115106

METAL BANK SUPERFUND SITE

Site Owner/MATTIONI Requested "Significant Issues in Comments to Proposed Plan" Briefing on May 29, 1996

SIGN-IN

	NAME	COMPANY/AGENCY	PHONE	FUNCTION
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2.	Don MacDonald	NOAA on Telecon	206-526-6271	"
3.	Ken Seeley	EVS on Telecon	206-217-9337	NOAA Contractor
4.	Cesar Lee	EPA /3HW21	215-566-3205	RPM
5.	TONY DARPOLONE	EPA	566-3188	Section Chief
6.	Margaret Cardamone	EPA	566-2477	Attorney
7.	John B Vogt	EPA	-	LAW CLERK
8.	Ed. Klepperich	Consultant	509-948-7701	Consultant
9.	Claire Marcussen	ESE, Inc.	352-333-2622	Human Health Risk Assess. Review.
10.	K.W. BROWN	KWBES	404-688-2280	
11.	ED TOKARSKI	ESE, INC	610-941-9200	ESE PROJ MGR.
12.	PETER T. KNIGHT	NOAA/CRC	215-566-3321	BTAG MEMBER
13.	JAY FIELD	NOAA	206-526-6404	Conf. Call
14.	BRETT BERQUIST / Ken Seeley	EVS Consultants	205 217 9337	"
15.	Robert BURR	U.S. Fish + Wildlife Service	215-566-3323	BTAG Member
16.	Barbara Okorn	EPA	(215) 566-3330	BTAG coordinator
17.	John E. Minihan	Mattioni Ltd	215-629-1600	Attorney
18.	John Mattioni	"	"	"
19.				

INDEX OF COMMENTS TO EPA PROPOSED PLAN

1. Letter dated September 18, 1995, from John Mattioni, Esquire, to Cesar Lee, EPA (10 pages), **(MMM-1)** forwarding two (2) volumes of comments contained in 21 binders or books as follows:

Volume I - Technical Comments

Books 1-2:	Comments on Superfund Program Proposed Plan, Metal Bank Superfund Site, Philadelphia, PA, July 1995, EWK, September 1995, **(EWK-1 and 2)** with a September 15, 1995 report by KWBES on groundwater PCB issues. **(KWBES-1)**
Book 3:	Review of EPA Superfund Program Proposed Plan, Metal Bank Superfund Site Philadelphia, PA, July 1995, ESE (Plymouth Meeting, PA), September 1995. **(ESE-1)**
Books 4-6:	Technical Review of the Risk Assessment Documents, Metal Bank/Cottman Avenue Site, Philadelphia, PA, (Volumes I, II and III), ESE, (Gainsville, FL), September 1995. **(ESE-2, 3 and 4)**
Book 7:	Technical Evaluation of Remedial Alternatives for the Metal Bank/Cottman Avenue Site, ESE (Amherst, New Hampshire), September 1995. **(ESE-5)**
Books 8-9:	Metal Bank/Cottman Avenue Superfund Site, Critical Review of Risk Assessments, Feasibility Study and Superfund Program Proposed Plan, ERM (Exton, PA), September 1995. **(ERM-1 and 2)**
Book 10:	Oil Recovery at the Metal Bank of America Site, 1981-1989, EWK, September 1995. **(EWK-3)**

Volume II - Site Background and Regulatory History (Factual, Procedural and Legal Comments) **(MMM-2 through 12)**

Books 1-2:	Factual Comments
Books 3-9:	Factual and Legal Comments
Book 10:	Oil Recovery Documentation
Book 11:	RI/FS Progress Reports

Letter dated October 18, 1995, from Mattioni to Lee (2 pages) **(MMM-13)** forwarding:

Volume I, Book 11: Supplemental Comments on Superfund Program Proposed Plan, Metal Bank Superfund Site, Philadelphia, PA, July 1995, EWK, October 17, 1995 with September 18, 1995 cover letter **(EWK-4)**, with a report by KWBES revising September 15, 1995 report. **(KWBES-2)**

Letter dated November 3, 1995, from Mattioni to Lee (3 pages) **(MMM-14)** forwarding Report re: Additional Treatability Data Supplied to EPA by the PRP Group on 17 October 1995. Metal Bank Cottman Avenue Superfund Site, EWK, October 26, 1995 (2 pages). **(EWK-5)**

Letter dated January 5, 1996, from Mattioni to Michael McCabe, EPA, cc: Lee (4 pages). **(MMM-15)**

Letter dated February 2, 1996, from McCabe to Mattioni (2 pages).

Letter dated April 4, 1996, from Mattioni to McCabe, cc: Lee (8 pages) with enclosed excerpts from prior comments (58 pages). **(MMM-16)**

Letter dated April 17, 1996, from Mattioni to Lee (2 pages) forwarding External Review Draft of PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures (EPA 1996). **(MMM-17)**

Letter dated May 16, 1996, from Elizabeth Lukens, EPA, to Mattioni concerning technical presentation (2 pages).

Letter dated May 24, 1996, from Mattioni to Lukens, concerning recording of technical presentation (2 pages). **(MMM-18)**

COURTYARD

A. IMPROPER CHARACTERIZATION

1. Lumping "Hot Spots" with larger area.

ESE-1	ESE-2	ESE-5	ERM-1
28 to 29	3-7 to 3-8	19	16 to 17
55	3-13 to 3-15		

2. Use of 1/2 Detection Limits For all Aroclors, despite no detection.

ESE-2
3-7 to 3-12
3-15

B. RISK ASSESSMENT

1. EPA Risk Assessment of $7X10^{-5}$ does not require remediation.

EWK-1	ESE-1	ESE-2	ERM
75	35	3-3	70-72
	37 to 41	3-7	
	57		

2. EPA Risk Assessment flawed; when properly calculated no unacceptable risks exist.

EWK-1	ESE-1	ESE-2	ERM-1
43 to 45	3	1-3 to 1-5	8 to 13
75 to 76	37 to 41	3-5	25 to 42
	57	3-17 to 3-18	70 to 72

C. POLICY-BASED REMEDIAL STANDARD

1. Use of generic policy-based standard not appropriate where site-specific risk information available.

EWK-1	ESE-1	ESE-5
Attachment 35	17 to 20	9 to 10
	53 to 54	

2. Imposition of 10 ppm PCB standard not justified and results in no significant risk reduction.

EWK-2	ESE-1	ERM-1
Attachment 35	17 to 20	70 to 72
	53 to 55	

D. **IF CONTROLS ARE NECESSARY, EPA's CHOICE IS INAPPROPRIATE**

1. **Risk** - Off-site disposal not favored.

