

JOHN SPELLMAN
Governor



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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M E M O R A N D U M

March 6, 1984

To: Tom Eaton

From: Art Johnson *aj*

Subject: Results of Priority Pollutant Analyses on Water and Sediment Samples Collected January 17, 1984 from the Blair Waterway Tote Facility Dredge Spoils Crib, Tacoma

Attached are the results of EPA Manchester laboratory's partly completed analyses on some of the dredge spoils samples Dale Norton and I collected for Jim Krull January 17, 1984. The accompanying sketch shows where each sample was collected. The water samples were surface grabs; sediment samples were cores 3 to 4 feet in length.

Phthalate esters (PAE), phenolic compounds, and polyaromatic hydrocarbons (PAH) were detected in both water samples. Trace amounts of dichloroethane were detected in one sample. The PAE data should be disregarded since these compounds were also measured at high concentrations in both blanks. Individual PAH (11 compounds detected) and phenols (pentachlorophenol and dimethylphenol detected) were present at low concentrations; i.e., less than 2 ug/L. EPA criteria for protection of marine life are 300 ug/L for PAH (acute toxicity) and 34 ug/L for pentachlorophenol (chronic toxicity). There are no saltwater criteria for dimethylphenol--the freshwater criterion is 2,120 ug/L (acute toxicity).

Most historical data(1) on discharges to Commencement Bay waterways and on surface waters within the waterways are based on higher detection limits for PAH (1 to 10 ug/L) than employed by EPA for these water samples. Therefore, PAH have shown up in relatively few samples, primarily those from Kaiser ditch, Lincoln Avenue south drain to Blair, and seeps at Pennwalt and Occidental. Concentrations have been between 1 and 10 ug/L. EPA did not detect PAH in a 1980 survey(2) of Blair and Hylebos surface waters using a 0.5 ug/L detection limit.

(1) Johnson, A., et al., 1974. A Summary of Priority Pollutant Data for Point Sources and Sediment in Inner Commencement Bay. WDOE.

(2) U.S. EPA, 1980. Commencement Bay/Port of Tacoma Field Survey, June 3, 1980.

Memo to Tom Eaton
Results of Priority Pollutant Analyses on Water and Sediment Samples Col-
lected January 17, 1984 from the Blair Waterway Tote Facility Dredge
Spoils Crib, Tacoma
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We recently received data from Cal Analytical Laboratory in Sacramento on 16 discharges to Commencement Bay waterways (storm drains, ditches, and creeks) Dale Norton sampled in September 1983. A 0.1 ug/L detection limit was used. PAH were detected in six of the discharges. Of these, only in Kaiser Ditch were more than one or two compounds present. Kaiser Ditch had individual PAH in the 1- to 8-ug/L range. Other discharges had less than 1 ug/L of individual PAH.

Based on this limited data, water in the dredge spoils crib appears to have a PAH content in the intermediate range of that known to occur in discharges to Commencement Bay waterways. The crib was ice-covered and the spoils had long sat undisturbed when we collected these samples, so suspended solids and therefore perhaps PAH were at a minimum.

