

**Paula Smith**

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**From:** Bruce Titus <brucet@brucetitus.com>  
**Sent:** Thursday, January 10, 2019 4:22 PM  
**To:** Cari Hornbein; Paula Smith; Tim Smith; Nathaniel Jones  
**Cc:** Daniel Rehberger; Tom Skillings  
**Subject:** Wellington Heights  
**Attachments:** Bruce Titus Drainage Analysis PDF.PDF

Dear Cari Hornbei,

Your re-issued MDNS of December 27, 2018 means significant damage to my dealership.

I've attached a report from Skillings and Connolly.

I want you to include all their recommendations into a new MDNS and re-issue it.

If you do not intend to include these recommendations into a new MDNS, please let me know before January 17, 2018 so that I can appeal your decision.

In addition, I object to the fact that your office continued to deal with ABS Investments LLC after it had been administratively dissolved on November 3, 2018 by the State of Washington.

Sincerely

Bruce Titus

Bruce Titus, President & CEO  
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"Count on Us, All Around the Sound"

**Drainage Evaluation**  
**for**  
**Bruce Titus, Chrysler Jeep**

Prepared by:

Skillings Connolly, Inc.  
Thomas E. Skillings, PE

Skillings Connolly has been retained by Mr. Bruce Titus to evaluate the drainage report prepared for the proposed Wellington Heights subdivision. I have reviewed the drainage report prepared by Olympic Engineering, dated March 29, 2018 and the soils reports prepared by Bill Parnell, PE and MTC. I have also reviewed the amendment letter to the Drainage Report prepared by Olympic Engineering, dated December 4, 2018. I offer the following observations and comments:

Project understanding: The proposed Wellington Heights subdivision is proposing to infiltrate 100% of the stormwater generated from the development using permeable concrete, drywells for roof drains, and in infiltration basin for the remainder of the site generated water. The bottom of the proposed infiltration basin will be advanced to a depth that accesses the sand layer located below the shallow till layer. The basin, with approximate dimensions of 40-feet by 80-feet will be located on the southwest edge of the development, with the edge of the infiltration basin about 17-feet from the top of the 2:1 slope leading to the Chrysler Jeep Dealership.

There are existing housing developments to the north of the proposed Wellington Heights development that contribute what is considered pass through water that flows through the project site, with an stated combined flow of 44 cubic feet per second (cfs). The existing channel is a rough channel, that generally flows directly north to south, turns to the west at the top of the slope, and ends up in a shallow ditch on the Titus Chrysler Jeep Dealership (Dealship) property.

The above referenced documents indicate the ditch along the bottom of the slope was not built per the original Anderson and Boone design, dated February 2, 1987. I have attached a copy of the ditch sections enlarged from the original plan sheet. I have also had my crew survey the ditches. A copy of the topography map of the subject area is included as an exhibit. I don't find any significant variation from the 1987 plans from what exist today, with the exception of the fill that was placed in the Dealership's ditch. This fill was apparently placed when the overflow ditch from the developments to the north of the Wellington Heights project was installed. The riprap and fill totally fill the existing ditch. The ditch section upstream and downstream of the fill is fairly consistent. I would disagree with Olympic Engineering assessment that the ditch was not constructed per the original plan. (see attached ditch sections) The ditch bottom varies in width of 2-4 feet; the back slope varies from 1.5:1 – 2:1 and the front slope varies from 1:1 – 2:1. This variation is pretty normal for a ditch that was constructed over 30-years ago.

When the Auto Mall was constructed in the late 80's there were no developments to the north. (see attached historical photo dated 1990. The next historical photo is dated 2003 where the evidence of the northerly development is evident. It was during this time the Wellington West

project was allowed to construct the stormwater overflow across the subject property and directly into the Dealership's northerly ditch. It is agreed, this northerly ditch does not have the capacity to carry the anticipated 44 cfs flow-through. The developer is changing the historic drainage and infiltration patterns of the land that drain to Titus' property. The water that was traditionally infiltrated uniformly across the property will now be collected and placed into drywells, or collected and directed into the development's stormwater pond where it will be infiltrated into the ground in a very concentrated area. There will be an increased amount of water because with the removal of the trees, there will no longer be any uptake of water and no longer any evapotranspiration uptake.

