



DEPARTMENT OF THE NAVY
NAVAL ORDNANCE STATION
INDIAN HEAD, MARYLAND 20640-5000

IN REPLY REFER TO

5090
Ser 0431A/49

APR 05 1989

Maryland Department of the Environment
Solid and Hazardous Waste Management Administration
Attn: Mr. Ronald Nelson
2500 Broening Highway
Baltimore, MD, 21224

Gentlemen:

We are writing in response to your letter of July 29, 1987, to inform you of the results to date of the Aquatic Assessment Plan to monitor the tidal wetland which is contaminated with mercury from past laboratory practices at the Biazzi Plant of the Naval Ordnance Station.

The information presented in this letter is only a part of the total Navy effort to evaluate the effects of mercury on this wetland and the fish in the adjacent water. E. C. Jordan, Inc. has conducted a Feasibility Study to determine the extent of contamination and to evaluate several possible remedial actions. The E. C. Jordan report is being forwarded under separate cover and will not be discussed in this letter other than to note that E. C. Jordan estimates there are only 60 to 100 pounds of mercury in the wetland rather than the 488 pounds previously estimated by the "Confirmation Study" conducted by CH₂M Hill, Inc.

The monitoring program agreed to in your letter of July 29, 1987, is the latest of several proposed monitoring efforts. Your office has received both the Initial Assessment Study and the Confirmation Study. Each of these previous surveys recommended additional effort to further define the extent of the problem and to determine whether the conditions were changing with time. As a result of these recommendations, we have collected different data at different times.

We are pleased to forward the "Mattawoman Creek/Naval Ordnance Station Mercury Monitoring Study Progress Report", report AFO-C88-3 of the U. S. Fish and Wildlife Service, Annapolis Maryland Field Office. The original draft was prepared in September, 1988, as shown on the cover and the final report was completed in November, 1988, as shown on the title page of the report. Report AFO-C88-3 is based on samples collected in the spring and fall of 1987 at the request of the Naval Ordnance Station. Data is not yet available on the fish samples which were collected in 1988. The Fish and Wildlife Service is also preparing another independent report on the Mattawoman Creek for work which they began in 1985 as part of the Chesapeake Bay Initiative. A preliminary report of the Fish and Wildlife 1985 findings was included in our letter of 2 June 1987 to the Maryland Office of Environmental Programs.

We believe the Fish and Wildlife Report is significant because none of the indigenous fish samples exceeded 1 part per million (ppm) of mercury which is the U. S. Food and Drug Administration recommended maximum level for human consumption. This indicates that the observed mercury levels in fish from the Mattawoman Creek do not threaten human health.

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We are also forwarding as enclosures the results of our "Water Column and Sediment Analysis". Ten of the eleven samples taken to date show the water leaving the wetland is within the drinking water standards for mercury content. The exception in June 1986 showed the mercury in water level to be 0.0075 ppm at the station boundary which is slightly above the 0.0020 ppm limit for drinking water. The sediments near the station boundary do show low levels of mercury enrichment above the expected background level; however, we are unable to detect any significant changes with time. Based on all available data, we conclude that mercury is not migrating from the station in amounts which would endanger human health or the environment.

We will be glad to discuss this information with you at your convenience. Please call me or Tommy Woo at (301) 743-4210.

Sincerely,

/s/

PETER RITZCOVAN
Director, Environmental
Protection Division
By direction of
the Commanding Officer

Encl:

- (1) Fish and Wildlife Services Report
- (2) Water Column and Sediment Analysis

Blind copy to:

CHESDIV 114
SEA 654
CO (w/o encl)
TDO (w/o encl)
04 (w/o encl)
0433

Writer: C. Davis, 0431A, x3420

Typist: K. Frey, 04 Apr 89

WATER COLUMN AND SEDIMENT ANALYSIS

After consultation with Maryland State officials, the Naval Ordnance Station developed an Aquatic Assessment Plan which included Water Column and Sediment Analysis. The Naval Ordnance Station letter of 2 June 1987 which proposed this plan is included as attachment number 1. This plan was approved by the Maryland Office of Environmental Programs (OEP) letter of July 29, 1987. This monitoring plan is the latest of several proposed monitoring efforts. Initial monitoring began in 1985 following the recommendations of the "Confirmation Study." The "Confirmation Study" also prompted State concern as evidenced by the OEP letter of August 14, 1986.

