To the Columbia County Planning Commission
8/23/2023
From Gene and Lynn Hester
33340 Tide Creek Road
Deer Island Oregon, 97054
And the people that have ask us to speak for them

We are writing this letter strongly opposing the Lupine Meadow Subdivision. Our property is tax lot #1001 and is directly across the street from the proposed development. I have entered in this package 12 total Tax Lot numbers surrounding the proposed lupine meadows that are having the very same issues.
To start with I purchased and moved into my home in 1982. I purchased this home 41 years ago.The well logs date back to 1975 when our home was built. Things have changed significantly since that time. This area has grown and a lot of new wells have been established. As time goes on we have less water and lower flow rates. In addition several years running there has been annual shortages of ground water that feeds aquifers. We as well as most people around us are experiencing serious water issues . I have had my well cone out three times and every time they shorten my well. We are on our 4th pump. The majority of my neighbors have had to have water storage tanks installed to deal with the water shortages.. Water is pumped into the tank a little at a time accumulating in low and slow use time. This supplies you with a minimum amount of water for daily use. You can still run out particularly in the summer. We recently had $4200 work done on our well. Justin from McMullen Wells in St. Helens told us it was just a bandaid and we will probably have bouts of no water. Justin told us that putting in storage tanks was a good option but a new well would be better. Justin Says that issues with our current well are not ideal to dig it deeper. The problem with a new well is the only location we can put a new well is too close to our septic drain field.
What is helping us is that there are only 2 of us living here. My wife did not even have her hanging baskets this year. We have ran out of water 3 times.. I am planing a new building to house water storage tanks. We are 100% dependent on the low-flow rate well we have. Justin told me we have only 28 feet of water and around 2.5 gpm.

The laws for developing land partitions are written very poorly. It lets developers use well logs from nearby properties that they submit to the county proving that there are good flow rates. Those well logs are usually very old and obsolete. (You will see how I proved that Petersons well log reports for the proposed project are not current or correct). My well flow rate was established in 1975. Some Houses

around me are even older . In addition the Oregon State Water Master has no information on our area aquifer.
8 new 4 bedroom homes will likely have a detrimental impact on surrounding wells. I ask Justin McMullen what will happen to our wells with that much usage. He simply said the guy with the deepest well wins. Severe coning will develope. Also water depletion establishes a very high risk of septic systems leaking into the Aquifer . When all of our homes were built there were different stands pertaining to how close our septic systems and wells could be to each other in a neighborhood.

Most of the current long time residences of this surrounding area cannot endure the financial hardship of drilling a new $25,000 plus well. Even then we will be competing with a huge amount of very nearby water usage.

Everything we are going through is nothing new to the other families up here on Tide Creek Road. Please read through all of the illustrated documintation I have included in this package from the USGS and the EPA concering wells, well water, aquifers and the reality of what really happens when new subdivisions move in around already weak systems. I have been told don't worry you have rights and you can sue and have wells shut down. That is something none of us ever want to experience. Then it is probably too late. And what about the unsuspecting families that purchase those 8 homes ?? Will they be forced not to use their wells because of our water rights?? We hope and pray that we can save our water here on a local level but in the event that does not work we are prepared to take this to Oregon State with our measure 49 Attorney. We have absolutly no choice. We have to save our water. Aggie Peterson once said that it is no problem for us because we are all land owners so we can all borrow money to drill wells. We are asking the Peterson's as neighbors to please back off and take this to one of your other many properties and help your neighbors save our depleting aquifer. Again queoting Justin McMullen..... "The person with the deepest well wins". We will not be able to compete with the Petersons new 8 deep water wells.

Again please study the illustrations that I have included in this package that clearly outlines what we will be in for. The info I have included just barely scratches the surface of what is out there to study. Please take time to google well water problems and you will see what we are facing is very very real and it is happening all over the country. If need be please bring this to a halt to at least do an impact anylasis study on the plight we are facing. And let the burden of this study be on the Peterson's . They have the money obviously and we should not have to spend money to defend our long time homes that our greedy neighbor could care less about.

Thank you so very much for reading this and giving us all the opportunity to be

heard. This subdivision that the Petersons have the wherwithall to put anywhere they want on their many many properties is a very very real threat to our long time homes . We beg you to give this serious situation your upmost attention. It is a huge threat to all of us up on the hill near this proposed project . I just cannot express enough how scary the potential of this coming to fruition is for all of us.

Thank You so much from all the people on Tide Creek Road that this impacts.

Sincerly, Gene Hester

Gene Hester

We the following are on the list opposed to the Lupine Meadow Subdivision. We each are giving our permission for Gene Hester, Frank Hall, or their representative to speak on our behalf at any meeting against said subdivision:

Frank Hall 33268 Tide Creek Rd.
Janice Hall

Maria Christie 32829 Tide Creek Rd
TY Christie " DEER Island, " OR 97054

~~TY C~~ ISRAEL REA 32830 TIDE CREEK RD DEER ISLAND, OR 97054

Karla Rea 32830 Tide creek RD Deer Island OR 97054

EMMA KIRCHHOFF 33562 Tide Creek Rd Deer Island OR 97054

ANDREW AHRNSBRAK

Patty Parsons 33220 Tide Creek Rd. Deer Island OR 97054
Johnny Parsons

Glennis McFarland 33300 Tide Ck Rd Deer Island, OR 97054
Jim McFarland

~~T~~ Ron 33386 Tide Ck Rd DI OR

Mary Weaver 33378 Tide Ck Rd DI 97054 We're giving Frank & Gene our time just like all others.
L. B. Weaver "

Gene Hester 33340 Tide Creek Rd
Lynn Hester

This is the list of neighbors that are apposed to the Lupin Meadow Sub-division:

[illegible] Wells Larry B [illegible] 33378 Tide Creek 503 397 2073

[illegible] & Frank Hall 33268 Tide creek Rd 503 3961218

[illegible] 503-366-4285

Lynn & [illegible] 33340 Tide Crk Rd. Deer Island Or 503 [illegible]

Tim Rose & Joyce Smith-Klein 33396 Tide Creek Rd Deer Island OR 9705[illegible] 503-366-3554

Karl Klein 5039369714 33470 Tide Creek Rd Deer Island OR 97054

well log data came from McMullens I am sure it is very legit. However since the data was collected as far out as 52 years ago it is mostly not current and obsolete.

Peterson also claimed on this well log sheet that OWRD states that half a gallon a minute can establish a well. He does not tell you the whole story . That is only if you instal a very expensive big storage tank system that the water can trickle into to build up over time when you are not using it. And a huge water supply. Just normal common sense clearly dictates that you cannot run a household on one half gallon a minute. You can have 5 gpm water but run out of water with 30-40 minutes of steady running. Most all of us have had extensive well work done and a large percentage are on storage tanks. Storage tanks are a last ditch effort and you are limited with them when it comes to garden watering and pressure washing etc.

6 of 18

WELL LOG DATA

Startcard # (if listed)	Well Log #	Date	Tax Lot No.		Yield (gal/min)
1028595	COLU 55121	10/26/2015	6225-00-00400	1	10.0 Petersons new well
	COLU 1704	7/13/1976	6225-00-00900	2	~~37.0~~ duplicate
	COLU 1706	8/7/1971	6225-00-00700	3	~~10.0~~ 3 gpm
83956	COLU 50307	10/30/1995	6225-00-01009	4	25.0 out of area
83964	COLU 50308	10/26/1995	6225-00-01006	5	~~12.0~~ 3 gpm
126399	COLU 52001	2/6/2002	6225-00-00900	6	10.0 2002
148019	COLU 52165	12/31/2002	6225-00-01007	7	~~20.0~~ 2 gpm
1043597	COLU 55494	7/15/2019	6236-00-00300	8	60.0 out of area

Submitted with this application as Attachment 8 are copies of the above well logs. This data establishes a yield for wells in the area ranging from 10 to 60 gallons per minute.

The OWRD well logs clearly establish adequate potential for water for the proposed lots.

1 This is Petersons new deep water well

2 This is a duplicate on Jim McFarland property. (#2 and # 6 above) He lost 150' of well and dropped to 10 gpm 2002. He is not sure what it does now . 2 people in house. Lite use.

3 John Parsons. Several reworks on well. Sulpher smell.Runs out of water often.Cannot drill again

4 Out of area well

5 Tim Rose installed large storage tanks due to low water. 3gpm

6 Jim Mcfarland. Had 37 gpm. Major well rework .Dropped 150' off of well. 2002 10 gpm

7 Mary Wells. Had to put in new well at the same time as Jim Mcfarland. Was 14 gpm now down to 2 gpm

8 Out of area well

WELL INFORMATION

The 7 or 8 well logs that are being used to justify the subdivision water is stated by the water resources as archaic and not reliable.

Water volumes and levels from neighbors are as reported by the property owner. The property owners Tax Lot # (TL) is included.

1 Christie, 32829 Tide Creek Rd., 4 gal. per min., has storage tanks. **TL00200**

2 Andrew Ahensbrak, 33562 Tide Creek Rd., 4 gal. per min., relies on storage tanks. **TL01100**

3 Parsons, 33220 Tide Creek Rd., 3 gal. per min. Has gone empty often. and has sulfur odor. **TL00700**

4 Hall, 33268 Tide Creek Rd., .4 gal. per min. and relies on storage tanks and can't re-drill. **TL00800**

5 Mary, 33378 Tide Creek Rd. they are on their second well and getting 2 gal. per min. **TL01007**

6 McFarland, 33300 Tide Creek Rd., well level has dropped 150' and has had rework done. **TL00900**

7 Gene Hester, 33340 Tide Creek Rd., 28' of water in well, goes empty in 45 min., has had recent rework cost 4K, McMullen said was only a bandage. Has sulfur odor. Pump replaced 4 times do to aquifer coning. Can't re-drill, need storage tanks. **TL01001**

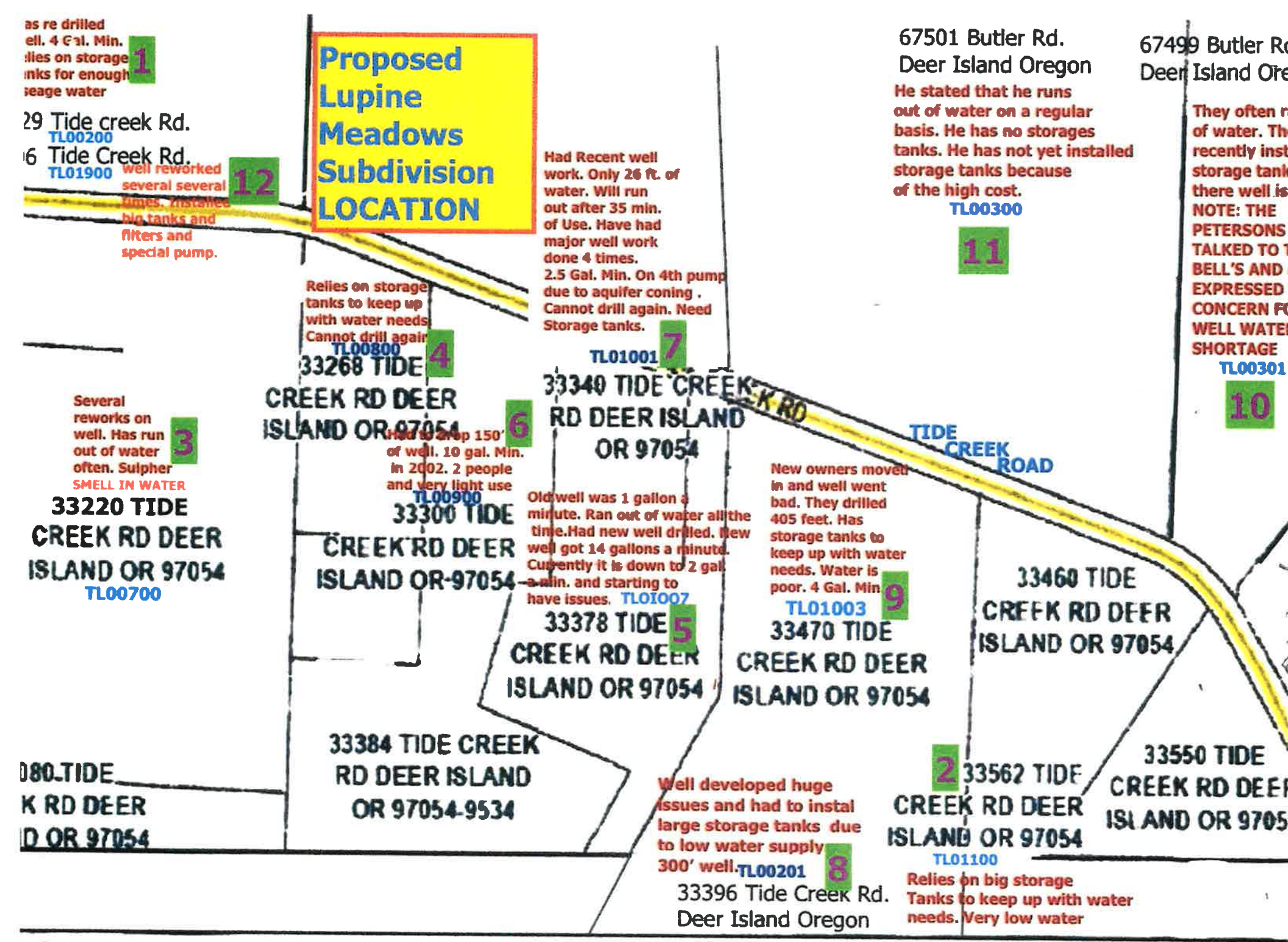
8 Tim Rose, 33396 Tide Creek Rd., has a large storage tank due to low water. **TL00201**

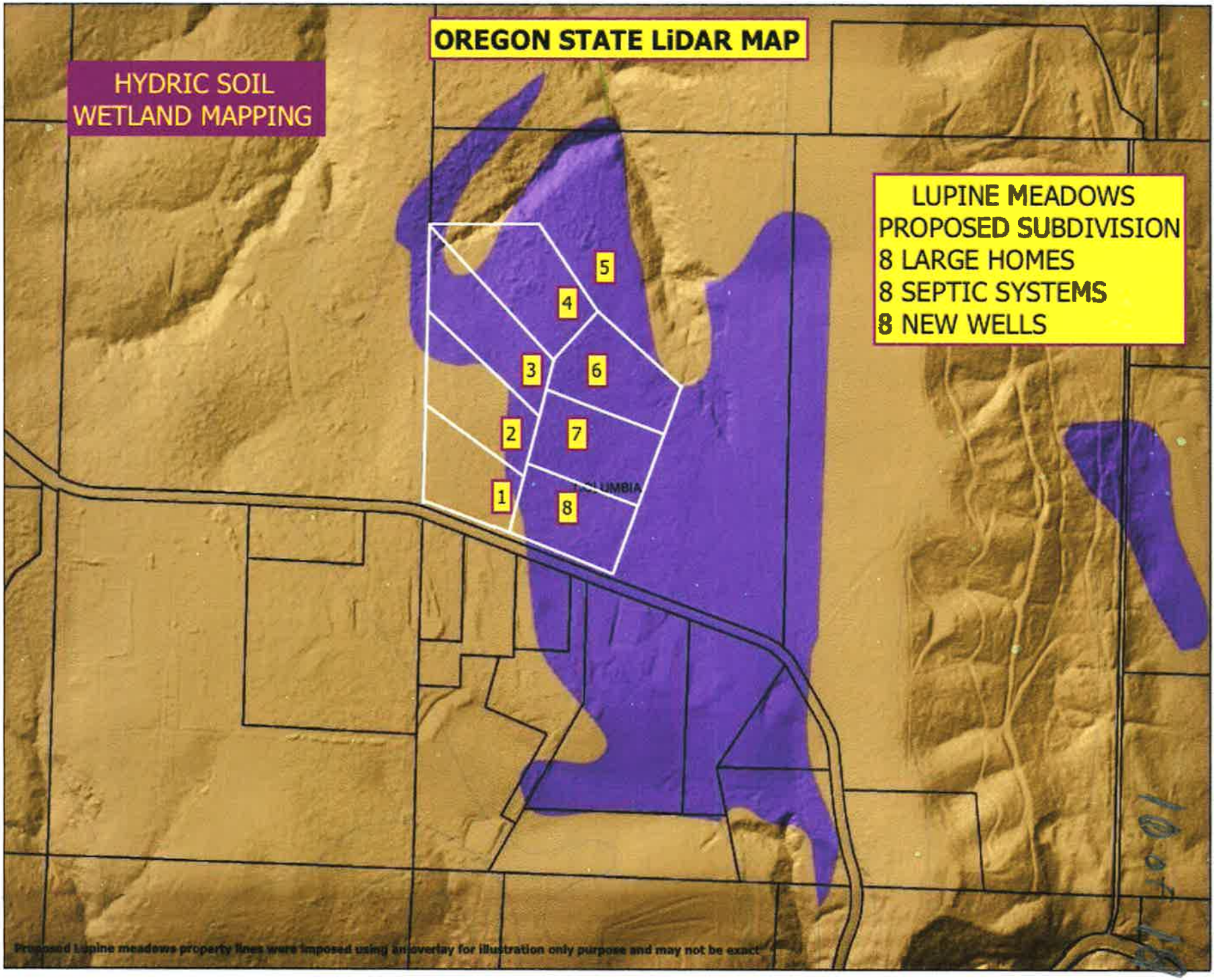
9 **Meador, 33470 Tide Creek Road. New property owner. They had to dig a new well. 405 ft. 4gpm. Poor water. They are on storage tanks to get enough water. TL01003**

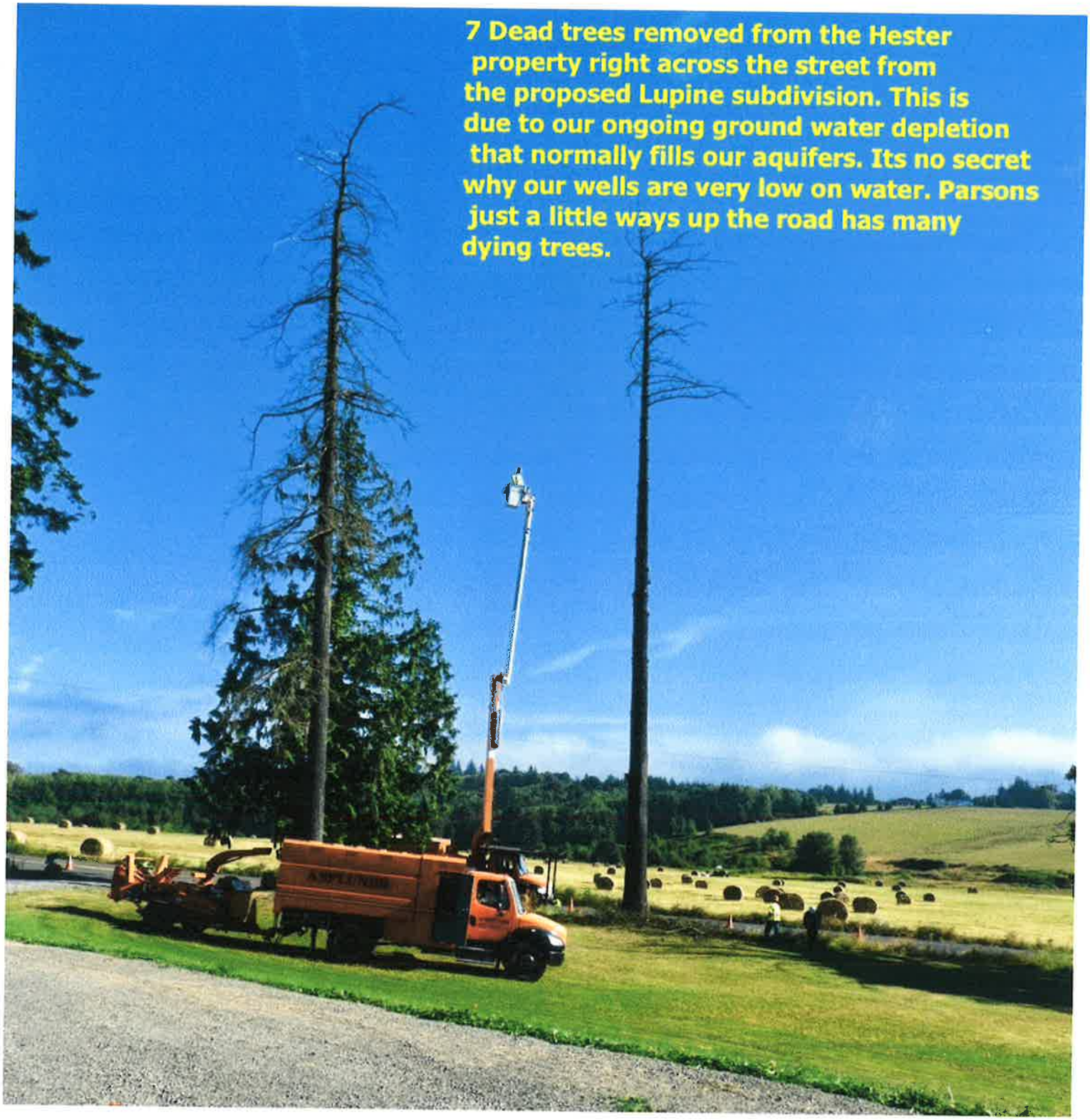
10 Sheila Bell, 67499 Butler Rd., They rely on newly installed water storage tank, before that they often ran out of water. Also the (Petersen's talked to the Bell's and also expressed their concerns about well water shortages). Well at 850' **TL00301**

11 Parlot, 67499 Butler Rd., He stated he runs out of water on a regular basis, he also has no storage tanks due to the 4100 cost of installation. **TL00300**

12 Hughes, 32506 Tide Creek Road. Ken has ran out of water often. He has had extensive well work done. He is now on big expensive tanks and a filtration system to handle bad water . About 3 gallons a minute but without tanks he runs out of water. **TL01900**



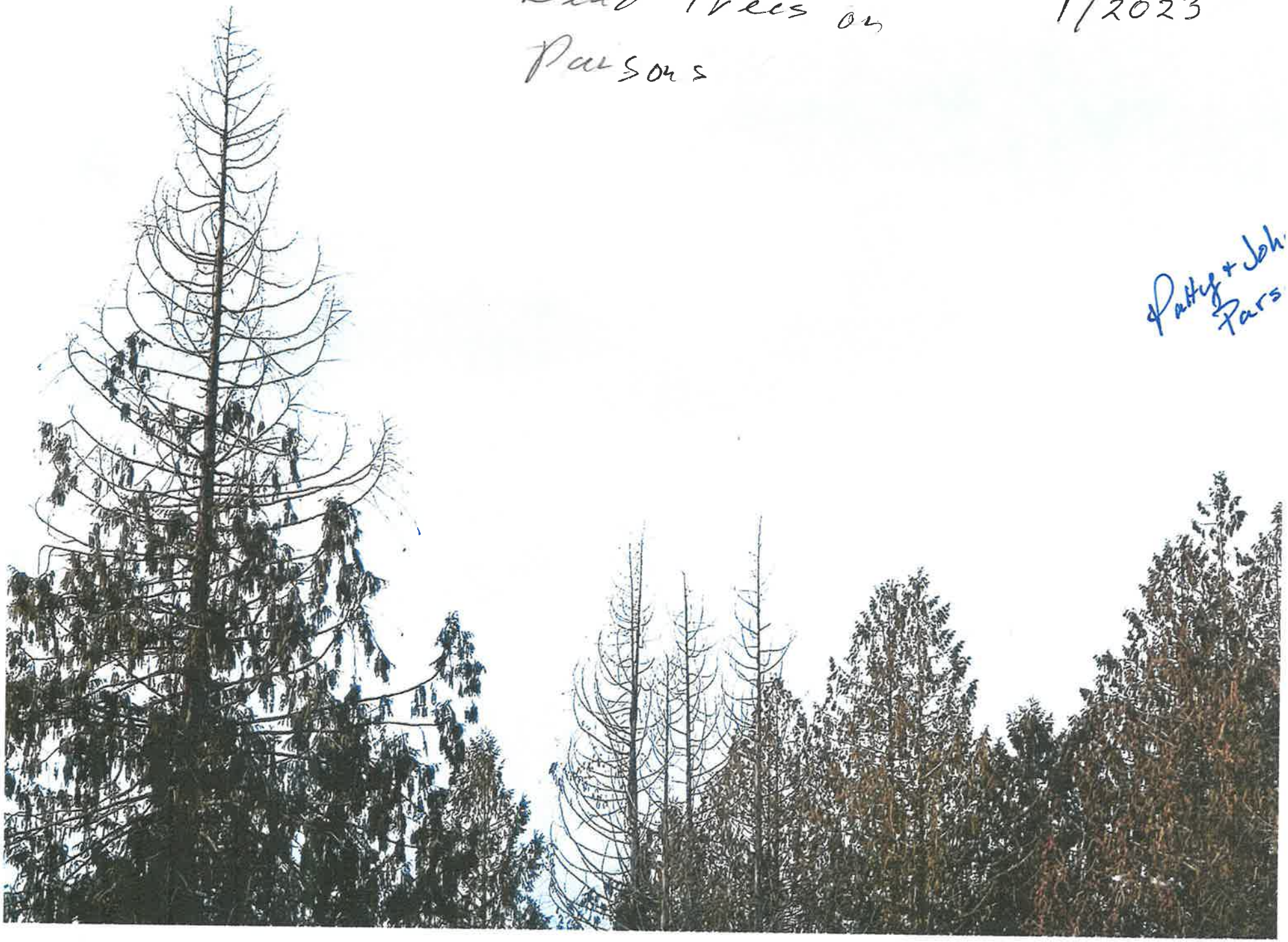

OREGON STATE LiDAR MAP
HYDRIC SOIL
WETLAND MAPPING
LUPINE MEADOWS
PROPOSED SUBDIVISION
8 LARGE HOMES
8 SEPTIC SYSTEMS
8 NEW WELLS
5
4
3
6
2
7
1
8
COLUMBIA
Proposed Lupine meadows property lines were imposed using an overlay for illustration only purpose and may not be exact


7 Dead trees removed from the Hester property right across the street from the proposed Lupine subdivision. This is due to our ongoing ground water depletion that normally fills our aquifers. Its no secret why our wells are very low on water. Parsons just a little ways up the road has many dying trees.

3322D Tide Creek

Dead Trees on Parsons 1/2023

Patty + John Pars



12 of 18

33220 Tide Cr. N
13 of 18
TL 00700
1/2023

a. Describe what happens to groundwater when the rate of pumping is less than the rate of infiltration.

The level of the water table drops a little, but overall it is fairly stable, and doesn't change much.

b. In this situation, how do you think water needs can be met over the long-term?

As long as rainfall and infiltration replenishes the groundwater faster than humans use it, the groundwater supply is reliable and steady. Groundwater is a renewable resource in this situation, and can meet water needs into the future.

c. Describe what happens to water levels when the rate of pumping is greater than the rate of infiltration.

The water table drops a lot, so much that some of the shallower wells run dry.

d. In this situation, how do you think water needs can be met over the long-term?

When infiltration is unable to replace groundwater as quickly as pumping removes it, the water table drops. Deeper wells could be dug to chase the table, but then the water table will just drop even further. Over the long-term, groundwater is a non-renewable resource in this situation, and won't be able to supply all the needed water.

The population will either have to reduce its water usage, or find other sources of water.

Overuse of groundwater can cause wells to dry up. This often leads to expensive and ultimately futile attempts to keep up with the dropping water table by drilling deeper and deeper wells. Other serious consequences can also follow groundwater overuse.

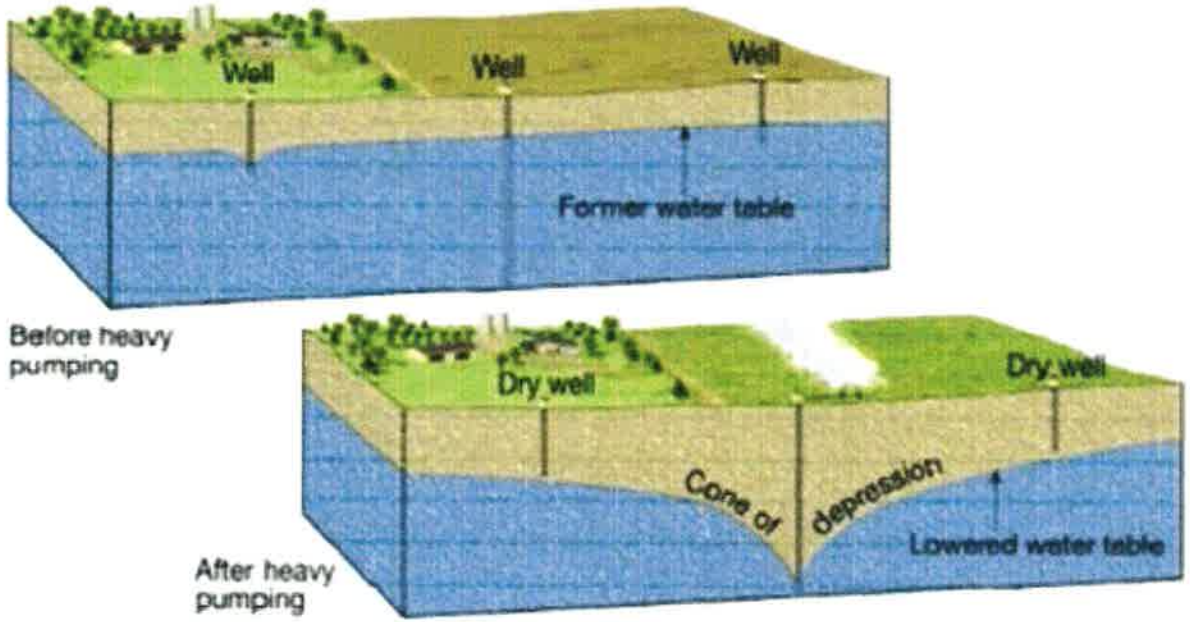
e. What happened to the stream as the water table dropped? What would have happened if that water body wasn't a stream, but an ocean?

Water was pulled out of the stream back into the groundwater as the water table dropped. If that had been an ocean, the water moving into the groundwater and into the nearby wells would be seawater. This would contaminate the water supply - salt water is toxic to land plants and animals, so it couldn't be used for drinking or irrigation, and it would harm machinery, so it couldn't be used industrially either.

When too much water is withdrawn from the ground, the land can collapse, a process called subsidence. When groundwater fills spaces in the soil, it supplies part of the internal strength of the ground. When the water is removed, leaving openings filled only with air, the weight of the overlying earth compacts and crushes the spaces.

EFFECT OF DEEPER WELLS

Formation of a cone of depression in the water table



NOTICE HOW A DEEPER WELL CAN RUIN NORMAL WELLS AROUND THEM

Figure 1. Formation of a Cone of Depression around a Pumping Water Well Source: Fayette County Groundwater Conservation District, TX

1504 18

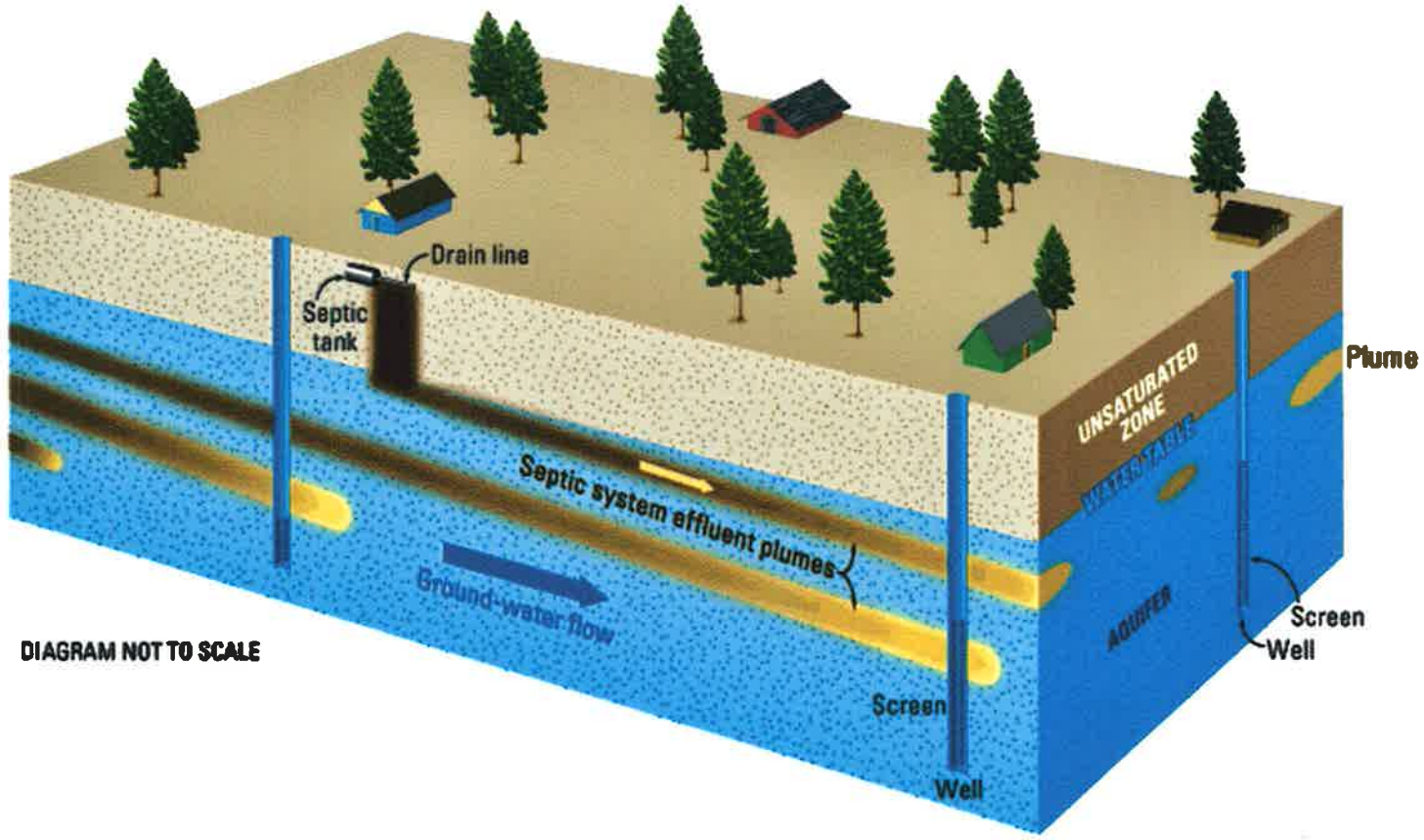


Figure 3. Wastewater from septic systems contains nitrogen in the forms of ammonia and organic nitrogen. As wastewater leaves the septic system drainfield and percolates through the unsaturated zone, these forms of nitrogen are converted to nitrate. When the wastewater reaches the water table it forms plumes of elevated nitrate within the aquifer. The plumes move downward with the ground water and slowly spread. Currently, relatively few wells have water with high nitrate concentrations because these plumes have not had time to reach the depths where most domestic supply wells draw water. As more homes are built, and as plumes move deeper and spread, many more supply wells will be affected.

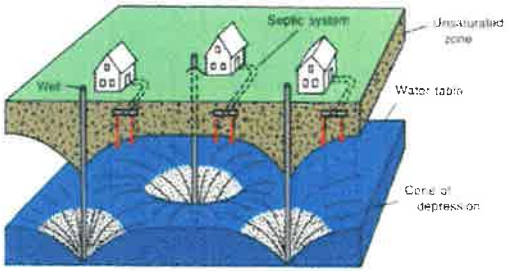
PLEASE READ THIS CAREFULLY. FROM USGS WEBSITE

by Roger M. Waller

This report is available in PDF format.

INCREASED PUMPING IN THE IMMEDIATE AREA

Another reason that wells "go dry" is the lowering of the water table by increased pumpage in the immediate area. Housing developments with small lots and individual wells have been built in many rural areas. If the aquifer is low yielding so that pumping causes a large drawdown, a cone of depression will develop around each well. Thus, several domestic wells close together can create a steady lowering of the water table if pumpage exceeds the natural recharge to the system (unless the withdrawn water is returned to the aquifer through septic systems). A third major reason that rural wells "go dry" is the installation of larger capacity wells for municipal, industrial, or agricultural purposes adjacent to residental areas. The increased withdrawals may cause large widespread cones of depression that intersect one another and cause general water-level declines that affect nearby domestic wells.



Effect of concentrated housing on ground-water level.

As you can see from this USGS report lowering our water tables from over-use and deeper wells from a neighboring subdivision can not only make our current shortages worse but can cause cones of depression around our wells and cause water to return to our aquifer from our septic systems. Compounding this scenario is the fact that all of our older homes in close proximity to the proposed subdivision have WELLS and SEPTIC DRAIN FIELDS way closer together then current laws allow. This damage is IREVERSABLE.

17 of 18

Driven wells are still common today. They are built by driving a small-diameter pipe into soft earth, such as sand or gravel. A screen is usually attached to the bottom of the pipe to filter out sand and other particles. Problems? They can only tap shallow water, and because the source of the water is so close to the surface, contamination from surface pollutants can occur.