ESE-1	ERM-1
74	74

2. **Alternatives**

(a) Institutional controls

EWK-1	ESE-5	ERM-1
75	23 to 25	65
		75

(b) Cover

EWK-1	ERM-1
75	65
	75

RIVER

A. **SEDIMENTS:**

1. **Mudflats and River Sediment Areas**

(a) PCBs/PAHs not site related.

EWK-1	ESE-1	ESE-2	ESE-4	ESE-5	ERM-1
66 to 74	23 to 25	3-71	Attach. Q,	20	1 to 8
85 to 86	33	4-23	Tab 6	27	14 to 15
	46 to 47	4-26 to 4-34			20
	49	4-36			42 to 43
	59-60				45 to 50
	66				55
	68				
	73				

(b) Improper characterization.

ESE-1	ERM-1
3	20 to 23
54 to 55	50 to 51

(c) EPA Risk Assessment flawed; when properly calculated no unacceptable risks exist.

EWK-1	ESE-1	ESE-2	ERM-1
43 to 45	3	1-3 to 1-6	8 to 13
86 to 87	34	3-5	25 to 42
	37 to 43	3-53	42 to 55
	45 to 49	3-56 to 3-121	55 to 57
	57	4-5 to 4-65	70 to 73
	61	5-1 to 5-34	

(d) Policy-based remedial standard:

(1) Use of generic policy-based standard not appropriate where site-specific risk information available.

EWK-2	ESE-1	ERM-1
Attachment 35	17 to 20	50 to 52
	53 to 55	
	58	
	71	

(2) Imposition of 1 ppm PCB standard not justified.

EWK-2	ESE-1	ERM-1
Attachment 35	33	43 to 46
	53 to 55	59
		70 to 73

(e) Risks associated with Proposed Plan.

ESE-1	ESE-5	ERM-1
36	15	52 to 54
45		74
47		
73 to 74		

2. **Rip-Rap**

(a) Unclear if PCBs site-related; PAHs not site-related.

EWK-1	ESE-1	ESE-2	ESE-4	ERM-1
85 to 86	23	3-6	Attach. Q, Tab 6	1 to 8
	49			14 to 15
				20
				24
				47

(b) Improper characterization.

ESE-1	ERM-1
3	20 to 23

(c) EPA Risk Assessments flawed; when properly calculated no unacceptable risks exist.

EWK-1	ESE-1	ESE-2	ERM-1
43 to 45	3	1-3 to 1-6	8 to 13
	37 to 43	3-5	25 to 42
	45	3-25 to 3-53	42 to 55
		3-62 to 3-69	55 to 57
		4-19 to 4-20	63
		5-9	

RIVER

B. **PREVENT RECONTAMINATION OF SEDIMENTS:**

1. UST is empty.

EWK-1	EWK-4	ESE-1	ESE-5
47 to 56	10	27	10
Attachment 11			23 to 24

2. No LNAPL or DNAPL.

EWK-1	EWK-3	EWK-4	ESE-1
10 to 39	All	6 to 10	5 to 14
45 to 47		13 to 16	23 to 25
56 to 59			29
76 to 83			44
Attachment 13			47 to 48
			53 to 55
			59 to 60
			65

ESE-2	ESE-5	ERM-1	KWBES-2
1-5	10 to 11	18 to 19	7 to 8
3-49 to 3-52	13	47	
4-19 to 4-20	17 to 18	58 to 59	
4-36		61	
		63	
		70	

3. Subsurface PCBs not leachable to degrade water quality.

EWK-1	EWK-4	EWK-5	ESE-1	ESE-2
19 to 20	5 to 6	All	15 to 17	4-22
39 to 43			26	
59 to 66			30	
83 to 84			64 to 65	

ESE-5	ERM-1	KWBES-1	KWBES-2
19 to 21	23 to 24	All	1 to 7
	55		
	59		
	61 to 62		
	70		

4. Surface is already covered.

EWK-1	ESE-5
14 to 16	18

5. Improper characterization.

ESE-1
21 to 22
28 to 32
53 to 54
61 to 62
64

6. Policy-based standard:

(a) Use of policy-based standard not appropriate.

EWK-2	ESE-1	ERM-1
Attachment 35	14 to 21	63
	52 to 54	70 to 72
	61 to 62	
	69 to 70	
	72	

(b) Imposition of 25 ppm PCB standard not justified subsurface.

EWK-2	ESE-1	ERM-1
Attachment 35	14	70 to 72
	19 to 21	
	53 to 54	
	69 to 70	

7. Risks associated with Proposed Plan.

ESE-1	ESE-5	ERM-1
74	14	74

EPA PROPOSED PLAN KEY ELEMENTS

I. **COURTYARD:** >10 ppm PCB Surface Soil, off site disposal

II. **RIVER:**

A. **SEDIMENTS:** >1 ppm PCB, >32 ppm PAH

1. Excavate - cofferdam
2. >25 ppm PCBs - Dewater, Off-Site Disposal
   <25 ppm Use to Fill "Hot Spot" Excavations
3. Backfill

B. **PREVENT RECONTAMINATION OF SEDIMENT (DISCHARGE OF PCBs TO RIVER):**

1. Remove UST
2. >25 ppm Subsurface "Hot Spot" Removal
3. Sheet Pile Wall, Collection & Treatment of LNAPL, DNAPL
4. Soil Cover

EPA PROPOSED PLAN KEY ELEMENTS

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3. Sheet Pile Wall; Collection & Treatment of LNAPL, DNAPL

4. Soil Cover

I. **COURTYARD**

A. **IMPROPER CHARACTERIZATION**

1. Lumping "Hot Spots" with larger area.

2. Use of 1/2 Detection Limits For all Aroclors, despite no detection.

B. **RISK ASSESSMENT**

1. EPA Risk Assessment of $7X10^{-5}$ does not require remediation.

2. EPA Risk Assessment flawed; when properly calculated no unacceptable risks exist.

C. **POLICY-BASED REMEDIAL STANDARD**

1. Use of generic policy-based standard not appropriate where site-specific risk information available.

2. Imposition of 10 ppm PCB standard not justified and results in no significant risk reduction.

D. **IF CONTROLS ARE NECESSARY, EPA's CHOICE IS INAPPROPRIATE**

1. **Risk** - Off-site disposal not favored.

