

US EPA ARCHIVE DOCUMENT



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

Centerville, Ohio
173
12-31

April 2, 1999

Civil/Military Project
Management Branch

Mr. Richard C. Boyton
Environmental Protection Agency
Region I, JFK Federal Building
Boston, Massachusetts 02203-0001

Dear Mr. Boyton:

In response to the recent site visits and additional chemical information obtained by EPA, the Corps has identified a need for further site characterizations of dioxin contamination at the Allendale Dam in North Providence, Rhode Island. This data will provide decision makers with the characterization of the existing site conditions at the proposed construction area. We understand that as further basin-wide characterizations are being conducted by EPA, it would be desirable to maintain the impoundment above Allendale Dam to prevent further downstream movement of contaminated soils. The Corps has the authority to repair the dam, but there is an overriding concern at defining the extent of dioxin contamination at the site.

We propose deploying a vibra-coring team to take sediment samples within the footprint of the proposed dam repair. Since the defined work area is within 50 feet of the structure and soils will only be disturbed within 20 feet, taking 4 cores above the dam within the 20-foot distance and one core below the dam, immediately downstream seems best. The enclosed 1993 boring logs indicate two sediment horizons are generally present, with 8 to 10 feet of fill over silty sand. The structure has failed and erosion of the materials may provide different site conditions than the boring data suggests. The sampling plan will be based largely on field conditions and visible sediment horizons in the core. Therefore, we recommend 4 cores be taken above the dam, with three horizons sampled (surface, 1 foot above the soils transition and 1 foot above refusal in the underlying silty-sand). The downstream core will most likely meet refusal quickly

since it is representative of the natural scoured riverbed and not fill. All cores will be split and the chemical analyses in the attached tables (including dioxin) will be performed. Therefore, three samples each from 4 cores from the upstream project footprint (total of 12 samples) and one downstream are proposed to be analyzed, for a total of thirteen samples.

We request your review of this approach and recommendations for any modification to the sampling and analysis. Please contact me at (978) 318-8620, Fax 318-8891, or e-mail at joseph.a.bocchino@usace.army.mil for further information.

