Copy for Dave, Doug 4-28-88

0160725

Office Memorandum

STATE DEPARTMENT OF HEALTH
AND ENVIRONMENTAL SCIENCES

		ACC.
HK		2/23/8
JM		2/24/8
SC		4-19
	FILE	
TECH	ADM	ENF

1262292 - R8 SDMS

TO: Files

DATE: February 23, 1988

FROM: Bob Raisch

SUBJECT: Third Quarter 1987 East Helena CMB Results - Most Important Sources in Descending Order

KH

ADMINISTRATIVE RECORD
SF FILE NUMBER
1170701

Spec File

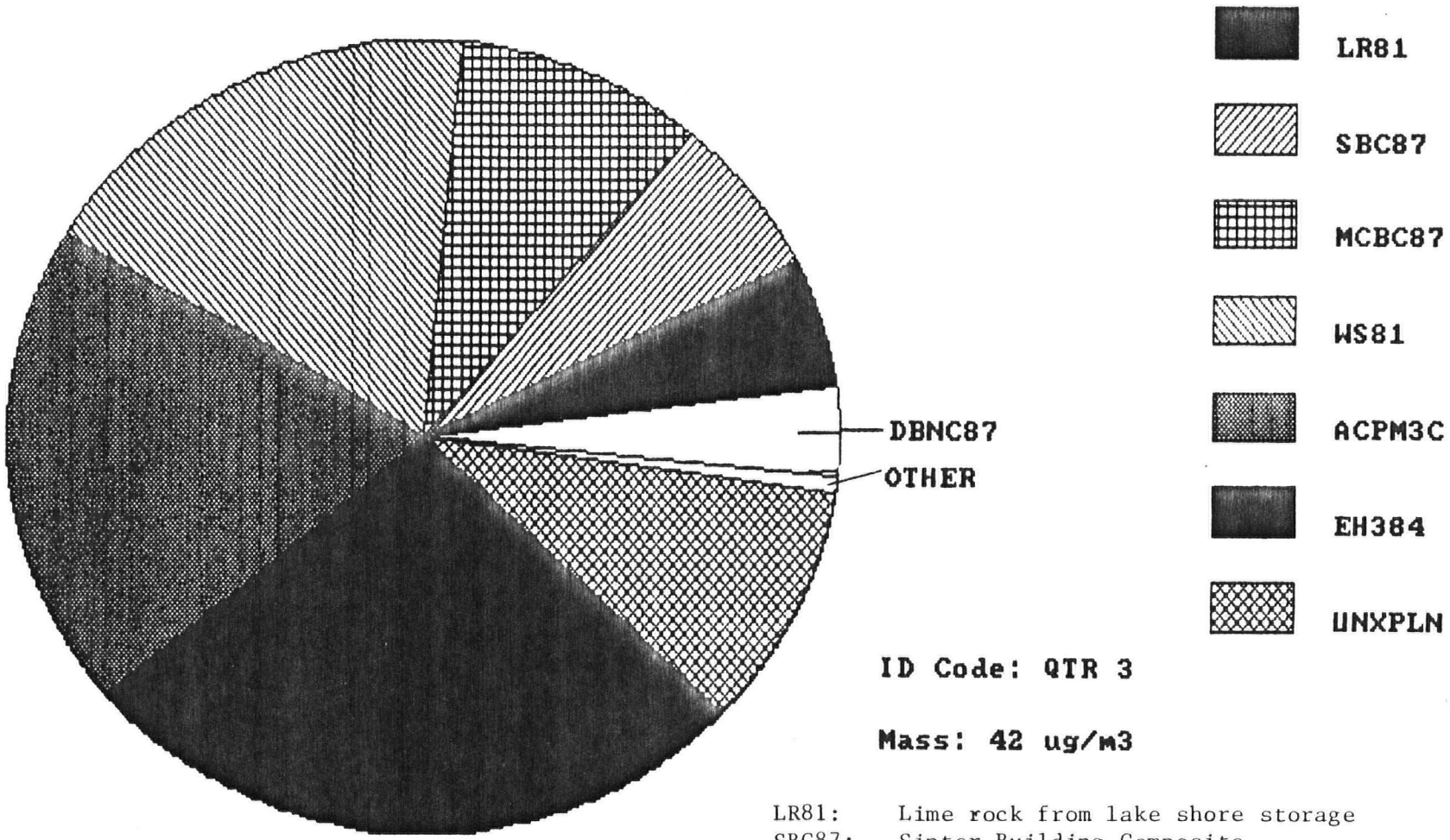
	July	August	September
Firehall	Sinter Building Pyrometallurgical Matte Crusher Bldg.	Sinter Building New Deal Building Firehall Road Dust	Sinter Building New Deal Building Acid Plant Dust
Hadfield	Sinter Building Acid Plant Dust Pyrometallurgical	Sinter Building Slag Composite Pyrometallurgical	Acid Plant Dust Sinter Building Pyrometallurgical

BR:kh

13

1.1.1 FIREHALL AVERAGE THIRD QUARTER TSP PIE CHART

Chemical Composites



ID Code: QTR 3

Mass: 42 ug/m3

LR81: Lime rock from lake shore storage
SBC87: Sinter Building Composite
MCBC87: Matte Crusher Building Composite
WS81: Wood stove
ACPM3C: Pyrometal, stack #3, cathode charge
EH384: Pacific St. at Firehall road dust
DBNC87: Dross Building Normal Process Composite

