

MEMO



**Consent
Item #: 6**

Meeting Date: February 17, 2023

To: Board of Directors
From: Senior Engineer, David Ramirez
Approved by: General Manager, Felipe Melchor

Subject: Landfill North Slope Cover Soil Maintenance Project

Recommendation

That the Board Authorize the General Manager to contract with Wood Brothers Incorporated of Lemoore, California to reduce the excess thickness of the vegetative soil layer over the landfill's cover material in the amount of \$500,000 (includes an estimated 15% contingency estimate).

Background

Landfill Modules 1 and 2 at the Monterey Peninsula Landfill were originally filled between 1964 and 1986. Due to settlement of the waste mass (which naturally occurs over time), ReGen elected to perform a 'sliver fill' over these modules between 2006 and 2009 to take advantage of the newly available air space. This waste fill occurred in four phases and was capped with a final cover system. This final cover system consisted of a prescriptive Subtitle D soil liner consisting of (bottom to top) a 2-foot foundation layer and 1-foot compacted clay liner overlain by a minimum 1-foot vegetative soil cover.

Since 2010, the vegetative soil cover mentioned above has experienced slump failures where the vegetative soil layer above the clay has slid down the slope. These slump failures typically coincide with heavy rainfall events. Between 2009 and 2023 there have been approximately 20 or more slope failures ranging from 10,000 to 60,000 square feet in size (~0.25 acres to 1.25 acres). Three slumps occurred in the 2017 storms which were declared major disasters by the Federal and State Governments (DR-4301, DR-4308) and five of them occurred as part of the most recent intense storms experienced this past January. The slumps in past disaster years damaged landfill gas header pipes and required a new bypass line around the slump area. This year several gas headers were impacted by slumps and needed to be shut off. ReGen's records indicate that slump failures occurred in 2010, 2012, 2017, 2018, 2019, 2021, 2022 and 2023.

In 2019 the Board authorized staff to hire Wood Brothers Inc. to remove large bench roads that ran horizontally along the slope. These roads created a large surcharge in the slope and created very large slumping events. The removal of these roads has reduced the intensity of the slumps as far as the amount of material that slides down but has not stopped the slumps completely. The thickness of the soil remains too large for the slope to support when saturated.

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Let's not waste this.



In January 2023, Wood Brothers Inc. was awarded the contract for long term intermediate cover hauling and is already onsite performing contract work. They have provided a daily cost quote of \$15,600 per day to perform maintenance on the northern slopes of Modules 1 and 2. The quote included two bulldozers, an excavator, two dump trucks, one laborer and one foreman.

Discussion

As mentioned above, slumps have been occurring since 2010 and coincide with storm events. The root causes that have led to these slump failures are as follows:

- Lack of surface and subsurface drainage control.
- Areas with slope inclinations steeper than required.
- The prescriptive vegetative soil layer is thicker than the 1-foot thick (minimum) in most locations such as around the area of the former bench road. When wet this soil surcharges the load (weight) on the slope which leads to slump failures.
- During a slump event, cracks in the soil cover open and provide a location for storm water to accumulate and seep into the vegetative cover layer and onto the clay liner surface. This increases the surcharge load and hydrates the slip plane between the clay and soil on the slope and can lead to slump failures.
- The slope is not keyed into the clay layer and sits along the sloping plane of the clay layer surface. This interface acts as a slip plane and makes the slope susceptible to slump failures when wetted.

The proposed interim remedy for the slumps on the north slopes of Module 1 and 2 is to remove the excess cover material that are surcharging the slope. Once this is complete the disturbed areas will be hydroseeded and erosion control wattles will be placed at 30' (vertical) intervals. Doing this would have the following benefits:

- Removes the surcharge loads of the additional vegetative soil
- Reduces the potential for ponding and infiltration of storm water.
- Minimizes potential for future slumps
- Minimizes potential for damage to gas and leachate systems
- Minimizes potential for damage and access to the landfill's northern perimeter road.
- Prepares ReGen for the upcoming wet weather season
- Improves the stormwater runoff quality by installing erosion control measures and eliminating the potential for exposed slopes.
- Minimizes potential interim maintenance costs while the Landfill Master Plan of final corrective design is proposed and permitted (SWFP revision for landfill footprint modification planned).

FINANCIAL IMPACT

Wood Brothers Inc. has estimated the work on a Time and Materials basis not to exceed \$500,000. Funds for this scope of work are anticipated to be incorporated in ReGen's operating expenses.



The recommendation to support the use of Wood Brothers Inc. to perform the work as opposed to ReGen’s forces is included in the following table:

ReGen vs. Contractor Approach Comparison			
Consideration	Option 1 – Use of ReGen Forces	Option 2 – Contract to Wood Brothers	Option 3 – Advertise for Bid
Completion Timeframe	6 weeks	2 weeks from Board Authorization	Bid advertisement would push start of work outside of wet weather season (Oct. 1)
Overtime Costs	All work would be overtime.	None anticipated	Unknown
Availability of Equipment and manpower	Limited equipment availability. Two staff members per day.	Large inventory of equipment and manpower available to perform work.	Unknown
Mobilization Costs	None	One additional bulldozer \$3,000	Yes
Technology	Traditional methods	Traditional	Unknown
Impact on landfill operations staff	This task would take REGEN’s staff away from other landfill related projects and wet weather preparation.	Wood Brothers can accomplish more long term intermediate cover and stockpile additional cover materials.	None

CONCLUSION

The authorization of Wood Brothers Inc. to reduce the thickness of the vegetative soil on the north slopes of Modules 1 and 2 will help mitigate the potential for slump failures on said slopes. Protection of these slopes ensures that the cover liner system remains intact and protects the environment from exposing waste. The selection of Wood Brothers Inc. also provides numerous financial and operational efficiencies for ReGen which take advantage of having a contractor with specialized resources currently available and onsite. Staff therefore recommends that the Board authorize the General Manager to contract with Wood Brothers Inc. to maintain the north slope of Module 1 and 2 in an amount not to exceed \$500,000 (includes an estimated 15% contingency estimate).

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