

BUNKER HILL SUPERFUND SITE 2022 BLOOD LEAD LEVELS

PANHANDLE HEALTH DISTRICT

IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MARCH 15, 2023



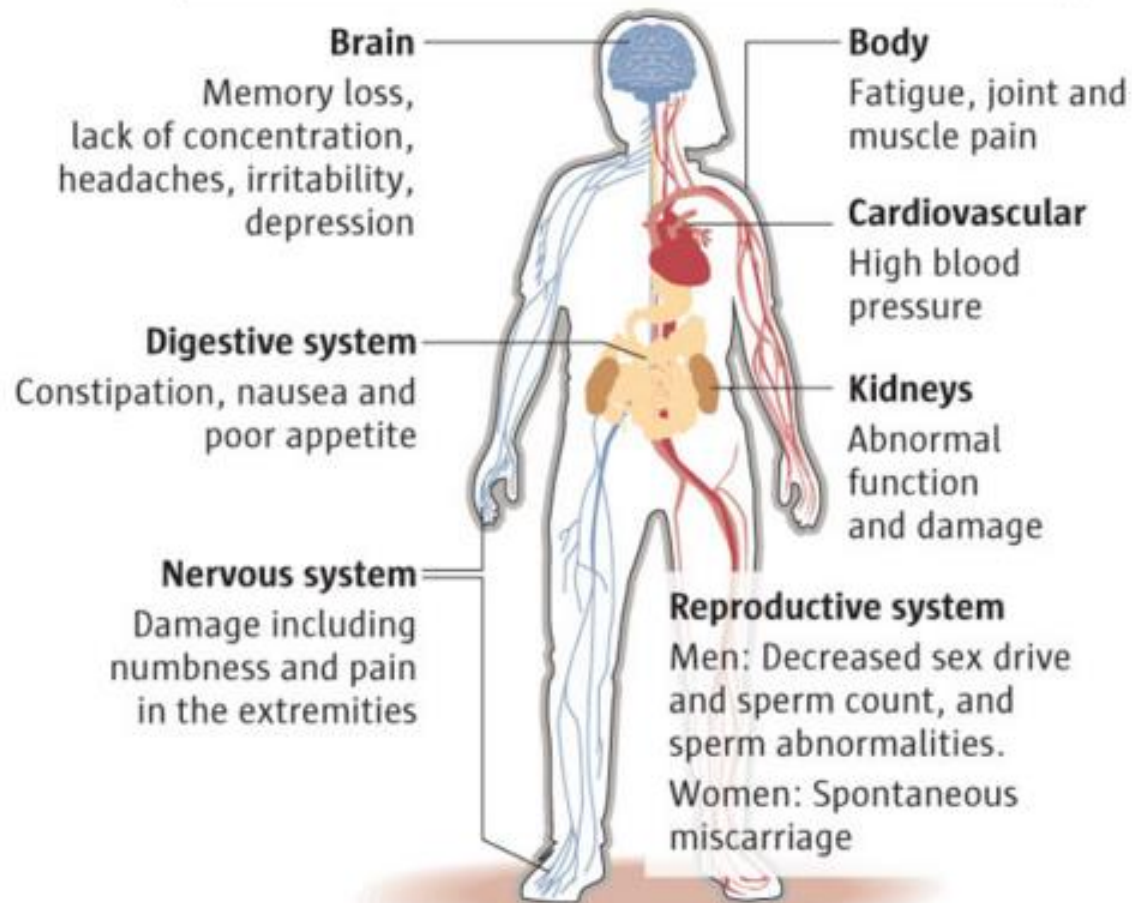
PRESENTATION OUTLINE

- HEALTH EFFECTS OF LEAD
- LEAD HEALTH INTERVENTION PROGRAM (LHIP) BACKGROUND
- 2022 LHIP APPROACH
- 2022 LHIP RESULTS



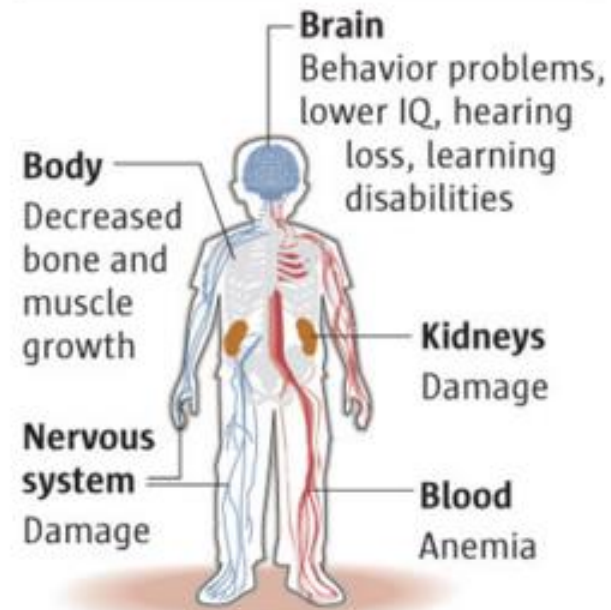
