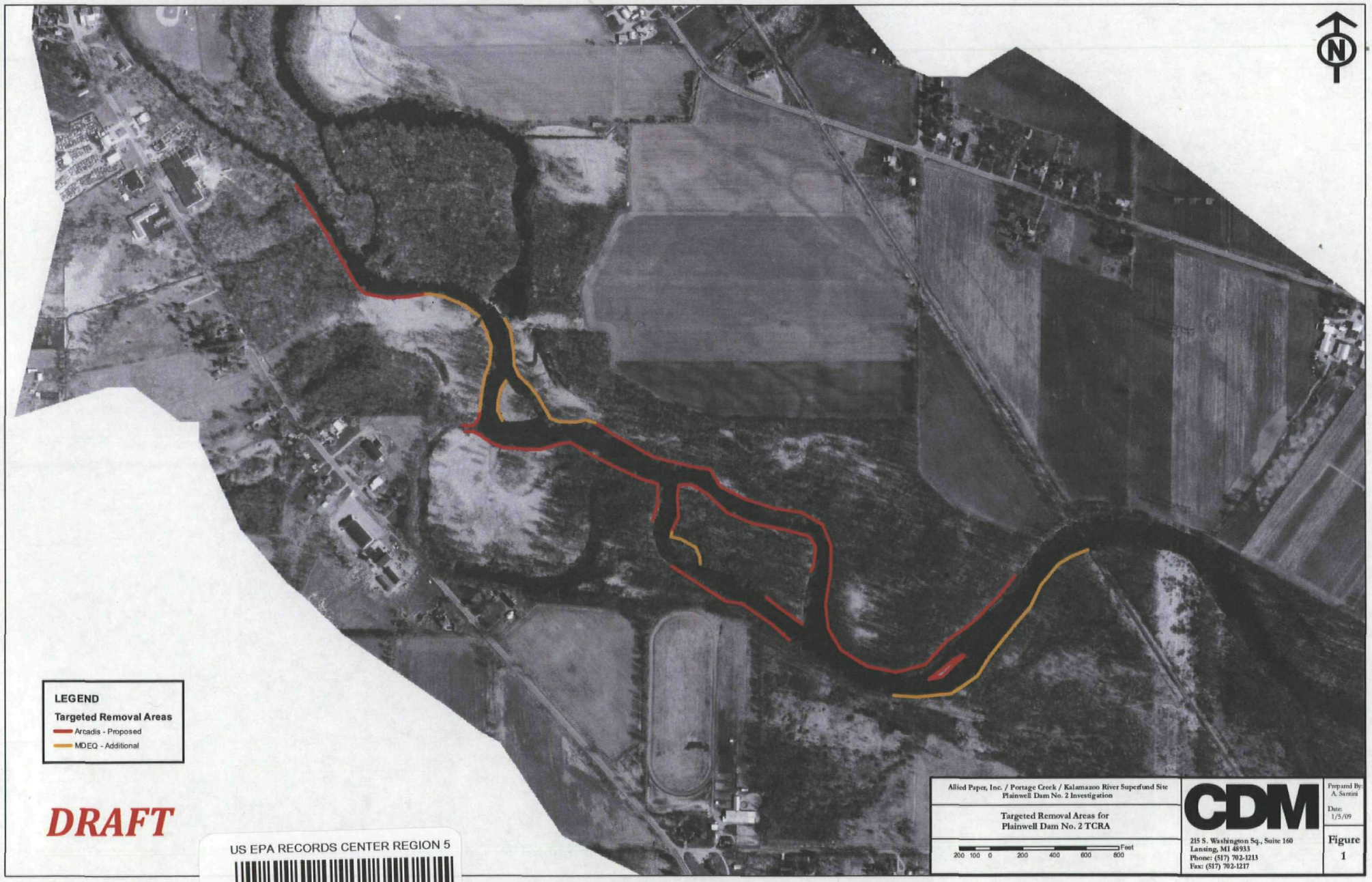