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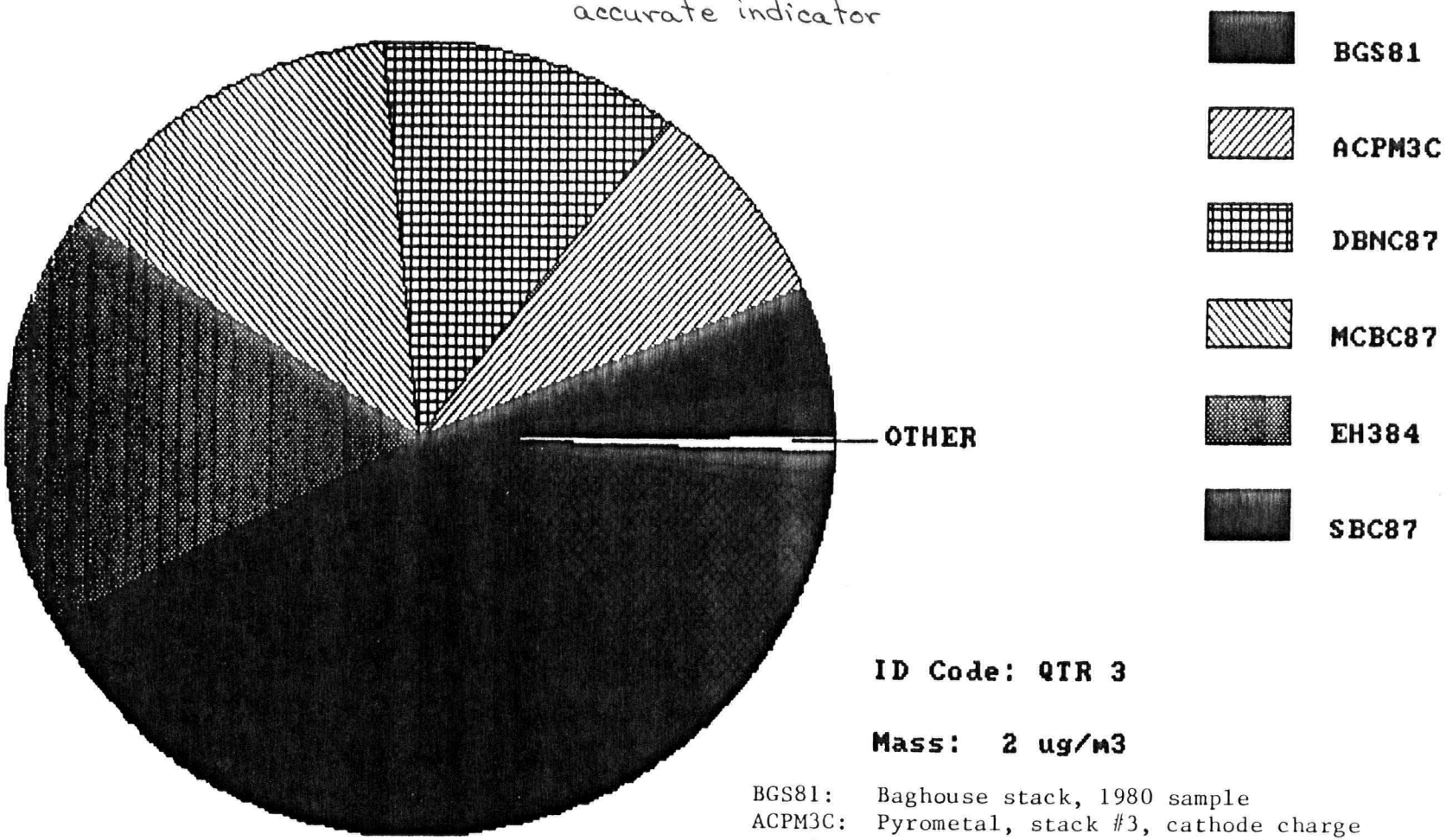
1.1.4 FIREHALL AVERAGE THIRD QUARTER LEAD PIE CHART

Avg of all CMB's (more of an accurate indicator



ID Code: QTR 3

Mass: 2 ug/m3

BGS81: Baghouse stack, 1980 sample
ACPM3C: Pyrometal, stack #3, cathode charge
DBNC87: Dross Building Normal Process Composite
MCBC87: Matte Crusher Building Composite
EH384: Pacific St. at Firehall road dust
SBC87: Sinter Building Composite

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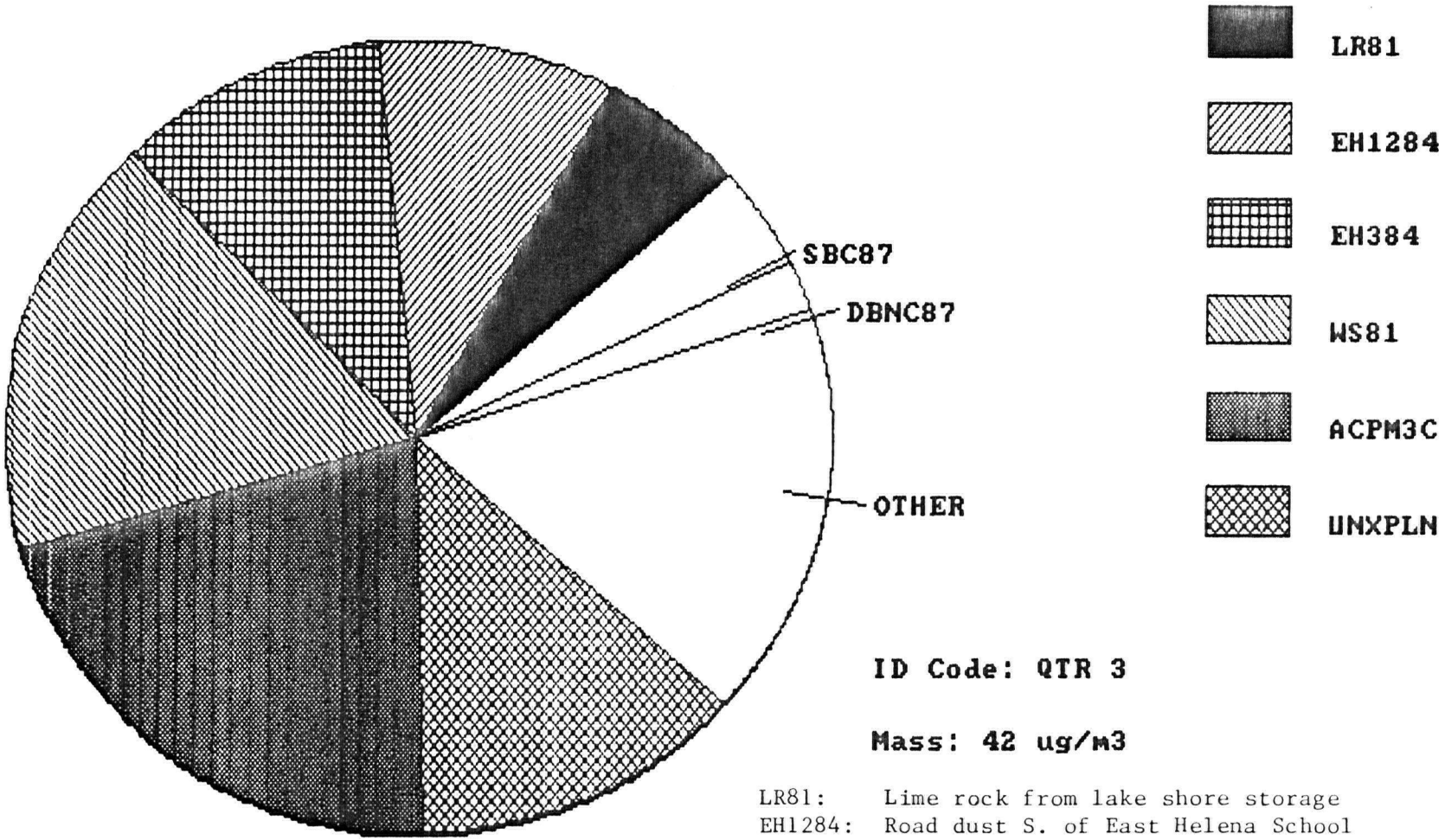
1.2.1 FIREHALL AVERAGE THIRD QUARTER TSP PIE CHART