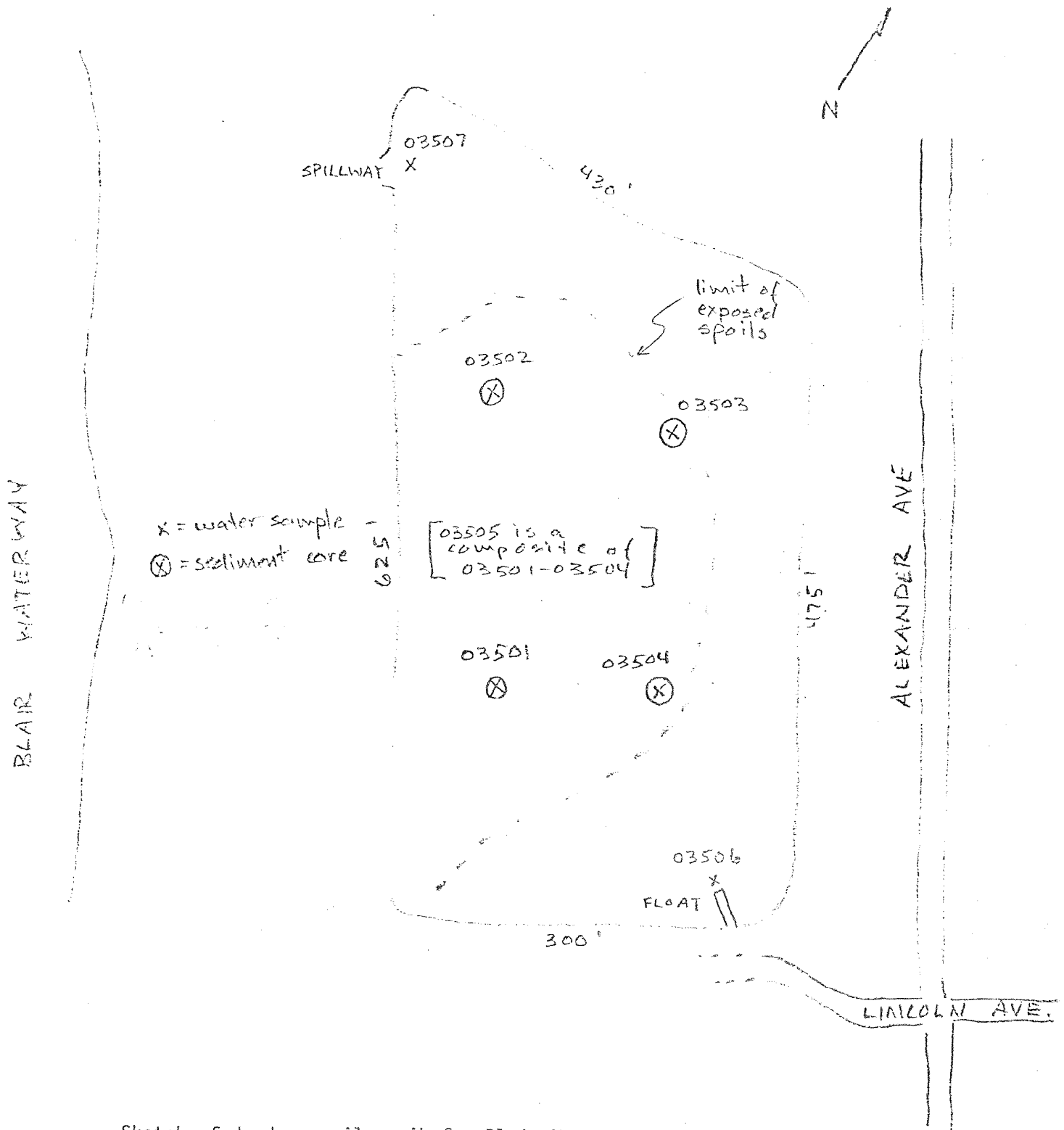
An estimate of the amount of PAH released to Blair Waterway if all the crib water were released is 0.07 pound. This estimate is based on approximate crib dimensions of 550 x 365 feet, an average water depth of 1 1/2 feet, and an average total PAH concentration of 3.75 ug/L. By way of comparison, the PAH loads WDOE have measured in Kaiser ditch have ranged between 0.044 and 0.12 pound/day.

The limited priority pollutant data from the EPA Manchester laboratory on the composite sediment sample show only trace amounts of benzene, ethylbenzene, toluene, and trichloroethylene to be present. The hazardous substance analyses of crib water and composite sediment show traces of a few compounds. I think the high acetone concentration in the sediment sample comes from our having used acetone to clean the spatulas we used to manipulate the sediment samples.

I expect to receive the remainder of the data on these samples within the week.

AJ:cp

Attachments



Sketch of dredge spoils crib for Blair Tote facility project showing locations of HDOE samples collected January 17, 1984.



DONALD W. MOOS
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Mail Stop PV-11 • Olympia, Washington 98504 • (206) 459-6000

TO: Merley McCall - Art Johnson
FROM: D. Huntamer - Chemist
SUBJECT: Organic Analysis of Blair Waterway Water and Sediment Samples, Tacoma, WA
DATE: February 27, 1984

Four water and five sediment samples were received from WDOE, Olympia at the EPA Region 10 Laboratory on January 23, 1984. Analysis requested was for a priority pollutant scan on the water samples and the one composite sediment sample. The remaining four sediments were analyzed for acid/base-neutrals. The results of the acid/base-neutral organic analyses are attached. Results for VOA's, PCB's PCBD's, pesticides and metals will be sent when completed.