HEALTH EFFECTS OF LEAD

ADULTS



Most common exposure route:
incidental ingestion

CHILDREN

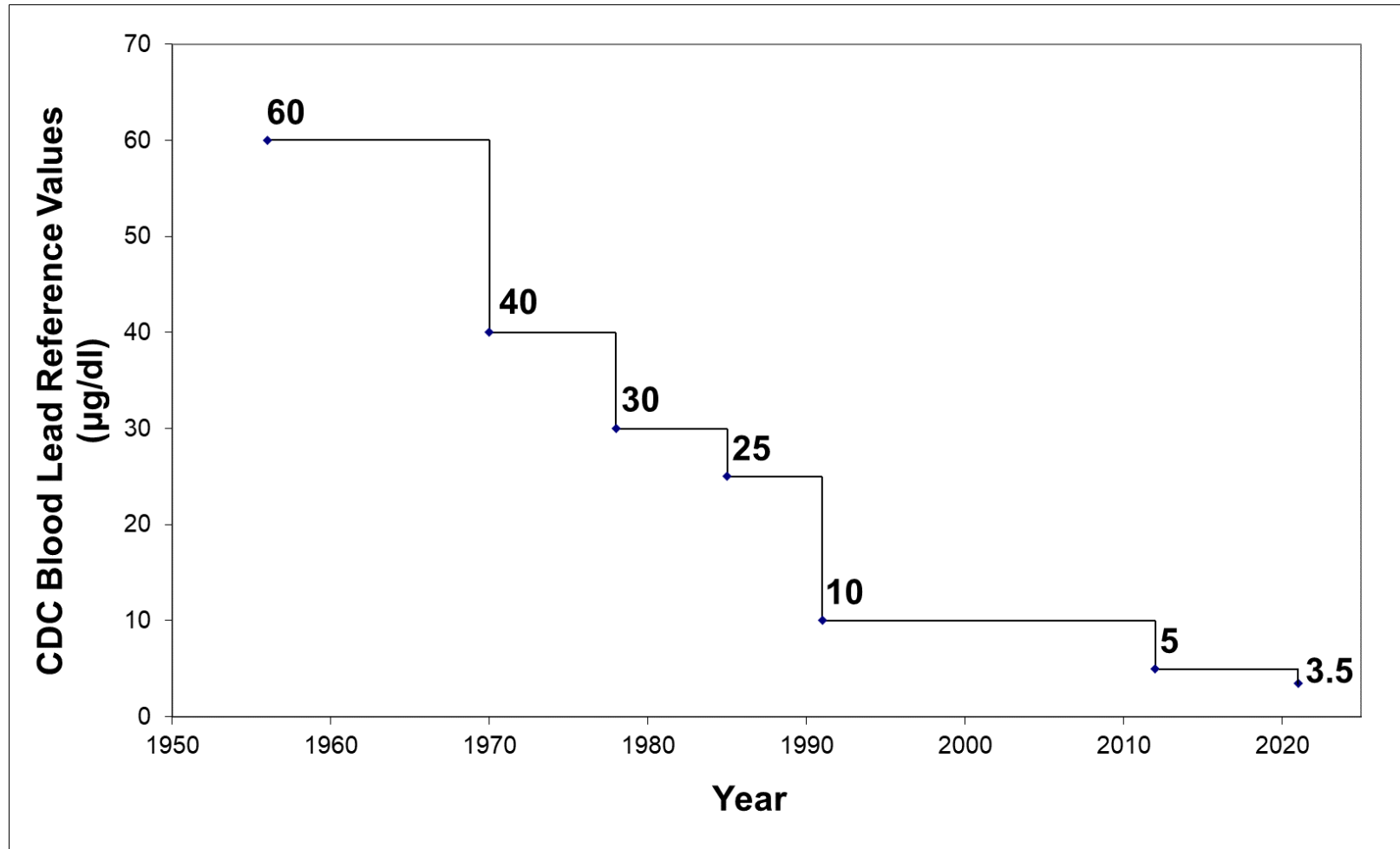


AT RISK POPULATIONS



Blood lead test is the best tool for identifying exposure & health risks

DECREASING “ELEVATED” BLOOD LEAD LEVELS



Blood Lead Concentrations Considered to be Elevated by the Centers for Disease Control and Prevention.