**The ditch needs to be restored to provide positive drainage from east to west.**

The developer is proposing to divert the above referenced 44-cfs flow-through drainage into a 36-inch pipe. This pipe will pick the 44 cfs flow-through water at the developer's southerly property line, and pipe it to the west, and then direct the flow into the existing ditch on the west side of the Dealership's property. Note, 44 cfs is only the flow-through quantity of water. The actual maximum needs to include the anticipated "emergency overflow" from the proposed infiltration pond. The topographic survey we prepared indicates the existing ditch does not have the capacity to carry 44-cfs + emergency overflow, without modification. Depending on how the 36-inch pipe is designed to connect from the top of the slope of Wellington Height's property to the Dealerships ditch, velocities could be in excess of 40 feet per second, depending on the slope of the pipe. Energy dissipation and erosion control in this ditch is of concern. The Dealership's dumpster foundation is only 2.5 feet from the drainage easement and the existing ditch centerline is only 5-feet from the limits of the easement. The north south ditch was never designed to carry the additional 44cfs plus the emergency overflow from the development. This ditch needs to be redesigned and reconstructed to carry the additional flow. A downstream analysis is necessary to address, not only through the Titus's property, but the complete flow path of the drainage system all the way to Percival Creek.

- **I would recommend a specific condition be required for a design requirement that will guarantee protection of the Dealership's property from scour. The Developer should be required to do this analysis and design modifications to the ditch that will not impact any downstream property.**
- **I would recommend a complete downstream analysis be completed to provide assurances the ditch through the Auto Mall all the way to the ultimate discharge at Percival Creek be completed. There are several flow control features in this system that could be affected.**

The developer is changing the historic drainage and infiltration patterns of the land that drain to Titus' property. The water that was traditionally infiltrated uniformly across the property will now be collected and placed into drywells, or collected and directed into the development's stormwater pond where it will be infiltrated into the ground in a very concentrated area. There will be an increased amount of water because with the removal of the trees, there will no longer be any uptake of water and evapotranspiration uptake will be reduced.

- The east-west ditch needs to be restored to provide positive drainage.

- I would recommend the EW ditch at the bottom of the slope be cleaned and graded to provide for positive drainage. The SEPA-BASED CONDITIONS and MITIGATION MEASURES: state in Item 3, paragraph 2: *“to mitigate off-site stormwater impacts, the applicant shall make improvements to an existing conveyance system so that it can convey the existing pass-through flows from the wellington West storm ponds, provide and emergency overflow route for the proposed on-site infiltration system, and protect downstream properties from stormwater impacts.”* This recommendation is based on the following and will help *“protect downstream properties from stormwater impacts”*:

When the north – south ditch is improved to carry the anticipated flow from the development, the north south ditch will have to be deepened. The east west ditch will require re-grading to match the invert of the EW ditch with the anticipated maximum water level in the NS ditch. Doing so will prevent backwater from flowing into the EW ditch and “protect downstream properties from stormwater impacts.”

Mr. Titus has indicated he has observed a large amount of water seeping out of the bank on the north property line during high rainfall events. I believe this is most likely the result of the rain infiltrating the upper soils layer, hitting the till layer, flowing in a southerly direction and exiting out of the bank at the Dealership’s north property line. The developer is proposing to continue to infiltrate rainwater from roof drains, pervious pavement, rain gardens, yards and landscaping. Stormwater will also continue to infiltrate from the ponds in Wellington West development. Therefore, it can be anticipated stormwater induced groundwater seepage will continue to occur along the Dealership’s north property line and will impact the Dealership property.

The geotechnical engineer, MTC recommends the placement of a clay cap on top of the new infiltration pond. There is no mention of the fate of the water that is prevented from infiltrating into this area. It is assumed the intent is for the water to infiltrate into the ground around the perimeter of the proposed infiltration basin. This concentrated flow will encounter restrictive layers and will eventually seep out of the bank on the Dealership’s north property line.

There is a potential for the project’s infiltration pond to create seepage on the bank below the infiltration site. (See discussion on groundwater mounding.)