<u>EPA#</u>	<u>WDOE#</u>	
03501	-	Sediment
03502	-	"
03503	-	"
03504	-	"
03505	-	Composite sediment
03506	-	Water
03507	-	"
03508	-	Water Blank
03509	-	" "

BASE/NEUTRAL COMPOUNDS

PROJECT: Blair Waterway COMPILED BY: J N Blazench DATE: 2-17-84
 LABORATORY: EPA Region X - REVIEWED BY: AKB DATE: 2-17-84

SAMPLE # :	03506	03507	03508	03509				
UNITS :	ug/l	—	—	→				
LOQ :	1-26-84 2-9-84	—	—	→				
1. acenaphthene	0.9	0.4	0.1u	→				
2. benzidine	0.1u	—	—	→				
3. 1,2,4-trichlorobenzene	0.1u	—	—	→				
4. hexachlorobenzene	0.1u	—	—	→				
5. hexachloroethane	0.1u	—	—	→				
6. bis(2-chloroethyl) ether	0.1u	—	—	→				
7. 2-chloronaphthalene	0.1u	—	—	→				
8. 1,2-dichlorobenzene	0.1u	—	—	→				
9. 1,3-dichlorobenzene	0.1u	—	—	→				
10. 1,4-dichlorobenzene	0.1u	—	—	→				
11. 3,3'-dichlorobenzidine	0.1u	—	—	→				
-12. 2,4-dinitrotoluene	0.2u	—	—	→				
13. 2,6-dinitrotoluene	0.2u	—	—	→				
14. 1,2-diphenylhydrazine (as azobenzene)	0.1u	—	—	→				
15. fluoroanthene	1.8	1	0.1u	→				
16. 4-chlorophenyl phenyl ether	0.1u	—	—	→				

BASE/NEUTRAL COMPOUNDS (continued)

PROJECT: Blain Waterway
 LABORATORY: EPA Region X

COMPILED BY: JN Blazewich
 REVIEWED BY: aps

DATE: 2-17-84
 DATE: 2-17-84

SAMPLE # :	03506	03507	03508	03509				
UNITS :	ug/l	→	→	→				
LOQ :								
17. 4-bromophenyl phenyl ether	0.2u	→	→	→				
18. bis(2-chloroisopropyl) ether	0.1u	→	→	→				
19. bis(2-chloroethoxy) methane	0.1u	→	→	→				
20. hexachlorobutadiene	0.1u	→	→	→				
21. hexachlorocyclopentadiene	0.3u	→	→	→				
22. isophorone	0.1u	→	→	→				
23. naphthalene	0.1u	→	→	→				
24. nitrobenzene	0.1u	→	→	→				
25. N-nitrosodimethylamine	—	—	—	—				
26. N-nitrosodiphenylamine	0.6u	→	→	→				
27. N-nitrosodi-n-propylamine	0.3u	→	→	→				
28. bis(2-ethyl hexyl) phthalate	(54)	(63)	(29)	(19)				
29. butyl benzyl phthalate	0.1u	→	→	→				
30. di-n-butyl phthalate	(2.3)	(2.9)	(0.3)	(0.2)				
31. di-n-octyl phthalate	(1.2)	(2.2)	(1.1)	(0.8)				
32. diethyl phthalate	0.1u	→	→	→				
33. dimethyl phthalate	0.1u	→	→	→				
34. benzo(a)anthracene	(0.2)	(0.2)	0.1u	→				
35. benzo(a)pyrene	0.1u	→	→	→				
36. 3,4-benzofluoranthene	—	—	—	—				
37. benzo(b)fluoranthene and/or benzo(k)fluoranthene	(0.36)	0.1u	→	→				
38. chrysene	(0.36)	(0.3)	0.1u	→				

BASE/NEUTRAL COMPOUNDS (continued)

PROJECT: Blain Waterway COMPILED BY: JM Blazewich DATE: 2-17-84
 LABORATORY: EPA Region X REVIEWED BY: AKB DATE: 2-17-84

