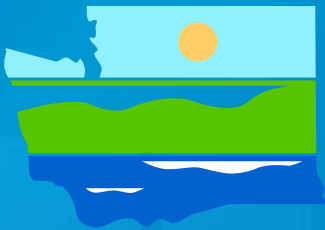


# Tacoma Smelter Plume Interim Action Plan

**December 6, 2011**  
**Toxics Cleanup Program**



DEPARTMENT OF  
**ECOLOGY**  
State of Washington

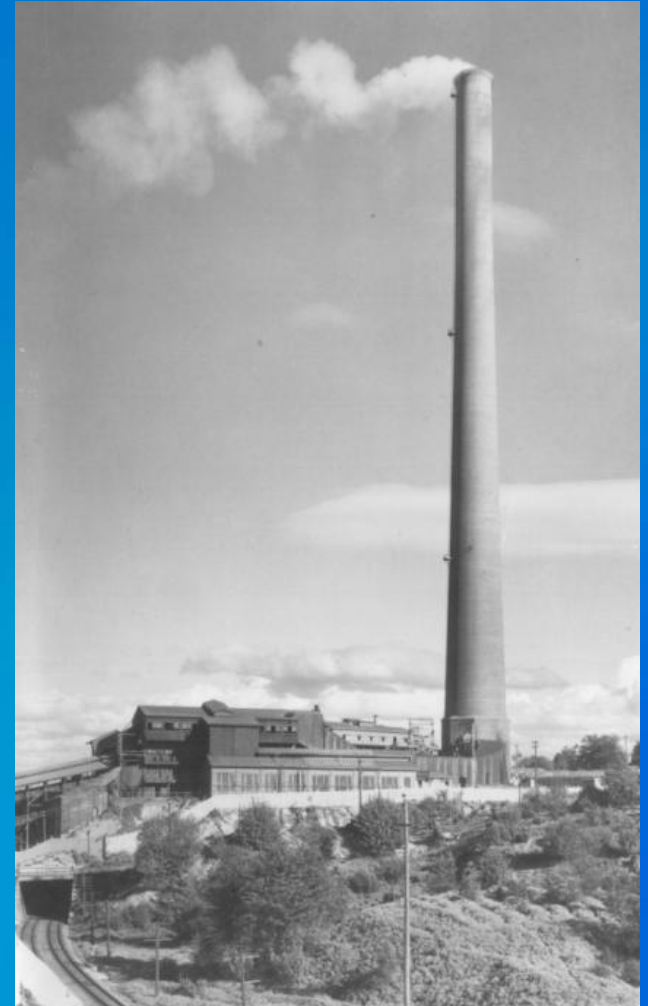
# Why are we here?

- To share Ecology's cleanup plan for the Tacoma Smelter Plume.
- To get your input and answer your questions.



# What are we going to cover?

- History of contamination
- The cleanup plan
- What happens next
- How to comment