Sincerely,



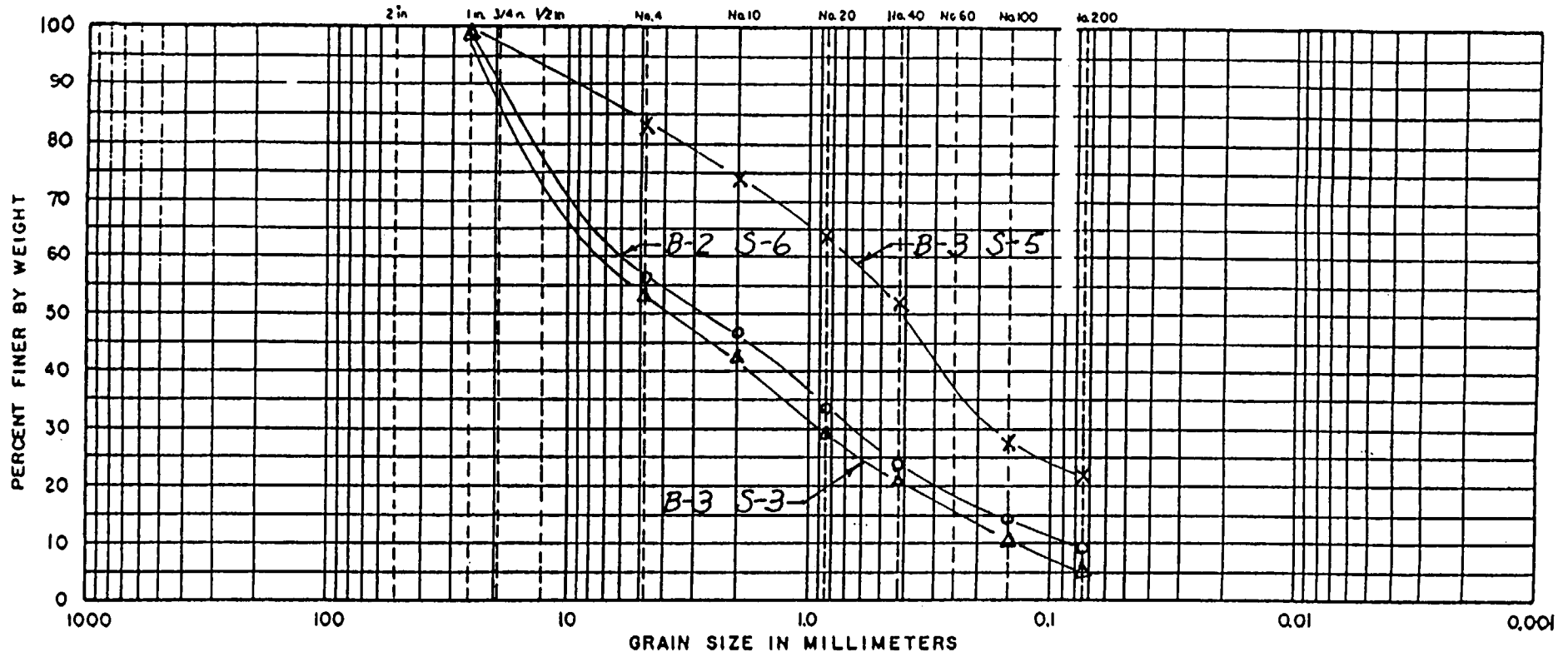
Joe Bocchino
Project Manager

Copies Furnished:

Gary Waldeck, RIDEM
Ted Bazenias, EPA, NE
Bob Mendoza, EPA, NE
A. Ralph Mollis, Mayor, N. Providence
Janet Coit, Office of Sen. John Chafee, Providence, R.I.

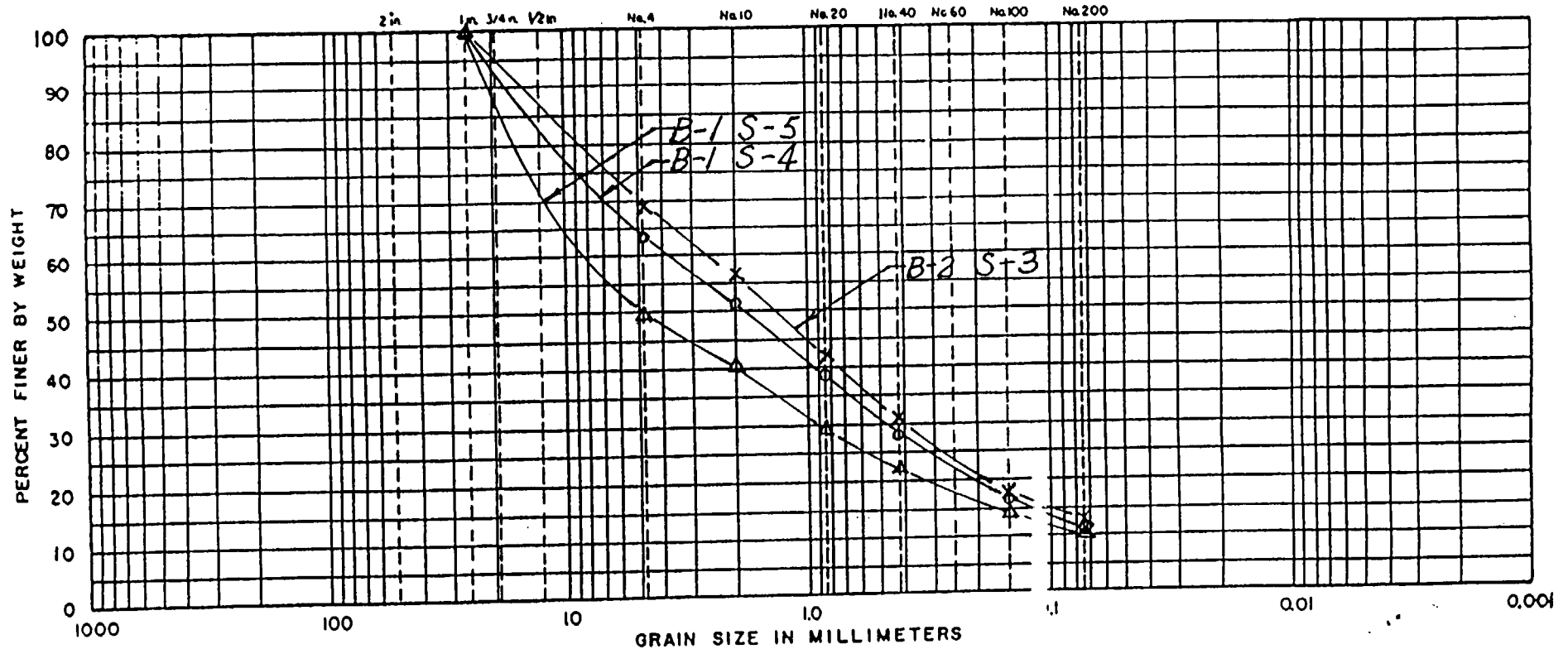
GRAIN SIZE DISTRIBUTION

U. S. Standard Sieve Size



GRAIN SIZE DISTRIBUTION

U.S. Standard Sieve Size



COBBLES	GRAVEL		SAND			SILT or CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