ID Code: QTR 3

Mass: 42 ug/m3

LR81:	Lime rock from lake shore storage
EH1284:	Road dust S. of East Helena School
EH384:	Pacific St. at Firehall road dust
WS81:	Wood stove
ACPM3C:	Pyrometal, stack #3, cathode charge
SBC87:	Sinter Building Composite
DBNC87:	Dross Building Normal Process Composite

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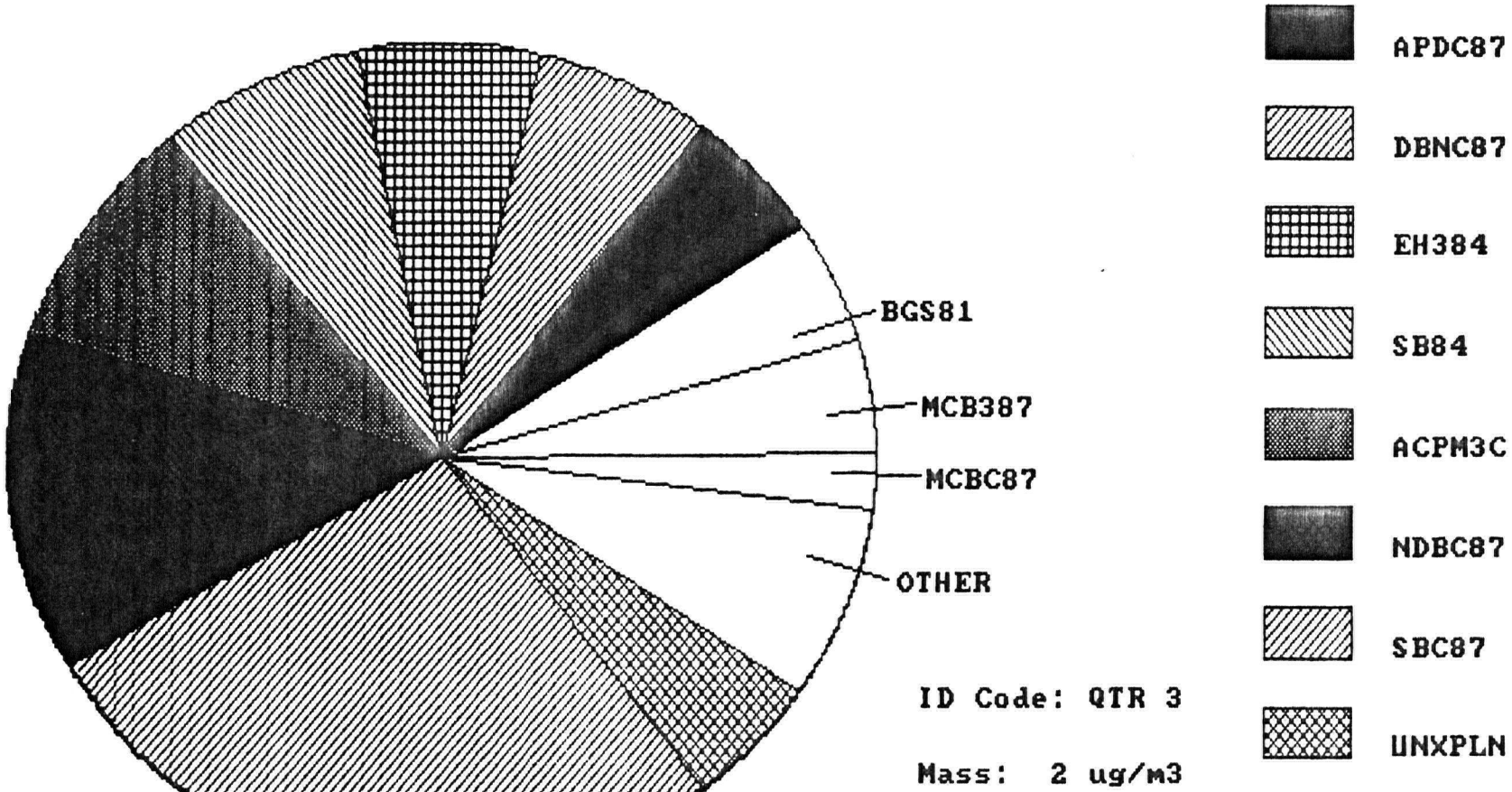
1.2.3 FIREHALL AVERAGE THIRD QUARTER LEAD PIE CHART



APDC87: Acid Plant Dust Loading Building
DBNC87: Dross Building Normal Process Composite
EH384: Pacific St. at Firehall road dust
SB84: Sinter Building
ACPM3C: Pyrometal, stack #3, cathode charge
NDBC87: New Deal Building Composite
SBC87: Sinter Building Composite
BGS81: Baghouse stack, 1980 sample
MCB387: Matte Crusher Building #2
MCBC87: Matte Crusher Building Composite