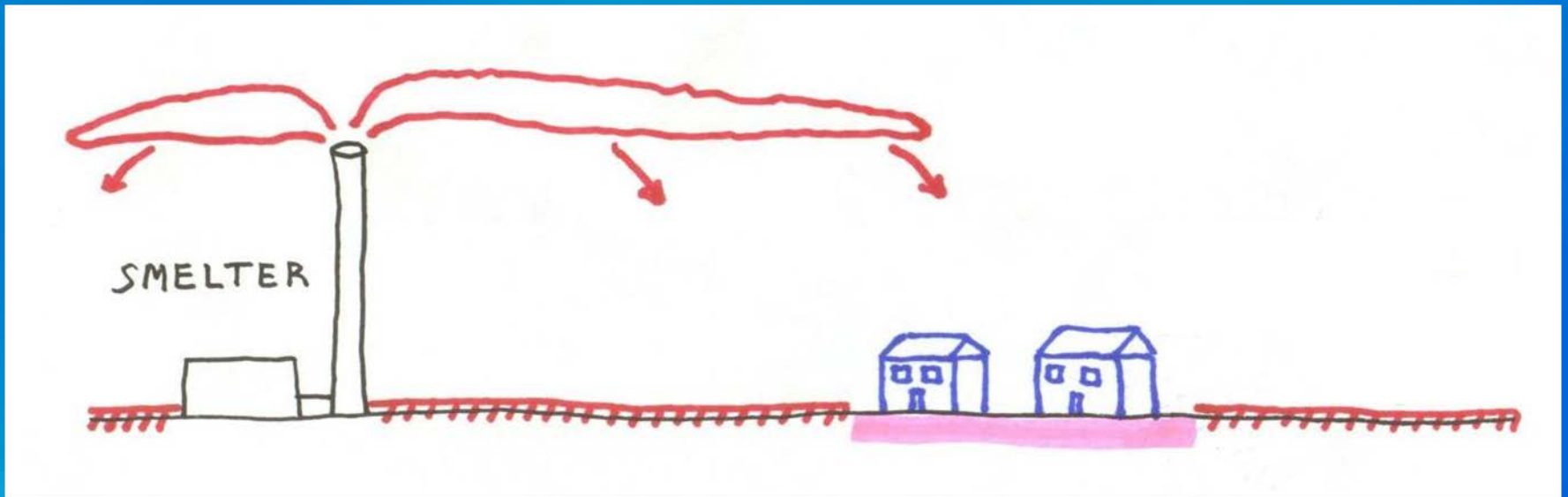
# Asarco Smelter History

- **1890-1986** - Smelted lead, copper, and high arsenic ores
- **1983** - Became a Superfund site
- **1993** – Yard cleanups began in Ruston and north Tacoma