UNIFIED SOIL CLASSIFICATION SYSTEM, CORPS OF ENGINEERS, U.S. ARMY

SAMPLE I.D.	DEPTH	DESCRIPTION
B-1 S-4	6'-8'	Gravelly fine to coarse sand with some silt (SP-SM).
B-1 S-5	8'-10'	Sandy gravel with some silt (GP-GM).
B-2 S-3	4'-6'	Gravelly fine to coarse sand with some silt (SP-SM).

PROJECT Allendale Dam
N. Providence, RI
 FILE NO. 933-RI DATE 2/5/93

US Army Corps of Engineers, New England District

List of Test Parameters in Sediment (Source: Table 1A and 1B 1989
CE/NED Protocol)

<u>PARAMETER</u>	<u>SUGGESTED TEST METHOD (*)</u>	<u>METHOD DETECTION LIMIT, mg/kg (Dry Weight)</u>
<u>METALS</u>		
Arsenic	3050A or 3051/7060A	0.5
Cadmium	3050A or 3051/7131A	0.1
Chromium	3050A or 3051/6010A	1.0
Copper	3050A or 3051/6010A	1.0
Lead	3050A or 3051/7421	1.0
Mercury	7471	0.02
Nickel	3050A or 3051/6010A	1.0
Zinc	3050A or 3051/6010A	1.0
<u>ORGANICS</u>		
TOTAL PCBs (Congeners)	3540A or 3550A/8082	0.001
PESTICIDES	3540A or 3550A/8081	0.02
Aldrin		
Chlordane (gamma and alpha)		
4,4-DDE,DDD,DDT		
Dieldrin		
Endosulfan I,II		
Endosulfan sulfate		
Endrin		
Endrin aldehyde		
Heptachlor		
Heptachlor epoxide		
Alpha-BHC		
Delta-BHC		
Beta-BHC		
Gamma-BHC (lindane)		
Methoxychlor		
Toxaphene		

PAH	3540A or 3550A/8270B	0.02
Naphthalene		
2-Methylnaphthalene		
1-Methylnaphthalene		
Biphenyl		
2,6-Dimethylnaphthalene		
Acenaphthylene		
Acenaphthene		
2,3,5-Trimethylnaphthalene		
Fluorene		
Phenanthrene		
Anthracene		
1-Methylphenanthrene		
Fluoranthene		
Pyrene		
Benzo(a)anthracene		
Chrysene		
Benzo(b)fluoranthene		
Benzo(k)fluoranthene		
Benzo(e)pyrene		
Benzo(a)pyrene		
Perylene		
Indeno(1,2,3-cd)pyrene		
Dibenzo(a,h)anthracene		
Benzo(g,h,i)perylene		

MISC

%Solids	2540B(Std.Methods)	0.1%
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** TOC	9060	0.01%
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QA/QC procedures per sample batch consist of: method blank, matrix spike, matrix spike duplicate, matrix duplicate, and LCS.

* - Selected test methods must meet listed MDLs.

** - Samples to be run in duplicate with a SRM analyzed in each batch in addition to regular QA/QC procedures

TABLE 1. Organic contaminants of concern, analytical methods and target detection limits (dry weight) routinely analyzed in sediments (continued).

Chemical Constituent	Analytical Method ¹	Target Detection limit
PCB CONGENERS ³	NOAA (1989), 8080A	0.001
8*	2,4' diCB	
18*	2,2',5 triCB	
28*	2,4,4' triCB	
44*	2,2',3,5' tetraCB	
49	2,2',4',5 tetraCB	
52*	2,2',5,5' tetraCB	
66*	2,3',4,4' tetraCB	
87	2,2',3,4,5' pentaCB	
101*	2,2',4,5,5' pentaCB	
105*	2,3,3',4,4' pentaCB	
118*	2,3',4,4',5 pentaCB	
128*	2',3,3',4,4' pentaCB	
138*	2,2',3,4,4',5 hexaCB	
153*	2,2',4,4',5,5' hexaCB	
170*	2,2',3,3',4,4',5 heptaCB	
180*	2,2',3,4,4',5,5' heptaCB	
183	2,2',3,4,4',5,6 heptaCB	
184	2,2',3,4,4',6,6' heptaCB	
187*	2,2',3,4',5,5',6 heptaCB	
195*	2,2',3,3',4,4',5,6 octaCB	
206*	2,2',3,3',4,4',5,5',6 nonaCB	
209*	2,2',3,3',4,4',5,5',6,6' decaCB	