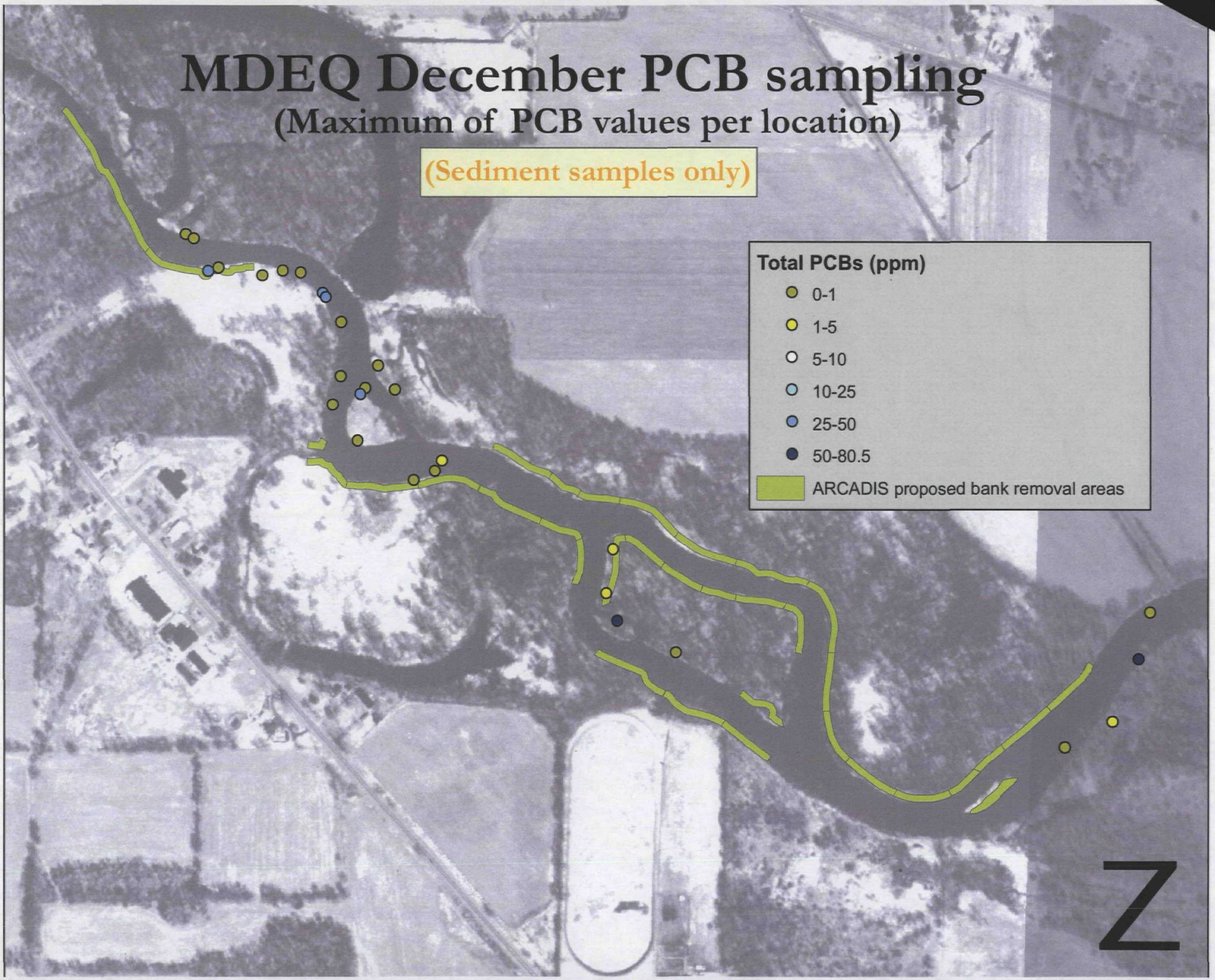