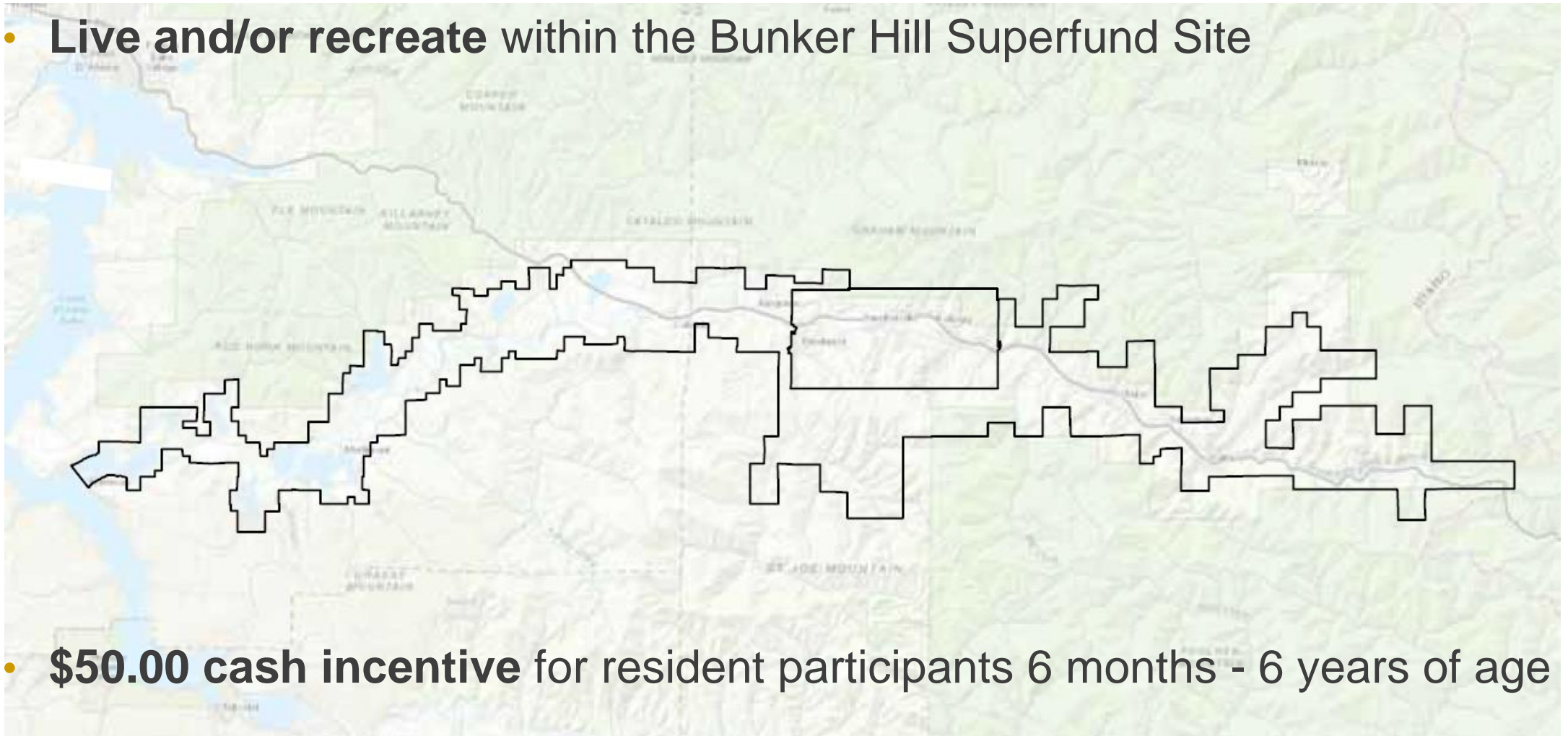
LEAD HEALTH INTERVENTION PROGRAM (LHIP)

- Public health service
- Not a study or experiment
- Box since 1974/1985
- Basin since 1996



