Using Local Compost and Mulch in Colorado: Guide for Municipalities

Prepared by

eco·cycle®
Building Zero Waste Communities

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Table of Contents

About Eco-Cycle

Eco-Cycle is a Zero Waste pioneer and one of the nation's oldest and largest nonprofit recyclers. Eco-Cycle innovates, implements, and advocates for local and global Zero Waste solutions to foster a more regenerative, equitable, and climate-resilient future. For more information, visit ecocycle.org.

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Cover photo: Elements Mountain Compost in Salida is one of several privately owned Colorado organics haulers and compost manufacturers. Elements Mountain Compost serves communities in Chaffee, Gunnison, and Alamosa Counties.

Photo credit: Julie Mach, Elements Mountain Compost

Introduction

Roughly 40% of the material Colorado residents and businesses landfill is organic matter (food scraps, yard trimmings, wood, etc.). This represents a huge loss to our state as these are valuable materials that could be diverted from landfills, turned into nutrient-rich soil amendments such as compost, mulch, and biochar, and applied to lands to boost soil health, improve resilience to flooding and drought, reduce the need for irrigation and chemical fertilizers, and draw down carbon from the atmosphere. Diverting these materials from landfills by composting or mulching them can lengthen the useful life of landfills and reduce the amount of landfill-generated methane.

When organic material breaks down anaerobically (without oxygen) in landfills, it creates methane, a greenhouse gas 83 times more potent than CO_2 when measured over a 20-year period.[1] In 2025, the State is undertaking a rulemaking to minimize landfill emissions, a crucial component of the larger organics diversion and air quality puzzles. While the updated regulations will not be finalized until mid-December, the proposed rule includes lower thresholds for requiring installation of landfill gas collection and control systems, stricter leak-monitoring requirements, and requirements to repair gas leaks. Diverting organic material from landfills will save landfills money over time by avoiding methane emissions altogether. As a bonus, diverted organic material can be processed into mulch and compost which can be used in public infrastructure projects and sold to the public.

The circular economy for organic materials has the unique ability to be a hyperlocal system—plants can be composted back into the soil at the same garden, farm, or community where they were grown. There is great value in a diversified approach that connects all participants—residents, schools, and businesses generating organic materials—with a distributed network of processors of all sizes. This includes the smallest backyard composters, local on-farm and on-site composting operations, municipally-run mulch piles, entrepreneurial haulers and processors serving communities, and large-scale regional compost manufacturers. This multi-scale local compost network is an integrated model linking organics collection and processing at multiple scales into a network that keeps nutrients circulating locally and prioritizes clean feedstocks for high-quality compost production to benefit Colorado's depleted soils and large agricultural communities.

Local governments across Colorado are building resilient local circular organics economies by implementing programs and policies to divert organic materials from landfills and reap the benefits of using the finished compost and mulch to rebuild soil health (see page 4). Further, many communities are finding that by using locally-produced, bulk (i.e., non-bagged) mulch and compost they not only support local diversion programs and businesses, but they are saving money (see page 7).

There are examples of communities partnering with biochar facilities, like when Boulder County, Louisville, and Superior worked with Biochar Now to divert woody material following the Marshall Fire.[2] However, this toolkit focuses on compost and mulch programs, as those are the most common organics diversion methods in Colorado. This toolkit highlights just some of the growing number of efforts local Colorado governments are undertaking, sometimes on their own, and sometimes in partnership with nonprofit groups and/or for-profit businesses, to build circular organics economies in their areas and to restore soil health and resiliency in their communities.

A Circular Organics Economy Has Tremendous Benefits

Diverting organic materials from landfills through edible food donation, composting, mulching, or creation of biochar—as well as using the end products as resources to build soil—substantially reduces climate pollution and creates significant community, economic, agricultural, and environmental benefits.

ENVIRONMENTAL BENEFITS

- Diverting organics from landfills reduces the production of methane, a greenhouse gas (GHG) 83 times more potent than CO_2.[3] Food waste is responsible for 58% of landfill-generated methane.[4]
- US GHG emissions from wasted food are equivalent to the emissions from over 50 million passenger vehicles annually.[5] Every 1,000 tons of organics diverted from the landfill is equivalent to taking 225 cars off the road.[6]
- Applying compost supports plant life and draws carbon out of the atmosphere sequestering it in the soil.[7]
- Applying compost reduces the need for synthetic fertilizers, pesticides and herbicides, which reduces chemical run-off. Additionally, compost builds organic matter in soils, which can filter, bind, and degrade contaminants as well as mitigate stormwater runoff.[8]

RESILIENCE

- Donating edible food to organizations that serve people in need helps reduce food insecurity.
- Increasing organic matter in soil by applying compost and mulch improves soil's ability to absorb and retain water and helps maintain stable soil temperature, which reduces irrigation needs, makes soil more resilient to drought and flooding, and decreases fire risk.[9]
- Applying compost and mulch reduces erosion by improving soil structure, mitigating runoff and preventing loss of topsoil from flooding and high winds.[10]
- The average Colorado household consumes nearly 150,000 gallons of water per year. For every 1,000 tons of diverted organics, the equivalent of eight households' worth of water is saved.[11]

ECONOMIC BENEFITS

- Investments in organics diversion programs are climate solution strategies with some of the lowest average costs per ton of GHG reductions.[12]
- Using locally sourced bulk (i.e., non-bagged) mulch and compost instead of imported materials in public works projects can save communities money, especially if the municipality generates their own mulch and compost.[13]
- Diverting organic matter extends the life of existing landfills, saving tremendous cost to communities. For every 1,000 tons of organics diverted, the equivalent space of one Olympic-sized swimming pool of landfill space is saved.[14]
- Making and using compost creates five times more jobs per ton of material as landfilling.[15] Using locally-made compost and mulch supports local businesses and creates green jobs. In Colorado, many compost companies are women-owned businesses.

