Publication No. 74-e33

MEMORANDUM

May 16, 1974

To: Files

From: Dan Glantz

Subject: Duwamish River Compliance Survey

On April 17 Mike Tomlinson and the writer launched the Department's boat from Alki Point in West Seattle and proceeded to a point 7.95 miles above the mouth of the Duwamish for the purpose of conducting the requested survey. This point was approximately a mile and one-half above the industrial area and considered sufficiently removed to provide a base.

Parameters were selected with reference to the NPDES permits involved. An induction salinometer and a pH meter were used in the survey. The pH readings were taken at the surface while the other parameter readings were taken at depths of one, two and three fathoms, with the few exceptions indicated on the attached chart.

Readings commenced at 1315 hours, near the time of high tide. Readings were repeated at each depth at the first station in an effort to evade the strong current which was moving the instrument probe to an approximate 45° angle. After the first reading at the second station the current was no longer a problem.

The attached data sheet and graph provide the details of the survey. There was consistency in all parameters at all stations until we arrived at station #7, near Boeing Plant #2. From this point on, conductivity and salinity increased considerably at the lower depths and continued this trend through the remainder of our run. An exception was station #10 at the north end of Plant #2 and station #11 across the stream from the plant where the two values dropped considerably. An open outfall (designated 028) under Plant #2 and between stations #9 and #10, was discharging a small amount of what appeared to be cooling water. Our sampling of this discharge showed a temperature of 20.1° and 10.5 pH value. The pH reading was confirmed with a sample in our laboratory and indicates a violation.

There does not appear to be much that is conclusive in our survey. It is obvious tidal incursion has its effect - how much industrial discharge adds to this was not determined. Further degree of compliance will best be arrived at through sampling and testing the individual outfalls. This, in conjunction with receiving water surveying, should provide us with the proper answer.

DG:ee

4/17/74 — DUWAMISH RIVER – COMPLIANCE MONITORING – 4/17/74

STA. #	DEPTH ft	TIME	WIRE ∠	YDS FROM MOUTH	COND.	S ‰	T °C	PH SURF.	COMMENTS
#1	1	1315	15°	14,000 (7.95 mi)	3.1	2.6	8.0	6.9	RESIDENTIAL AREA, UNDER FOOT BRIDGE.
	2	1319	45°		3.1	2.6	8.0	~~6.9~~	
	3	1321			3.2	2.7	8.0	~~6.4~~	
#1	1	1329	10°		3.2	2.6	8.0	6.8	
	2	1330	45°		3.2	2.7	8.0		
	3	1331	45°		3.2	2.7	8.0		
#1	1	1345	15°		3.2	2.7	8.0	6.8	
	2	1347	45°		3.2	2.7	8.0		
	3	1348	45°		3.3	2.8	8.0		
#2	1	1400	45°	13,133 (7.46 mi)	3.2	2.7	8.2		
	2	1401	<5°		3.3	2.7	8.2		CIRCLING BOAT
	3	1402	10°		3.2	2.7	8.0		
#3	1	1406	<5°	12,733 (7.23 mi)	3.3	2.8	8.0		
	2	1407	<5°		3.3	2.8	8.0		
#4	1	1422		12,233 (6.76 mi)	3.3	2.7	8.3	6.8	JUST ABOVE INDUSTRIAL AREA.
	2	1424	<5°		3.3	2.7	8.2		NEAR DRIVE IN THEATRE
	2?	1425	<5°		3.3	2.8	8.5		DIFFICULT TO DETERMINE BOTTOM.
#5	1	1434		11,167 yds (6.34 mi)	3.2	2.7	8.2		
	2	1435			3.2	2.7	8.2		
	3	1436			3.2	2.7	8.2		
#6	1	1446	<5°	10,667 (6.06 mi)	3.2	2.7	8.3		NEAR BOEING
	5	1446			3.7	3.0	8.5		OFF TANKS
#7	1	1453		9,667 (5.49 mi)	3.3	2.7	8.8		
	2	1454			3.5	2.9	9.1		
	3	1450	<5°		3.5	2.9	9.2	6.8	BOTTOM > 3' LESS THAN 4'.
#8	1	1509	<5°	9,350 (5.31 mi)	3.5	2.9	9.0	5.8	
	3	15 11	<5°		20.0	18.1	8.0		
	2	15 14	<5°		18.6	16.6	8.4		NEAR THOMPSON BLDG.
#9	1	15 22		8,333 (4.73 mi)	3.1	3.0	9.0	6.4	ADJACENT TO PLANT #2.
	2	1524			13.9	12.1	8.3		
	3	1525			24.6	27.9	8.1		
	4	1526			29.7	28.0	8.1		
							20.1	10.5	DISCHARGE AT BOEING PLANT #2 (028
#10	1	1543		7,683 (4.36 mi)	4.3	3.5	9.2	6.1	NEAR MOST NORTHERLY BLDG OF PLANT #2
	2	1544			10.9	9.2	8.8		
	3	1546			9.9	8.1	8.8		
#11	1	1552		7,333 (4.17 mi)	4.3	3.5	9.3	6.2	ACROSS STREAM FROM PLANT #2
	2	1553			6.5	5.3	9.4		
#12	1	1603		5,933 (3.37 mi)	5.6	4.6	9.0	6.2	
	2	1604			15.1	13.2	8.5		