US EPA RECORDS CENTER REGION 5
402972

MDEQ December PCB sampling

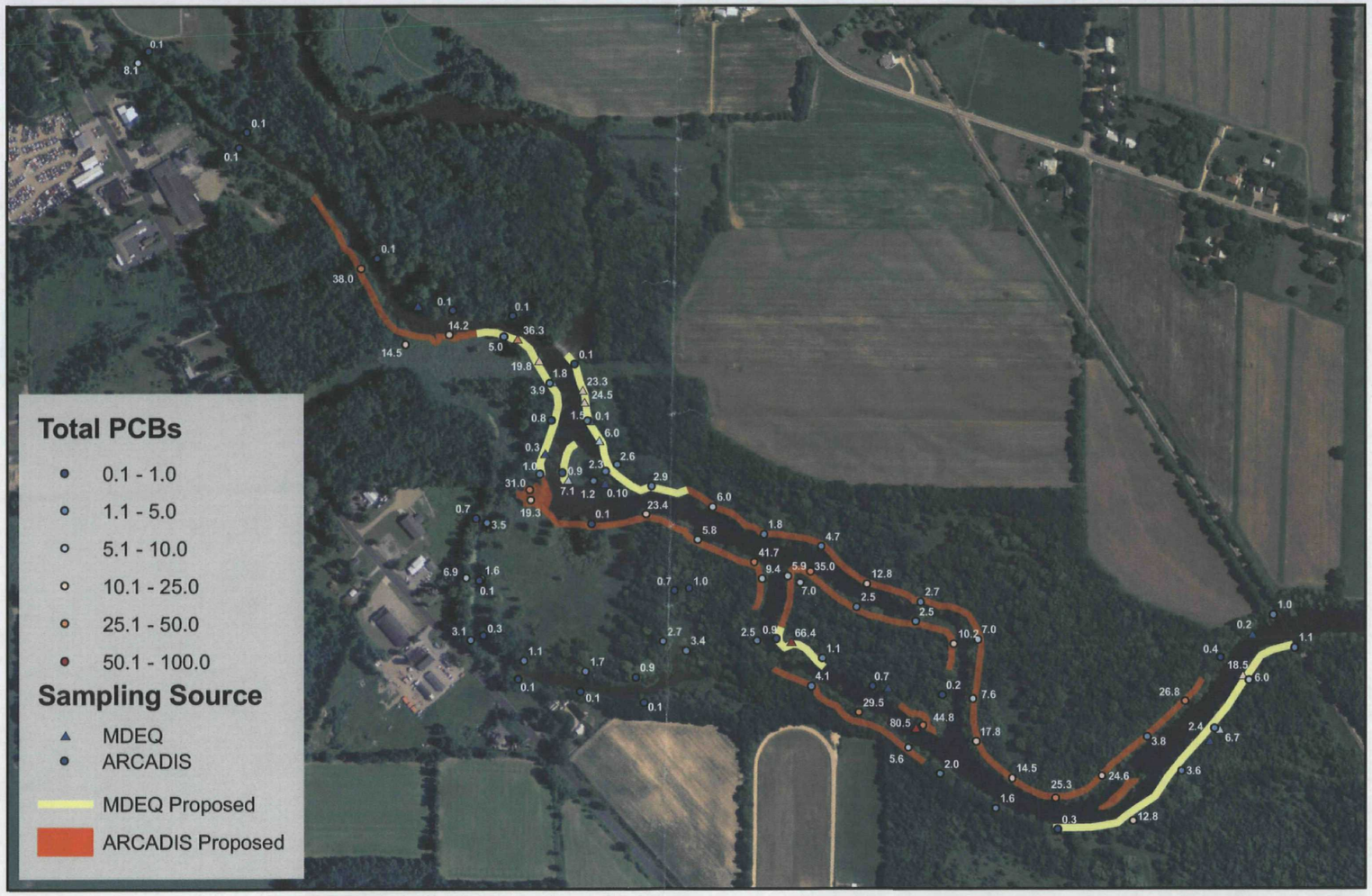
(Maximum of PCB values per location)

(Sediment samples only)



