

BCTT Republic Landfill and Neighborhood Tours: Combined Questions from Members/Public and Answers

The Benton County Talks Trash Workgroup (<https://www.co.benton.or.us/cd/page/solid-waste-process-work-group>) conducted two tours as part of its work. Republic led the Coffin Butte Landfill tour on September 24, 2022. (Part A – Pages 1 through 12.) Joel Geier and Nancy Whitcombe led the Neighborhood tour on October 1, 2022. (Part B – Pages 13 through 33.) Tour participants submitted questions after each tour and the facilitator sent them to Benton County, Oregon DEQ, the Neighborhood Tour leaders, and Republic Services. The answers received through October 26, 2022, follow. The BCTT subcommittees are encouraged to review this document and bring forward topics they would like to discuss further. Otherwise, the information in this document, along with the tour minutes, will serve as the complete project documentation.

Part A: Coffin Butte Landfill Tour

- 1. Question: I have had trouble finding out the details every time I move and in different cities/counties over the years in the Willamette Valley. The most accurate information I have found lately is through the Corvallis Sustainability Coalition. Not everyone knows about them though, I just found this recently after 30 years of living here. For example, on the tour, one of the leaders told me that in my neighborhood (Lewisburg) there is household composting. I have never been offered that or given any information about that. I have looked on your website and talked to people on the phone and it is not clear.*

<i>Staff</i>	<i>Oregon DEQ</i>	<i>Republic Services</i>
<p>The county's Solid Waste and Sustainable Materials Management webpages detail the various collection services available to residents, including that food waste can be placed in all curbside mixed organics (yard waste) carts county-wide. Our staff are also available by phone at 541-766-6819 to help with solid waste questions.</p> <p>Republic Services also publishes this service guide showing what items are accepted in each residential cart, and the guide is available on the County's webpage, as well as Republic Services' webpage.</p>		<p>We mail our service guide to all customers. It can be accessed online at https://www.republicservices.com/cms/documents/municipality/OREGON/CORVALLIS/Philomath-Adair-Village-Benton-County-OR-Service-Guide-2022.pdf.</p> <p>All services (and subsequently the guide) vary based on where the customer lives.</p>

- 2. Question: I sat next to a gentleman who was a member of the public, that told me that this whole tour must be a media stunt on behalf of Republic Services. I was happy to explain to him that in fact we the work group requested this tour. He didn't know there was a work group. I would be interested to know how he found out about the tour, I wish I would have asked at the time.*

<i>Staff</i>	<i>Oregon DEQ</i>	<i>Republic Services</i>
<p>Benton County shared information about the tours through various outlets, including:</p> <ul style="list-style-type: none"> •Shared on social media – Facebook, Twitter, Nextdoor, Instagram •Sent media advisories to local media •External newsletter - 9000 subscribers •Sent to Solid Waste Workgroup opt in email list with reminders •Posted on Benton County website 		<p>This question does not appear to be directed at Republic Services.</p>

3. Question: What is the best way to obtain information about the exact details of local recycling pick-up and what is collected?

<i>Staff</i>	<i>Oregon DEQ</i>	<i>Republic Services</i>
<p>Republic Services should be contacted to answer any questions about specific solid waste and recycling collection services. For more general information about materials accepted, county staff are also available to help answer questions. The county’s Solid Waste and Sustainable Materials Management webpages detail the various collection services available to residents.</p>		<p>We mail our service guide to all customers. It can be accessed online at https://www.republicservices.com/cms/documents/municipality/OREGON/CORVALLIS/Philomath-Adair-Village-Benton-County-OR-Service-Guide-2022.pdf.</p> <p>Services (and subsequently the guide) vary based on where the customer lives.</p>

4. Question: With the new recycling legislation and working with this committee, what are your plans to improve communication with the community about what is recyclable and what services are offered?

<i>Staff</i>	<i>Oregon DEQ</i>	<i>Republic Services</i>
<p>The county will be working with Oregon DEQ and with the collection franchisee on the communication and implementation of new legislation elements. The county’s Solid Waste and Sustainable Materials Management webpages</p>		<p>We provide information to the community through a variety of channels, including our customer service guides, newsletters, the master recycler class, community and school presentation and the CSC block captain program. We are</p>

are a helpful resource, and will continue to communicate any updates with recycling services.		open to further discussion about additional methods of communication.
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5. Question: Could we get total monies received from all leases, taxes for Benton County? I know this is in other documents, but I fear it has been buried.

Staff	Oregon DEQ	Republic Services
		This question appears to be directed to Benton County.

6. Question: Could we get a break down of costs per user, that should include residential and commercial, host and non-host, covered loads and non-covered loads?

Staff	Oregon DEQ	Republic Services
		This is an extremely broad question and the answer varies based on the nearly two dozen franchise agreements and service contracts that are currently in place. However, our gate rate is \$82 for municipal solid waste and construction related materials and \$52 for yard waste and wood. A complete list of pricing can also be found on our website: coffinbuttelandfill.com

7. Question: How are closure costs for the Old Landfill addressed in current operating budgets and financial assurance instruments?

Staff	Oregon DEQ	Republic Services
	DEQ assumes that this is referring to the "Former Burn Dump" area which is located west of the existing quarry. Republic Services is responsible for the entire landfill site, which includes the "Former Burn Dump".	We are assuming that this question refers to the "Burn Dump." That material has been moved from the unlined location into a lined cell. It's covered by the financial assurance.

	<p>The Permittee must provide an annual update including what it would cost to properly close the entire landfill if they had to close it this year. They also need to estimate the expected costs of 30 years of operations and maintenance (post closure care) including mowing, gas and leachate management and monitoring.</p> <p>The landfill currently provides financial assurance (which allows DEQ to access the funds under certain circumstances) in the following amounts: Closure- \$16,222,800 Post Closure - \$5,743,202.</p> <p>These cost estimates are based on a third party closing the landfill and for post closure care. They are updated annually and take inflation into account.</p>	
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8. Question: Do you have a record of your carbon footprint? What is the estimated decrease with the change to electric transportation?