2. **Alternatives**

(a) Institutional controls

(b) Cover

AR304346

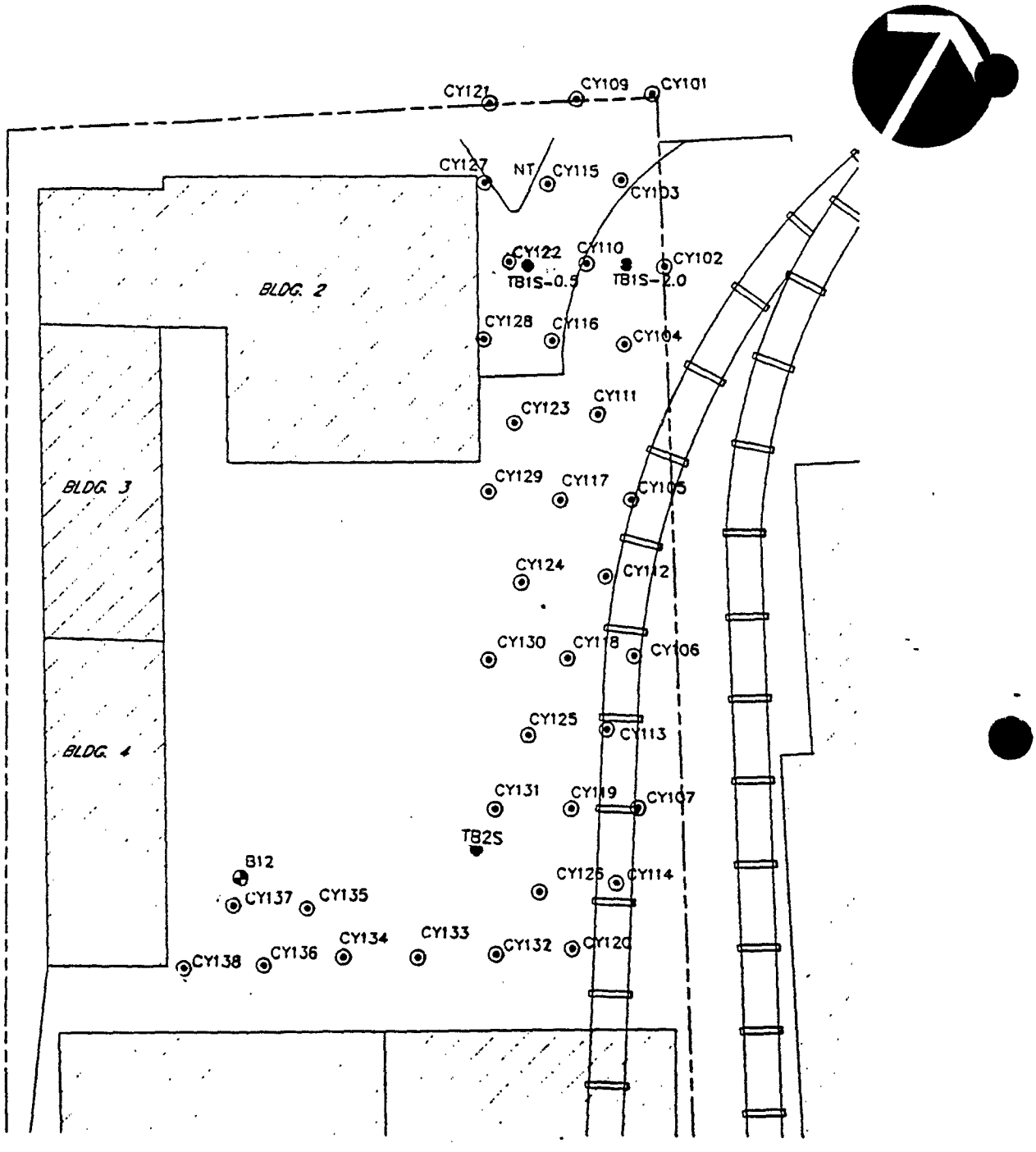
I A COURTYARD: IMPROPER CHARACTERIZATION

1. Lumping "Hot Spots" with larger area.

   - Courtyard area-wide contamination was misrepresented and overestimated.

   - Three isolated areas of PCB contamination exist but were not evaluated as distinct areas.