LHIP PARTICIPANT CRITERIA & INCENTIVE

- **Live and/or recreate** within the Bunker Hill Superfund Site



- **\$50.00 cash incentive** for resident participants 6 months - 6 years of age

PRESENTATION OUTLINE

- ✓ HEALTH EFFECTS OF LEAD
- ✓ LEAD HEALTH INTERVENTION PROGRAM (LHIP)
BACKGROUND
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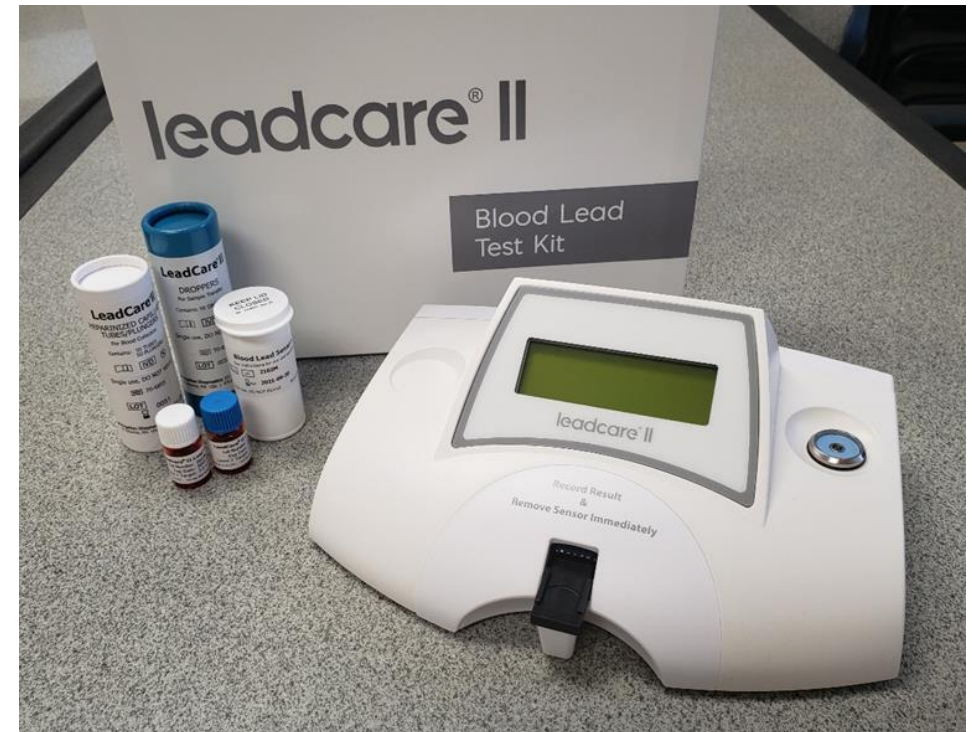
2022 LHIP APPROACH

- Informed consent
- Blood test offered by either
 - Venous, or
 - Capillary (i.e., fingerstick [FS])
- If FS ≥ 3.5 $\mu\text{g/dL}$ then venous confirmation test
- Offer consultations and follow-up with all children ≥ 3.5 $\mu\text{g/dL}$



2022 LHIP CAPILLARY PROCEDURES

- 2022: Secured substitute analyzer (LeadCareII) and new test kits (detection limit = 3.3 ug/dL)
- Prior years: LeadCarePlus Analyzer used for capillary test (detection limit = 1.9 ug/dL)



2022 RESULTS APPROACH

- Capillary not combined with venous results - due to high detection limit and large number of nondetects

	No. of Participants	No. (%) Nondetects	Detection Limit (µg/dL)
Basin	101		
Capillary	61	51 (84%)	3.3
Venous*	40	0 (0%)	1
Box	114		
Capillary	71	64 (90%)	3.3
Venous*	43	1 (2%)	1

*If capillary results were confirmed with a venous sample, only the venous result is counted.