Staff	Oregon DEQ	Republic Services
		<p>Republic Services set aggressive sustainability targets for 2030, and we are working to achieve them. Our goal is to reduce absolute Scope 1 and 2 greenhouse gas emissions 35 percent by 2030. As of our 2021 data, we've reduced operational greenhouse gas emissions by 9 percent of over our 2017 baseline year, close to our interim target of a 10 percent reduction by 2025. We currently have 77 renewable energy projects around the nation, an award-winning compositing site in Otoy, near San Diego, California, and another facility just down the street from Coffin Butte.</p>

		Electric vehicles are a game changer. We are currently piloting EV pilot projects in Boise, Idaho and Hickory, North Carolina.
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9. Question: Emissions directly to the atmosphere: Have estimates been made? What do they include as sources e.g. open face of landfill, fuel for dozer like equipment use on site, missions from garbage trucks on site?

Staff	Oregon DEQ	Republic Services
	<p>The DEQ air quality permit is only applicable to stationary sources, so emissions from mobile engines such as garbage trucks or compactors are not accounted for as part of the landfill’s total emissions. The following emission units are included in the permit:</p> <ul style="list-style-type: none"> • Landfill gas emissions from the landfill surface (fugitive emissions) • Emissions from flares (a portion of landfill gas is collected and controlled by these flares) • Road dust emissions from vehicle traffic (this does not include emissions from vehicle engines) • Tipper • Petroleum contaminated soils • Aggregate insignificant activities – includes cell development, operation, leachate collection and wastewater treatment, portable light plant, trash pumps and generators (these were evaluated and determined their emissions are insignificant). <p>The majority of the emissions are landfill gas emissions from the landfill surface and flares. These emissions were estimated by using EPA’s landfill gas emissions model (LandGEM), which is specifically designed to estimate landfill gas emissions based on the tonnage of waste received.</p>	<p>We submit an annual GHG report to the EPA, but for landfill data only. We need additional time to extract the relevant material from this complex report.</p>

10. Question: Engineered wetlands at NE corner of 99W and Coffin Butte Road. Appears to be in wet condition. Unclear if this is the 40 acres of dedicated wetlands. DEQ records (2005)(called Figure 2-2 and attached) indicate a Leachate Pond was located on the east side of the site. Where is its approximate location on a current site map?

Staff	Oregon DEQ	Republic Services
	<p>There are two leachate ponds south of Coffin Butte Road and west of the landfill gas energy plant.</p> <p>DSL designates wetlands. A map of wetlands can be found here: https://maps.dsl.state.or.us/swi/</p>	<p>Republic Services can provide an update site map at an upcoming workgroup or subcommittee meeting, whichever the facilitator deems more appropriate.</p>

11. Question: What is being done to ensure the Old Landfill is not a continuing environmental problem?

Staff	Oregon DEQ	Republic Services
	<p>Answer assumes “the Old Landfill” refers to the area known as the “Burn Dump”.</p> <p>Waste from the unlined “Burn Dump” (also known as the former Army landfill) was excavated and relocated to lined cells at the landfill (2018-2022). (See October 2018 Coffin Butte Landfill “Burn Dump” Clean Closure Work Plan). Moving the waste to lined cells greatly reduces risks to the environment and human health.</p> <p>Additionally, 15 wells along the western part of the site are monitored to document the recovery of the groundwater from past activities in the closed landfill and Cells 1/1A. Most are sampled once a year and some are sampled twice per year, they are analyzed for volatile organic compounds, selected ions and selected trace metals. Once every five years they are analyzed for additional parameters.</p>	<p>The material from this site (also known as the Burn Dump) was moved into a modern, lined cell, in compliance with current DEQ standards.</p>

	<p>Volatile organic compound concentrations in wells along the west-side compliance boundary were below primary drinking water standards including well MW-12S, where the trend for tetrachloroethene (PCE) continues downward.</p> <p>Several other VOCs were detected at low concentrations in the west-side compliance wells and several inorganic parameters (chloride, total dissolved solids, manganese) are present above background concentrations or screening levels at one or more monitoring wells. These parameters do not cause any risks to human health but are helpful to understand how the aquifer has recovered from past contamination.</p>	
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12. Question: Could we get a breakdown of counties that includes total tonnage? It should include or break out residential and commercial.

Staff	Oregon DEQ	Republic Services
Tonnage by county is included on this report , but it does not differentiate residential and commercial.		Republic Services provides a summary of this data in its annual report to Benton County, the most recent of which can be accessed here . The data can be found on Page 7. We do not break out residential versus commercial tonnage.

13. Question: DEQ tracks Municipal Solid Waste disposal and Recyclables. Info on Industrial Wastes also should be available. Disconnect in numbers between RSI and DEQ mentioned by tour participant. Need DEQ (Brian Fuller) and RSI (Sean and Russ) to resolve disconnects?

Staff	Oregon DEQ	Republic Services
Oregon DEQ provided the following explanation regarding the differences between the state’s reported disposal tonnage and the reported tonnage in Coffin Butte Landfill’s annual reports:		Republic Services agrees with the explanation provided by the Oregon Department of Environmental Quality (ODEQ.)

<p>DEQ material recovery survey reports “counting waste”, which is essentially municipal solid waste (MSW) plus tires and construction and demolition waste (excluding dirt, rubble, rock and asphalt).</p> <p>The DEQ material recovery survey reporting does not include industrial or agricultural wastes, sewage sludge, asbestos, rubble, rock, and asphalt or other inert wastes, or petroleum-contaminated soil. Oregon DEQ does not ask landfills to report the county of origin for these other wastes, DEQ only asks landfills to report if they are from Oregon or from out-of-state.</p> <p>In summary, the difference between the Benton County numbers in the Coffin Butte Landfill Annual Report and DEQ’s Material Recovery Survey report is due to all the industrial waste, sewage sludge, and alternative daily cover disposed at Coffin Butte, which is coming from Benton County but only reported to DEQ as coming from somewhere in Oregon.</p>		
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14. Question: How many medical systems use the landfill?

Staff	Oregon DEQ	Republic Services
	DEQ does not track “medical systems” that use the landfill.	Good Samaritan Regional Medical Center in Corvallis.

15. Question: What 1-3 waste products cause the most volume in the landfill locally and by the other counties that use the landfill? Do you see a future where these could be decreased?

