

Brownfields for Community Gardens & Urban Agriculture

Portland, Oregon

**Jenn Bildersee
Portland Brownfield Program**

jenn.bildersee@portlandoregon.gov





Growers need accessible policy + guidelines for urban agriculture to flourish.

Things we're used to in the brownfields world that do not translate well to many small urban ag projects:

Grey areas

Multiple rounds of testing

Research gaps

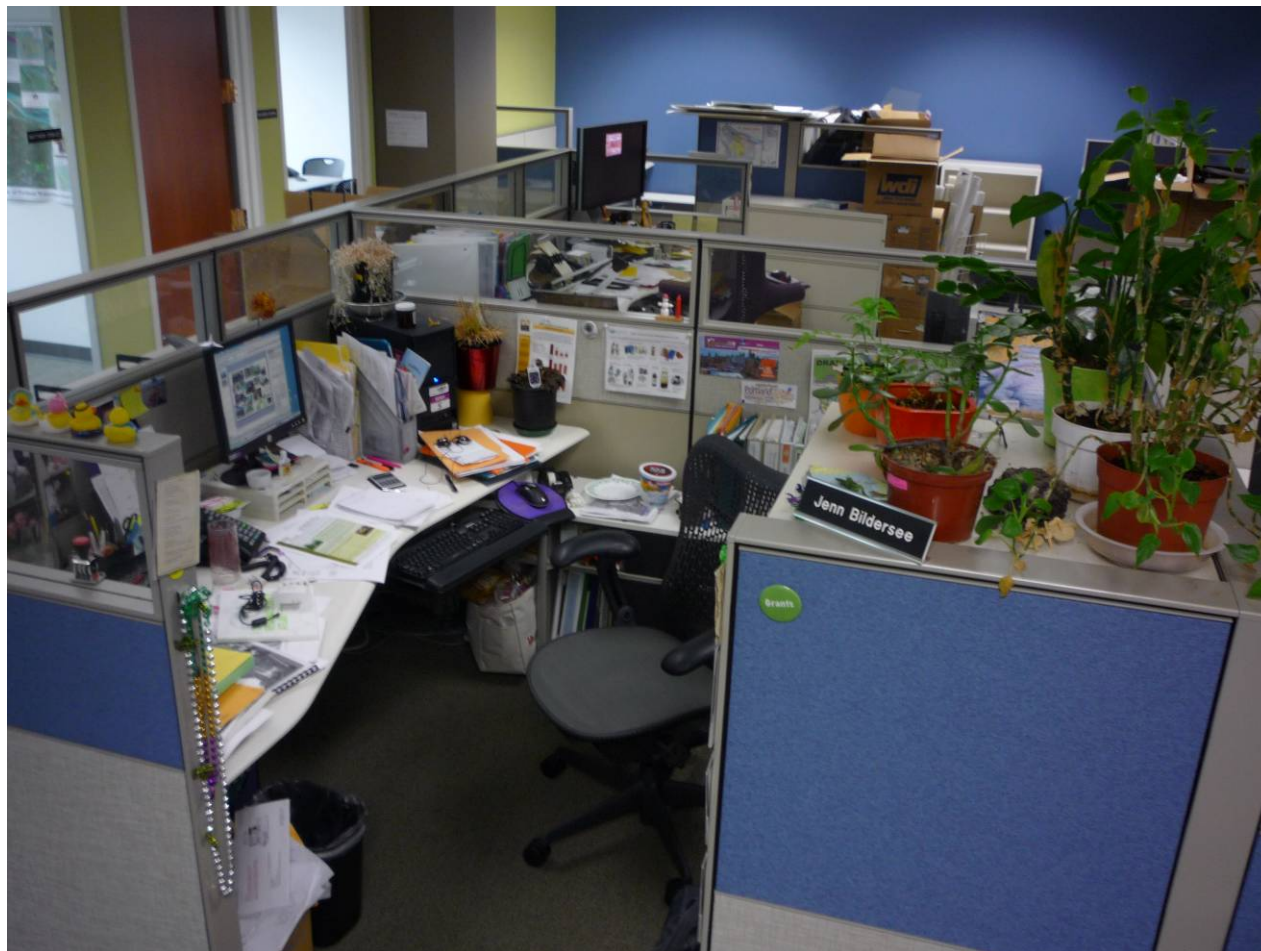
Multi-year timelines

Risk based cleanup

Acronyms

Assessment that costs tens of thousands of dollars

Solutions tailored to a particular site by extensive work of consultants and regulatory agencies



What do I mean by accessible?

1. Adaptable

2. Reassuring

3. Easy to communicate

ENJOY
FRESH LOCAL
PRODUCE



Growing produce
in the city
for people
who live here.