Yard Trimmings: The Lowest-Hanging Fruit with High Potential Benefits

Overall diversion of organic materials from the landfill would be greatly increased by increased diversion of residential yard trimmings. As stated in Colorado's 2024 Organics Diversion Study, yard trimmings make up 42.8% of organic waste statewide, and currently only 18% of these yard trimmings are diverted from the landfill.[16] Adding more curbside collection programs and drop-off locations for yard trimmings would easily boost diversion of yard trimmings.[17]

According to the state diversion study, if existing trash collection routes across Colorado were expanded to include collection of residential yard trimmings for compost or mulching, 69% of total yard trimmings could be diverted from the landfill. In addition, if drop-off locations for yard trimmings were added in counties that do not currently have curbside pickup, an impressive 90% of total residential yard trimmings could be diverted from landfills.[18]

When communities are looking to start an organics diversion program, adding a yard trimmings drop-off site can be the lowest-hanging fruit with the most immediate potential to improve organics diversion from the landfill. Many communities across Colorado already host tree branch collection and mulching facilities for use from municipal public works that are sometimes open to the public. Yard trimming drop-offs can be co-located with other municipal facilities, such as recycling centers or wastewater treatment plants, and may be open to the public for drop-off on specific days or year-round on multiple days per week. Some cities like Aurora use their own chippers to process materials; others, like Longmont and Loveland, contract with a third-party vendor such as A1 Organics to chip material. Some communities like Louisville make mulch available for residents to pick up any time, while others allow residents to haul mulch for free or at a cost at specific times.[19] Excess chips that the municipalities won't use or provide to residents can be hauled away by third-party companies for composting.

Municipalities that collect and mulch woody materials cite multiple benefits of using locally made bulk mulch, including:

- Cost savings
- Reduction of waste compared to using commercially purchased bagged mulch
- Lower transportation-related emissions compared to mulch trucked in from other areas
- Residents appreciate access to free or low-cost mulch
- Ease of spreading bulk loads that are dumped compared to the inefficiency of opening individual bags [20]

Choosing and Using Mulch

Mulches are either organic (wood, straw, bark, etc.) or inorganic (stone, gravel, etc.). Organic mulches break down over time, feeding the soil. Wood chips come in multiple sizes, serving different purposes. Larger wood chips are less prone to blowing away, and will take longer to break down, needing less frequent replacement. Some wood yards, like the City of Boulder Mulch Pile, double-chip their wood mulch to get a more uniform mulch.[21] Fines generated by the grinding process can be sifted out and used as a separate product. When applying mulch, spread it in a 2–4 inch layer. Avoid piling mulch directly around plants and trees. The City of Aurora requires new plantings to have mulch 3 inches deep with a minimum 3 inch space between plants and mulch to reduce insect damage. Organic mulch should not be placed within 5 feet of buildings to reduce fire risks (follow local fire code for specific codes in your area). When reapplying mulch, do not work old mulch into the soil; rather, add sufficient new mulch to bring the layer back up to the desired depth. (See appendix for City of Louisville mulch application guidelines.)

To dye or not to dye?

Some communities choose to dye or add colorant to their mulched chips to meet demand from residents. However, natural, undyed mulch has the same weed prevention and water retention benefits of dyed mulch, without the additional costs of adding dye. As residents and communities embrace the local organics economy, many are opting for local, undyed mulch.

Connecting residents to mulch

Many communities host yard-trimming drop-off sites either year-round or once or twice per year. Communities with permanent yard trimming sites chip the material themselves or hire a third-party contractor to chip it. Some communities allow residents to take mulch for free, others charge for mulch. ChipDrop is a private company that connects arborists to gardeners and landscapers. Through their app, people can register to receive free large deliveries of local mulch.

Left: Single-chipped, natural-colored mulch from the City of Boulder;
Right: Double-chipped, natural-colored mulch.
Photos: Rutger Myers, Eco-Cycle

Compost and Mulch Are an Investment in Soils That Can Save Money

When weighing the benefits of any soil amendments, direct costs and return on investment are key decision-making factors. Applying compost and wood mulch builds soil health, reaping long-term financial savings and other benefits.

Compost vs. Fertilizer

Some may think that using synthetic fertilizers will be less expensive, but the truth is, comparing the cost of compost vs. synthetic fertilizer is like comparing apples to candy. Compost, like apples, provides nutrients to build long-term health, while synthetic fertilizers, like candy, provide a quick burst of energy followed by depletion and the need for more sustenance. When applying synthetic water-soluble fertilizers, some nutrients are taken up by the targeted plant, while others are washed away into stormwater systems, eventually leading to eutrophication in waterways if not treated properly. Compost application increases organic matter, building healthy soil structure for a diverse microbial biome. The microbes that are introduced with compost create a spongy soil texture that retains water and absorbs excess nutrients before they leach or runoff into the water table. As the microbes consume organic matter in the soil, they release nutrients, making them available to plants over time as needed, and reducing the need for synthetic fertilizers.

Investing in soil health by applying compost saves money.

Increasing organic matter in soil through compost application reduces the need for chemical fertilizers and provides multiple co-benefits that can save money over the long term.

- Compost balances soil nutrients and biology in soils that helps plants fend off pests and diseases, decreasing the need for herbicides and pesticides.[22]
- Compost applied as a blanket, in a compost berm, or used in a compost filtration sock can mitigate stormwater runoff, reducing contamination of waterways from chemical fertilizers, pesticides, and herbicides. By improving soil's infiltration rate and water-holding capacity, compost application increases the soil's ability to filter, bind, and degrade contaminants from stormwater leaching or run-off.[23]
- Increasing organic matter in soil through compost application improves the soil's ability to absorb and retain water, reducing irrigation needs and making the soil more resilient to floods and droughts.[24] Wetter soils and plants with access to sufficient water reduce fire risk.[25]
- Healthier soils produce stronger and more resilient plants, reducing crop failure and need for replanting.[26]
- Compost used as blankets, berms, wattles, or socks can reduce erosion by improving soil structure, mitigating waterflow and promoting vegetation growth.[27]

Bulk compost and mulch saves money and reduces waste compared to bagged.