¹ The specified methods are recommendations only. Other acceptable methodologies capable of meeting the TDLs can be used. Sample preparation methodology (i.e., extraction and cleanup) (EPA 1993; NOAA 1989) and sample size may need to be modified to achieve the required target detection limits.

² Applies to each analyte listed below unless otherwise noted.

³ Total PCBs are to be estimated based on the following: Total = 2 X [sum of 18 summation congeners marked with *] (T.Wade, personal communication).

TABLE 7

List of Dioxin/Furan Congeners

2,3,7,8-TCDD

1,2,3,7,8-PeCDD

1,2,3,4,7,8-HxCDD

1,2,3,6,7,8-HxCDD

1,2,3,7,8,9-HxCDD

1,2,3,4,6,7,8-HpCDD

OCDD

2,3,7,8-TCDF

1,2,3,7,8-PeCDF

2,3,4,7,8-PeCDF

1,2,3,4,7,8-HxCDF

1,2,3,6,7,8-HxCDF

2,3,4,6,7,8-HxCDF

1,2,3,7,8,9-HxCDF

1,2,3,4,6,7,8-HpCDF

1,2,3,4,7,8,9-HpCDF

OCDF

Testing Procedure: SW846- Method 8290

MDL: 0.000001 ppm

[illegible]

LIAO ASSOCL S, INC.							TEST BORING REPORT														
PROJECT: Allendale Dam							BORING NO. B-3														
LOCATION: N. Providence, RI							PAGE 1 OF 1														
DRILLING CONTRACTOR: Enviro-Tech Drilling							DATE STARTED: 1/28/93														
DRILLED BY: Dan Bilezekian, Richard Canaczo							DATE FINISHED: 1/28/93														
INSPECTED BY: Mark Liao							SURFACE ELEVATION: 91.48'														
GROUNDWATER OBSERVATIONS							CASING SAMPLER CORE BAR														
<table border="1"> <thead> <tr> <th>DEPTH</th> <th>CASING AT</th> <th>STABILIZATION</th> </tr> </thead> <tbody> <tr> <td>1.5'</td> <td></td> <td>20 min.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>							DEPTH	CASING AT	STABILIZATION	1.5'		20 min.							TYPE: HSA split spoon SIZE I.D.: 3 3/4" 1 3/8" HAMMER WT.: 140 lbs HAMMER FALL: 30 in.		
DEPTH	CASING AT	STABILIZATION																			
1.5'		20 min.																			
CASING BLOWS PER FOOT	SAMPLING DEPTH FROM - TO	TYPE OF SAMPLE	HAMMER BLOWS ON SAMPLER				STRATA CHANGE	DESCRIPTION OF MATERIALS	SAMPLE												
			0-6"	6-12"	12-18"	18-24"			NO.	PEN. (in.)	REC. (in.)										
	0 - 2'	spoon	2	14	8	9	8'	FILL: Silty fine to medium sand with gravel and cobbles, gray, medium dense, wet. Soil with organics, loose, from about 6' to 9'.	S-1	24	6										
	2' - 4'	spoon	10	12	13	10			S-2	24	8										
	4' - 6'	spoon	11	11	25	15			S-3	24	7										
	6' - 8'	spoon	8	4	2	1			S-4	24	4										
	8' - 10'	spoon	1	3	10	10	11'	SILTY SAND: Silty fine to medium sand with organics, brown, loose to med. dense, wet.	S-5	24	15										
	10' - 11'	spoon	5	130					S-6	24	1										
								Refusal encountered at 11'-6".													
GENERAL REMARKS:																					
Note: The ground surface elevation is based on the plan prepared by Waterman Engineering Co. of E. Providence, RI dated on Dec. 1992.																					

