

Supplemental Testimony of
Dr. Robert Fischer
1127 12th Street S.E.
Bandon, Oregon 97411

Bandon Beach Hotel Plan Review Public Hearing
Application Number: 20-078
1090 Portland Avenue, Bandon, Oregon
Date of Council decision: Monday, April 12, 2021, at 7:00 pm
Electronic deadline: Monday, April 5, at 5:00 pm

Dear Bandon Mayor and City Councillors,

Thank you for the opportunity to submit supplemental testimony for the hotel Plan Review Application.

I will focus on the lack of planning for:

- 1) the excavation for the basement level of the proposed hotel.
- 2) the impact of the disrupted groundwater flow on the nearby slope and stairs.
- 3) the movement of the head-scarp toward the hotel site.
- 4) the proper disposal of storm and groundwater.

1) The excavation for the basement level of the proposed hotel

In the documents in the record for the Plan Review, and in the Public Hearing on the Plan Review, there was no mention of the “Garden Level,” the name given to the hotel’s habitable basement. No consideration has given to the dangers inherent in hollowing out the hotel property by making an excavation 112 feet long, 75 feet wide, and 12 feet deep in the unconsolidated, wet sand of Coquille Point.

There has been no mention of the inevitable caving of the sides of the excavation and no mention of the complications that will be created by the groundwater flowing through the site. There has been no talk of mediation measures for supporting the sides of the excavation with walls and forms to prevent caving. There are no plans for dealing with the groundwater.

There was no mention of the danger that the excavation will pose to the Coquille Unit of the Oregon Islands National Wildlife Refuge, the U.S. Fish & Wildlife Service property that borders the hotel site on three sides. The distance from the excavation to USFWS property is only 5 feet from the north property line, 10 feet from the west property line, and 15 feet from the south property line, but no thought has been given to the protection of the sensitive property of the refuge.

There is a danger of triggering landslides on the slopes beneath the hotel property and beneath the USFWS parking lot, and there is a risk of dislodging and destroying the USFWS stairs with the vibrations and shaking of the earth caused by the operation of heavy equipment, the power shovels digging, and the constant traffic of dump trucks carrying damp sand from the excavation, and large trucks dumping heavy loads of crushed gravel that will be spread over the bottom of the excavation to create the base for the spread footings and pilings that will support the weight of the hotel.

There are many hazards presented by the excavation of the Garden Level, and no solutions have been proposed for any of them.

2) The impact of the disrupted groundwater flow on the nearby slope and stairs

In the documents for the Plan Review, and during the Public Hearing for the Plan Review, there was no mention of the impact of the groundwater that will be concentrated and redirected by the insertion of the hotel basement into the flowing water of the Coquille Point aquifer.

At the motel's southwest corner groundwater can be observed in the form of numerous springs and seeps in the hillside. The topsoil and the sand underneath it are eroded and carried down to the beach by the spring water and seepage along the face of slope.

Imagine placing a large boulder in a creek. The boulder does not stop the flow of water, but it does force the water to go around it. The same amount of water is flowing, but its path has been changed, and because the flow is concentrated as it goes around both sides of the boulder, the flow is faster and it has much greater force.

The effect is the same for a hotel basement inserted into the flowing water of an aquifer, except for the fact that this basement is no boulder. It is a 112 feet long, 75 feet wide, and 12 feet deep impermeable solid that is going to concentrate the water and force it to flow in a new path, with greater speed and more force.

This will speed up the erosion of the bluff, and increase the threat to the stability of the USFWS stairs, and no solutions have been proposed to mitigate these inevitable problems.

3) The movement of the head-scarp toward the hotel site

During the Public Hearing on the Plan Review, there was no discussion of bluff retreat and the movement of the head-scarp toward the hotel site.

“Scarp” is a shortened form of escarpment, which is a long, continuous cliff or relatively steep slope produced by erosion and faulting. At Coquille Point, groundwater from the springs and seeps on the slope keep the topsoil and sand on the slope saturated, and during high tides the surf erodes the toe of the slope, which permits the heavy wet sand and other landslide material, rocks and bits of clay, to slowly slide (creep) down the slope to the beach -- where it is carried away by the surf.

A “head-scarp” is the top, and most recent, fracture and slip of the slope movement. A head-scarp first appears as an arcuate crack in the sandy surface at the top of the bluff.

Overtime, the creep exposes more and more of the sandy face of the head-scarp, and provides less and less support for it, until a section of it fractures and slides down, providing more loose sand that will creep down to the beach and be swept away by the surf. When the scarp fractures and the front section slides down and crumbles, it leaves behind a new head-scarp. The process is never ending, and the long-term consequence is bluff retreat.

Here is what Dr. Gunnar Schlieder of GeoScience said about the head-scarp.