Purchasing compost and mulch in bulk (not bagged) can be more cost-effective than purchasing it in bags for several reasons:

- Pricing for bulk purchases is usually much lower than for bagged material.
- Bulk compost can reduce labor and eases application. When delivered in bulk, compost can be spread using machinery or hand tools without the need to open individual bags.
- When staging a project over multiple days, bulk compost is less prone to theft than bagged compost, which is easier to pick up and carry off.
- Bulk compost does not require disposal of empty bags, which must be landfilled.
- Buying local bulk compost reduces the transportation and related greenhouse gas emissions of bagged compost that is likely transported into Colorado from the Southern US or Canada.[28]

Which compost should be used?

It is recommended that US Composting Council (USCC) Seal of Testing Assurance (STA) Certified® compost or equivalent be used when available. STA certification ensures the compost has been through rigorous, consistent third-party testing to confirm compost has met compliance and national safety standards, as well as providing usage recommendations, and affirms that the compost manufacturer is appropriately registered and regulated by the State. According to the Colorado Organic Diversion Study, STA equivalence can be demonstrated by compost that passes the STA testing suite once per year (as opposed to four times per year) in order to provide the results that demonstrate STA equivalence.

Just as synthetic fertilizers vary in exact make-up, different compost products contain varying ratios of compost to topsoil, and they come in different sizes of materials that are targeted for different crops and utilizations. The exact quantity and mixture of soil amendment for a project depends on the existing health of the soil, the types of plants that will be grown in the soil, and which agricultural practices will be used. For example, a turf-covered ball field has different needs than a planter box with annuals, and both likely require different amendments than a field of vegetables. What they have in common, however, is that they can all benefit from the application of compost.

While it is best to consult a local horticulturist and a local compost manufacturer to see what compost products best meet the specific needs of the project, calculators (USCC calculator, or King County, WA, calculator, or your local compost manufacturer may have a calculator) can be used to determine rough quantities needed. See the appendix for specific guidance on compost usage.

Jamie Blanchard-Poling, owner of Compost Queen, checking temperature on a compost pile. Compost Queen is a private organics hauler and composter serving residents and businesses, and partnering with farmers in Northern Colorado. In 2025, the City of Fort Collins and Compost Queen began a 12-month pilot to increase organics diversion in the city over the next year.

Photo credit: Rutger Myers, Eco-Cycle

Compost Application Reduces Disease in Turf

Multiple Colorado studies have shown applying compost to turf grass creates healthier grass and playing spaces. A study from Colorado State University's (CSU) Department of Horticulture and Landscape Architecture found that application of compost reduced the incidence of necrotic ringspot (NRS) disease and significantly reduced thatch while increasing turf quality.[29] These impacts were compared with plots treated with fertilizer as well as a control plot which was not treated with compost or fertilizer. Improvements were seen shortly after application and continued to show lower incidents of disease when measured again after two years. The compost-treated plots also showed better color.

Left to right: The CSU study showed dramatic reduction of necrotic ring spots and increase in overall turf health after ¼ inch application of compost in both fall and spring. No changes were made to irrigation and no additional seeds were added.
Photos: Clinton Sander, A1 Organics

Another demonstration (photos below) showed that a one-time application of compost at ¼ inch per 1000 square feet without adding seeds revived turf health within three weeks while continuing to water at normal rates.[30]

Left to right: Turf before treatment; turf two weeks after application of compost; turf three weeks after treatment with compost.
Photos: Clinton Sander, A1 Organics