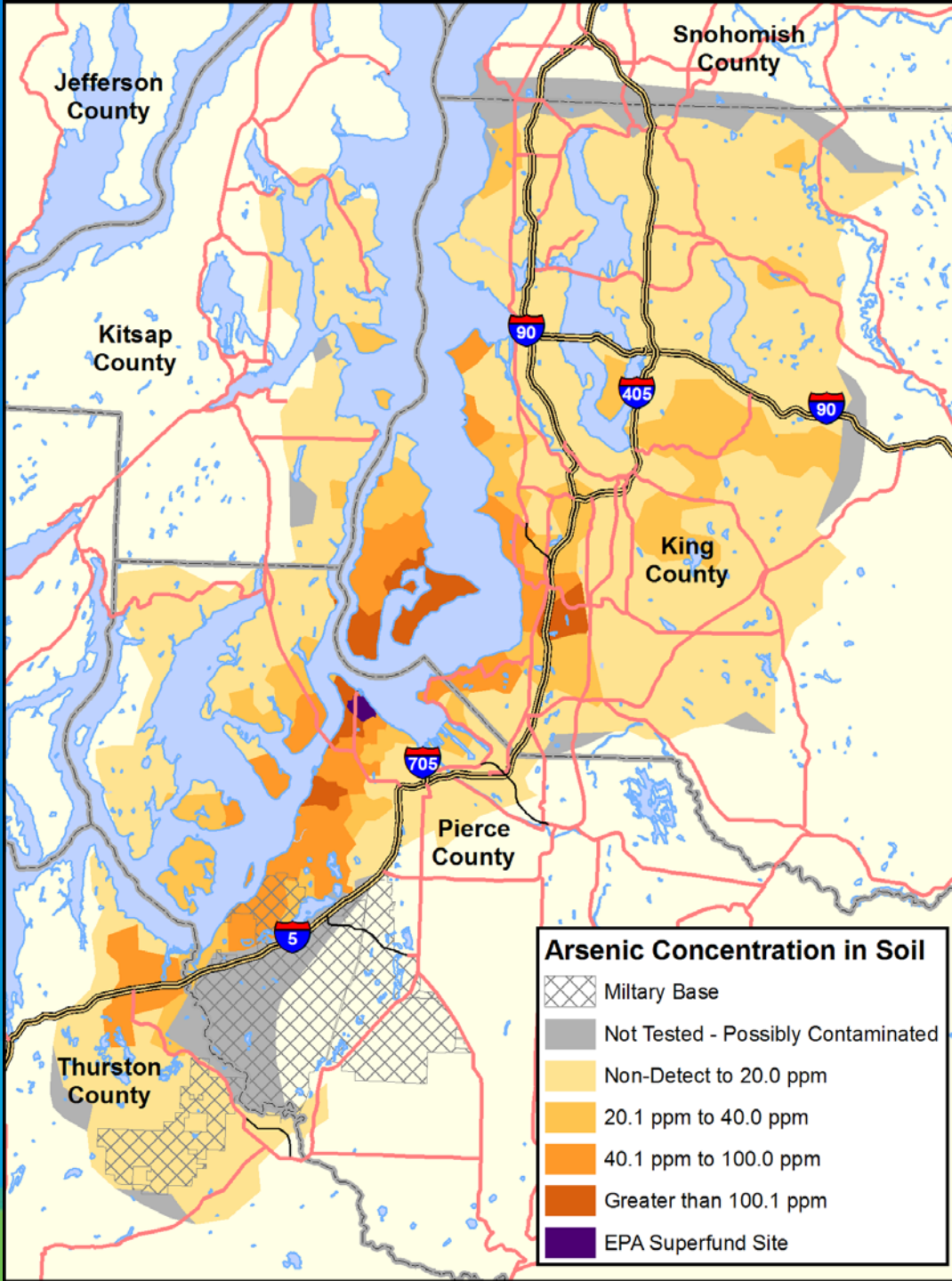


# Tacoma Smelter Plume

- Arsenic, lead, other heavy metals
- Settled on surface soils



# Tacoma Smelter Plume



State cleanup levels

Arsenic = 20 ppm

Lead = 250 ppm

# Why It Matters

- **Arsenic** – heart disease, diabetes, cancers
- **Lead** – developmental delays, behavioral problems

**Risk = Toxicity x Exposure**

**Toxicity** = how dangerous?

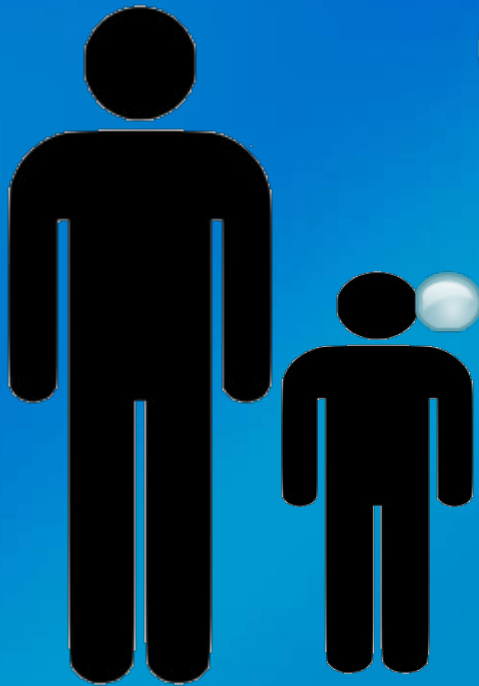
**Exposure** = how much contact?

# Ways People Can Be Exposed





# Children are at greater risk

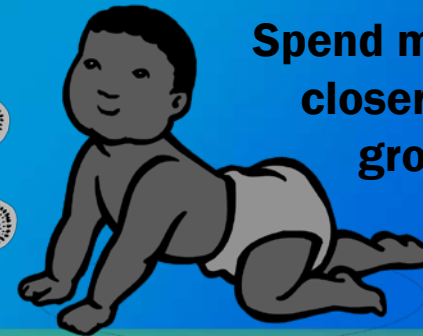
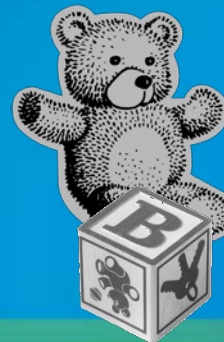


