

Table of Contents

Nexus Project Update Report - January 2023	1
Goal + Guiding Questions	1
Background	1
Why this project?.....	2
Useful Knowledge From Compost Experts	2
Stakeholders interviewed and feedback	3
Pending Outreach:	4
For staff to facilitate/connect us with	4
Appendix	5

Nexus Project Update Report - January 2023

By Emma Smith, Sydney Tamplin, Emerson Zamensky, Alyssa Moore, and Olive Simon

Goal + Guiding Questions

Begin a pilot project on high fire-risk land to monitor changes in severity of fire-risk over time on plots with and without compost+mulch best practices.

- Is there anyone at surrounding universities studying fire mitigation practices that can be involved in the project?
 - Looking for land for pilot project?
- What experts on fire mitigation, land management, or other relevant fields would be useful contacts for us?
- What are the best ways YOU can identify for us to move this project forward?

Background

CCAC Fellows were given the seed of an idea – is there a use for compost in wildfire resiliency? Fellows conducted desk research and found that while there are many uses for compost, there was little literature connecting its use to preventative resiliency against wildfire. The project evolved and the Fellows developed a presentation for City stakeholders for a soil remediation and environmental resiliency pilot project in parks and fire/flood damaged land, keeping in mind our original goal of ***using compost and mulch to mitigate fire hazard and damage.***

Why this project?

The Sustainability & Zero Waste teams heard about similar work from Marin Carbon project. Additionally, complying with SB 1383 will result in excess compost.

- City of Oakland has a history of disastrous fires and continues to have areas of extreme fire-risk which must be mitigated to prevent future disaster.
- The City has funding from the CalRecycle SB 1383 implementation grant (about \$20-30K for compost) and less than 1.5 years to spend it.
- Oakland has 15 CCAC Fellows serving through August 2023 prepared to support project implementation.

Useful Knowledge From Compost Experts

Dr. Stephen Quarles (UC ANR) conducted a study on the combustibility of mulches and found that composted woodchips had the lowest relative combustion; they smoldered with no open flame. NOTE: Composted woodchips could still ignite present combustible material.

The Marin Carbon Project conducted land remediation experiments through carbon farming, where compost was spread across grazed rangeland areas. Results from one half-inch layer of applied compost showed that:

- Plant production increased every year following 1 application
- Increased soil moisture by 17-25% with just 1 application
- Water holding capacity increased by about 26,000 liters/hectare
- Carbon sequestration capacity increased by one ton/hectare/year for 30 years, with no re-application

The fellows met with Kelly Schoonmaker, Program Manager at StopWaste, who provided expert knowledge and additional resources regarding uses for compost.

- Mulch compost is good erosion control on slopes and great for remediation after flooding.
- Compost socks/waddles are effective erosion control, especially at bottom of slope where runoff can occur. They can also provide bank stabilization along with willow sticks.
- Using a compost blanket combined with seeding is an effective 2-pronged approach for erosion and sediment control.
- Compost is good for remediating burned land.
- Compost use is standard best practice in tree planting.
- Dry soil is associated with greater fire risk.
- Increased organic matter increases water holding capacity in soil.)

Cal Rescape's Compost and Mulch Best Practices Seminar:

- Best practice is: 1 inch organic compost beneath 3 inches recycled, organic mulch
- MWELo recommended soil organic matter: 6% of soil. Caveat: CA native plants prefer low nutrient soils.

- Organic Matter should NEVER cover root crowns of plants (where plants enter soil). After application of compost and mulch, remove organic matter 3' radius from plant root crowns.

Stakeholders interviewed and feedback

Jacqueline Salas, Park Supervisor II

Jackie expressed some concerns with the project idea and mentioned her need for compost is for turf fields in parks.

Need:

- High-quality compost for turf in parks – the compost from Waste Management is not high-quality enough for this usage as it may contain glass
- The Parks Department can do application/maintenance of the compost on the land, although it would be helpful to find grants for equipment
- Compost mixed with potting soil could be useful for urban farms/nurseries

Concerns and questions:

- How do you apply compost in parks (particularly hilly areas) while preventing it from running off into the creeks/watershed and into the Bay?
 - Answer: compost mats and berms serve well for preventing hillside erosion. Using low-Nitrogen compost in berms along creek beds prevents polluting runoff from entering waterways.
- Location for the project – compost is naturally occurring in forests; there are rangelands outside of Oakland that may be an option

David Moore, Tree Supervisor II

David expressed concerns and raised questions the project. David does not currently have a need for compost.

Concerns and questions:

- Why does the forest need compost? What's wrong with the forest soils as they are now?
- What are the unintended consequences of applying compost? Compost on its own isn't an added benefit because it just produces gas. Overlaying compost on soil could cause toxic amounts of nutrients in soils that can harm plants.

Rebecca Parnes, Senior Recycling Specialist

Rebecca is supportive of the Fellows finding a project to utilize compost in a way that supports the goals of the fellowship (which focuses in the areas of wildfire resilience, urban greening, and edible food

recovery). Rebecca encouraged the Fellows to work towards a tangible experiment (getting compost on the ground) rather than a research paper to increase the probability of implementation and impact.

Fellows will attend an upcoming StopWaste meeting with various compost providers/producers talking about their products and SB 1383, as well as a ReScape Composting Best Practices webinar.

Pending Outreach:

For staff to facilitate/connect us with

- Brett KenCairn
- Michael Perlmutter – City of Oakland storm water management
- ReScape (fellows have connected, meeting is pending)
- US Compost Council (fellows have reached out)
- Prunedale Parks Department
- Pleasanton Parks Department
- East Bay Regional Parks
 - Robert Kennedy

Appendix

Sources for our desk research are listed below.

- “Appendix 1 – Natural and Working Lands Technical Support Document.” *2022 Scoping Plan*. California Air Resources Board, 2022. <https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-appendix-i-nwl-modeling.pdf>
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- “The many benefits of healthy soil.” NM Healthy Soil Working Group, 2023. <https://www.nmhealthysoil.org/benefits/>

“Use of Compost and Mulch Products on Fire-Damaged Land.” CalRecycle. State of California, 2023.
<https://calrecycle.ca.gov/organics/erosion/firedamage/>