Staff	Oregon DEQ	Republic Services
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<p>An estimate using DEQ’s Waste Characterization Study (downstate 2016-17), shows the top three waste categories disposed statewide (outside of Portland Metro area) are:</p> <ul style="list-style-type: none"> - Food at 15.84%, - Wood at 14.03% - “Other Inorganics” (rock, dirt, concrete, litter, etc): 13.51% <p>There are significant opportunities to increase waste prevention and recovery of several materials. Food and the larger category of Construction and Demolition are key areas for opportunity.</p>	<p>County staff answer covers this.</p>	<p>According to the U.S. Environmental Protection Agency’s most recent data, paper and paperboard related products comprise 23.05 percent of municipal solid waste; food equates to 21.59 percent of MSW and yard trimmings and plastics each contribute about 12 percent of MSW. The 2020 Oregon Material Recovery and Waste Generation Rates Report found that Oregonians are generating more waste than in previous years. People in Oregon generated 5,960,805 tons of waste, up five percent from 2019. The report notes “Waste generation remained well above the goal set for 2009-2024 by the Oregon Legislature.”</p> <p>Read the report here: https://www.oregon.gov/deg/recycling/Documents/2020MRWGRatesReport.pdf</p>
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16. Question: What percentage of waste at the landfill is medical and how much of that is local? What types of medical waste do you take and what is the process?

Staff	Oregon DEQ	Republic Services
	<p>DEQ does not track the amount of medical waste sent to landfills.</p> <p>Per OAR 340-093-0030 (66) "Medical Waste" means solid waste that is generated as a result of patient diagnosis, treatment, or immunization of human beings or animals.</p>	<p>See answer above. Medical waste is a minimal amount of overall volume.</p>

17. Question: “While we are on the landfill tour on Saturday, I heard you talking with Joel Geier, and the subject of the arc lamps on the scene came up. You told Joel that the lamps were not used mornings, only in afternoons... However, I went out this morning at 6 am and saw that the lights were indeed already on atop Coffin Butte, and there appeared to be operations going on, as I could see the red taillights of trucks moving around up there also... So I am looking for an explanation from you that reconciles your statement to Joel and the ground truth.”

Staff	Oregon DEQ	Republic Services
		The individual who asked this question is mistaken about the conversation he overheard. As noted in previously submitted materials, Coffin Butte is open to commercial customers from 5 a.m. to 5 p.m. and our employees are onsite from 4:30 a.m. to 5:30 p.m. to open and close the facility. Lights are used in both the morning and afternoon as needed to ensure the safety of our employees and customers but are not left on overnight.

18. Question: Could we get the plan for quarry once it reaches its end?

Staff	Oregon DEQ	Republic Services
		The quarry will be used as a lined cell, like the others at Coffin Butte, built in compliance with DEQ standards and regulations. Once it's filled, it will be capped and monitored like the rest of the landfill cells, again, in accordance with DEQ standards and regulations.

19. Question: Have seeps been observed in the rock formations between the current landfill and the Knife River operation? Between the Old Landfill and the Knife River operation? Do/did these seeps contain landfill leachate constituents? Does/did testing of the quarry pond or site discharge contain landfill leachate constituents?

Staff	Oregon DEQ	Republic Services
	Materials reviewed by DEQ have not documented seeps going into the quarry. Water in the quarry is not currently part of the environmental monitoring plan for the landfill site.	We are not aware of any groundwater seeps. We monitor groundwater wells and Knife River has a stormwater permit for their surface water discharge.

20. Question: I work at the hospital in Corvallis and have been working on improving recycling on the floor I work on. In doing so I found out that the hospital doesn't recycle glass. Is there a reason for this and how can recycling be improved at local companies? Is there a department leader that helps with this?

<i>Staff</i>	<i>Oregon DEQ</i>	<i>Republic Services</i>
		<p>We have done several mini-audits at Good Samaritan Regional Hospital over the years, primarily looking at waste coming from surgical suites. Some of it can be recycled but requires sorting. There was not much interest in doing that. Glass recycling is available to the hospital and it is their choice to utilize that service. They have had glass collection in the past. They have a very tight loading area and that has been an issue as well.</p>

21. Question: Clarifications of the net amount of energy generated and overall environmental emissions would be helpful. Examples: What are the constituents of the landfill gas and a what concentration? What fraction of the landfill gas received is used in the power production engines? What fraction is flared? Is supplemental natural gas or other fuel used to assist flare operations/efficiency? What are the environmental emissions from the power plant site (including the flair)? What fraction of the electric power generated is used onsite? Clarify what the impact of CB not being able to maintain its recent rate of yearly increased trash inflow on power generation. Hypothetically, what would be the impact on power generation if CB operations were limited to accepting materials from only Benton County? Please include the impact on CPI customers, corporate financial condition, etc.

<i>Staff</i>	<i>Oregon DEQ</i>	<i>Republic Services</i>
		<p>Landfill gas is roughly 50 percent carbon dioxide and 50 percent methane. It is routed to the power plant, where it is transformed into clean, renewable energy, capable of powering up to 4,000 homes. The plant operates under its own DEQ Air Quality permit (Title V).</p>

22. Question: I am a customer of Consumer power, I was excited to learn about the methane gas being used to power homes. How much methane and other greenhouse gases are released per year that doesn't make it to the power plant? Why aren't they able to be collected? You said compost was a large releaser of GHGE. Is there a way to decrease that by different methods?

<i>Staff</i>	<i>Oregon DEQ</i>	<i>Republic Services</i>
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		EPA models of GHG generation are estimates of the amount of gas generated that we report annually. Composting reduces GHG emissions by removing the organic material from the landfill. This is not accounted for in the models and can skew them.
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23. Question: Is all the landfill gas collected piped to the power plant? How much gas vents from the landfill?

Staff	Oregon DEQ	Republic Services
	<p>Not all the landfill gas collected is piped to the power plant. There are two flares that are used to control (burn) landfill gas when they generate more gas than the power plant can handle. The landfill reports to DEQ every month how much gas is sent to the power plant and how much gas is burned in the flares.</p> <p>It is hard to estimate how much gas is emitted from the landfill surface. EPA suggests assuming 25% of landfill gas generated is emitted from the landfill surface using the LandGEM model.</p>	All the landfill gas that is collected from Coffin Butte is routed to the power plant.

Neighborhood Tour

1. Question: Can Republic Services show that they have fairly compensated landowners for property purchased next to quarry?