SAMPLE # :	03506	03507	03508	03509				
UNITS :	ug/l	—	—	→				
LOQ :								
39. acenaphthylene	(0.1)	(0.05) ^m	0.1 _u	→				
40. anthracene	(0.2)	(0.17)	0.1 _u	→				
41. benzo(ghi)perylene	0.2 _u	—	—	→				
42. fluorene	(0.2)	(0.11)	0.1 _u	→				
43. phenanthrene	(0.4)	(0.25)	0.1 _u	→				
44. dibenzo(a,h)anthracene	0.3 _u	—	—	→				
45. ideno(1,2,3-cd)pyrene	0.2 _u	—	—	→				
46. pyrene	(0.9)	(0.5)	0.1 _u	→				
47. TCDD	ND	ND	ND	ND				

ACID COMPOUNDS

PROJECT: Blair Waterway COMPILED BY: JM Blazewich DATE: 2-17-84
 LABORATORY: EPA Region 8 REVIEWED BY: MS DATE: 2-17-84

SAMPLE # :	03506	03507	03508	03509				
UNITS :	ug/l	→	→	→				
LOQ :								
1. 2,4,6-trichlorophenol	0.1u	→	→	→				
2. p-chloro-m-cresol	0.1u	→	→	→				
3. 2-chlorophenol	0.1u	→	→	→				
4. 2,4-dichlorophenol	0.1u	→	→	→				
5. 2,4-dimethyl phenol	0.7	0.9	0.1u	→				
6. 2-nitrophenol	0.1u	→	→	→				
7. 4-nitrophenol	0.3u	→	→	→				
8. 2,4-dinitrophenol	0.8u	→	→	→				
9. 4,6-dinitro-o-cresol	0.6u	→	→	→				
10. pentachlorophenol	0.9u	0.5	0.2u	→				
11. phenol	0.1u	→	→	→				

VOLATILES (Continued)

PROJECT: Blair W Wey/WDO COMPILED BY: JMB Lagovich DATE: 2-24-84
 LABORATORY: EPA Region X REVIEWED BY: MS DATE: 2-24-84

SAMPLE # :	03505	03506	03507	03508	03509			
UNITS :	ug/kg	ug/l	—	—	—	→		
LOQ :								
23. dichlorobromomethane	2M	2M	2M	2M	2M			
24. trichlorofluoromethane	↓	↓	↓	↓	↓			
25. dichlorodifluoromethane	↓	↓	↓	↓	↓			
26. chlorodibromomethane	↓	↓	↓	↓	↓			
27. tetrachloroethylene	↓	↓	↓	↓	↓			
28. toluene	2M	↓	↓	↓	2M			
29. trichloroethylene	2M	↓	↓	↓	2M			
30. vinyl chloride	2M	↓	↓	↓	↓			

NON-PRIORITY POLLUTANT HAZARDOUS SUBSTANCES LIST COMPOUNDS

PROJECT: Blair Wm WIDGE
 LABORATORY: EPA Region X

COMPILED BY: JM Blazewich
 REVIEWED BY: [Signature]

DATE 2-24-84
 DATE 2-24-84

SAMPLE # :	03505	03506	03507	03508	03509			
UNITS :	mg/kg		mg/l		→			
LOQ :								
1. benzoic acid								
2. 2-methylphenol								
3. 4-methylphenol								
4. 2,4,5-trichlorophenol								
5. aniline								
6. benzyl alcohol								
7. 4-chloroaniline								
8. dibenzofuran								
9. 2-methyl naphthalene								
10. 2-nitroaniline								
11. 3-nitroaniline								
12. 4-nitroaniline								
13. acetone	260	2M	2M	2M	3M			
14. 2-butanone	4	↓	↓	↓	2M			
15. carbon disulfide	2M	↓	↓	↓	2M			
16. 2-hexanone	↓	↓	↓	↓	↓			
17. 4-methyl 1-2-pentanone	↓	↓	↓	↓	↓			
18. styrene	ND	ND	ND	ND	ND			
19. vinyl acetate	ND	ND	ND	ND	ND			
20. o-xylene	2M	2M	2M	2M	2M			