LIAO ASSOCIATES, INC.								TEST BORING REPORT			
PROJECT: Allendale Dam				BORING NO. B-4							
LOCATION: N. Providence, RI				PAGE 1 OF 1							
DRILLING CONTRACTOR: Enviro-Tech Drilling				DATE STARTED: 1/29/93							
DRILLED BY: Dan Bilezekian, Richard Canaeco				DATE FINISHED: 1/29/93							
INSPECTED BY: Mark Liao				SURFACE ELEVATION: 93.18'							
GROUNDWATER OBSERVATIONS								CASING SAMPLER CORE BAR			
DEPTH		CASING AT		STABILIZATION		TYPE:		HSA		split spoon	
11.0'				20 min.		SIZE I.D.:		3 3/4"		1 3/8"	
						HAMMER WT.:				140 lbs	
						HAMMER FALL:				30 in.	
CASING BLOWS PER FOOT	SAMPLING DEPTH FROM - TO	TYPE OF SAMPLE	HAMMER BLOWS ON SAMPLER				STRATA CHANGE	DESCRIPTION OF MATERIALS	SAMPLE		
			0-6"	6-12"	12-18"	18-24"			NO.	PEN. (in.)	REC. (in.)
	0 - 2'	spoon	2	2	2		10'	FILL: Silty fine to coarse sand with gravel, construction debris, loose to medium dense, dry to moist.	S-1	18	7
	2' - 4'	spoon	1	3	5	7			S-2	24	1
	4' - 6'	spoon	7	6	8	4			S-3	24	1
	6' - 8'	spoon	4	5	5	13			S-4	24	6
	8' - 10'	spoon	9	18	10	5			S-5	24	6
	10' - 12'	spoon	3	12	8	12			13' - 5"	SILTY SAND: Brown silty sand, medium dense, changing to gray rock fragments and coarse sand at 12'-5".	S-6
	12'-13.4'	spoon	28	32	100/5"		S-7	17			8
							Refusal encountered at 13' - 5".				
GENERAL REMARKS:											
Note: The ground surface elevation is based on the plan prepared by Waterman Engineering Co. of E. Providence, RI dated on Dec. 1992.											

LIAO ASSOCIATES, INC.										TEST BORING REPORT			
PROJECT: Allendale Dam					BORING NO. B-1								
LOCATION: N. Providence, RI					PAGE 1 OF 1								
DRILLING CONTRACTOR: Enviro-Tech Drilling					DATE STARTED: 1/27/93								
DRILLED BY: Dan Bilezekian, Richard Canaezo					DATE FINISHED: 1/27/93								
INSPECTED BY: Mark Liao					SURFACE ELEVATION: 92.44'								
GROUNDWATER OBSERVATIONS										CASING SAMPLER CORE BAR			
DEPTH		CASING AT		STABILIZATION		TYPE:		HSA		split spoon			
6.0'				20 min.		SIZE I.D.:		3 3/4"		1 3/8"			
						HAMMER WT.:		140 lbs					
						HAMMER FALL:		30 in.					
CASING BLOWS PER FOOT	SAMPLING DEPTH FROM - TO	TYPE OF SAMPLE	HAMMER BLOWS ON SAMPLER				STRATA CHANGE	DESCRIPTION OF MATERIALS	SAMPLE				
			0-6"	6-12"	12-18"	18-24"			NO.	PEN. (in.)	REC. (in.)		
	0 - 2'	spoon	7	8	14	16	6'	FILL: Fine to coarse sand with gravel and cobbles, gray, medium dense, moist.	S-1	24	6		
	2' - 4'	spoon	8	10	15	22			S-2	24	7		
	4' - 6'	spoon	15	19	10	10			S-3	24	2		
	6' - 8'	spoon	5	5	5	5	12'-4"	FILL: Silty fine to coarse sand with gravel, brown, medium dense, wet. Wood plank about 1" thick at about 11'.	S-4	24	8		
	8' - 10'	spoon	5	5	6	5			S-5	24	7		
	10' - 12'	spoon	5	22	15	21			S-6	24	2		
							16'-4"	ROCK FORMATION: Schist Recovery Ratio Lr = 0.96 Rock Quality Designation RQD = 0.75 End of test boring					
GENERAL REMARKS: Coring Rates: 12'-4" to 13'-4" 9 min., 13'-4" to 14'-4" 7 min., 14'-4" to 15'-4" 9 min., 15'-4" to 16'-4" 9 min.													
Note: The ground surface elevation is based on the plan prepared by Waterman Engineering Co. of E. Providence, RI dated on Dec. 1992.													