AR304347



LEGEND

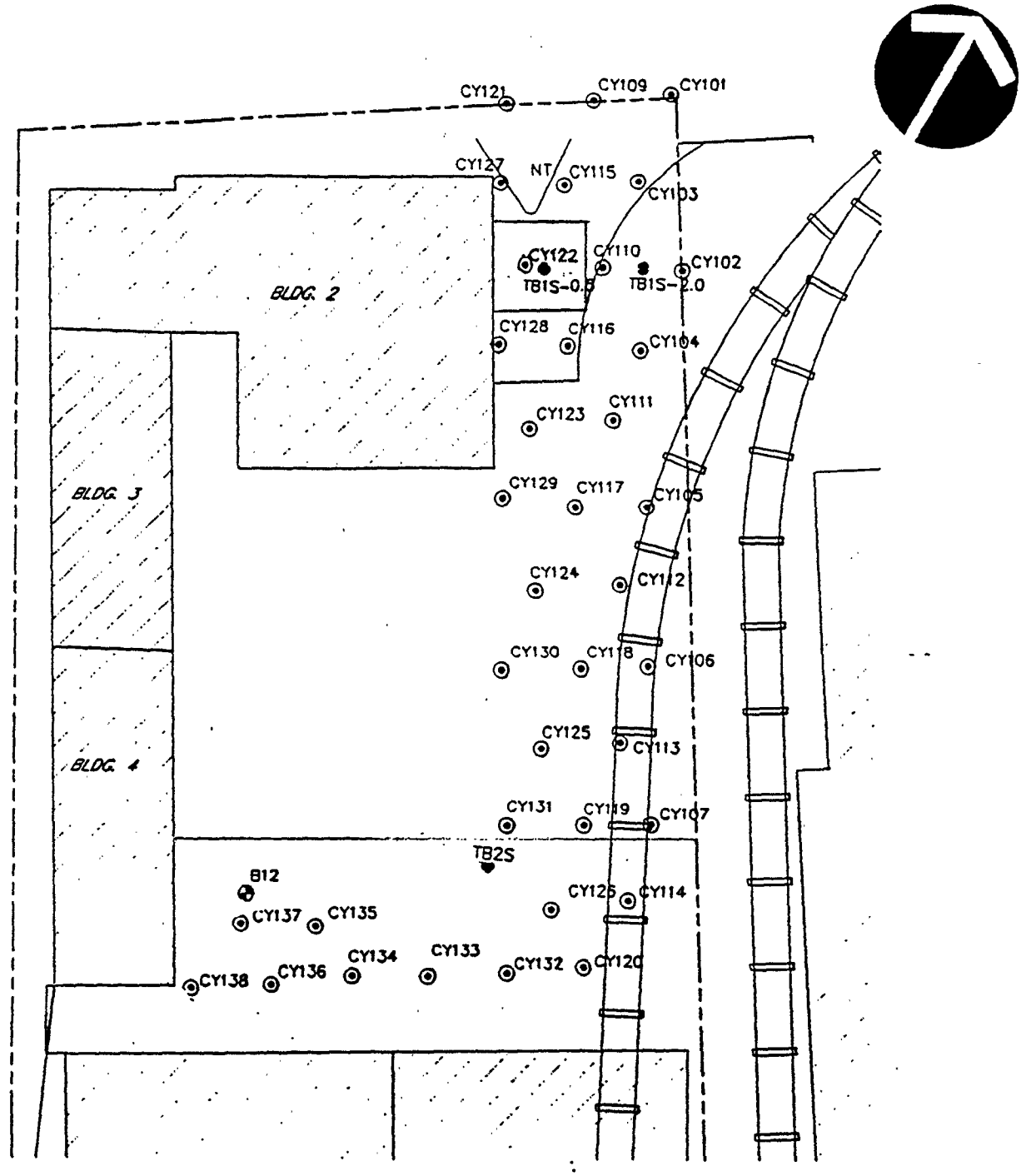
TB2S	COURTYARD SAMPLE LOCATION (JULY/SEPTEMBER, 1991)
CY138	COURTYARD SAMPLE LOCATION (MAY, 1993)
B12/MW12	SOIL BORING LOCATION (SEPTEMBER, 1991)

1" = 40'

0 20 40 80

SCALE IN FEET

PCB Concentrations in the Courtyard Soils
Metal Bank/Cottman Avenue



LEGEND

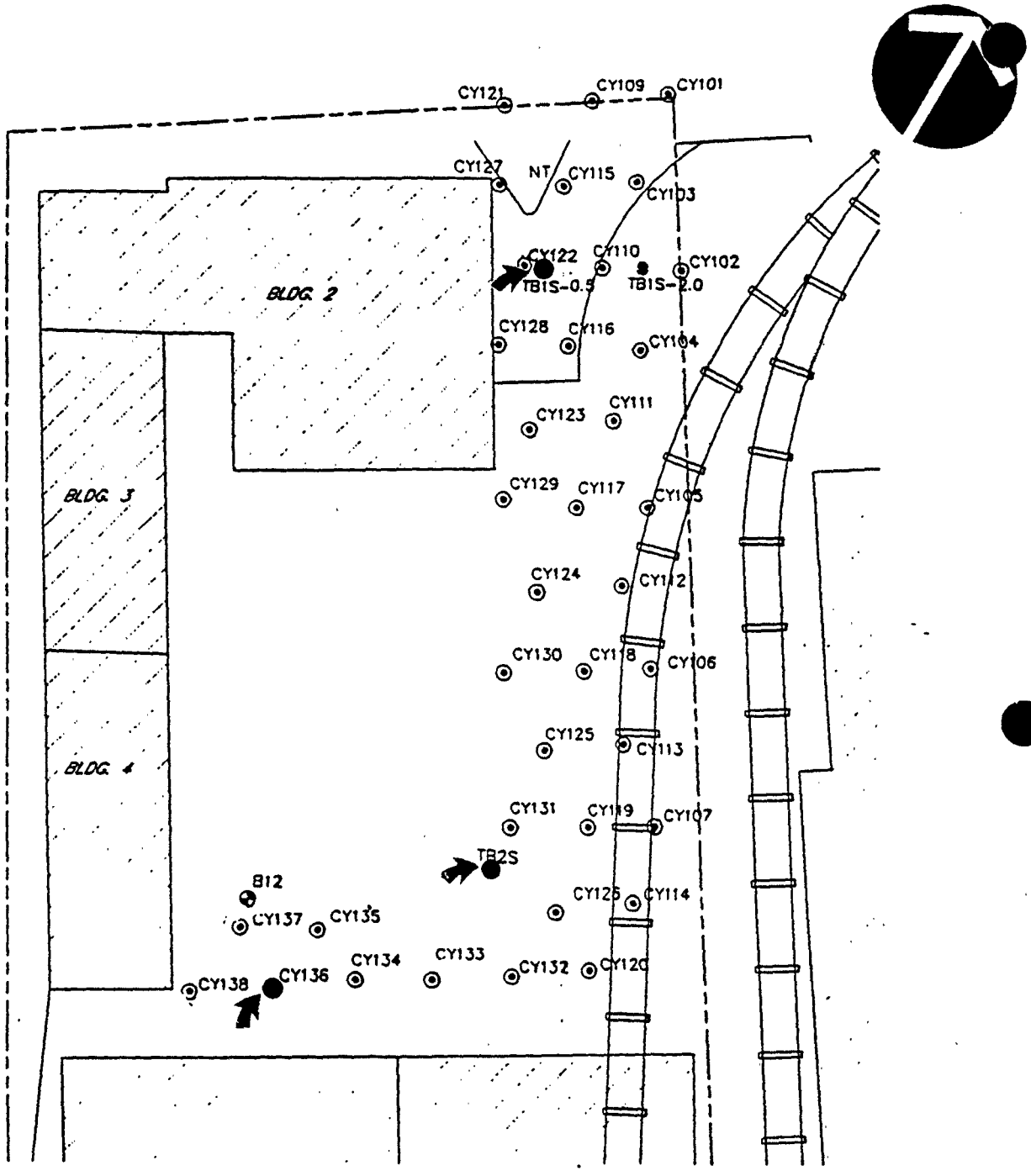
TB2S	COURTYARD SAMPLE LOCATION (JULY/SEPTEMBER, 1991)
CY138	COURTYARD SAMPLE LOCATION (MAY, 1993)
B12/MW12	SOIL BORING LOCATION (SEPTEMBER, 1991)
	Proposed Area for Remediation

1" = 40'

0 20 40 80

SCALE IN FEET

PCB Concentrations in the Courtyard Soils
Metal Bank/Cottman Avenue



LEGEND

TB2S	COURTYARD SAMPLE LOCATION (JULY/SEPTEMBER, 1991)
CY138	COURTYARD SAMPLE LOCATION (MAY, 1993)
B12/MW12	SOIL BORING LOCATION (SEPTEMBER, 1991)
●	PCB Hot Spots

1" = 40'

0 20 40 80

SCALE IN FEET

PCB Concentrations in the Courtyard Soils
Metal Bank/Cottman Avenue

I A COURTYARD: IMPROPER CHARACTERIZATION

2. Use of ½ detection limits for all Aroclors, despite no detection.

   - ½ detection limits were used for chemicals never detected (e.g. Aroclors 1016, -1221, -1232, -1242, and -1260).