Responses			
<i>Staff</i>	<i>Oregon DEQ</i>	<i>Neighborhood Tour Leaders</i>	<i>Republic Services</i>
		<p>This is question is posed for Republic, but could be answered objectively by the Benton County Assessor’s office, which has access to records of sale and past appraisals both for the vicinity of the landfill and for less impacted areas of Benton County which are otherwise comparable.</p> <p>To determine what would be “fair value” for a property not already degraded by proximity to landfill operations, we suggest that the assessment should compare sale prices of properties elsewhere in Benton county that, at the time of sale, were similar in size, zoning, and scenic rural character, but at least 3 miles from the landfill. This could include, for example, Logsdan Ridge, Vineyard Mountain, Springhill, and rural residential areas south of Philomath.</p>	<p>This question is vague but if and when any real estate transactions occurred, Valley Landfills Inc., and its predecessors would have purchased all properties in arms-length transactions with the seller. Valley Landfills Inc. has no power of eminent domain or other means to force someone to sell their property, other than to offer them a price they are willing to accept.</p>

2. Question: Has Republic Services ever donated to the volunteer fire fighters for Adair Village or any other?

Responses			
<i>Staff</i>	<i>Oregon DEQ</i>	<i>Neighborhood Tour Leaders</i>	<i>Republic Services</i>

		<p>This is question is posed for Republic, but could be also be posed to Adair Rural Fire & Rescue (http://adair-rural-fire.com/site/), regarding the timing and amount of any donations. ARF&R might also be able to supply information on costs of past responses to landfill fires.</p>	<p>Coffin Butte Landfill has supported local causes, civic organizations, non-profit entities and individuals who share our company's values for many years. In addition, we have provided drop boxes for brush clean up in Benton County neighborhoods to assist in fire prevention. This program is called Firewise and we respond to County requests for these services.</p>
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3. Question: Given the increasing forecast of earthquake magnitude, how would a 9.0 magnitude earthquake (same as the design criteria for the recent CPU) impact the existing landfill?

Responses			
Staff	Oregon DEQ	Neighborhood Tour Leaders	Republic Services
	<p>According to the landfill's Site Development Plan (updated in 2022, a site-specific probabilistic seismic hazard assessment (PSHA) update was performed for the site using up-to-date tools for earthquake assessment. The PSHA was performed to calculate the acceleration response spectrum of the site with a 2% probability of exceedance in 50 years, which corresponds to an event with a 2,475-year return period.</p> <p>Design Moment Magnitude of M = 8.48 and site-to-source distance of R = 61 km (38 miles) resulted in a corresponding PGV of 24 cm/s.</p>	<p>This is a good question that could be addressed at least in part by a seismic hazard analysis of the existing landfill, based on current understanding of the risks of a 9.0 (or larger, possibly as high as 9.5) magnitude earthquake on the Cascadia Subduction Zone.</p> <p>Research by Dr. Chris Goldfinger at OSU (see https://www.nature.com/articles/news.2010.270) indicates that there have been 41 earthquakes of magnitude 9.0+ on this zone in the past 10,000 years -- about 1 per 240 years on average (though it's important to note that the intervals between mega quakes can vary considerably from the average).</p>	<p>The EPA's Resource and Recovery Act (RCRA) codifies all aspects of landfill design, permitting and operations. Seismic design guidance has been in place and part of RCRA since 1993. Coffin Butte Landfill has been, and continues, to be, in compliance with all state and federal regulations.</p>

Results of the slope stability analyses that incorporate the proposed subgrade plan and waste grading plan are summarized in Table.

Cross Section	Condition Analyzed	Static FS _{min}	Seismic Yield, K _y	Estimated Seismic Displacement (in)
1	West Slope – Cell 6	1.9	0.20g	1.0
2	South Slope – Cell 6 Piggy-Back	1.5	0.14g	6.2
3	South Slope – Cells 3, 5B-5E & 6I	1.6	0.01g	10.2

The results indicate a minimum static FS greater than 1.5 and estimated permanent seismic deformation of 12 inches or less for the proposed waste slopes represented by the three cross sections evaluated. Given the range of conditions evaluated, the stability results were found to be acceptable relative to the design criteria presented in Section 2 of this report, the standards set forth in 40 CFR Part 258, OAR 340-094, and generally accepted standard of practice for landfill slope stability.

To our knowledge, this type of analysis has not been done for the older landfill cells. The risk of a M 9.0+ earthquake on the Cascadia Subduction Zone was not recognized before research published by Brian Atwater in 1987 (<https://www.science.org/doi/10.1126/science.236.4804.942>). Even after this evidence was accepted by the scientific community, it took a couple of decades for the implications to make it into state and local regulatory requirements for new construction.

For the most recently planned cells, filings by Republic's geotechnical consultants use a method called "probabilistic seismic hazard analysis." This is a scientifically credible approach, in general terms, but the results depend on numerous assumptions that go into the analysis, in what is a rapidly developing "art." See for example: <https://www.usgs.gov/publications/probabilistic-seismic-hazard-analysis-regional-and-national-scale-state-art-and-future>

For a landfill, this analysis is further complicated by the uncertainty and variability in the properties of garbage as a material (as evident from the wide range of "density" estimates quoted in Republic's annual reports for Coffin Butte). Taking a careful, independent look at the earthquake modeling in the 2021 Site Development Plan might be a good project for seismic risk