Example of a pump and plumbing configuration used by public water systems. (Credit: Roland Tollett, USGS)

DRILLED WELLS

Most modern wells are drilled, which requires a fairly complicated and expensive drill rig. Drill rigs are often mounted on big trucks. They use rotary drill bits that chew away at the rock, percussion bits that smash the rock, or, if the ground is soft, large auger bits. Drilled wells can be drilled more than 1,000 feet deep. Often a pump is placed in the well at some depth to push the water up to the surface..Wells and Pumpage

Water Levels in Wells

Groundwater users would find life easier if the water level in the aquifer that supplied their well always stayed the same. Seasonal variations in rainfall and the occasional drought affect the "height" of the underground water level. Withdrawing water from a well causes the water levels around the well to lower. The water level in a well can also be lowered if other wells near it are withdrawing water. When water levels drop below the levels of the pump intakes, then wells will begin to pump air - they will "go dry."

Pumping a well lowers the water level around the well to form a cone of depression in the water table. If the cone of depression extends to other nearby wells, the water level in those wells will be lowered. The cone develops in both shallow water-table and deeper confined-aquifer systems. In the deeper confined-aquifer system, the cone of depression is indicated by a decline in the pressure and the cone spreads over a much larger area than in a water-table system. For a given rate of withdrawal, the cone of depression extends deeper in low-yielding aquifers than in high-yielding ones.

Even though water is present at some depth at almost any location, the success of obtaining an adequate domestic supply (usually 5 gallons per minute) of water from a well depends upon the permeability of the rock. Where permeable materials are near land surface, a shallow well may be adequate. Elsewhere, such as where clayey material directly overlies bedrock, a deep well extending into bedrock may be needed.

ATTACHMENT 2

Cutler Law Group LLC

Thomas H. Cutler

Email: thomas@cutlerlawgrp.com

Cutler Law Group, LLC | 15585 SE River Rd.| Oak Grove, OR 97267 | Phone: 503-888-9318

September 11, 2023

Columbia County Planning Commission

Re: Measure 49 Subdivision, Application No. S 23-01; Hearing, September 11, 2023

Dear Commissioners,

I represent Frank Hall and Gene Hester, neighbors residing across the road from the proposed new residential subdivision. I would like to offer response and input to the above application which I hope will be useful to the planning commissioners in handling and ultimately making a decision on the pending application.

First, A Measure 37/49 DLCD decision letter is not a free pass, nor does it imply a free ride. DLCD's letter opinion is just a provisional, conditioned approval allowing a successful claimant to proceed to apply for new residential lots and dwellings if all conditions of the letter (in compliance with Measure 37/49 requirements), all federal law requirements, and all state and local requirements reasonably necessary for protection of public health and safety are met. The applicant must, in this process, be required to make all improvements necessary to offset the added burden placed on surrounding properties, public systems and infrastructure and to ensure public health and safety. Unfortunately, the applicant has not yet met her burden and the hearing on this matter should either be continued to allow for the applicant and county staff to supplement and fully demonstrate satisfaction of all necessary requirements, or the present application should be denied and the applicant be allowed to apply again at a future date, if she believes she can satisfy all requirements necessary for citing a subdivision on this site.

It must be also noted at the outset that serious irregularities and questions appear to exist with respect to the deed records for the subject property and surrounding and already existing family owned lots. These issues are discussed in the submissions of Frank Hall, and below, but applicant should be allowed the opportunity to provide further evidence, to explain the facts and circumstances and to respond to the ownership timing questions so as to satisfy the board that she is truly entitled to the rights claimed in her application.

However, even if the applicant can demonstrate entitlement to 8 lots, and that she has a right to site all 8 on the proposed parcel, all standards relating to public health and safety still apply. Cite DLCD order and ORS and/or OAR,

Although not mentioned by the applicant nor staff in the staff report, Columbia County Zoning Ordinance section 1450 is triggered for this application and is fully applicable as an applicable approval standard, regardless of Measure 37/49 status or conditional DLCD approval because it is reasonably necessary to protect public health and safety. Section 1450 provides in relevant part:

> Transportation Impact Analysis: A Transportation Impact Analysis (TIA) must be submitted with a land use application if the proposal is expected to involve one or more of the conditions in 1450.1 (below) in order to minimize impacts on and protect transportation facilities, consistent with Section 660-012-0045(2)(b) and (e) of the State Transportation Planning Rule.
> .1 Applicability – A TIA shall be required to be submitted to the County with a land use application if the proposal is expected to involve one (1) or more of the following:
>
> > A. Changes in land use designation, or zoning designation that will generate more vehicle trip ends.
> > B. Projected increase in trip generation of 25 or more trips during either the AM or PM peak hour, or more than 400 daily trips.
> > C. Potential impacts to intersection operations.
> > D. Potential impacts to residential areas or local roadways, including any non- residential development that will generate traffic through a residential zone.
> >
> > ***
> >
> > F. The location of an existing or proposed access driveway does not meet minimum spacing or sight distance requirements, or is located where vehicles entering or leaving the property are restricted, or such vehicles are likely to queue or hesitate at an approach or access connection, thereby creating a safety hazard.
> > G. A change in internal traffic patterns may cause safety concerns.
> > H. A TIA is required by ODOT pursuant with OAR 734-051.

Any <u>one</u> of the conditions above trigger the need for a transportation impact study (traffic study). The applicant's subdivision application involves most if not <u>all</u> of the above. This application involves the functional equivalent of a change in zoning or land use designation for these proposed new lots from FA_80 to Residential. The addition of 8 new residential households would seem easily to exceed the 25 daily peak trip threshold

for triggering a full study. It would seem the addition of 8 households, and associated trips will easily impact both the local roadway and the operations of both the Tide Creek Road/Hwy 30 intersection and operations at the new intersection of Tide Creek Road and the new private road. It could well be that the location of an existing or proposed access driveway does not meet minimum spacing or sight distance requirements or will be located where vehicles entering or leaving the property are restricted, or such vehicles are likely to queue or hesitate at an approach or access connection, thereby creating a safety hazard. There will be brand new internal traffic patterns which should be assessed. Finally, although a TIA may not directly be required by ODOT, one could easily be triggered if the traffic engineer or the county determine that any changes will need to be made to the Hwy 30/Tide Creek Road intersection to safely accommodate traffic generated by the newly proposed subdivision.

The commission cannot legally not approve this application without requiring a TIA. Traffic safety concerns are extremely important, especially for the area in which the new subdivision is proposed. Gene Hester and other concerned neighbors provide evidence of both the very poor state of Tide Creek Road close to the proposed subdivision (See first and second pages of photos attached to this letter), but also the extreme danger at the Hwy 30/Tide Creek Road intersection (see third page of photos depicting the intersection and remaining evidence after yet another fatal crash there just last week). The intersection is extremely dangerous due to very poor current visibility and design, resulting in predictably numerous and regular accidents. At least 8 serous crashes and 11 total crashes at ofr near the intersection from 2016 through 2021 (See map and date compiled from ODot for this intersection) and another __ crashes in 2022, the last year data is readily available.

Section 1005 (a) cited by staff, but then not applied or required:
". . . no subdivision or partition shall be approved unless the development has at least 50 feet of frontage on an existing public street and otherwise complies with County Road Standards and Specifications in effect at the time of development . . .

Similarly under Section 1005 (h), if Tide Creek Road is an arterial (even a minor arterial), additional design elements, including prohibiting direct lot access, must be considered and possibly imposed in in the interests of public safety. Unfortunately, no traffic study has been required or volunteered, and it would be reckless to greenlight this project without a full TIA with analysis of the current and anticipated conditions and coming from the expertise of qualified traffic engineers.

With respect to irregularities in the deed records, without clarification and additional evidence from the applicant, it appears and may be that applicant never truly qualified for measure 37 relief on this parcel (Lot 400). DLCD merely indicated that county records reflect the applicant was the owner at the time of Making the M37/49 claims, and that according to county property records, the applicant "acquired" the property in 1965. DLCD made no finding of continuous ownership between 1965 and the present. The applicant for purposes of this present application submits a 1966 deed on which she apparently tries to claim ownership from before zoning was applied to the parcel, ignoring that she

supposedly already owned the property since 1965, ignoring the fact that the deed of record for the property was also created in 1966, and vested tile of record in the applicant's mother's name, not hers, for the intervening from 1966 to 2006! Without explanation, which opponents respectfully request from the applicant, the purported other 1966 on which applicant apparently now relies was not recorded until 2006 not long before the applicant asserted rights under M37. Utterly perplexing and potentially very problematic. See and compare all three deeds attached. The applicant must explain the existence, timing and circumstances surrounding the alleged execution and the recording of these deeds.

Similarly, irregularities appear to attend the deeds with respect to contiguous parcels and proper eligible lot count under the standards of Measure 49, which must be applied to the subject lot, and all contiguous lots as they existed at the time of the Measure 37/49 claims and authorization. Specifically, and as will be set forth in my clients' own submissions, the county property records seem to suggest that property in the same ownership at the time of DLCD authorization, i.e., Lot 401, et seq., was only recently transferred as separate lots to the applicant's son and daughter, i.e., in 2021 and 2022. If applicant held more than one existing lot as the property on which Measure 37/49 relief was sought, or if she owned any other property adjacent (touching, contiguous with such Measure 37/49 claim property) then those additional internal or contiguous lots must be considered and reduced from the number of lots and/or homesites available on Lot 400. Contiguous parcels/properties apparently existed at time of DLCD letter. 2021 and 2022 transfer into relative's names cannot create new rights to additional lots or homesites. Again, the applicant should be given an opportunity to explain the 2021 and 2022 transfers and the existence of other adjacent properties or additional or contiguous lots in the same ownership before those or any other transfer after the M37/48 claims were asserted and DLCD issued its letter. DLCD authorizations fully contemplate further proof and proceedings at the local government level, triggering the need for further analysis under Measure 37/49 and possibly resulting reduction of new lots and/or homesites tentatively permitted.

Inadequate water supply triggers also concerns for human safety in at least two ways, needed sufficiency for human hygiene and consumption and sufficient flow for fire suppression. It may be that only a neighborhood water system, with adequate flow for all residents and fire suppression purposes. Sufficient supply is not only essential for these new residents, but also for the existing residents once they are all pulling from the same strained groundwater aquifers. The well water sufficiency issues and serious non-considered realities are fully addressed in Frank Hall's submissions. Neither the well supply, the septic systems , perc tests, wetlands issues nor drainage issues should be deferred for later consideration or as delayed conditions. Clearly public health and safety issues are implicated and are relevant to the public hearing portion of this process.

The application fails to meet the applicant's burden of proof as presently submitted. Respectfully, as additional time is available on the 150-day clock, and in the interests of efficiency, the applicant should be given a postponement of this hearing of at least one month to provide a TIA and to provide additional evidence, explanations and argument supporting her application particularly as to all points raised above, if no postponement is made, the application should be denied and my clients ask for the record to be left open for 7 days for the submission of additional evidence and argument.

Thank you to all of the commissioners for their service, valuable time and attention to this matter.

Very truly yours,

___/S/_____
Thomas H. Cutler

Cutler Law Group LLC

Thomas H. Cutler

Email: thomas@cutlerlawgrp.com

Cutler Law Group, LLC | 15585 SE River Rd.| Oak Grove, OR 97267 | Phone: 503-888-9318

October 18, 2023

Hayden Richardson, Director of Planning
Michael Russell, Director of Public Works

Re: **Proper Scope of TIA; Measure 49 Subdivision, Application No. S 23-01; Original Hearing Date, September 11, 2023, continued to**

Dear Messrs. Richardson and Russel,

As you may know, I represent Frank Hall, Gene Hester, and John Parsons, neighbors residing across the road from the proposed new residential subdivision.

At the time of the opening of the public hearing on this matter on September 11, 2023 I indicated it would be improper to approve this project without a full TIA. Again, a transportation impact analysis is triggered in multiple ways under the Columbia County Zoning Ordinance section 1450, which is applicable, regardless of Measure 37/49 status or conditional DLCD approval. The TIA requirement is reasonably necessary to protect public health and safety.

We are pleased that the department of public works has formally required a TIA from the applicant but want to clarify the proper scope of the TIA required for the applicant to satisfy the code in the interests of public health and safety. As previously indicated. traffic safety concerns are extremely important, especially for the area in which the new subdivision is proposed. It will **not** be sufficient to conduct a partial or incomplete analysis of the impacts to the intersection operations of Tide Creek Road and Hwy 30, for example. Nor will the study be sufficient to satisfy the public health and safety concerns set forth in the code by ignoring the current and expected condition and impacts to Tide Creek Road approaching the proposed development from either direction, and/or all of the roadway between the proposed development and the intersection with HWY 30.

As to intersections, under Section 1450(C) a TIA addressing all "potential impacts to intersection operations" is required "in order to minimize impacts on and protect transportation facilities" and thereby protect public health and safety. There is no question the proposed 8-unit subdivision, with its assumed 9 additional trips per day, per

household (and the hundreds of additional heavy equipment and commercial vehicle trips necessary to develop and construct the 8 new dwellings) will impact not only the newly proposed intersection, but also the existing Tide Creek Roak/Butler Rd. and the very dangerous Tide Creek Road/Hwy 30 intersections. Due to the extreme danger at the Hwy 30/Tide Creek Road intersection (poor current visibility and design, resulting in predictably numerous and regular accidents, as documented and evidenced by opponents at the September 11 hearing and submissions both before and after the hearing. Again, at least 8 serous crashes and 11 total crashes at or near the intersection from 2016 through 2021 alone. Please review closely the attached pdf illustrations and additional testimony of Gene Hester of the exceptional dangers already existing and which would only be greatly compounded by the addition of 72 average daily trips, i.e., pdf labelled, "HWY 30 AND TC RD."

In light of the illustrations and clarifying testimony it should be abundantly evident that any study of impacts of the subdivision on the HWY 30 intersection must necessarily include the analysis of not only traffic turning left or right onto HWY 30 from Tide Creek Road but must also include a full analysis of traffic turning right, and most importantly, left onto Tide Creek Road from HWY 30. There is no left turn lane currently at this critical and dangerous juncture, and a significant number of added trips will undoubtedly involve access to the subdivision via HWY 30, left turn onto Tide Creek Road, and then maneuvering the rough and collapse prone conditions along Tide Creek Road to the newly proposed subdivision.

In short, the TIA should be sufficiently broad and comprehensive to satisfy both the county and ODOT in determining if any changes will need to be made to the Hwy 30/Tide Creek Road intersection to safely accommodate traffic generated by the newly proposed subdivision.

As to impacts on local roadways, under Section 1450(C) a TIA addressing all "potential impacts to residential areas or *local roadways*" is required, again, "in order to minimize impacts on and protect transportation facilities" and thereby protect public health and safety. As testified and demonstrated at the September 11 hearing and in subsequent submissions, Tide Creek Road is in horrible condition overall, require constant repairs, is subject to collapsing geological conditions, and is riddled with dangerous uneven surfaces. (See first and second pages of photos attached to my previous letter to the Planning Commission) In order to understand the severity and geological vulnerability of the area neighboring the proposed subdivision and through which Tide Creek Road passes, the county, the applicant and the applicant's expert should give special attention to the letters and testimony of the Michael Newton and Lowell Norbom recently submitted, which document the very serious geological settling and collapsing conditions they have and continue to experience living very close to the site and the adjacent Tide Creek Road..

In further support of these concerns, Gene Hester has prepared new illustrations, evidence and testimony clarifying the nature and extent of the road condition, the geological vulnerability of the area (including documenting, illustrating and summarizing the situations faced by the Newtons and Norboms), and making clear the potential impacts, health and safety concerns in adding eight newly proposed homes to this immediate area and having a greater volume of trips on Tide Creek Road. See pdfs files attached labelled. "Revised, Norbom Driveway, and Newton Well and Concrete."

In the name of public heath and safety, Mssrs. Hester's, Norbom's and Newton's concerns should not be ignored. The serious, well documented road conditions and related geological concerns of this immediate area should be taken into account. It may be that the County should study and establish a special geological hazard overlay for this area. As Mr. Hester suggests in his pdf materials, it may well be that the true safety of the serious Tide Creek Road conditions, and the true health and safety impacts of greater use of Tide Creek Road arising from this newly proposed subdivision can only be evaluated with a geotechnical study as part of, or in conjunction with the TIA.

In any event, even without the County adding an express hazard overlay or additional specific requirements to its code, this applicant, as any subdivision applicant must bear proportional responsibility for making all needed improvements to the Tide Creek roadway and all impacted intersections so that the transportation system **is** adequate and safe and **remains so** after constructing the proposed subdivision and 8 additional households are added. The TIA must be broad and comprehensive enough to properly ensure transportation safety and adequacy both now and into the future.

Thank you for your work, attention, and assistance in this very important matter.

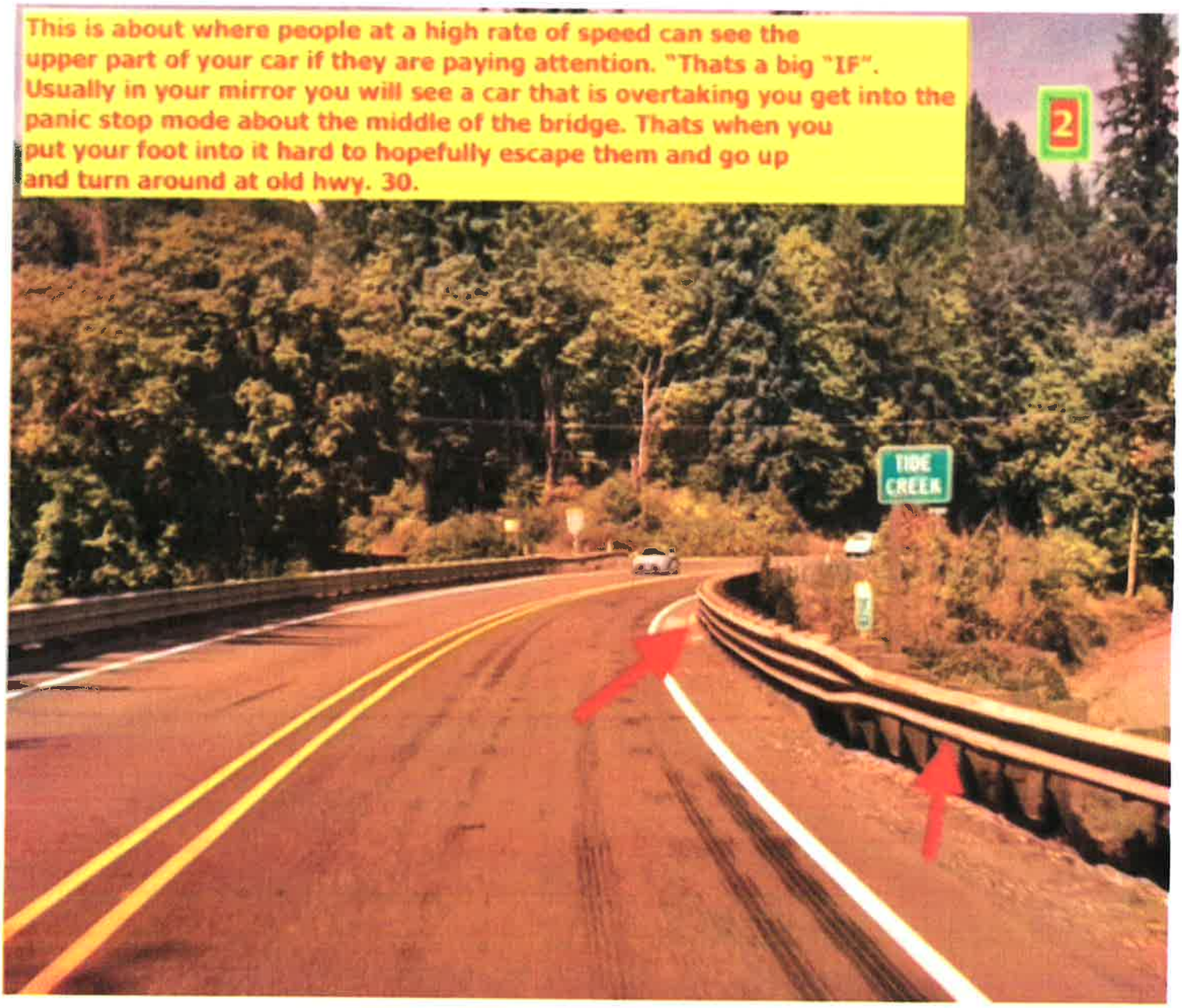
Very truly yours,

___/S/_____
Thomas H. Cutler

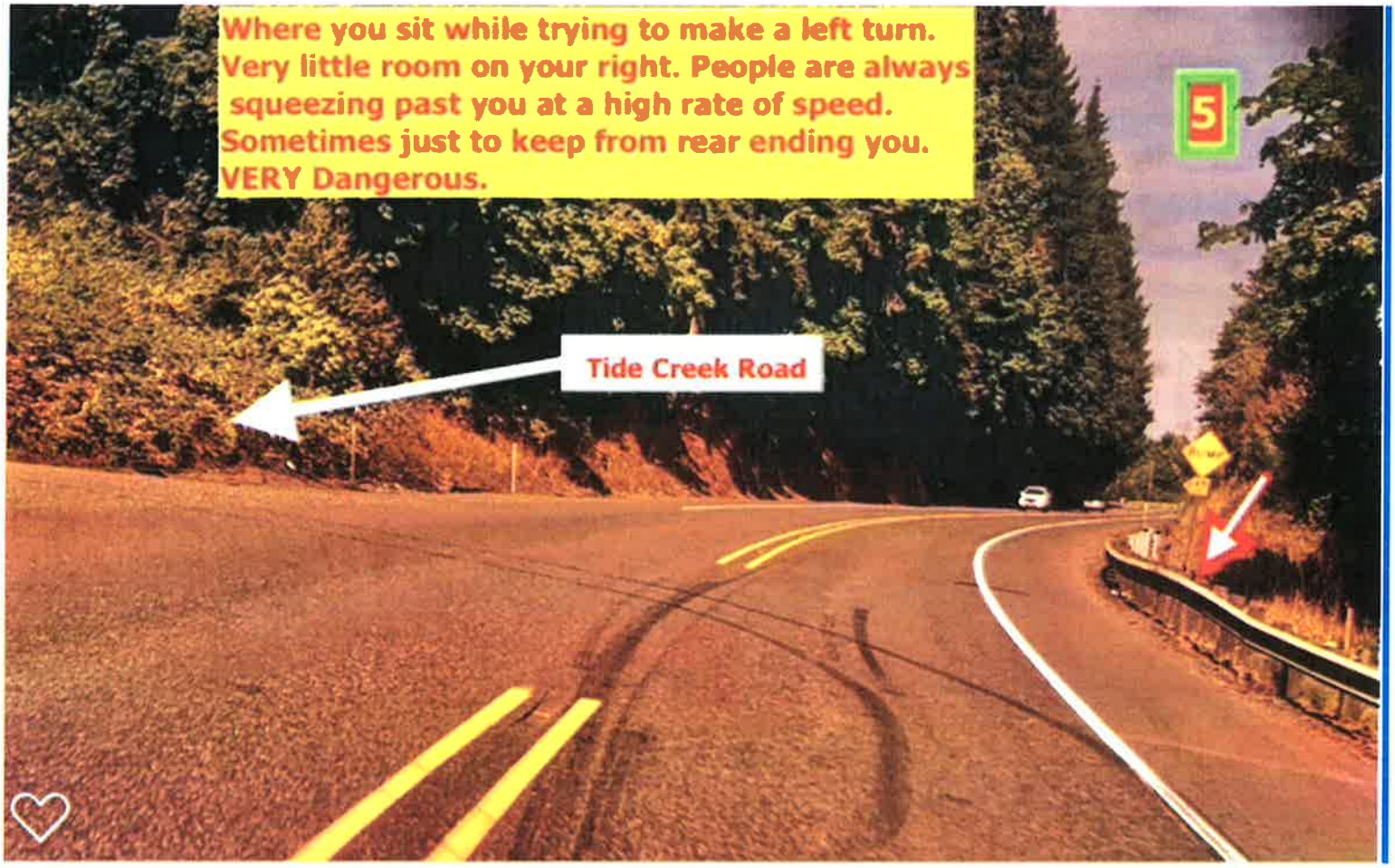
cc: Columbia County Planning Commission
Applicant

Westbound as You approach Tide Creek Rd. to turn left. The bridge curves to the right. If you have oncoming traffic and cars are close directly in back of you, you hope they will see your signal and brake lights . If you are sitting there waiting on the other side of the bridge and are awaiting oncoming traffic to finish going by..... The corner and the guardrail are hiding you .....traffic that does not know you are stopped here catches up to you and cannot stop in time. If there is enough room on your right side they escape around you. VERY dangerous.

Notice all of the rubber marks on the road. There is a continual ongoing supply of new tire tracks . Notice the beat up guardrails. There have been a lot of guardrail replacements. It is a very dangerous place to have to turn. If there is oncoming traffic a lot of us continue down the road a ways and turn around on the old hwy 30 . 3 of us have have been hit by a rear end collision here over the years.


This is about where people at a high rate of speed can see the upper part of your car if they are paying attention. "Thats a big "IF". Usually in your mirror you will see a car that is overtaking you get into the panic stop mode about the middle of the bridge. Thats when you put your foot into it hard to hopefully escape them and go up and turn around at old hwy. 30.
2
TIDE CREEK


3


Where you sit while trying to make a left turn.
Very little room on your right. People are always squeezing past you at a high rate of speed.
Sometimes just to keep from rear ending you.
VERY Dangerous.
Tide Creek Road
5

Fault line sink area crack that took out their well That goes across the upper end of Norbom family's home. One of many sink hole faults on Tide Creek Road. The areas are literally sliding off of the mountain. One long stretch is a sinking roller coaster all the way across the ridge.

****** NOTE ******

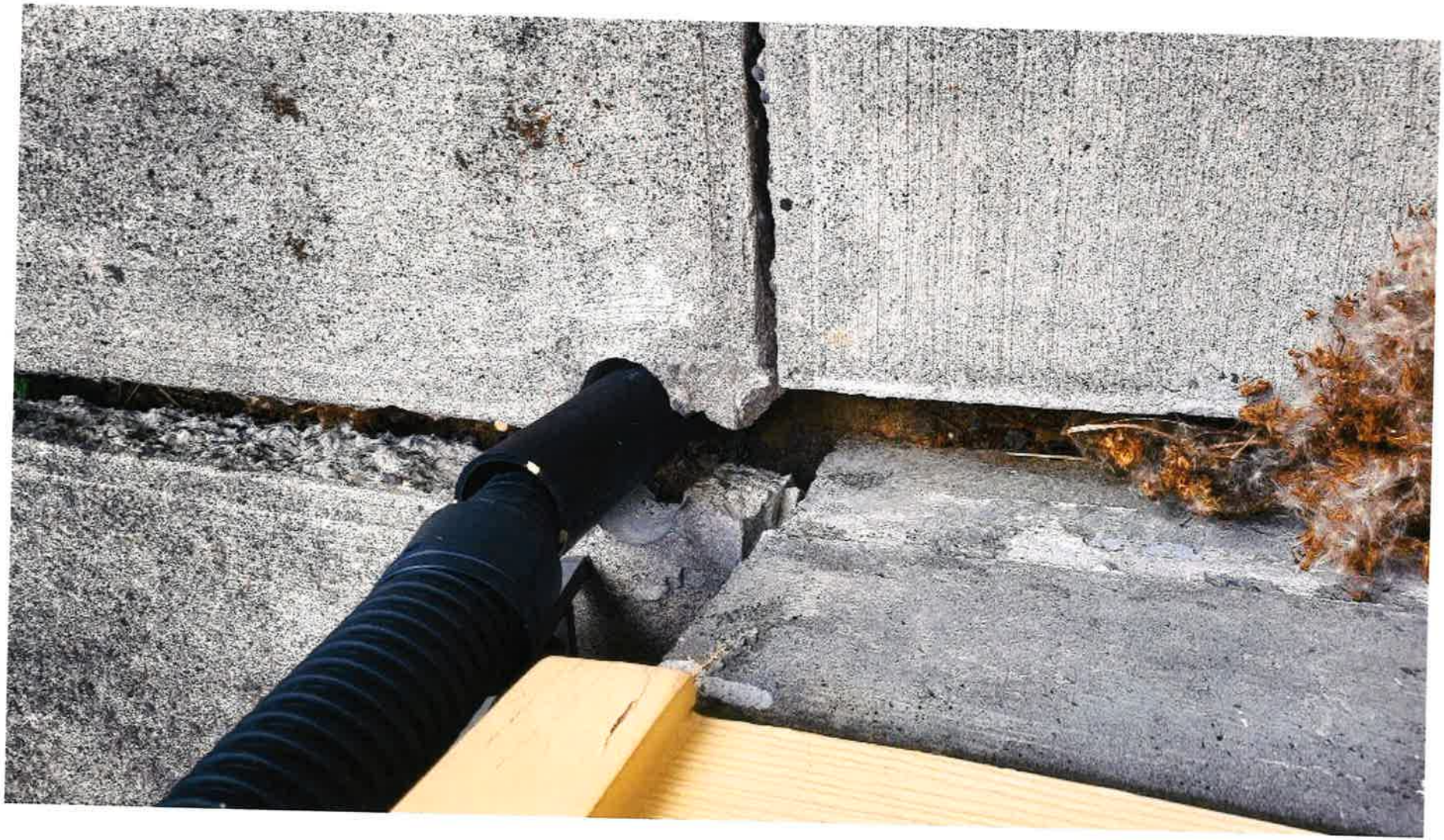
Frank Hall That lives up Tide Creek Road above this location stopped a logging operation on his property because the trucks were causing this fault to open up and the road to sink.

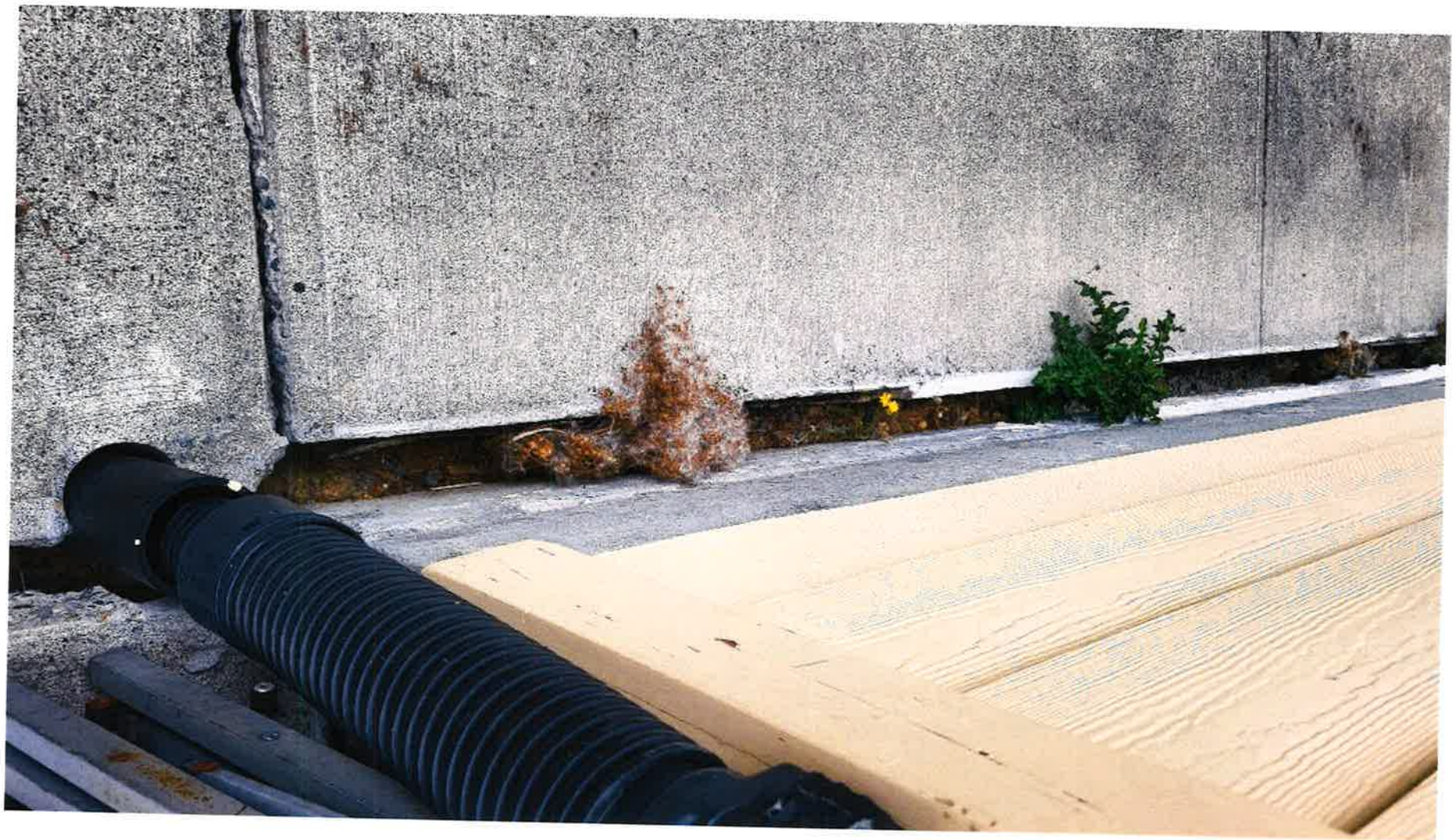
The Norbom Family had to put a new asphalt apron on their driveway because the County Road Department has had to put so much asphalt on Tide Creek Rd. to keep the fault sink hole level with the rest of the road. the Norbom's were having to get a run at the big hump. It is evident how much the road and their driveway sunk. The fault line leads to their nearby ruined well.

A TIA inclusive of a Geohydrologist and Geotechnical monitoring specifically aimed at Tide Creek Road and the homes and issues of 33783 and 33660 located on Tide Creek Rd. should be done now that all are aware of these easily documentable issues.

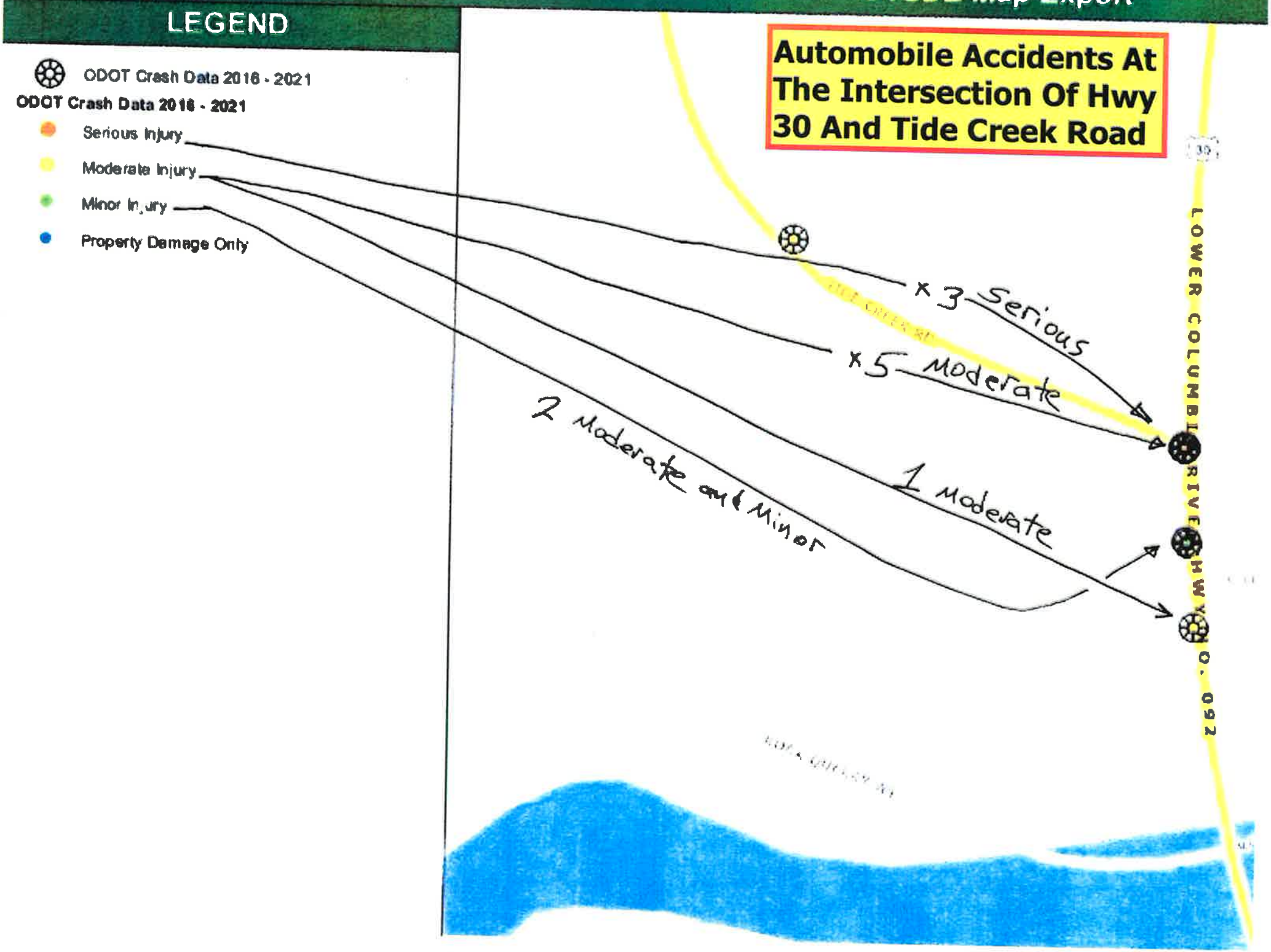
Mick Newtons concrete all around his house has pulled away from the foundation and is heaving up from earth movement. All of his downspouts have been moved.