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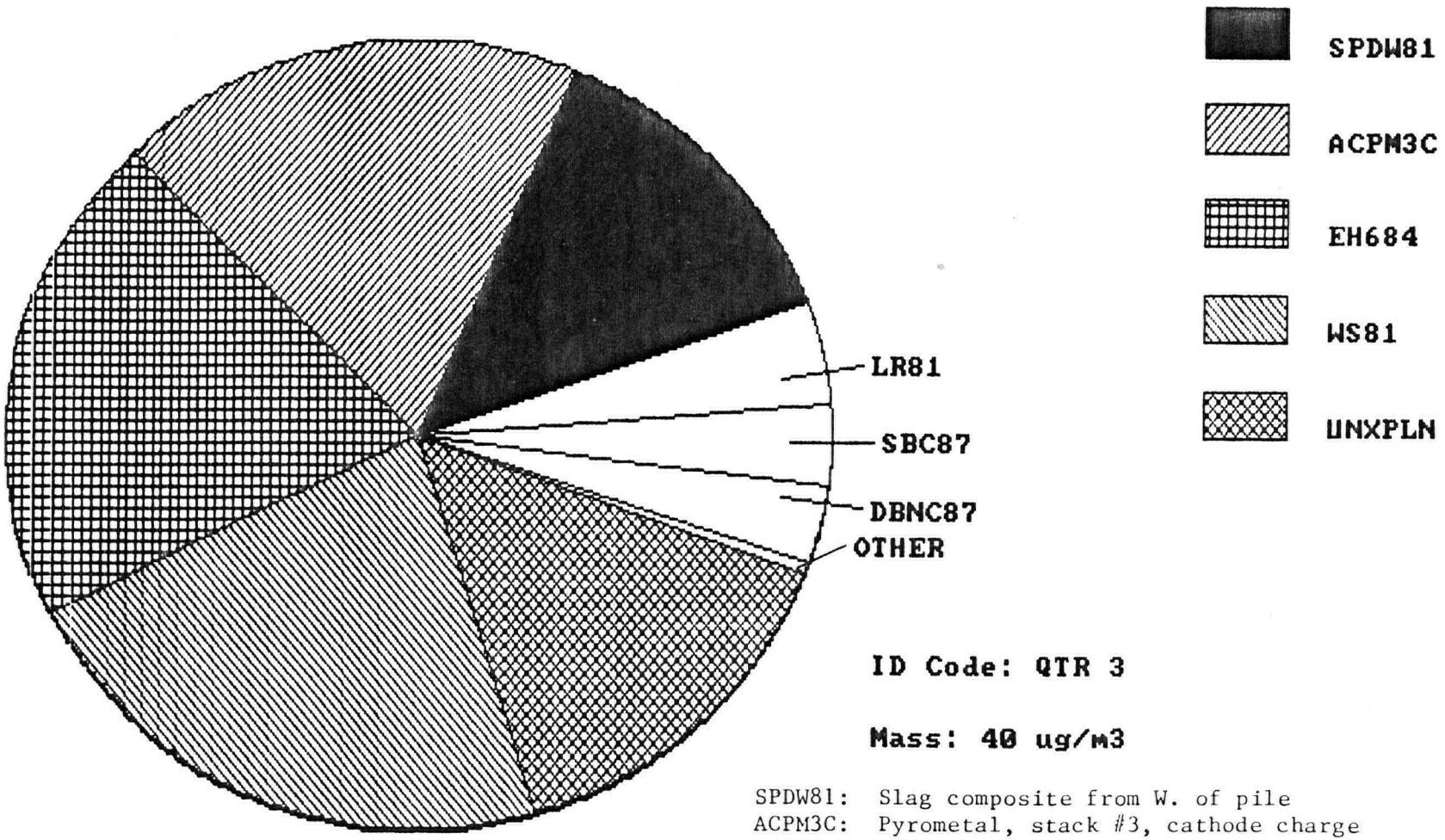
2.1.1 HADFIELD AVERAGE THIRD QUARTER TSP PIE CHART



ID Code: QTR 3

Mass: 40 ug/m3

SPDW81: Slag composite from W. of pile
ACPM3C: Pyrometal, stack #3, cathode charge
EH684: Main St. at Hadfield road dust
WS81: Wood stove
LR81: Lime rock from lake shore storage
SBC87: Sinter Building Composite
DBNC87: Dross Building Normal Process Composite