Breathe and eat more for their body size



Are still growing and developing

Put dirty toys and hands in their mouths



Spend more time closer to the ground

# Cleanup Plans – Phase One

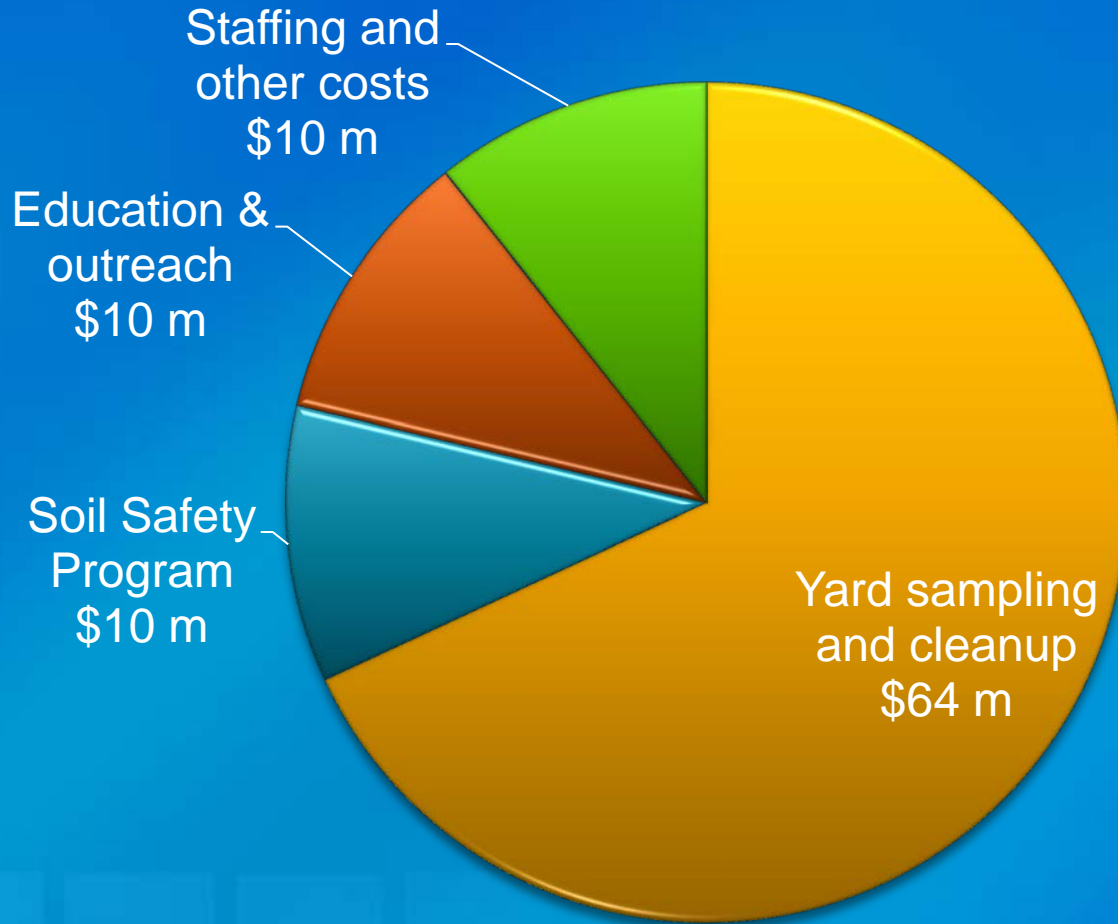
Ongoing education and outreach

Encourage voluntary cleanup

Continue the Soil Safety Program

**Yard sampling and cleanup  
program**

# Asarco Settlement Spending



# Education and Outreach

- Raises awareness
- Encourages “healthy actions”
  - Hand washing
  - Taking off shoes
  - Cleaning toys
  - Damp dusting and vacuuming
  - Washing fruits and vegetables



# What Ecology Offers



- Ecology offers:
  - Brochures and advice for sampling your own soil
  - Advice on how to make your yard safer
  - Nailbrushes and magnets
  - Classroom curriculums

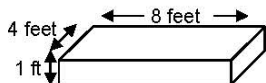


## Raised Garden Beds

### What is Involved

Moderate labor is required to construct raised beds but it is a relatively simple process. Here's an example of how to calculate how much soil you'll need to fill a 4 feet wide by 8 feet long by 1 foot deep bed.

- $(4 \times 8) \times 1 = 32$  cubic feet
- There are 27 cubic feet in 1 cubic yard
- 32 divided by 27 = 1.2 cubic yards



### 2009 Cost Estimates\*

Garden topsoil prices can range from \$20 to \$29 per cubic yard. Look in the phone directory under *Topsoil* to find a listing of local topsoil businesses. A 3 feet by 5 feet roll of landscaping fabric can range from \$9.92 to \$13.49 per roll.