2006 WINTER SHARE



adaptable



“urban
agriculture”
comprises
many users,
site types,
scales,
budgets,
degrees of
permanence,
etc etc etc



reassuring

www.lead.org.au:

HIGH uptake of lead	Lettuce, Spinach, Carrot, Endive, Cress, Beetroot
MODERATE uptake	Onion, Mustard, Potato, Radish
LOW uptake	Corn, Cauliflower, Asparagus, Celery, Berries
VERY LOW uptake of lead	Beans, Peas, Melon, Tomatoes, Fruit, Paprika

..so I shouldn't plant lettuce, but I can plant lots of paprika?

A simple Google search should tell us what an acceptable lead level is...

Nytimes.com:

The level is well below the **400 p.p.m.** considered hazardous by the Environmental Protection Agency, though not below the more stringent goals recommended by some countries like the Netherlands, at **40 p.p.m.**

www.thesmartmama.com:

In Europe, the residential standards range from **0 to 150 ppm**, in some US states the residential standards are **100 ppm** and in Canada the standard for soil for children is **140 ppm**.

www.growit.umd.edu:

Test the soil for lead regardless of your location. All soils will have a natural, background level between 5 ppm and 40 ppm. Do not locate school gardens in an area where the total estimated lead level is above **300 ppm**.

www.motherjones.com:

The blog Obama Foodorama interviewed lead experts who pointed out that **93 ppm** is not an unusual level of lead in urban soils. That level is still well above natural levels and the EPA's own **56 ppm** "ecological soil screening level"---hence my reasonable assertion that the garden is "contaminated with lead"

www.rdmag.com:

Gardens with no or low levels of lead contamination as determined by location or with test results of less than **200 parts per million** (ppm) can be abundantly planted, but may benefit from high phosphate fertilizer which immobilizes metals like lead.

“We have been **unable to identify** the threshold of lead exposure at which there is no risk to health,” said Mary Jean Brown, chief of lead poisoning prevention in the Healthy Housing Branch of the federal Centers for Disease Control.

www.garden.org:

List of steps to take for any urban garden site:

- Laying heavy-duty landscape cloth over the ground and mulching thickly to keep kids from easily coming into contact with the soil;
- Supervising young children to ensure they do not eat dirt or unwashed vegetables;
- Placing gardens away from roadsides, painted structures, garbage dumps, and industrial zones;
- Growing fruiting crops, such as tomatoes, peppers, beans, and okra, rather than root crops, leafy vegetables, or herbs, which absorb more contaminants from the soil and air;
- Putting a fence or hedge between your garden and high-risk areas like highways. Barriers help block dust that may contain lead particles.
- Adding organic matter to the soil;
- Maintaining pH around 6.5;
- Cleaning produce thoroughly before eating or storing;
- Washing hands immediately after gardening and before meals.

From a limited Phase II ESA that we provided for a school garden site with EPA assessment grant funds:

DEQ's generic RBCs were not developed to evaluate potential risks to human health resulting from ingestion of plants grown in lead-impacted soil. To evaluate potential risks associated with ingesting fruits and vegetables grown at the site, GeoEngineers consulted with DEQ and EPA toxicologists and performed preliminary calculations using EPA's Integrated Exposure Uptake Biokinetic Model (IEUBK) for Lead in Children (IEUBK Version 1.0, Build 264). The IEUBK model is used to derive soil lead levels that are estimated to result in less than a 5 percent chance of a child having a blood lead level greater than 10 micrograms per deciliter ($\mu\text{g}/\text{dL}$). Children are used as the receptor in the IEUBK model because children are particularly sensitive to lead exposure. EPA used the IEUBK model to calculate a residential screening level for lead of 400 mg/kg (EPA, 1994; Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities).

DEQ toxicologists Mike Poulsen and Paul Seidel and EPA toxicologist Marc Stifelman confirmed that the DEQ RBC and the EPA Regional Screening Level for lead are not likely suitable for evaluating potential risks to human health resulting of ingestion of food grown in lead-impacted soil.

Preliminary results from the IEUBK model suggest that children who rely on fruits and vegetables grown in native soil at the site for more than approximately 5 percent of their annual consumption (i.e., equivalent to 19 days per year), may be exposed to unacceptable concentrations of lead. That is, ingestion of fruits and vegetables grown in lead-impacted soil at the site may result in elevated blood lead levels, leading to potential adverse health effects.

Brownfields

- Brownfields Home
- Basic Information
- Where You Live
- Newsroom
- Grants & Funding
- Laws & Statutes
- Tools & Technical Information
- Publications
- Partnerships
- Initiatives
- Sitemap

Contact Us Share

You are here: EPA Home » Brownfields » Urban Agriculture » Steps to Create a Community Garden or Expand Urban Agriculture

Steps to Create a Community Garden or Expand Urban Agriculture

1. Survey the property and identify potential risks and contaminants for testing.
2. Test your soil. Consider likely environmental contaminants, pH, organic content, and soil nutrients needed for healthy plant growth.
3. Clean contaminants and add soil amendments to create a safe growing environment.
4. Consider garden design including location, crops, water, sunlight, lighting, and accessibility.
5. Construct the garden to accommodate children, the elderly, and people all abilities. Raised beds, wider paths, and benches can all be used to create a more usable space.
6. Plant a safe and healthy garden and enjoy your growing community.

