

From: [REDACTED]
To: [Benton County Talks Trash](#)
Cc: ["Sam Imperati"](#); [REDICK Daniel](#); ["Ken Eklund"](#); [NICHOLS Darren](#)
Subject: Synchronization of Solid Waste Disposal and Alternative Path Forward Benton County talks trash - October meeting - Written Comments
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Hi All,

Kindly appreciate the opportunity to include the above subject matter for written comments for the next workgroup meeting in October for "Benton County talks trash".

I took the opportunity to expand the e-mail addresses, account Daniel usually handles, but is on a well-deserved vacation.

Thank you for your time.

Chuck

Chuck Gilbert
Benton County Member

Chuck Gilbert

Member of Benton County

9/30/2022

Synchronization of Solid Waste Disposal Resources and Alternative Path Forward

Benton County Talks Trash Workgroup

A. Resources - Synchronization

It is not a question of are the heavens descending towards Mt. Olympus or is it Mt. Olympus ascending to the heavens for pagan divine intervention of solutions for “ Benton County talks trash”.

Needless to say, this is a meager defense to the age-old Jesuit dogma opposed to futile, loquacious, ineffectual discourse on: is the sky falling? Or is the mountain rising?

Albeit it is an inquiry and understanding of the multiple resources that are interwoven with the rate of solid waste going into Coffin Butte’s landfill cells, versus an imbalanced quarry’s rate of excavation of aggregate rock and gravel to produce new landfill cells for the anticipated tonnage of solid waste being shipped to the landfill for disposal on an annual basis.

In other words, it is a synchronization process of sustainability of three resources that needs to be resolved in order to advert the comparable results with the prior Benton County’s land application LU-21-047 permit decision by the Planning Commission.

The first resource is the landfill with enumerated solid waste cells designed and allowed for solid waste disposal north of Coffin Butte Road. The cells are finite in number, space, and volume for solid waste disposal and are operationally divided into closed , active, and future active cells.

The enumeration of cells, statuses, and capacities is documented in a report by Geo-Logic Associates, professional engineers, of Bend, Oregon for the site development plan of Coffin Butte Landfill, updated December 2021 for Valley Landfills.

This report is in the materials management document library at Benton County’s web address: <https://www.co.benton.or.us/cd/page/materials-management-document-library>

Excerpts from the report are listed below in this memo for convenience and illustrating the numbers for the cells and their lifespans based on the design space and volume of each cell. (*Reference 1*)

The intent here for the first resource is not to weigh the solid waste going into the landfill cells into pounds, ounces, and grains nor read the tea leaves for the definitive cell life expectancy.

Instead, it is to recognize any imbalances in the resources that may be resolved through equity and sustainability within the solid waste management of Benton County, which also includes the regional waste streams going into Coffin Butte landfill from neighboring counties and municipalities.

The second resource is the parcel of lands reserved for the landfill but not yet allowed for solid waste disposal that is geographically south of Coffin Butte Road which is also in part reflected in the aforementioned site plan for Coffin Butte but is limited in design and focus.

Customarily, expansion of a land fill is triggered when solid waste input exceeds reservation ability of disposal cells.

In other words, there are no rooms at the inn.

With no vacancies or limited vacancies of cells, it evokes expansion, which in part is the discourse of the workgroup to seek collective understanding of the processes of solid waste management by incorporating the overarching goals and tenets of sustainability for expansion or other practical options possible as an alternative to expansion of a landfill.

The third resource is the rock and gravel aggregates being quarried in Coffin Butte.

It is not the intent to value one resource over another, but instead seek a balance that assures equity and sustainability of all resources where equilibrium is possible.

Knife River supplies stone, sand, and gravel which are the aggregates of the foundation of Benton County's and Oregon's infrastructure for highways, bridges, railways, airport runways, or even sand for the sandbox at home. Within this context, Knife River is a major resource of aggregate in the community.

Conversely, Knife River appears as the minor resource when compared to Coffin Butte's major resource of municipal solid waste within the perimeters of the landfill.

Although a resource hierarchy comparison may assign one resource to be minor while another resource is major, the interdependency of each other makes the overall homeostasis functionable.

In other words, by design Knife River quarries the rock for the landfill cells to the required sub-grade elevation for Coffin Butte use.

Coffin Butte landfill then builds upon the sub-grade with geotextile fabric, bentonite, and courses of drain rock before placement of solid waste into the cell until filled, then finishing with soil and fabric top layers to the design elevation for closure of cells.