   - Elevated detection limits were used to assess the degree of contamination.

   - Extent of contamination is based on detection limits and not on observed concentrations.

AR304351

I B COURTYARD: RISK ASSESSMENT

1. EPA's risk of 7×10^{-5} results from improper use of RA methods.

   - Risk is below EPA's own trigger level of 10^{-4} and does not require remediation.

   - EPA's noncarcinogenic hazard index is below 1 and does not require remediation.

AR304352

I B COURTYARD: RISK ASSESSMENT

2. EPA Risk Assessment flawed; when properly calculated no unacceptable risks exist.

   - Hot spots were not evaluated.
   - Use of elevated detection limits overestimated risk.
   - Chemicals below detection in all samples should not have been included, especially at ½ the detection limit.
   - EPA's exposure concentrations could not be verified or reproduced.
   - EPA's RA is flawed by discrepancies and inconsistent use of analytical data.
   - Properly calculated risks do not trigger remediation.

I. COURTYARD

A. IMPROPER CHARACTERIZATION

1. Lumping "Hot Spots" with larger area.

2. Use of 1/2 Detection Limits For all Aroclors, despite no detection.

B. RISK ASSESSMENT

1. EPA Risk Assessment of $7X10^{-5}$ does not require remediation.

2. EPA Risk Assessment flawed; when properly calculated no unacceptable risks exist.

C. POLICY-BASED REMEDIAL STANDARD

1. Use of generic policy-based standard not appropriate where site-specific risk information available.

2. Imposition of 10 ppm PCB standard not justified and results in no significant risk reduction.

D. IF CONTROLS ARE NECESSARY, EPA's CHOICE IS INAPPROPRIATE

1. Risk - Off-site disposal not favored.

2. Alternatives

(a) Institutional controls

(b) Cover

AR304354

I C COURTYARD: POLICY-BASED REMEDIAL STANDARD

1. Use of generic policy-based standard not appropriate where site-specific risk information is available.

   - EPA completed a site-specific risk assessment that does not substantiate the need for remediation.

   - EPA cannot impose generic policy-based standard where no actual risks exist.

I C COURTYARD: POLICY-BASED REMEDIAL STANDARD

2. Imposition of 10 ppm PCB standard not justified and results in no significant risk reduction.

   - Preliminary Remediation Goals (PRGs) only identify those areas to be considered for remediation.

   - Appropriate PRG for industrial areas is 10 ppm to 25 ppm.

   - Actual cleanup levels must be based on NCP compliant site-specific risk assessment, and must be defensible.

   - Imposition of 10 ppm PCB PRG as standard not justified.

AR304356

I D COURTYARD: IF CONTROLS ARE NECESSARY, EPA'S CHOICE IS INAPPROPRIATE.

1. Risk - Off-site disposal not favored.

   - NCP Favors on-site remedy.

   - EPA remedy replaces 10^{-5} cancer risk with a 10^{-3} fatality risk.

AR304357

I D 2 COURTYARD: IF CONTROLS ARE NECESSARY, EPA'S CHOICE IS INAPPROPRIATE: ALTERNATIVES

(a) Institutional Controls

- Institutional controls are adequate and proven to prevent future exposure.

(b) Cover

- Cover is adequate and proven to prevent contact by industrial workers.

AR304358

I. **COURTYARD**

A. **IMPROPER CHARACTERIZATION**

1. Lumping "Hot Spots" with larger area.

2. Use of 1/2 Detection Limits For all Aroclors, despite no detection.

B. **RISK ASSESSMENT**

1. EPA Risk Assessment of $7X10^{-5}$ does not require remediation.

2. EPA Risk Assessment flawed; when properly calculated no unacceptable risks exist.

C. **POLICY-BASED REMEDIAL STANDARD**

1. Use of generic policy-based standard not appropriate where site-specific risk information available.

2. Imposition of 10 ppm PCB standard not justified and results in no significant risk reduction.

D. **IF CONTROLS ARE NECESSARY, EPA's CHOICE IS INAPPROPRIATE**

1. **Risk** - Off-site disposal not favored.

2. **Alternatives**

(a) Institutional controls

(b) Cover

EPA PROPOSED PLAN KEY ELEMENTS

I. **COURTYARD:** >10 ppm PCB Surface Soil, off site disposal

II. **RIVER:**

A. **SEDIMENTS:** >1 ppm PCB, >32 ppm PAH

1. Excavate - cofferdam

2. >25 ppm PCBs - Dewater, Off-Site Disposal
   <25 ppm Use to Fill "Hot Spot" Excavations

3. Backfill

B. **PREVENT RECONTAMINATION OF SEDIMENT (DISCHARGE OF PCBs TO RIVER):**

1. Remove UST

2. >25 ppm Subsurface "Hot Spot" Removal

3. Sheet Pile Wall; Collection & Treatment of LNAPL, DNAPL

4. Soil Cover

AR304360

II. RIVER

A. SEDIMENTS:

1. Mudflats and River Sediment Areas

(a) PCBs/PAHs not site related.

(b) Improper characterization.

(c) EPA Risk Assessment flawed; when properly calculated no unacceptable risks exist.

(d) Policy-based remedial standard:

(1) Use of generic policy-based standard not appropriate where site-specific risk information available.

(2) Imposition of 1 ppm PCB standard not justified.

(e) Risks associated with Proposed Plan.

II A 1 RIVER: SEDIMENTS: MUDFLAT AND RIVER SEDIMENT AREAS

(a) PCBs/PAHs not site related.