Attachments 2 and 3 show locations of sites 11, 14 and 15. These site numbers are the same as the sampling locations used in the "Confirmation Study." Site 11 is at the upstream edge of the wetland and was chosen as a control because it was believed this site was not contaminated by station operations. Site 14 is immediately upstream of the culvert which encloses the wetland and forms the station boundary; site 15 is immediately outside the station boundary.

Attachment number 4 is the data from our "Water Column and Sediment Analysis." The major points concerning mercury are:

a. Mercury in water leaving station (site 14 and 15) is within drinking water standards of 0.002 parts per million (ppm) for ten of the eleven sampling periods. The June 1986 samples were 0.0075 ppm for site 14 and 0.0041 ppm for site 15.

b. Mercury in the sediment at all three sites is in the range of 0.08 to 4.0 parts per million (ppm). Within the limits of the analytical method, the 0.08 ppm level is essentially the background level; the 4.0 ppm level is the lowest possible level which would fail the Extraction Procedure toxicity criteria of 40 CFR 261 if all of the mercury were readily soluble. It is noted that the highest level of mercury in these samples is 1.2 ppm at the station boundary which is roughly one order of magnitude above background and only one third of the arbitrary upper limit of 4.0 ppm derived from 40 CFR 261.

c. Based on this information and the Fish and Wildlife Service report AFO-C88-3, we conclude there is no immediate danger of mercury migrating from the station in amounts which would endanger human health or the environment.

We were very surprised by the arsenic levels found in the latest two samples from site 11, the upstream control location. We know of no past or present industrial process which could result in arsenic contamination. Pesticides containing arsenic may have been used on station, but we have no information to determine the source of the arsenic. The laboratory which obtained the high arsenic levels is in the process of reanalyzing the retained samples to verify these numbers.

ENCLOSURE(2)

SCALE IN FEET
CONTOUR INTERVAL 10 FEET

SITE 8
NG PLANT OFFICE

SITE 12
TOWN GUT LANDFILL

Figure 1
Portion of Naval Ordnance Station
Indian Head, Maryland

From 7.5 Minute USGS Quadrangle, Indian Head, Md.-Va., 1966, Photorevised 1978.