2022 RESULTS IN “THE BOX”

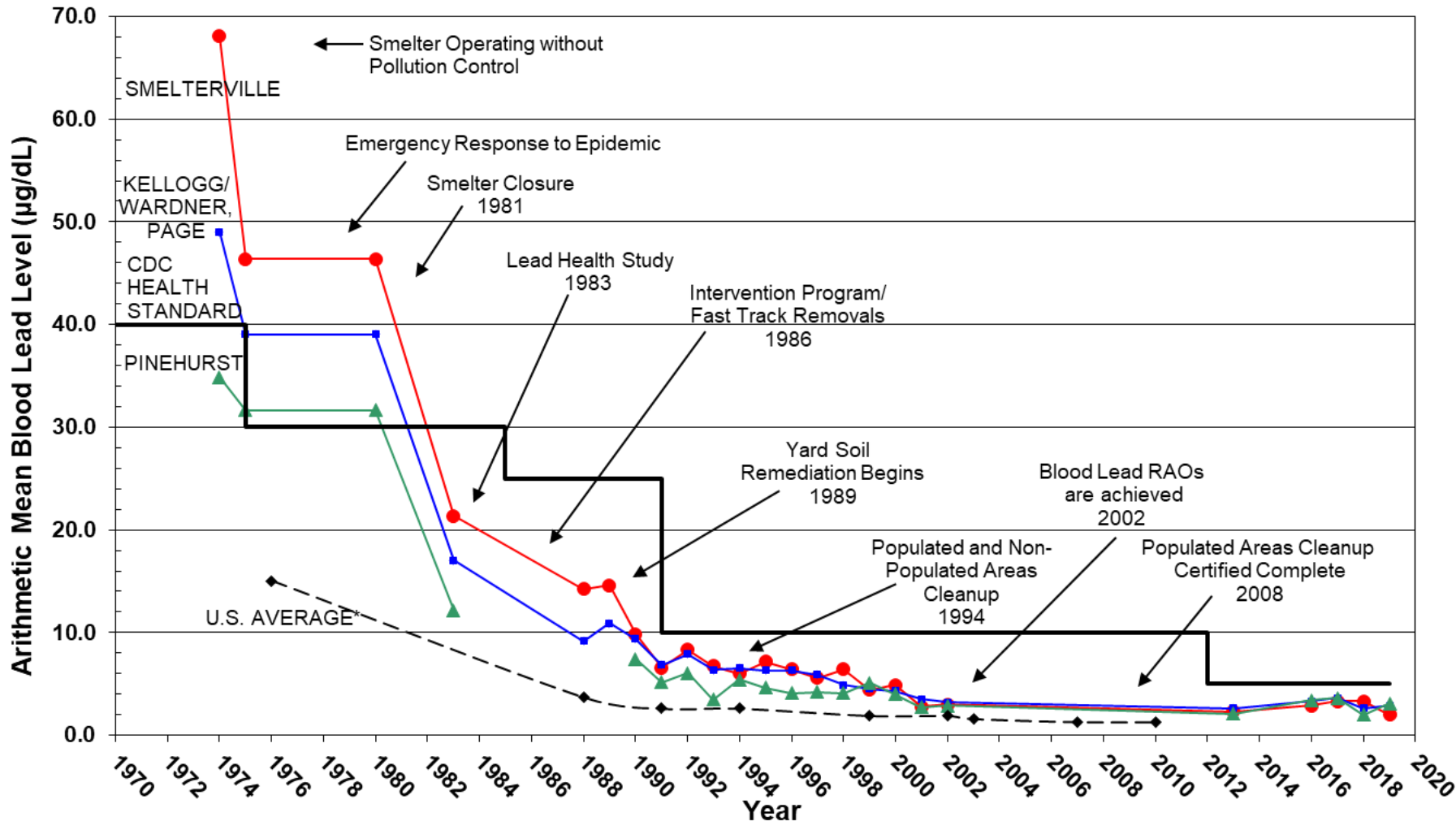
OPERABLE UNITS (OU) 1 & 2



BOX REMEDIAL ACTION OBJECTIVES

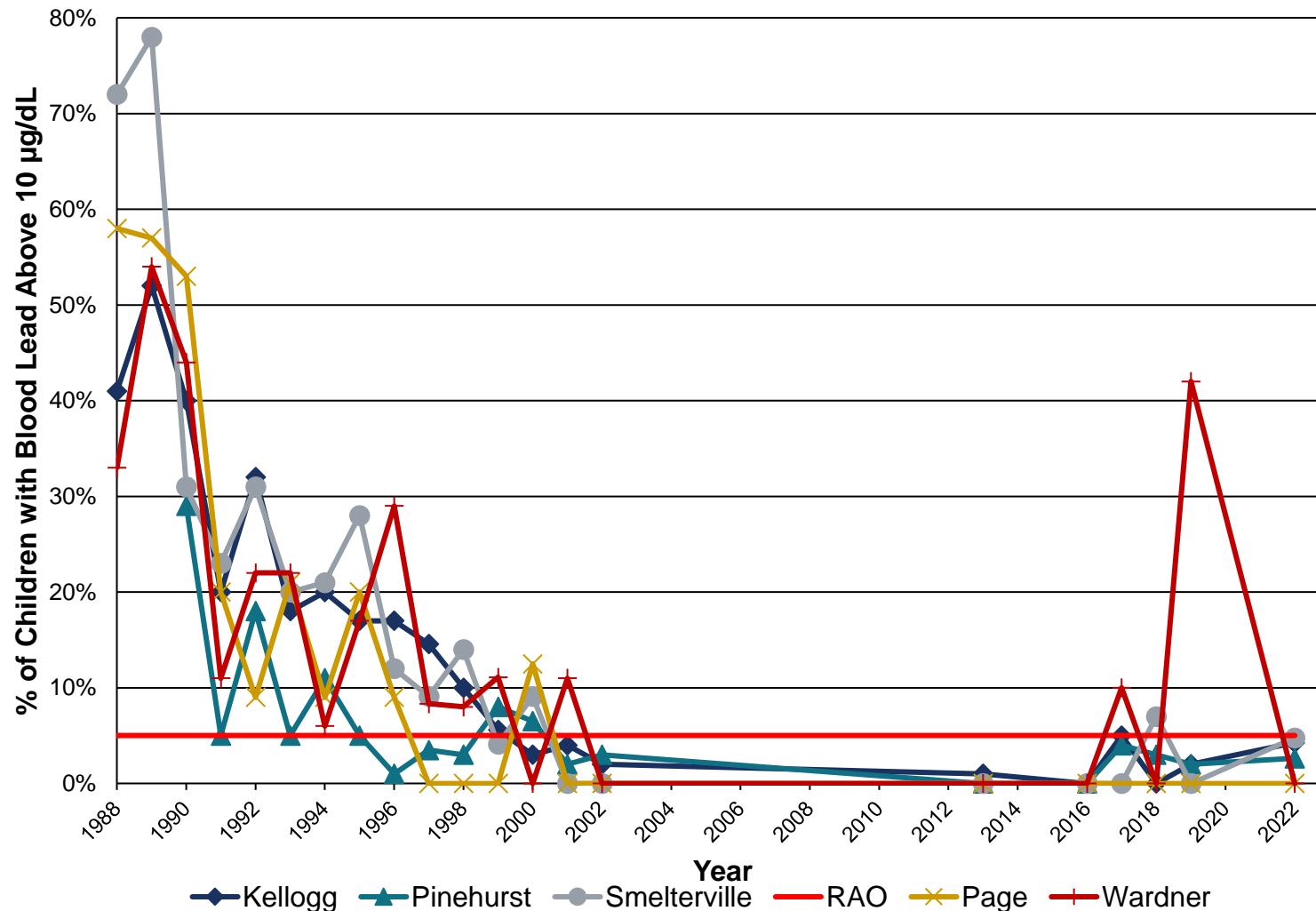
- No more than 5% of children in each community have blood lead levels $\geq 10 \mu\text{g/dL}$
- Less than 1% with blood lead levels $\geq 15 \mu\text{g/dL}$