Mick Newton has had his water feed line from his well head to his house pull apart 3 times because of earth shifting/ movement. 2 times it pulled away from his well head and 1 time it pulled apart under ground.





OTSDE Map Export



ATTACHMENT 3

Jake Renney

From: Mary Anne Anderson <maryanne.anderson@ymail.com>
Sent: Thursday, August 10, 2023 4:37 PM
To: Jake Renney
Cc: Amy Herzog; Hayden Richardson; Deborah Jacob; Agnes M. Petersen
Subject: Re: THANK YOU. And, request to remove item 10.j. from list of approval criteria

Meant to include this part of the message from NW Natural:

The gas availability request for this address indicates, based on the distance to our nearest gas main, we cannot provide gas service to this location at this time. NW Natural is always exploring new areas for expansion of our infrastructure.

To help NW Natural monitor interest in your area, we encourage you to register your interest by contacting a NW Natural representative. Your information will be stored in our database for any notification of potential expansion of our service network.

Mary Anne Anderson
VanNatta, Petersen & Anderson
P.O. Box 748
St. Helens, Oregon 97051

503.397.4091

On Thursday, August 10, 2023 at 04:32:00 PM PDT, Mary Anne Anderson <maryanne.anderson@ymail.com> wrote:

Dear All,

I just want to thank you for your timely and thorough Staff Report on Lupine Meadow, S 23-01. I know it was / is a lot of work and appreciate the time and effort by all of you at LDS.

We are already hard at work to address the items that need addressing.

I am unclear why there would be a requirement for a "will serve" letter from NW Natural Gas in this area as there is no natural gas available anywhere near Tide Creek Road.

I did, just to be sure of this, go onto NW Natural Gas's web page and run a Gas Service Availability request at 33625 Tide Creek Road. The response from NW Natural Gas (copied below) says
"Unfortunately, it appears that gas service is not available in your area."

Based on this, Applicant requests removal of item "10.j" from the conditions of approval.

Applicant will address other concerns at the hearing -- but for the most part, those are few and far between.

Thank you again for all your hard work on this.

Mary Anne Anderson
on behalf of Agnes Marie Petersen, Applicant and Owner.

Gas Service Availability

33625 Tide Creek Rd, Deer Island, OR 97054, USA

"I want natural gas service in a single family residence that does not currently have natural gas."

Unfortunately, it appears that gas service is not available in your area.

Back

Mary Anne Anderson
VanNatta, Petersen & Anderson
P.O. Box 748
St. Helens, Oregon 97051

503.397.4091

AUG 29 2023
Land Development Services

To: Columbia County Planning Commission

Date: August 29, 2023

Re: S 23-01 Lupine Meadow – Removal of Certain Conditions of Approval
(as listed in August 10, 2023 Staff Report)

First, thank you to Columbia County LDS staff – and in particular to Jake Renney – for the effort compiling the S 23-01 August 10, 2023 Staff Report. It is obvious Mr. Renney spent a good deal of time writing the S 23-01 Staff Report and we appreciate its clarity and readability.

Applicant has identified three necessary revisions to Conditions of Approval in the August 10, 2023, S 23-01 Staff Report:

(1) Removal of Condition 10.d. (page 48 of 50).

(2) Removal of Condition 10.i. (page 48 of 50) and Condition 12.e. (page 49 of 50) In place of Condition 12.e., Applicant proposes a new Condition 12.e. (below).

(3) Removal of Condition 10.j. (page 48 of 50).

As explained below, Conditions 10.d., 10.i., and 12.e. are not properly imposed on Applicant's Measure 49 land division request. Condition 10.j. is one which is also inappropriate because it requires something that cannot be obtained from the local utility service and is not necessary to build on the lots as proposed. In order of appearance in the August 10, 2023 Staff Report, here are Applicant's requested deletions and revisions:

1. **Remove all statements (page 3 of 50) and the condition (Condition 10.d., page 48 of 50) purporting to require Applicant to remove her property from special farm use assessment before final plat approval.**

   Imposing inapplicable criteria on a land use approval is reversible error. *Beaver State Sand & Gravel, Inc. v. Douglas County*, 43 Or LUBA 140, 165 (2002). Nothing in the CCZO or the CCSPO purport to grant the Planning Commission – or indeed the County Commissioners – authority over taxing decisions. Nor do the CCZO or the CCSPO – which govern approval of Applicant's land division request – allow the Planning Commission or Board of Commissioners to condition approval of a Measure 49 land division application on Applicant removing her property from a tax status which the law so clearly entitles her to retain. The comments submitted into the record cite no authority

for imposing this condition, and indeed the law prohibits the imposition of this condition on Applicant's request for a land division premised upon Measure 49.

ORS Chapter 308A, (the statutory provisions regarding special assessments, including farm use special assessments), makes clear that the County has no authority to require Applicant to remove her property from special assessment before a final plat approved. Instead, the Measure 49 landowner is entitled to retain the special farm use assessment status unless and until the property is removed from farm use. Applicant is not removing her property from farm use and indeed may never do so.

This land division request is under Measure 49. Applicant is entitled – at a bare minimum – to retain the special assessment status on Tax Lot 400 until the year following the event which allegedly causes it to become disqualified because qualification for special assessment is determined as of the January 1 assessment date. ORS 308A.062. The law expressly allows Tax Lot 400 to retain special assessment status much longer – but (again at a minimum) this provision is entirely inconsistent with requiring removal of the special assessment status before the county approves the final plat. If, in the future, Applicant or a subsequent owner takes action on the property which is inconsistent with farm use, then the assessor may well remove a portion of the property from special assessment, but the mere act of obtaining approval to divide the property under Measure 49 is not such an action.

Two provisions of ORS Chapter 308A discuss disqualification of farmland from special assessment status, depending on whether the property is in an exclusive farm use zone. *See* ORS 308A.113 (exclusive farm use zone farmland); ORS 308A.116 (nonexclusive farm use zone farmland). The uses on Tax Lot 400 are governed by the exclusive farm use rules in the PA-80 zone, an exclusive farm use zone, because Tax Lot 400 has been used exclusively for farm use for well over 50 years. Nothing in those statutes requires an applicant for a Measure 49 land division to remove agricultural lands from special assessment status before dividing them.

ORS 308A.113 permits the assessor to disqualify property for special assessment for a variety of reasons, including no longer using the property as farmland, removing the land from an exclusive farm use zone, or establishing a non-farm dwelling under ORS 215.236. However, none of those provisions is applicable to Applicant's request for a land division under Measure 49, particularly where Applicant has not yet applied to build a dwelling or non-farm structure of any kind. And, again, under ORS 308A.062, that

assessment decision is made by the assessor on January 1 of the year following the action which allegedly causes the disqualification, not by the LDS office, Planning Commission, or Board of Commissioners in conditions of approval on the land division request.

ORS 308A.116 makes the act of "recording a subdivision plat under the provisions of ORS chapter 92" a basis for disqualifying non-exclusive farm zone property from a special assessment. However, use of that provision as a basis for Condition 10.d. is inappropriate for two reasons. First, Applicant disputes that ORS 308A.116 applies to Tax Lot 400 and is entitled to challenge that finding (if it is made) with the tax assessor. Second, even if it were found to apply, it is applicable only ***after*** "[t]he act of recording a subdivision plat." It certainly does not grant the County the authority to require removal of the property from a special assessment in the context of a land use decision "***prior*** to acceptance and approval of the Final Plat."

This application must be reviewed based on those Measure 49, zoning, and subdivision criteria that actually apply. Those criteria are found in Applicant's Final Order and Home Site Approvals and certain sections of the CCZO and CCSPO. Nothing in those orders or ordinances permits the County to become entangled in or make decisions about the assessment status of Applicant's property. Applicant is entitled to rely on the state statutes which govern taxation of her property, and state law sets out both the procedure for removal of a special assessment status, and the Applicant's rights of appeal of any such decision. Notably, those procedures involve the assessor and the taxpayer, not the LDS, the Planning Commission, or the Board of Commissioners. Neither the CCZO nor the CCSPO override state taxing laws and Applicant's land division request and approval of the final plat may not lawfully be conditioned upon requiring her to remove her property from special farm use assessment "prior to acceptance and approval of the Final Plat." Accordingly, Condition 10.d. must be removed as a Condition of Approval.

2. **Remove all statements (page 3 of 50) and the conditions (Condition 10.i. (page 48 of 50) and Condition 12.e. (page 49 of 50)) that require Applicant to either drill wells on every proposed lot before approval of the final plat or to identify particular shared-well arrangements on the final plat.**

Neither the CCZO nor the CCSPO require an applicant for a final plat to definitively prove up a water supply on every individual lot or commit to a specific shared-well arrangement prior to final plat approval. Instead, the Applicant's obligation under CCSPO § 1013(D) is merely to show "adequate *potential* for water at the site" by drilling

test wells or by submitting well drilling logs from the area. Applicant has clearly done that. Well logs confirm a 70 GPM water supply collectively available on Lots 1, 2, and 8. That is sufficient for a total of 22 individual home sites under the FHA's lending requirements for proposed dwellings. *See* https://www.fha.com/fha_article?id=600 (3 GPM for shared wells; here, each of the two wells with yields of 25 GPM can serve eight lots, and the well with a yield of 20 GPM can serve six lots).

Similarly, nothing in the CCSPO requires applicant to drill wells on every individual lot or to finalize plans for shared-well systems prior to final plat approval. CCSPO § 511 merely requires "[w]ritten proof of available water supply adequate to serve water on each lot . . . prior to approval of the final plat by the County." As discussed above, Applicant has established proof of available and adequate water supply to serve each of the five remaining lots (Lots 3, 4, 5, 6, and 7) by drilling three wells on site (Lots 1, 2, and 8) which collectively yield water at a rate of 70 GPM. Thus, both the CCZO and the CCSPO entitle Applicant to approval of her final plat based on the water supply information she has already provided. Applicant is entitled to have her final plat approved without first drilling wells on every individual lot or determining which lots, if any, will have shared wells. Condition 10.i. should therefore be deleted from the Conditions of Approval.

To alert subsequent owners of the need for a proven water supply, the County may, of course, require a statement on the final plat regarding which lots have no proven water supply. The County requires identification of location of approved means of water supply for partitions "*if known*." *See* CCSPO § 602(A)(7) (for major partitions, tentative map must include "location of approved means of water supply for each lot . . . *if known*." (emphasis added)); CCSPO § 702(A)(7) (same requirement for minor partition). There is no requirement to identify the particular source of water for every parcel or lot in advance of the land division for partitions or for subdivisions. Instead, the subdivision portions of the CCSPO merely require proof of adequate water to serve the proposed number of lots, and, for partitions, the requirement to note the location of the water source is only required "*if known*." Read collectively, the CCZO and CCSPO clearly allow land divisions without the applicant going to the trouble and expense of drilling numerous additional wells or determining all the details of a shared-well arrangement. That is appropriately part of the building permitting process, not the preliminary request for a land division. Applicant has established proof of water supply adequate to serve 22 residential lots – nearly three times the number of lots requested. This satisfies CCZO §1013(D) and CCSPO § 511.

To alert subsequent lot owners of the need for a proven water supply, the County may require a statement on the final plat. The County may also condition approval of a County building permit on establishing a means of water supply for Lots 3, 4, 5, 6, and 7. Thus, Applicant proposes the following new Condition12.e. and new Condition 13.b.:

. . . the following shall be included on the Final Plat: (Condition 12.e.) A statement that: "Lots 2, 3, 4, 5, 6, and 7 do not have a proven water supply. A building permit for an individual lot may be issued only when a water supply is established by either: (1) drilling a well and recording the well log with the Oregon Water Resources Department ("OWRD") and providing a copy of the well log to Columbia County LDS; or (2) recording the necessary waterline easement(s) for a shared well for the individual lot and providing a copy of the recorded easement(s) to Columbia County LDS for inclusion in File S 23-01."

Before a building permit may be issued for any individual lot resulting from this subdivision: (Condition 13.b.) The individual lot must have a proven water supply established by either: (1) submission of a well log recorded with OWRD to Columbia County LDS; or (2) submission of recorded waterline easement(s) for a shared well serving the lot to Columbia County LDS for inclusion in File S 23-01.

3. **Removing all statements (page 28 of 50) and the condition (Condition 10.j., page 48 of 50) that Applicant submit a will-serve letter from NW Natural Gas.**

NW Natural Gas will not serve homes on Tide Creek Road as their facilities are too far away. Inputting addresses along Tide Creek Road onto the NW Natural Gas web page to determine if service is available results in a response that: "The gas availability request for this address indicates, based on the distance to our nearest gas main, we cannot provide gas service to this location at this time."

Addresses all along this stretch of Tide Creek Road result in the same statement. It appears that the nearest gas line is along Highway 30, about 1.3 miles from Tax Lot 400. https://www.oregonlive.com/environment/2016/11/post_50.html As a result, (Condition 10.j., page 48 of 50) should be removed as a Condition of Approval.

Thank you so much for your time and attention.
Mary Anne Anderson on behalf of Applicant, Agnes Marie Petersen

Deborah Jacob

From: Mary Anne Anderson <maryanne.anderson@ymail.com>
Sent: Monday, October 30, 2023 5:18 PM
To: Deborah Jacob
Cc: Agnes M. Petersen; Al Petersen
Subject: County Water Supply Requirements (Conditions of Approval re: S 23-01)

Good afternoon Deb,

I wanted to take a moment to further clarify our position that Applicant has met all requirements with regard to water supply in order to obtain final plat approval. As you will no doubt recall, in the Amended Staff Report issued three years ago on 9/25/2020 (regarding S 20-01), Finding 27 carefully reviewed the submitted well log data and the rules governing water use in Oregon and concluded "Under the existing provisions in Section 404(A) as well as these exempt uses of the Oregon Water Law, the applicant's submittal of 8 well logs satisfies the minimum requirements for proposed Lupine Meadow Subdivision." Amended Staff Report (S 20-01), p. 31 of 51. Finding 24 also noted that the "actual locations of dwellings and wells can only be determined at the time of building permit issuance." *Id*, p. 27 of 51. To ensure that a building permit would not be issued without a confirmed water supply, the Amended Staff Report (S 20-01) included a condition requiring the final plat to include a statement that "Approved potable water supplies have not been demonstrated for [] Lots 1 - 5." *Id.*, p. 31 of 51.

There has been no change to the applicable water supply requirements since then. Not only do the same well logs satisfy the minimum requirements for this application (S 23-01), but Applicant has now drilled three wells directly on site. These three test wells each yield water at between 20-25 gpm. In addition, Applicant recently submitted a Water Availability Report from Arthur McMullen of McMullen Well Drilling Corp. who provides the well log numbers, depth, and yield of those three wells, and opines that the site "has available water adequate to serve the eight (8) lots proposed at Lupine Meadow." Water Availability Report dated 10/27/2023.

The August 10, 2023 Staff Report on S 23-01 (Finding 37) incorporates requirements that Section 511 does not in fact require, namely that final plat approval should be conditioned on either drilling wells on each proposed lot (five additional wells) or including waterline easements and well maintenance agreements with the final plat. This puts the proverbial cart (site plan and issuance of a building permit) before the horse (final plat approval). The timing of those requirements is in error.

Just as found in the Amended Staff Report (on S 20-01), Applicant will only finalize site plans for particular lots after final plat approval (but before application for/issuance of a building permit). As a protective measure for those lots that do not yet have a well, Applicant has no issue with including the same condition that was proposed with regard to S 20-01, which would require a notation on the S 23-01 final plat that "Approved potable water supplies have not been demonstrated for Lots 3-7." (S 23-01 Lots 1, 2, and 8 already have wells). Applicant also takes no issue with a condition that issuance of a building permit will require that the applicant identify the water source for the lot for which a building permit is sought and secure that water source (either by drilling a new well, or filing and recording such documentation (waterline easements and/or well maintenance agreements) as is necessary for a shared well).

We appreciate your attention and time and hope that you will craft conditions which do not require the Applicant to jump through hoops that do not exist in the County's ordinances and also do not make sense from a development perspective.

Many thanks,

Mary Anne Anderson
on behalf of Applicant, Agnes Marie Petersen

VanNatta, Petersen & Anderson
P.O. Box 748
St. Helens, Oregon 97051

503.397.4091

Deborah Jacob

From: Mary Anne Anderson <maryanne.anderson@ymail.com>
Sent: Monday, October 30, 2023 12:42 PM
To: Deborah Jacob; Amy Herzog; Hayden Richardson
Cc: Agnes M. Petersen; Al Petersen
Subject: 10/27/2023 Water Availability Report; S-23-01 Lupine Meadow
Attachments: 10272023.Lupine.Meadow.Water.Availability.Report.pdf

Dear Land Development Services,

Attached, for submittal into the record on S 23-01, is a Water Availability Report dated 10/27/2023, from Arthur McMullen of McMullen Well Drilling Corp.

This report, along with the well logs previously submitted, satisfies all requirements relating to water supply -- namely CCSPO Sections 511 (requiring a showing of "adequate potential for water at the site") and 1013(D) (submittal of ("[w]ritten proof of available water supply adequate to serve water on each lot.").

Based on this Water Availability Report and the well logs previously submitted, Applicant requests the LDS staff find that Applicant has satisfied both of these standards and remove any pre-final-plat condition requiring additional well drilling or recording of waterline easements and/or well maintenance agreements prior to final plat approval, as no such pre-final-plat requirement appears in state law or any applicable Columbia County ordinance.

Applicant takes no issue with a condition that would require Applicant, when applying for a building permit on a Lots 3, 4, 5, 6, or 7 (which do not currently have wells) be required to identify the water source for that lot and secure that water source (either by drilling a new well, or filing and recording

such documentation (waterline easements and/or well maintenance agreements) as is necessary for a shared well) before a building permit may be issued on that particular lot.

Sincerely,

Mary Anne Anderson
on behalf of Applicant, Agnes Marie Petersen

Mary Anne Anderson
VanNatta, Petersen & Anderson
P.O. Box 748
St. Helens, Oregon 97051

503.397.4091

ATTACHMENT 4

Jake Renney

From: Andrea Jurkiewicz
Sent: Tuesday, August 29, 2023 10:51 AM
To: Hayden Richardson
Cc: Jake Renney; Suzie Dahl; Spencer Parsons; Department-Counsel
Subject: Re: S 23-01 Comments from applicant

Good morning!

I left a voicemail but wanted to follow up with an email.

The key piece of information here is that Planning is looking at this as EFU land. We have never assessed this as EFU land. It has always been assessed as Non-EFU. As the applicant stated, non-efu land is what is affected by 308a.116 and I was relying on my records when I made that note.

So, if Planning is considering this as EFU land, then the requirement to disqualify and pay back taxes can be removed. EFU land can only be disqualified under one of 3 ways:

1. No longer farm land/no longer in use as farm land
2. Removed from an EFU zone
3. Establishing a non-farm dwelling

Simply recording a subdivision is not a requirement of EFU. It is only a requirement for non-efu. The confusion comes in when our records indicate the property as non-efu and Planning recognizes it as EFU (when the zoning is FA80).

All of this to say, it is okay to remove the note from the planning piece and let them know that DQ and tax collection is not required since the land is considered EFU even though it isn't strictly zoned EFU.

Hope this clears up any confusion. I am happy to attend the meeting if you think it would be beneficial. Just let me know.

Thanks,
Andi

Andrea Jurkiewicz
Columbia County Assessor

www.columbiacountyor.gov
503-397-7413
Office Hours: Tuesday- Friday 7am-5pm

Service ~ Engagement ~ Connection ~ Innovation

From: Hayden Richardson <Hayden.Richardson@columbiacountyor.gov>
Sent: Tuesday, August 29, 2023 8:55 AM
To: Andrea Jurkiewicz <Andrea.Jurkiewicz@columbiacountyor.gov>

Cc: Jake Renney <Jake.Renney@columbiacountyor.gov>; Suzie Dahl <Suzie.Dahl@columbiacountyor.gov>; Spencer Parsons <Spencer.Parsons@columbiacountyor.gov>; Department-Counsel <department-counsel@columbiacountyor.gov>
Subject: S 23-01 Comments from applicant

Hi Andi,

I just wanted to keep you in the loop on this one. We have received comments back from the applicant of the Subdivision request out on Tide Creek Road which specifically address the comments that you had submitted (attached). Please see #1 in the applicant's response.

At this point, I don't think it is a huge deal for that condition to be taken out (at least from Planning's perspective) since your office has a chance to review and approve the Final Plat prior to recordation. However, if you would like to respond or participate in the hearing on September 11th, you are more than welcome to.

Let me know if you would like to discuss this and talk possible avenues to address this.

Thanks!

Hayden Richardson
Planning Manager
(503) 397-7216
Hayden.richardson@columbiacountyor.gov
445 Port Ave, St. Helens, OR 97051

Please note:
Land Development Services has moved to a temporary location at 445 Port Avenue, St. Helens.
We're available to assist you in person, by phone 503-397-1501 and email:
building@columbiacountyor.gov or planning@columbiacountyor.gov.

ATTACHMENT 5

BIA COUNTY
)PMENT SERVICES
ıg Division
RTHOUSE
, OREGON 97051
l Fax: (503) 366-3902

July 11, 2023

REFERRAL AND ACKNOWLEDGMENT

Date: August 21, 2023
File # S 23-01
Owner/Applicant: Agnes Marie Petersen
Map/Taxlot: 6225-00-00400
Site Address: 33625 Tide Creek Rd Deer Island, OR 97054
Zone: Farm/Agriculture FA 80
Size: 45 Acres

NOTICE IS HEREBY GIVEN that Agnes Marie Petersen has submitted an application for a Subdivision. This property is zoned Farm/Agriculture FA 80 and has approximately 45 Acres, identified by tax map number 6225-00-00400 and is located at 33625 Tide Creek Rd Deer Island, OR 97054

SAID PUBLIC HEARING will be held before the Columbia County Planning Commission on **Monday, August 21, 2023**, starting at **6:30 p.m.**

During the COVID-19 global pandemic, the Columbia County Planning Commission will be hosting their public hearing via online webinar. Please use the links below if you wish to participate in the public meeting.

Columbia County Planning Commission Meeting

Please join my meeting from your computer, tablet or smartphone.
https://meet.goto.com/880602597

You can also dial in using your phone.
Access Code: 880-602-597
United States (Toll Free): 1 866 899 4679
United States: +1 (571) 317-3116

Get the app now and be ready when your first meeting starts:
https://meet.goto.com/install

THIS APPLICATION IS FOR () Administrative Review; (X) Planning Commission, Hearing Date: **August 21, 2023**

PLEASE RETURN BY: July 21, 2023

Planner: **Jake Renney**

The enclosed application is being referred to you for your information and comment. Your recommendation and suggestions will be used by the County Planning Department and/or the Columbia County Planning Commission in arriving at a decision. Your prompt reply will help us to process this application and will ensure the inclusion of

your recommendations in the staff report. Please comment below.

1. _____We have reviewed the enclosed application and have no objection to its approval as submitted.
2. __X__Please see attached letter or notes below for our comments.
3. _____We are considering the proposal further and will have comments to you by _____.
4. _____Our board must meet to consider this; we will return their comments to you by _____.
5. _____Please contact our office so we may discuss this.
6. _____We recommend denial of the application, for the reasons below:

COMMENTS: See email for comments.

Signed: Scott Toenjes Printed Name: Scott Toenjes

Title: Engineering Technician II Date: 9/18/2023

Jake Renney

From: Scott Toenjes
Sent: Friday, September 8, 2023 4:27 PM
To: Planning Department.UserGroup
Subject: Tide Creek Road, Agnes Marie Petersen, S 23-01

Here are the Columbia county Public Works Department's comments for this Subdivision Application off of Tide Creek Road:

1. Applicant must obtain an access permit for the three new connections to Tide Creek Road including the new Private Road connection. The sight distance of these connections will need to be verified that it is adequate. If not they may need to be moved or other mitigation measures may be required.

2. Applicant must obtain an access permit for every connection to the new Private Road.

3. Applicant must name and construct the new Private Road to County Private Road Standards.

4. Applicant is required to complete a Transportation Impact Analysis.

5. No additional storm water can be added to Tide Creek Road or any other County Road.

6. Applicant must dedicate 10' of right-of-way along the frontage of the entire property. Tide Creek Road is classified as a minor collector and currently has 40' of right-of-way. The County Transportation System Plan calls for 60' wide of right-of-way.

Thank you.

Scott Toenjes | Engineering Technician | Columbia County Public Works
1054 Oregon Street, St Helens, OR 97051
503-366-3963 | F 503-397-7215 | scott.toenjes@columbiacountyor.gov
Service ~ Engagement ~ Connection ~ Innovation

COLUMBIA COUNTY
LAND DEVELOPMENT SERVICES
COURTHOUSE
ST. HELENS, OREGON 97051
PHONE (503) 397-1501

ATTACHMENT 6

35 DAY
WAIVER OF 120 AND 150 DAY RULE

The undersigned hereby waives the requirement in ORS 215.427(1) that Columbia County must take final action on the application described below within 120 days *(inside urban growth boundary)* or 150 days *(all other applications)* of the application being deemed complete. *** This is a partial waiver only. See below.

File Number: S 23-01

Applicant Name(s) *please print*: Agnes M. Petersen, individually; and as P.R. of the Estate of John A. Petersen

Date Application Deemed Complete: June 29, 2023

Tax Account Number: 16380

Purpose: Applicant requests a continuance to November 6, 2023.

Signed: Agnes M. Petersen Date Signed: 9-26-2023
Applicant Signature

Signed: John Allan Petersen estate by Agnes M. Petersen, Personal Representative Date Signed: 9/28/2023
Applicant Signature

Signed: _____ Date Signed: _____
Applicant Signature

*** To address issues raised in the initial hearing, Applicant requests a continuance of the hearing to November 6, 2023, and agrees to a corresponding 35-day extension of the deadline set in ORS 215.427.

ORS 215.427 provides that, outside Urban Growth Boundaries (UGBs), the governing body of a county or its designate shall take final action on an application for a permit, limited land use decision or zone change, including resolution of all appeals, within 150 days after the application is deemed complete. Land use decisions within UGBs must be completed, including resolution of all appeals, within 120 days.

ATTACHMENT 7

Hayden Richardson

From: Michael Russell
Sent: Wednesday, September 13, 2023 11:05 AM
To: Hayden Richardson
Cc: Scott Toenjes; Jake Renney
Subject: RE: Tide Creek Road, Agnes Marie Petersen, S 23-01

Hi Hayden,

Please accept the following in response to your request for more details on Public Works' requirement for a Transportation Impact Analysis (TIA) and what the scope of the TIA should be for this application.

TIA Triggers
Consistent with Columbia County's ***Guidelines for Transportation Impact Analysis***, I am exercising my right as Public Works Director to request one in this case. Also, I find the proposed development meets at least one of the other listed triggers for requiring a TIA as follows:

#3 – Potential impacts to intersection operations – The proposed development creates a new intersection with Tide Creek Road. Creating a new intersection inherently creates impacts at the location and I want to see what those might be to determine if there will be any geometric, sight distance, striping, signage, lighting or other improvements needed on Tide Creek Road at this location to mitigate those impacts.

TIA Scope
There may be specific elements that need to be included in a TIA that come out of discussions with the applicants engineer depending on the characteristics of the site and proposed development. It is expected that the applicants engineer will contact Public Works to discuss the scope of the TIA to finalize the requirements.

Generally the *Guidelines* specify what should be evaluated within the TIA. Specifically, for this application, **the study area should include the proposed intersection onto Tide Creek Road and Tide Creek Road's intersection with Hwy 30** consistent with Requirement #2 on page 5. I would also request the **driveways in the immediately vicinity** of the proposed intersection be included in the evaluation of the intersection movements, operation, and potential impacts to level of service on Tide Creek Road. Namely, the existing driveways for 33268, 33300, 33340 Tide Creek Road as well as the existing shared driveway for 33378, 33384, 33396 Tide Creek Road.

Columbia County does not have current traffic counts for Tide Creek Road. The TIA scope should include a process for counting traffic sufficient enough to establish a seasonally adjusted Annual Average Daily Traffic count (AADT) on Tide Creek Road for the vicinity to establish the base traffic state.

Mike Russell | Director | Columbia County Public Works |
1054 Oregon Street, St Helens, OR 97051
503-397-5090 | F 503-397-7215 | Michael.russell@columbiacountyor.gov
Service ~ Engagement ~ Connection ~ Innovation

From: Hayden Richardson <Hayden.Richardson@columbiacountyor.gov>
Sent: Tuesday, September 12, 2023 7:17 AM
To: Michael Russell <Michael.Russell@columbiacountyor.gov>

Deborah Jacob

From: Michael Russell
Sent: Tuesday, October 31, 2023 8:54 AM
To: Hayden Richardson; Scott Toenjes
Cc: Deborah Jacob; Spencer Parsons; Department-Counsel; Suzie Dahl
Subject: RE: S 23-01 Lupine Meadow Traffic Impact Analysis

Hi Hayden,

I inadvertently attached a geotechnical report to my response. This was in error. Please disregard the attachment as it is not meant to be a part of this reply.

Mike Russell | Director | Columbia County Public Works |
1054 Oregon Street, St Helens, OR 97051
503-397-5090 | F 503-397-7215 | Michael.russell@columbiacountyor.gov
Service ~ Engagement ~ Connection ~ Innovation

From: Michael Russell
Sent: Tuesday, October 31, 2023 8:52 AM
To: Hayden Richardson <Hayden.Richardson@columbiacountyor.gov>; Scott Toenjes <Scott.Toenjes@columbiacountyor.gov>
Cc: Deborah Jacob <Deborah.Jacob@columbiacountyor.gov>; Spencer Parsons <Spencer.Parsons@columbiacountyor.gov>; Department-Counsel <department-counsel@columbiacountyor.gov>; Suzie Dahl <Suzie.Dahl@columbiacountyor.gov>
Subject: RE: S 23-01 Lupine Meadow Traffic Impact Analysis

Hi Hayden,

Here are Public Works' comments:

Public Works staff have heard concerns regarding the proposed application. Specifically, that the additional traffic will cause safety issues on Tide Creek Road by causing additional congestion along the section of the roadway adjacent to the proposed development where there are existing driveways and shared driveways and increase congestion and safety issues at the intersection of Tide Creek with Highway 30. The Public Works Director required the applicant's engineer to perform a Traffic Impact Analysis (TIA) that would address the congestion and safety aspects of these concerns.

Tide Creek Road Safety
While the addition of driveways onto any county road introduce the potential for turning movement conflicts where there were none, this alone does not necessarily restrict rural development or provide cause for denying a particular application. The applicant has demonstrated the proposed development has adequate access onto Tide Creek Road. The specifics of each access will be determined through the issuance of individual Road Access permits issued by the Public Works Department, so **the requirement that the applicant obtain Road Access Permits is still in place.**

The TIA specifically looked at peak hour trips as a measure of the most busiest time of day. As demonstrated, the applicant's engineer determined that the most peak hour trips at full buildout of the development would be 8 trips

total. The applicant's engineer also determined that this increase will effectively cause no delay along Tide Creek. **Public Works is satisfied that the proposal will have a negligible effect on the current operations of Tide Creek Road in terms of traffic loading and Level Of Service (LOS) that Tide Creek Road currently provides.**

The Applicant's engineer also addressed sight distance and a review of crash history to determine if any modifications to the proposal or to Tide Creek Road were warranted. **Public Works is satisfied that there are no significant trends that indicate a specific safety concern on this section of Tide Creek Road and that the sight distance of the proposed driveway locations will meet Columbia County Road Standards and not create significant conflicts with existing driveways.**

Tide Creek Road @ Highway 30
The TIA found that traffic signal warrants were not met at this intersection and that there were no significant crash patterns that would indicate any specific safety mitigation as a result of the proposal. **Public Works is satisfied that the proposal does not trigger any specific improvements or modifications to the intersection of Tide Creek Road at Highway 30.**

The Public Works Director finds that there are no significant traffic-related impacts that need to be mitigated as a result of full bulldout of the proposed development. As stated in the TIA *"[w]ith a peak hour increase of only 1 vehicle every 7 to 10 minutes, residents along Tide Creek Road will perceive no change in average delay; driveways will continue to operate at LOS A."*

Mike Russell | Director | Columbia County Public Works |
1054 Oregon Street, St Helens, OR 97051
503-397-5090 | F 503-397-7215 | Michael.russell@columbiacountyor.gov
Service ~ Engagement ~ Connection ~ Innovation

From: Hayden Richardson <Hayden.Richardson@columbiacountyor.gov>
Sent: Monday, October 30, 2023 7:46 AM
To: Michael Russell <Michael.Russell@columbiacountyor.gov>; Scott Toenjes <Scott.Toenjes@columbiacountyor.gov>
Cc: Deborah Jacob <Deborah.Jacob@columbiacountyor.gov>; Spencer Parsons <Spencer.Parsons@columbiacountyor.gov>; Department-Counsel <department-counsel@columbiacountyor.gov>; Suzie Dahl <Suzie.Dahl@columbiacountyor.gov>
Subject: FW: S 23-01 Lupine Meadow Traffic Impact Analysis

Hi Mike/Scott,

In light of the TIA submission from the applicants of S 23-01 relative to the continued Planning Commission hearing on November 6th, would it be possible to get Public Works' comments on this info by this Wednesday (11/1)? Planning staff will also need time to draft the supplemental findings which will include your comments.

Thanks!

Hayden Richardson
Planning Manager
(503) 397-7216
Hayden.richardson@columbiacountyor.gov
445 Port Ave, St. Helens, OR 97051

ATTACHMENT 8

Michael Newton <micknewton@centurylink.net>

From: Michael Newton [mailto:micknewton@centurylink.net]
Sent: Monday, September 25, 2023 6:21 PM
To: 'Gene Hester'
Subject: RE: From Gene Hester Tide Creek Road

Mike Russel, Directer of Public Works.
Hayden Richardson, Columbia County Planning Department.

My name is Michael Newton. My wife and I built our home at 33660 Tide Creek road back in 1999. When we were building our home John Peterson stopped by multiple times and tried to get us to stop. He told me and the building contractors that we couldn't build our home here because the whole hillside would slide down to the highway. He also tried to stop the crew that drilled our well. He told them they would never get water. We had no problems with ground movement on our property for over 20 years, and our well has always had plenty of water. During that time the only slide I ever saw near my property was down below my property, nearer the highway, where a piece of the hill next to the huge gravel pit that was being dug into the hillside slid onto the road. The county road crew was there loading the dirt into dump trucks and hauling it to Peterson's property. It was shortly after they dug the huge hole in the hillside that we experienced ground movement on our property. The water line from the well head to the house broke and the whole section of concrete sidewalk on the south side of our garage broke loose and dropped a couple inches. We had to pay a crew to reconnect the water line. The PVC pipe had broken right where it connected to the well head. I still have not been able to repair the sidewalk. A month or so later the ground moved again and the water line broke a second time. This time we couldn't find where the pipe had broken so we were forced to pay another crew to dig up the entire pipe to locate the break. I had to pay another crew to break up and remove a section of the concrete sidewalk to get to the break. I then had to pay another crew to replace the entire water line.

In the 23 years that I have live here on Tide Creek road I have seen the condition of the road deteriorate considerably. I believe it is caused by very poor, or nonexistent, drainage control undermining the roadway, and the large amount of vehicle traffic, especially extra heavy vehicle traffic like large fully loaded dump trucks, log trucks, etc..

I am enclosing a few photos of the broken water line and sidewalk.

Sincerely,
Michael Newton

Download all attachments as a zip file


2023....JPG
4.7MB


2023....JPG
5.7MB


2023....JPG
7.7MB

Lowell Norbom, 33783 Tide Creek Road, Deer Island, OR 97054
Teresa Norbom, 33783 Tide Creek Road, Deer Island, OR 97054

ATTACHMENT 9

Lowell.norbom@gmail.com
Teresa.norbom@gmail.com

Mike Russel, Columbia County Director of Public Works.
Hayden Richarsdson, Columbia County Planning Department Director
Columbia County Planning Commission

Subj: Opposition to a development of 8 house lots above the Peterson's residence

Dear Sirs and Madams,

My name is Lowell Norbom. I live at 33783 Tide Creek Rd, Deer Island, OR 97054, along with my daughter, Teresa Norbom. Our property is the first one on the right, as one drives up Tide Creek Road from Highway 30. Our driveway is just a short distance below Butler Road. We have approximately 11 acres, starting at Highway 30, and going up the hill to Butler Road (excluding the government easements, of course). My wife and I purchased and developed this property over 25 years ago. My daughter joined us in 2001. My wife has since passed away.

First, we want to be clear on one point - we absolutely believe that property owners should be free to develop their properties as they choose, with only limited interference from government or neighbors, related to adherence to general safety and building regulations. However, we do not believe that property owners have the right to cause significant or material damage (financial or otherwise) to property owned by others, public lands and roads, or the environment.