Compost Improves Athletic Fields

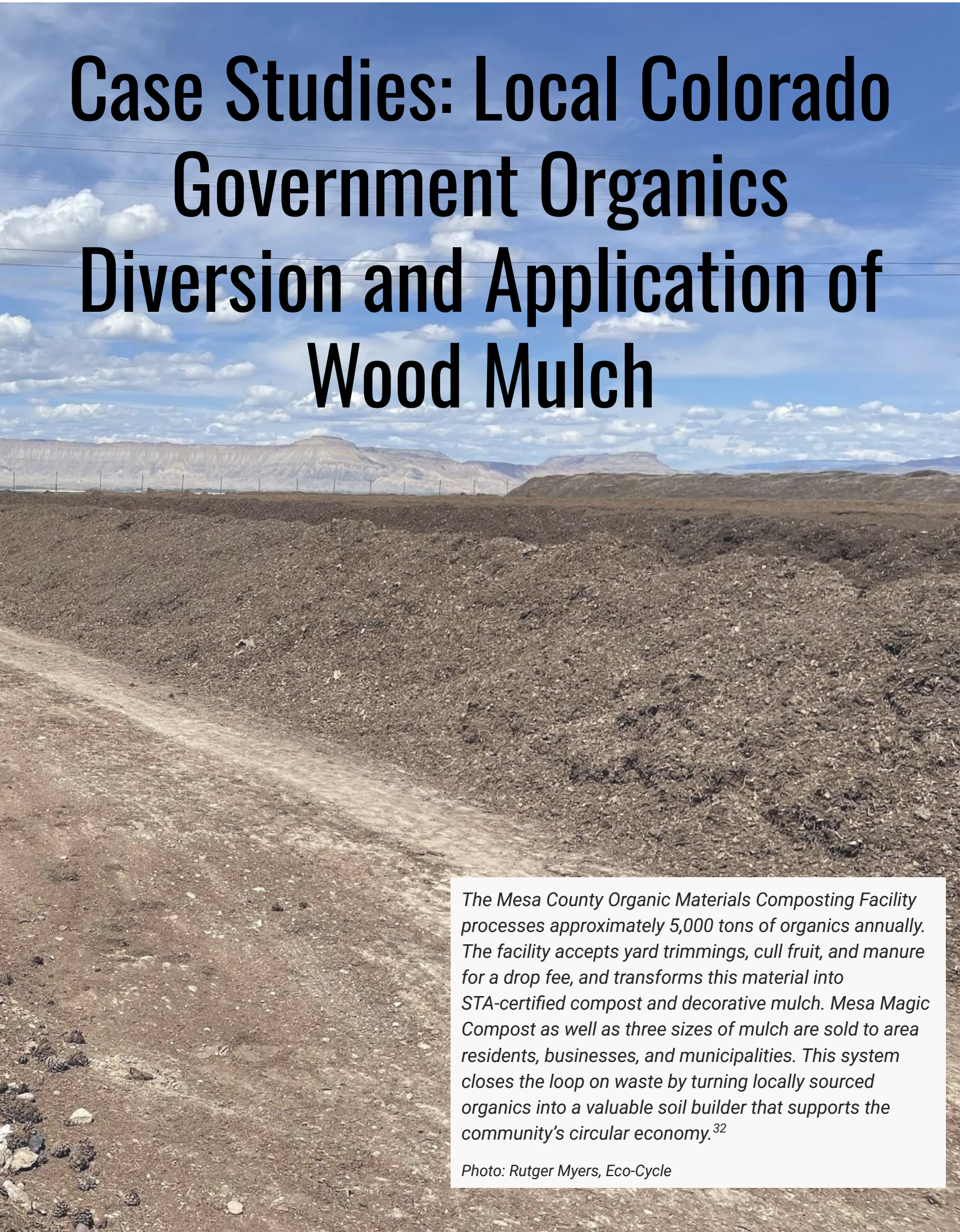
Increasing organic matter builds soil health by increasing the ability of soil to hold water and fight disease. According to the USDA, 1% of organic matter in the top 6 inches of soil would hold approximately 27,000 gallons of water per acre.[31] The quickest, most effective, and most sustainable way to increase organic matter in soil is by directly adding it through compost application. When top-dressing, aerating the soil prior to application and watering after application speeds the uptake of organic matter into the soil. Top-dressing playing fields with compost builds organic matter in the soil, increasing the water-holding capacity of the soil, which can reduce the amount of irrigation needed. Compost application helps turf grow longer roots, making playing fields healthier and more resilient to activity and use. As an added bonus, unlike with application of chemical fertilizers, herbicides, or pesticides, fields top-dressed with compost can be played on immediately. See Appendix 5 for guidance on using mulch and compost.

Left: City of Greeley top-dressing Monfort Park Athletic Fields in 2024. Kids were able to play on the fields later that evening. Right: Field turf filled in and became greener after one month.

Left: Eaton Community Center baseball fields prior to being top-dressed with ½ inch per 1,000 square foot of compost; Right: Roughly four weeks after application.

Photos: Clinton Sander, A1 Organics

Case Studies: Local Colorado Government Organics Diversion and Application of Wood Mulch



The Mesa County Organic Materials Composting Facility processes approximately 5,000 tons of organics annually. The facility accepts yard trimmings, cull fruit, and manure for a drop fee, and transforms this material into STA-certified compost and decorative mulch. Mesa Magic Compost as well as three sizes of mulch are sold to area residents, businesses, and municipalities. This system closes the loop on waste by turning locally sourced organics into a valuable soil builder that supports the community's circular economy.[32]

Photo: Rutger Myers, Eco-Cycle

City of Louisville Contracts Chipping of Yard Trimmings to Mulch

The City of Louisville has a long history of supporting organics diversion from landfills. In addition to including food scrap and yard trimming collections in the City's residential trash and recycling collection contract, the City hosts annual fall leaf collection events.

Louisville also allows residents to drop off branches at the town branch site on designated Saturdays in the summer. The City hires a contractor to chip the wood, leaving free mulch available for residents to pick up year-round. The City also uses the mulch on municipal projects to support landscaping efforts, helping trees and plants retain moisture and reducing weed growth. In addition, the Streetscapes and Horticulture team creates a limited amount of compost from landscape waste for use by the City on municipal projects.[33] See the appendices for Louisville's guidelines on using mulch in tree plantings.

Above: Louisville uses municipal mulch in its Bee Friendly & Waterwise Gardens in the arboretum as well as other places in the city.

Left: Residents are encouraged to drop off woody matter and use the municipal mulch for landscaping in yards and gardens.

Photos: Rachel Setzke, Eco-Cycle

New Chipper Boosts Wood Diversion at the Summit County Resource Allocation Park

Thanks to funding from Summit County's Strong Future Fund mill levy, the Summit County Resource Allocation Park (SCRAP) recently purchased a RotoChopper to process clean wood on-site at the SCRAP. Other communities have purchased similar equipment with the help of grants from the Recycling Resources Economic Opportunity (RREO) fund, the precursor to the state's Circular Colorado Communities (C3) Enterprise.[34]

The SCRAP purchased this RotoChopper to chip yard waste, slash, wooden pallets, and clean dimensional lumber. Summit County is exploring options for increased diversion and reuse of salvaged lumber, however, clean lumber that is not suitable for reuse will continue to be mulched and diverted from the landfill. This machine, like similar chippers used in other Colorado communities, has a magnet that separates nails from clean salvaged lumber. Staff at the SCRAP load the material into the chipper with their excavator and then move the chipped material into piles with their loader.