- Aroclor 1260 in rip-rap, not in mudflats
- PCBs in mudflats not from Metal Bank, then neither are PAHs
- Fish not contaminated by feeding in mudflats; no Aroclor 1248 nor 1254
- Fish not contaminated by PCBs or PAHs from Metal Bank
- Background river sediment contamination historic; under 4 to 6 feet of river sediments
- Background river sediments not contaminating rip-rap

AR304362

DRAFT
DO NOT QUOTE OR CITE

NCEA-W-059
January 1996
External Review Draft

PCBs: CANCER DOSE-RESPONSE ASSESSMENT AND APPLICATION TO ENVIRONMENTAL MIXTURES

NOTICE

THIS DOCUMENT IS A PRELIMINARY DRAFT. It has not been formally released by the U.S. Environmental Protection Agency and should not at this stage be construed to represent Agency policy. It is being circulated for comment on its technical accuracy and policy implications.

National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Washington, D.C.

AR304363

II A 1 RIVER: SEDIMENTS: MUDFLAT AND RIVER SEDIMENT AREAS:

(b) Improper characterization

- There is no concentration gradient from the site to the sediments.
- The highest concentrations considered by EPA to be representative of the site are actually background samples upstream of the site.
- Ubiquitous background concentrations of PCBs and PAHs in the environment were ignored.
- A proper leverage analysis shows PCBs and PAHs are not site-related.

AR304364

II A 1 RIVER: SEDIMENTS: MUDFLAT AND RIVER SEDIMENT AREAS:

(c) EPA Risk Assessment flawed; when properly calculated no unacceptable risks exist.

- EPA's risk of 3×10^{-6} results from improper use of RA methods.
- EPA's exposure assumptions/concentrations are unverifiable.
- EPA's risk is below 10^{-4} trigger and does not require remediation.
- EPA's noncarcinogenic HI is below 1 and does not require remediation.
- Any ecological risks are not site-related.
- Available ecological surveys were not used to evaluate site-specific risks.
- Ecological surveys contradict RA conclusions.

AR304365

II A 1 d RIVER: SEDIMENTS: MUDFLAT AND RIVER SEDIMENT AREAS: POLICY-BASED REMEDIAL STANDARD

(1) Use of generic policy-based standard not appropriate where site-specific risk information is available.

- EPA completed a site-specific risk assessment that does not substantiate the need for remediation.

- EPA cannot impose generic policy-based standard where no actual risks exist.

AR304366

II A 1 d RIVER: SEDIMENTS: MUDFLAT AND RIVER SEDIMENT AREAS: POLICY-BASED REMEDIAL STANDARD

(2) Imposition of 1 ppm PCB standard not justified and results in no significant risk reduction.

- EPA provides no justification or explanation for 1 ppm standard.
- Imposition of 1 ppm as PCB cleanup standard not justified because no ecological risks are posed.

II. **RIVER**

A. **SEDIMENTS:**

2. **Rip-Rap**

(a) Unclear if PCBs site-related; PAHs not site-related.

(b) Improper characterization.

(c) EPA Risk Assessments flawed; when properly calculated no unacceptable risks exist.

II A 2 RIVER: SEDIMENTS: RIP-RAP

(a) Unclear if PCBs site-related; PAHs not site related.

- If PCBs in oil were leaking from the site, PAH and PCB levels would show a correlation; none exists
- Highest SVOC level in 1993 sampling was near sewer outlet
- EPA proposing to remove at least 100 pounds of PCBs in the rip-rap and sediments, but EPA calculated in 1980 that uncontrolled site discharge was only 0.5 lbs per year
- Rip-rap cannot be contaminated by "oil" from MW-6, no Aroclor 1248 present
- If rip-rap PCB contamination is from Metal Bank, then it is residue of historic discharge and only a small amount remains.

II A 2 RIVER: SEDIMENTS: RIP-RAP

(b) Improper characterization

- ½ detection limits were used for 15 of the 17 dioxins never detected.
- Extent of contamination is not based on observed concentrations.
- Duplicate samples were not averaged.
- Duplicate sample did not duplicate (e.g. 0.18 ng/kg vs 19 ng/kg)

AR304370

II A 2 RIVER: SEDIMENTS: RIP-RAP

(c) EPA Risk Assessment flawed; when properly calculated no unacceptable risks exist.

- EPA's risk of 1.7×10^{-6}(child) results from improper use of RA methods.
- Risk is below EPA's trigger level of 10^{-4} and does not require remediation.
- EPA's noncarcinogenic hazard index is below 1 and does not require remediation.
- EPA's exposure concentrations could not be verified or reproduced.
- Simple mathematical error results in risks overstated 1000X.
- Both EPA's human and ecological risk are based on an incomplete exposure pathway.

AR304371

II. RIVER

A. SEDIMENTS:

1. Mudflats and River Sediment Areas

(a) PCBs/PAHs not site related.

(b) Improper characterization.

(c) EPA Risk Assessment flawed; when properly calculated no unacceptable risks exist.

(d) Policy-based remedial standard:

(1) Use of generic policy-based standard not appropriate where site-specific risk information available.

(2) Imposition of 1 ppm PCB standard not justified.

(e) Risks associated with Proposed Plan.

2. Rip-Rap

(a) Unclear if PCBs site-related; PAHs not site-related.

(b) Improper characterization.

(c) EPA Risk Assessments flawed; when properly calculated no unacceptable risks exist.

II. **RIVER**

B. **PREVENT RECONTAMINATION OF SEDIMENTS:**

1. UST is empty.

2. No LNAPL or DNAPL.

3. Subsurface PCBs not leachable to degrade water quality.

4. Surface is already covered.

5. Improper characterization.

6. Policy-based standard:

   (a) Use of policy-based standard not appropriate.

   (b) Imposition of 25 ppm PCB standard not justified for subsurface.