- I would recommend a “French drain” cutoff be constructed at the top of slope to intercept the seepage that can be anticipated to be generated from the Wellington Heights project. This will *“protect the downstream properties from stormwater impacts”, to facilitate compliance with mitigation measure No. 3.*

Olympic Engineering states in their letter dated December 4, 2018, “...the ditch on the northerly portion of Mr. Titus’s parcel was not constructed per the 1987 plan and/or has not been properly maintained sense then.” Mr. Titus did not place the fill in the ditch where the channel from the stormwater overflow enters his ditch. The point source channel did not exist when the ditch was built. The normal function of

the EW ditch has been impacted by the construction of the flow-through drainage ditch. Please see attached exhibits, including historical photos, survey topo map, and historical pictures.

**Mounding Analysis:**

I reviewed the soil borings and mounding analysis prepared by MTC. The proposed project infiltration basin is located in the vicinity of BH1 and TP2. The Bore hole was advanced to a depth of 51.5-feet on June 21<sup>st</sup>, 2018 and the water table was found at a depth of 40-feet below ground level. The mounding analysis estimate performed by MTC indicates the anticipated mound that will develop under the infiltration pond will be 17.9-feet. MTC indicates this will place the mound 9-feet below the bottom of the infiltration pond. This is well below the required 3-foot separation between the pond bottom and the groundwater mound surface. The spring and summer of 2018 had less than normal rain fall. There is no mention of where the groundwater would be in the winter or early spring after a wet season. I did not see any winter evaluation of water levels. If the winter water level were to rise over 5 feet, the mound surface would penetrate the required 3-foot buffer. It is not unreasonable a water tables to fluctuate 10-20-feet or more, during extreme weather cycles. If the water level rose 10-feet, the mound would intercept the bottom of the pond, and the mounding analysis assumptions would no longer be valid; the infiltration pond would fail. The predicted mound surface geometry may look significantly different than the mound predicted in the Olympic Engineering report and. (see attached exhibits)

This issue is the most concerning to me. The developer's design of the 100% infiltration for the stormwater generated from the site is based solely on one summer measurement of the groundwater. If the groundwater rises 5-feet from what was recorded, it does not meet standards. If the water table rises 8-feet above what was recorded, the system will begin to fail. It is critical the winter water table elevation be understood. Typically we would see at a minimum, a one-year analysis of the water table. In addition, because this design feature is so important, the design of the emergency overflow to prevent uncontrolled overflow, or uncontrolled lateral flow that would surface on the north slope of the Titus property. Should be design to provide 100% assurance it will not have an uncontrolled failure.

- **The Developer should be required to conduct a thorough analysis of the seasonal water table variation found in the Qvr aquifer at this site. I would recommend approval of the proposed design be withheld until the winter water surface level below the proposed drainage facility is completely understood and quantified. If the water level in the aquifer is much higher in the winter than in the summer as measured, the likelihood of failure of the infiltration system is high, and the potential impacts resulting from a failed infiltration basin can be difficult to remedy.**

