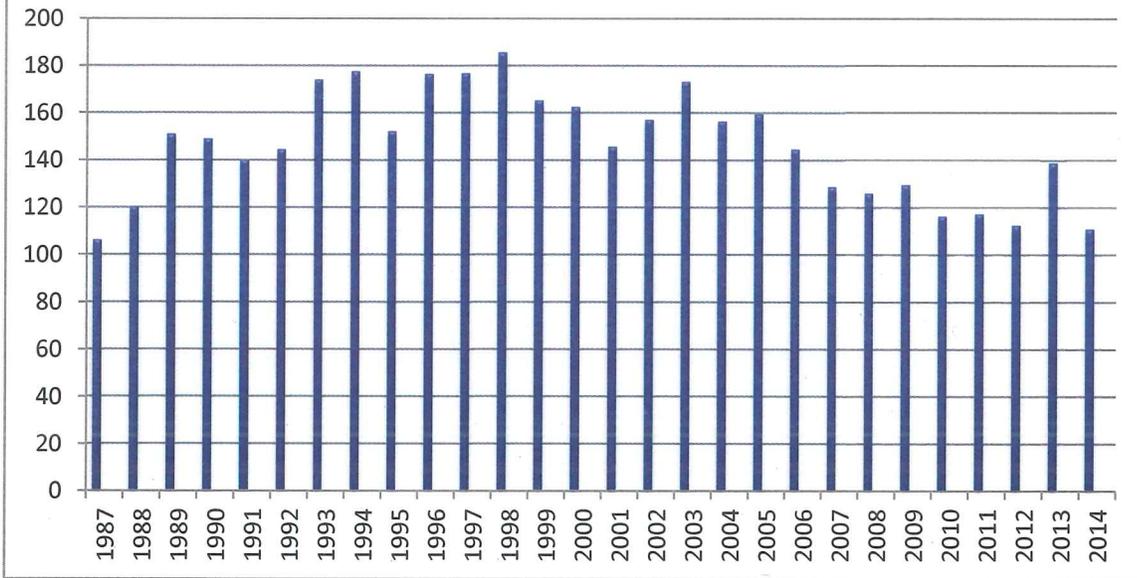
LOW FLOW MG _____

AVERAGE FLOW MG _____

HIGH FLOW MG _____

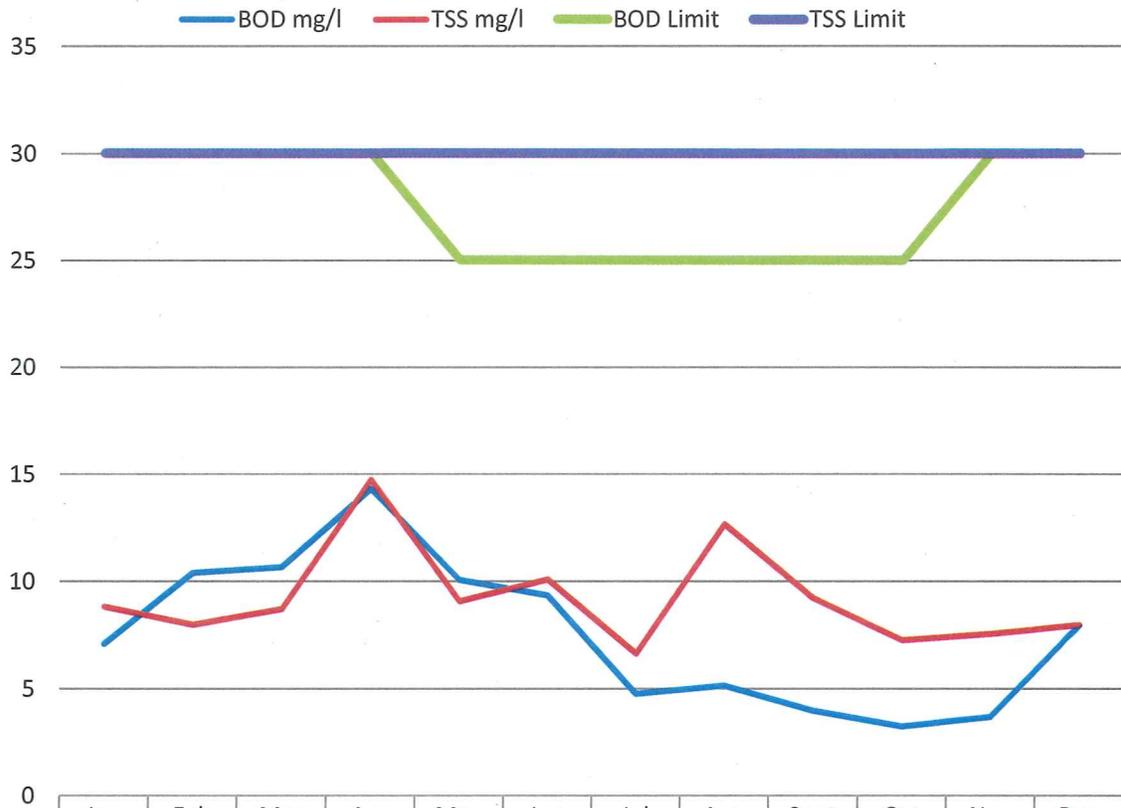
PERMIT LIMIT MG _____

TOTAL YEARLY FLOW 2014



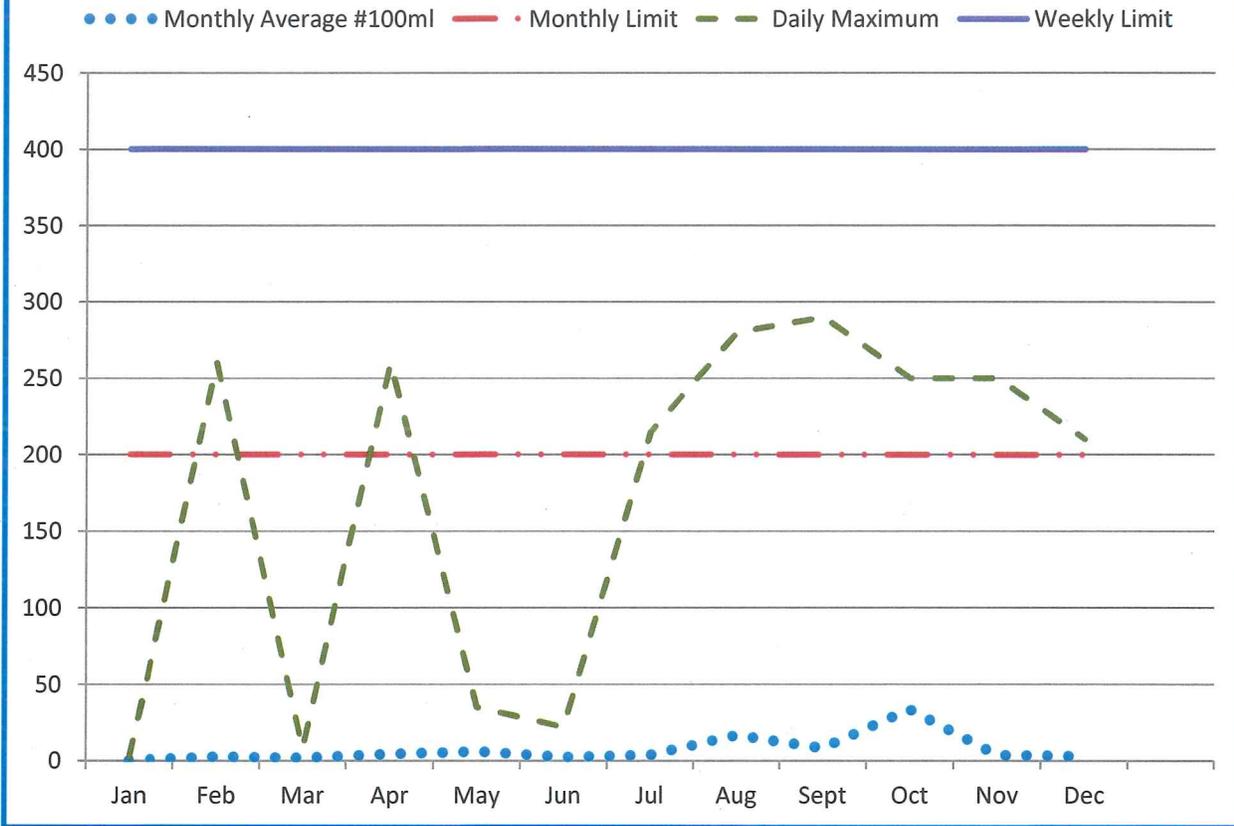
TOTAL FLOW IN MILLION GALLONS 1987-2014 GRANITE FALLS WWTP

2014 BOD & TSS RESULTS GRANITE FALLS WWTP

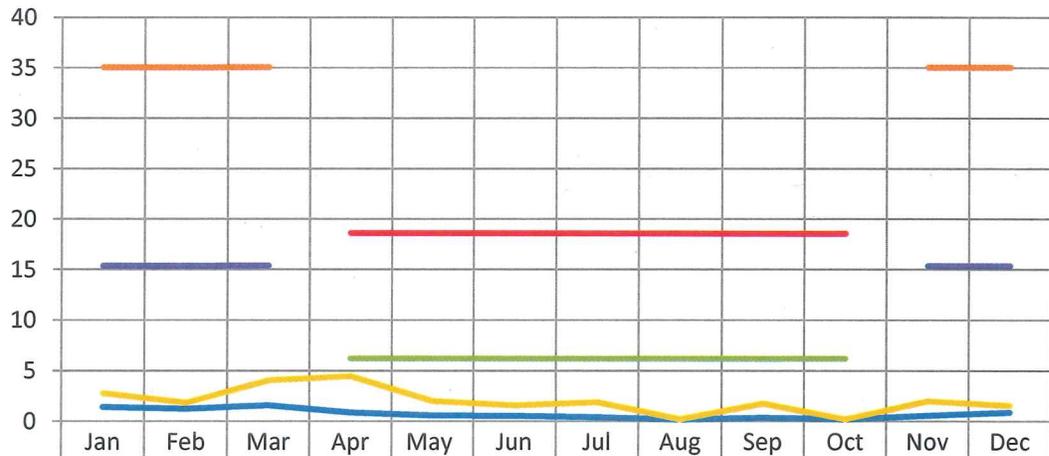


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
BOD mg/l	7.06	10.37	10.65	14.31	10.05	9.33	4.73	5.12	3.96	3.22	3.66	7.93
TSS mg/l	8.82	7.98	8.71	14.74	9.07	10.09	6.64	12.68	9.24	7.28	7.58	7.98
BOD Limit	30	30	30	30	25	25	25	25	25	25	30	30
TSS Limit	30	30	30	30	30	30	30	30	30	30	30	30

2014 Fecal Coliform Results Granite Falls WWTP



2014 Ammonia Nitrogen Results Granite Falls WWTP



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monthly Average mg/l	1.42	1.25	1.55	0.86	0.58	0.55	0.42	0.20	0.40	0.2	0.57	0.90