7. Risks associated with Proposed Plan.

AR304373

II B RIVER: PREVENT RECONTAMINATION OF SEDIMENTS:

1. UST is empty.

   - EPA's and PADEP's own personnel state the tank does not contain oil
   - EPA knew it was clean and empty in 1980, that is why no relief was requested
   - Ed Kleppinger and Metal Bank personnel state the tank was clean in 1981
   - The tank could have been easily located and inspected during the RI; it was not
   - There is no LNAPL; confirmed most recently at TP-T-2 downgradient of the UST

II B RIVER: PREVENT RECONTAMINATION OF SEDIMENTS:

2. No LNAPL or DNAPL.

- All oil recovered as part of previous Metal Bank remedial operations; EPA based estimate: 1,500 recoverable gallons; actual recovery: no less than 8,200 gallons
- Test pits found no NAPL
- TPH values are too low to support a NAPL phase
- Monitor wells show no NAPL
- No DNAPL material sent to site
- EPA's own documented procedure defines that there is no NAPL at the site

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EPA

Estimating Potential for Occurrence of DNAPL at Superfund Sites

Office of Emergency and Remedial Response
Hazardous Site Control Division (OS-220W)

Quick Reference Fact Sheet

GOALS

The presence of Dense Nonaqueous Phase Liquids (DNAPL) in soils and aquifers can control the ultimate success or failure of remediation at a hazardous waste site. Because of the complex nature of DNAPL transport and fate, however, DNAPL may often be undetected by direct methods, leading to incomplete site assessments and inadequate remedial designs. Sites affected by DNAPL may require a different "paradigm," or conceptual framework, to develop effective characterization and remedial actions (2).

To help site personnel determine if DNAPL-based characterization strategies should be employed at a particular site, a guide for estimating the potential for DNAPL occurrence was developed. The approach, described in this fact sheet, requires application of two types of existing site information:

- Historical Site Use Information
- Site Characterization Data

By using available data, site decision makers can enter a system of two flowcharts and a classification matrix for estimating the potential for DNAPL occurrence at a site. If the potential for DNAPL occurrence is low, then conventional site assessment and remedial actions may be sufficient. If the potential for DNAPL is moderate or high, however, a different conceptual approach may be required to account for problems associated with DNAPL in the subsurface.

BACKGROUND

DNAPLs are separate-phase hydrocarbon liquids that are denser than water, such as chlorinated solvents (either as a single component or as mixtures of solvents), wood preservative wastes, coal tar wastes, and pesticides. Until recently, standard operating practice in a variety of industries resulted in the release of large quantities of DNAPL to the subsurface. Most DNAPLs undergo only limited degradation in the subsurface, and persist for long periods while slowly releasing soluble organic constituents to ground water through dissolution. Even with a moderate DNAPL release, dissolution may continue for hundreds of years or longer under natural conditions before all the DNAPL is dissipated and concentrations of soluble organics in ground water return to background levels.

DNAPL exists in the soil/aquifer matrix as free-phase DNAPL and residual DNAPL. When released at the surface, free-phase DNAPL moves downward through the soil matrix under the force of gravity or laterally along the surface of sloping fine-grained stratigraphic units. As the free-phase DNAPL moves, blobs or ganglia are trapped in pores and/or fractures by capillary forces (7). The amount of the trapped DNAPL, known as residual saturation, is a function of the physical properties of the DNAPL and the hydrogeologic characteristics of the soil/aquifer medium and typically ranges from 5% to 50% of total pore volume. At many sites, however, DNAPL migrates preferentially through small-scale fractures and heterogeneities in the soil, permitting the DNAPL to penetrate much deeper than would be predicted from application of typical residual saturation values (16).

Once in the subsurface, it is difficult or impossible to recover all of the trapped residual DNAPL. The conventional aquifer remediation approach, ground water pump-and-treat, usually removes only a small fraction of trapped residual DNAPL (11, 21, 26). Although many DNAPL removal technologies are currently being tested, to date there have been no field demonstrations where sufficient DNAPL has been successfully recovered from the subsurface to return the aquifer to drinking water quality. The DNAPL that remains trapped in the soil/aquifer matrix acts as a continuing source of dissolved contaminants to ground water, preventing the restoration of DNAPL-affected aquifers for many years.

II B RIVER: PREVENT RECONTAMINATION OF SEDIMENTS:

3. Subsurface PCBs not leachable to degrade water quality.

   - PCBs have been removed from the groundwater at the site by the Metal Bank remedial action

   - RI groundwater results show no dissolved PCBs; some samples show the effects of sediment and oil sheen contamination

   - Worst case PCB levels were not leachable in untreated soil fixation studies

   - Worst case groundwater PCB concentrations may be calculated; they are less than the concentration of PCBs in rain water

EFFECTIVE SOLUBILITY (EPA, 1992)

Two phase system - NAPL & Water

Organics

- limited solubilities in water
- prefer to stay in the organic phase

Solubility of a given organic (PCB) is decreased by competition from other organics trying to solubilize water

Effective Solubility = Solubility in water X Mole fraction in NAPL

Solubility of PCB in water = 6×10^{-2} mg/Kg

Mole fraction of PCB in NAPL = 0.00035

Effective Solubility = 0.024 ug/L

Far less than the MCL of 0.5 ug/L

SOIL-OIL-WATER PARTITIONING (Boyd et al, 1990)

Organic chemicals in soil are sorbed on soil organic matter and in residual oil

$$\text{Sorption Coefficient (K)} = f_{oc}K_{oc} + f_{oil}K_{oil}$$

where:

f_{oc} =	the fraction of organic carbon in soil
K_{oc} =	organic carbon-water partition coefficient
f_{oil} =	the fraction of petroleum hydrocarbon in soil
K_{oil} =	oil-water partition coefficient, approximately equal

$$\text{Concentration in water} = \frac{\text{Concentration in soil}}{\text{Sorption coefficient}}$$

For the soil sample with the greatest concentration of PCB:

$$\text{Concentration in water } (C_W) = \frac{230}{9.142 \times 10^5}$$

$$C_W = 0.25\ \mu g/L$$

Less than the MCL of 0.5 ug/L

FLOW OF PCB'S TO THE RIVER

Flow of water from site is calculated as :

Flow to river = Hydraulic conductivity x gradient x discharge area

Flow to river = 588 gal/day/sq. ft. x 0.0035 x 900 ft. x 7.38 ft

Flow to river = 4.99×10^6 gal/yr

Flow to river = 0.021 cfs

FLOW OF PCB'S TO THE RIVER

USING EFFECTIVE SOLUBILITY VALUES

Flow of PCB to river = Flow of water to river x conc. of PCB in grdwtr

Flow of PCB to river = 4.99×10^6 gal/yr x 0.024 ug/L

Flow of PCB to river = 0.001 lb/yr

FLOW OF PCB'S TO THE RIVER

USING SOIL-OIL-WATER PARTITION VALUES

The average concentration of PCB in the groundwater was calculated from all 165 available samples.