In the time we've lived on this property, there are several changes we've noted to date:

Current - Tide Creek Road

- When we moved to our property on Tide Creek Road, just below Butler Road the road was smooth and level.
- Several years ago there was a crack across the road exactly opposite our driveway. That crack has been patched multiple times, starting with a fairly thin patch. Each time, the crack returns after the patch. The patch used to last for several months. The time from patch to new crack had shortened. For instance, about a month ago there was a patch of about 2 inches in depth placed - that patch lasted two weeks. Then they put a patch that is 4 to 5 inches high, and they smoothed the patch on both sides so that it looks like a regular piece of the road. You can see the elevated piece of road in front of my driveway.
    - Our amazing road department smooths out the driveway so that our cars have a more gentle drop. A couple of years ago we had to have our driveway apron paved over with more asphalt, to more closely match the new height of Tide Creek Road. Due to the new height of our driveway and the road, compared to the ditch alongside the road, we've had to mark our driveway approach with garbage cans, to be sure that we and our guests stay in the central part of our driveway to avoid getting trapped in the drop of more than 12 inches.
    - If anyone is interested, there is a very small section of the original berm showing. The current road is 12 higher than the original berm. The hill is slipping, and I question how long the current patch will hold.
- One of the fault lines on the hillside runs through Tide Creek Road, right where our driveway is
    - This fault line is the one causing the cracks in Tide Creek Road that keep getting patched by the road department
- Century Link has a fiber optic cable running along Tide Creek Road, on the opposite side of the road from our property

Lowell Norbom, 33783 Tide Creek Road, Deer Island, OR 97054 Lowell.norbom@gmail.com
Teresa Norbom, 33783 Tide Creek Road, Deer Island, OR 97054 Teresa.norbom@gmail.com

  - This summer, Century Link had to dig up their cable just opposite our driveway, and downhill a very short way, to replace a portion of the cable that had been torn apart by the earth movements around the road
- On Tide Creek Road, between our driveway and Highway 30, the road has become like a roller coaster in recent years.
  - There are hills and depressions in the road, that make driving on it feel like being on a roller coaster
  - Neither my daughter or I are road engineers, but it appears clear to us that the road is becoming more unstable.
  - Our assumption is that the hill is moving, creating depressions, that the road then follows
  - If one stands on Tide Creek at our driveway, the waves in the road are very obvious
- As of the writing of this letter, there are 9 cracks across Tide Creek Road, between our driveway, and Highway 30

Current - Our Well

- Our original well was placed when my wife and I first moved to our property
  - Due to the size and shape of our property, the well is placed approximately 50 feet from Tide Creek Road
  - That well had no problems until a few years ago, when we noticed that the well shed was starting to slant sideways, towards Tide Creek Road
  - Upon inspection, we were told that the well casing was very close to cracking, due to movements in the ground
  - The well is in the general area of the fault line that runs through Tide Creek Road – we were unaware of the fault line when our well was placed
- Two years ago, we had a new well placed
  - The well is 150 feet deep
  - Due to the configuration of our property, the new well is only a short distance from the old well, less than 12 feet further into our property
  - The new well is also in the general area of the fault line
- Until this year, just a few months ago, we did not experience any problems with our new well, or the output thereof
  - Our water needs are fairly minimal
    - Our well only needs to support the two of us living on our property
    - We have no farm animals, or farmland, to support
    - We do not even have a grass yard that needs to be watered
  - In the most recent couple of months, we have started to experience issues with the output of our well
    - We have not yet had any official well readings taken
    - Anecdotally, we are noticing drops in pressure when we use water for normal purposes, such as a normal length shower, or washing dishes
    - To compensate, we have put ourselves on a mild water rationing regimen
- While it seems clear that the aquifer has dropped, we were unclear as to why
  - We've had long periods of little or no rainfall in prior years, with no impact to our well output
  - Therefore, we don't believe that the recent period of little or no rainfall was the culprit, or at least not the only culprit
- We have learned of a deep well fairly recently placed on the hill above us, at 33470 Tide Creek Road

Lowell Norbom, 33783 Tide Creek Road, Deer Island, OR 97054
Teresa Norbom, 33783 Tide Creek Road, Deer Island, OR 97054
Lowell.norbom@gmail.com
Teresa.norbom@gmail.com

- This well is 400 feet deep
- A deep well like the one recently placed on the hill directly above our property is a likely contributor to the lowering of the aquifer

Current - The Hillside

- Our property, like many others, is on the hill
- Our house and well are placed on a small plateau, about 20 to 30 yards downhill from Butler Road
- The placement of the house, well, etc, were all approved by the county inspector
- In recent years, we have noticed that the portion of the hill between our house and Butler Road has been moving, sliding downhill just enough to cause a few issues
- We've noticed this in the well shed, as well as our fenceline and other signs
- To date, this shifting in the hillside has not been overly dramatic or concerning
- However, the fault line on the road leads right to our driveway, and towards our well

Given what we've already seen in recent years, we have some grave concerns about the development being requested at the Peterson's property. We believe that there is a significant risk to the aquifer level, as well as Tide Creek Road, and the hillside itself. Here are our specific concerns:

Water

- Unless there is a survey from a qualified and certified Geohydrologist to prove otherwise, we do not believe that the aquifer can support 8 new residences, with their accompanying water usage - wells, septic fields, etc,
- Our property has already seen a decrease in well output in recent months, for the first time in over 25 years
- If the aquifer continues to lower, our well will, at some point, fail
  - At that point, our ability to sustain our own fairly minimal water needs will property value will be quite limited, and require external water tanks
  - Our property value will also be severely damaged, likely an irreversible drop in value
- Just as concerning as the drop in the aquifer, will be the drastic increase in sewage water from the septic fields
  - As our property is downhill from the proposed subdivision, that is a major concern

Tide Creek Road

- With the construction of a subdivision, comes an exponential increase in heavy vehicle traffic on Tide Creek Road, for at least a couple of years (concrete trucks, construction vehicles, trailers hauling construction supplies)
- We believe that the increase in traffic on the road from heavy vehicles during construction, plus the increase due to occupation of the proposed subdivision, will have a negative impact on Tide Creek Road
- We urge the TIA to include the road itself, all the way from the area of the Peterson's property, down to Highway 30 - not just intersections or driveways
  - Additionally, at the Tide Creek Road and Highway 30 intersection, we urge review of the lack of a left turn lane onto Tide Creek Road from Highway 30. This is a very dangerous turn off of

Lowell Norbom, 33783 Tide Creek Road, Deer Island, OR 97054
Teresa Norbom, 33783 Tide Creek Road, Deer Island, OR 97054

Lowell.norbom@gmail.com
Teresa.norbom@gmail.com

Highway 30, and we fear that increased traffic on Tide Creek Road may result in more accidents at this point if a left turn lane is not re-evaluated.

- The potential damage to Tide Creek Road is a major concern for locals in our area, who use the road to access our homes, and know the changes to the road better than anyone

The Hillside

- As outlined above, we have seen some signs that the hillside above us is not completely stable
- We are extremely concerned that the addition of a pod of new residences will have a significant negative impact on it's stability
- According to the US Geological Survey (USGS), depletion of the aquifer leads to ground subsidence
    - Subsidence would cause irrevocable damage to the stability of our property, and that of our neighbors
    - Depletion of the aquifer is a likely and foreseeable effect of drawing a large amount more water from the ground using wells
- We also urge an official evaluation by the state, of the state's geotechnical monitoring information, to determine the impact on the hillside of the development of a small subdivision
    - One of the monitoring stations was placed on the hillside, close to Highway 30, 2 or 3 years ago – that station happens to be on our property, or the edge thereof

In conclusion, we are opposed to the addition of a subdivision of houses on the Peterson property. The negative impacts to our property and the environment are likely and foreseeable, as well as significant and material.

Thank you,

Lowell Norbom

Lowell Norbom
Lowell Norbom (Oct 16, 2023 22:50 PDT)

Teresa Norbom

Teresa Norbom
Teresa Norbom (Oct 16, 2023 22:40 PDT)

project - Copy

Final Audit Report 2023-10-17

Created:	2023-10-17
By:	Teresa Norbom (teresa.norbom@gmail.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAARbkAk92fFqTV07nv_HEPjg7ZfqaWKm9k

"project - Copy" History

Document created by Teresa Norbom (teresa.norbom@gmail.com)
2023-10-17 - 5:39:13 AM GMT- IP address: 136.226.55.114

Document emailed to Lowell Norbom (lowell.norbom@gmail.com) for signature
2023-10-17 - 5:39:17 AM GMT

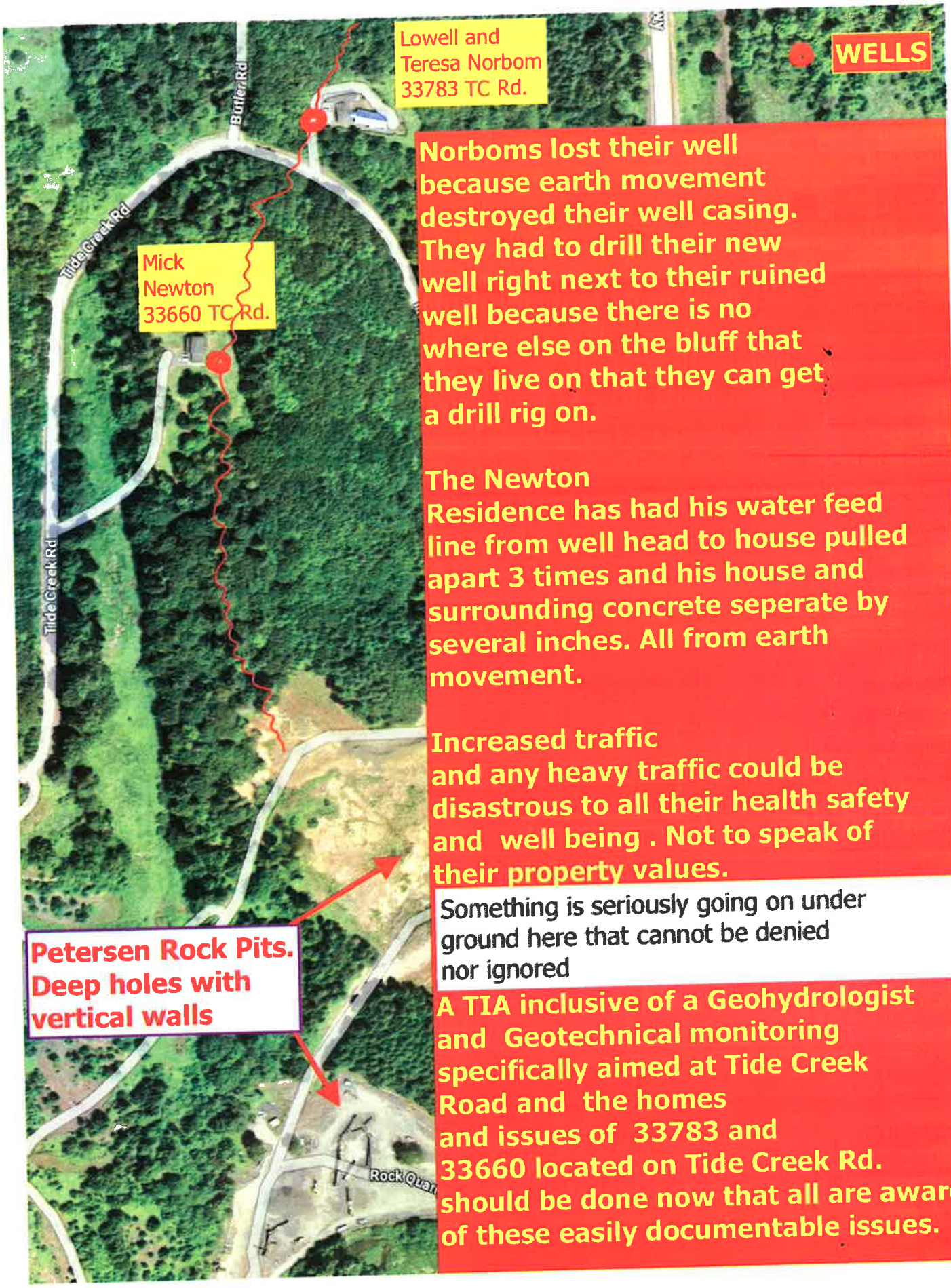
Document emailed to Teresa Norbom (teresa.norbom@gmail.com) for signature
2023-10-17 - 5:39:17 AM GMT

Document e-signed by Teresa Norbom (teresa.norbom@gmail.com)
E-signature hosted by Teresa Norbom (teresa.norbom@gmail.com)
Signature Date: 2023-10-17 - 5:40:11 AM GMT - Time Source: server- IP address: 136.226.55.114

Email viewed by Lowell Norbom (lowell.norbom@gmail.com)
2023-10-17 - 5:44:25 AM GMT- IP address: 66.249.84.68

Document e-signed by Lowell Norbom (lowell.norbom@gmail.com)
Signature Date: 2023-10-17 - 5:50:37 AM GMT - Time Source: server- IP address: 97.115.229.150

Agreement completed.
2023-10-17 - 5:50:37 AM GMT



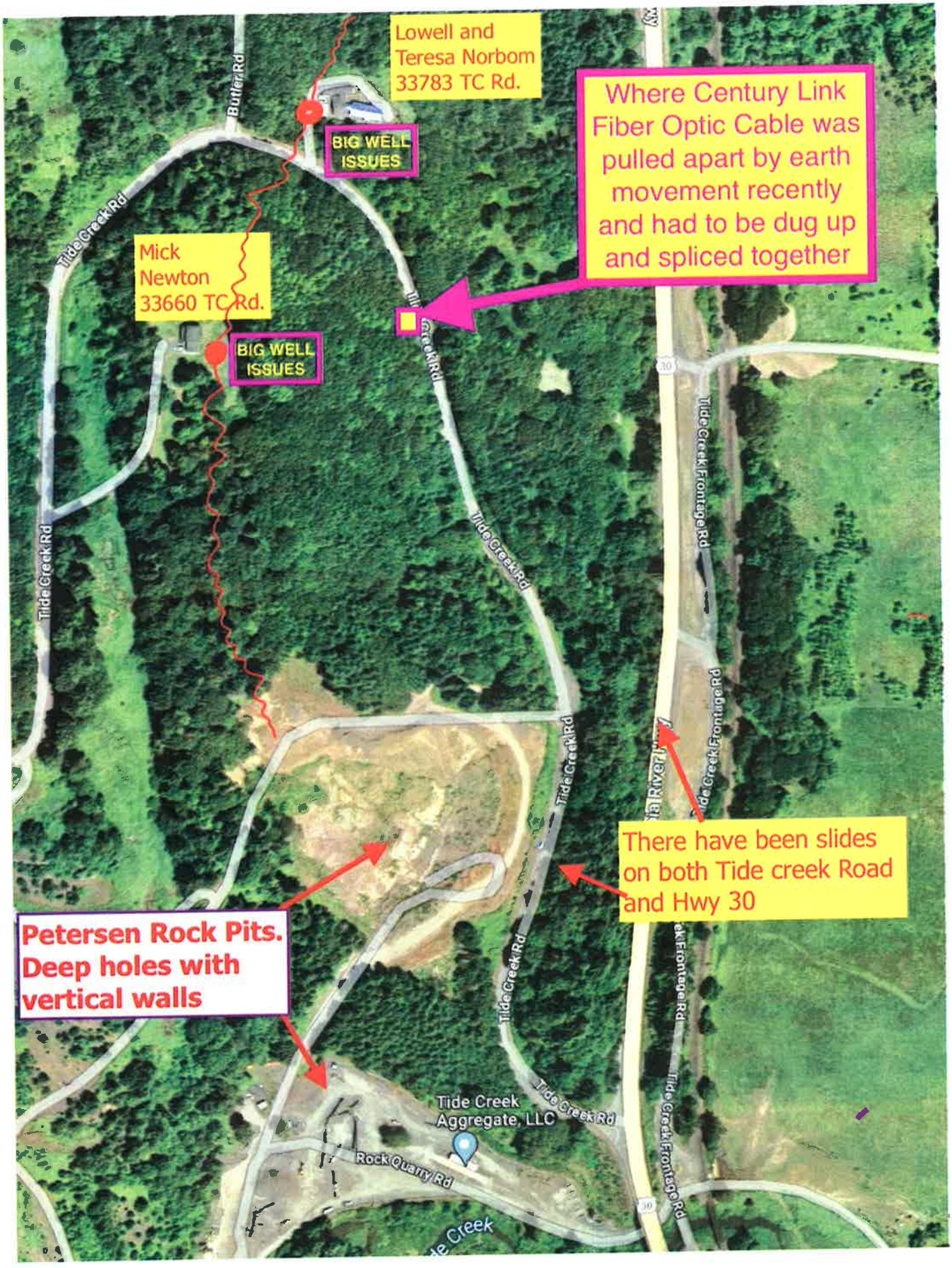
Norboms lost their well because earth movement destroyed their well casing. They had to drill their new well right next to their ruined well because there is no where else on the bluff that they live on that they can get a drill rig on.

The Newton Residence has had his water feed line from well head to house pulled apart 3 times and his house and surrounding concrete seperate by several inches. All from earth movement.

Increased traffic and any heavy traffic could be disastrous to all their health safety and well being . Not to speak of their property values.

Something is seriously going on under ground here that cannot be denied nor ignored

A TIA inclusive of a Geohydrologist and Geotechnical monitoring specifically aimed at Tide Creek Road and the homes and issues of 33783 and 33660 located on Tide Creek Rd. should be done now that all are aware of these easily documentable issues.


Lowell and
Teresa Norbom
33783 TC Rd.
BIG WELL ISSUES
Where Century Link Fiber Optic Cable was pulled apart by earth movement recently and had to be dug up and spliced together
Mick
Newton
33660 TC Rd.
BIG WELL ISSUES
There have been slides on both Tide creek Road and Hwy 30
Petersen Rock Pits.
Deep holes with vertical walls
Tide Creek Aggregate, LLC
Rock Quarry Rd
Butler Rd
Tide Creek Rd
Tide Creek Frontage Rd


Extremely Dangerouse Driveways
Lowell and Teresa Norbom 33783 TC Rd.
Yellow ARROWS is very steep ground
Mick Newton 33660 TC Rd.
Dips and heave areas in Hwy. 30 they keep fixing
These are all just gravel rds. in rock pit area
Petersen Rock Pits. Deep holes with vertical walls
Butler Rd
Tide Creek Rd
Tide Creek Frontage Rd
Tide Creek Aggregate, LLC
Rock Quarry Rd

ATTACHMENT 10

Deborah Jacob

From: Al Petersen <alpetersen@akaandesign.com>
Sent: Monday, October 30, 2023 11:09 AM
To: Amy Herzog; Deborah Jacob
Cc: maryanne.anderson@ymail.com; Agnes M. Petersen
Subject: RE: S 23-01 Lupine Meadows- Submission - RE Tide Creek Road Slide
Attachments: Petersen-SlideTestimony&1950sPhographs.pdf

Dear LDS

Attached please find additional written information regarding application S 23-01 - Lupine Meadow.

Al Petersen

10-23-2023

Dear Planning Commission:

The most recent submittals from those that oppose this application point out land slide problems along Tide Creek Road and Highway 30 one mile from the subject property.

The subject property is not in the side area. The fact that houses located a mile away are constructed in a slide area does not address any of the criteria that the planning commission is to consider with this application.

The written testimony from Mr. Newton says that my father (now deceased) had stopped by during the construction of his home and told him "the whole hillside would slide down to the highway." (Newton email, Sept 25, 2023).

I briefly point out the following:

- My father lived on Tide Creek his entire life. He attended the Shiloh Basin one-room elementary school at the intersection of Tide Creek, Nicolai, Anliker, and Bishop Creek Roads.
- In the late 1950's (when dad was about 22 years old) Highway 30 was constructed where it is now. Shortly after laying asphalt (according to dad), the hillside, generally where the Newton and Norbom houses are now located, slid and disrupted Highway 30 and Tide Creek Road.
- A few years ago, when new bumps appeared in Highway 30, ODOT sent out a geologist whom my mother met. Attached please find an email from Engineering Geologist Rory "Tony" Robinson, Ph.D. along with copies of photographs from ODOT's archives. See Robinson email and pages 13 to 23 of photographs. Various photos say "hump", or "movement in pavement". Photo on page 21 is a photo of Tide Creek Road, the writing says "sag in Co. Road". ODOT's mitigation at the time was to construct a "rock wall counter balance" adjacent to Highway 30, see photo on page 23.

I have no doubt that my father stopped by when Newton was constructing his house and told him that his property was in a slide area, that dad had seen how it had affected the area, and that constructing a house on top of a slide was a bad idea. Apparently, Newton didn't believe dad, based on his email perhaps he should have.

It is unfortunate that the Newton and Norbom houses are constructed in a slide area, however the subject property is **not** in the slide area, everything presented by the opposition related to the slide is all irrelevant to this application, it has nothing to do with any of the criteria that the Planning Commission is to consider.

Al Petersen

----- Forwarded Message -----
From: ROBINSON Tony <tony.robinson@odot.state.or.us>
To: agnes petersen <agi12342003@yahoo.com>
Sent: Tuesday, November 12, 2019, 09:41:22 AM PST
Subject: RE: 1950s Slide Pictures on US 30 near Tide Creek Road

Dear Ms. Petersen,

As it turns out Monday was a holiday!

Please find the attached PDF file, which contains the old photographs that ODOT has of the area around the Big Meadow Slide. The photographs of the "Red Barn" may be of a slide a bit south of the Big Meadow Slide itself. However, I figured that I would send them all to you as you may be able to recognize them better than I.

As for your son-in-law, please share my info with him, and let him know that if he ever finds himself in Salem to give me a call and we can grab a coffee.

Warm Regards,
Tony Robinson

Rory "Tony" Robinson, Ph.D
R.G., C.E.G., C.H.G., R.C.E., R.G.E
Engineering Geologist
Oregon Department of Transportation
Region 2 – Geo/Hydro/HazMat
o: (503) 986-3102 c (971) 209-9664

-----Original Message-----
From: agnes petersen <agi12342003@yahoo.com>
Sent: Wednesday, November 6, 2019 9:31 AM
To: ROBINSON Tony <Tony.ROBINSON@odot.state.or.us>
Subject: 1950s Slide Pictures on US 30 near Tide Creek Road

Dear Mr. Robinson:

It was a pleasure to meet you and visit with you about the US Highway near Tide Creek Road. I am so happy to meet an kEngineer Ph. D. in Geology. Geology was one of my favorite classes at the U of O back in 1954-55. I would like to have the pictures that ODOT has of the slide many years ago, if you are able to send them to me. When I took Geology back then the professor said that ODOT needed to hire more geologists as they had highways sliding into the sea along the Oregon coast which could have been avoided if they had used geologists then. Now they seem to be up to speed in ways that are important. I am sure that you would enjoy knowing our Engineer Son in Law and if you give me permission I will share your contact information with him. He loves the outdoors and when he is not working for Washington County, he is taking hikes all over Oregon, particularly to the mountains.. Are you interested? Thanks again. Sincerely, Agnes Marie Petersen, 33625 Tide Creek Road, Deer Island, Oregon 97054.

[redacted]

Hwy 2W Columbia Co MP 34.5-40.0

Tide Creek Slide

02W_036-50_040-00_GT_MX_54_Tide Creek Slide

Box 99

Tide - Creek - Goble Section, Possible Slide at 167+00.00 L to 300' L.

3/22/54

Looking West

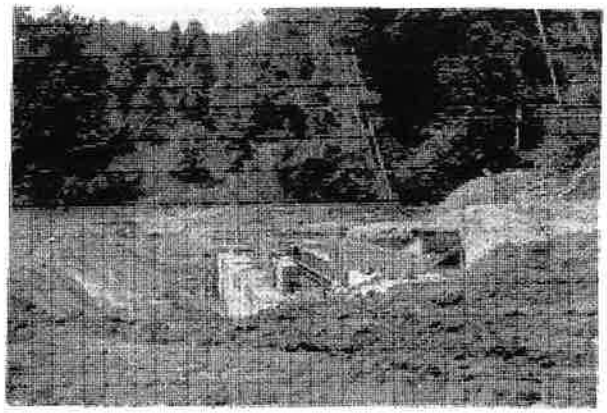
3/22/54

Looking West.

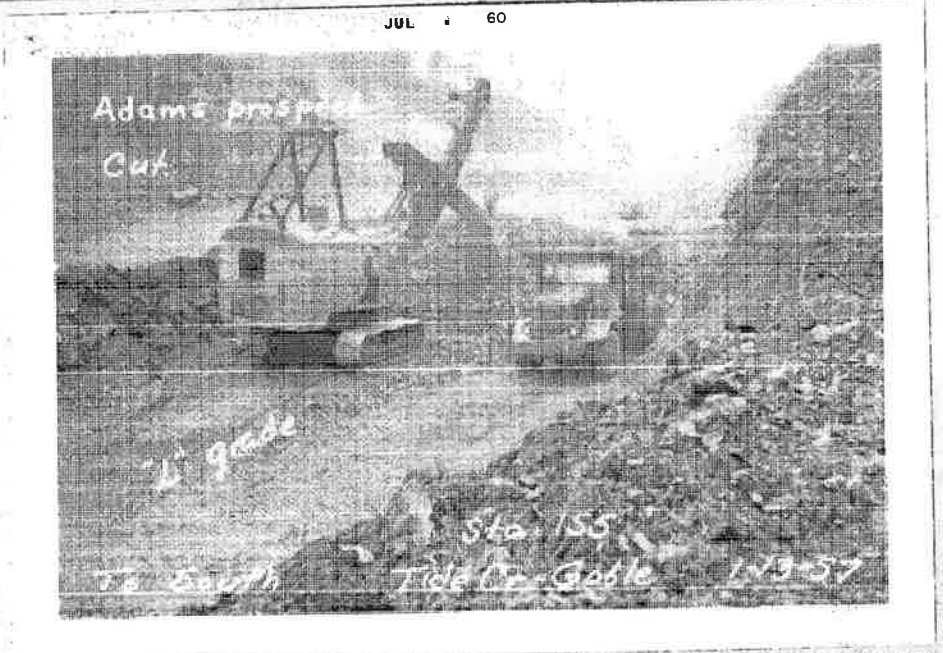
PHOTOGRAPHIC RECORD OF SLIDES

GOBLE - TIDE CREEK SECTION
Columbia River Highway

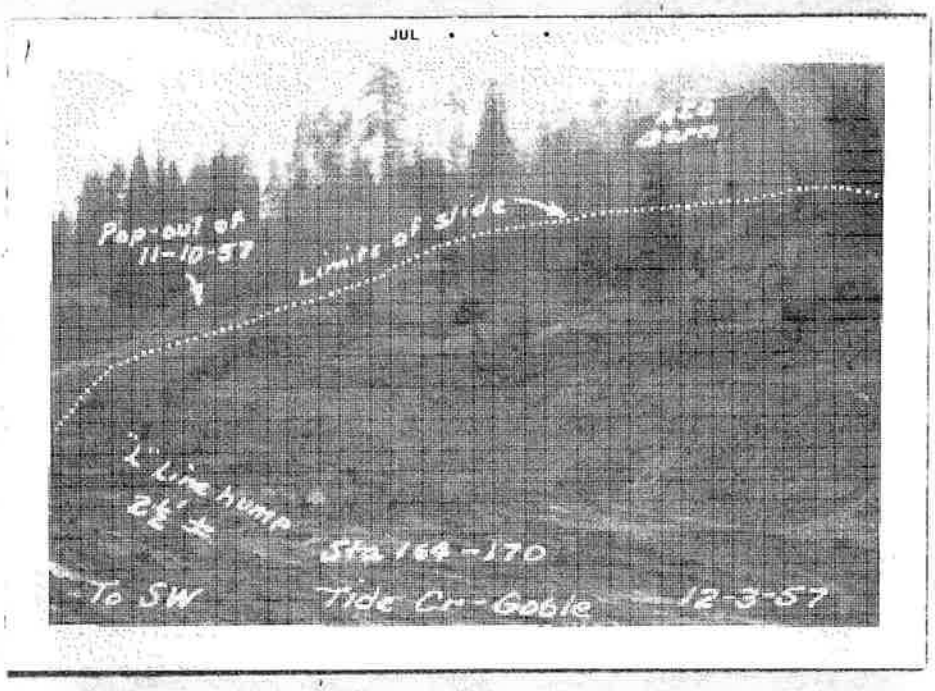
Contract 5053 Prefix 5-1035

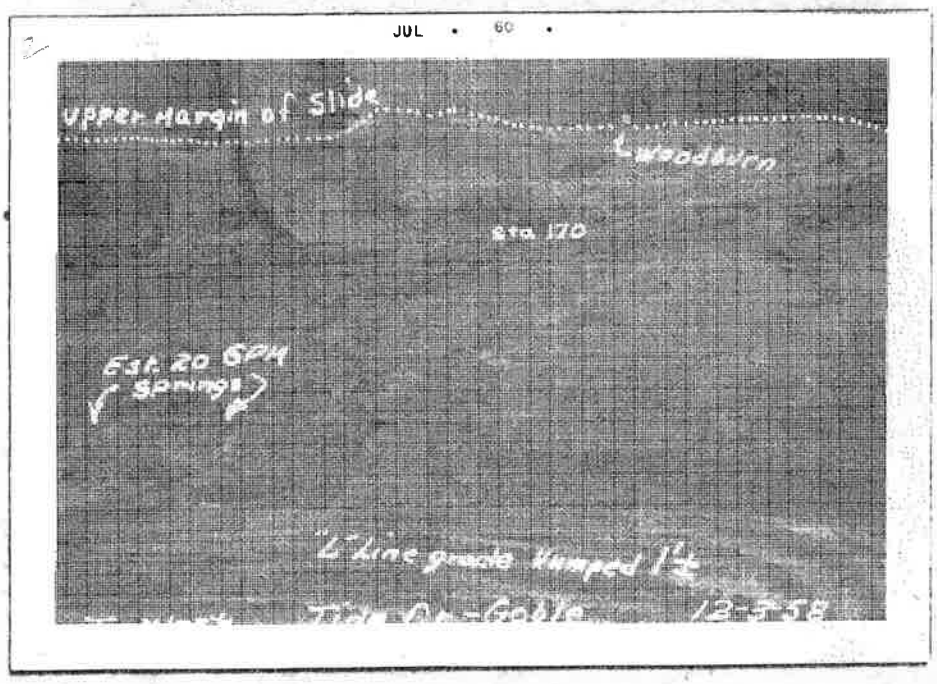


Photographs 1 to 3 are of the dams quarry, the site of the material used to construct counter balance and rock fills for correcting the Red Barn slide, Big Meadows Ranch Slide Lt. 103 to 110 and The Leppin Slide Lt. 179 to 185.



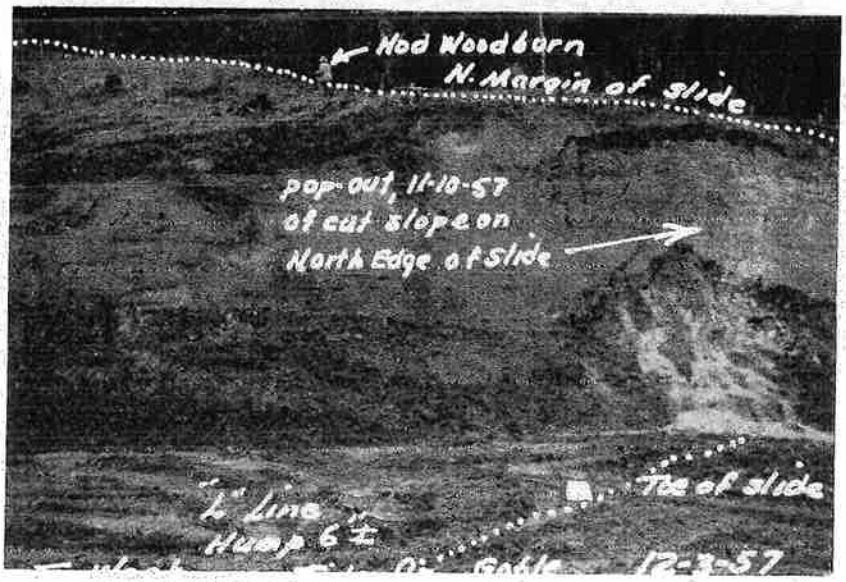
Photographs 1 to 5 show the general limits of the slide area and beginning activities.





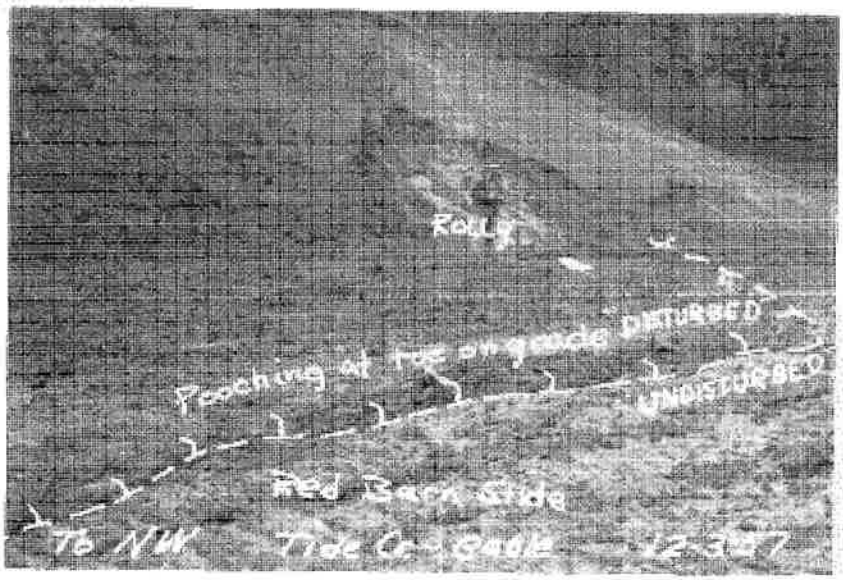
JUL • 60 •

3

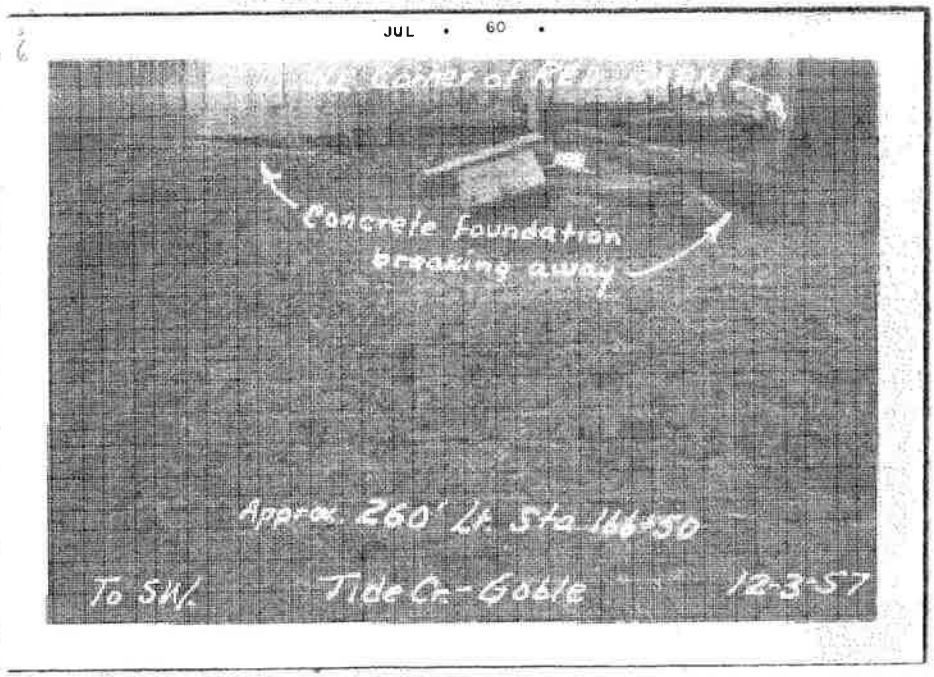


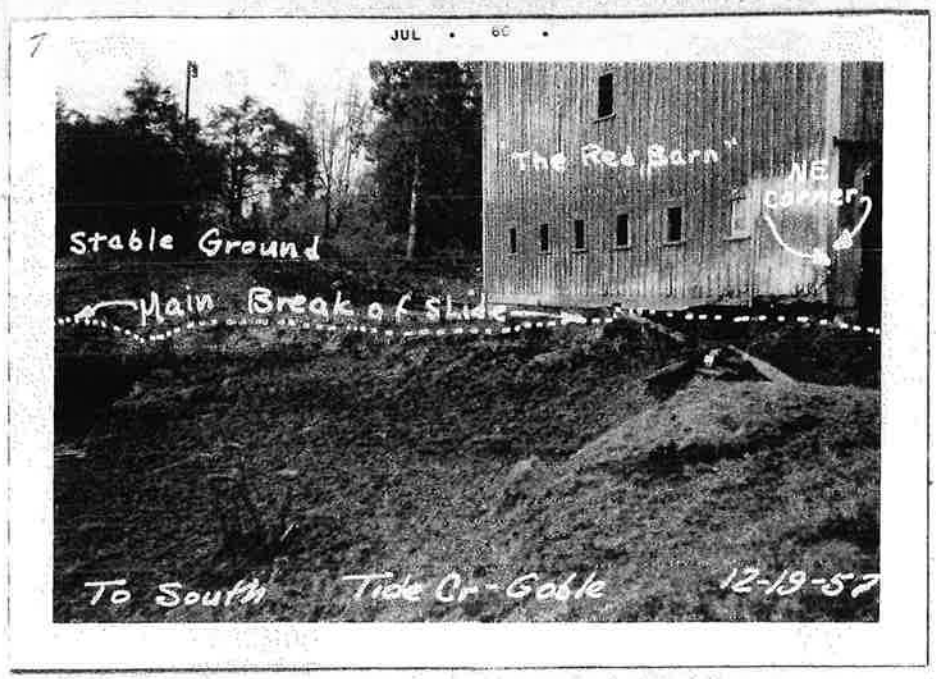
JUL • 60 •

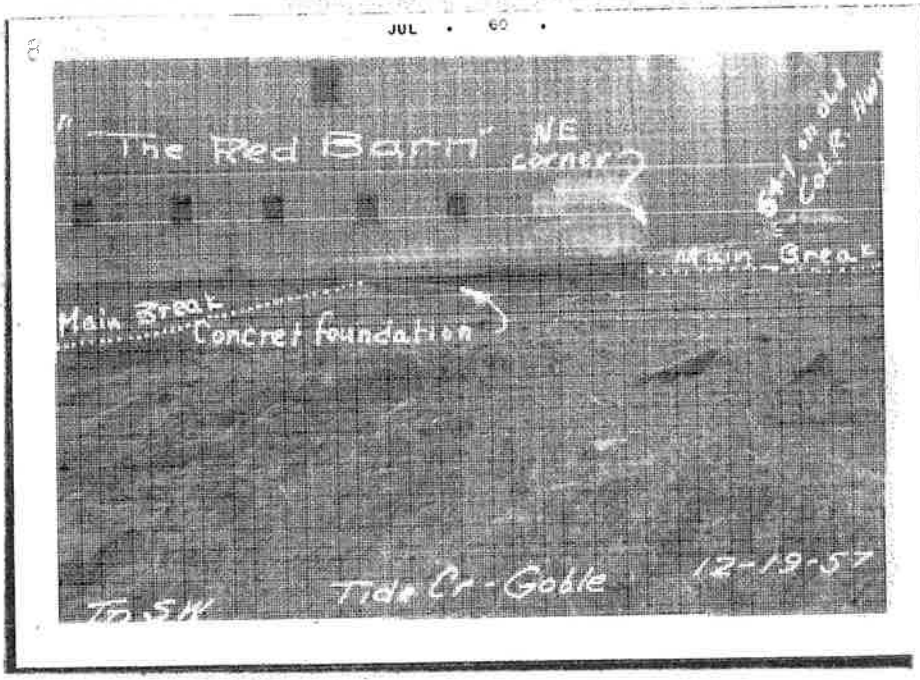
4



Photographs 6 to 10 show the surface cracks and settlement in the vicinity of the Red Barn.