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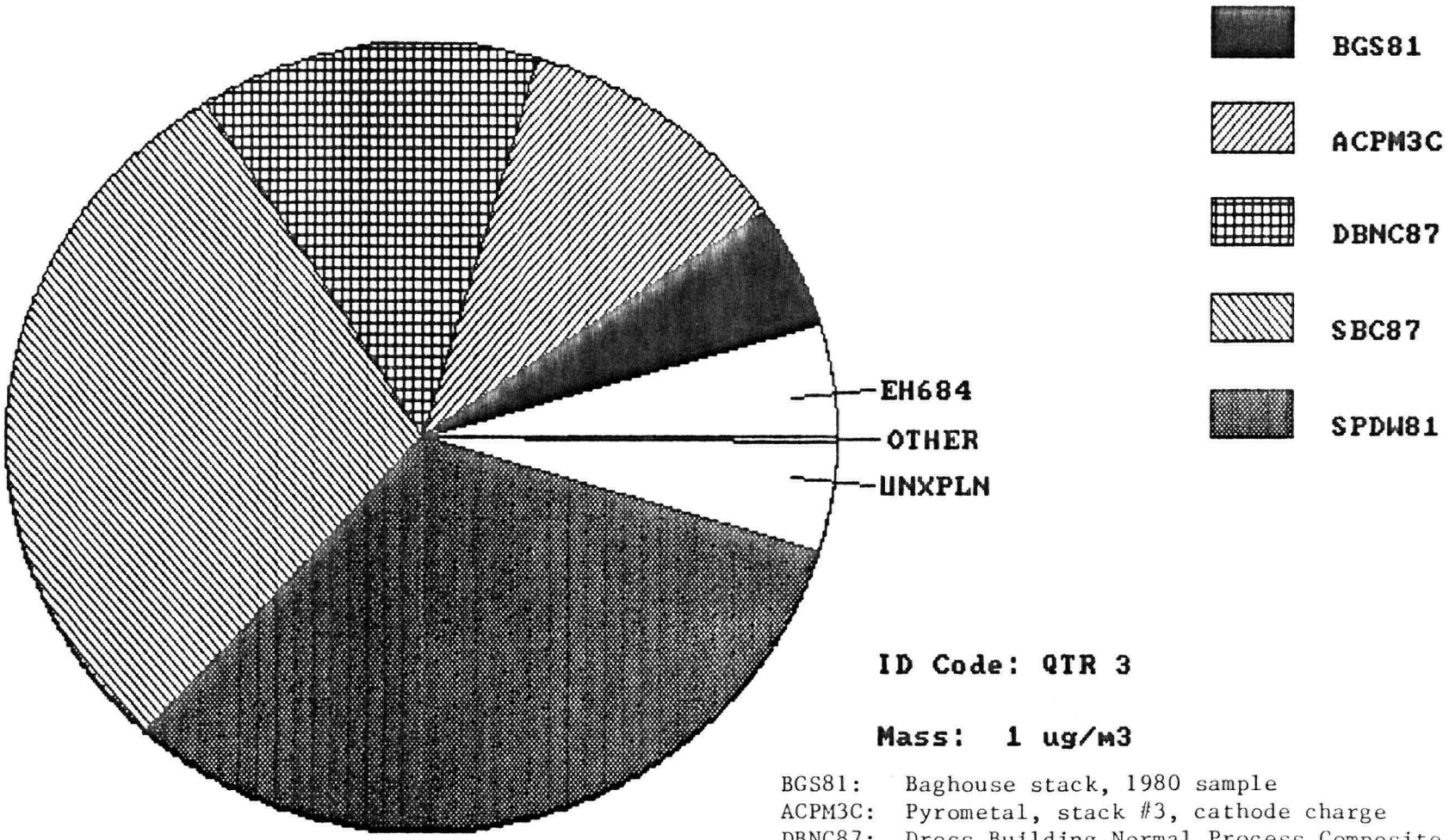
2.1.4 HADFIELD AVERAGE THIRD QUARTER LEAD PIE CHART



ID Code: QTR 3

Mass: 1 ug/m3

BGS81: Baghouse stack, 1980 sample
ACPM3C: Pyrometal, stack #3, cathode charge
DBNC87: Dross Building Normal Process Composite
SBC87: Sinter Building Composite
SPDW81: Slag composite from W. of pile
EH684: Main St. at Hadfield road dust

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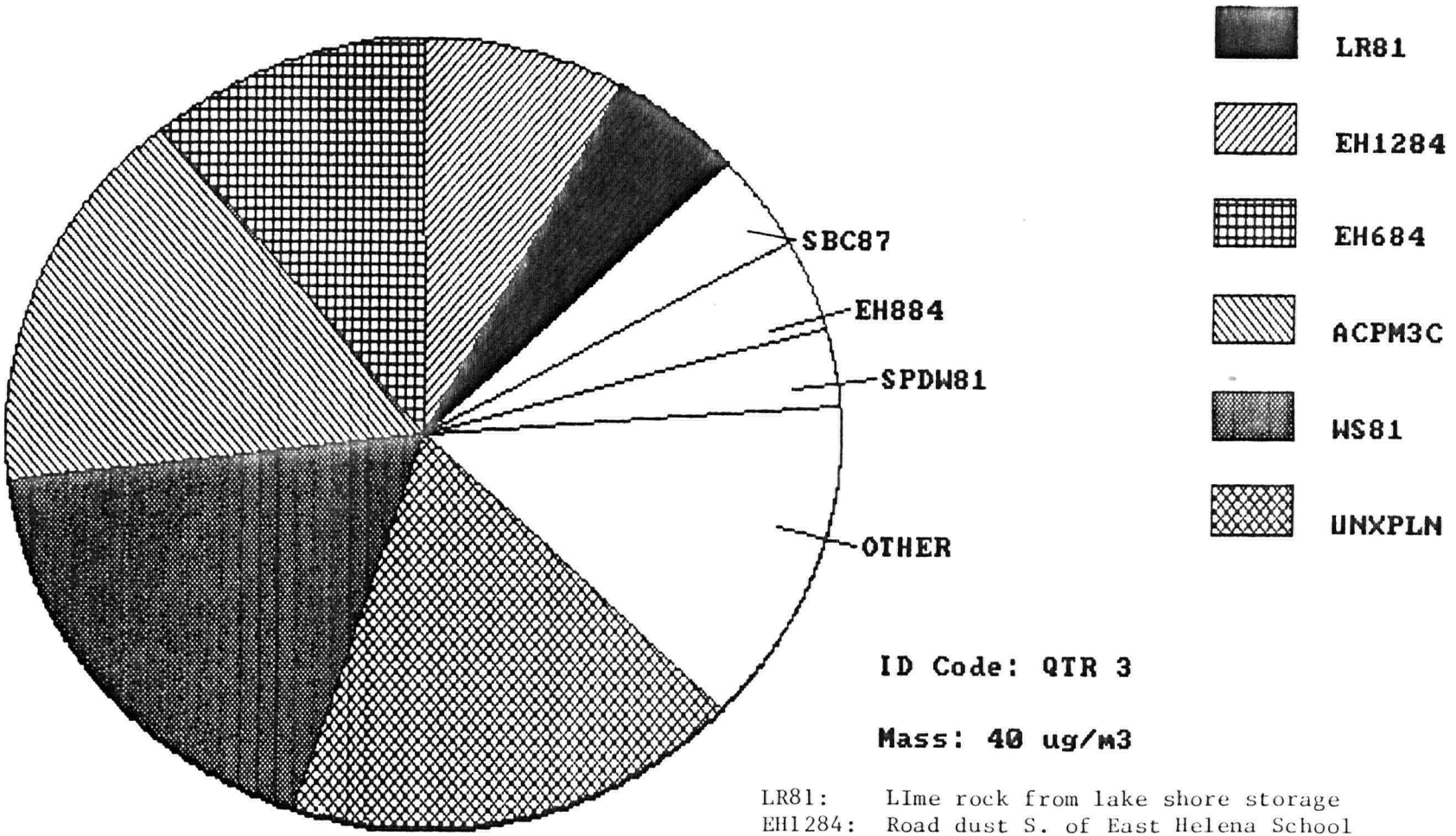
2.2.1 HADFIELD AVERAGE THIRD QUARTER TSP PIE CHART