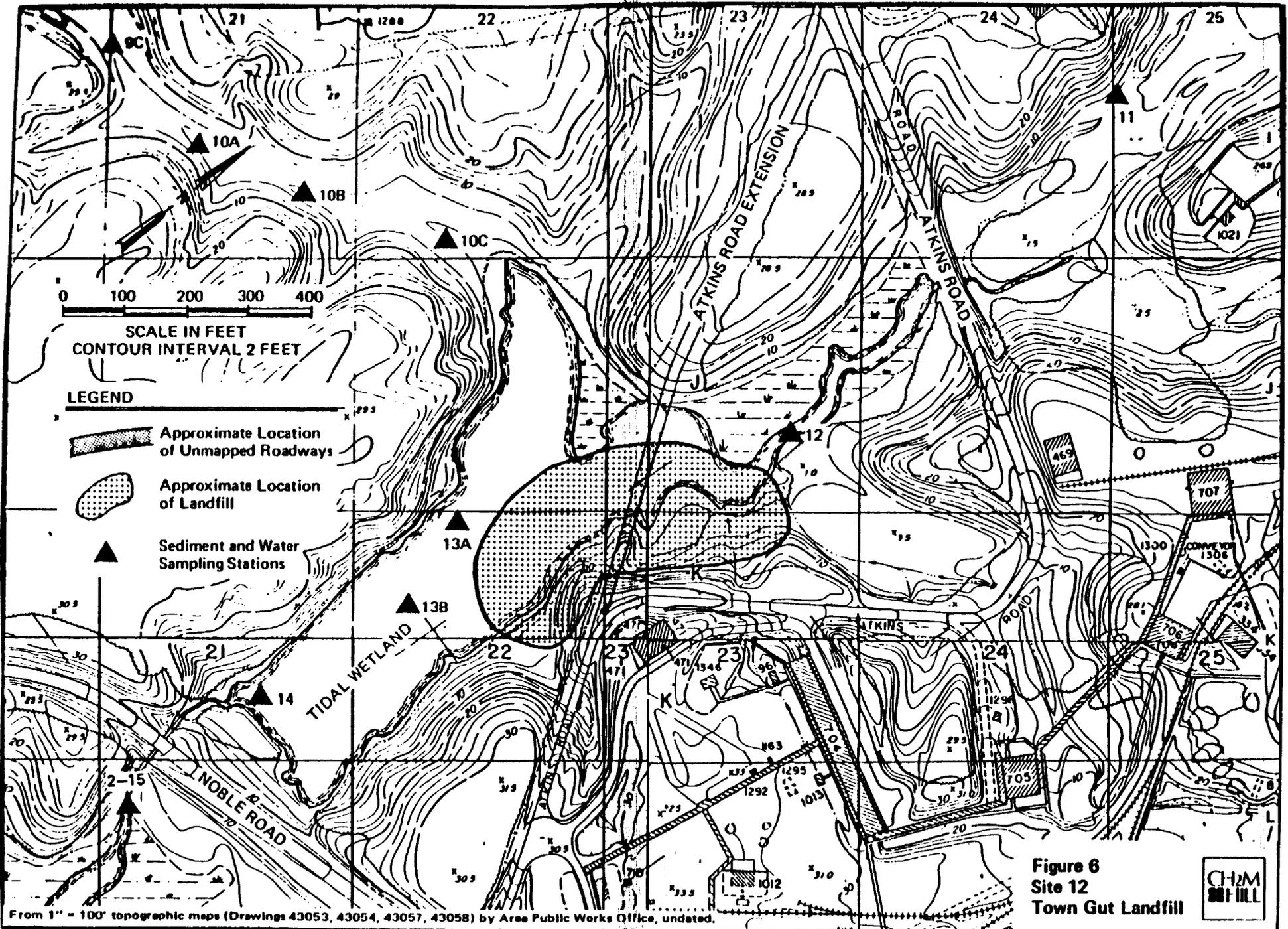


Figure 6
Site 12
Town Gut Landfill



From 1" = 100' topographic maps (Drawings 43053, 43054, 43057, 43058) by Area Public Works Office, undated.

WATER COLUMN AND SEDIMENT ANALYSIS
 Naval Ordnance Station, Indian Head, MD, 20640-5000

(Results in parts per million-wet weight basis)
 (Chesapeake Laboratory data unless indicated)

<u>Date</u>	<u>Site 11 Hg in Water</u>	<u>Site 11 Hg in Sediment</u>	<u>Site 14 Hg in Water</u>	<u>Site 14 Hg in Sediment</u>	<u>Site 15 Hg in Water</u>	<u>Site 15 Hg in Sediment</u>	<u>Site 11 As in Water</u>	<u>Site 11 As in Sediment</u>	<u>Site 14 As in Water</u>	<u>Site 14 As in Sediment</u>	<u>Site 15 As in Water</u>	<u>Site 15 As in Sediment</u>
21 Nov 85	0.002	0.697	0.002	0.82	0.002		0.0033	7.59	0.0011	2.85		
Mar 86	0.00046	0.268	0.00022	0.658	0.001		0.0027	7.79	0.0013	3.98		
Jun 86	0.0025	1.23	0.0075	1.24	0.0041		0.0203	20.4	0.0052	6.21		
Sep 86	0.001	0.190	0.001	0.11	0.001		0.001	1.8	0.001	3.6	0.001	3.6
Dec 86	0.001	0.12	0.001	0.08	0.001		0.0005	4.9	0.0005	3.3		
Feb 87	0.001	0.104	0.001	0.091	0.001	0.272	0.0040	2.85	0.0021	1.56	0.0024	1.18
Jun 87	0.001	1.15	0.001	0.58	0.001	0.27	0.007	5.39	0.004	0.88	0.008	0.69
Aug 87	0.001	0.5	0.001	0.08	0.001	0.5	0.026	34.7	0.004	0.99	0.002	0.89
Dec 87 Dec 87*	0.002	0.09 0.1	0.002	0.12	0.002	0.1 0.1	0.003	0.47 13.0	0.002	0.46	0.002	0.50 1.67
18 Jul 88 18 Jul 88*	0.001				0.001							
Dec 88 Dec 88*	0.001	0.1			0.001	0.1		58.9				7.17
		0.03			0.001	0.02	0.0027				0.0020	
								24.9				1.09

(* CBL data)