The SCRAP is experimenting with different colors of mulch following Pitkin County's example of selling both natural-colored wood chips and colored mulch. The SCRAP uses the chips in both its food and biosolids composting programs and aims to sell surplus mulch to customers starting in the spring of 2026.

The SCRAP processes woody material from the entire county. Other municipalities, alone or in partnership with other communities or their counties, may generate sufficient quantities of material to make the purchase of a similar or smaller chipper worthwhile. For communities that do not want to own and operate their own chippers, they may want to contract chipping services (see Louisville example).[35]

The RotoChopper chipping wood at the SCRAP. Photo: Bill Schenk, SCRAP

Glenwood Springs and South Canyon Landfill Capture Soil-Building Benefits from Organic Materials

For decades, the City of Glenwood Springs' South Canyon Landfill has been diverting organic materials from their landfill and creating valuable compost and mulch for sale. South Canyon composts food scraps, along with grease from restaurant grease traps, and uses cardboard and yard trimmings as bulking agents. Following a pilot program with local restaurants to divert food scraps, the Glenwood Springs City Council voted to ban yard trimmings from the landfill starting in the summer of 2025. While many residents and businesses comply with the ordinance by diverting yard materials into the composting program, some are taking yard trimmings to nearby landfills. The diversion requirement is a success for South Canyon because it is expanding the landfill's usable lifespan and avoiding methane emissions by keeping yard trimmings out of the landfill. The ability to continue landfilling organic materials in other landfills points to a larger need for coordinated or state-wide policies.

South Canyon's Seal of Testing Assurance (STA) certified compost is available for purchase in small or large quantities. The City owns and operates the landfill as an enterprise, taking no money from the City's general fund. The City purchases compost from the landfill and has found the following benefits of switching from bagged compost to local bulk compost:

- Reduction in costs and transportation impacts, and elimination of bag waste.
- Increased ease of spreading. Dumping loads with machinery requires less labor than opening individual bags.
- Reduced issues with theft of compost. People are less likely to take compost from a bulk load than they are to take a bag from a pile left at a work site.
- Increased buy-in from residents. The compost caused the new grasses to come in bright green, which drew people's attention and inspired them to learn more about the project.[36]

Top of page: Finished compost pile at South Canyon Landfill. Bottom of page: Customer purchasing compost at the South Canyon Landfill.
Photos: Sandy Briggs, City of Boulder and Co-Chair of Colorado Composting Council (COCC)

Glenwood Springs and South Canyon Landfill, continued

Bulk compost and mulch have saved the city money over using bagged materials. Community volunteers recently joined city staff to spread 10 tons of South Canyon topsoil blend (50% STA Certified® compost) and plant native plants in a park that had been disturbed by utility construction.[37]

"It's been a great resource and has helped us get projects done that would not have happened otherwise. Access to good topsoil is challenging here. Without this local resource, the cost of buying or hauling in soil would mean that some of these projects just wouldn't be possible for us because of the cost. We've used it for native plantings, turf establishment, and in a low-water-use demonstration garden and it's working really well for us."
- Dan Roper, Parks Superintendent for Glenwood Springs

Top of Page: Spreading compost for a City project; Top Row: Volunteers helping staff to spread compost; Recently seeded area protected with straw mulch; Bottom Row: Turf grass planted in compost blend growing in; Fully regrown turf grass.
Photos: Jamie Kelly, City of Glenwood Springs

City of Boulder Leveraging Composting as a Natural Solution to Invasive Weeds

In fall 2025, the City of Boulder, with technical support from Eco-Cycle, began a pilot on-site composting project focused on removing the invasive weed Eurasian watermilfoil that is populating the Boulder Reservoir and degrading recreation experiences. With minimal training and readily available equipment, City staff are producing high-quality compost from the milfoil. Eco-Cycle tracks the pile's core temperature and recommends watering and turning schedules, while City staff operate the machinery and carry out the plan developed collaboratively between the two partners. All material in the pile reaches sufficient temperatures to decompose seeds and plant parts capable of reproduction, controlling the invasive weed without the need for herbicides. By maintaining adequate oxygen levels within the compost pile, the project transforms a noxious material into high-quality compost that can be used on-site to build healthy soil.

This pilot demonstrates that on-site composting is a viable diversion strategy with the added benefit of soil building—not only for farms, but also for parks, open spaces, and landscaping projects removing vegetation.[38]

Compost operation at the Boulder Reservoir.
Photos: Rutger Myers, Eco-Cycle

Appendix 1: Glossary of Organics-Related Terms

Aerated static pile (ASP): A composting method where organic materials are formed into a large pile and then air is forced through the pile using a blower and perforated pipes, rather than the pile being turned for aeration. This system creates and maintains aerobic conditions, speeding up the composting process and allowing for efficient pathogen reduction while managing odors and moisture levels.

Anaerobic: Without oxygen. When organic material decomposes in an anaerobic environment, it releases methane gas, a greenhouse gas 83 times more potent than CO_2 in the short term. Intentional anaerobic breakdown such as in an anaerobic digester aims to capture and use this gas, while anaerobic breakdown in landfills leads to GHG emissions, though some landfill-generated methane may be captured.

Animal Edible Food: Food that is no longer appropriate for human consumption but is still safe for animals. Examples: Spent grains from brewing, and food scraps.

Biochar: Charcoal produced by pyrolysis, or heating biomass with little to no oxygen. Biochar is used as a soil amendment that can improve soil quality by creating a more hospitable environment for nutrients and beneficial microorganisms through its highly porous structure and high surface area. Biochar is highly adsorbent, meaning molecules like pollutants or nutrients are collected and held to the surface of the biochar. It needs to be inoculated with compost or compost tea prior to being added to soil if being used to rebuild depleted soils. Biochar is an effective method for capturing carbon and storing it in a solid state that can remain stable for centuries, and is often touted for its carbon sequestration benefits.

