

August 26, 1974

State of
Washington
Department
of Ecology



Memo to: Ron Robinson

From: Mike Tomlinson

Subject: Twanoh State Park Efficiency Survey

The park ranger (Harry Louch) knew very little about the system. During peak use, the Cl₂ residual was too low. It was suggested that he add more (which was done). The flow meter was broken. He would appreciate you contacting him, he needs a crash course in STP's.

MT:jmh

MONTHLY ATTENDANCE

Twano State Park

1973 - 1974

Month	Year	Overnight Total	Day Use Total	Grand Total
Jan.	1973	42	5,855	5,897
Feb.	"	166	9,722	9,888
Mar.	"	367	13,048	13,415
April	"	765	20,514	21,279
May	"	1,925	36,806	38,731
June	"	2,623	32,538	35,161
July	"	5,085	83,499	88,584
Aug.	"	6,249	57,463	63,712
Sept.	"	1,207	25,025	26,232
Oct.	"	188	11,513	11,701
Nov.	"	76	5,306	5,382
Dec.	"	4	4,044	4,048
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Jan	1974	0	3,702	3,702
Feb.	"	81	5,128	5,209
Mar.	"	138	7,484	7,622
April	"	450	15,984	16,434
May	"	1,511	29,336	30,847
June	"	3,069	61,343	64,412

STP Survey Report Form

Efficiency Study

City Twanoh State Pk Plant Type Septic Tank Pop. Served 350,000/yr. Design Capacity Average
 Receiving Water Hood Canal Perennial Intermittent
 Date 7/21/74 Survey Period 1200-1800 Survey Personnel M. Tomlinson
 Comp. Sampling Frequency Hourly Sampling Alequot 1200 ml.
 Weather Conditions (24 hr) Dry-sunny Are facilities provided for complete by-pass of raw sewage? Yes No/Frequency of bypass NA
 Reason for bypass NA Is bypass chlorinated? NA Yes NA No
 Was DOE Notified? NA Discharge - Intermittent NA Continuous NA

Plant Operation

Total flow SEE AVG. POP. BY MONTH How measured Meter not operational
 Maximum flow " Time of Max. 1500 (Esp. weekends)
 Minimum flow " Time of Min.
 Pre Cl₂ NA #/day Post Cl₂ Min ~1.5 / Max ~4.5 #/day

Field Results

Determinations	Influent				Effluent			
	Max.	Min.	Mean	Median	Max.	Min.	Mean	Median
Temp °C					15.3	14	14.8	14.6
pH (Units)					8.4	7.0	8.0	7.7
Conductivity (µmhos/cm ²)					1450	380	971	915
Settleable Solids (mls/l)					0.1	0	0	0.05

Laboratory Results on Composites

	Influent	Effluent	% Reduction
Laboratory No.		74-2980	
5-Day BOD ppm			
COD ppm		187	
T.S. ppm		364	
T.N.V.S. ppm		197	
T.S.S. ppm		36	
N.V.S.S. ppm		3	
pH (Units)		8.7	
Conductivity (µmhos/cm ²)		1030	
Turbidity (JTU's)		17	
Color		320	

Laboratory Bacteriological Results

Lab No.	Sampling Time	Colonies/100 ml (MF)			Cl ₂ Residual	
		Total Coliform	Fecal Coliform	Fecal Strep	15 Sec	3 Min
74-2976	1200	740	10 Est.		<0.05	<0.05
	1300				<0.05	<0.05
77	1400	5500	420		<0.05	<0.05
	1500				<0.05	<0.05
78	1600	<20	<10		0.05	<0.05
	1700				0.35	0.75
79	1800	<20	<10		0.20	>1.0