KALAMAZOO PD2: MDEQ/ARCADIS MAX TOTAL PCB BANK DATA

MICHIGAN
JAN 2009



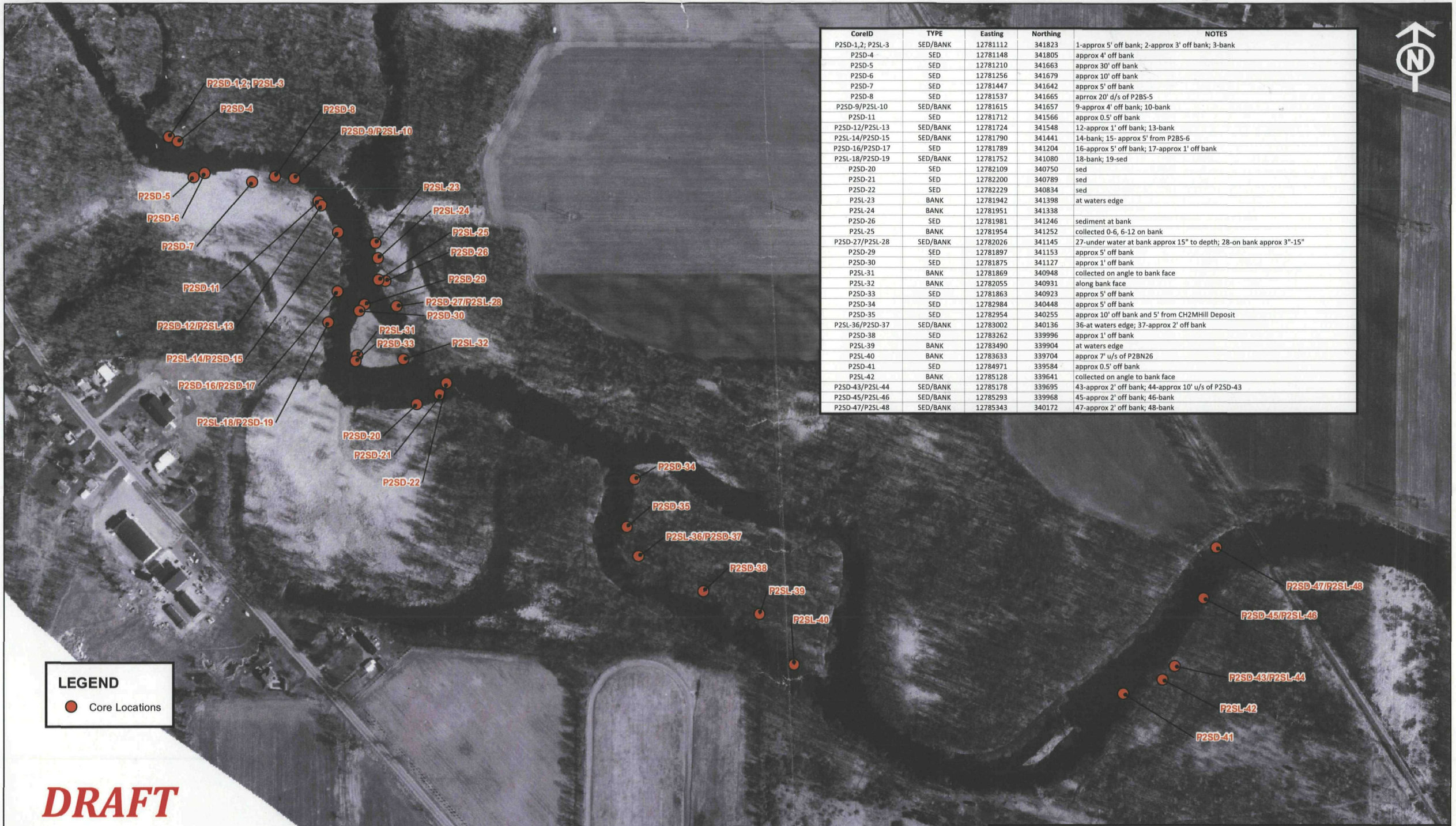
FIELDS
Field Environmental Decision Support