1. Survey the property and identify potential risks and contaminants for testing.

The types of contaminants you are likely to find depend on the history and use of the property. As a general rule at brownfields, environmental professionals look at the property history and previous uses to identify what environmental contaminants may be present for testing. They also look at nearby properties to see if their use may have created hazards that could affect neighboring areas.

Ingredients of Success: Amending Urban Soil to Productive Gardens



Enlarge Graphic (53K)

How do I...?

- Start an Urban Agriculture Project
- Learn more about Urban Agriculture
- Read about Success Stories & Ongoing Projects
- Find Resources & Related Links

1B. Need help? Apply for Brownfields Assessment or Cleanup Grant.

For this small site, given the timeline, budget, and staff resources, a brownfield assessment grant did not feel like the best tool for the job.

In retrospect, it might have been faster, easier, cheaper, and even more reassuring to assume the worst and design accordingly.

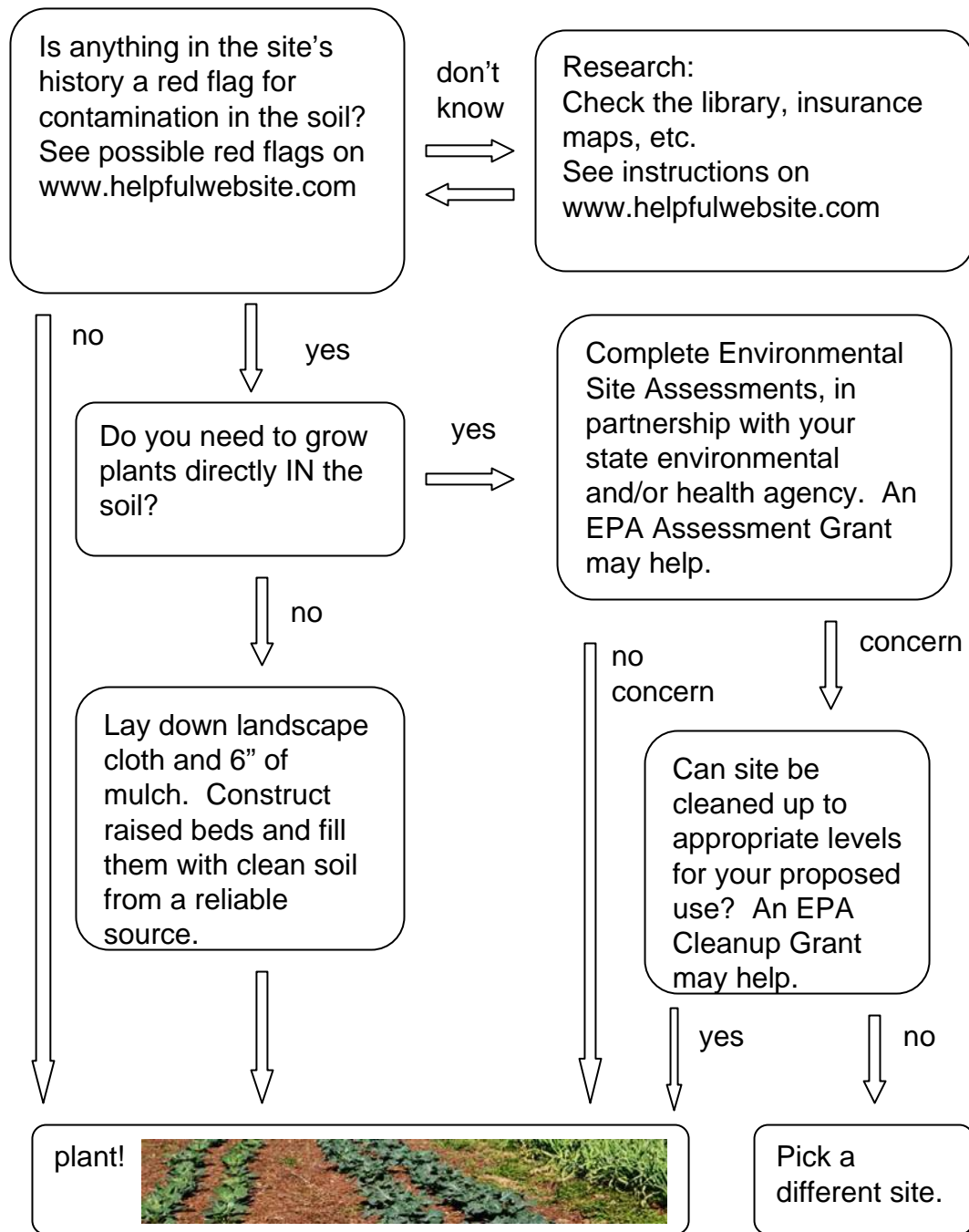


On some sites, finding out if you should garden in raised beds costs more (in money AND time) than constructing raised beds.





Is there a way to simplify the decision process without detracting from health considerations, perhaps by designing for the worst?





the end.