Equilibrium is kept as long as Knife River has adequate time to quarry the rock and keeping ahead of the landfill cells disposal operations.

However, an alleged disparity exists in the site development plan for Coffin Butte referenced below that the current use of Cells 5D/5E for placement of solid waste has a 4-year cell life reaching capacity in Year 2025.

Likewise, future compartmental Cells 6A -6I slated into the primary Cell 6 being also the Knife River quarry excavation site that needs a reported 8-year more excavation time, even though the site development plan reflects a start date of Year 2026.

Also, Cell 1a was the original garbage site that was used by the former US Army training center at Camp Adair working from 1942 through 1944.

Republic Services advised SWAC, if my memory is correct, that Cell 1a this year will move the last part of the unlined refuse to a lined cell at Coffin Butte.

Hopefully, Cell 1a can be lined and used as additional space for inbound solid waste disposal.

Cell 1a is approximately 2 acres which would be approximately 1, 500,000 yards of capacity, extrapolated from similar acreage listed in the report.

Recapitulating by years, the current Cells 5D/5E service life would be from:	Years 2022 -2025	4 Years
Cell 1a, which needs verification may have a service life for solid waste.	Years 2025-2026	1 year
Knife River quarrying of Cell 6 needs an alleged 8 more years to finish	Years 2022- 2029	8 years
Cells 6A-6I then would have a service life from	Years 2029-2042	13 years
Absent of disposal at Coffin Butte for Years 2026-2029 - no vacancy	4 years	

Summarizing, approximately 1 million tons a year of solid waste starting in Year 2026 through Year 2029 would need to be reduced at Coffin Butte to synchronize with Cells 6A – 6I activation for solid waste in Year 2029 thereby giving 13 more years of service life north of Coffin Butte Road.

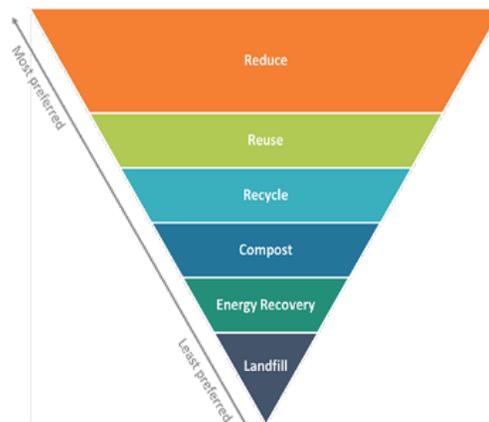
The common resources mentioned above work in unison, because their unique attributes form the geographic design and operations for solid waste disposal in the landfill north of Coffin Butte Road.

The common resources referenced above are not superior nor was it the intent to diminish or exclude natural resources, aquatic-life resources, atmospheric resources, farmland resources, timber land resources, wildlife resources, or fresh-water resources, but instead first examine the cause-effect relationship between specific resources and their attributes to determine a common understanding of the processes of solid waste management collectively within sustainable goals and tenets.

Haz-Mat resources appears at first blush a malfeasance or misfeasance against the above resources. Nonetheless, certain Haz-Mat are allowed into the landfill, i.e., fuel soiled dirt, creosoted lumber, asbestos, which some waste products of Haz-Mat have good waste to energy recovery qualities.

B. AN ALTERNATIVE PATH FORWARD

The sustainability mantra is reduce, reuse, recycle, compost, recovery, and then landfill.



By the new waste hierarchy, energy recovery from waste is added downstream between recycle and landfill.

The U.S. Environmental Agency as well as State of Oregon agencies are providing a waste management plan which includes material handling goals for sustainability.

The need is to stretch goals beyond just recycling, in order to use material sustainability upstream to reduce raw material manufacturing into products as well as downstream at the landfills to reduce refuse going into landfills by using waste to energy technologies.

Both upstream and downstream stages consider strengths of new products being developed to support the goals and aims of renewable resources.

This supplies an alternative path forward through energy recovery of waste that normally would go into Coffin Butte Landfill, but now changes a waste stream resource into an economical, sustainable, and usable energy resource stream.

Briefly, biochar is a carbon-rich material that is made from biomass through a thermochemical conversion process known as pyrolysis.