N

0 0.05 0.1
Miles

NAD 83, State Plane MI South (Intl Feet)
ARCADIS / USEPA / MDEQ
Mike Mejac

United States Environmental Protection Agency



CoreID	TYPE	Easting	Northing	NOTES
P2SD-1,2; P2SL-3	SED/BANK	12781112	341823	1-approx 5' off bank; 2-approx 3' off bank; 3-bank
P2SD-4	SED	12781148	341805	approx 4' off bank
P2SD-5	SED	12781210	341663	approx 30' off bank
P2SD-6	SED	12781256	341679	approx 10' off bank
P2SD-7	SED	12781447	341642	approx 5' off bank
P2SD-8	SED	12781537	341665	aprrox 20' d/s of P2BS-5
P2SD-9/P2SL-10	SED/BANK	12781615	341657	9-approx 4' off bank; 10-bank
P2SD-11	SED	12781712	341566	approx 0.5' off bank
P2SD-12/P2SL-13	SED/BANK	12781724	341548	12-approx 1' off bank; 13-bank
P2SL-14/P2SD-15	SED/BANK	12781790	341441	14-bank; 15- approx 5' from P2BS-6
P2SD-16/P2SD-17	SED	12781789	341204	16-approx 5' off bank; 17-approx 1' off bank
P2SL-18/P2SD-19	SED/BANK	12781752	341080	18-bank; 19-sed
P2SD-20	SED	12782109	340750	sed
P2SD-21	SED	12782200	340789	sed
P2SD-22	SED	12782229	340834	sed
P2SL-23	BANK	12781942	341398	at waters edge
P2SL-24	BANK	12781951	341338	
P2SD-26	SED	12781981	341246	sediment at bank
P2SL-25	BANK	12781954	341252	collected 0-6, 6-12 on bank
P2SD-27/P2SL-28	SED/BANK	12782026	341145	27-under water at bank approx 15" to depth; 28-on bank approx 3"-15"
P2SD-29	SED	12781897	341153	approx 5' off bank
P2SD-30	SED	12781875	341127	approx 1' off bank
P2SL-31	BANK	12781869	340948	collected on angle to bank face
P2SL-32	BANK	12782055	340931	along bank face
P2SD-33	SED	12781863	340923	approx 5' off bank
P2SD-34	SED	12782984	340448	approx 5' off bank
P2SD-35	SED	12782954	340255	approx 10' off bank and 5' from CH2MHill Deposit
P2SL-36/P2SD-37	SED/BANK	12783002	340136	36-at waters edge; 37-approx 2' off bank
P2SD-38	SED	12783262	339996	approx 1' off bank
P2SL-39	BANK	12783490	339904	at waters edge
P2SL-40	BANK	12783633	339704	approx 7' u/s of P2BN26
P2SD-41	SED	12784971	339584	approx 0.5' off bank
P2SL-42	BANK	12785128	339641	collected on angle to bank face
P2SD-43/P2SL-44	SED/BANK	12785178	339695	43-approx 2' off bank; 44-approx 10' u/s of P2SD-43
P2SD-45/P2SL-46	SED/BANK	12785293	339968	45-approx 2' off bank; 46-bank
P2SD-47/P2SL-48	SED/BANK	12785343	340172	47-approx 2' off bank; 48-bank

Notes:
1. Coordinates were recorded with handheld a Garmin GPS unit.
The reported accuracy of this unit during the day was usually between 20 and 30 feet.
Locations for cores 41 and 47/48 appear to be outside the accuracy of the unit since these are depicted approximately 65 and 140 feet from the south bank (where they were collected), respectively.

Allied Paper, Inc. / Portage Creek / Kalamazoo River Superfund Site
Plainwell Dam No. 2 Investigation