The average value = 0.130 ug/L

Flow of PCB to river = 4.99 $x10^6$ gal/yr x 0.13 ug/L

Flow of PCB to river = 0.0054 lbs/yr

II B RIVER: PREVENT RECONTAMINATION OF SEDIMENTS:

5. Improper characterization

   - Current post-remediation data was not used to determine the presence of NAPL; NAPL was not found in post-remediation sampling.

   - Site-specific ecological surveys were ignored when developing remedial alternatives.

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II B 6 RIVER: PREVENT RECONTAMINATION OF SEDIMENTS: POLICY-BASED STANDARD

(a) Use of policy-based standard not appropriate.

- EPA cannot impose generic policy-based standard where no actual risks exist.
- EPA completed a site-specific risk assessment that does not substantiate the need for remediation.

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II B 6 RIVER: PREVENT RECONTAMINATION OF SEDIMENTS: POLICY-BASED STANDARD

(b) Imposition of 25 ppm PCB standard not justified for subsurface.

- PRGs identify only those areas to be considered for remediation.
- 25 ppm PCB PRG does not address subsurface pathway (groundwater) identified by EPA.
- Actual cleanup levels must be based on NCP compliant site-specific risk assessment, and be defensible.
- Imposition of 25 ppm PCB PRG as standard is not appropriate for the pathway identified and does not result in significant risk reduction.

II B 7 RIVER: PREVENT RECONTAMINATION OF SEDIMENTS.

Risks associated with proposed plan.

- Subsurface Hot Spot removal using EPA estimates will result in .97 accidents.
- Hot Spot removal using PRP Group estimates will result in 3.345 accidents.
- The risk of statistical death from Hot Spot removal is 1.0476 E-2 using EPA estimates.
- The risk of statistical death from Hot Spot removal is 3.6126 E-2 using PRP Group estimates.
- There is no risk to humans if Hot Spots are left in place.

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II B 7 RIVER: PREVENT RECONTAMINATION OF SEDIMENTS.

Risks of Accident-calculations.

- Proposed remedy intends to transport "Hot Spot" materials to Model Cities near Buffalo New York which is a 950 mile round trip from Philadelphia.

- EPA estimates that 9,000 cubic yards will need to be removed while the PRP Group estimates 31,000 cubic yards will need to be removed.

- Assumes that 1.2 tons equals a cubic yard of soil and each truckload will average 20 tons.

- The National Highway Traffic Safety Administration's Traffic Safety Facts 1994 says there are 2.7 deaths, 61 injuries, and 184 property damage only crashes per 100 million miles traveled by large trucks in 1993.

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II B 7 RIVER: PREVENT RECONTAMINATION OF SEDIMENTS.

Risks of Accident-calculations. (Continued)

- The injuries expected from the Hot Spot removal are 2.3668 E-1 for EPA estimated amounts and 8.1618 E-1 for the PRP Group's estimates.

- The property damage only accidents will be 7.1392 E-1 with EPA's estimates and there will be 2.4619 accidents with the PRP Group's estimates.

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I. **COURTYARD**

A. **IMPROPER CHARACTERIZATION**

1. Lumping "Hot Spots" with larger area.

2. Use of 1/2 Detection Limits For all Aroclors, despite no detection.

B. **RISK ASSESSMENT**

1. EPA Risk Assessment of $7X10^{-5}$ does not require remediation.

2. EPA Risk Assessment flawed; when properly calculated no unacceptable risks exist.

C. **POLICY-BASED REMEDIAL STANDARD**

1. Use of generic policy-based standard not appropriate where site-specific risk information available.

2. Imposition of 10 ppm PCB standard not justified and results in no significant risk reduction.

D. **IF CONTROLS ARE NECESSARY, EPA's CHOICE IS INAPPROPRIATE**

1. **Risk** - Off-site disposal not favored.

2. **Alternatives**

(a) Institutional controls

(b) Cover

II. RIVER

A. SEDIMENTS:

1. Mudflats and River Sediment Areas

(a) PCBs/PAHs not site related.

(b) Improper characterization.

(c) EPA Risk Assessment flawed; when properly calculated no unacceptable risks exist.

(d) Policy-based remedial standard:

(1) Use of generic policy-based standard not appropriate where site-specific risk information available.

(2) Imposition of 1 ppm PCB standard not justified.

(e) Risks associated with Proposed Plan.

2. Rip-Rap

(a) Unclear if PCBs site-related; PAHs not site-related.

(b) Improper characterization.

(c) EPA Risk Assessments flawed; when properly calculated no unacceptable risks exist.

II. **RIVER**

B. **PREVENT RECONTAMINATION OF SEDIMENTS:**

1. UST is empty.

2. No LNAPL or DNAPL.

3. Subsurface PCBs not leachable to degrade water quality.

4. Surface is already covered.

5. Improper characterization.

6. Policy-based standard:

   (a) Use of policy-based standard not appropriate.

   (b) Imposition of 25 ppm PCB standard not justified for subsurface.

7. Risks associated with Proposed Plan.

II. RIVER

B. **PREVENT RECONTAMINATION OF SEDIMENTS:**

1. UST is empty.

EWK-1	EWK-4	ESE-1	ESE-5
47 to 56	10	27	10
Attachment 11			23 to 24

2. No LNAPL or DNAPL.

EWK-1	EWK-3	EWK-4	ESE-1
10 to 39	All	6 to 10	5 to 14
45 to 47		13 to 16	23 to 25
56 to 59			29
76 to 83			44
Attachment 13			47 to 48
			53 to 55
			59 to 60
			65

ESE-2	ESE-5	ERM-1	KWBES-2
1-5	10 to 11	18 to 19	7 to 8
3-49 to 3-52	13	47	
4-19 to 4-20	17 to 18	58 to 59	
4-36		61	
		63	
		70	

PRESENT STATUS OF SITE

I. INSTITUTIONAL CONTROLS IN PLACE

   A. DEED NOTICE

   B. FENCE

II. NAPL REMOVED

III. UST EMPTY

IV. A. SITE COVERED

   B. RUN-OFF CONTROLLED

   C. RIVER BANK STABILIZED

V. NO DETECTABLE PCBs IN GROUND WATER LEAVING SITE

VI. PCB CONTAMINATION OF FISH AND MUDFLAT AND RIVER SEDIMENTS NOT RELATED TO THE SITE, BACKGROUND.