



STATE OF
WASHINGTON

Dixy Lee Ray
Governor

DEPARTMENT OF ECOLOGY

7272 Cleanwater Lane, Olympia, Washington 98504

206/753-2353

July 25, 1977

To: Ken Mauermann

From: Mike Morhous

Re: Salmon Creek STP Class II Inspection

In conjunction with the above referenced inspection are the following findings and conclusions.

The DOE laboratory analyses showed that the Salmon Creek STP was in compliance with their NPDES permit limitations (monthly average) for pH, suspended solids and fecal coliforms. However the STP was experiencing difficulty in meeting effluent limitations for BOD₅. The STP was in compliance with BOD₅ limitations (mg/l) once out of three separate 24 hour composites analyzed. It should be noted that the mg/l values were not computed to lbs/day values due to the inaccuracy of the flow recorder at the time it was checked.

The Parshall flume/recorder is in definite need of calibration. At the time its accuracy was checked, the script chart was recording 38% of the actual flow. Dale Cap, Plant Operator indicated the plant was in the process of scheduling the flume/recorder for calibration.

During review of the STP's NPDES permit it was noticed that there were no total residual chlorine parameters. Consideration should be given to include total residual chlorine parameters in the permit.

At the time the inspection was conducted the STP was neither dechlorinating nor reseeded the chlorinated effluent BOD₅ samples. However subsequent to the inspection, Dale Cap indicated the laboratory had implemented these procedures as part of the chlorinated effluent BOD₅ test and will continue to do so.

Salmon Creek Class II Inspection

On February 24, 1977 Greg Cloud and I arrived at the Salmon Creek STP to conduct a routine Class II inspection. Automatic composite samplers were installed at the influent, unchlorinated effluent and chlorinated effluent. The influent sampler was located below the grit chamber/comminutor. The unchlorinated effluent sampler was located in the combined clarifier outfall channel. The chlorinated effluent sampler was located at the chlorine contact chamber outfall. All three samplers were adjusted to take a 250 ml aliquot every thirty minutes.

The STP's flow measuring device is an 18 inch Parshall flume. The accuracy of the flume/recorder was checked with a calculated instantaneous flow. The recorder (script chart) was reading 38 per cent of the actual flow.

Laboratory procedures were reviewed with Dale Cap, Plant Operator. The major discrepancy was the lab procedure for setting up the chlorinated effluent BOD₅ which excluded dechlorinating and reseeded the sample. The necessity of dechlorinating and reseeded chlorinated samples was explained together with the accepted method for accomplishing these procedures. It was recommended that dechlorinating and reseeded procedures be implemented for a more accurate chlorinated effluent BOD₅. During review of the total suspended solids analysis, it was recommended the sample volume be reduced so that the filter paper will not plug up and prevent the sample volume from being completely filtered through within a time span of approximately 1-3 minutes.

The STP indicated they were having a problem with the fecal coliform test. The fecal coliform colonies were not producing a blue color after incubation. It was discovered that the manufactured mFC broth was defective. The STP was given mFC broth, from the DOE lab, to use while they ordered new broth.

Two fecal coliform grab samples were collected together with simultaneous total residual chlorine readings using a LaMotte DPD chlorine test kit.

On February 25 Greg and I returned to pick up the composite samplers. The influent and chlorinated effluent composites were split with the STP for a comparison of lab results. However due to malfunction of the STP's incubator during the five day incubation period, a comparison of results was not possible.

The following table lists DOE's results together with NPDES permit effluent limitations.

	Inf.	Unchl. Eff.	Chl. Eff.	NPDES Final Eff. (Monthly Avg.)
BOD ₅ mg/1 lbs/day	194	165	155	130 3900
TSS mg/1 lbs/day	128	66	52	75 2400
Fecal Coliforms (Colonies/100 mls)				700
at 1100			< 10	
at 1500			< 10	
* Chlorine Residual (ppm)				
at 1100			.70	
at 1500			.35	
Total Plant Flow (mgd)			1.86	

" <" is "less than"

In view of the inaccuracy of the flume/recorder, the total plant flow value obtained from the STP totalizer is questionable. Therefore BOD₅ and TSS loadings were not computed.

Since a comparison of laboratory results was not possible, subsequent 24 hour composites collected by the STP on March 23-24, 1977 were split for a comparison of BOD₅ and TSS results. The STP dechlorinated the effluent composite by adding 2-3 drops of sodium thiosulfate to the sample jug prior to the sampling period. However the composite sample was not reseeded. The following table lists both DOE and Salmon Creek STP results.

	DOE		Salmon Creek STP	
	Inf.	Chl. Eff.	Inf.	Chl. Eff.
BOD ₅ mg/1	132	115	222	166
TSS mg/1	152	40	154	57

As shown the TSS results were reasonably close, however the BOD₅ results were not comparable. It should be noted that DOE's results show the STP in compliance in both analyses.

In view of the discrepancy involved with the BOD₅ results, a third 24 hour composite collected by the STP on May 11-12, 1977 was split for comparison of laboratory results. It should be noted that at this time the STP was dechlorinating and reseeded chlorinated composite samples in conjunction with an evening class employees were attending for instruction on dechlorinating and reseeded procedures. Also the DOE lab used Salmon Creek STP's seed material when setting up BODs. The following table lists the results.

	DOE		Salmon Creek STP	
	Inf.	Chl. Eff.	Inf.	Chl. Eff.
BOD ₅ mg/1	210	147	325	168

The effluent results compared reasonably well, however there still exists a considerable discrepancy between the influent results. No apparent reason for the influent BOD₅ discrepancies has been discovered to date. However an additional review of the STP's BOD₅ procedures will be conducted upon request from your office.

MM:ee

cc: Dick Cunningham
Doug Houck
Central Files