### Things to Think About

For added protection, use a heavy duty landscape fabric over the contaminated soil, then construct your raised bed on top of the landscape fabric.

Do not use older, treated wood. The majority of treated wood produced before 2004 was treated with chromate copper arsenate, which can contaminate your clean soil with arsenic. Unfinished cedar is a good choice and will last many years. Stone, concrete or other masonry products are also good choices.

### Who to Contact

Local topsoil businesses or nurseries.

## Common Ground Covers

### What is Involved

Bark and wood chips are ideal for flower gardens, under hedges, around decorative bushes, trees, and children's play areas. The depth of cover is up to you, but remember that more is better, especially for use in children's play areas. Decorative rock or pea gravel can also be used in various landscaping applications. Pea gravel at depths of 12 inches or more works well under children's play sets and Jungle Gyms.

### 2009 Cost Estimates\*

Bark and wood chips can range from \$22.50 to \$28 per cubic yard. Pea gravel can range from \$22 to \$24.50 per cubic yard. Other decorative type rock can range from \$23 to \$43 per cubic yard.

### Things to Think About

For added protection, lay down a permeable landscape fabric before spreading any chosen ground cover.

### Who to Contact

Landscapers, topsoil businesses, or nurseries.



## Grass Cover

### What is Involved

A well maintained solid layer could provide a barrier to contaminated soils.

### 2009 Cost Estimates\*

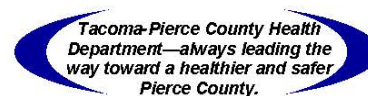
A five-pound bag of grass seed can range from \$17.50 to \$38. The average cost of sod is \$3.09 per roll if you haul. A roll is 2 feet by 5 feet. The cost will increase if you have it delivered.

### Things to Think About

The two benefits of having a deeper clean topsoil layer are: 1) increased protection from contaminated soil, and 2) healthier turf. You may want to supplement your topsoil with compost or mulch before you plant fresh sod.

### Who to Contact

Landscapers, nurseries, hardware stores, or sod farms.



## Sand Boxes and Rubber Mats

### What is Involved

Families with young children may want to consider the use of sand boxes, with covers to keep the cats out. Rubber mulch under play sets can also be considered. Be sure to check that the rubber mulch is safe for children.

### 2009 Cost Estimates\*

Sand can range from \$22 to \$24.50 per cubic yard. Rubber mulch can range from \$9 to \$13 per 0.8 cubic feet. This product is only sold in bags.

### Things to Think About

Be sure to check with the *Consumer Product Safety Commission* (CPSC) and the *American Standard for Testing Materials* (ASTM) before purchasing recycled rubber products.

### Who To Contact

Local hardware stores or topsoil businesses.



\* \$\$ Cost Estimates Effective Spring 2009

Rev. 7/2009

**Note: If you know that there are elevated levels of arsenic and lead in your yard, you must notify the future property owners or tenants of the need to maintain cover.**

# Encouraging Voluntary Cleanup

- Can be done during construction
- Protects future residents
- Ecology has **guidance** and is working with local permit offices

Dig up to make room for houses and landscaping

Landfill →

Contaminated surface soil

Cleaner, deeper soil



# Model Remedies Guidance

- Soil sampling and cleanup guidance
- Tacoma Smelter Plume contamination only
- Available for comment

## Tacoma Smelter Plume Model Remedies Guidance

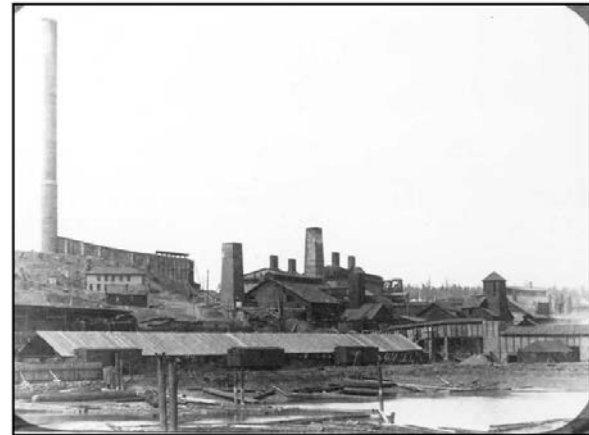
Sampling and cleanup of arsenic and lead contaminated soils