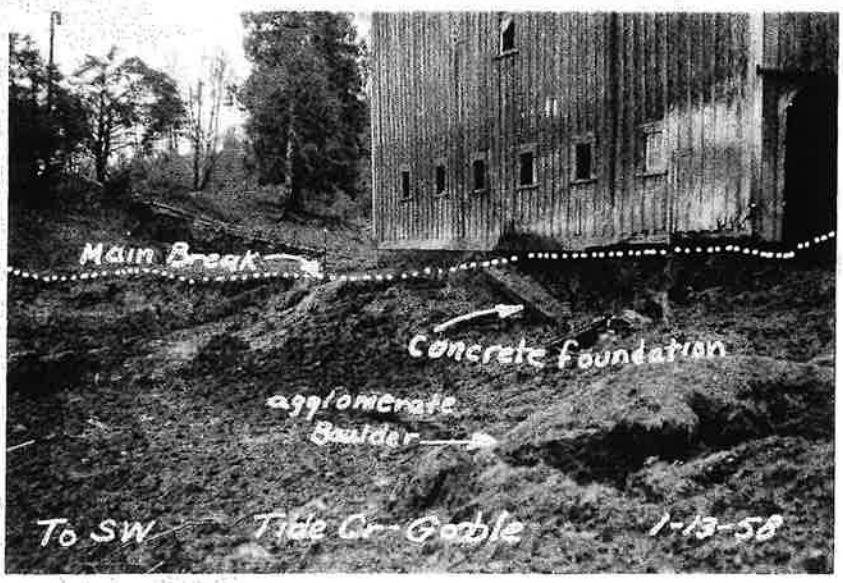



JUL • 60 •
7
Stable Ground
"The Red Barn"
NE corner
Main Break of Slide
To South
Tide Cr - Goble
12-19-57


JUL • 60 •
8
"The Red Barn"
NE corner
Main Break
Main Break
Concret foundation
To SW
Tide Cr - Goble
12-19-57

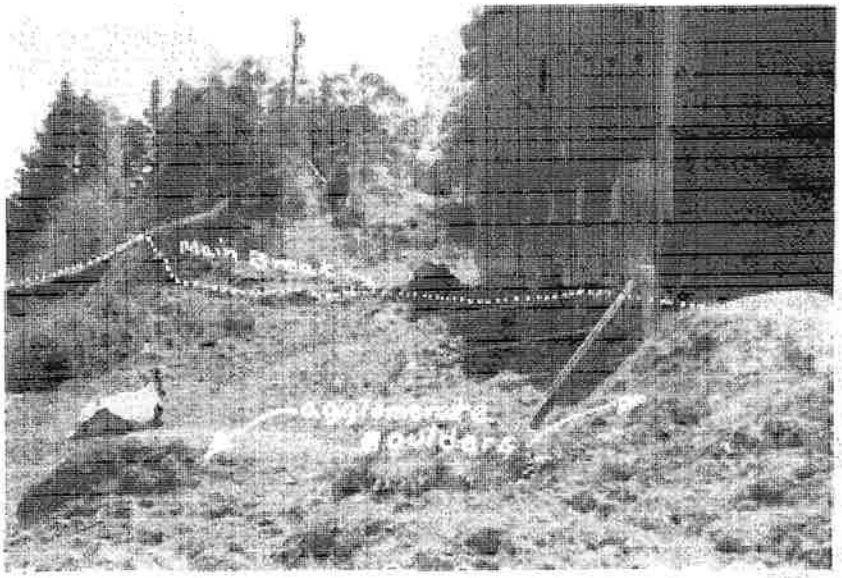
9

JUL • 60 •

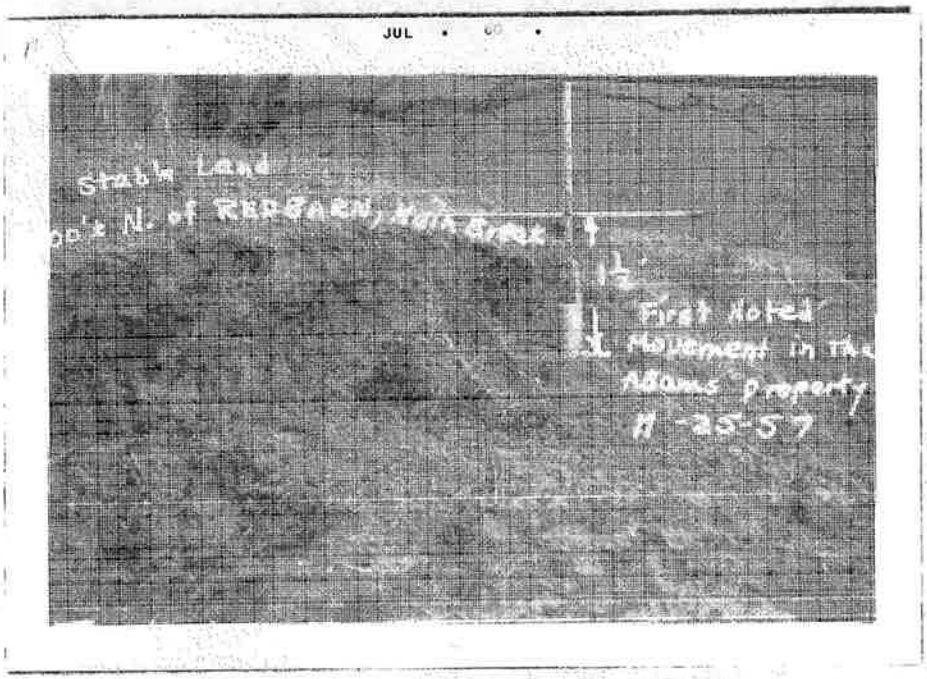


10

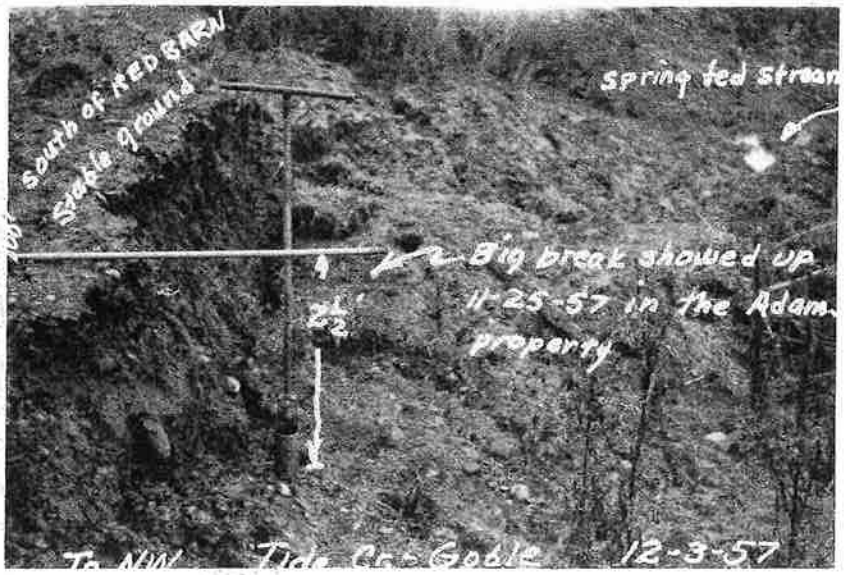
JUL • 60 •



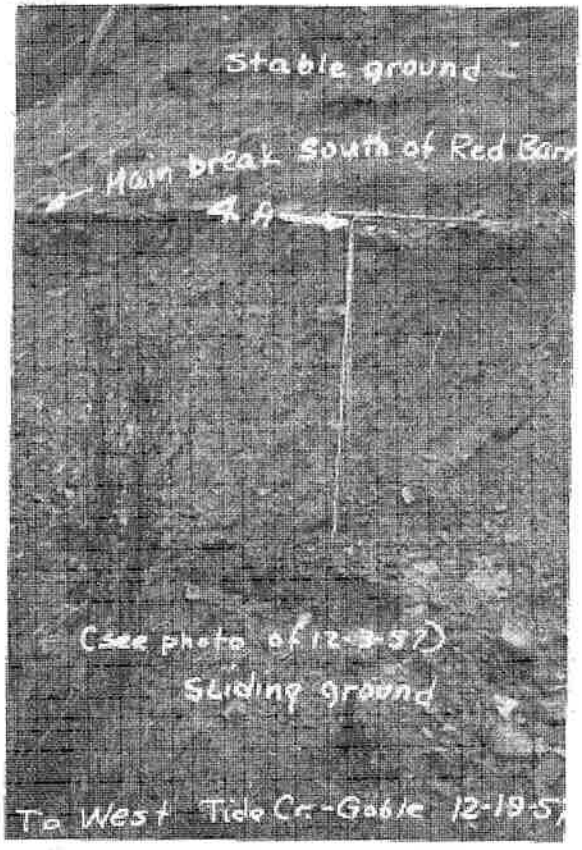
Photographs 11 to 17 show the surface cracks and the settlement and poaching section of the slide and the tension cracks in the old highway left of station 164 to 171.

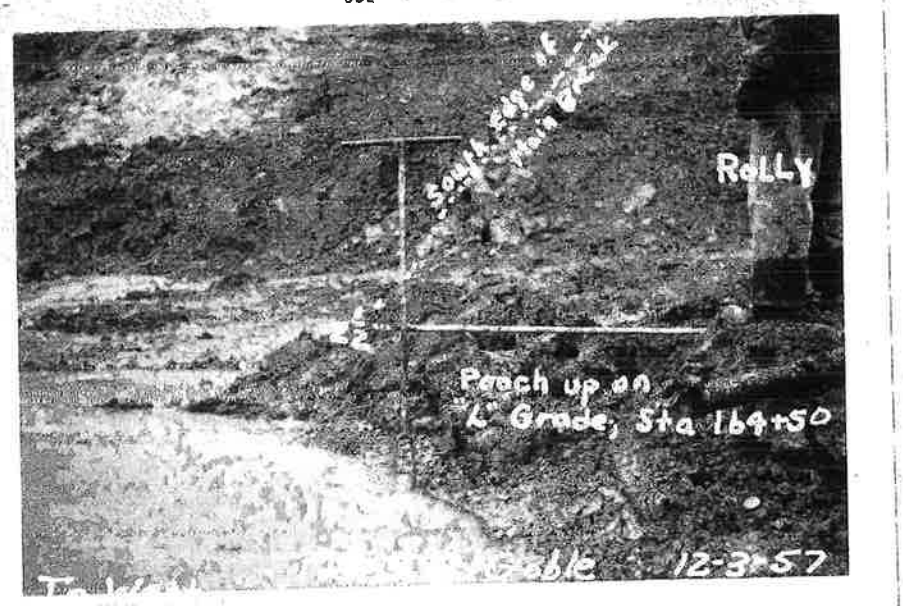


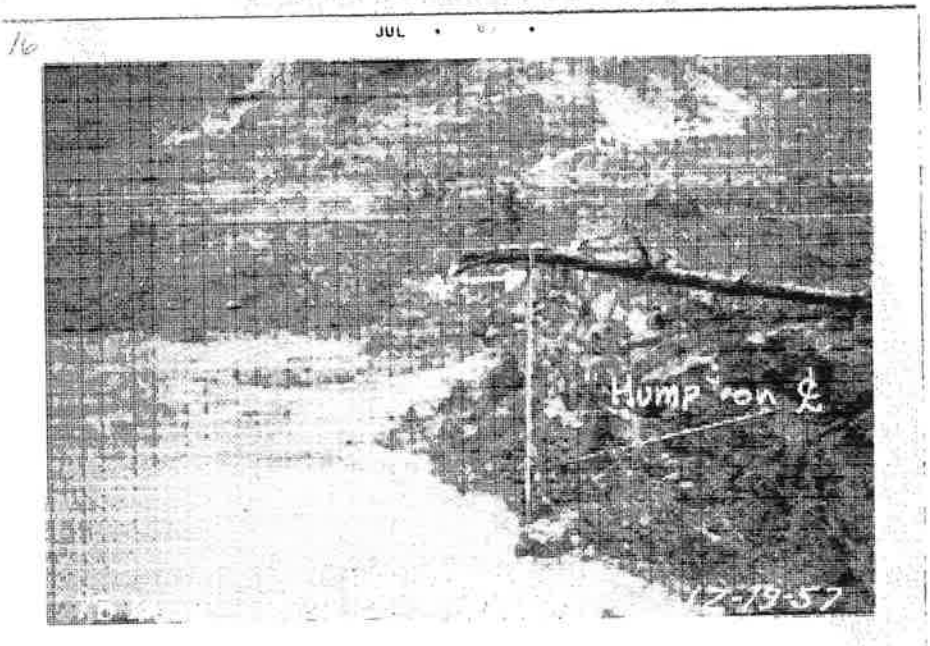
13


South of RED BARN
Stable ground
Spring fed Stream
Big break showed up
11-25-57 in the Adams
property
2½'
To NW Tide Cr.-Gable 12-3-57

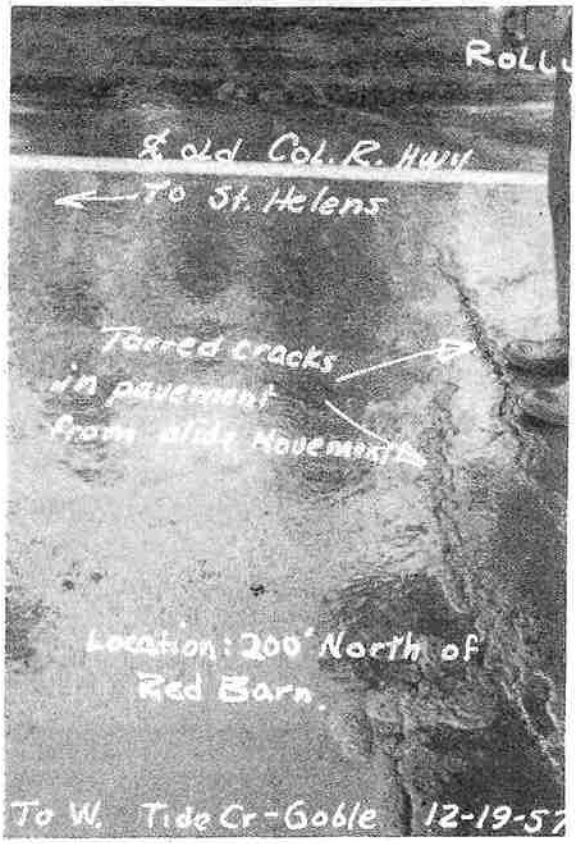
14


Stable ground
Main break South of Red Barn
4 ft
(See photo of 12-3-57)
Sliding ground
To West Tide Cr.-Gable 12-19-57


JUL
Rolly
Peach up on
℄ Grade; Sta 164+50
12-3-57


JUL
Hump on ℄
12-19-57

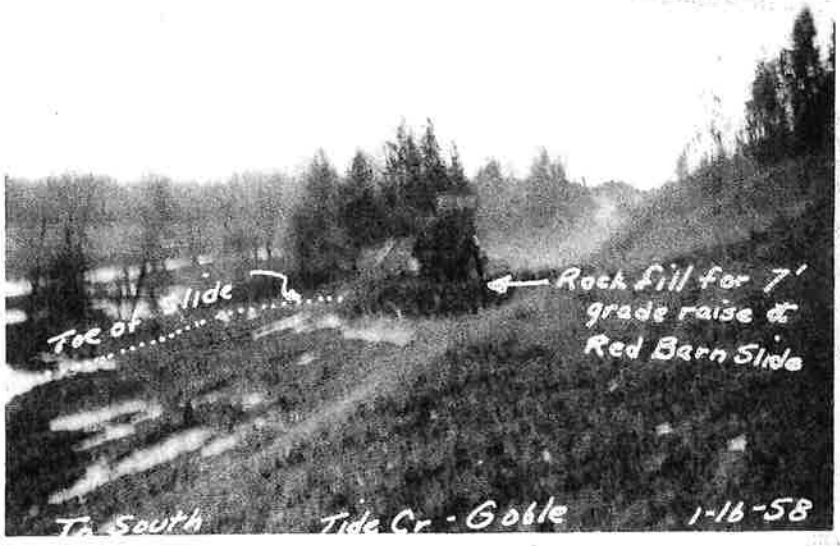
17



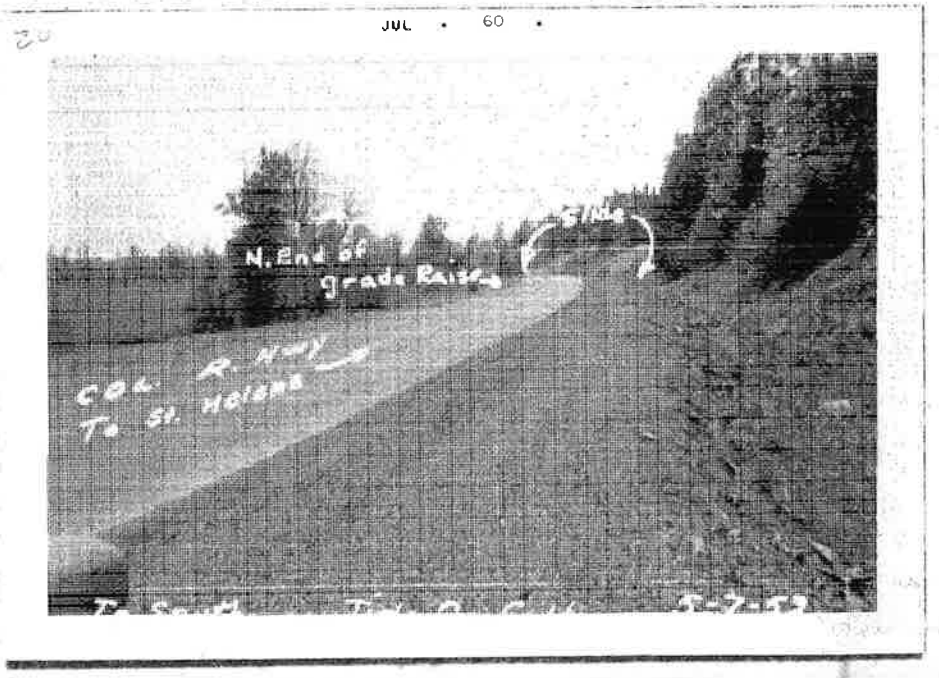
JUL • 60

Photographs 18 and 19 show the corrective action taken to counter balance the slide.

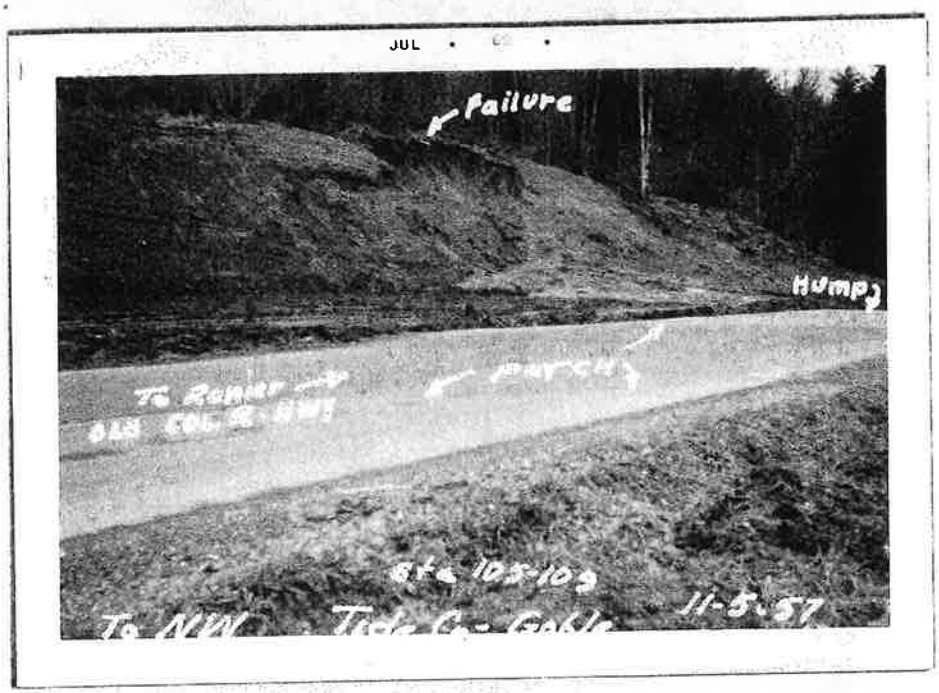
18

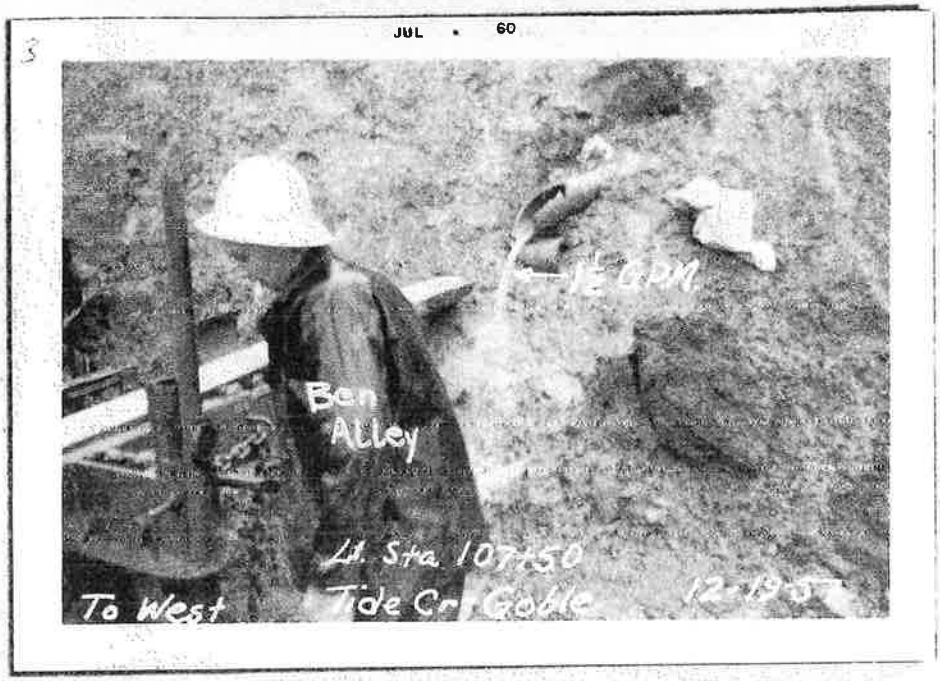


Photograph 20 shows the completed grade raise, counter balance and slide area.

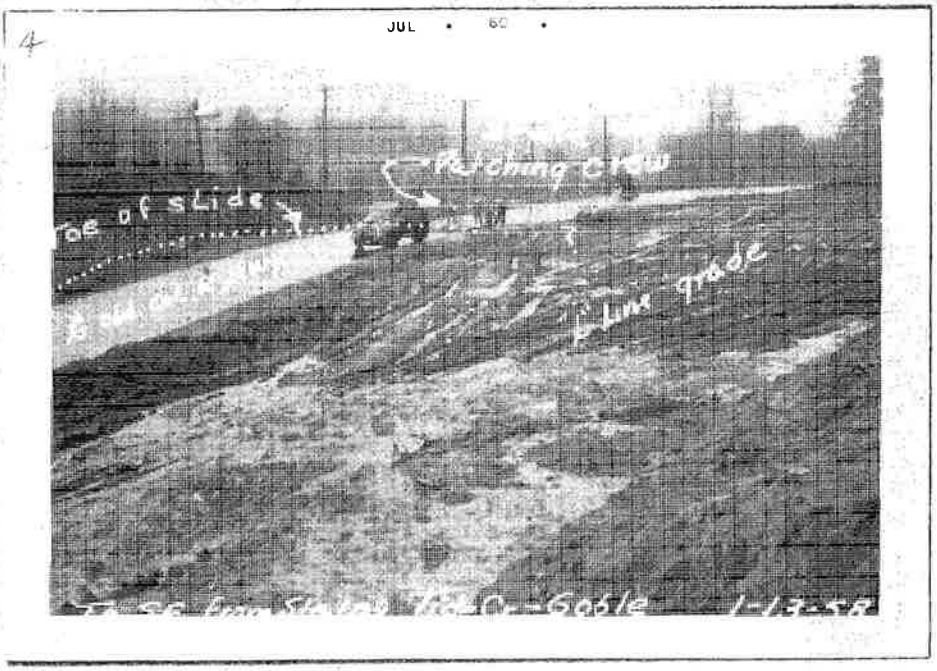


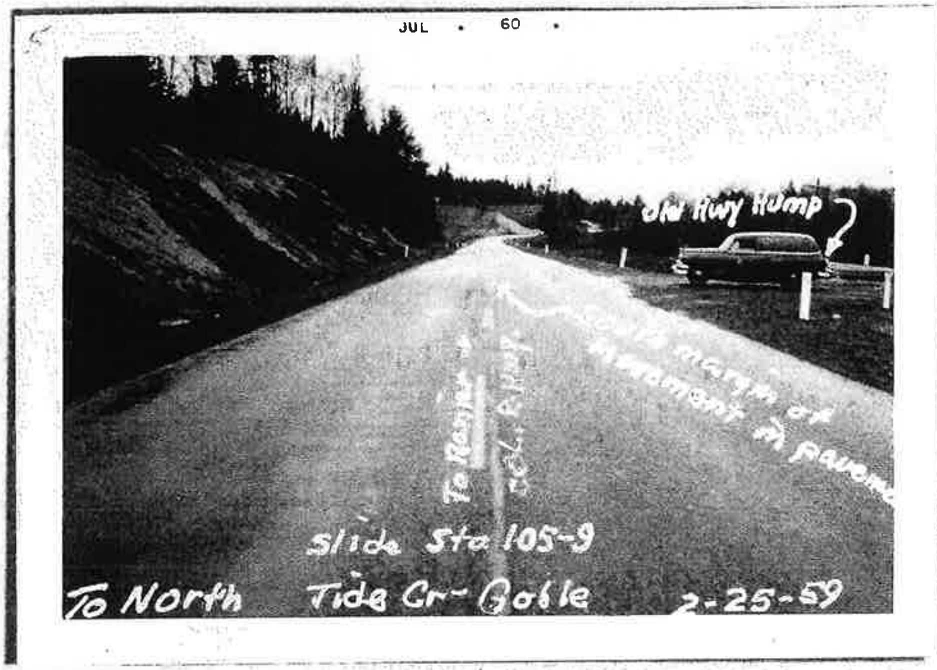
Photographs 1 to 3 show slope failure and excess surface water and horizontal drains as corrective measure.

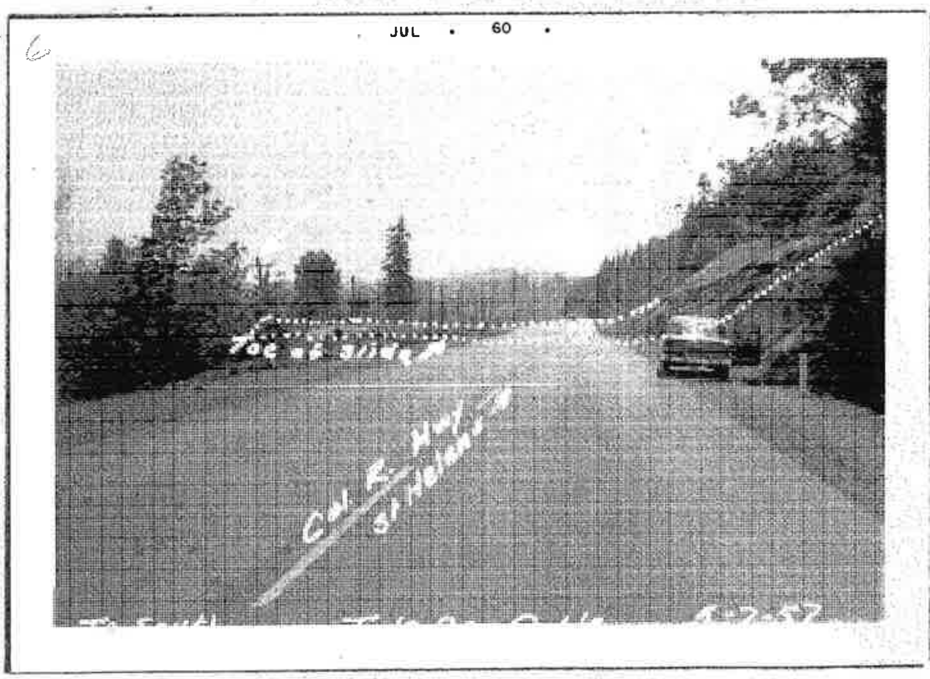




Photographs 4 to 6 show pooching action and limits of slide in the new roadbed.



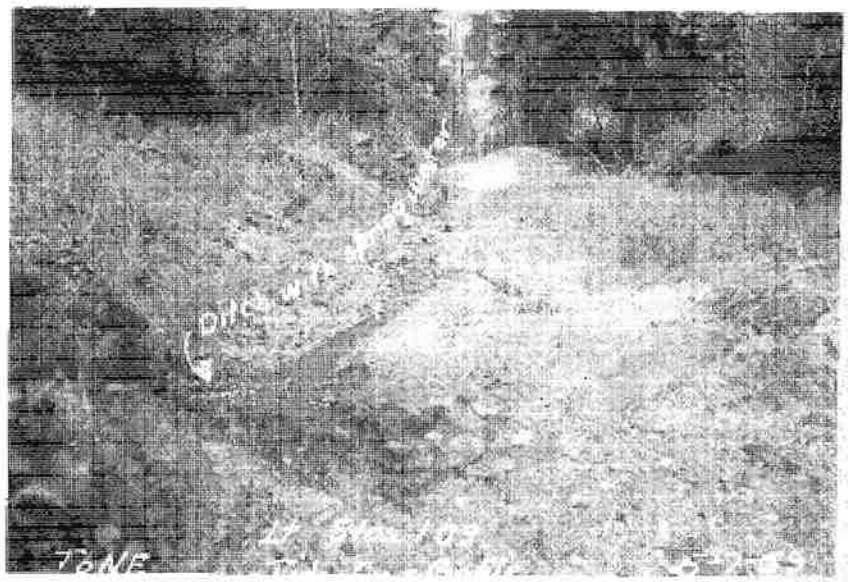

JUL 60
Old Hwy Hump
To Rainier
Col. R. Hwy
Slide Sta 105-9
To North
Tide Cr-Goble
2-25-59


JUL 60
Toe of slide
Col. R. Hwy
St Helens

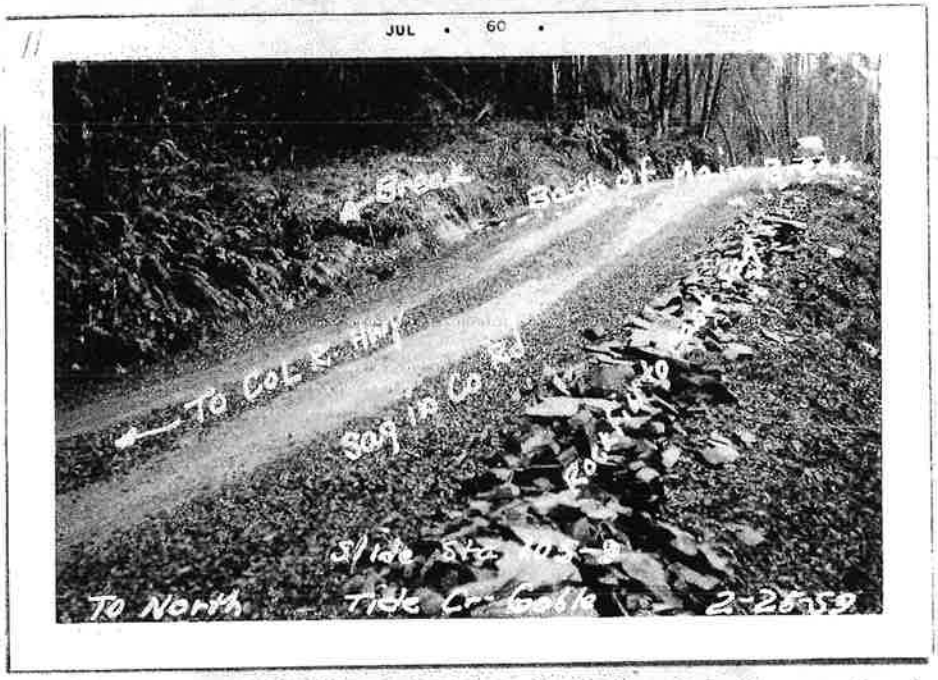
Photographs 7 to 10 show surface cracks, surface water and drainage correction in upper areas of slide approximately 800 feet left of Columbia River Highway.

7

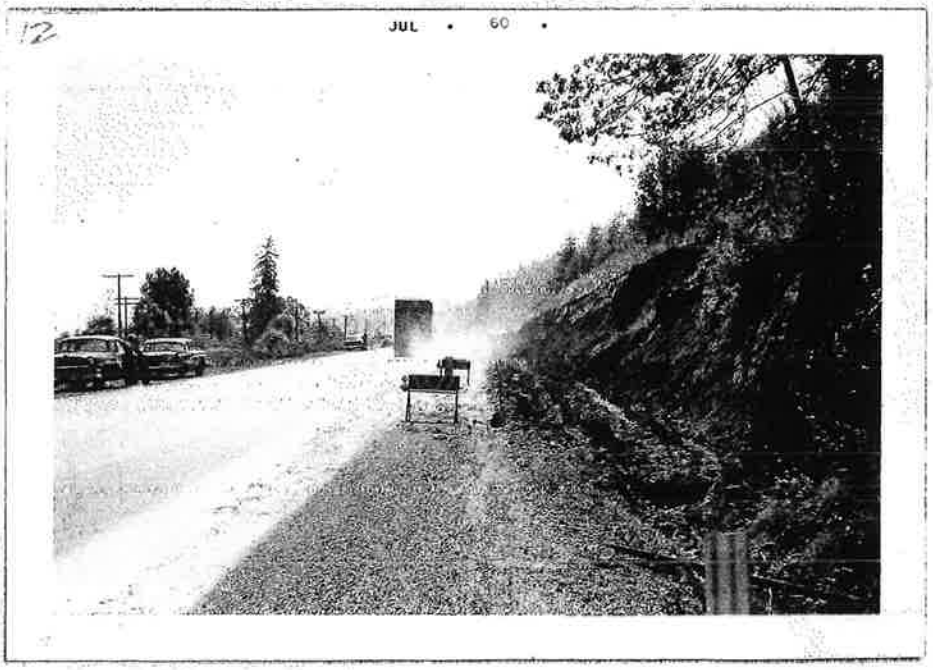
10



Photograph 11 shows settlement and slide actions in Tide Creek Road approximately 1,000 feet left of Columbia River Highway.



Photographs 12 and 13 show excavation at toe of cut slope in preparation for the rock wall counter balance.