		<p>assessment and structural engineering experts at OSU.</p> <p>The results presented by Republic's consultants thus far have been stated in terms of predicted probabilities of displacements of different magnitude for soil cover etc. To our knowledge, these geotechnical model predictions have not been propagated to assess the risks of, e.g. shearing of wells and piping in the methane capture system, ruptures of the liner system, or the resulting risks to public health and safety following a magnitude 9.0+ earthquake.</p> <p>For comparison, the city of Christchurch, New Zealand has spent more than a decade repairing municipal water and sewer pipes following the M 7.1 earthquake that struck the city in September of 2010. So it's reasonable to expect that a more severe earthquake, shaking a small mountain of old garbage that contains everything from diapers to bedframes and old kitchen sinks, might cause problems for the many miles of pipes and acres of tarps in the methane capture system.</p> <p>One thing about earthquakes is that, like unhappy families each earthquake is unhappy in its own way. Most major earthquakes result in a re-evaluation of the building codes that were insufficient to prevent loss of life</p>	
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		<p>because the earthquake ended up being longer, or "joltier," or more harmonic, than it was expected to be. That's why the best earthquake research on buildings and other complex structures is conducted on "shake tables."</p> <p>Here's a link to a cool example: https://www.youtube.com/watch?v=Y7kKclsBKDo</p> <p>So far as we know, no one has put a scale model of a landfill on a "shake table" and tried out different scenarios that would be comparable to a M 9.0+ earthquake. So much is going on in this landfill: plastic liners with welded seams, perforated pipes, horizontal gas pipes, vertical gas pipes, and layers of waste of highly variable composition and compaction. The properties of the garbage layers are also changing constantly, as chemical reactions transform solids into gases and leachate. It's a very complex system, with much to go wrong.</p>	
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4. Question: Is there a robust Emergency Management Plan that addresses the needed responses of RSI and County resources? Are personnel appropriately aware and trained for situations that arise with landfills? Is there a consensus among RSI and first responders on how to fight a landfill fire? Are responsibilities clearly identified? Is the effort adequately funded?

Responses			
Staff	Oregon DEQ	Neighborhood Tour Leaders	Republic Services

		<p>These are good questions for the Benton County Emergency Management coordinator. Perhaps he could be asked to speak to the Work Group.</p> <p>Recently when the County was preparing its Wildfire Protection Plan, county development staff were asked whether the landfill was going to be included in the Plan as a locale of concern, which is either the site in North Benton County where the most fires have originated, or is at least one of the top sites in the County for fire origination.</p> <p>Staff's reply was that they couldn't include the landfill in the WPP, since staff had no expertise in, or understanding of, the ramifications of fires either originating in a landfill and starting a larger wildfire on neighboring lands, or starting on neighboring lands and spreading to the landfill.</p>	<p>Safety is of the utmost priority at Coffin Butte. All of the Landfill's employees are highly skilled and highly-trained on all aspects of Landfill operations, including fire prevention and response. The Landfill utilizes best-in-class fire prevention techniques and adheres to all local and state guidelines. Questions related to County resources and County budgetary items/funding will need to be directed to Benton County officials.</p>
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5. Question: The Bit-by-Bit facility said there has been no forest plan for forest fire prevention on landfill land bordering her property. Can republic services speak to their wildfire prevention plan?

Responses			
Staff	Oregon DEQ	Neighborhood Tour Leaders	Republic Services
		<p>There was some misunderstanding here as to what Bit-by-Bit's representative stated. There just has been no communication by Republic Services with neighbors about this issue, at least since Brian May's tenure as landfill manager for VLI (around 2005). Meanwhile</p>	<p>Seems like there is some confusion around this question and what was stated by the Bit-by-Bit facility, per Joel Geier's email. Republic Services believes the trees near the Bit-by-Bit facility were planted to screen the Landfill and its operations from the adjacent</p>

		<p>the Douglas-fir plantation has become very dense, with many dead branches low down in the trees which could serve as "fire ladders" for a ground fire to move into the canopy and grow explosively.</p> <p>Potential sources of wildfire risk could include accidents along the highway. During the 2017 tanker spill we were lucky that power lines near the crash site were not damaged enough to arc to ground, and CPI was notified quickly by first responders so that they could shut off power. We might not be so lucky next time. In addition, there many people of limited resources travel on foot, bicycle, or even skateboard along Hwy 99W.</p> <p>Occasionally neighbors have seen indications of people camping in the dense Douglas-fir plantation (bicycles left by the side of the road or people with backpacks coming out of the forest in the morning). So there may also be a risk of wildfire from campfires or improvised camp stoves.</p>	<p>property. We are unaware of any local or State requirement to maintain a wildfire prevention plan for the property, but are open to further discussion about this issue.</p>
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6. Question: Bit by Bit facility said there has been banging in the forest next to their facility at 8pm at night. Can Republic Services address what that may be?

Responses			
Staff	Oregon DEQ	Neighborhood Tour Leaders	Republic Services
		<p>This question is also directed to Republic. As neighbors, we can say that the last time we heard similar banging noises in the forest was during the summer of 2021. It emerged later</p>	<p>Without further information or a timeframe, Republic Services is unable to respond to this question.</p>

		<p>that Republic was digging test pits and boring holes as part of geotechnical site characterization activities prior to submitting a CUP for landfill expansion. The public was not notified of plans for that activity on these Forest Conservation zoned parcels.</p> <p>This does illustrate how an expansion of regular landfill operations in this direction would increase impacts of equipment-generated noise on adjacent landowners and their ability to use their properties.</p>	
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7. Question: Did one of the Benton County Commissioners tell Nancy that in fact the County can negotiate with the Landfill to only accept trash from certain places?

Responses			
Staff	Oregon DEQ	Neighborhood Tour Leaders	Republic Services
		<p>The 1981 Franchise Agreement between the County and VLI limited the service area from which waste could be trucked to a very small number of regions (this is memorialized in the 1974 CUP). Until the franchise agreement was re-negotiated in 2000, adding additional regions for waste collection was collaboratively decided upon by the County and the landfill operator. After the landfill was sold to Allied Waste in 2000, the franchise agreement was negotiated to remove the County's control over which regions could deposit waste into the landfill. This is memorialized in the 2001 "Baseline Study" prepared by the County: "In return for an increased franchise fee and the institution</p>	<p>This would seem to be a question for Benton County Commissioners, as Coffin Butte Landfill has no knowledge of, and was not involved with, this conversation.</p>

		of a per ton host surcharge, Benton County no longer has rate setting authority for the landfill and will no longer be consulted in regards to the origin or volume of solid waste disposed at the landfill." Source: Baseline Study, Introduction, page 4 of 322	
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8. Question: How is it decided how high the landfill can be build? When do you stop adding garbage?

Responses			
Staff	Oregon DEQ	Neighborhood Tour Leaders	Republic Services
	There is not a DEQ rule stating the height of the landfill, but there are limits on the landfill's final cover slopes that DEQ considers stable, which given the area limits imply a height limit. Generally, the maximum slope of the landfill sides is 30% (1 to 3 or 30 feet of elevation for every 100 feet of distance). It's possible to exceed this with significant extra engineering calculations.	The first part of this question seems to be for the Planning Department (conditions on past permits). The second part of the question seems like a good question for the work group to consider in making recommendations.	The Landfill height and configuration is determined by our DEQ approved Site Development Plan. Benton County also has a copy of this plan on file.