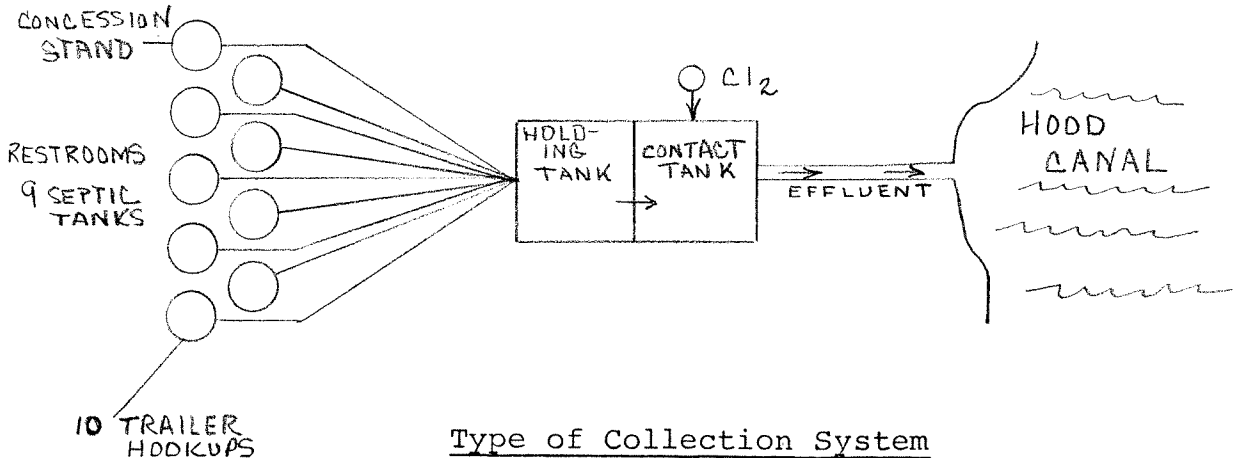
Additional Laboratory Results

NO ₃ -N ppm	-	0.02	
NO ₂ -N ppm	-	ND	
NH ₃ -N ppm	-	105	
T. Kjeldahl-N ppm	-	98.5	
O-PO ₄ -P ppm	-	7.0	
T-PO ₄ -P ppm	-	9.0	

Operator's Name Harry Louch (Ranger)

Phone No. 898-2291

Furnish a flow diagram with sequence and relative size and points of chlorination.



Type of Collection System

Combined Separate Both

No storm sewers

Estimate flow contributed by surface or ground water (infiltration)

? MGD

Plant Loading Information

Annual average daily flow rate(mgd)

Peak flow rate(mgd)

Dry _____

Dry _____

Wet _____

Wet _____

COMMENTS: At 1415, Ranger Louch Increased Cl₂ from 1.7 lbs/day to 4 - 4.5 lbs/day.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

WATER QUALITY LABORATORY

DATA SUMMARY

ORIGINAL TO:
M. T. Tolman
COPIES TO:
.....
.....
LAB FILES

Source TWANOK ST. PARK

Collected By M. T.

Date Collected 7-22-74

Goal, Pro./Obj. _____

Log Number:	74	2976	77	78	79	80						STORET
Station:	1200	1400	1600	1800	Comp							
pH					8.7							00403
Turbidity (JTU)					17.							00070
Conductivity (umhos/cm)@25°C					1,030							00095
COD					187.							00340
BOD (5 day)					—*							00310
Total Coliform (Col./100ml)	740	5500	<20	<20	-							31504
Fecal Coliform (Col./100ml)	EST 10	420	<10	<10	-							31616
NO3-N (Filtered)					.02							00620
NO2-N (Filtered)					ND							00615
NH3-N (Unfiltered)					105.							00610
T. Kjeldahl-N (Unfiltered)					98.5							00625
O-PO4-P (Filtered)					7.0							00671
Total Phos.-P (Unfiltered)					9.0							00665
Total Solids					364							00500
Total Non Vol. Solids					197							
Total Suspended Solids					36							00530
Total Sus. Non Vol. Solids					3							
<u>Color</u>					320							

Note: All results are in PPM unless otherwise specified. ND is "None Detected"
Convert those marked with a * to PPB (PPM X 10³) prior to entry into STORET

* Rejected due to BOD dilution
water problem

Summary By Stephen P. Roll Date 8-19-74