13

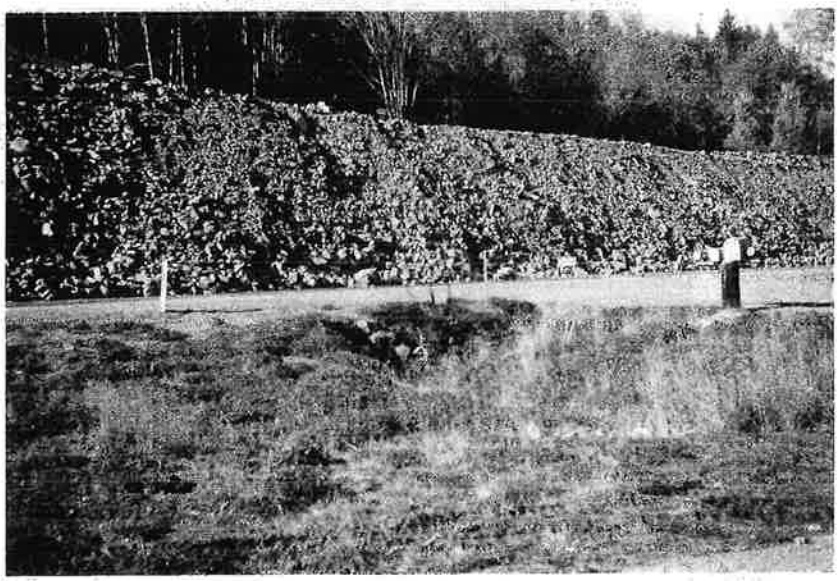
Photograph 14 shows the outlet of 8-inch perforated drain pipe laid at base of rock wall counter balance to remove subsurface water.

14

Photographs 15 to 18 show different stages of construction of rock wall counter balance at toe of slide.

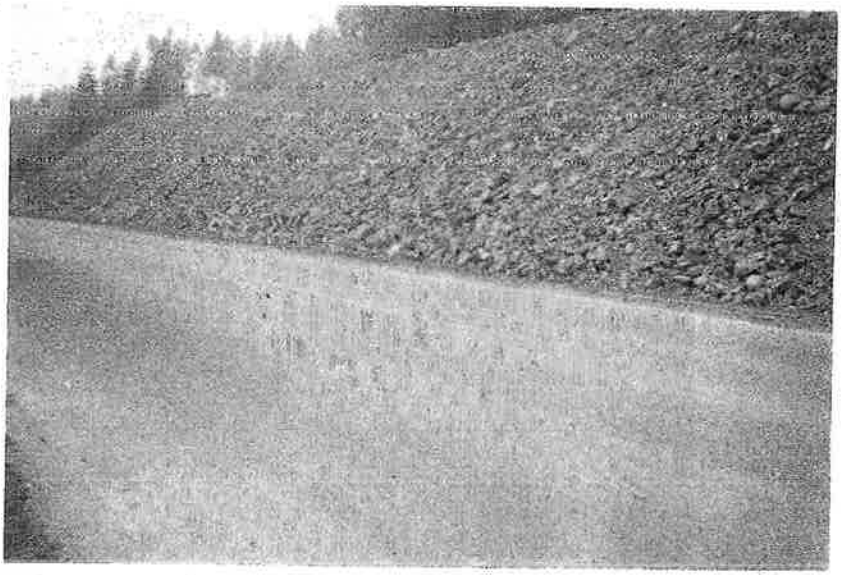
15

JUL • 60 •



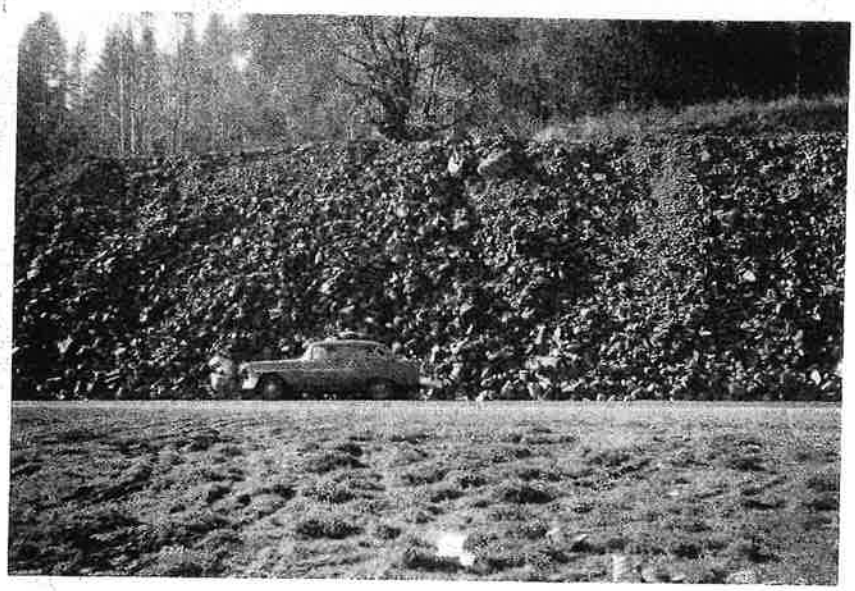
16

JUL • 60



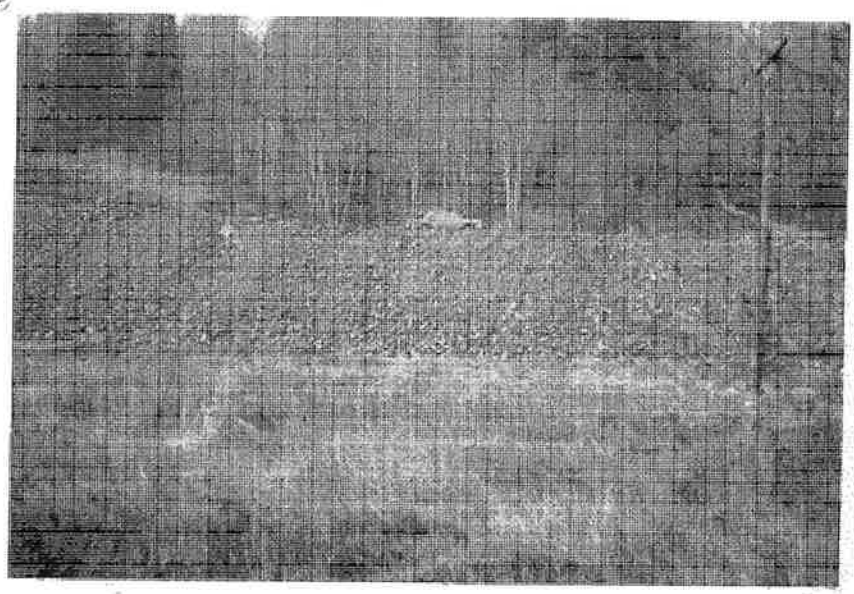
JUL • 60 •

1C



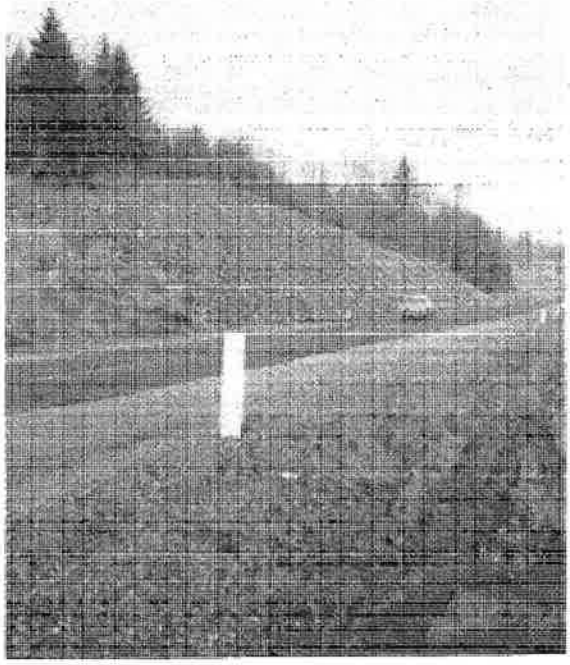
JUL • 60 •

1E



Photograph 19 shows the completed rock wall counter balance and roadbed through slide area.

19



JUL • 60

ATTACHMENT 11

lancaster mobley

Lupine Meadow

Transportation Impact Analysis

Columbia County, OR

Date:
October 27, 2023

Prepared for:
Agnes Petersen

Prepared by:
Myla Cross
Jennifer Danziger, PE

RENEWS: 12/31/2023

Table of Contents

List of Appendices

List of Figures

List of Tables

Executive Summary

1. This Transportation Impact Study (TIA) evaluates the transportation impacts of the development of 8 single-family homes, to be constructed on Map No. 6225 Tax Lot 400, opposite of 33300 Tide Creek Road in Columbia County, Oregon.
2. The project site encompasses approximately 44.96 acres located north of Tide Creek Road. It is currently undeveloped and surrounded by residential land uses.
3. Three accesses along Tide Creek Road will be constructed. Two will serve individual residences and one will be shared access serving 6 residences.
4. The trip generation calculations show that the proposed project is projected to generate 6 morning peak hour trips, 8 evening peak hour trips, and 76 average weekday trips.
5. No significant trends or crash patterns were identified at any of the study intersections. Accordingly, no specific safety mitigation is recommended.
6. Sight distance requirements per Columbia County standards can be met at all of the site accesses.
7. The projected traffic demand at the shared site access does not meet the left-turn lane warrant thresholds under buildout conditions.
8. Traffic signal warrants are not met at the intersection of Tide Creek Road and US 30.
9. The new accesses and added traffic from the proposed development will not create significant conflicts with existing driveways.
10. All study intersections are projected to meet ODOT and the Columbia County standards under all analysis scenarios.
11. With a peak hour increase of only 1 vehicle every 7 to 10 minutes, residents along Tide Creek Road will perceive no change in average delay; driveways will continue to operate at LOS A.

Project Description

Introduction

This Transportation Impact Study (TIA) evaluates the transportation impacts of the development of 8 single-family homes, , to be constructed on Map No. 6225 Tax Lot 400, opposite of 33300 Tide Creek Road in Columbia County, Oregon.

This report follows the Columbia County *Guidelines for Transportation Impact Analysis.*[1] Its purpose is to determine whether the transportation system within the vicinity of the site is capable of safely and efficiently supporting the existing and proposed uses, as well as to determine any mitigation that may be necessary. The study area was determined through discussion with the Director of Public Works.

All supporting data and calculations are included in the appendix to this report.

Location Description

The project site (Map No. 6225 Tax Lot 400) encompasses approximately 44.96 acres and is located north of Tide Creek Road. The project site is currently undeveloped with Forest Agriculture (*FA-80*) zoning. It is being developed through a Measure 49 property claim.

Figure 1 displays a vicinity map of the project area, with the project site outlined in yellow.

[1] 2017 Columbia County Transportation System Plan: Volume 2, Section P.

Figure 1: Aerial Photo of Site Vicinity (Image from Google Maps)

Three accesses along Tide Creek Road will be constructed:

1. A western driveway serving a single home located approximately 145 feet east of the property line.
2. A shared site access serving 6 homes located with a centerline 240 feet east of the property line
3. An eastern driveway serving a single home located a minimum of 380 feet east of the property line

Vicinity Streets

The proposed development is expected to primarily utilize Tide Creek Road and US 30. Table 1 provides a description of these roadways.

Table 1: Vicinity Roadway Descriptions

Street Name	Jurisdiction	Functional Classification	Cross-Section	Speed (MPH)	Curbs & Sidewalks	On-Street Parking	Bicycle Facilities
US 30	ODOT	Principal Arterial/ Statewide Hwy	2 lanes[1]	55	None	Not Permitted	None
Tide Creek Road	Columbia County	Minor Collector	2 lanes[2]	25 Statutory	None	Not Permitted	None

Notes:

1. *US 30 is approximately 24 feet wide with 6-foot shoulders with a poor pavement condition rating.*
2. *Tide Creek Road is approximately 20 to 22 feet wide with narrow to non-existent paved shoulders and steep grades. A pavement condition rating was not available.*

Tide Creek Road is classified as a minor collector roadway in the Columbia County Transportation System Plan (TSP). According to the TSP, minor collectors "often connect the neighborhoods to the major collector roadways. These roadways serve as major neighborhood routes and generally provide more direct access to properties or driveways than arterial or major collector roadways."

Study Intersections

Through coordination with Columbia County Public Work's staff, the intersection of US 30 & Tide Creek Road was identified for evaluation, along with the three proposed site accesses. The existing characteristics of the US 30 & Tide Creek Road intersection are summarized in Table 2.

Table 2: Vicinity Intersection Descriptions

	Intersection	Geometry	Traffic Control	Phasing/Stopped Approaches
1	US 30 & Tide Creek Road	3-Leg	Stop-Controlled	EB Stop-Controlled

Site Trips

Trip Generation

To estimate the number of trips that will be generated by the proposed use, trip rates from the *Trip Generation Manual*[2] were used. Specifically, trip rates from the land use code 210, *Single Family Detached Housing* are used to estimate the proposed development's trip generation based on the number of dwelling units (8 units).

The trip generation estimates are summarized in Table 3. Detailed trip generation calculations are included as an attachment to this memorandum.

Table 3: Trip Generation Summary

Land Use	ITE Code	Size	Morning Peak Hour			Evening Peak Hour			Weekday Total
			In	Out	Total	In	Out	Total	
Single-Family Detached Housing	210	8 DU	2	4	6	5	3	8	76

The trip generation calculations show that the proposed project is projected to generate 6 morning peak hour trips, 8 evening peak hour trips, and 76 average weekday trips. The site will not generate vehicles exceeding 26,000-pound gross vehicle weight (13 tons).

Note, the site trip generation is well below the threshold of more than 25 peak hour trips or more than 400 daily trips which Columbia County typically uses as the basis for requiring a TIA. Construction trip generation is not considered as criteria for requiring a TIA.

[2] Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 11th Edition, 2021.

Trip Distribution

A directional distribution of site trips to and from the proposed development was estimated based on locations of likely destinations, locations of major transportation facilities in the site vicinity, and turning movement counts at the highway intersection. The following trip distribution was used for analysis:

- Approximately 90 percent of site trips will travel to/from the south/east along US 30 via Tide Creek Road
- Approximately 10 percent of site trips will travel to/from the north/west along US 30 via Tide Creek Road

Trip Assignment

The project trip assignment is shown in the third column of Figure 2.

Traffic Volumes

Existing Conditions

Turning movement counts were conducted on Wednesday, October 4, 2023, between 7:00 AM and 9:00 AM and between 4:00 PM and 6:00 PM at the existing intersection of US 30 and Tide Creek Road (see Appendix B). The intersection's respective morning and evening peak hours were used for analysis.

Traffic volumes through ODOT intersections were seasonally adjusted to reflect the 30th highest hour of traffic. ODOT Summer Trends were used to develop a seasonal adjustment factor (SAF) of 1.185 that was applied to the existing traffic counts. Turning movement volumes are shown in the first column of Figure 2.

In addition to turning movement counts, 24-hour traffic counts were collected on Tide Creek Road east of the site on October 5, 2023, and on Tide Creek Road west of the site on October 18, 2023. These counts included a measure of daily volume by hour, vehicle classification and speed. Detailed counts are included in Appendix B; key findings are summarized below.

- The average daily volume (ADT) was measured at 500 vehicles east of the site and 465 vehicles west of the site. The difference in volumes is likely due to the variation in daily traffic demand and not just the traffic from the homes and businesses between the two count locations.
- Based on an average of the two days of vehicle classification data, the average percentage of heavy vehicles (i.e., more than 3 axles) was 1.7 percent.
- The 85th percentile speed of traffic traveling eastbound toward the site from the west was 47 mph.
- The 85th percentile speed of traffic traveling westbound toward the site from the east was 42 mph.

Background Conditions

For the general background growth, an annual growth rate of 2.0 percent per year for 2 years was applied to the year 2023 existing traffic volumes to estimate year 2025 background traffic volumes. This rate is substantially higher than the 20-year forecast growth rate of 0.5 percent per year that was derived from ODOT's Future Highway Volume Table and thus provides a conservative estimate. Turning movement volumes are shown in the second column of Figure 2.

With this growth rate the ADT under background conditions would be 520 vehicles or less east of the site.

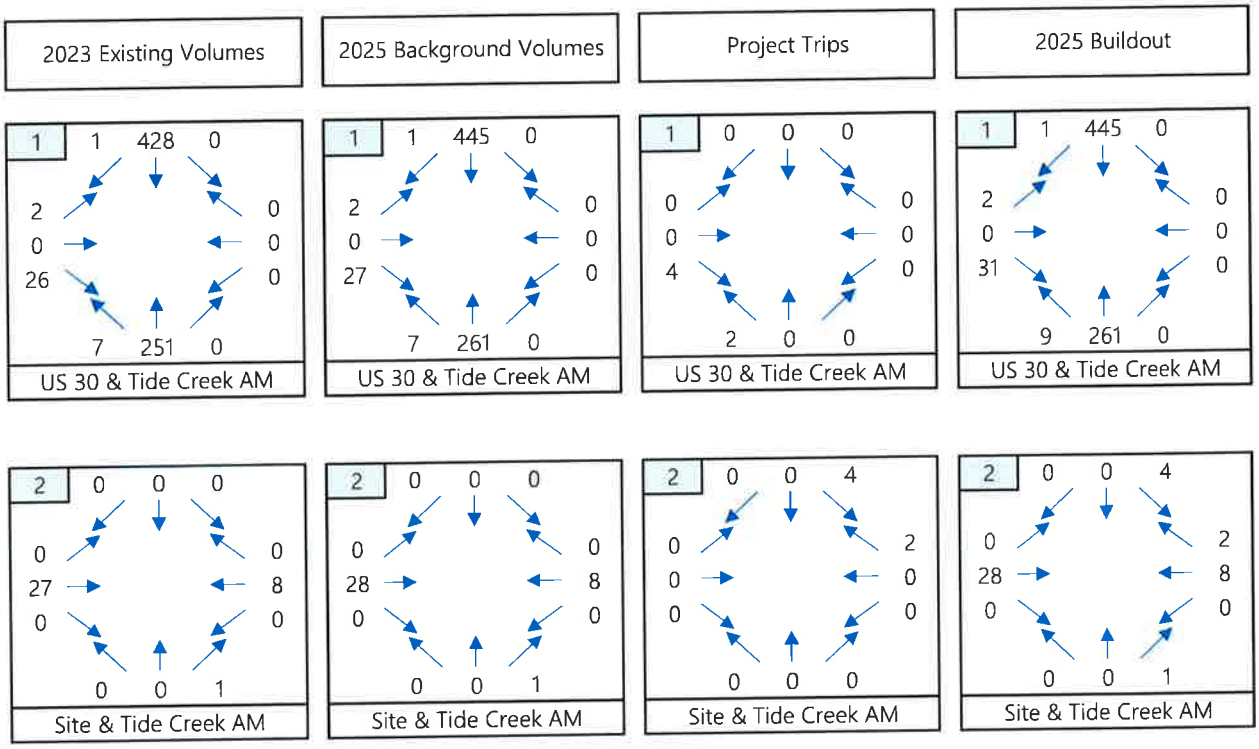
Buildout Conditions

The trips to be generated by the proposed development, quantified earlier within the *Site Trips* section, were added to the year 2025 background traffic volumes in order to obtain the year 2025 traffic volumes with the full buildout and occupancy of the proposed development. As a worst-case evaluation of operations, all trips from the development were assigned to the shared access. In reality, the trips will be distributed across the three accesses with most still using the shared access. Turning movement volumes are shown in the fourth column of Figure 2.

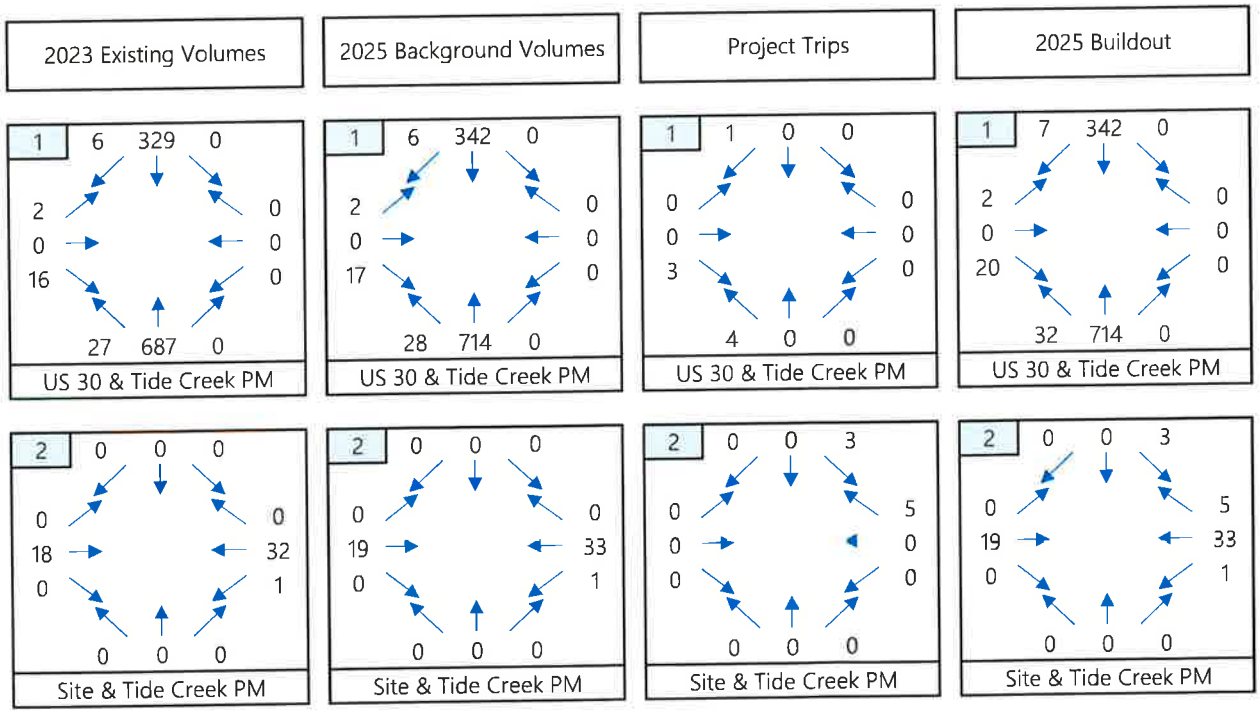
With project traffic, the ADT under buildout conditions would be 596 vehicles or less east of the site.

AM PEAK HOUR

no scale



PM PEAK HOUR



lancaster mobley

PEAK HOUR TRAFFIC VOLUMES ALL SCENARIOS

Figure 2
Lupine Meadow
Columbia County, Oregon

Safety

Crash History Review

Using data obtained from ODOT's Crash Data System, a review of approximately five years of the most recent available crash history (January 2017 through December 2021) was performed at the study intersections. The crash data was evaluated based on the number of crashes, the type of collisions, and the severity of the collisions. Crash severity is based on injuries sustained by people involved in the crash, and includes five categories:

- *PDO* – Property Damage Only
- *Injury C* – Possible Injury
- *Injury B* – Suspected Minor Injury
- *Injury A* – Suspected Serious Injury
- *Fatality*

Crash rates provide the ability to compare safety risks at different intersections by accounting for both the number of crashes that have occurred during the study period and the number of vehicles that typically travel through the intersection. Crash rates were calculated using the common assumption that traffic counted during the evening peak hour represents approximately 10 percent of the average daily traffic (ADT) at the intersection.

The study intersections adhere to the crash analysis methodologies within ODOT's Analysis Procedures Manual (APM). According to *Exhibit 4-1: Intersection Crash Rates per MEV by Land Type and Traffic Control* of the APM, intersections which experience crash rates in excess of their respective 90th percentile crash rates should be "flagged for further analysis". Crash rates in excess of the 90th percentile crashes per million entering vehicles (CMEV) may be indicative of design deficiencies and therefore require a need for further investigation and possible mitigation.

Columbia County Public Works' staff requested a crash history review at the study intersection of Tide Creek Road & US 30 as well as along Tide Creek Road from the site frontage to US 30. Table 4 below provides a summary of crash types while Table 5 summarizes crash severities and rates for each of the study areas. Detailed crash data is provided in Appendix C.

Table 4: Crash Type Summary

Segment or Intersection	Crash Type						Total Crashes
	Turn	Rear End	Fixed	Ped	Bike	Other	
Tide Creek Road (Site Access to US 30)	0	0	1	0	0	1	2
US 30 & Tide Creek Road	1	5	0	0	0	0	6

Table 5: Crash Severity and Rate Summary

Segment or Intersection	Severity					Total Crashes	PHEV	Crash Rate	90th % Rate
	PDO	C	B	A	Fatal				
Tide Creek Road (Site Access to US 30)	0	0	2	0	0	2	-	-	-
US 30 & Tide Creek Road	1	3	1	1	0	6	1,067	0.308	0.475

Tide Creek Road

Two crashes were reported on Tide Creek Road during the five-year crash analysis period. Both collisions involved a single vehicle traveling in the eastbound direction:

- One crash was reported approximately 200 feet west of US 30. It involved a motorcycle that overturned at a curve in the roadway. The event code indicates the driver may have been avoiding another vehicle but the direction of the non-contact vehicle is not reported. Thus, it cannot be determined if the driver lost control while slowing due to another vehicle traveling in the same direction or was swerving to avoid a vehicle traveling in the opposite direction.
- One crash was reported approximately 0.25 miles west of US 30. It involved a westbound passenger vehicle that collided with a fixed object. The event code for this crash also indicates that the driver may have been avoiding another vehicle but the direction of the non-contact vehicle is not reported. Given the position of the crash on a curve and distance from the highway intersection, it is more likely that the driver swerved to avoid a vehicle traveling in the opposite direction.

US 30 & Tide Creek Road

Six reported crashes were associated with the intersection during the five-year analysis period. All crashes appear to have occurred traveling westbound on US 30, which is northbound specifically at the intersection. One was reported as a turning collision and 5 were reported as rear-end collisions. Closer examination of the turning collision descriptors indicates that it was likely to have been a rear-end collision where a vehicle traveling straight on US 30 struck a vehicle slowing to make a left turn onto Tide Creek Road.

Crash Severity

One of the crashes reported in the five-year analysis period resulting in an incapacitating injury (Injury A) at the intersection of Tide Creek Road & US 30. This rear-end collision was reported in the westbound direction on US 30, which is northbound in the study area. The driver of the striking vehicle was reported to have been following too closely and had a suspended license. The driver of the striking vehicle is reported to not have sustained any injuries, the driver of the struck vehicle is reported to have sustained injuries consistent with an Injury A classification. The crash occurred under clear, dry, daytime conditions.

Pedestrian and Bicycle Collisions

None of the crashes reported in the five-year analysis period had a pedestrian or bicyclist involved.

ODOT 90th Percentile Crash Rates

The study intersection of Tide Creek Road & US 30 was found to not have a rate above the respective ODOT 90th percentile crash rates.

Conclusion

Based on a review of the most recent five years of available crash data, no significant trends or crash patterns were identified at any of the study intersections. No safety mitigation is recommended per the crash data analysis.

Sight Distance

A sight distance analysis was performed for the planned new local accesses. Sight distance was measured and evaluated in accordance with standards established in *A Policy on Geometric Design of Highways and Streets*[3] as well as per *Columbia County Roadway Standards*. According to Columbia County standards, the driver's eye is assumed to be 10 feet from the near edge of the nearest travel lane of the intersecting street and at a height of 3.5 feet above the minor-street approach pavement. The vehicle driver's eye-height along the major-street approach is assumed to be 3.5 feet above the cross-street pavement.

Columbia County Standards

Per *Columbia County Roadway Standards*, the minimum sight distance requirement will be 10 times the 85th percentile speed to be measured 10 feet from the edge of the travel lane. The speed data on Tide Creek Road showed that the 85th percentile eastbound speed is 47 mph approaching the site accesses from the west and the westbound speed is 42 mph approaching the site accesses from the east. Therefore, the minimum sight distance requirements are 470 feet looking to the west of the site accesses and 420 feet looking to the east of the site accesses.

Stopping Sight Distance

Stopping sight distance (SSD) is considered the minimum requirement to ensure safe operation of the driveway access. This distance allows the driver of a vehicle traveling on the major street to react to a turning vehicle or other object in the roadway and come to a complete stop to avoid a collision. To ensure safe operation of a driveway, the available sight distance must at least equal the minimum required stopping sight distance. SSD is the same for both passenger vehicles and trucks.

For vehicles traveling in the eastbound direction toward the site, Tide Creek Road was measured to have an approximately 9 percent downgrade. At an 85th percentile speed of 47 mph, the SSD is 460 feet.

For vehicles traveling in the westbound direction toward the site, Tide Creek Road was measured to have an approximately 7 percent upgrade. At an 85th percentile speed of 42 mph, the SSD is 300 feet.

Available Sight Distance

Due to existing grade differences and foliage on the property, field measurements were taken at the edge of pavement. Available sight lines were calibrated on aerial photos using these measurements and then calculated

[3] American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, 7th Edition, 2018.

from a distance of ten feet back to provide sight distance measurements that comply with Columbia County standards. Table 6 compares the available sight distance measured in the field with the recommendations and requirements for the traffic movements at the site accesses. Illustrations of sight lines are included in Appendix C.

Table 6: Sight Distance Comparison

Access	Columbia County Requirements		Required SSD		Available Sight Distance	
	To Left	To Right	To Left	To Right	To Left	To Right
Eastern Driveway & Tide Creek Road	420 ft	470 ft	300 ft	460 ft	> 700 ft	> 470 ft
Shared Site Access & Tide Creek Road	420 ft	470 ft	300 ft	460 ft	> 700 ft	470 ft
Western Driveway & Tide Creek Road	420 ft	470 ft	300 ft	460 ft	> 700 ft	470 ft

Conclusion

Based on the sight distance analysis, all site accesses are expected to have adequate sight lines. No mitigation pertaining to sight distance is required.

Access Spacing

According to the Columbia County TSP the minimum access spacing between driveways is 65 feet on a minor collector as measured from center to center of all adjacent approaches. The proposed driveway locations will meet this standard.

Left-Turn Lane Warrants

Tide Creek Road is a low-volume, two-lane minor collector road. As such, left-turn lanes are not typically provided at intersections or driveways. However, left-turn warrants were assessed at the shared site access to determine if threshold to install a turn lane would be met.

A left-turn refuge lane is primarily a safety consideration for the major street, removing left-turning vehicles from the through traffic stream. The left-turn lane warrants used were developed from the *National Cooperative Highway Research Project's* (NCHRP) *Report 457*. Turn lane warrants were evaluated based on the number of advancing and opposing vehicles as well as the number of turning vehicles, the travel speed, and the number of through travel lanes.

Left-turn lane warrants are not projected to be met for the shared site access under buildout conditions. Accordingly, no new turn lanes are recommended.

Preliminary Traffic Signal Warrants

Future traffic demand on Tide Creek Road at the site accesses and at the highway is well below the thresholds for a traffic signal; therefore, no detailed warrant analysis was performed.

Potential Access Conflicts

The proposed development will add three accesses to the north side of Tide Creek Road along a section that has three existing accesses on the south side of the road. The shared access will be located opposite an existing driveway but the other two driveways will be offset from accesses across the street.

Tide Creek Road has a two-lane cross section that can adequately serve the forecast demand and left-turn lane warrants are not met. Without a center refuge lane, there is no potential for head-on collisions between vehicles trying to make a left turn. Furthermore, the volume on the roadway is so low that the likelihood of encountering another turning vehicle is relatively low, even during peak hours. Therefore, the short driveway offsets are not anticipated to be a safety concern.

Thus, the new accesses and added traffic from the proposed development will not create significant conflicts with existing driveways.

Operational Analysis

An operational analysis was conducted for each of the study intersections per the unsignalized intersection analysis methodologies in the *Highway Capacity Manual* (HCM)[4]. The Synchro/SimTraffic software was used for the analysis.

Two performance measures are assessed for intersection operations:

- The Level of service (LOS) is a measure based on average delay per vehicle that ranges from LOS A, which indicates little or no delay, to LOS F, which indicates a significant amount of congestion and delay.
- The volume to capacity (v/c) ratio is a measure that compares the traffic volume (demand) against the available capacity of an intersection, with v/c ratios above 1.0 indicating that an intersection is operating above capacity.

Performance Targets

The intersection of US 30 & Tide Creek Road is under the jurisdiction of the Oregon Department of Transportation. The applicable minimum operational standards for these facilities are established under the Oregon Highway Plan and are based on the v/c ratio of the intersection. According to the Oregon Highway Plan, US 30 is a Statewide Freight Route, and has a maximum allowable v/c ratio of 0.70.[5]

According to the Columbia County TSP, for two-way, stop-controlled intersections, all approaches serving more than 20 vehicles during the highest one-hour period of an average weekday shall operate with a LOS E or better and a v/c ratio not higher than 0.90. Mobility targets do not apply to approaches at intersections serving 20 vehicles or fewer during the peak hour.

Delay & Capacity Analysis

The LOS, delay, and v/c results of the capacity analysis are shown in Table 7. Detailed calculations as well as tables showing the relationship between delay and LOS are included Appendix D. For a conservative analysis, the site accesses along Tide Creek Road were condensed to the single shared access and driveway volumes were included for the existing residence south of the highway.

As shown in Table 7, all study intersections are projected to operate within ODOT and the Columbia County standards under all analysis scenarios.

The increased traffic from the proposed development will not measurably impact the operations at other driveways along Tide Creek Road. With a peak hour increase of only 1 vehicle every 7 to 10 minutes, residents along Tide Creek Road will perceive no change in average delay; driveways will continue to operate at LOS A.

---

[4] Transportation Research Board, *Highway Capacity Manual 7th Edition*, 2022.

[5] Oregon Department of Transportation, *1999 Oregon Highway Plan, Including amendments November 1999 through May 2015*, 1999.

Table 7: Capacity Analysis Summary

Intersection & Scenario	Morning Peak Hour			Evening Peak Hour		
	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C
1. US 30 & Tide Creek Road						
2023 Existing Condition	B	12	0.05	B	12	0.03
2025 Background Condition	B	12	0.05	B	12	0.04
2025 Buildout Condition	B	12	0.06	B	12	0.04
2. Site Access & Tide Creek Road						
2023 Existing Condition	A	9	<0.01	A	7	<0.01
2025 Background Condition	A	9	<0.01	A	7	<0.01
2025 Buildout Condition	A	9	0.01	A	9	<0.01

Conclusions

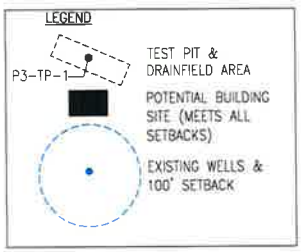
Findings from this TIS include:

- The trip generation calculations show that the proposed project is projected to generate 6 morning peak hour trips, 8 evening peak hour trips, and 76 average weekday trips.
- No significant trends or crash patterns were identified at any of the study intersections. Accordingly, no specific safety mitigation is recommended.
- Sight distance requirements per Columbia County standards can be met at all of the site accesses.
- The projected traffic demand at the shared site access does not meet the left-turn lane warrant thresholds under buildout conditions.
- Traffic signal warrants are not met at the intersection of Tide Creek Road and US 30.
- The new accesses and added traffic from the proposed development will not create significant conflicts with existing driveways.
- All study intersections are projected to meet ODOT and the Columbia County standards under all analysis scenarios.
- With a peak hour increase of only 1 vehicle every 7 to 10 minutes, residents along Tide Creek Road will perceive no change in average delay; driveways will continue to operate at LOS A.

Appendix A – Site Information

Site Plan

Trip Generation Calculations



GENERAL NOTES

ALL PROPOSED LOT DIMENSIONS ARE APPROXIMATE SUBJECT TO FINAL PLAT PREPARED BY PROFESSIONAL LAND SURVEYOR.

TOPOGRAPHY IS BASED ON COUNTY G.I.S. AND USGS TOPOGRAPHIC MAPS. FINAL TOPOGRAPHY WILL DOCUMENTED BY PROFESSIONAL LAND SURVEYOR AT FINAL PLAT.

FINAL ROAD DESIGN, GRADES, CROWN, CURVE RADII, STORMWATER AND EROSION CONTROL WILL BE DESIGNED BY A LICENSED DESIGN PROFESSIONAL.

LOT NOTES:

PARCEL #400 APPROXIMATE AREA BEFORE AND AFTER DEVELOPMENT
ORIGINAL PARCEL = ± 48 AC.
REMNANT PARCEL AFTER M49 DEVELOPMENT = ±31 AC.
REMNANT PARCEL HAS ±709' ROAD FRONTAGE ON TIDE CREEK ROAD

PRIVATE R.O.W. = ± 35,600 sq. ft. OR +/- 0.8 AC.