9. Question: I am in SWAC but still want clarification on ownership of Coffin Butte Landfill. Who owns the landfill and the PRC? Both Republic? Either the county?

Responses			
Staff	Oregon DEQ	Neighborhood Tour Leaders	Republic Services
Benton County does not own or operate Coffin Butte Landfill nor Pacific Region Compost (PRC).		This is a good question for the Planning Department or County Assessor. If you look on the Assessor's website, some parcels around the landfill are listed as being owned by "Republic Services Property Tax" while some are owned by "Valley Landfills Inc." or other entities. It is confusing.	Valley Landfills, Inc., a wholly-owned subsidiary of Republic Services.

		<p>The PRC is located mainly on tax lots 104170000300 & 301 (Valley Landfills Inc.) but with recent expansions of this facility, some operations appear to extend onto tax lots 104170000400 & 302 and 104080000300 & 400 (City of Adair Village) as well as parts of 104170000200 (owner listed as USA, apparently federal government -- the US Forest Service, Siuslaw National Forest maintains some jurisdiction over parts of this lot but other parts such as the former BOMARC missile site might still be under Department of Defense).</p>	
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10. Question: It was said that the fuel spilled on 99 by the dump was taken to the landfill. Can we talk about how that soil was managed and if it was by DEQ standards?

Responses			
Staff	Oregon DEQ	Neighborhood Tour Leaders	Republic Services
	<p>The landfill has a special waste management plan that specifies how much petroleum contaminated soil (PCS) can be accepted and what is the maximum concentration of petroleum. Some of it may be used as daily cover soil. PCS must be kept on lined portions of the landfill if stockpiled for use as cover soil. They were briefly allowed to keep some of the soil outside of the landfill footprint during this emergency response phase.</p> <p>PCS is a common daily cover material used at landfills throughout Oregon.</p>	<p>The first part of this question seems to be mainly for Republic to explain. In connection with other fuel spills, gasoline- or diesel-contaminated soil has sometimes been used as "daily cover" which means that the soil would be spread out, allowing volatile organic compounds in the soil to evaporate into the air.</p> <p>The second part of this question is a good question for DEQ, as they had a trailer on site for approximately a month for DEQ staff who were supposed to be monitoring the response (the actual work was carried out</p>	<p>DEQ staff were onsite to manage the cleanup process. Coffin Butte Landfill managed the material in compliance with all DEQ rules and regulations.</p>

		mainly by a private contractor based in Philomath).	
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11. *Question: The front facing cells seem to be "closed". Can we confirm? When will they be covered with soil and planted over?*

Responses			
Staff	Oregon DEQ	Neighborhood Tour Leaders	Republic Services
		These seem to be questions for Republic to answer. From information in the 2021 Site Development Plan, it appears that no cell has been "closed" since 2011. Planning Division staff might be able to speak to conditions of past CUPs.	Forty-five acres on the south side of the Landfill have been closed. This entails placement of a geosynthetic liner that is covered with soil and planted with vegetation. Additional areas will be closed in the future.

12. *Question: There was a claim that the county was to terrace the landfill and now it appears that the cells that have been covered are in fact not terraced. Can we have Republic Services address that?*

Responses			
Staff	Oregon DEQ	Neighborhood Tour Leaders	Republic Services
		Planning Division staff have been asked for documents referenced in the Findings of Fact for the 1983 Zoning Amendment that would describe the referenced "terracing" (they would probably be in the form of drawings). The best clues as to what might be contained in these documents lie in contemporaneous newspaper articles where County representatives and lawmakers discuss how, after the landfill closes, it will be returned to productive use and look better than it did before, for example, the following quote	DEQ regulations, with respect to landfill closure, have evolved over time. Terracing of Landfills is an outdated practice that has since been replaced by sophisticated and highly-regulated closure and post-closure requirements. The outside slopes are covered in accordance with these DEQ/EPA requirements.

		<p>from the Gazette Times in an article from 11/21/1973,</p> <p>“Jeanette Simerville, chairman of the Benton County Board of Commissioners, said Tuesday ‘the site would be used in increments and as each increment was filled it would be in better condition for productive use than it is now.’”</p>	
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13. Question: There was a claim that the Quarries created by the government during Camp Adair's time were filled with waste. Can we confirm this?

Responses			
Staff	Oregon DEQ	Neighborhood Tour Leaders	Republic Services
		<p>The tour guide handout included a photograph from an OSU MAIS thesis by historian Bob Zybach which shows the extent of the quarrying during the early Camp Adair period (photos originally taken by Wilma Rohner). More documentation is available from a series of oral history monographs. Copies of several of these are available for inspection at the Soap Creek historic schoolhouse, or can be downloaded from: http://nwmapsco.com/ZybachB/Oral_Histories/Soap_Creek_Valley/index.html</p> <p>Several small quarries were created on the lower slopes of Coffin Butte by the US Army and government contractors during the Camp Adair period. These were the source of crushed rock that was used mainly as "fill" to elevate roadbeds through "Swamp Adair" as</p>	<p>If we are understanding the question correctly, Republic invested \$5,000,000 over the last several years to relocate waste from this area to the lined cells.</p>

		<p>it was called, although the Army found that this rock was of too poor quality to use for the actual road surfaces or for concrete structures in the camp. For those purposes, better-quality gravel was mined from river-gravel quarries several miles to the east. Two of the main river-gravel quarries from this period have recently been restored as western pond-turtle habitat, as part of Luckiamute State Natural Area in the northeast corner of Benton County,</p> <p>Many of the oral histories produced by Dr. Zybach reference the old crushed-rock quarries on Coffin Butte as “scars”. The quote from the 1973 CUP is as follows: The scars that erode the face of Coffin Butte should be filled and compacted to a condition permitting reseeding and eventual visual reclamation of the area.</p> <p>The “scars” are thought to refer to the pits and bare-rock slopes left by the Army. Some of those quarries (mainly on the west side of the topographic saddle) were later filled with garbage (sometimes referred to as "the burn dump" in Republic's annual reports) or covered by later landfill cells. This is documented by DEQ (see answer to next question, below).</p> <p>A couple of quarries on the east end of the butte were used occasionally by ODOT, before those lands were transferred to ODFW</p>	
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		(around the year 2000). Those quarries have not been filled with garbage. They are now accessible to the public via the Coffin Butte Trail (part of E.E. Wilson Wildlife Area), and still provide good exposures of the basalt rock that forms much of Coffin Butte. During the tour we noted that these quarries are small in relation to more recent scarring of the butte, by recent expansions of Republic's landfill and the quarry operated by Knife River.	
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14. Question: There was the assertion that Wah Chang has used the landfill in the past or present and that Magnesium and other metals were dumped there. Can the landfill confirm? If so, can they tell us who regulates how they handle those kinds of materials? Were those rules followed? There were expressed fears of an exothermic reaction underground. Can Republic address?