Daily Maximum mg/l	2.75	1.83	4.00	4.43	1.96	1.57	1.87	0.2	1.74	0.2	1.96	1.53
Monthly Summer Limit				6.2	6.2	6.2	6.2	6.2	6.2	6.2		
Monthly Winter Limit	15.4	15.4	15.4								15.4	15.4
Summer Weekly Limit				18.6	18.6	18.6	18.6	18.6	18.6	18.6		
Winter Weekly Limit	35.0	35.0	35.0								35.0	35.0

— Monthly Average mg/l
 — Daily Maximum mg/l
 — Monthly Summer Limit
— Monthly Winter Limit
 — Summer Weekly Limit
 — Winter Weekly Limit

**WWTP/COLLECTION SYSTEM IMPROVEMENTS
ALUM SLUDGE STORAGE TANK ADDITION
FUNDING AND ENGINEERING SCHEDULE**

In June 2014 the Town of Granite Falls received "Notice of Intent to Fund" from the Clean Water State Revolving Fund (CWSRF) for two projects related to its Wastewater collection & Treatment system. Project No. 1 is Improvements to the Waste Treatment Plant – Phase 1 and Project No. 2 is the Replacement of the Laurel Street Pump Station and the Central Ave. Pump Station in the Collection system

The total cost for these two projects is estimated to be \$2,560,000. Subsequently, in January of this year, the Town also received "Notice of Intent to Fund" from the CWSRF for a third project. This project is for the planned addition of another Alum Sludge Storage Tank at the Water Plant which is estimated to cost \$612,000.

The required Preliminary Engineering Reports and Environmental Documents (PER/ED) for the first two projects have been completed and submitted to the State for review. Approval of these documents is expected no later than March 2, 2015 at which time the design of the proposed improvements will begin.

Work will begin on the PER/ED document for the Alum Sludge Tank by February 1st and must be submitted to the State by May 1st.

Attached are the Proposed Schedules for the Town of Granite Falls CWSRF projects.