Sediment and Soil Samples Collected By
MDEQ on January 10 and 11, 2008

200 100 0 200 400 600 Feet

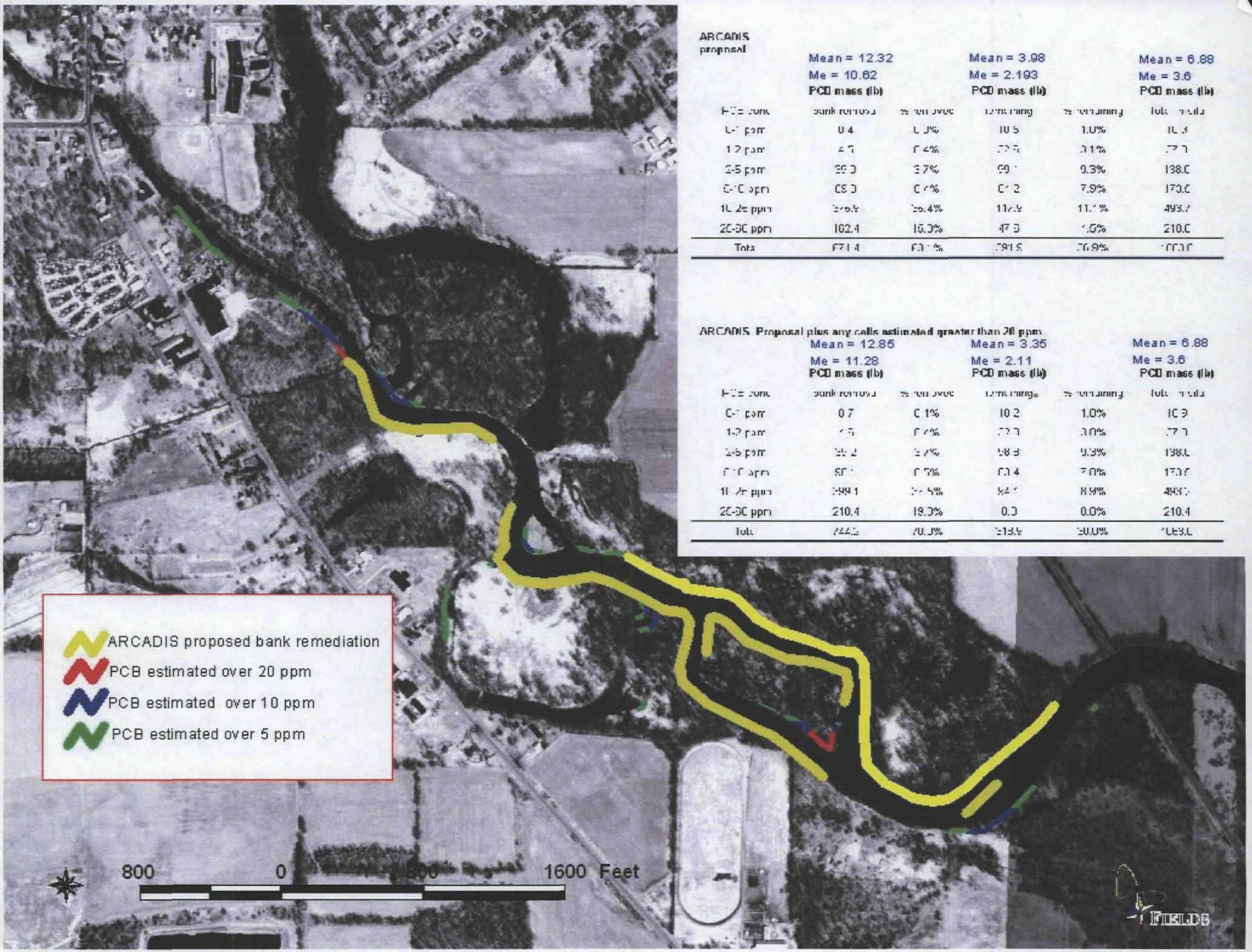
CDM

215 S. Washington Sq., Suite 160
Lansing, MI 48933
Phone: (517) 702-1213
Fax: (517) 702-1217

Prepared By: A. Santini

Date: 12/29/08

Figure 1

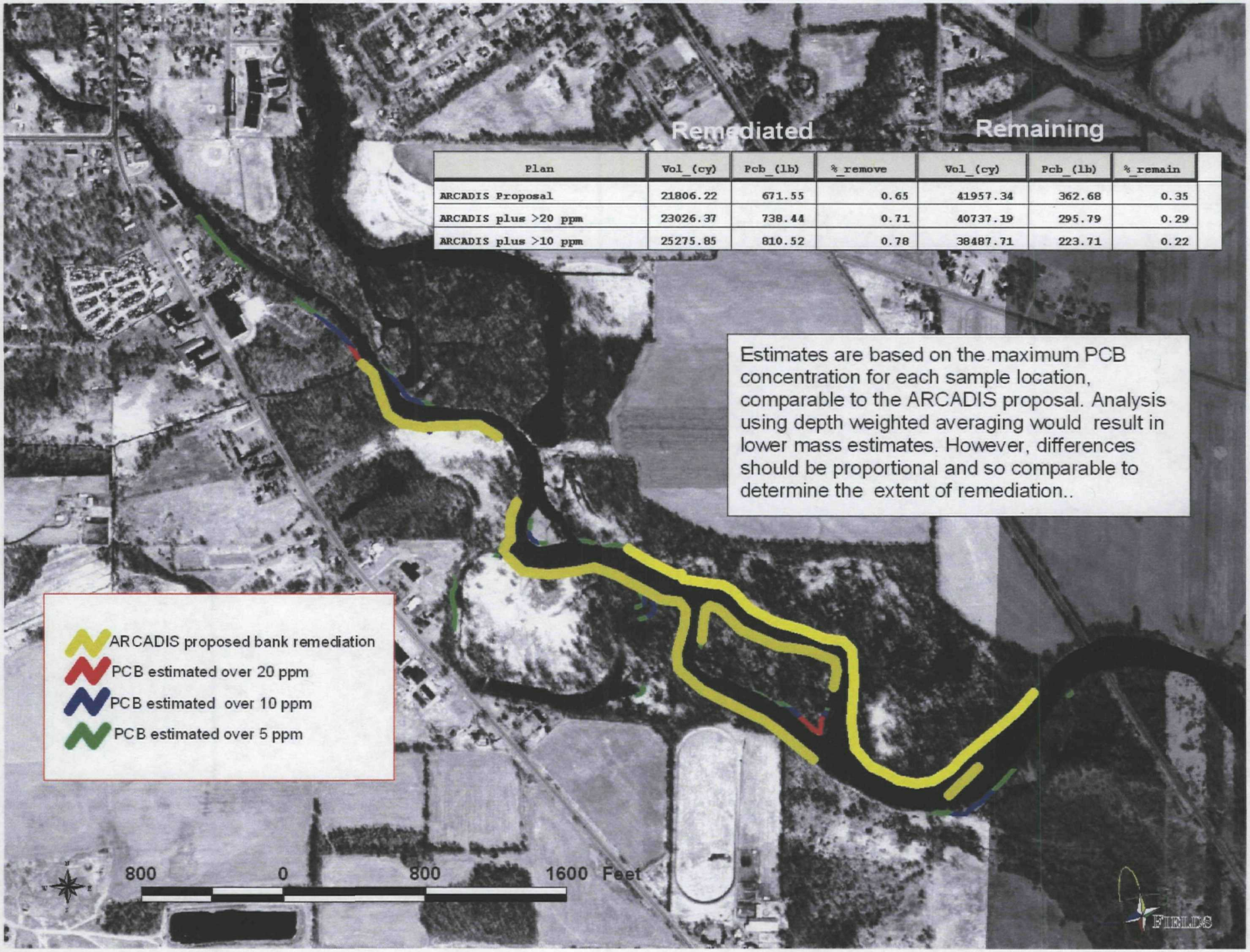


ARCADIS proposal

PCB zone	Mean = 12.32 Me = 10.62 PCB mass (lb) bank removal	% removed	Mean = 3.98 Me = 2.193 PCB mass (lb) bank remaining	% remaining	Mean = 6.88 Me = 3.6 PCB mass (lb) total mass
0-1 ppm	0.4	0.3%	10.5	1.0%	10.9
1-2 ppm	4.5	0.4%	72.5	3.1%	77.0
2-5 ppm	99.0	9.7%	99.1	9.3%	198.0
5-10 ppm	85.0	8.4%	84.2	7.9%	170.0
10-20 ppm	246.9	24.4%	112.9	11.1%	493.7
20-30 ppm	102.4	10.0%	47.6	4.5%	210.0
Total	671.4	66.1%	391.5	36.9%	1063.0