Respectfully submitted,

Skillings Connolly, Inc.  
Thomas E. Skillings, PE

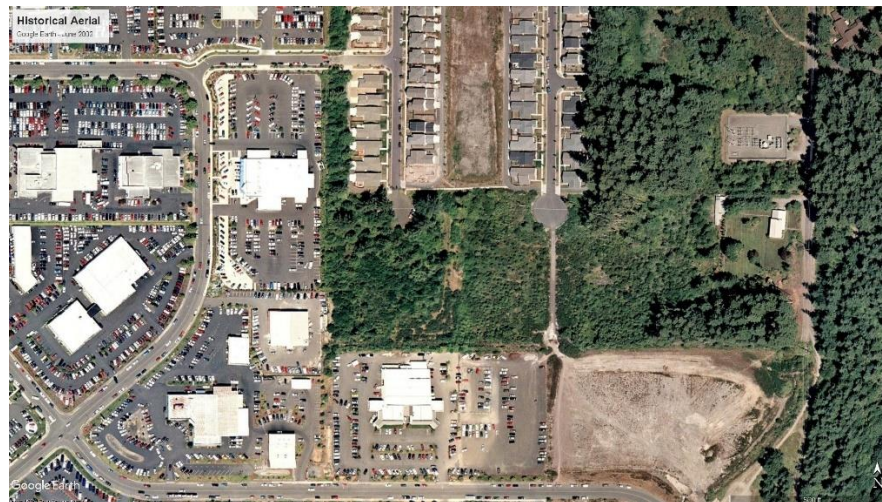


Skillings Connolly, Inc

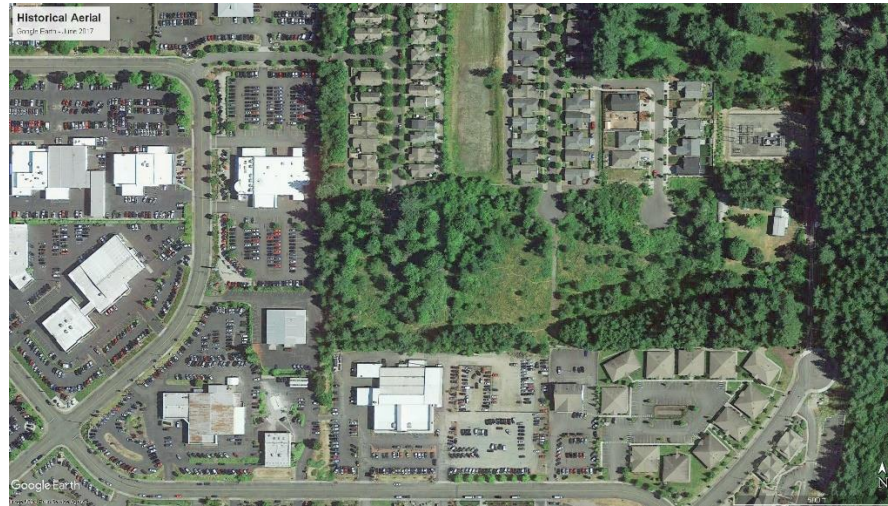
Bruce Titus Drainage Evaluation  
January 10, 2019



**Historical photo, dated June 1990**



**Historical photo, dated June 2003**



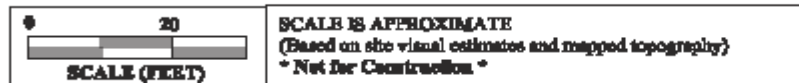
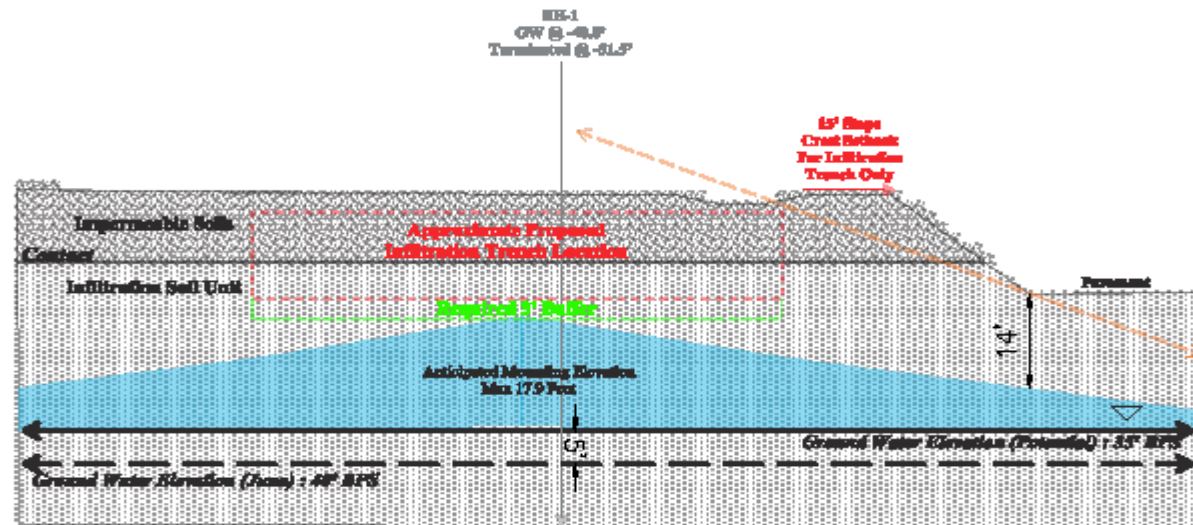
**Historical photo, dated June 2017**

It can be seen from the photos above, there was minimal development to the north of the Titus property in 1990. As developments were constructed, overflow drainage was directed to the toe of slope ditch on the Titus property. It was never designed for 44 cfs.