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STA. #	DEPTH FMS	TIME	WIRE	YDS FROM MOUTH	COND	S °/₀₀	T°C	PH @ SURFACE
#12	3	1605		4,133	29.8	28.1	8.1	
#13	1	1620		(2.35 MI)	10.9	9.2	8.6	5.8
	2	1621			25.2	23.2	8.4	
	3	1622			29.9	28.1	8.2	
#14	1	1635		2,067 (1.17 MI)	12.4	10.7	8.8	6.8
	2	1636			22.1	20.1	8.4	
	3	1637			29.3	27.5	8.1	
#15	1	1650		733 (0.4 MI)	21.5	19.4	8.4	6.4
	2	1651			29.2	27.2	8.3	
	3	1652			30.5	28.6	8.3	

COMMENTS

HALOCLINE BETWEEN 1 & 2 FTHMS

SEATTLE TIDES — APRIL 1974

Day	HIGH TIDES Time	Ft.	Time	Ft.	LOW TIDES Time	Ft.	Time	Ft.
Mo 1	0:31	10.9	10:58	9.1	6:13	6.6	**6:05**	**0.5**
Tu 2	1:27	11.2	**12:29**	**9.1**	7:25	5.4	**7:10**	**0.9**
We 3	2:12	11.5	**1:51**	**9.5**	8:20	4.1	**8:09**	**1.4**
Th 4	2:50	11.7	**3:03**	**10.1**	9:07	2.6	**9:05**	**2.0**
Fr 5	3:24	11.8	**4:03**	**10.6**	9:48	1.3	**9:51**	**2.7**
Sa 6	3:58	11.8	**5:00**	**11.0**	10:27	0.3	**10:37**	**3.5**
Su 7	4:29	11.6	**5:49**	**11.2**	11:06	-0.5	**11:21**	**4.2**
Mo 8	5:01	11.4	**6:41**	**11.3**	11:45	-0.9	.....	.....
Tu 9	5:33	11.0	**7:30**	**11.1**	0:03	5.0	**12:25**	**-0.9**
We 10	6:07	10.5	**8:21**	**10.9**	0:49	5.6	**1:07**	**-0.7**
Th 11	6:45	10.0	**9:17**	**10.6**	1:39	6.2	**1:49**	**-0.2**
Fr 12	7:25	9.3	**10:18**	**10.4**	2:31	6.7	**2:39**	**0.4**
Sa 13	8:16	8.7	**11:21**	**10.3**	3:38	6.9	**3:30**	**1.0**
Su 14	9:22	8.1	.....	.....	5:01	6.8	**4:32**	**1.7**
Mo 15	0:18	10.3	10:41	7.8	6:20	6.3	**5:34**	**2.2**
Tu 16	1:03	10.4	**12:11**	**7.8**	7:19	5.4	**6:33**	**2.6**
We 17	1:40	10.4	**1:27**	**8.2**	8:01	4.5	**7:29**	**3.1**
Th 18	2:09	10.5	**2:30**	**8.7**	8:36	3.4	**8:18**	**3.5**
Fr 19	2:33	10.5	**3:23**	**9.4**	9:05	2.3	**9:01**	**4.0**
Sa 20	2:57	10.6	**4:08**	**10.0**	9:36	1.2	**9:42**	**4.4**
Su 21	3:23	10.7	**4:51**	**10.6**	10:09	0.2	**10:21**	**4.9**
Mo 22	3:47	10.8	**5:37**	**11.1**	10:43	-0.8	**11:02**	**5.4**
Tu 23	4:20	10.9	**6:22**	**11.4**	11:19	-1.5	**11:44**	**5.9**
We 24	4:52	11.0	**7:10**	**11.6**	11:58	-2.0	.....	.....
Th 25	5:31	10.8	**8:03**	**11.7**	0:30	6.3	**12:43**	**-2.1**
Fr 26	6:13	10.5	**8:58**	**11.6**	1:22	6.7	**1:32**	**-1.9**
Sa 27	7:05	9.9	**9:57**	**11.6**	2:21	6.8	**2:23**	**-1.3**
PACIFIC DAYLIGHT TIME BEGINS APRIL 28								
Su 28	9:11	9.2	**11:52**	**11.6**	4:33	6.6	**4:22**	**-0.4**
Mo 29	10:34	8.5	.....	.....	5:51	5.9	**5:25**	**0.6**
Tu 30	0:49	11.6	**12:13**	**8.2**	7:08	4.8	**6:33**	**1.7**

Light Type AM PACIFIC STANDARD TIME Bold Type PM