

M E M O R A N D U M  
January 14, 1980

To: Rick Pierce, S.W. Region  
From: Greg Cloud  
Subject: Elma Lagoons Sewage Treatment Plant

Introduction

On December 4 and 5, 1979 a Class II inspection was conducted at the Elma sewage treatment plant (STP). Those in attendance were Rick Pierce and Greg Cloud (DOE) and Quentin Boyer, the STP operator.

The Elma STP is a primary system composed of two lagoons, a clarifier and a chlorine contact chamber. At the time of the inspection a survey crew was surveying in preparation for the building of a bar screen-grit chamber addition to the plant. This item is badly needed as all solids, rags, etc. are passed directly to the primary lagoon. This makes for extreme maintenance in keeping the lagoon clean of floatables. The rags are hanging from the support wires to the aerators and clogging the aerators causing the motors to overheat and burn out. At the time of the inspection, only two of five aerators were working and one of the two plugged up while the inspection was underway. The bar screen-grit chamber will be installed at the old STP site about 1/4 mile away. This is probably the best spot as there is sufficient gravity flow for good passage. The new plant sits in a very low area and has the sewage pumped in and pumped out. Between the two plants about eight houses are connected to the main trunk line. This should not be a significant load to the rag problem in the lagoons.

Findings and Conclusions

At the time of inspection the plant was passing .5 MGD for the 24-hour sampling period. The NPDES limitation on a monthly average is 0.35 MGD. This large increase is due to the very heavy rains prior to and during

the survey. Some lowland flooding was present in the area.

The flow volume was computed by using a Manning "dipper" flowmeter installed four feet upstream from the 90° "V" notch weir at the end of the contact chamber. The flow meter at the plant was not operating nor had it been for some time. The operator recorded flows by using a yardstick to measure the level passing over the "V" notch weir. This number was applied to a chart, supplied by Parametrix, to give actual flow. The values on the Parametrix chart are correct for the 90° "V" notch weir, but the operator was measuring the level by placing the yardstick at the bottom of the "V" notch. This is measuring the nappe which is not correct. The correct measurement should be made at least 2 feet above (upstream) from the weir. The operator was informed of this and simultaneous measurements were made. The operator's value was 1/2 inch less than the correct value. With the proper flow at that time, this amounted to a .087 MGD error less than actual flow.

#### Laboratory Procedures

The only tests that Mr. Boyer performs are pH, total suspended solids, temperature, and occasionally dissolved oxygen. I believe that the TSS test is being performed correctly, but the environment within the building is too moist. The building has water leakage on the floor due to poor design. This causes problems with the dessicant and moisture absorbtion with the filters. The error could be considerable with poor attention to the situation. No fecal coliforms are being run due to the lack of equipment. This situation has existed since the previous survey (Morhous, Elma STP, September 1977). Mr. Boyer uses LaMotte Bromthaymol blue indicator, with a range of 6.2 to 7.6 as a colormetric determination of pH. This is being used in lieu of a Corning pH meter that has been inoperable for some time. The narrow-range colormetric method is not approved by Standard Methods.

A sample of both influent and chlorinated effluent, sampled by DOE, was split with Mr. Boyer for a laboratory comparison of total suspended solids. The results are entered on the laboratory summary sheet. Mr. Boyer's influent and unchlorinated effluent results are higher than those of DOE. His influent result exceeded that of DOE by 36 percent and unchlorinated effluent result by 43 percent. This could possibly be

due to the moisture problem previously mentioned.

The pounds discharged to the river reported by Mr. Boyer from the split results are in error. He reports 116 pounds discharged. This value is based on the monthly average allowable flow of 0.35 MGD. The correct value should be 167 pounds discharged.

The STP was exceeding permit limitations for BOD mg/l and BOD lbs/day and TSS lbs/day. This is probably due to the extremely heavy rains during the survey and the increased flow.

Elma STP

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