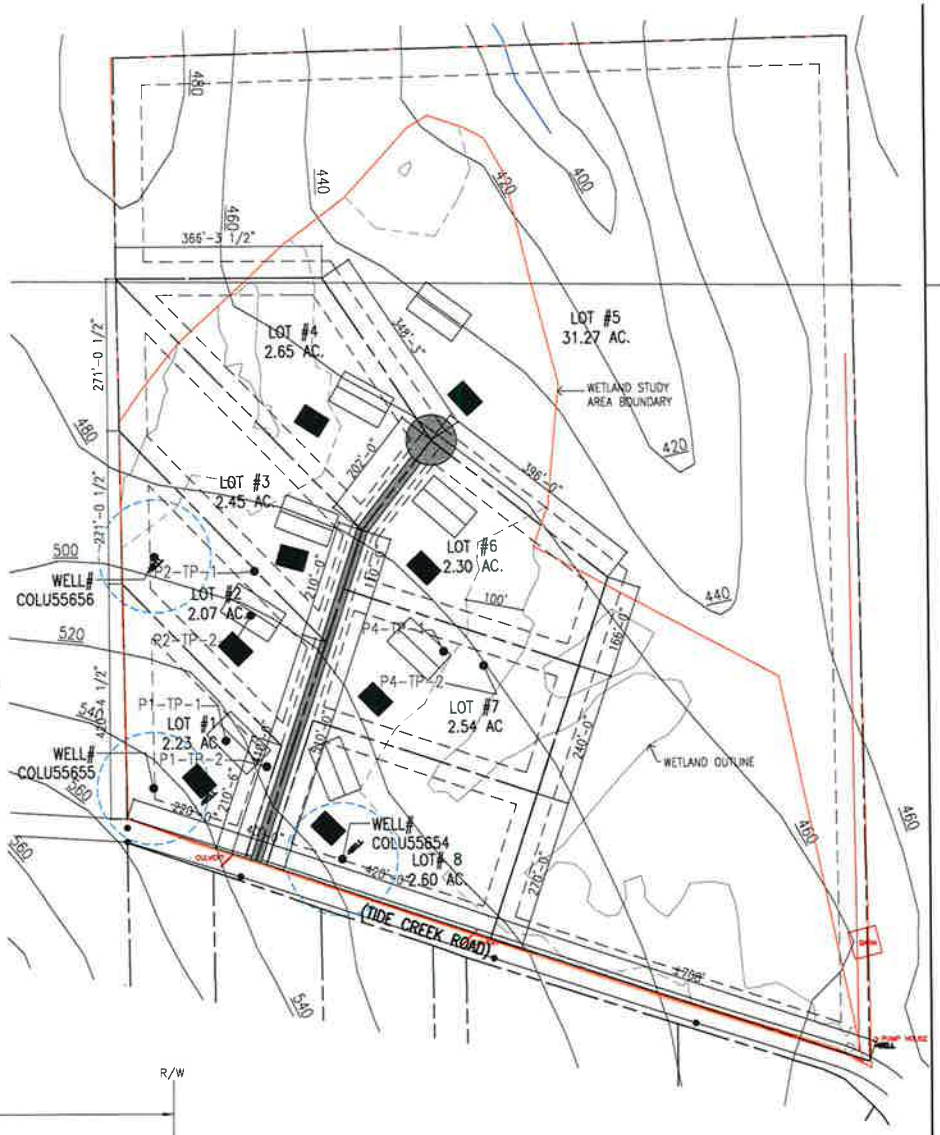
DEVELOPMENT FRONTAGE: 1250 ft.

SEPTIC INFORMATION:

SEPTIC TEST PITS ARE LABELED BASED ON THE TEST PIT EVALUATION REPORTS FROM APRIL 30, 2019. SEE NARRATIVE, ATTACHMENT #7.

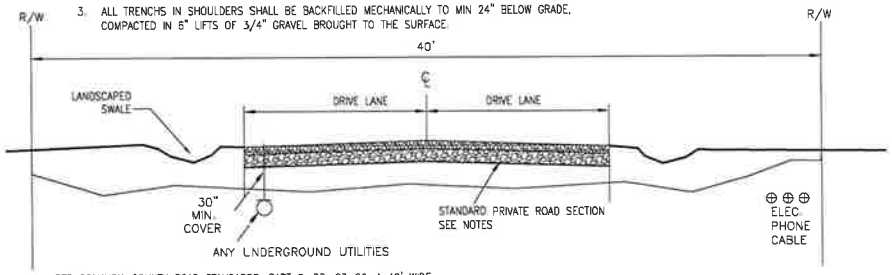
EACH PROPOSED SEPTIC DRAINFIELD AREA MEASURES ± 30'x100' AND IS SITED A MINIMUM OF:

- 100' FROM ANY WETLAND (OR WETLAND STUDY AREA BORDER)
- 100' FROM ANY WELL
- 10' FROM ANY PROPERTY LINE
- 50' FROM ANY DOWN-SLOPE STRUCTURE



STREET SECTION NOTES:

1. PER COLUMBIA COUNTY ROAD STANDARDS PRIVATE ROAD SHALL BE AS FOLLOWS:
   - BASE: 8" OF 1-1/2"-0 COMPACTED GRAVEL
   - LEVELING COURSE: 2" MIN OF 3/4"-0 COMPACTED GRAVEL
2. ALL TRENCH CROSSINGS OR UNDERGROUND UTILITIES SHALL BE BACKFILLED MECHANICALLY TO MIN 30" BELOW GRADE, COMPACTED IN 6" LIFTS OF 3/4" GRAVEL BROUGHT TO THE SURFACE OF THE STREET AGG. ALL PATCHES SHALL BE OF LIKE MATERIAL AS ORIGINAL SURFACE.
3. ALL TRENCHS IN SHOULDERS SHALL BE BACKFILLED MECHANICALLY TO MIN 24" BELOW GRADE, COMPACTED IN 6" LIFTS OF 3/4" GRAVEL BROUGHT TO THE SURFACE.



PER COLUMBIA COUNTY ROAD STANDARDS, PART 2, PP. 23-26, A 40' WIDE PRIVATE R.O.W. MAY BE USED TO SERVE UP TO SIX HOMES. THIS CONFIGURATION OF THE PRIVATE R.O.W. / ROAD MEETS ALL APPLICABLE COUNTY STANDARDS.

2 PP-1 TYPICAL ROAD SECTION

1 PP-1 PRELIMINARY PLAT 1" = 150'

Page reduced to letter size for report.

AKAAN
architecture + design llc
101 ST HELENS ST.
ST HELENS, OR 97051
T: 503 366 3050 F: 503 366 3055

Owner / Developer:
AGNES PETERSEN
PO BOX 748
ST HELENS, OR 97051

PRELIMINARY PLAT
Lupine Meadow
MEASURE 49 AUTHORIZATIONS
TAX LOT 6N2W-2500-400

TIDE CREEK ROAD,
DEER ISLAND, OR 97054

SCALE: AS NOTED
DRAWN BY:
CHECKED BY:
CAD FILE: M49-Transfer-PlotPlan1.2
DATE: JUNE 21, 2023

REVISIONS
△	DATE	DESCRIPTION

CONTENTS:
PRELIMINARY PLAT

SHEET NO:

PP-2.1

TRIP GENERATION CALCULATIONS
Source: Trip Generation Manual, 11th Edition

Land Use: Single-Family Detached Housing
Land Use Code: 210
Land Use Subcategory: All Sites
Setting/Location General Urban/Suburban
Variable: Dwelling Units
Trip Type: Vehicle
Formula Type: Rate
Variable Quantity: 8

WARNING: Variable Quantity is less than Minimum Survey Size for Peak Hours

AM PEAK HOUR

Trip Rate: 0.7

	Enter	Exit	Total
Directional Split	25%	75%	
Trip Ends	2	4	6

PM PEAK HOUR

Trip Rate: 0.94

	Enter	Exit	Total
Directional Split	63%	37%	
Trip Ends	5	3	8

WEEKDAY

Trip Rate: 9.43

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	38	38	76

SATURDAY

Trip Rate: 9.48

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	38	38	76

Source: Trip Generation Manual, 11th Edition

Appendix B – Volumes

Turning Movement Counts

24-Hour Volumes

24-Hour Vehicle Classification

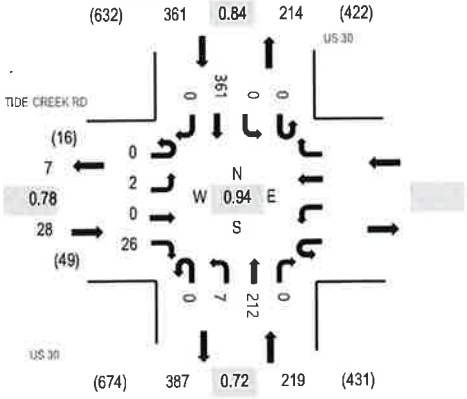
Speed Data

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

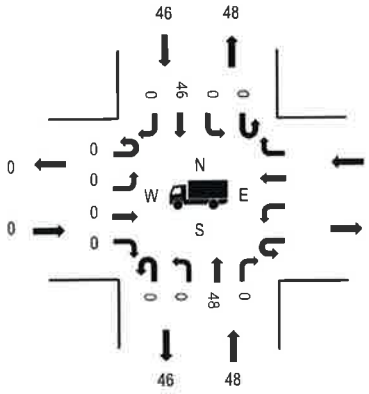
Location: 1 US 30 & TIDE CREEK RD AM
Date: Wednesday, October 4, 2023
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:15 AM - 07:30 AM

Peak Hour

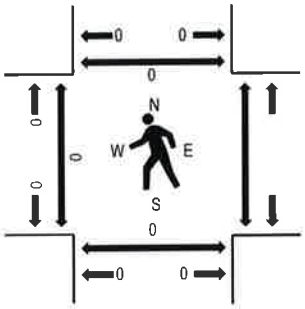
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.78
WB		
NB	21.9%	0.72
SB	12.7%	0.84
All	15.5%	0.94

Traffic Counts - Motorized Vehicles

Interval Start Time	TIDE CREEK RD Eastbound				Westbound				US 30 Northbound				US 30 Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	0	0	0					0	0	16	0	0	0	29	0	45	595
7:05 AM	0	0	0	2					0	0	17	0	0	0	17	0	36	593
7:10 AM	0	0	0	3					0	0	21	0	0	0	23	1	48	600
7:15 AM	0	1	0	2					0	0	34	0	0	0	31	0	68	608
7:20 AM	0	0	0	3					0	0	21	0	0	0	23	0	47	586
7:25 AM	0	0	0	2					0	0	19	0	0	0	26	0	47	588
7:30 AM	0	0	0	1					0	0	15	0	0	0	38	0	54	585
7:35 AM	0	1	0	2					0	0	9	0	0	0	32	0	44	568
7:40 AM	0	0	0	4					0	1	19	0	0	0	37	0	61	563
7:45 AM	0	0	0	1					0	1	12	0	0	0	36	0	50	534
7:50 AM	0	0	0	2					0	0	16	0	0	0	30	0	48	529
7:55 AM	0	0	0	0					0	0	19	0	0	0	28	0	47	525
8:00 AM	0	0	0	3					0	0	14	0	0	0	26	0	43	517
8:05 AM	0	0	0	1					0	2	15	0	0	0	25	0	43	
8:10 AM	0	0	0	5					0	3	19	0	0	0	29	0	56	
8:15 AM	0	0	0	0					0	0	16	0	0	0	29	1	46	
8:20 AM	0	0	0	3					0	0	26	0	0	0	20	0	49	
8:25 AM	0	0	0	2					0	2	21	0	0	0	19	0	44	
8:30 AM	0	0	0	1					0	1	15	0	0	0	20	0	37	
8:35 AM	0	0	0	1					0	0	17	0	0	0	21	0	39	
8:40 AM	0	1	0	1					0	1	9	0	0	0	20	0	32	
8:45 AM	0	0	0	2					0	0	15	0	0	0	28	0	45	
8:50 AM	1	1	0	2					0	1	16	0	0	0	23	0	44	
8:55 AM	0	0	0	1					0	1	17	0	0	0	20	0	39	
Count Total	1	4	0	44					0	13	418	0	0	0	630	2	1,112	
Peak Hour	0	2	0	26					0	7	212	0	0	0	361	0	608	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

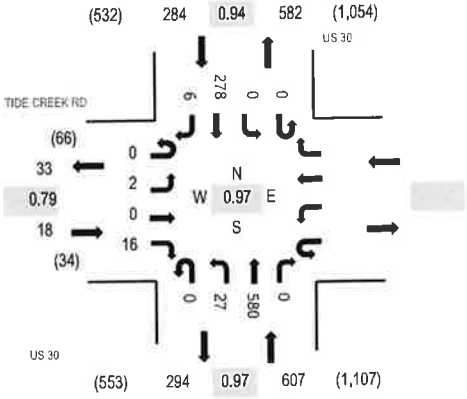
Interval	Heavy Vehicles					Interval	Bicycles on Roadway					Interval	Pedestrians/Bicycles on Crosswalk				
Start Time	EB	NB	WB	SB	Total	Start Time	EB	NB	WB	SB	Total	Start Time	EB	NB	WB	SB	Total
7:00 AM	0	4		3	7	7:00 AM	0	0		0	0	7:00 AM	0	0		0	0
7:05 AM	1	3		2	6	7:05 AM	0	0		0	0	7:05 AM	0	0		0	0
7:10 AM	0	4		4	8	7:10 AM	0	0		0	0	7:10 AM	0	0		0	0
7:15 AM	0	9		3	12	7:15 AM	0	0		0	0	7:15 AM	0	0		0	0
7:20 AM	0	4		1	5	7:20 AM	0	0		0	0	7:20 AM	0	0		0	0
7:25 AM	0	3		4	7	7:25 AM	0	0		0	0	7:25 AM	0	0		0	0
7:30 AM	0	6		6	12	7:30 AM	0	0		0	0	7:30 AM	0	0		0	0
7:35 AM	0	1		2	3	7:35 AM	0	0		0	0	7:35 AM	0	0		0	0
7:40 AM	0	4		7	11	7:40 AM	0	0		0	0	7:40 AM	0	0		0	0
7:45 AM	0	2		4	6	7:45 AM	0	0		0	0	7:45 AM	0	0		0	0
7:50 AM	0	3		6	9	7:50 AM	0	0		0	0	7:50 AM	0	0		0	0
7:55 AM	0	5		0	5	7:55 AM	0	0		0	0	7:55 AM	0	0		0	0
8:00 AM	0	2		6	8	8:00 AM	0	0		0	0	8:00 AM	0	0		0	0
8:05 AM	0	4		2	6	8:05 AM	0	0		0	0	8:05 AM	0	0		0	0
8:10 AM	0	5		5	10	8:10 AM	0	0		0	0	8:10 AM	0	0		0	0
8:15 AM	0	1		7	8	8:15 AM	0	0		0	0	8:15 AM	0	0		0	0
8:20 AM	0	7		2	9	8:20 AM	0	0		0	0	8:20 AM	0	0		0	0
8:25 AM	0	5		4	9	8:25 AM	0	0		0	0	8:25 AM	0	0		0	0
8:30 AM	0	5		3	8	8:30 AM	0	0		0	0	8:30 AM	0	0		0	0
8:35 AM	0	5		4	9	8:35 AM	0	0		0	0	8:35 AM	0	0		0	0
8:40 AM	0	2		4	6	8:40 AM	0	0		0	0	8:40 AM	0	0		0	0
8:45 AM	0	3		3	6	8:45 AM	0	0		0	0	8:45 AM	0	0		0	0
8:50 AM	0	6		3	9	8:50 AM	0	0		0	0	8:50 AM	0	0		0	0
8:55 AM	0	4		3	7	8:55 AM	0	0		0	0	8:55 AM	0	0		0	0
Count Total	1	97		88	186	Count Total	0	0		0	0	Count Total	0	0		0	0
Peak Hour	0	48		46	94	Peak Hour	0	0		0	0	Peak Hour	0	0		0	0

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

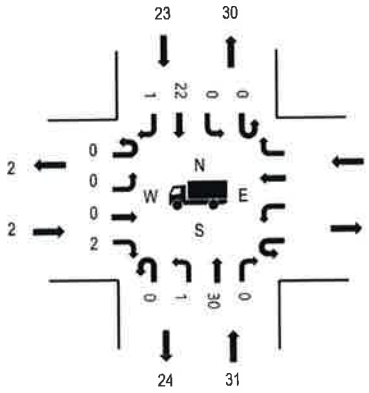
Location: 1 US 30 & TIDE CREEK RD PM
Date: Wednesday, October 4, 2023
Peak Hour: 04:25 PM - 05:25 PM
Peak 15-Minutes: 04:25 PM - 04:40 PM

Peak Hour

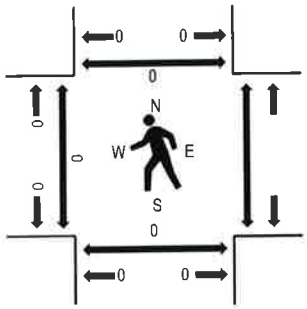
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	11.1%	0.79
WB		
NB	5.1%	0.97
SB	8.1%	0.94
All	6.2%	0.97

Traffic Counts - Motorized Vehicles

Interval Start Time	TIDE CREEK RD Eastbound U-Turn	Left	Thru	Right	Westbound U-Turn	Left	Thru	Right	US 30 Northbound U-Turn	Left	Thru	Right	US 30 Southbound U-Turn	Left	Thru	Right	Total	Rolling Hour
4:00 PM	0	0	0	2					0	7	26	0	0	0	25	0	60	857
4:05 PM	0	1	0	2					0	1	27	0	0	0	25	0	56	868
4:10 PM	0	0	0	0					0	1	39	0	0	0	27	1	68	887
4:15 PM	0	0	0	2					0	2	42	0	0	0	26	0	72	893
4:20 PM	0	0	0	1					0	2	46	0	0	0	24	0	73	889
4:25 PM	0	0	0	2					0	1	47	0	0	0	23	1	74	909
4:30 PM	0	0	0	1					0	3	45	0	0	0	27	0	76	905
4:35 PM	0	0	0	2					0	0	54	0	0	0	26	0	82	887
4:40 PM	0	1	0	1					0	1	47	0	0	0	14	1	65	868
4:45 PM	0	0	0	0					0	2	45	0	0	0	22	0	69	864
4:50 PM	0	0	0	1					0	2	50	0	0	0	31	2	86	853
4:55 PM	0	0	0	2					0	2	48	0	0	0	20	1	73	836
5:00 PM	0	0	0	3					0	5	44	0	0	0	19	0	71	816
5:05 PM	0	0	0	1					0	5	46	0	0	0	23	0	75	
5:10 PM	0	1	0	0					0	0	49	0	0	0	24	0	74	
5:15 PM	0	0	0	1					0	1	48	0	0	0	18	0	68	
5:20 PM	0	0	0	2					0	2	57	0	0	0	31	1	93	
5:25 PM	0	0	0	3					0	2	41	0	0	0	28	0	74	
5:30 PM	0	0	0	1					0	3	39	0	0	0	12	2	57	
5:35 PM	0	0	0	1					0	2	42	0	0	0	18	0	63	
5:40 PM	0	0	0	0					0	0	46	0	0	0	15	0	61	
5:45 PM	0	0	0	0					0	6	36	0	0	0	16	0	58	
5:50 PM	0	1	0	1					0	4	46	0	0	0	17	0	69	
5:55 PM	0	0	0	1					0	0	40	0	0	0	12	0	53	
Count Total	0	4	0	30					0	57	1,050	0	0	0	523	9	1,673	
Peak Hour	0	2	0	16					0	27	580	0	0	0	278	6	909	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval	Heavy Vehicles					Interval	Bicycles on Roadway					Interval	Pedestrians/Bicycles on Crosswalk				
Start Time	EB	NB	WB	SB	Total	Start Time	EB	NB	WB	SB	Total	Start Time	EB	NB	WB	SB	Total
4:00 PM	0	4		3	7	4:00 PM	0	0		0	0	4:00 PM	0	0		0	0
4:05 PM	1	0		3	4	4:05 PM	0	0		0	0	4:05 PM	0	0		0	0
4:10 PM	0	4		2	6	4:10 PM	0	0		0	0	4:10 PM	0	0		0	0
4:15 PM	0	4		0	4	4:15 PM	0	0		0	0	4:15 PM	0	0		0	0
4:20 PM	0	2		4	6	4:20 PM	0	0		0	0	4:20 PM	0	0		0	0
4:25 PM	0	2		2	4	4:25 PM	0	0		0	0	4:25 PM	0	0		0	0
4:30 PM	1	4		4	9	4:30 PM	0	0		0	0	4:30 PM	0	0		0	0
4:35 PM	0	4		4	8	4:35 PM	0	0		0	0	4:35 PM	0	0		0	0
4:40 PM	0	2		1	3	4:40 PM	0	0		0	0	4:40 PM	0	0		0	0
4:45 PM	0	2		2	4	4:45 PM	0	0		0	0	4:45 PM	0	0		0	0
4:50 PM	0	2		2	4	4:50 PM	0	0		0	0	4:50 PM	0	0		0	0
4:55 PM	0	1		2	3	4:55 PM	0	0		0	0	4:55 PM	0	0		0	0
5:00 PM	1	4		0	5	5:00 PM	0	0		0	0	5:00 PM	0	0		0	0
5:05 PM	0	1		1	2	5:05 PM	0	0		0	0	5:05 PM	0	0		0	0
5:10 PM	0	3		2	5	5:10 PM	0	0		0	0	5:10 PM	0	0		0	0
5:15 PM	0	2		0	2	5:15 PM	0	0		0	0	5:15 PM	0	0		0	0
5:20 PM	0	4		3	7	5:20 PM	0	0		0	0	5:20 PM	0	0		0	0
5:25 PM	0	2		1	3	5:25 PM	0	0		0	0	5:25 PM	0	0		0	0
5:30 PM	0	3		1	4	5:30 PM	0	0		0	0	5:30 PM	0	0		0	0
5:35 PM	0	2		1	3	5:35 PM	0	0		0	0	5:35 PM	0	0		0	0
5:40 PM	0	3		0	3	5:40 PM	0	0		0	0	5:40 PM	0	0		0	0
5:45 PM	0	1		0	1	5:45 PM	0	0		0	0	5:45 PM	0	0		0	0
5:50 PM	1	3		0	4	5:50 PM	0	0		0	0	5:50 PM	0	0		0	0
5:55 PM	0	0		1	1	5:55 PM	0	0		0	0	5:55 PM	0	0		0	0
Count Total	4	59		39	102	Count Total	0	0		0	0	Count Total	0	0		0	0
Peak Hour	2	31		23	56	Peak Hour	0	0		0	0	Peak Hour	0	0		0	0

Measured ~600 feet east of
Proposed Shared Access

All Traffic Data Services, Inc.
alltrafficdata.net

Site Code: 1
Tide Creek Road E.O MAPLECREST RD

Start Time	05-Oct-23 Thu	EB	WB							Total
12:00 AM		0	0							0
01:00		0	0							0
02:00		0	0							0
03:00		2	0							2
04:00		7	1							8
05:00		13	3							16
06:00		**25**	1							26
07:00		25	8							**33**
08:00		17	8							25
09:00		22	9							31
10:00		11	9							20
11:00		18	**10**							28
12:00 PM		**19**	12							31
01:00		15	23							38
02:00		19	11							30
03:00		11	22							33
04:00		17	22							39
05:00		13	**31**							**44**
06:00		16	24							40
07:00		7	15							22
08:00		5	11							16
09:00		4	5							9
10:00		1	4							5
11:00		1	3							4
Total		268	232							500
Percent		53.6%	46.4%							
AM Peak	-	06:00	11:00	-	-	-	-	-	-	07:00
Vol.	-	25	10	-	-	-	-	-	-	33
PM Peak	-	12:00	17:00	-	-	-	-	-	-	17:00
Vol.	-	19	31	-	-	-	-	-	-	44
Grand Total		268	232							500
Percent		53.6%	46.4%							
ADT		ADT 500		AADT 500						

Measured ~600 feet east of
Proposed Shared Access

All Traffic Data Services, Inc.
alltrafficdata.net

Site Code: 1
Tide Creek Road E.O MAPLECREST RD

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
10/05/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	1	0	0	1	0	0	0	0	0	0	0	0	2
04:00	0	4	3	0	0	0	0	0	0	0	0	0	0	7
05:00	0	6	0	0	**6**	0	0	0	0	0	**1**	0	0	13
06:00	0	**14**	3	**1**	6	0	0	**1**	0	0	0	0	0	**25**
07:00	0	11	**10**	0	4	0	0	0	0	0	0	0	0	25
08:00	0	11	3	0	2	0	0	1	0	0	0	0	0	17
09:00	0	12	4	0	6	0	0	0	0	0	0	0	0	22
10:00	0	7	3	0	1	0	0	0	0	0	0	0	0	11
11:00	0	9	4	0	4	0	0	**1**	0	0	0	0	0	18
12 PM	0	11	3	0	**5**	0	0	0	0	0	0	0	0	**19**
13:00	0	9	3	0	3	0	0	0	0	0	0	0	0	15
14:00	0	**13**	3	**1**	2	0	0	0	0	0	0	0	0	19
15:00	0	5	3	1	2	0	0	0	0	0	0	0	0	11
16:00	0	7	5	0	5	0	0	0	0	0	0	0	0	17
17:00	0	5	**6**	0	2	0	0	0	0	0	0	0	0	13
18:00	0	8	4	0	4	0	0	0	0	0	0	0	0	16
19:00	0	3	2	0	2	0	0	0	0	0	0	0	0	7
20:00	0	1	3	0	1	0	0	0	0	0	0	0	0	5
21:00	0	0	3	0	1	0	0	0	0	0	0	0	0	4
22:00	0	0	0	0	1	0	0	0	0	0	0	0	0	1
23:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Day Total	0	138	65	3	58	0	0	3	0	0	1	0	0	268
Percent	0.0%	51.5%	24.3%	1.1%	21.6%	0.0%	0.0%	1.1%	0.0%	0.0%	0.4%	0.0%	0.0%	
AM Peak		06:00	07:00	06:00	05:00			06:00			05:00			06:00
Vol.		14	10	1	6			1			1			25
PM Peak		14:00	17:00	14:00	12:00									12:00
Vol.		13	6	1	5									19
Grand Total	0	138	65	3	58	0	0	3	0	0	1	0	0	268
Percent	0.0%	51.5%	24.3%	1.1%	21.6%	0.0%	0.0%	1.1%	0.0%	0.0%	0.4%	0.0%	0.0%	

Site Code: 1
Tide Creek Road E.O MAPLECREST RD

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
10/05/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
05:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
06:00	0	0	0	1	0	0	0	0	0	0	0	0	0	1
07:00	0	6	0	0	2	0	0	0	0	0	0	0	0	8
08:00	0	5	2	0	1	0	0	0	0	0	0	0	0	8
09:00	0	7	1	0	1	0	0	0	0	0	0	0	0	9
10:00	0	5	3	0	1	0	0	0	0	0	0	0	0	9
11:00	0	4	3	0	3	0	0	0	0	0	0	0	0	10
12 PM	0	9	2	0	1	0	0	0	0	0	0	0	0	12
13:00	0	13	8	0	1	0	0	1	0	0	0	0	0	23
14:00	0	8	3	0	0	0	0	0	0	0	0	0	0	11
15:00	0	13	5	0	3	0	1	0	0	0	0	0	0	22
16:00	0	17	5	0	0	0	0	0	0	0	0	0	0	22
17:00	0	17	8	0	6	0	0	0	0	0	0	0	0	31
18:00	0	18	4	0	2	0	0	0	0	0	0	0	0	24
19:00	0	7	5	0	3	0	0	0	0	0	0	0	0	15
20:00	0	8	3	0	0	0	0	0	0	0	0	0	0	11
21:00	0	3	2	0	0	0	0	0	0	0	0	0	0	5
22:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
23:00	0	0	2	0	1	0	0	0	0	0	0	0	0	3
Day Total	0	148	56	1	25	0	1	1	0	0	0	0	0	232
Percent	0.0%	63.8%	24.1%	0.4%	10.8%	0.0%	0.4%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak		09:00	10:00	06:00	11:00									11:00
Vol.		7	3	1	3									10
PM Peak		18:00	13:00		17:00		15:00	13:00						17:00
Vol.		18	8		6		1	1						31
Grand Total	0	148	56	1	25	0	1	1	0	0	0	0	0	232
Percent	0.0%	63.8%	24.1%	0.4%	10.8%	0.0%	0.4%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	

Measured ~600 feet east of
Proposed Shared Access

All Traffic Data Services, Inc.
alltrafficdata.net

Site Code: 1
Tide Creek Road E.O MAPLECREST RD

EB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
10/05/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
03:00	0	0	0	0	0	0	1	0	0	1	0	0	0	0	2	34-43	1
04:00	0	0	0	0	0	0	3	1	2	0	1	0	0	0	7	41-50	4
05:00	0	0	0	0	2	2	2	2	2	2	1	0	0	0	13	51-60	4
06:00	1	0	0	3	3	1	6	5	3	3	0	0	0	0	25	41-50	11
07:00	0	0	0	0	0	0	9	7	6	2	1	0	0	0	25	41-50	16
08:00	1	0	0	2	1	2	7	2	2	0	0	0	0	0	17	41-50	9
09:00	1	0	0	0	1	2	7	7	4	0	0	0	0	0	22	41-50	14
10:00	0	0	0	0	0	2	3	2	0	4	0	0	0	0	11	36-45	5
11:00	0	0	2	0	3	1	5	7	0	0	0	0	0	0	18	41-50	12
12 PM	2	0	0	0	1	2	5	4	2	3	0	0	0	0	19	41-50	9
13:00	1	0	1	0	0	3	4	4	1	0	0	1	0	0	15	41-50	8
14:00	7	0	1	0	3	1	2	2	3	0	0	0	0	0	19	46-55	5
15:00	1	0	0	1	0	3	0	2	3	1	0	0	0	0	11	46-55	5
16:00	1	0	0	0	0	3	3	7	3	0	0	0	0	0	17	46-55	10
17:00	0	0	0	1	1	3	2	1	3	2	0	0	0	0	13	51-60	5
18:00	1	0	0	1	2	0	4	4	3	1	0	0	0	0	16	41-50	8
19:00	0	0	0	0	0	1	3	0	2	0	1	0	0	0	7	36-45	4
20:00	0	0	0	0	0	1	2	1	1	0	0	0	0	0	5	41-50	3
21:00	0	0	0	0	0	1	0	2	1	0	0	0	0	0	4	44-53	3
22:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	29-38	1
23:00	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	49-58	1
Total	16	0	4	8	17	29	68	60	41	20	4	1	0	0	268		
Percent	6.0%	0.0%	1.5%	3.0%	6.3%	10.8%	25.4%	22.4%	15.3%	7.5%	1.5%	0.4%	0.0%	0.0%			
AM Peak	06:00		11:00	06:00	06:00	05:00	07:00	07:00	07:00	10:00	04:00				06:00		
Vol.	1		2	3	3	2	9	7	6	4	1				25		
PM Peak	14:00		13:00	15:00	14:00	13:00	12:00	16:00	14:00	12:00	19:00	13:00			12:00		
Vol.	7		1	1	3	3	5	7	3	3	1	1			19		
Total	16	0	4	8	17	29	68	60	41	20	4	1	0	0	268		
Percent	6.0%	0.0%	1.5%	3.0%	6.3%	10.8%	25.4%	22.4%	15.3%	7.5%	1.5%	0.4%	0.0%	0.0%			

	15th Percentile :	33 MPH
	50th Percentile :	44 MPH
	85th Percentile :	53 MPH
	95th Percentile :	57 MPH
Stats	10 MPH Pace Speed :	41-50 MPH
	Number in Pace :	128
	Percent in Pace :	47.8%
	Number of Vehicles > 50 MPH :	66
	Percent of Vehicles > 50 MPH :	24.6%
	Mean Speed(Average) :	43 MPH

Site Code: 1
Tide Creek Road E.O MAPLECREST RD

WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
10/05/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
04:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	29-38	1
05:00	0	0	0	0	0	2	0	1	0	0	0	0	0	0	3	30-39	2
06:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	24-33	1
07:00	0	0	0	1	2	4	1	0	0	0	0	0	0	0	8	31-40	6
08:00	0	0	0	0	2	3	2	1	0	0	0	0	0	0	8	36-45	5
09:00	0	0	0	0	5	2	1	1	0	0	0	0	0	0	9	31-40	7
10:00	0	0	0	2	2	2	2	1	0	0	0	0	0	0	9	36-45	4
11:00	0	0	0	5	2	1	2	0	0	0	0	0	0	0	10	26-35	7
12 PM	0	0	0	2	1	6	3	0	0	0	0	0	0	0	12	35-44	9
13:00	0	0	0	3	10	6	4	0	0	0	0	0	0	0	23	31-40	16
14:00	3	0	0	2	2	1	3	0	0	0	0	0	0	0	11	25-34	4
15:00	0	0	0	1	6	10	4	1	0	0	0	0	0	0	22	31-40	16
16:00	2	0	0	0	4	9	5	1	1	0	0	0	0	0	22	34-43	14
17:00	1	0	0	2	2	16	6	4	0	0	0	0	0	0	31	36-45	22
18:00	1	0	0	1	7	6	7	1	1	0	0	0	0	0	24	31-40	13
19:00	0	0	0	0	5	6	3	1	0	0	0	0	0	0	15	31-40	11
20:00	0	0	0	2	1	5	2	1	0	0	0	0	0	0	11	36-45	7
21:00	0	0	0	0	1	3	1	0	0	0	0	0	0	0	5	36-45	4
22:00	0	0	0	0	2	2	0	0	0	0	0	0	0	0	4	30-39	4
23:00	0	0	0	0	1	2	0	0	0	0	0	0	0	0	3	30-39	3
Total	7	0	0	21	56	87	46	13	2	0	0	0	0	0	232		
Percent	3.0%	0.0%	0.0%	9.1%	24.1%	37.5%	19.8%	5.6%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak				11:00	09:00	07:00	08:00	05:00							11:00		
Vol.				5	5	4	2	1							10		
PM Peak	14:00			13:00	13:00	17:00	18:00	17:00	16:00						17:00		
Vol.	3			3	10	16	7	4	1						31		
Total	7	0	0	21	56	87	46	13	2	0	0	0	0	0	232		
Percent	3.0%	0.0%	0.0%	9.1%	24.1%	37.5%	19.8%	5.6%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%			

	15th Percentile :	30 MPH
	50th Percentile :	36 MPH
	85th Percentile :	42 MPH
	95th Percentile :	46 MPH
Stats	10 MPH Pace Speed :	31-40 MPH
	Number in Pace :	143
	Percent in Pace :	61.6%
	Number of Vehicles > 50 MPH :	2
	Percent of Vehicles > 50 MPH :	0.9%
	Mean Speed(Average) :	37 MPH

Measured ~500 feet west of
Proposed Shared Access

All Traffic Data Services, Inc.
alltrafficdata.net

Site Code: 1
Tide Creek Rd E.O Maplecrest Rd

Start Time	18-Oct-23 Wed	EB	WB							Total
12:00 AM		0	0							0
01:00		2	0							2
02:00		0	0							0
03:00		1	0							1
04:00		8	0							8
05:00		15	2							17
06:00		**22**	2							24
07:00		21	2							23
08:00		18	7							25
09:00		17	6							23
10:00		12	**11**							23
11:00		15	11							**26**
12:00 PM		12	14							26
01:00		**20**	16							36
02:00		18	14							32
03:00		8	**26**							34
04:00		11	23							34
05:00		14	24							38
06:00		17	23							**40**
07:00		4	16							20
08:00		2	15							17
09:00		2	5							7
10:00		4	2							6
11:00		0	3							3
Total		243	222							465
Percent		52.3%	47.7%							
AM Peak	-	06:00	10:00	-	-	-	-	-	-	11:00
Vol.	-	22	11	-	-	-	-	-	-	26
PM Peak	-	13:00	15:00	-	-	-	-	-	-	18:00
Vol.	-	20	26	-	-	-	-	-	-	40
Grand Total		243	222							465
Percent		52.3%	47.7%							
ADT		ADT 465		AADT 465						

Measured ~500 feet west of
Proposed Shared Access

All Traffic Data Services, Inc.
alltrafficdata.net

Site Code: 1
Tide Creek Rd E.O Maplecrest Rd

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
10/18/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	6	1	0	1	0	0	0	0	0	0	0	0	8
05:00	0	6	4	1	4	0	0	0	0	0	0	0	0	15
06:00	0	10	2	2	8	0	0	0	0	0	0	0	0	22
07:00	0	13	4	0	4	0	0	0	0	0	0	0	0	21
08:00	0	8	4	0	5	0	0	1	0	0	0	0	0	18
09:00	0	10	3	0	3	0	0	1	0	0	0	0	0	17
10:00	0	6	4	0	2	0	0	0	0	0	0	0	0	12
11:00	0	9	5	0	1	0	0	0	0	0	0	0	0	15
12 PM	0	7	2	0	2	0	0	1	0	0	0	0	0	12
13:00	0	6	7	1	5	0	0	1	0	0	0	0	0	20
14:00	0	11	4	0	3	0	0	0	0	0	0	0	0	18
15:00	0	4	2	1	1	0	0	0	0	0	0	0	0	8
16:00	0	6	4	0	1	0	0	0	0	0	0	0	0	11
17:00	0	8	2	0	3	0	0	1	0	0	0	0	0	14
18:00	0	12	2	0	3	0	0	0	0	0	0	0	0	17
19:00	0	1	2	0	1	0	0	0	0	0	0	0	0	4
20:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
21:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
22:00	0	0	1	0	3	0	0	0	0	0	0	0	0	4
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Day Total	0	127	56	5	50	0	0	5	0	0	0	0	0	243
Percent	0.0%	52.3%	23.0%	2.1%	20.6%	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak		07:00	11:00	06:00	06:00			08:00						06:00
Vol.		13	5	2	8			1						22
PM Peak		18:00	13:00	13:00	13:00			12:00						13:00
Vol.		12	7	1	5			1						20
Grand Total	0	127	56	5	50	0	0	5	0	0	0	0	0	243
Percent	0.0%	52.3%	23.0%	2.1%	20.6%	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	