**For:**

Formal cleanup sites

Voluntary Cleanup Program

Properties under development



October 2011 Public Review Draft  
Toxics Cleanup Program  
Washington State Department of Ecology  
Lacey, WA



# What does sampling look like?



# Cleanup Options

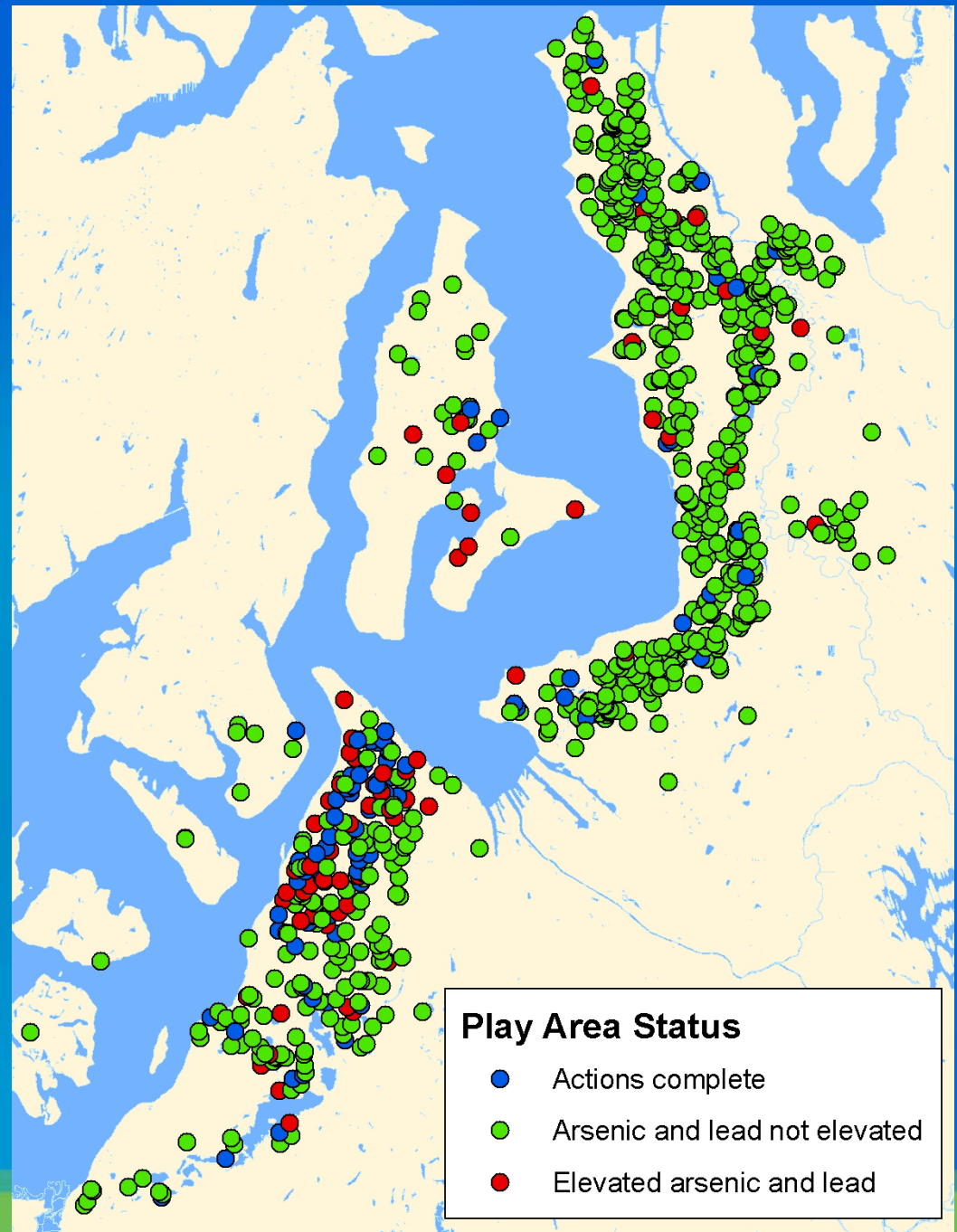
- Dig up and remove
- Cap with soil
- Mix with cleaner soil