ID Code: QTR 3

Mass: 40 ug/m3

LR81: LIme rock from lake shore storage
EH1284: Road dust S. of East Helena School
EH684: Main St. at Hadfield road dust
ACPM3C: Pyrometal, stack #3, cathode charge
WS81: Wood stove
SBC87: Sinter Building Composite
EH884: Cleveland St. road dust
SPDW81: Slag composite from W. of pile

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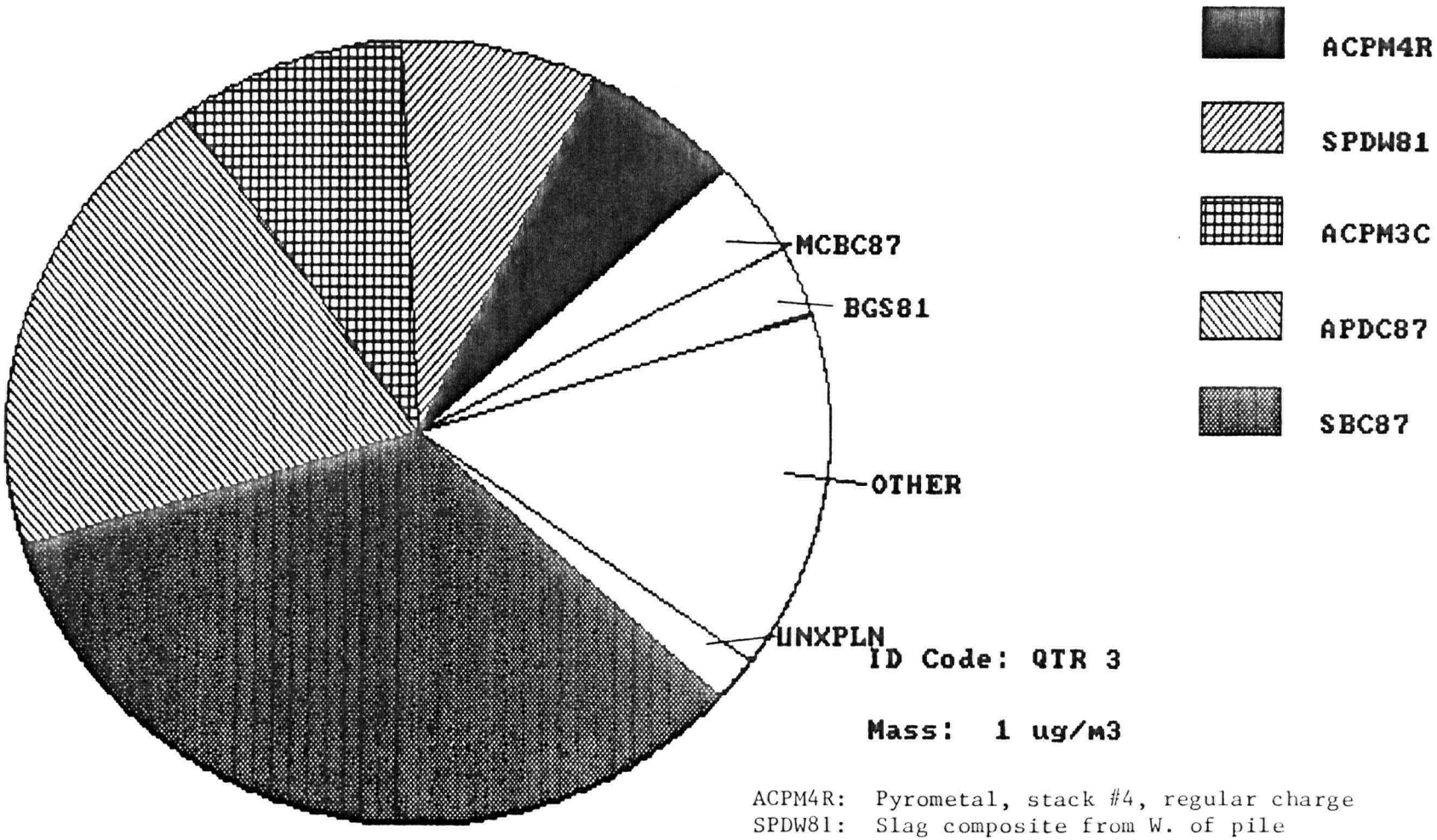
2.2.3 HADFIELD AVERAGE THIRD QUARTER LEAD PIE CHART



ACPM4R: Pyrometal, stack #4, regular charge
SPDW81: Slag composite from W. of pile
ACPM3C: Pyrometal, stack #3, cathode charge
APDC87: Acid Plant Dust Loading Bldg.
SBC87: Sinter Building Composite
MCBC87: Matte Crusher Building Composite
BGS81: Baghouse stack, 1980 sample

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Copy for Dave, Doug

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EAST HELENA MEETING 4-28-88

①

DATA TRENDS

3 locations
Hadfield
Dartman

1. TSP – annual average essentially unchanged in last 5 yrs. around 70 $\mu g/m^3$

2. Lead – annual averages & quarterly averages have remained approximately the same for last 3 years: 1985–87. Lower than for years 1983–84.