ARCADIS Proposal plus any cells estimated greater than 20 ppm

PCB zone	Mean = 12.85 Me = 11.28 PCB mass (lb) bank removal	% removed	Mean = 3.35 Me = 2.11 PCB mass (lb) bank remaining	% remaining	Mean = 6.88 Me = 3.6 PCB mass (lb) total mass
0-1 ppm	0.7	0.1%	10.2	1.0%	10.9
1-2 ppm	4.5	0.4%	72.5	3.0%	77.0
2-5 ppm	99.2	9.7%	98.8	9.3%	198.0
5-10 ppm	85.1	8.3%	84.4	7.9%	170.0
10-20 ppm	249.1	24.5%	94.1	8.9%	493.2
20-30 ppm	210.4	19.3%	0.0	0.0%	210.4
Total	744.2	70.3%	318.9	30.0%	1063.0



Plan	Vol_(cy)	Pcb_(lb)	%_remove	Vol_(cy)	Pcb_(lb)	%_remain
ARCADIS Proposal	21806.22	671.55	0.65	41957.34	362.68	0.35
ARCADIS plus >20 ppm	23026.37	738.44	0.71	40737.19	295.79	0.29
ARCADIS plus >10 ppm	25275.85	810.52	0.78	38487.71	223.71	0.22

ARCADIS proposal

	Removal				Remaining		TOTAL	
PCB conc	volume	PCB mass (lb) bank removal	% removed	volume	mass remaining	% remaining	volume	mass Total in situ
0-1 ppm		0.35	2.6%		13.40	97.4%		13.76
1-2 ppm		4.48	9.6%		42.31	90.4%		46.79
2-5 ppm		39.00	28.3%		98.70	71.7%		137.69
5-10 ppm		89.35	54.6%		74.15	45.4%		163.50
10-25 ppm		266.33	79.1%		70.19	20.9%		336.52
25-60 ppm		272.04	81.0%		63.93	19.0%		335.97
Total	21806.22	671.55	64.9%	41957.34	362.68	35.1%	63763.56	1034.23

ARCADIS plus 20 ppm cells

	Removal				Remaining		TOTAL	
PCB conc	volume	PCB mass (lb) bank removal	% removed	volume	mass remaining	% remaining	volume	mass Total in situ
0-1 ppm		0.67	4.9%		13.08	95.1%		13.76
1-2 ppm		4.66	10.0%		42.14	90.0%		46.80
2-5 ppm		39.23	28.5%		98.46	71.5%		137.69
5-10 ppm		89.81	54.9%		73.87	45.1%		163.68
10-25 ppm		268.82	79.9%		67.78	20.1%		336.60
25-60 ppm		335.25	100.0%		0.00	0.0%		335.25
Total	23026.37	738.44	71.4%	40737.19	295.79	28.6%	63763.56	1034.23

ARCADIS plus 10 ppm cells

	Removal				Remaining		TOTAL	
% by concentration PCB conc	volume	PCB mass (lb) bank removal	% removed	volume	mass remaining	% remaining	volume	mass Total in situ
0-1 ppm		0.67	4.9%		13.08	95.1%		13.76
1-2 ppm		4.66	10.0%		42.14	90.0%		46.80
2-5 ppm		39.23	28.5%		98.46	71.5%		137.69
5-10 ppm		93.39	57.2%		69.96	42.8%		163.36
10-25 ppm		337.32	100.0%		0.00	0.0%		337.32
25-60 ppm		335.25	100.0%		0.00	0.0%		335.25
Total	25275.85	810.52	78.4%	38487.71	223.71	21.6%	63763.56	1034.23

Plan	vol (CY)	PCB (lb)	% remove	vol (CY)	PCB (lb)	% remain
ARCADIS Proposal	21806.22	671.55	64.9%	41957.34	362.68	35.1%
ARCADIS plus >20 ppm	23026.37	738.44	71.4%	40737.19	295.79	28.6%
ARCADIS plus >10 ppm	25275.85	810.52	78.4%	38487.71	223.71	21.6%