# Soil Safety Program

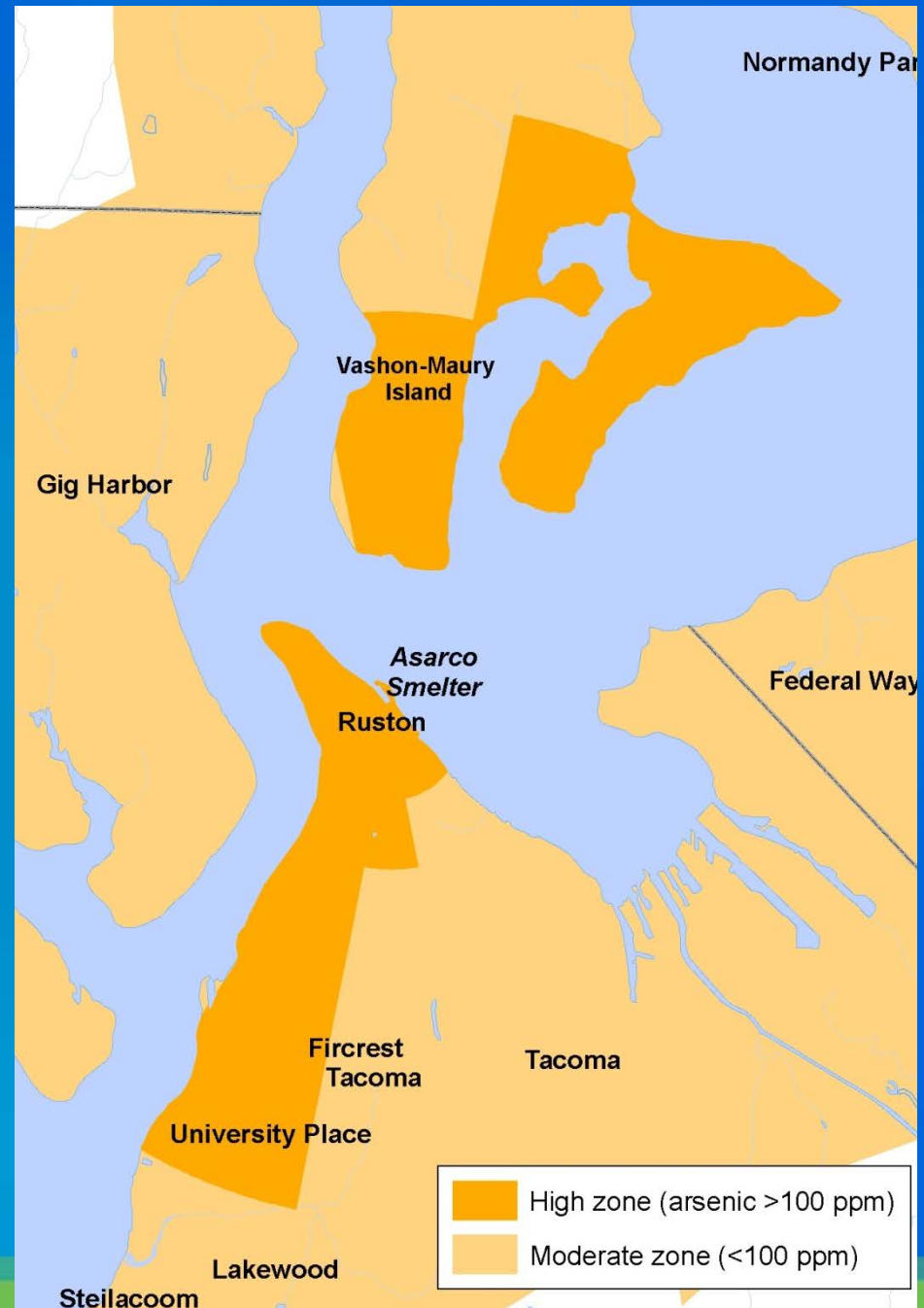
Play areas at existing:

- Schools
- Licensed childcares
- Parks
- Camps
- Multi-family public housing



# Yard Sampling and Cleanup

- Voluntary and free program
- Ten-year timeline
- Offers sampling for 17,000 parcels



# What levels Ecology will clean up



# The yard program is not designed yet

- How to address yards outside the high zone with arsenic over 100 ppm.
- How to track cleanups and educate future property owners.