3. Lead – averages about 4.5% of the total mass.

4. Copper – annual averages have shown little change in last five years. Percent of mass averages between 8.5 – 11%.

5. TSP – Maximum 24-hour readings in 1987 were lower than those from previous years.

6. Lead – High quarters JAN-MAR, OCT-DEC
Low quarters Apr-Jun, Jul-Sep.

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(2)

FIRE HALL
TSP & METAL COMPARISON

YEAR	TSP	Cu (%)	Pb (% of total mass)	Zn (%)
83	72.1	6.44 (8.9)	5.04 (7.0)	1.91 (2.6)
84	75.2	7.25 (9.6)	5.28 (7.0)	3.02 (4.0)
85	67.9	5.88 (8.6)	3.34 (4.9)	1.55 (2.2)
86	71.3	7.98 (11.1)	3.06 (4.2)	1.41 (1.9)
87	70.7	6.15 (8.6)	3.25 (4.6)	1.35 (1.9)
			dropped	

TABLE 22
AQCR 142 - LEAD--QUARTERLY
Micrograms per Cubic Meter

County/City Site Code	Site Name/Location	Yr	Jan-Mar Num Obs	Jan-Mar Arith Mean	Apr-Jun Num Obs	Apr-Jun Arith Mean	Jul-Sep Num Obs	Jul-Sep Arith Mean	Oct-Dec Num Obs	Oct-Dec Arith Mean
Lewis & Clark/East Helena										
0860 714 F 02	Firehall	83	--	---	--	---	25	4.78	30	5.25
		84	30	5.77	27	2.74	29	5.61	29	6.82
		85	29	5.46	31	3.29	25	2.25	30	2.26
		86	27	3.17	30	1.77	31	2.34	28	5.15
		87	27	3.44	28	2.34	31	3.09	30	4.10
0860 719 F 02	Hadfield	82	1	7.62	2	1.59	7	2.63	15	1.95
		83	15	3.27	2	3.20	24	3.00	29	3.07
		84	28	4.12	29	1.82	30	3.38	29	4.63
		85	30	3.19	29	2.16	28	1.86	28	1.41
		86	30	2.09	29	1.13	31	1.86	31	3.70
		87	30	3.44	28	1.91	29	1.94	30	2.76
0860 719 F 07	Hadfield - Collocated	82	1	7.34	2	2.75	11	2.68	16	2.14
		83	15	3.47	2	3.36	22	2.92	28	2.98
		84	25	3.18	26	1.80	28	3.44	30	4.31
		85	29	3.05	28	2.06	27	1.68	31	1.36
		86	30	2.00	29	1.27	31	1.81	29	3.71
		87	30	3.24	28	1.93	31	1.93	29	2.64
0860 724 F 02	Dartman Field	83	--	---	1	1.03	25	2.95	16	2.57
		84	16	3.19	15	1.26	14	3.10	14	3.23
		85	13	2.72	16	1.54	14	.61	15	1.26
		86	15	1.60	15	1.18	15	1.49	15	2.94
		87	15	2.48	15	1.27	16	2.06	13	2.84

LEAD - QUARTERLY

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TABLE 21
AQCR 142 - LEAD - DAILY
Micrograms per Cubic Meter

County/City Site Code	Site Name/Location	Yr	Num Obs	Max Obs	2nd Max	3rd Max	Arith Mean
Lewis and Clark/East Helena							
0860 714 F 02	Firehall	83	55	16.75	13.13	12.73	5.04
		84	115	19.27	17.12	17.07	5.28
		85	115	17.08	12.99	12.98	3.34
		86	116	19.49	14.25	13.14	3.06
		87	116	12.75	11.54	10.58	3.25
0860 719 F 02	Hadfield	82	25	7.62	6.18	4.29	2.34
		83	70	8.39	7.29	7.21	3.09
		84	116	17.73	12.88	12.79	3.48
		85	115	10.08	9.05	7.59	2.18
		86	121	11.67	11.43	9.80	2.21
		87	117	16.42	13.30	6.51	2.53
0860 719 F 07	Hadfield - Collocated	82	30	7.34	6.55	5.61	2.55
		83	67	9.28	7.86	7.19	3.08
		84	109	20.43	12.58	12.03	3.23
		85	115	8.50	8.29	6.79	2.03
		86	119	11.45	11.09	10.49	2.19
		87	118	15.32	13.92	7.56	2.45
0860 724 F 02	Dartman Field	83	42	9.80	7.99	7.46	2.76
		84	59	10.96	8.34	7.85	2.69
		85	58	7.14	6.74	4.46	1.51
		86	60	7.19	6.18	5.13	1.80
		87	59	7.25	6.87	5.56	2.14

LEAD - DAILY

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TABLE 17b
AQCR 142 - TOTAL SUSPENDED PARTICULATES
Micrograms per Cubic Meter

County/City Site Code	Site Name/Location	Yr	Num Obs	Max Obs	2nd Max	3rd Max	Arith Mean	Geom Mean
Jefferson/Montana City								
0760 905 F 05	Montana City School	82	18	188	182	154	86.8	73.5
		83	35	193	175	165	80.6	68.0
		84	40	349	201	196	97.9	78.4
		85	60	259	228	221	78.5	62.5
		86	59	175	165	165	67.5	58.0
Lewis and Clark/Helena								
0720 001 F 01	Cogswell Building	82	37	114	113	91	49.2	42.3
		83	55	193	165	137	48.6	41.0
		84	57	248	120	114	50.9	42.0
		85	58	273	195	189	60.5	45.8
		86	59	362	307	237	67.5	49.0
0720 013 G 05	Capital Courts	82	54	183	166	122	58.6	51.3
		83	59	232	212	178	72.8	58.6
		84	54	122	116	111	52.8	45.7
		85	60	397	213	210	67.4	50.7
		86	49	225	184	161	70.9	58.6
Lewis and Clark/East Helena								
0860 714 F 02	Firehall	83	51	142	136	131	72.1	65.5
		84	115	216	206	196	75.2	65.5
		85	115	215	207	170	67.9	59.2
		86	115	209	178	173	71.3	60.4
		87	116	166	155	148	70.7	—

TSP -

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TABLE 17c
AQCR 142 - TOTAL SUSPENDED PARTICULATES
Micrograms per Cubic Meter