BUNKER HILL BOX AVERAGE BLOOD LEAD: 1974-2019*



*not enough
samples in
2020-2022

PERCENT OF BOX CHILDREN WITH BLOOD LEAD LEVELS ≥ 10 UG/DL, BY CITY, 1988-2022*



*not enough samples in
2003-2012, 2014,
2015, 2020, & 2021

Since 1998, ≤ 10
participants/year in
Page & Wardner

2022 BLOOD LEAD SUMMARY STATISTICS: BOX (AGE 6 MONTHS-6 YEARS)

Total Number of Children (N)*	43
Minimum (µg/dL)	<1
Maximum (µg/dL)	15
Average (µg/dL)	2.5
Standard Deviation	2.9
Geometric Mean (µg/dL)	1.7
Geometric Standard Deviation	2.1
Number / Percent Below Detection	1 (2%)

	Number[†]	Percentage[†]
Children's blood lead \geq 3.5 µg/dL	9	8%
Children's blood lead \geq 5 µg/dL	7	6%
Children's blood lead \geq 10 µg/dL	4	4%
Children's blood lead \geq 15 µg/dL	2	2%

*Venous sample results only. An additional 71 children had capillary test results, 64 of which were below detection (<3.3 ug/dL).

[†]Capillary *and* venous results.

2022 BLOOD LEAD SUMMARY STATISTICS: BOX (OTHER NON-ELIGIBLE PARTICIPANTS)

Total Number of Participants (N)*	14
Minimum (µg/dL)	<1
Maximum (µg/dL)	13.0
Average (µg/dL)	1.9
Standard Deviation	3.2
Geometric Mean (µg/dL)	1.3
Geometric Standard Deviation	2.0
Number / Percent Below Detection	3 (21%)

	Number [†]	Percentage [†]
Blood lead \geq 3.5 µg/dL	5	7%
Blood lead \geq 5 µg/dL	4	6%
Blood lead \geq 10 µg/dL	2	3%
Blood lead \geq 15 µg/dL	1	2%

*7-60 years; includes one pre-natal participant. Venous sample results only. An additional 54 participants had capillary test results, 50 of which were below detection (<3.3 ug/dL).

[†] Capillary *and* venous results.