The term 'pyrolysis' has Greek roots and can be roughly translated as "fire separating". Generally, substances, i.e., refuse in landfills, which are subjected to pyrolysis undergo a chemical decomposition reaction and break down into multiple useful product compounds.

These compounds are then used to make an array of products, such as but not limited to, agricultural biochar for soil augmentation, liquid fuels from bio-diesel to hydrogen, and electrical power through conservation and reuse of heat from the pyrolysis process to run a steam generator to produce electricity.

Due to time restraints, pyrolysis is best detailed under another in-depth discussion.

Once again, Prometheus gift to humanity of fire lights the way.

References:

Reference 1. Site Development Plan – Coffin Butte

phasing details of Cell 6. This SDP update incorporates a phased design that reduces the lined landfill slopes to 1:1 (horizontal: vertical) in the existing quarry/Cell 6 area.

Organization of this SDP follows the latest version of ODEQ's *Solid Waste Landfill Guidance* document (<https://www.oregon.gov/deq>).

2. Facility Operations

2.1 Facility Operations

General facility operations have been previously described in the Operations Plan (GLA, 2020a) and the Operations and Maintenance Manual (GLA, 2020b). These documents were recently updated as part of the permit renewal associated with this SDP update. This section provides an overview of the information previously published, updated as appropriate.

The VLI land ownership around the CBL encompassing facility operations and waste placement areas can be seen in Drawing G02 in Appendix A. General facility operations consist of solid waste disposal operations, monitoring, maintenance, and management of leachate collection and removal systems, landfill gas collection systems, and stormwater management infrastructure, ancillary operations, and environmental monitoring operations.

2.2 Capacity and Projected Life

Site life calculations were performed for the CBL to estimate the overall life span of the landfill and the general schedule required for construction of the major individual phases. The site life calculations were based on (1) the volumetric capacities of the phases as shown on the SDP drawings in Appendix A, (2) an operational density of 1,600 lbs/cy, (3) a soil to waste ratio of 15% (for daily cover), and (4) an incoming tonnage of 2,959 tons per day (projected average daily tonnage). The capacity of each phase was volumetrically calculated from the top of waste design grades to the design liner grade using AutoCAD Civil 3D software. The volume of soil for the operations layer was subtracted from the gross air space. Supporting documentation for the site life calculations is presented in Appendix B.

The net available airspace volume available for disposal in Cell 5D/5E and Cells 6A – 6I, as of the March 30, 2021 topographical map, totals approximately 18,645,000 cy. For the purposes of this report, airspace is defined as the volume available for waste, daily cover, and interim cover. Soil

for daily and intermediate cover is estimated to consume approximately 2,797,000 cy of this volume, with an assumed soil to waste ratio of 15% by volume. Using the above stated parameters, the current fill area was calculated to reach final grades during the middle of the year 2039. Table 1 summarizes the site life projections for the landfill.

Table 1
Site Life Projection

	Plan View Footprint (Acres)	Capacity (CY)	Cumulative Capacity (CY)	Total Life of Cell (Years)	Year Capacity is Reached
Cell 5D/5E	6.1 ¹	4,834,330	4,834,330	4	2025
Cell 6A	19.8	1,482,260	6,316,590	1	2026
Cell 6B	11.3	1,029,430	7,346,020	1	2027
Cell 6C	4.3	1,742,130	9,088,150	2	2029
Cell 6D	11.0	1,859,820	10,947,970	2	2031
Cell 6E	3.9	1,078,420	12,026,390	1	2032
Cell 6F	5.1	1,686,070	13,712,460	2	2034
Cell 6G	2.4	2,015,260	15,727,720	2	2036
Cell 6H	1.1	1,295,450	17,023,170	1	2037
Cell 6I	1.2	1,622,130	18,645,300	2	2039

Notes: 1 – Cell 5 consists of Cells 5A through Cell 5E. Cell 5A through 5C are currently lined and accepting waste. Cell 5D (3.5 acres) was lined during 2021 and is awaiting approval for waste acceptance to begin in 2022. Cell 5E (2.6 acres) is planned to be lined in 2023. The plan view footprint presented in this table represents the areas of Cells 5D and 5E.

2.3 Population and Industry Served

At present, the landfill serves primarily the counties shown in Table 2. In addition, some amounts of overflow waste come to the landfill from Lane and Marion Counties. Future sources of waste are susceptible to change. The major industries served by the landfill consist of forest products, mobile home manufacturers, and the electronics industry.