# Phase Two Cleanup Plans

- Educating home buyers and real estate agents.
- Developing a brochure for home buyers.
- Encouraging sampling before real estate sales.



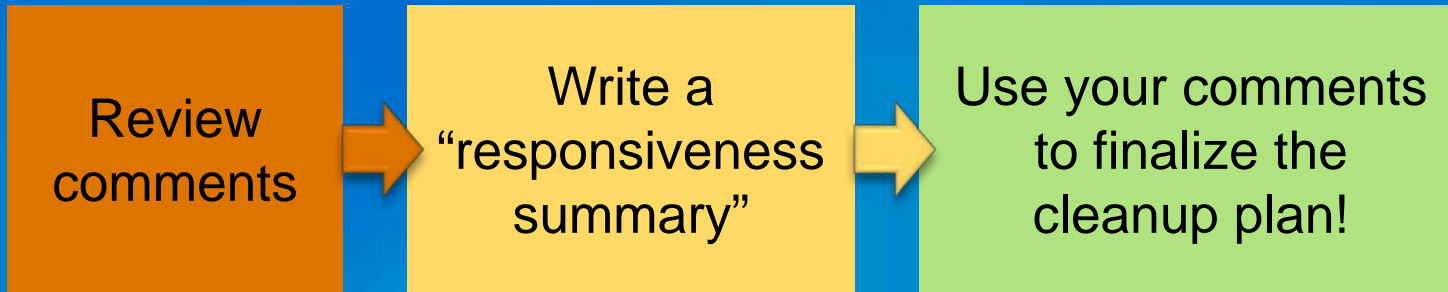
# Phase Two Cleanup Plans

- Explore *requiring* sampling and cleanup during construction or soil moving.
- Possible cleanup for areas not covered in Phase One.
- Making soil safety part of day-to-day business practices.

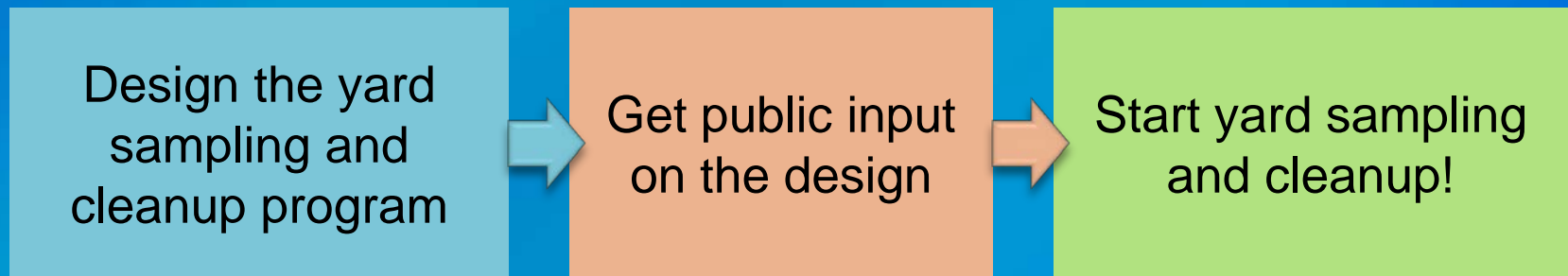


# What happens next?

By early 2012



By the end of 2012



...Phase Two plan around 2014

# What should I focus on?

- How to prioritize settlement funding.
- How to prioritize soil sampling and cleanup.
- How to expand and improve outreach.
- Whether to encourage or require soil sampling and cleanup during construction.
- How to notify and educate homebuyers.

# Submitting Comments

- **Deadline:** December 20, 2011
- **Submit a comment tonight**
- **Write or e-mail:**

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DEPARTMENT OF  
**ECOLOGY**  
State of Washington