The Hart-Crowser study, which involved field work conducted in early 2015, mapped the head-scarp of the portion of the slope movement located north of the stair structure and west of the subject property on the west (downslope) side of the paved path leading from the parking lot northwesterly to Coquille Point.

At the time of the mid-September 2018 field assessment by GeoScience, arcuate tension cracks were observed crossing the entire paved width of the path, indicating that the head-scarp had stepped northeast by a maximum of approximately 30 feet.

This would imply an average annual rate of head-ward progression of the failure during 2015 through 2018 of approximately 10'. At present, the head scarp is located approximately 24' from the SW corner of the existing structure. The direction of the active slope movement of the top edge of the landslide is toward the center of the motel.

The slope movements on the beach bluff are clearly a result of significant groundwater pore pressures which would likely be negatively affected by any increases in the rate of shallow groundwater discharge [due to installation of the basement.] (Insertion made by Fischer)

(Dr. Gunnar Schlieder, GeoScience, Bandon Bach Hotel Geotech Review, December 14, 2018, pages 3 &4)

4) The proper disposal of storm and groundwater

During the Public Hearing on the Plan Review there was no mention of the volume of groundwater and storm water that will be collected at the hotel, and at the hotel's two

parking lots. Nothing was said about the impact that the increased volume of water will have on the city's storm sewer system, or on Tupper Creek where the water will be dumped, or on the beach from the mouth of the creek to the ocean.

Winter storms and saturation of the soil occur in Bandon November through March. Bandon averages 58.74 inches a year, with half of that, 29 inches, arriving as prolonged and intense rain during the storms of November, December and January. February and March are almost as wet as January, and together they add another 14 inches, almost one-quarter of Bandon's total. (www.usclimatedata.com/climate/bandon/oregon/united-states/usor0023)

A French drain circling the bottom of the hotel's foundation will be used in an attempt to prevent groundwater from damaging the hotel's foundations, and penetrating and flooding the basement. Pipes from the French drain will carry the water to a storm sump pit.

The tentative location of the storm sump pit and its redundant pumps is in Utility Room B, on the east side of the basement. From the sump the pooled water will be pumped up about 15 feet and piped to the storm sewer under Portland Avenue.

The storm water collected from the roof, the sunken garden, and the side yards will be routed directly to the Portland Avenue storm drain.

The hotel's two parking lots consists of tax lots 4100, 4800 and 4900, a total of .99 acres. The parking lots will be paved with asphalt and concrete, and the drains in the parking lots will empty into a StormTech underground detention basin.

The StormTech underground detention system will be seven rows, each with five SC-310 StormTech chambers. The seven rows will be 40 feet long. Each chamber is arched, concave upwards, and is 16 inches high and slightly less than 3 feet wide at the base. The StormTech detention basin will drain into a flow control storm sewer manhole.

The flow control storm sewer manhole output is through a circular orifice 3.5- inches in diameter in a weir plate. The purpose of the orifice is to control the .45 cfs flow rate. The weir plate in the flow control structure will allow overflow in the case of extreme events. This will allow safe passage of peak flow during a large storm. From the flow control manhole catch basin the water flows through a 12 inch pipe to a new G- 2 catch basin in 11th Street, and from there the water flows west to the 24 inch storm water sewer pipe in Portland Ave. (Engineering Drawing C5 Grading and Drainage Plan)

That is very imaginative engineering, but the problem lies beyond the parking lots and hotel site. The problem is that the city's storm water sewer under Portland Avenue also drains Beach Loop Drive, Ninth Street and Eleventh Street (there is no Tenth Street) and the USFWS parking lot.

The storm water sewer pipe under Portland Avenue is only 24 inches in diameter, until it crosses under Eleventh Street. From there to its outlet in the bluff overlooking Tupper Creek, the pipe is 36 inches in diameter. From the storm water sewer outlet, the water falls about fifty feet into Tupper Creek.

Currently, when large storms occur the storm water sewer pipe under Portland Avenue becomes overwhelmed by the large volume of water that flows into it from the streets, and the water fills up the catch basins and overflows causing flooding in the street. That problem has been ignored.

No plan has been made for the proper disposal of the additional volume of storm water and groundwater from the new hotel and its parking lots.

No environmental study has been made to gauge the impact of the increased volume of water on Tupper Creek, or on the beach from the mouth of the creek to the ocean. Will there be irreparable damage to the creek bed and its banks? Will the beach be dangerously eroded? Will the increased flow of water present a hazard to people walking on the beach? Evidently, we are not going to know until it happens.

Conclusion: What I am asking for is independent investigations by disinterested professional geologists of the problems I have outlined here. Specifically the lack of planning for:

- 1) the excavation for the basement level of the proposed hotel.
- 2) the impact of the disrupted groundwater flow on the nearby slope and stairs.
- 3) the movement of the head-scarp toward the hotel site.
- 4) the proper disposal of storm and groundwater.

Sincerely,
Dr. Robert Fischer