Biomass: Living or recently living organic material, such as plants or animals, and their byproducts.

Bokashi: An anaerobic fermentation process that uses a special blend of microbes to pickle food scraps rather than compost them. Bokashi microbes break down food scraps without producing methane associated with most anaerobic bacteria and fungi, greatly reducing the odor associated with typical low-oxygen decomposition. Implementing Bokashi fermentation at organics generators (restaurants, schools, grocery stores) allows for more flexibility in haulers' pickup schedules. Bokashi fermentation also gives composters a "head start" in breaking down green scraps before they are added to the pile.

Compost or finished compost: The product manufactured through the controlled aerobic, biological decomposition of biodegradable materials. The product has undergone mesophilic and thermophilic temperatures, which significantly reduces the viability of pathogens and weed seeds, and stabilizes the carbon, such that it is beneficial to plant growth. Compost is typically used as a soil amendment, but may also contribute plant nutrients. (This is the official USCC definition.)

Compost tea: A compost liquid amendment, applied in the form of a foliar spray, which introduces a large population of select beneficial bacteria and fungi. Compost tea is brewed in an aerated system over several days. By adding nutrients to the brew, a large population of beneficial microbes are applied to the plant's leaves with the intention of disease prevention.

Appendix 1: Glossary continued

Compost extract: A compost liquid amendment, applied in the form of a soil drench, which introduces a diverse population of beneficial bacteria and fungi. Compost extract is brewed in an aerated system for a brief period of time, 30 minutes to 1 hour, providing a more diverse but less dense microbial population.

Compost sock: A cylindrical mesh tube filled with compost that serves as a temporary, cost-effective method for erosion and sediment control.

Compost berm: A mound of compost placed perpendicular to the flow of runoff to control erosion and trap sediment. These barriers act as filters, slowing down stormwater, allowing sediments to settle, and removing pollutants as the water passes through.

Compostable product: A product that is capable of undergoing aerobic biological decomposition in a controlled composting system as demonstrated in accordance with ASTM D6400 or ASTM D6868 (specifications for solid material biodegradation by composting required for the labeling of plastics) as applicable (per Colorado statute SB23-253).

Food recovery or food rescue: The act of collecting edible food that would otherwise be wasted and redirecting it for human consumption. Recovering or rescuing food represents a critical opportunity to improve food security and reduce waste.

Food surplus: The unsold food in fields, and at farms, stores, events, and other locations that is perfectly good for people to eat. Food surplus differs from “leftovers,” which imply food that has been served and remains uneaten.

Inoculant: A substance added to compost to introduce specific microorganisms, such as bacteria or fungi, that aid in the decomposition process. Inoculating is the process of applying an inoculant.

In-vessel composter: A controlled, enclosed method for decomposing organic waste within a vessel, such as a drum or tunnel, to produce compost. Because in-vessel composting units are contained and don’t smell, they can be a great solution for areas concerned about wildlife, urban areas, schools, and large business campuses.

Microbes: Microorganisms, or microscopic organisms that exist all around us as unicellular, multicellular, or cell clusters. There are different types of microorganisms that break down compost materials into compost, but the most numerous are bacteria.

Mulch: Material spread on soil, often around plants, as a protective layer to reduce erosion, evaporation, and weed pressure, and to moderate soil temperatures. Mulches can be organic (e.g., chipped wood or bark, straw, etc.) or inorganic (e.g., squeegee or pea gravel).

Appendix 1: Glossary continued

Organics or organic feedstocks: Commonly used to mean food scraps and yard trimmings. May include certified compostables if accepted by local processors. These are the materials collected to be processed into biochar, mulch, digestate, or compost. Per the Colorado Solid Waste Regulations, potential organics feedstocks fall into one of four categories:

> **Type 1:** Vegetative waste and other materials determined by the Colorado Department of Public Health and Environment (CDPHE) to pose a low risk to human health and the environment.
>
> **Type 2:** Animal waste, manure, source-separated organics, food residuals, and food processing vegetative waste.
>
> **Type 3:** Biosolids, mixed solid waste, processed solid waste and sludges and food processing residuals not covered in Type 2, fats, oils, greases, dairy manufacturing wastes, dissolved air flotation (DAF) skimmings, paunch, and any other compostable material not covered in Type 1 or Type 2.
>
> **Prohibited Wastes:** Composting facilities may not accept asbestos or asbestos-containing materials, infectious waste, hazardous waste, Polychlorinated biphenyl waste or lead-acid batteries.

Organic waste, food waste, yard waste: Organics only become waste when their value is ruined and lost by being landfilled or incinerated.

Slash: Woody organic material (such as trees or shrubs) resulting from logging, forestry management, landscaping projects, and fire mitigation.

Seal of Testing Assurance (STA) Certified® compost: The US Composting Council (USCC) third-party certification program that ensures quality, safety, and consistency through rigorous, independent testing and data disclosure. This certification provides consumers and professionals with confidence that the compost is a healthy, effective soil amendment that improves soil structure, water retention, and fertility while reducing waste and promoting environmental sustainability. Similar to a nutrition label, the STA Program's Compost Technical Data Sheet (CTDS) includes test results, a list of ingredients, and recommended directions for use.

STA equivalent compost: According to CDPHE's SB23-191 Colorado Organic Diversion Study, STA equivalence can be demonstrated by compost that passes the STA testing suite once per year (as opposed to four times per year) in order to provide the results that demonstrate STA equivalence.

Windrow: A large-scale, open-air composting method where organic materials are piled into long, narrow rows called windrows, which are regularly turned by mechanical equipment to provide aeration.