County/City Site Code	Site Name/Location	Yr	Num Obs	Max Obs	2nd Max	3rd Max	Arith Mean	Geom Mean
Lewis and Clark/East Helena								
0860 719 F 02	Hadfield	82	25	133	121	113	66.7	60.8
		83	67	240	232	172	74.2	65.5
		84	116	326	301	273	85.6	70.2
		85	115	273	189	173	68.6	59.4
		86	119	259	208	193	74.1	63.5
		87	117	162	156	142	73.8	—
0860 719 F 07	Hadfield - Collocated	82	30	130	126	122	72.1	66.3
		83	64	239	212	192	75.6	66.7
		84	109	295	268	259	79.4	64.6
		85	115	250	182	162	66.6	58.2
		86	118	247	207	185	73.5	63.1
		87	118	170	150	137	70.4	—
0860 724 F 02	Dartman Field	83	42	98	95	93	46.9	40.1
		84	59	174	114	109	50.0	40.5
		85	58	113	106	101	44.0	36.4
		86	60	145	131	128	53.1	43.8
		87	59	120	113	112	53.3	—
Powell/Deer Lodge								
0380 001 F 01	Powell County Courthouse	~~84~~	~~19~~	~~109~~	~~87~~	~~76~~	~~48.8~~	~~42.5~~
		85	53	~~130~~	~~119~~	~~109~~	51.6	42.0
		~~86~~	~~24~~	~~119~~	~~105~~	~~79~~	~~50.0~~	~~43.9~~

TSP max's seem to have reduced, but mean unchanged

TSP —

0160739

TABLE 19
AQCR 142 - ARSENIC
Micrograms per Cubic Meter

County/City Site Code	Site Name/Location	Yr	Num Obs	Max Obs	2nd Max	3rd Max	Arith Mean
Deer Lodge/Anaconda							
0020 007 F 01	Lincoln School	85	45	.232	.167	.100	.021
		86	30	.123	.049	.046	.011
0400 004 F 02	Hiway Junction	84	53	2.011	1.842	1.127	.170
		85	113	.349	.264	.259	.040
		86	120	.611	.265	.223	.033

TABLE 20
AQCR 142 - COPPER
Micrograms per Cubic Meter

County/City Site Code	Site Name/Location	Yr	Num Obs	Max Obs	2nd Max	3rd Max	Arith Mean
Lewis and Clark/East Helena							
0860 714 F 02	Firehall	83	55	32.95	23.71	23.46	6.44
		84	115	86.07	45.49	33.68	7.25
		85	115	64.52	49.08	36.65	5.88
		86	116	70.72	54.37	37.09	7.98
		87	116	44.51	24.24	22.30	6.15

COPPER

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TABLE 24
AQCR 142 - ZINC
Micrograms per Cubic Meter

County/City Site Code	Site Name/Location	Yr	Num Obs	Max Obs	2nd Max	3rd Max	Arith Mean
Lewis and Clark/East Helena							
0860 714 F 02	Firehall	83	55	6.53	6.00	4.75	1.91
		84	115	16.80	12.47	10.77	3.02
		85	115	6.86	5.79	4.71	1.55
		86	116	9.99	5.62	4.61	1.41
		87	116	5.19	4.46	4.10	1.35

ZINC

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4-28-88
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1987 Road Dust Samples

East Helena

1. American Chemet parking lot	Nov. 87 vacuum samples, resuspended on low-vol filters	Fugitive ambient-temp.	Existing data is adequate
2. American Chemet access road behind plant	Nov. 87 vacuum samples, resuspended on low-vol filters	Fugitive ambient-temp.	Existing data is adequate
3. Main Street by Hadfield's	Nov. 87 vacuum samples, resuspended on low-vol filters	Fugitive ambient-temp.	Existing data is adequate
4. Morton Avenue by Firehall	Nov. 87 vacuum samples, resuspended on low-vol filters	Fugitive ambient-temp.	Existing data is adequate
5. Highway 12 by Firehall	Nov. 87 vacuum samples, resuspended on low-vol filters	Fugitive ambient-temp.	Existing data is adequate
6. Moontown Road ~~parking lot~~	Nov. 87 vacuum samples, resuspended on low-vol filters	Fugitive ambient-temp.	Existing data is adequate

AGENDA

EAST HELENA LEAD SIP MEETING

April 28, 1988

Cogswell Building - Room A110

1.	Update on lead ambient data	Stan Sternberg
2.	Review of third quarter 1987 CMB data	Bob Raisch/Jon Nickel
3.	Review of CMB fingerprints and determination of additional needs	
	a. Off-plant sources	Bob Raisch
	b. American Chemet	Bill Porter
	c. ASARCO	Jon Nickel
4.	East Helena PM-10 status and PM-10 monitoring	Bob Raisch

4-28-88
ASARCO

Fingerprinting

Table C.1 (cont.)

SUMMARY OF SOURCE PROFILES
IN EAST HELENA AIRSHED SOURCE LIBRARY

No.	Code	Mnemonic	Size	Description	Basis
64	5504	MCB187	tsp	Matte Crusher Bldg. #1	Single sample
65	5505	MCB387	tsp	Matte Crusher Bldg. #2	Single sample
66	5506	MCBC87	tsp	Matte Crusher Bldg. Composite	Mean 2 samples ± S.D.
67	5507	SBC87	tsp	Sinter Bldg. Composite	Mean 2 samples ± S.D.
68	5508	NDBC87	tsp	New Deal Bldg. Composite	Mean 2 samples ± S.D.
69	5509	DBN187	tsp	Dross Bldg. Normal Process #1	Single sample
70	5510	DBN287	tsp	Dross Bldg. Normal Process #2	Single sample
71	5511	DBNC87	tsp	Dross Bldg. Normal Process Composite	Mean 2 samples ± S.D.
72	5512	DBS187	tsp	Dross Bldg. Sodium Process #1	Single sample
73	5513	DBS287	tsp	Dross Bldg. Sodium Process #2	Single sample
74	5514	DBSC87	tsp	Dross Bldg. Sodium Process Composite	Mean 2 samples ± S.D.
75	5515	DBC87	tsp	Dross Bldg. Composite	Mean 4 samples ± S.D.
76	5516	APDC87	tsp	Acid Plant Dust Loading Bldg.	Mean 3 samples ± S.D.

New

SOURCE PROFILES TO FIT

SOURCE	FIT LAST
SPEISS PIT STACK	1981
SLAG POUR	1984
BLAST UPSETS	1984
#6 DROSS PLANT STACK	NOT DONE
TAPPING #1 SETTLER	NOT DONE
BLAST BAGHOUSE DUST PIT	NOT DONE

Cu-As-Sb complexes
Steam Plume probably contains -

Slag has changed since Zn operation discont. in 1982

Cd-high output

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