

## **Attachment H**

**Why TL 3200?**

To: Tillamook County  
From: Jonathan F Hudson, Network Investment Manager  
Date: August 20, 2019  
Re: Project Jupiter – Why TL 3200

To Whom it May Concern:

Locating a landing site for a submarine cable is a balance and review of many factors that can be summed into 1) Backhaul fiber, 2) Cable Landing Station, 3) Marine Routing, and 4) Beach Manhole site location.

1. Backhaul Fiber - Terrestrial (land side) fiber availability – we call this “backhaul” in the industry
  - a. Backhaul fiber supporting submarine cable systems is highly sensitive due to the long distances covered by the trans-oceanic system as a whole.
  - b. This backhaul fiber needs to be:
    - i. New – installed within the last 5 years which ensures it can support the 25 year life span of the submarine cable
    - ii. Shortest distance possible to an existing network facility
    - iii. Underground – to provide maximum operational uptime
    - iv. High quality – the fiber on the submarine system is not the same as the fiber used on common land fiber systems. It is a higher quality and higher cost fiber that supports the long distances covered by the system. The strong preference is that this same fiber type is matched on the backhaul. But since it is higher cost and specialized for submarine systems it is not commonly deployed on land.
    - v. Capacity available – the counts of strands on the submarine cable need to be matched on *both sides* of the backhaul ring. For example if we have eight fiber stands on the submarine system, we need eight fibers on each side of the backhaul ring.
  - c. There is exactly one location on the US west coast that meets all of the above criteria. That is Pacific City, Oregon. A local telecommunications operator has invested in their infrastructure to provide two routes, each installed in the last 3 years, with the high quality fiber that we require.
  - d. Other options are to land in or near a major metropolitan area and connect over a shorter distance to a major datacenter. Los Angeles is the only location that provides this option on the US West Coast today and a separate branch of the Jupiter project that lands there. As such we require an additional landing to provide system diversity and redundancy.
  - e. Due to the above requirements we decided to land the Oregon branch of the Jupiter system into Pacific City.
2. Cable Landing Station (CLS) location or availability
  - a. The Cable Landing Station is the first location on land where the cable can be interconnected between the subsea and land side network infrastructure. This site is a Point of Presence where we can manage and monitor and maintain the system from.

- b. Having an existing cable station is a strong preference when looking at where to land a cable. These sites need to be at an elevation above the tsunami inundation zone or “run-up” areas.
  - c. There is an existing cable landing station owned by Microsoft that we are collocating in for this project.
  - d. Note that the Tillamook Lightwave Cable Landing Station (CLS) in Pacific City is not above the tsunami zone, we had to rule that site out as such.
3. Marine Routing - submarine constraints on the route and concerns from the fishing industry drive out site selection
- a. We coordinate with the fishing community to identify a route through the fishing grounds that meets their requirements. Their sign off and support of our route is required by Oregon State Law.
  - b. The fishing community is organized in Oregon and coordinates with the telecom cable operators through the OFCC, the Oregon Fisherman’s Cable Committee. The OFCC has stringent guidelines on route approval and we must satisfy all of the following:
    - i. Avoid crossing other existing cables – please see Exhibit A.
    - ii. Bury the cable through the fishing grounds to a minimum of 3 feet / 1 meter
    - iii. Avoid areas of “hard bottom”, rock areas that a burial cannot be assured
    - iv. Avoid undersea cliffs, mountains, canyons, volcanos, shipwrecks, unexploded ordinance, or any other know high risk area.
  - c. In addition, we must avoid Federal Essential Fish Habitat areas (EFH) – these are the red areas on the map included here as Exhibit A. Some cables do cross these, but those cables predate the EFH being established in those areas.
  - d. Pacific City and the entire Oregon Coast from Newport to at least Nedonna or Cannon Beach is very difficult to land a new cable and meet the above requirements.
  - e. The Jupiter route as designed meets all the above requirements, but looking at it now it is quite amazing that we found the route that we did, which runs a small gap through an undersea ridge, avoiding crossings and also ensuring burial.
    - i. If we landed into the existing beach manhole location or to the Bob Straub State Park just south of town, Jupiter would run afoul of one or more of the above, including avoiding crossings (we would have to cross at least 1, possibly 2 cables), avoiding hard bottom (there is a lot of rock near the Haystack), and/or crossing the EFH.
    - ii. The route required landing to the north of Cape Kiwanda to meet the requirements above.
4. Beach manhole (the initial landing site) site feasibility that we can perform the Horizontal Directional Drilling (HDD boring) operations from
- a. We utilize Horizontal Directional Drilling operation to ensure minimal disruption to the land and communities near the landing site.
  - b. The site for drilling requires at least 0.5 an acre on stable soils, far enough from the beach to avoid storm wave concerns, but also close enough to the mean high tide line to maintain a reasonable bore distance.

- c. The beach manhole and drilling site on Lot 3200 was selected as it:
  - i. Is large enough
  - ii. Is level.
  - iii. Is beachfront which allows us to avoid easements across other land
  - iv. Is also adjacent to the road where we can access the land side conduits (fronthaul, see below, #5) to terminate the system to the Cable Landing Station (CLS)
  - v. Is stable soil and can support the drilling rig and related materials
- d. Other locations for the beach manhole that were north of Cape Kiwanda (to meet the requirements from #3 above) were evaluated and ruled out:
  - i. Below the Nantucket Shores neighborhood, adjacent to Sandlake Rd – the private property lot was not large enough to support operations of the Horizontal Directional Drilling and contained wetlands area near Sears Lake. The slope of the hillside was also concerning.
  - ii. On the beach or between the road and the beach – no location was found that was all of:
    - 1. stable/could support the equipment (all on sand)
    - 2. large enough – adjacent to the road on a parking lot was an option but too small

# Exhibit A