Yard trimmings: Grass clippings, leaves, weeds, and shrub and tree prunings (including slash).

Appendix 2: Additional Resources

Colorado has a thriving composting community made up of individuals, businesses, and local governments expanding composting infrastructure and awareness. Colorado also has many tools and resources to support the expansion of policies, programming, and infrastructure to increase organics diversion and use.

Resources for Composting at Multiple Scales:

- The Colorado Composting Council (COCC) is a coalition of individuals, businesses and local governments working to expand the diversion of organics and increase the use of finished compost in the state.
- Many municipalities and community gardens offer backyard composting workshops or in-depth Master Composter programs to build composting champions.

Tools for Communities to Start or Improve Organics Diversion:

- Colorado Circular Communities (C3) Enterprise provides funding and technical assistance for local governments and other entities around waste reduction and diversion programs, including organics.
- Eco-Cycle's Clean Compost Campaign Toolkit provides free resources for businesses to minimize contamination in their organics collection bins.
- Blueprint for Scaling Collection and Composting Infrastructure includes organics policies, infrastructure considerations, contracting best practices, and customizable outreach materials aimed at helping communities identify the right steps to begin or expand organics diversion in their areas. These tools were co-created by Closed Loop Partners, the Compost Consortium and Eco-Cycle.
- Colorado's Statewide Organics Management Plan, diversion study, and toolkit provide an overview of organics diversion programs in Colorado, the impact of organics diversion, the case for using finished compost in the state, and policy recommendations for the State and local governments.
- Eco-Cycle's Zero Waste Schools Activity Guide for schools and camps provides tips and plans to educate and engage students in Zero Waste activities.
- The report Compost & Soil Improvement: Tools for Climate Resilient Landscapes provides a deep dive on soil and compost characteristics and best practices for use.

Appendix 3: Suggested Information and Questions for Compost and Mulch Vendors

Provide background information on project including:

1. Size and type of area needing compost (e.g., How much would be needed for eight 10x10 planter boxes for perennials, or a soccer field complex totaling XX acres). Calculator tools, such as those listed below, can be used to determine rough quantities of compost needed for a project. Calculator tools include: King County, Washington, USCC calculator, or your local compost manufacturer may have one.
2. Desired timing for the project.
3. Project specs, screen size, mulch color or material, or other details, including whether compost needs to be STA Certified® or comparable.
4. Brief explanation of the project and goal. For example: Reseed park space disturbed by adjacent infrastructure work.
5. Any other pertinent information about the project.

Questions for the compost or mulch manufacturer:

1. Is the compost STA (or equivalent) Certified?*
2. Where was the product made (i.e., does it fit in the municipality's definition of "local")?**
3. What type of compost product or mulch are you recommending and why do you recommend that product? The type of compost is specific to project type; specifications will also align with project. The bidder will base their answer on the stated project and goals.
4. What is the cost of the compost/mulch? Do you offer volume pricing?
5. What is the delivery cost? What is the cost for pickup?
6. When would you be able to do this project? How much lead time do you need?
7. Do you have equipment for spreading/application or need a service provider? Are there companies you recommend to help with application of the mulch/compost?***

* Colorado's Organics Management Plan and the Colorado Composting Council (COCC) recommend US Composting Council (USCC) Seal of Testing Assurance (STA) certified compost or equivalent. STA Certified compost is tested by a third-party to ensure quality, safety, and consistency through rigorous independent testing and data disclosure. This certification provides consumers and professionals with confidence that the compost is a healthy, effective soil amendment that improves soil structure, water retention, and fertility while reducing waste and promoting environmental sustainability. Similar to a nutrition label, the STA Program's Compost Technical Data Sheet (CTDS) includes test results, a list of ingredients, and recommended directions for use. "STA equivalent" compost is compost that passes the STA certification at least once per year.

** Municipalities may define "local" differently depending on the region they are in and their proximity to compost manufacturers. We suggest defining "local" to mean made in Colorado, if not made within the municipality's county or region (e.g., Roaring Fork Valley, Front Range, etc.). Similar to a nutrition label,

Appendix 3: continued

the STA Program's Compost Technical Data Sheet (CTDS) includes test results, a list of ingredients, and recommended directions for use.

*** In addition to these questions for compost and mulch producers, the City may need additional help spreading the material. Some communities turn to volunteers to help (see photos from Glenwood Springs), while others may hire contractors. The City may want to create a list of "approved contractors" or recommendations of these companies in the area that can spread compost/landscape, etc.

Appendix 4: Tree Mulching Guidelines

Adapted from City of Louisville Parks, Forestry, and Horticulture Division

To properly mulch a tree, apply a 2- to 4-inch layer of organic mulch in a wide ring, extending to the drip line if possible, while keeping it a few inches away from the trunk to expose the root flare. Avoid piling mulch against the trunk, as this can lead to disease and girdling roots.

Mulch application guidelines

Depth: Apply a 2- to 4-inch layer of mulch. Overly thick layers can cause problems with oxygen and moisture levels, and creating "mulch volcanoes" against the trunk is harmful. Leave a 3-inch space between the trunk of the tree and the mulch.

Area: Create a wide ring that extends out as far as the tree's drip line (the outer edge of the canopy). If this isn't practical, at least cover a 3-foot radius around the trunk.

Trunk flare: Keep mulch at least 2 to 4 inches away from the trunk, making sure to expose the root flare (the area where the trunk widens at the base).

Maintenance: If mulch is already present, break up any matted layers and rake the surface. Only add more mulch if the depth is insufficient; do not just keep piling it on.

Why these guidelines are important

Conserves moisture: Mulch helps the soil retain moisture by reducing evaporation.

Moderates temperature: It helps regulate soil temperature, protecting roots from extreme heat and cold.

Controls weeds: A layer of mulch helps suppress weeds by blocking light and making it easier to pull them when they grow in the mulch.