2022 RESULTS IN “THE BASIN”

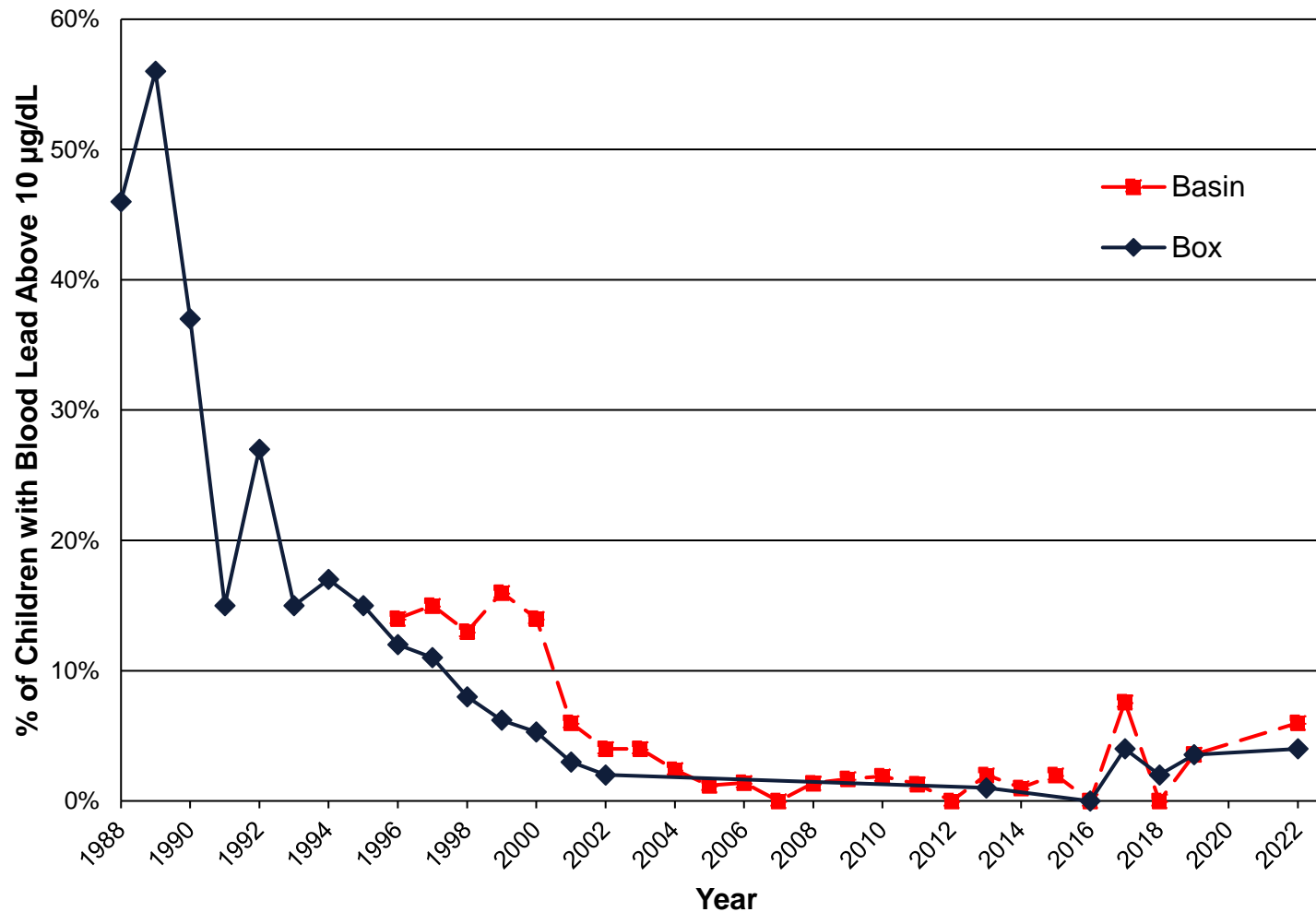
OPERABLE UNIT (OU) 3



BASIN REMEDIAL ACTION OBJECTIVES

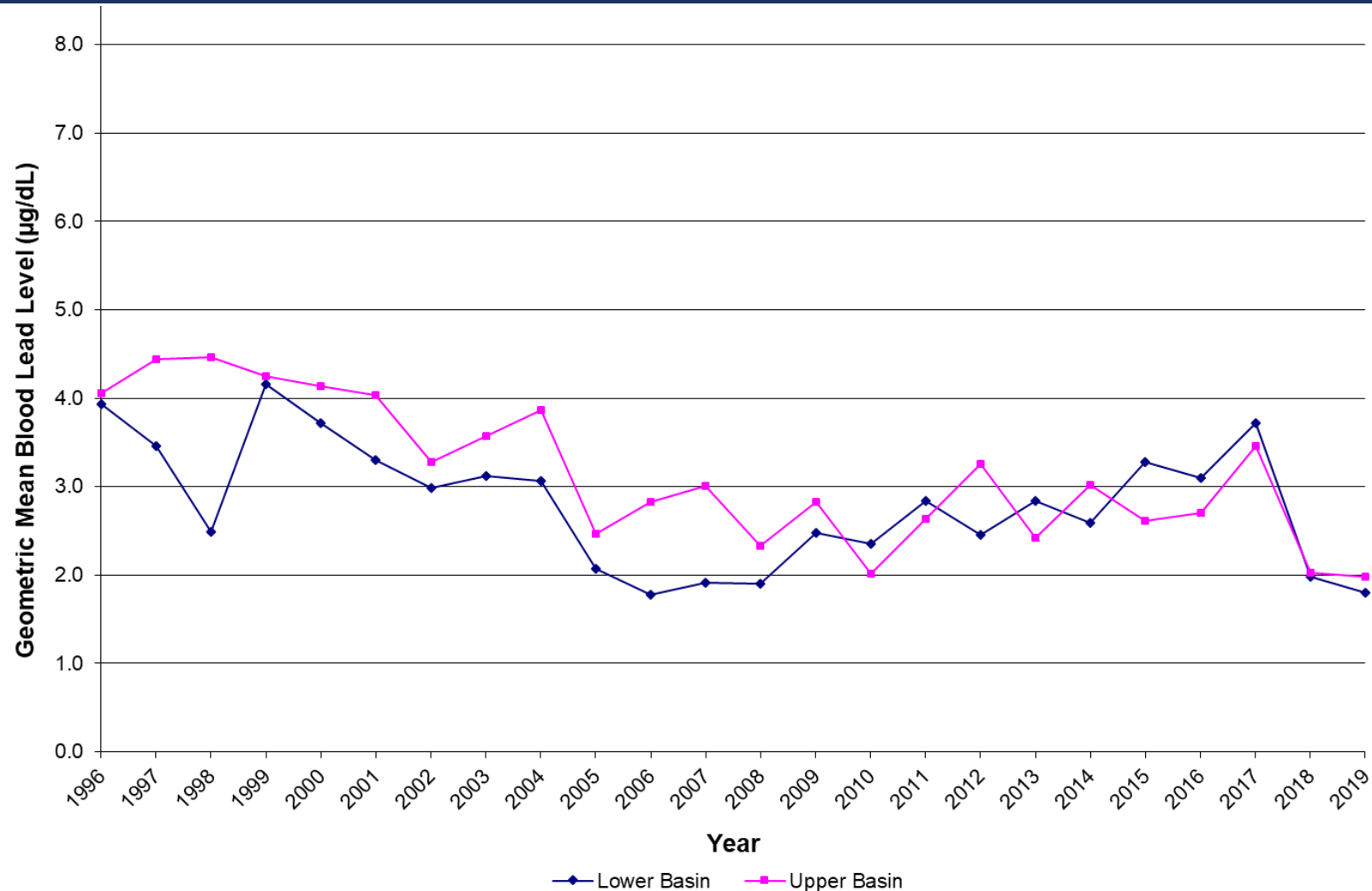
- Reduce exposures to soils with concentrations greater than:
 - Lead: ≥ 700 mg/kg
 - Arsenic: ≥ 100 mg/kg
- Reduce exposures to lead in house dust
- Cumulative exposures do not exceed USEPA's health risk goals:
 - **<5% chance that a typical child at an individual residence does not exceed 10 $\mu\text{g}/\text{dL}$**