Town of Granite Falls

CWSRF Schedule

❖ **WWTP Improvements, Phase I**

❖ **Replacement of Laurel Street and Central Avenue Pump Stations**

●	Begin Design	3/15/2015	(NLT)
●	Submit Design to State	9/1/2015	(NLT)
●	Design Approval	1/4/2016	(NLT)
●	Advertise for Bids	2/1/2016	(NLT)
●	Authority to Award Contract	5/2/2016	(NLT)
●	Execute Construction Contract	6/1/2016	(NLT)
●	Begin Construction	7/1/2016	(NLT)
●	End Construction	4/1/2017	(NLT)
●	Project Close-Out	6/1/2017	(NLT)

❖ **Water Treatment Plant Alum Sludge Tank**

●	PER/ED Submittal	5/1/2015	(NLT)
●	PER/ED Approval	10/1/2015	(NLT)
●	Begin Design	10/15/2015	(NLT)
●	Submit Design to State	4/1/2015	(NLT)
●	Design Approval	8/1/2016	(NLT)
●	Advertise for Bids	9/1/2016	(NLT)
●	Authority to Award Contract	12/1/2016	(NLT)
●	Execute Construction Contract	1/3/2017	(NLT)
●	Begin Construction	2/3/2017	(NLT)
●	End Construction	8/3/2017	(NLT)
●	Project Close-Out	10/3/2017	(NLT)

CLEAN WATER STATE REVOLVING FUND LOANS BUDGET SCHEDULE

Town of Granite Falls

PROJECT # 1 - Wastewater Treatment Plant Improvements - Phase 1						
ITEM	FY 2015	FY 2016	FY 2017	FY 2018	ITEM TOTAL	
ENGINEERING						
Design	\$97,000.00	\$20,000.00			\$117,000.00	
Construction Administration		\$3,000.00	\$27,000.00		\$30,000.00	
Construction Observation			\$80,000.00		\$80,000.00	
Loan Administration	\$200.00	\$500.00	\$7,300.00		\$8,000.00	
Start-Up			\$10,000.00		\$10,000.00	
O&M Manual			\$8,000.00		\$8,000.00	
ENGINEERING SUB-TOTAL	\$97,200.00	\$23,500.00	\$132,300.00		\$253,000.00	
CONSTRUCTION			\$1,637,000.00		\$1,637,000.00	
LEGAL		\$1,000.00	\$1,000.00		\$2,000.00	
CLOSING FEE		\$38,000.00			\$38,000.00	
FY TOTAL	\$97,200.00	\$62,500.00	\$1,770,300.00	\$0.00	\$1,930,000.00	

CLEAN WATER STATE REVOLVING FUND LOANS BUDGET SCHEDULE

Town of Granite Falls

PROJECT # 2 - Replacement of Laurel Street and Central Avenue Pump Stations						
ITEM	FY 2015	FY 2016	FY 2017	FY 2018	ITEM TOTAL	
ENGINEERING						
Design	\$35,000.00	\$7,000.00			\$42,000.00	
Construction Administration		\$1,000.00	\$9,000.00		\$10,000.00	
Construction Observation			\$18,000.00		\$18,000.00	
Loan Administration		\$500.00	\$4,300.00		\$5,000.00	
Start-Up					\$0.00	
O&M Manual					\$0.00	
ENGINEERING SUB-TOTAL	\$35,200.00	\$8,500.00	\$31,300.00		\$75,000.00	
CONSTRUCTION			\$527,000.00		\$527,000.00	
LEGAL		\$1,000.00	\$1,000.00		\$2,000.00	
CLOSING FEE		\$12,200.00			\$12,200.00	
FY TOTAL	\$35,200.00	\$21,700.00	\$559,300.00	\$0.00	\$616,200.00	

CLEAN WATER STATE REVOLVING FUND LOANS BUDGET SCHEDULE

Town of Granite Falls

PROJECT # 3 - New Alum Sludge Storage Tank At Water Treatment Plant						
ITEM	FY 2015	FY 2016	FY 2017	FY 2018	ITEM TOTAL	
ENGINEERING						
PER/ED	\$8,000.00				\$8,000.00	
Design		\$47,000.00			\$47,000.00	
Construction Administration			\$9,000.00	\$2,000.00	\$11,000.00	
Construction Observation			\$19,000.00	\$2,000.00	\$21,000.00	
Loan Administration		\$500.00	\$3,000.00	\$1,500.00	\$5,000.00	
Start-Up						
O&M Manual						
ENGINEERING SUB-TOTAL	\$8,000.00	\$47,500.00	\$31,000.00	\$5,500.00	\$92,000.00	
CONSTRUCTION			\$450,000.00	\$56,000.00	\$506,000.00	
LEGAL		\$1,000.00	\$1,000.00		\$2,000.00	
CLOSING FEE			\$12,000.00		\$12,000.00	
FY TOTAL	\$8,000.00	\$48,500.00	\$494,000.00	\$61,500.00	\$612,000.00	
FY TOTAL ALL PROJECTS	\$140,400.00	\$132,700.00	\$2,823,600.00	\$61,500.00	\$3,158,200.00	TOTAL ALL PROJECTS