North

South

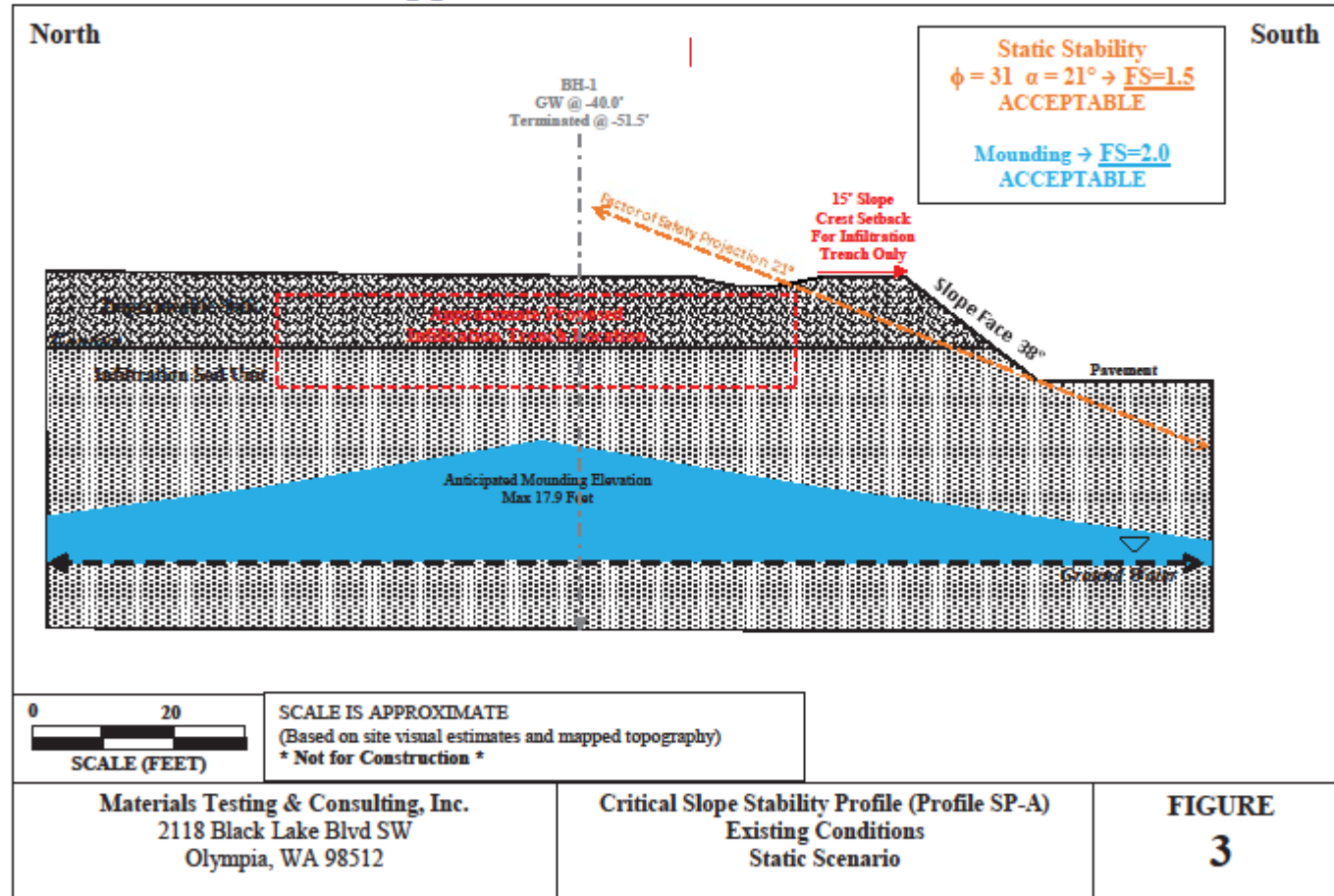


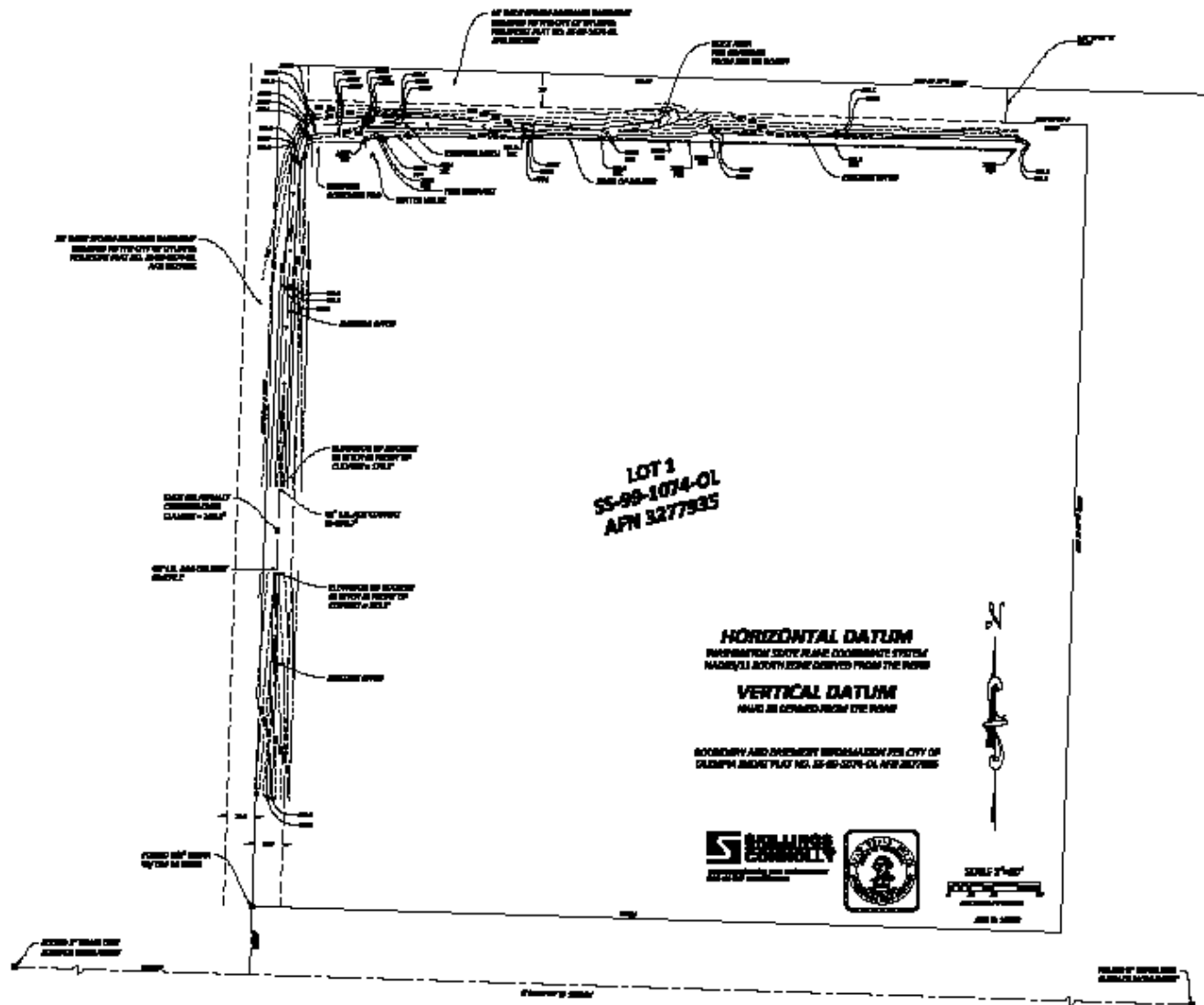
\*Mounding analysis shown published by MTC  
See attached MTC "SLOPE PROFILES"

## Mound Exhibit with potential higher water table



## Appendix C. SLOPE PROFILES





Topographic Map Exhibit