Responses			
Staff	Oregon DEQ	Neighborhood Tour Leaders	Republic Services
		<p>These facts have been documented by DEQ. Here is the relevant text excerpted from the DEQ document titled "Environmental Cleanup Site Information (ECSI) Database Site Summary Full Report - Details for Site ID 832, Coffin Butte Regional Landfill" (as downloaded from DEQ's of November 14, 2021 at 12:41:30 PM).</p> <p>Site History: Landfilling at Coffin Butte first began in the 1940s by the Army as a part of waste disposal for the former Camp Adair. (See ECSI #1044 for more information on Camp Adair). In 1975, Valley Landfills, Inc. (VLI) purchased the site and currently</p>	The material we believe these questions are referring to was isolated many years ago into its own cell and have been subsequently handled according to all relevant rules and regulations.

		<p>operates it as a municipal solid waste facility. Contamination information: (1/23/95 ACV/SAS) Valley Landfills, a subsidiary of Waste Control Systems, purchased the landfill in 1975 for use as a municipal landfill.</p> <p>In addition to municipal wastes, the landfill received low level radioactive wastes and industrial debris from Teledyne Wah Chang. For the first few years after 1975, zirconium nodule fines from Teledyne were mixed in with the municipal wastes. Because the fines were pyrophoric, the practice was discontinued. Teledyne's wastes are now segregated from the municipal wastes in clay cells. (See ECSI #315 for more information on Teledyne Wah Chang).</p> <p>Manner and Time of release: Landfilling of wastes; leachate generation. 1940s to present. Hazardous Substances/Waste Types: municipal and industrial wastes, radium, magnesium, zirconium, asbestos, VOCs [volatile organic compounds].</p> <p>Note that the term "pyrophoric" as used in the context of hazardous materials refers to substances that ignite instantly upon exposure to oxygen. They can also be water-reactive, where heat and hydrogen, a flammable gas, are produced (see https://www.purdue.edu/ehps/rem/laboratory/HazMat/Chemical%20Materials/pyro.html).</p>	
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15. Question: How far from the landfill has groundwater contamination been found? How has the groundwater contamination plume been contained? Prevented from reaching surface waters?

Responses			
Staff	Oregon DEQ	Neighborhood Tour Leaders	Republic Services
	<p>Coffin Butte Landfill underwent a series of groundwater investigations beginning in 1992 that characterized the site in response to DEQ solid waste permit requirements and additional work overseen by DEQ's cleanup program. An overall summary of the investigations and responses to the pre-regulation landfill cells is presented in the Record of Decision available here untitled (state.or.us).</p> <p>The extent of contamination is defined based on impacts of volatile organic compounds (VOCs) as VOCs are not present in natural groundwater and relatively mobile. Approximately 300 to 400 feet downgradient of the compliance boundary for Cells 1/1a, groundwater quality has shown a distinct improvement in detection wells MW-17 through MW-19. VOCs have not been detected in these wells indicating attenuation between the compliance boundary and the downgradient detection wells.</p> <p>The Closed Landfill is monitored by two detection wells: one completed in the alluvium (MW-20), and one completed in bedrock (MW-21). Of three historically</p>	<p>Groundwater contamination has been found at least as far from the landfill as the well for the Helms home site which we visited (near where Wiles Road crosses Soap Creek).</p> <p>The contamination plume was not "contained" but there have been efforts to diminish the strength of the source (e.g. first by capping the old "burn dump" to limit infiltration by rainwater, and later by moving this material to a lined cell). The contaminants that already entered the groundwater prior to completion of these actions will presumably continue to move as a plume, though the concentrations (based on general principles of hydrogeology) can be expected to become more dilute with time and distance, as the plume disperses over a wider area or seeps into surface waters such as Soap Creek.</p> <p>Further information on Republic's efforts to monitor the plume are detailed in their annual monitoring reports submitted to DEQ (Tuppan Consultants). Those reports also show the extent of their monitoring network.</p>	<p>As noted in public records and reports submitted to our regulatory agencies, remediation efforts have been in place since the 1990s. Since the landfill cover was installed on Cells 1/1A in 1996 and LFG removal wells were installed in Cell 1 in 1994, the number and concentrations of VOCs have declined in compliance wells. Most concentrations are at very low concentrations and continue to decline in each of the wells.</p>

	<p>detected VOCs in MW-21, <i>cis</i>-1,2-DCE has not been detected since May 1995, 1,2-dichlorobenzene has been nondetect the last three years, and chlorobenzene declined to nondetect in 2001. No VOCs have been detected in MW-20 since 1995.</p> <p>Soap Creek has never been believed to be impacted by contaminated groundwater, it is possible that low levels of VOCs attenuated or evaporated as groundwater meets surface water.</p>		
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16. Question: Risk assessments for the Landfill (human health, transportation spills, fire, etc.) should consider including schools being potentially impacted by air borne releases from landfill fires (approx. 2 miles away) or transportation accidents (99W about 1400 ft away).