Prevents disease: Keeping mulch away from the trunk prevents moisture from getting trapped against the bark, which can lead to fungal diseases and rot.

Avoids root damage: A gap at the trunk prevents suffocation and the development of girdling roots, which can strangle the tree.

Improves soil: Organic mulches (like wood chips) decompose over time, which adds organic matter to the soil and stimulates microbial activity.

Appendix 5: Mulch and Compost Application Guide

The following is general guidance for the use of locally made, bulk (non-bagged) compost and mulch. If site-specific soil testing by an agronomist (e.g., CSU extension) reveals more or less compost is needed for a particular site, the testing recommendations should be followed.

Section 1. Landscaping

1. Soil amendment prior to new planting:
    a. Prior to the installation of new plants in landscaping projects, existing soil should be amended with compost. Soil does not need to be amended if soil tests reveal that pre-amendment soil is composed of at least 5% organic matter by weight to a depth of 6 or more inches, or a condition exists that prevents the application of compost, such as oversaturation.
    b. Soil should be amended with compost at a rate of at least 4 cubic yards of compost per 1,000 square feet of soil. The compost should be spread evenly across the project area, then incorporated into the soil to a depth of 6 inches. In areas where there are not 6 inches of soil in which to incorporate the compost, compost shall be incorporated at a rate of 20–25% compost to 75–80% percent soil to the existing soil depth.
    c. If landscaping will be majority native plants, less compost may be needed. Check with a local agronomist (e.g., CSU extension) for plant-specific recommendations.
    d. New trees and bedding plants should be protected with a layer of mulch 2–4 inches thick with a minimum of 3 inches between the trunks of trees or plants and the mulch to decrease issues with insects and fungus.
2. Ongoing maintenance
    a. Compost and mulch should be used where feasible, in ongoing landscaping activities, such as for top-dressing and maintaining planting beds.
        i. For top-dressing of turf, compost should be applied at a rate of 2 yards per 1,000 square feet. For best results, aerate prior to application and water directly after application.
        ii. Trees and bedding plants should be protected with a layer of mulch 2–4 inches thick with a minimum of 3 inches between the trunks of trees or plants and the mulch to decrease issues with insects and fungus. If needed, prior to application of new mulch, existing mulch shall be pulled away from plants and a 1- to 2-inch layer of compost shall be added. After application of compost, then mulch shall be applied to meet the 2–4 inch requirement.
        iii. If landscaping will be majority native plants, less compost may be needed. Check with a local agronomist (e.g., CSU extension) for plant-specific recommendations.

Section 2. Construction

1. Preserve existing soil:
    a. To the extent possible, original soil should be kept in place and compacting it with construction equipment should be avoided.

Appendix 5: continued

b. When existing soil must be moved during construction, it should be kept on-site when possible for use once construction is completed.

2. Post-construction soil standards and amendment:
   a. In areas where soil is left exposed after construction is completed (not impervious surfaces) and soil is being amended, soil should be amended with compost to achieve the following organic matter and pH standards and then be protected by mulch. Soil should be amended such that the top 8 inches contain between 5% and 10% organic matter and are restored to their original pH levels, or to pH levels between 6 and 8. Five percent is sufficient for turf, and 10% is sufficient for planting beds. The amount of compost necessary to achieve these standards will vary depending on the initial quality of the soil. Custom amendment rates specific to the soil for a particular project can be calculated using an online calculator such as the King County, WA calculator, or the US Composting Council calculator. Some compost manufacturers also have calculator tools. Alternatively, the following amendment rates could be used:
      i. In turf areas, 1.75 inches of compost should be incorporated into the top 8 inches of soil, which amounts to 5.4 cubic yards of compost per 1,000 square feet of soil; and
      ii. In planting beds, 3 inches of compost shall be incorporated into the top 8 inches of soil, which amounts to 9.2 cubic yards of compost per 1,000 square feet of soil. Less compost is likely needed for native plants. Check with a local agronomist (e.g., CSU extension) for plant-specific recommendations.
   b. If soil is particularly compacted and thus impermeable, the top 4 inches of the soil below the 8 inches of amended soil shall be scarified (loosened or broken up to improve aeration, water absorption, and root penetration). Compaction may be measured using a penetrometer or through a lab soil test to determine bulk density. Soil measuring above 300 psi compaction is impenetrable to plant roots.
   c. For best results ensuring a evenly spread compost, apply when soil is dry.

Section 3. Roads and highways

1. When undertaking erosion control measures in the context of road and highway construction and maintenance, compost and mulch should be used where possible, including when implementing best management practices that call for the use of organic material. Measures for which compost shall be used include, but are not limited to, the following:
   a. landscaping and planting;
   b. filter berms, wattles and socks; and
   c. compost blankets.
2. Compost shall contain the required organic material content, pH, and particle size for the intended use and comply with Colorado Department of Transportation compost and mulch specifications as detailed in the 2023 Standard Specifications for Road and Bridge Construction and subsequent editions.

Appendix 5: continued

3. Filter berms, filter socks, and compost blankets: Ensure that compost adheres to the specific standards contained in the 2003 American Association of State Highway and Transportation Officials' Provisional Standards Manual for Filter Berms and Filter Socks (applies to compost blankets as well).

Section 4. Low-impact development and green infrastructure

1. Incorporating compost and mulch into low-impact development and green infrastructure projects can help achieve stormwater management goals by filtering pollutants and keeping more water on-site.
2. When constructing low-impact development and green infrastructure projects, compost and mulch should be used where possible, including when adopting best management practices that call for the use of organic material. Measures for which compost and mulch should be used include, but are not limited to, the following:
    a. green roofs;
    b. downspout disconnections; and
    c. bioretention projects/rain gardens.

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