PERCENT OF CHILDREN WITH BLOOD LEAD LEVELS ≥ 10 UG/DL, BOX AND BASIN, 1988-2022*



*not enough samples in 2020 & 2021

BASIN AVERAGE BLOOD LEAD LEVELS BY YEAR, 1996-2019*



*not enough
samples in
2020-2022

2022 BLOOD LEAD SUMMARY STATISTICS: BASIN (AGE 6 MONTHS-6 YEARS)

Total Number of Children (N)*	40
Minimum (µg/dL)	1
Maximum (µg/dL)	30
Average (µg/dL)	4.2
Standard Deviation	6.6
Geometric Mean (µg/dL)	2.2
Geometric Standard Deviation	2.8
Number / Percent Below Detection	0 (0%)

	Number[†]	Percentage[†]
Children's blood lead \geq 3.5 µg/dL	14	14%
Children's blood lead \geq 5 µg/dL	10	10%
Children's blood lead \geq 10 µg/dL	6	6%
Children's blood lead \geq 15 µg/dL	3	3%

*Venous sample results only. An additional 61 children had capillary test results, 51 of which were below detection (<3.3 ug/dL).

[†]Capillary *and* venous results.

2022 BLOOD LEAD SUMMARY STATISTICS: BASIN (OTHER NON-ELIGIBLE PARTICIPANTS*)

Total Number of Participants (N)*	13
Minimum (µg/dL)	1
Maximum (µg/dL)	11
Average (µg/dL)	3.4
Standard Deviation	3.7
Geometric Mean (µg/dL)	2.1
Geometric Standard Deviation	2.6
Number / Percent Below Detection	0 (0%)

	Number [†]	Percentage [†]
Blood lead \geq 3.5 µg/dL	10	17%
Blood lead \geq 5 µg/dL	7	12%
Blood lead \geq 10 µg/dL	3	5%
Blood lead \geq 15 µg/dL	0	0%

*7-57 years or outside ICP boundary; includes one pre-natal participant. Venous sample results only. An additional 46 participants had capillary test results, 38 of which were below detection (<3.3 µg/dL).

[†]Capillary *and* venous results.

2022 FOLLOW-UPS CONDUCTED (BOX & BASIN)

- **In-home follow ups: 5**
- **Phone consultations: 92**
- **Letters sent with more information: 54**

Identified sources:

- Disturbed barriers
 - Work with ICP to re-establish
- Recreating in un-remediated areas
 - Additional outreach & follow safety tips to reduce exposure
- Occupational related
 - PHD will attempt to work with industries to provide education and provide tips on how to reduce exposure at work and reduce tracking
- Lead based paint
 - Conduct assessment & address if needed



QUESTIONS?



ESTIMATED 2022 LHIP PARTICIPATION RATES

	Basin	Box
Estimated Eligible Population ^a	493	330
Total No. of Eligible Population Providing Samples in 2022 ^b	101	114
Estimated Percentage of Population Providing Samples	20%	35%

^a Eligible population are 6 month - 6 year old children living in the Box or Basin, based on estimates from 2018.

^b Count includes children who provided either a capillary or venous blood sample.

2022 LHIP PARTICIPANTS & PROPERTY REMEDICATION STATUS

Property Remediation Status	Number of Children	
	Basin	Box
No remedial action required or Remediated	96	110
Requires Remediation or Sampling	5	4
Total	101	114