Responses			
Staff	Oregon DEQ	Neighborhood Tour Leaders	Republic Services
		<p>Yes, we believe that a proper assessment of risks related to the landfill and any expansion should include an assessment of risk to the entire population of the area around the landfill, including school children and families in Adair Village.</p> <p>In addition to the existing K-12 Santiam Christian School (with enrollment of 650), there is a proposal to build a new elementary school as part of the Corvallis 509-J School district (per testimony at a recent Planning Commission meeting by the Adair city administrator, Patrick Hare). This could bring even more children into the landfill-impacted</p>	<p>None. This appears to be a statement, not a question.</p>

		<p>zone 5 days a week, 9 months per year.</p> <p>Adair Village is also home to many young families, particularly in the older parts of the town which has many multi-family residences (mainly duplexes) that provide affordable housing for families of moderate or lower income. As of the 2010 Census, 36.7% of residents were under the age of 18 (per Wikipedia).</p>	
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17. Question: The road were not built to handle "this kind of traffic". "The road was not built for this kind of traffic." Can the roads department address that please? We were sitting on the corner of Camp Adair and Independence.

Responses			
Staff	Oregon DEQ	Neighborhood Tour Leaders	Republic Services
		<p>Benton County identifies the route in question as a "High Crash Rate Segment" of roadway (Benton County Transportation Plan, page 24 of 112). Highway 20 was just this year blocked when a Republic garbage truck overturned closing both lanes of traffic (Albany Democrat-Herald, April 11, 2022, "Highway 20 closed near Albany due to garbage truck rollover"). In 2020, a Republic Services garbage truck went off the road and tipped over not far from the intersection where the tour stopped (at Independence Highway and Palestine Rd.).</p> <p>We are not aware of any county-funded studies of landfill- or quarry-related truck traffic on Camp Adair Road. However the</p>	<p>This appears to be a question for Benton County.</p>

		<p>degree of wear and tear on the road is evident to residents, in the form of road damage and deep roadside potholes where trucks go off the pavement, particularly on the sharp curves just east of Highway 99W (by the archery range where we stopped). It could be useful to see a record of the frequency of repairs to this road, in comparison with other roads of the same class.</p> <p>Springhill Drive (just north of where we turned west off of Independence Hwy) can be mentioned as another nearby road that carries some of the heavy traffic from these sources, and is also chronically in very poor condition.</p>	
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18. Question: The statement that Garbage trucks are the most dangerous truck on the road. I would like to request data to show what the most dangerous trucks on the road are.

Responses			
Staff	Oregon DEQ	Neighborhood Tour Leaders	Republic Services
		<p>If the statement was that garbage trucks are “the most dangerous”, that was a misstatement. Certainly the intent was to say that dump trucks and garbage trucks are among the most dangerous large trucks. According to “Large Truck and Bus Crash Facts” put out by the Federal Motor Carrier Safety Administration, dump trucks come in fourth (at 8 percent) of all large trucks involved in fatal traffic accidents; and dump trucks come in fourth (at 10 percent) of all</p>	<p>Republic Services is unaware of any data supporting this statement. In addition, Republic Services has recorded a 38 percent better safety performance than the industry average over the past 10 years (based on OSHA recordable rates.) We continue to innovate and pilot new technologies to ensure the safety of our drivers. Since 2016, Republic Services has partnered with Together for Safer Roads, a coalition of</p>

		<p>injury-causing accidents. Garbage trucks represented between 2.2 and 2.5 percent of all large trucks in fatal traffic accidents.</p> <p>Dump trucks and garbage trucks are very large and as result have long blind spots, and their weight causes them to have long stopping distances and for accidents involving them to be inherently more dangerous. They also are associated with flying debris. During the landfill tour, one of the Republic employees described how garbage loads can catch on fire while in the truck, causing the driver to have to quickly find a place to pull off the road so that they can dump their load to extinguish the fire.</p> <p>Further Information of an anecdotal nature is fairly easy to find in Google search, e.g.: https://www.motorbiscuit.com/garbage-trucks-dangerous-surprising-number-accidents/ https://www.trucknews.com/transportation/fatalities-surge-around-truckings-most-dangerous-job-driving-agarbage-truck/1003130722/</p> <p>The following OSHA database and search string could be useful if county staff or the facilitation team would like to devote time to researching this issue more quantitatively: https://www.osha.gov/pls/imis/accidentsear</p>	<p>private fleet operators committed to working together to advance road safety.</p>
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		ch.search? sic=&sicgroup=&naics=&acc_description=&acc_abstract=&acc_keyword=%22Garbage%20Truck%22&inspr=&fatal=&officetype=&office=&startmonth=&startday=&startyear=&endmonth=&endday=&endyear= &keyword_list=on&p_start=&p_finish=20&p_sort=&p_desc=DESC&p_direction=Next&p_show=20	
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19. Question: There is a concern as laid out in many articles about air quality and those living close to landfills. There are also concerns about ground water contamination. What has the county decided is a safe distance for residents to be living and their wells in relation to the landfill. I would request that we recommend that the county determine that distance. There is evidence to suggest that air quality is a concern for allergies and cancer. Has the county looked into these claims as a way to make its decision?

Responses			
Staff	Oregon DEQ	Neighborhood Tour Leaders	Republic Services
		Here's a very thorough article from the EPA about the health effects of living near hazardous-waste landfill sites https://www.epa.gov/sites/default/files/2014-03/documents/health_effects_of_residence_near_hazardous_waste_landfill_sites_3v.pdf While Coffin Butte is not currently designated as a hazardous-waste landfill, it has received hazardous waste in the past (see DEQ report cited above), and it still receives	The environmental services industry is among the most heavily regulated in the United States. These regulations include stringent air quality and groundwater monitoring and standards. Valley Landfills, Inc. works closely with its municipal, county, state DEQ and EPA partners and is in compliance with these regulations.

		<p>contaminated soils from fuel spills, asbestos, fire debris, and incinerator ash. There is no regular program to audit the contents of garbage trucked in from remote counties. A community-member comment submitted to the Work Group ahead of our October 6th meeting described how even the Corvallis schools have apparently sent items classed as hazardous waste to the landfill.</p> <p>Potential health effects of living near landfills seem to include respiratory diseases including asthma, lung cancer, and risk of congenital malformation in newborns (Science Daily, May 24, 2016 “Living near a landfill could damage your health”).</p> <p>We are not aware of any local studies or guidelines issued by the County. Formerly the Disposal Site Advisory Committee (DSAC) was under the direction of the County Health Department which might have paid more attention to these types of concerns, but in recent years responsibility has been shifted to the Development Division, which does not have the same level of expertise on public health issues.</p>	
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