Site Code: 1
Tide Creek Rd E.O Maplecrest Rd

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
10/18/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	2	0	0	0	0	0	0	0	0	2
06:00	0	1	0	1	0	0	0	0	0	0	0	0	0	2
07:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
08:00	0	4	2	0	1	0	0	0	0	0	0	0	0	7
09:00	0	1	2	0	2	0	0	1	0	0	0	0	0	6
10:00	0	3	6	0	2	0	0	0	0	0	0	0	0	11
11:00	0	2	4	0	3	0	0	2	0	0	0	0	0	11
12 PM	0	11	3	0	0	0	0	0	0	0	0	0	0	14
13:00	0	10	2	1	2	0	0	1	0	0	0	0	0	16
14:00	0	6	5	0	3	0	0	0	0	0	0	0	0	14
15:00	0	13	6	0	7	0	0	0	0	0	0	0	0	26
16:00	0	11	5	0	7	0	0	0	0	0	0	0	0	23
17:00	0	13	5	0	5	0	0	1	0	0	0	0	0	24
18:00	0	14	4	0	5	0	0	0	0	0	0	0	0	23
19:00	0	10	4	0	2	0	0	0	0	0	0	0	0	16
20:00	0	9	2	0	4	0	0	0	0	0	0	0	0	15
21:00	0	2	3	0	0	0	0	0	0	0	0	0	0	5
22:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
23:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
Day Total	0	117	53	2	45	0	0	5	0	0	0	0	0	222
Percent	0.0%	52.7%	23.9%	0.9%	20.3%	0.0%	0.0%	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak		08:00	10:00	06:00	11:00			11:00						10:00
Vol.		4	6	1	3			2						11
PM Peak		18:00	15:00	13:00	15:00			13:00						15:00
Vol.		14	6	1	7			1						26
Grand Total	0	117	53	2	45	0	0	5	0	0	0	0	0	222
Percent	0.0%	52.7%	23.9%	0.9%	20.3%	0.0%	0.0%	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%	

Measured ~500 feet west of
Proposed Shared Access

All Traffic Data Services, Inc.
alltrafficdata.net

Site Code: 1
Tide Creek Rd E.O Maplecrest Rd

EB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
10/18/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
01:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2	29-38	2
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
03:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	29-38	1
04:00	0	0	0	0	0	0	3	5	0	0	0	0	0	0	8	41-50	8
05:00	0	0	0	1	0	3	5	3	3	0	0	0	0	0	15	36-45	8
06:00	0	0	1	1	4	5	5	4	0	2	0	0	0	0	22	36-45	10
07:00	0	0	0	0	1	6	7	5	2	0	0	0	0	0	21	36-45	13
08:00	0	2	1	2	3	7	2	1	0	0	0	0	0	0	18	31-40	10
09:00	0	0	0	7	4	4	2	0	0	0	0	0	0	0	17	26-35	11
10:00	0	0	1	2	4	4	1	0	0	0	0	0	0	0	12	30-39	8
11:00	1	0	0	5	3	4	1	0	1	0	0	0	0	0	15	26-35	8
12 PM	0	0	0	1	3	2	3	1	2	0	0	0	0	0	12	36-45	5
13:00	0	0	0	0	2	6	9	2	0	1	0	0	0	0	20	36-45	15
14:00	1	0	0	0	2	5	6	3	1	0	0	0	0	0	18	36-45	11
15:00	0	0	0	0	0	2	5	0	1	0	0	0	0	0	8	36-45	7
16:00	2	0	0	0	1	3	3	2	0	0	0	0	0	0	11	36-45	6
17:00	0	0	0	2	2	3	3	2	2	0	0	0	0	0	14	36-45	6
18:00	1	0	0	0	1	5	6	2	1	1	0	0	0	0	17	36-45	11
19:00	0	0	0	0	1	1	2	0	0	0	0	0	0	0	4	34-43	3
20:00	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	40-49	2
21:00	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	30-39	2
22:00	0	0	0	0	0	1	1	1	1	0	0	0	0	0	4	34-43	2
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
Total	5	2	3	21	32	65	64	33	14	4	0	0	0	0	243		
Percent	2.1%	0.8%	1.2%	8.6%	13.2%	26.7%	26.3%	13.6%	5.8%	1.6%	0.0%	0.0%	0.0%	0.0%			
AM Peak	11:00	08:00	06:00	09:00	06:00	08:00	07:00	04:00	05:00	06:00					06:00		
Vol.	1	2	1	7	4	7	7	5	3	2					22		
PM Peak	16:00			17:00	12:00	13:00	13:00	14:00	12:00	13:00					13:00		
Vol.	2			2	3	6	9	3	2	1					20		
Total	5	2	3	21	32	65	64	33	14	4	0	0	0	0	243		
Percent	2.1%	0.8%	1.2%	8.6%	13.2%	26.7%	26.3%	13.6%	5.8%	1.6%	0.0%	0.0%	0.0%	0.0%			

15th Percentile :	30 MPH
50th Percentile :	39 MPH
85th Percentile :	47 MPH
95th Percentile :	52 MPH

Stats

10 MPH Pace Speed :	36-45 MPH
Number in Pace :	129
Percent in Pace :	53.1%
Number of Vehicles > 45 MPH :	51
Percent of Vehicles > 45 MPH :	21.0%
Mean Speed(Average) :	39 MPH

Measured ~500 feet west of
Proposed Shared Access

All Traffic Data Services, Inc.
alltrafficdata.net

Site Code: 1
Tide Creek Rd E.O Maplecrest Rd

WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
10/18/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
05:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2	29-38	2
06:00	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	24-33	1
07:00	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2	39-48	2
08:00	1	1	0	3	1	0	1	0	0	0	0	0	0	0	7	26-35	4
09:00	0	0	1	1	3	1	0	0	0	0	0	0	0	0	6	31-40	4
10:00	0	0	1	7	3	0	0	0	0	0	0	0	0	0	11	25-34	10
11:00	0	2	4	2	2	1	0	0	0	0	0	0	0	0	11	21-30	6
12 PM	0	0	0	2	2	4	3	0	2	0	1	0	0	0	14	34-43	7
13:00	1	0	0	2	3	5	2	1	2	0	0	0	0	0	16	31-40	8
14:00	1	0	0	1	1	4	4	1	2	0	0	0	0	0	14	36-45	8
15:00	0	0	0	2	3	11	10	0	0	0	0	0	0	0	26	36-45	21
16:00	0	0	0	0	1	13	2	6	1	0	0	0	0	0	23	34-43	15
17:00	1	0	0	0	1	9	7	3	3	0	0	0	0	0	24	36-45	16
18:00	1	0	0	1	2	5	11	2	1	0	0	0	0	0	23	36-45	16
19:00	0	0	0	1	2	4	6	2	1	0	0	0	0	0	16	36-45	10
20:00	0	0	0	0	3	5	5	1	1	0	0	0	0	0	15	36-45	10
21:00	0	0	0	0	1	3	1	0	0	0	0	0	0	0	5	36-45	4
22:00	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2	24-33	1
23:00	0	0	0	0	1	2	0	0	0	0	0	0	0	0	3	30-39	3
Total	5	3	6	22	32	68	54	18	13	0	1	0	0	0	222		
Percent	2.3%	1.4%	2.7%	9.9%	14.4%	30.6%	24.3%	8.1%	5.9%	0.0%	0.5%	0.0%	0.0%	0.0%			
AM Peak	08:00	11:00	11:00	10:00	09:00	05:00	07:00	06:00							10:00		
Vol.	1	2	4	7	3	1	1	1							11		
PM Peak	13:00			12:00	13:00	16:00	18:00	16:00	17:00		12:00				15:00		
Vol.	1			2	3	13	11	6	3		1				26		
Total	5	3	6	22	32	68	54	18	13	0	1	0	0	0	222		
Percent	2.3%	1.4%	2.7%	9.9%	14.4%	30.6%	24.3%	8.1%	5.9%	0.0%	0.5%	0.0%	0.0%	0.0%			

15th Percentile :	29 MPH
50th Percentile :	38 MPH
85th Percentile :	44 MPH
95th Percentile :	51 MPH

Stats

10 MPH Pace Speed :	36-45 MPH
Number in Pace :	122
Percent in Pace :	55.0%
Number of Vehicles > 45 MPH :	32
Percent of Vehicles > 45 MPH :	14.4%
Mean Speed(Average) :	38 MPH

Appendix C - Safety

Crash History Data

Sight Distance Measurements

Left-Turn Lane Warrant Analysis

COLUMBIA COUNTY

TIDE CK RD, MP -999.99 to 999.99, 01/01/2017 to 12/31/2021

1 - 2 of 2 Crash records shown.

SER# INVEST RD DPT UNLOC?	S P E E D	 A L C	D R U G S	M J I N V	S C H L	W O R K	DATE DAY TIME LAT	MILEPNT DIST FROM INTERSECT LONG	COUNTY ROADS FIRST STREET SECOND STREET LRS	RD CHAR DIRECT LOCTN	INT-TYPE (MEDIAN) LEGS (#LANES)	INT-REL TRAF- CONTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH COLL SVRTY	V#	SPCL USE TRLR QTY OWNER TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
00169	N	N	N	N	N	N	06/11/2019	0.04	TIDE CK RD	CURVE		N	Y	CLR	OVERTURN	01	NONE 0	STRGHT										092	26
STATE							TU	0.04 miles west of US 30		UN	(NONE)	NONE	N	DRY	NCOL		PRVTE	W -E									007	092	26
Y							9A			02			N	DAY	INJ		MTRCYCLE		01	DRVR	INJB	56	M	OR-Y		080,081	000		00
N							45 57 40.55	-122 52 8.82			(02)													OR<25					
00429	N	N	N	N	N	N	12/21/2020	0.25	TIDE CK RD	CURVE		N	Y	CLD	FIX OBJ	01	NONE 0	STRGHT										092,079,010	26
COUNTY							MO	0.25 miles west of US 30		UN	(NONE)	NONE	N	WET	FIX		PRVTE	W -E									007	092,079,010	26
Y							2P			01			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	34	M	OTH-Y		081	000		00
N							45 57 51	-122 52 8.63			(02)													N-RES					
																01	NONE 0	STRGHT											
																	PRVTE	W -E									007	092,079,010	26
																	PSNGR CAR		02	PSNG	INJB	29	F			000	000		00

OREGON DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
CONTINUOUS SYSTEM CRASH LISTING

Highway 092 ALL ROAD TYPES, MP 36.48 to 36.58 01/01/2017 to 12/31/2021, Both Add and Non-Add mileage

1 - 5 of 7 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	R A L C	J U G S	S I N V	W C H L	O R K	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# / COMPNT / MLG / MILEPNT	FC / TYP / LRS	CONN# / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
06111	N	N	N	N	N	N	05/22/2019	COLUMBIA	1	02		CURVE		N	N	CLR	ANIMAL	01	NONE 0	STRGHT										035	12
STATE							WE		MN	0		UN	(NONE)	NONE	N	DRY	OTH		PRVTE	E -W									000	035	00
N							8A		36.52			03			N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	76	F	OR-Y		000	000		00
N							45 57 38.93	-122 52 5.71			009200100S00		(02)													OR<25					
00176	Y	N	N	N			06/13/2019	COLUMBIA	1	02		CURVE		Y	N	CLR	S-1STOP	01	NONE 0	STRGHT											01
NONE							TH		MN	0		UN	(NONE)	UNKNOWN	N	DRY	REAR		PRVTE	E -W									000		00
N							8A		36.52			03			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	73	M	OR-Y		047,026	000		01
N							45 57 38.95	-122 52 5.72			009200100S00		(02)													OR<25					
																		02	NONE 0	STOP											
																			PRVTE	E -W									011		00
																			PSNGR CAR		01	DRVR	INJC	30	F	OR-Y		000	000		00
																										OR<25					
																		02	NONE 0	STOP											
																			PRVTE	E -W									011		00
																			PSNGR CAR		02	PSNG	INJC	08	F			000	000		00
																		02	NONE 0	STOP											
																			PRVTE	E -W									011		00
																			PSNGR CAR		03	PSNG	INJC	10	M			000	000		00
00387	Y	N	N	N	N	N	11/25/2019	COLUMBIA	1	02		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											01,07,32
STATE							MO		MN	0		UN		UNKNOWN	N	DRY	REAR		N/A	S -N									000		00
N							6P		36.53			06	0		N	DUSK	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N							45 57 39.47	-122 52 5.74			009200100S00															UNK					
																		02	NONE 9	STOP											
																			N/A	S -N									012		00
																			PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																										UNK					
00259	N	N	N	N	N	N	08/18/2021	COLUMBIA	1	02		INTER	3-LEG	N	N	CLR	S-1TURN	01	NONE 0	STRGHT											07
STATE							WE		MN	0		CN		UNKNOWN	N	DRY	REAR		PRVTE	E -W									000		00
N							2P		36.53			01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	22	F	SUSP		043	000		07
N							45 57 39.45	-122 52 5.74			009200100S00															OR<25					
																		02	NONE 0	TURN-L											
																			PRVTE	E -S									000		00
																			PSNGR CAR		01	DRVR	INJA	37	F	OR-Y		000	000		00
																										OR<25					
00319	N	N	N	N	N	N	09/27/2021	COLUMBIA	1	02		INTER	3-LEG	N	N	RAIN	S-1TURN	01	NONE 0	TURN-L											06,27
STATE							MO		MN	0		CN		STOP SIGN	N	WET	TURN		PRVTE	S -W									006		00
N							1P		36.53			01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	63	F	OR-Y		000	000		00
N							45 57 39.46	-122 52 5.75			009200100S00															OR<25					
																		02	NONE 0	STRGHT											
																			PRVTE	S -N									031		00
																			PSNGR CAR		01	DRVR	NONE	39	M	OTH-Y		034,016	038		06,27
																										N-RES					
00301	Y	N	N	N		Y	09/23/2019	COLUMBIA	1	02		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											01
NONE							MO		MN	0		CN		OFCR/FLAG	N	DRY	REAR		PRVTE	S -N									000		00
N							12P		36.53			04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	75	F	OR-Y		047,026	000		01
N							45 57 39.46	-122 52 5.76			009200100S00															OR<25					

Animal in Road - Not Intersection Related

E-W could be northbound at intersection

Northbound

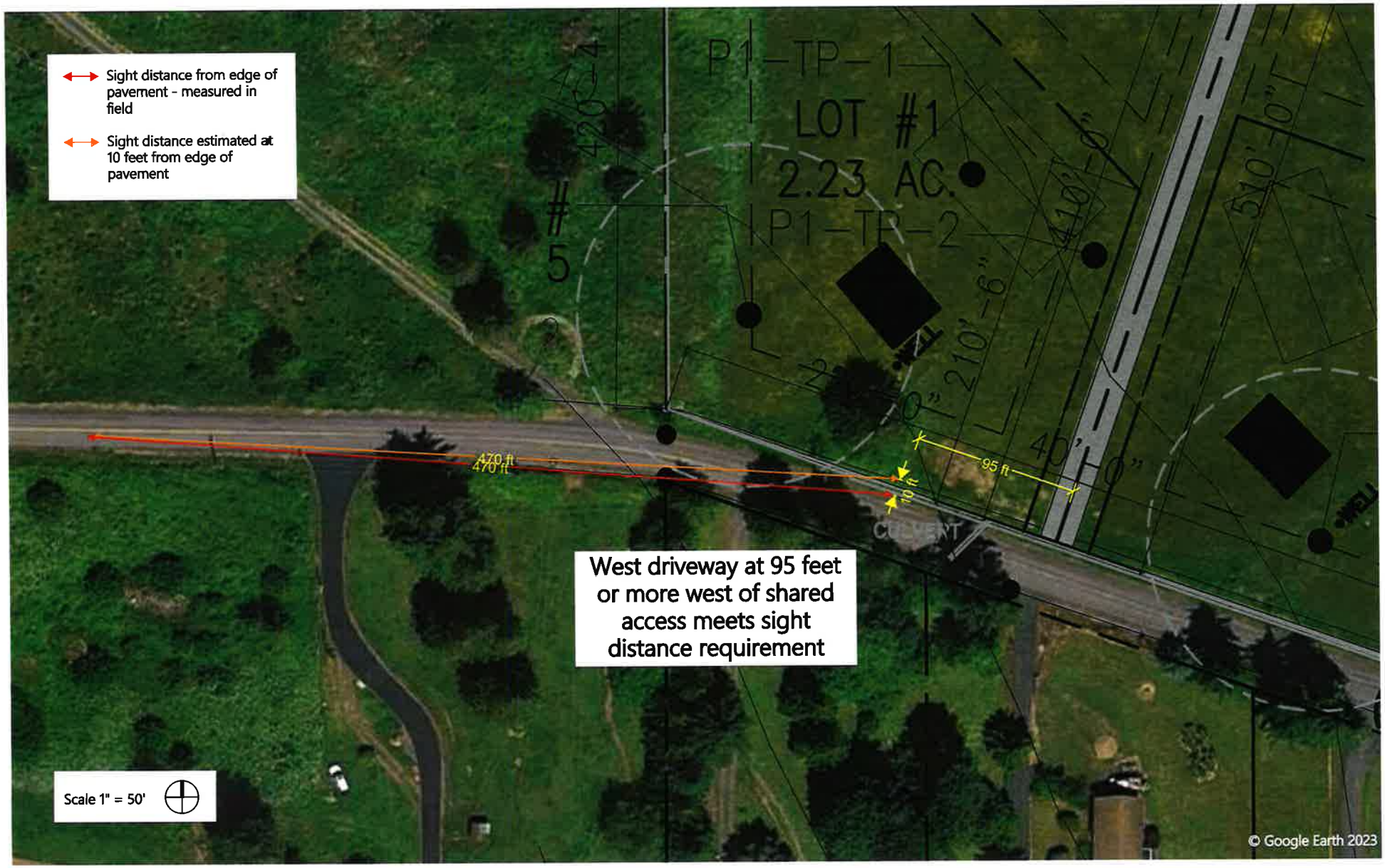
E-W could be northbound at intersection

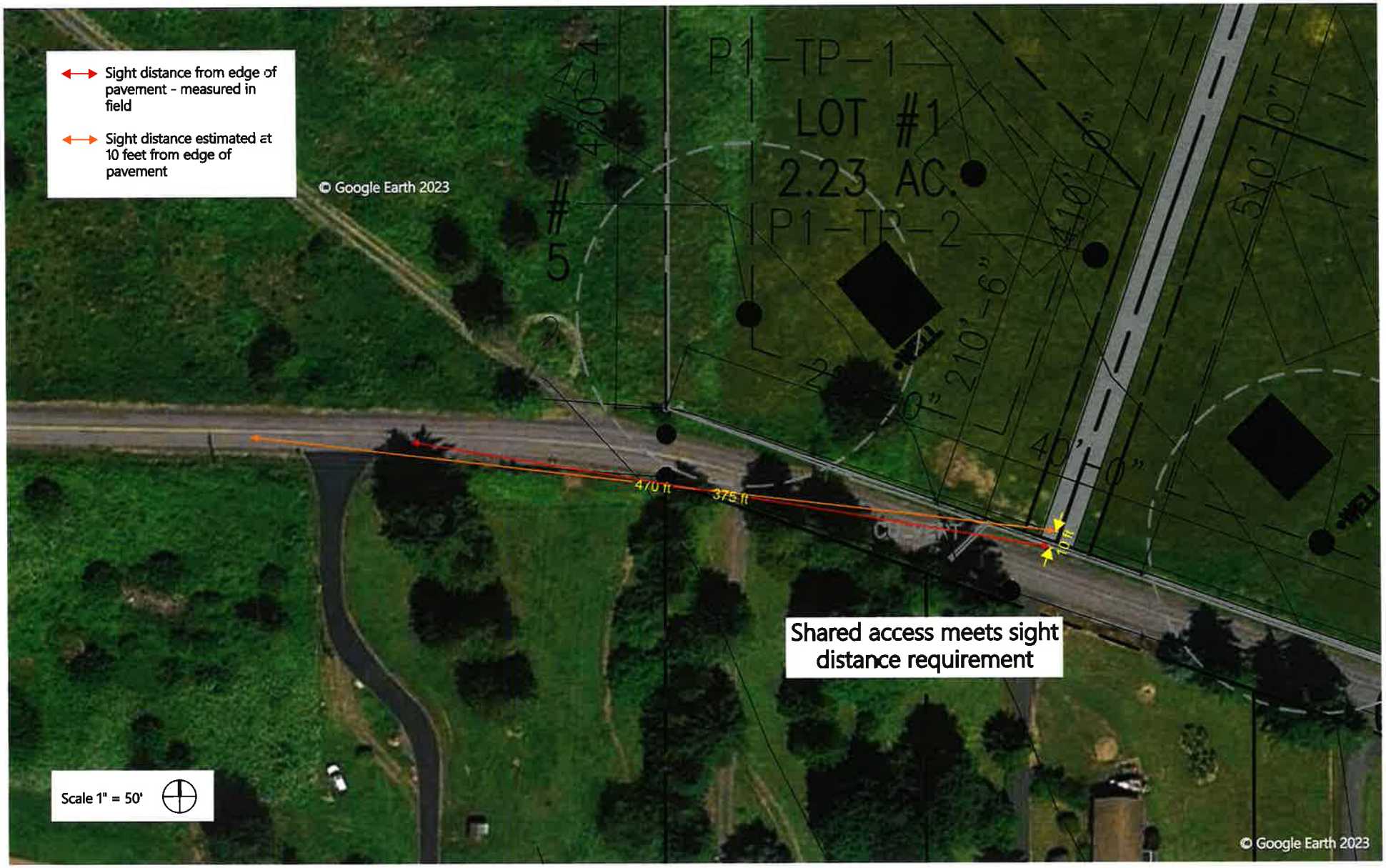
Northbound

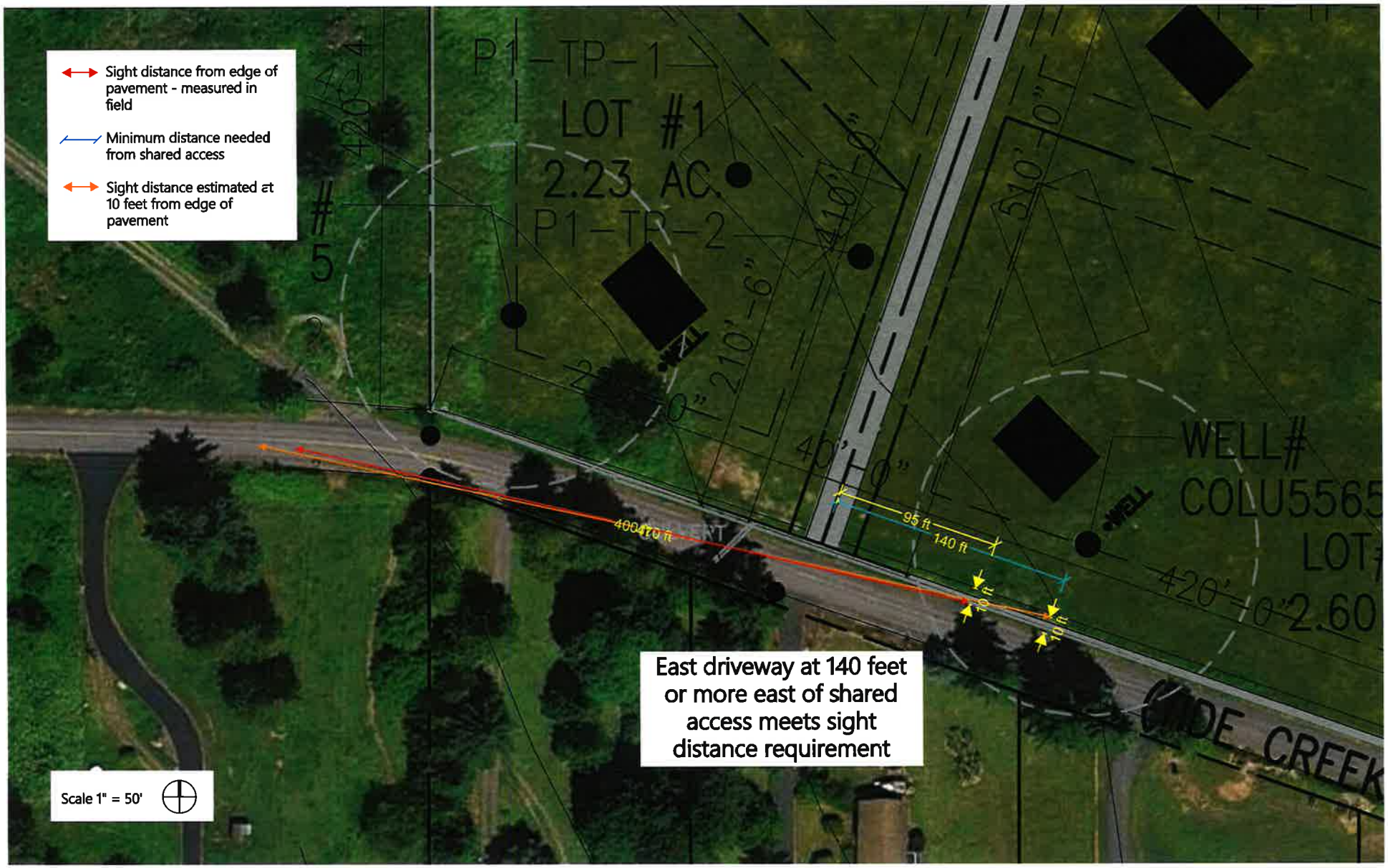
Northbound

SER# INVEST RD DPT UNLOC?	S D M P R J S W E A U I C O E L G N H R D C S V L K	DATE DAY TIME LAT	COUNTY CITY URBAN AREA LONG	RD# FC COMPNT MLG TYP MILEPNT	CONN# FIRST STREET SECOND STREET LRS	RD CHAR DIRECT LOCTN	INT-TYPE (MEDIAN) LEGS (#LANES)	INT-REL TRAF- CONTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH COLL SVRTY	V#	SPCL USE TRLR QTY OWNER TYPE	MOVE FROM TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
												02	NONE 0 PRVTE PSNGR CAR	STOP S -N	01	DRVR	INJC	62	F	OR-Y OR<25		000	012 000		00 00
00225 NO RPT N N	N N N N	07/27/2020 MO 4P 45 57 39.45	COLUMBIA -122 52 5.74	1 02 MN 0 36.53	 009200100S00	INTER CN 04	3-LEG 0	N STOP SIGN	N N N	CLR DRY DAY	S-1STOP REAR INJ														32
												01	NONE 0 PRVTE PSNGR CAR	STRGHT S -N	01	DRVR	INJB	18	F	OR-Y OR<25		052	000 000		00 32
												01	NONE 0 PRVTE PSNGR CAR	STRGHT S -N	02	PSNG	INJB	19	M			000	000 000		00 00
												02	NONE 0 PRVTE PSNGR CAR	STOP S -N	01	DRVR	INJC	59	M	OR-Y OR<25		000	012 000		00 00

Northbound


Sight distance from edge of pavement - measured in field
Sight distance estimated at 10 feet from edge of pavement
P1-TP-1
LOT #1
2.23 AC.
P1-TP-2
#5
470 ft
470 ft
10 ft
95 ft
CULVERT
West driveway at 95 feet or more west of shared access meets sight distance requirement
Scale 1" = 50'
© Google Earth 2023


Sight distance from edge of pavement - measured in field
Sight distance estimated at 10 feet from edge of pavement
© Google Earth 2023
P1-TP-1
LOT #1
2.23 AC.
P1-TP-2
470 ft
375 ft
10 ft
Shared access meets sight distance requirement
Scale 1" = 50'
© Google Earth 2023


Sight distance from edge of pavement - measured in field
Minimum distance needed from shared access
Sight distance estimated at 10 feet from edge of pavement
P1-TP-1
LOT #1
2.23 AC.
P1-TP-2
WELL#
COLU5565
400 ft
95 ft
140 ft
East driveway at 140 feet or more east of shared access meets sight distance requirement
Scale 1" = 50'

2.54 AC
Sight distance from edge of pavement - measured in field
Sight distance estimated at 10 feet from edge of pavement
West driveway at 95 feet or more west of shared access meets sight distance requirement
95 ft
CULVERT
WELL# COLU55654
LOT# 8
2.60 AC.
420'-0"
270'-0"
CREEK ROAD)
Scale 1" = 50'
© Google Earth 2023


Sight distance from edge of pavement - measured in field
Sight distance estimated at 10 feet from edge of pavement
Shared access meets sight distance requirement
WELL#
COLU55654
LOT# 8
2.60 AC.
420'-0"
270'-0"
40'-0"
CREEK ROAD)
788 ft
Scale 1" = 50'
© Google Earth 2023


Sight distance from edge of pavement - measured in field
Minimum distance needed from shared access
Sight distance estimated at 10 feet from edge of pavement
WELL#
COLU55654
LOT# 8
2.60 AC.
420'-0"
270'-0"
95 ft
140 ft
10 ft
10 ft
700 ft
700 ft
CREEK ROAD)
East driveway at 140 feet or more east of shared access meets sight distance requirement
Scale 1" = 50'
© Google Earth 2023

Left-Turn Lane Warrant Analysis

Project: 23135 - Lupine Meadow
Intersection: Shared Access & Tide Creek Road
Date: 10/27/2023
Scenario: Buildout AM

Assumes 1 left-turning vehicle for calculation.

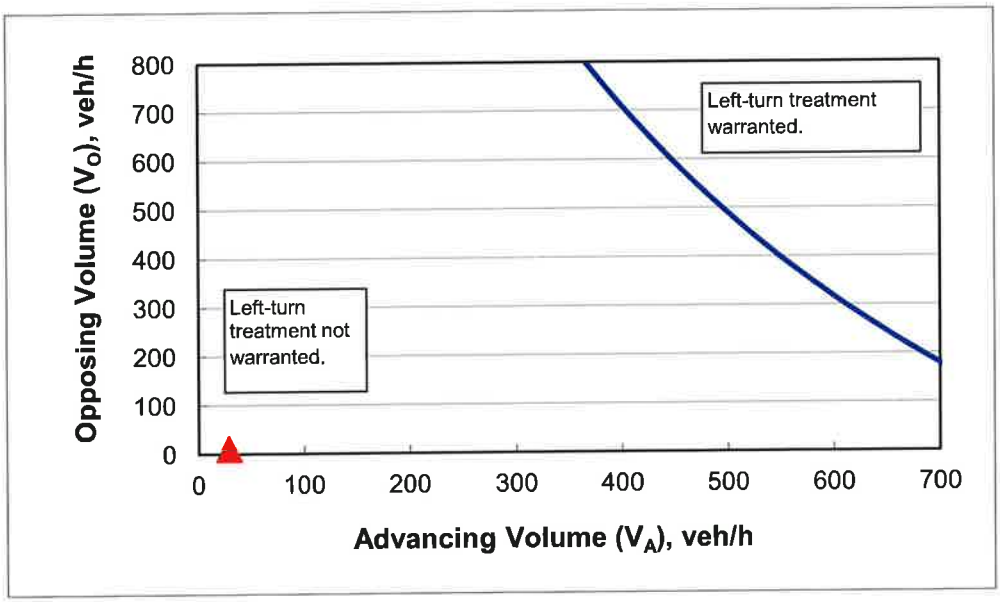
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	47
Left-turns in advancing volume (V_A), veh/hr:	1
Advancing volume (V_A), veh/h:	29
Opposing volume (V_O), veh/h:	10

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	856
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS (2-Lane Roadway)

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Left-Turn Lane Warrant Analysis

Project: 23135 - Lupine Meadow
Intersection: Shared Access & Tide Creek Road
Date: 10/27/2023
Scenario: Buildout PM

Assumes 1 left-turning vehicle for calculation.

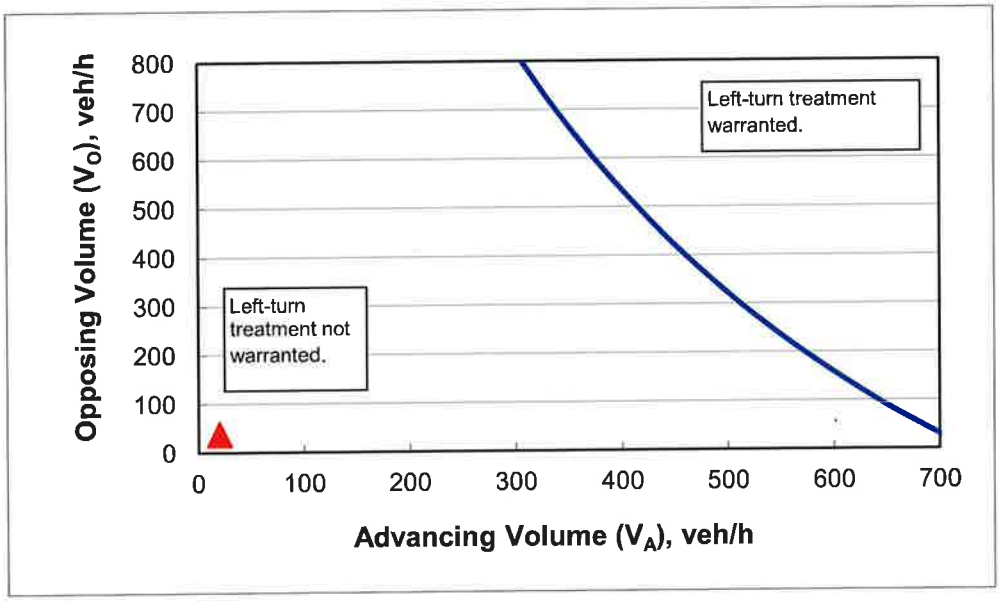
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	47
Left-turns in advancing volume (V_A), veh/hr:	1
Advancing volume (V_A), veh/h:	20
Opposing volume (V_O), veh/h:	38

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	692
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS (2-Lane Roadway)

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Appendix D - Operations

Definitions

Synchro Reports

Level of Service Definitions

Level of service is used to describe the quality of traffic flow. Levels of service A to C are considered good, and rural roads are usually designed for level of service C. Urban streets and signalized intersections are typically designed for level of service D. Level of service E is considered to be the limit of acceptable delay. For unsignalized intersections, level of service E is generally considered acceptable. Here is a more complete description of levels of service:

- *Level of service A:* Very low delay at intersections, with all traffic signal cycles clearing and no vehicles waiting through more than one signal cycle. On highways, low volume and high speeds, with speeds not restricted by other vehicles.
- *Level of service B:* Operating speeds beginning to be affected by other traffic; short traffic delays at intersections. Higher average intersection delay than for level of service A resulting from more vehicles stopping.
- *Level of service C:* Operating speeds and maneuverability closely controlled by other traffic; higher delays at intersections than for level of service B due to a significant number of vehicles stopping. Not all signal cycles clear the waiting vehicles. This is the recommended design standard for rural highways.
- *Level of service D:* Tolerable operating speeds; long traffic delays occur at intersections. The influence of congestion is noticeable. At traffic signals many vehicles stop, and the proportion of vehicles not stopping declines. The number of signal cycle failures, for which vehicles must wait through more than one signal cycle, are noticeable. This is typically the design level for urban signalized intersections.
- *Level of service E:* Restricted speeds, very long traffic delays at traffic signals, and traffic volumes near capacity. Flow is unstable so that any interruption, no matter how minor, will cause queues to form and service to deteriorate to level of service F. Traffic signal cycle failures are frequent occurrences. For unsignalized intersections, level of service E or better is generally considered acceptable.
- *Level of service F:* Extreme delays, resulting in long queues which may interfere with other traffic movements. There may be stoppages of long duration, and speeds may drop to zero. There may be frequent signal cycle failures. Level of service F will typically result when vehicle arrival rates are greater than capacity. It is considered unacceptable by most drivers.

Level of Service Criteria
For Signalized Intersections

Level of Service (LOS)	Control Delay per Vehicle (Seconds)
A	<10
B	10-20
C	20-35
D	35-55
E	55-80
F	>80

Level of Service Criteria
For Unsignalized Intersections

Level of Service (LOS)	Control Delay per Vehicle (Seconds)
A	<10
B	10-15
C	15-25
D	25-35
E	35-50
F	>50

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	26	7	251	428	1
Future Vol, veh/h	2	26	7	251	428	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	23	13	0
Mvmt Flow	2	28	7	267	455	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	738	456	456	0	-	0
Stage 1	456	-	-	-	-	-
Stage 2	282	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	388	609	1115	-	-	-
Stage 1	643	-	-	-	-	-
Stage 2	770	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	385	609	1115	-	-	-
Mov Cap-2 Maneuver	385	-	-	-	-	-
Stage 1	638	-	-	-	-	-
Stage 2	770	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	11.49	0.22	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	49	-	584	-	-
HCM Lane V/C Ratio	0.007	-	0.051	-	-
HCM Control Delay (s/veh)	8.3	0	11.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	27	0	0	8	0	0	0	1	0	0	0
Future Vol, veh/h	0	27	0	0	8	0	0	0	1	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	92	92	78	78	92	92	92	78	92	78
Heavy Vehicles, %	2	8	2	2	0	2	2	2	2	2	2	2
Mvmt Flow	0	35	0	0	10	0	0	0	1	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	10	0	0	35	0	0	45	45	35	45	45	10
Stage 1	-	-	-	-	-	-	35	35	-	10	10	-
Stage 2	-	-	-	-	-	-	10	10	-	35	35	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1609	-	-	1577	-	-	957	847	1038	957	847	1071
Stage 1	-	-	-	-	-	-	981	866	-	1011	887	-
Stage 2	-	-	-	-	-	-	1011	887	-	981	866	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1609	-	-	1577	-	-	957	847	1038	956	847	1071
Mov Cap-2 Maneuver	-	-	-	-	-	-	957	847	-	956	847	-
Stage 1	-	-	-	-	-	-	981	866	-	1011	887	-
Stage 2	-	-	-	-	-	-	1011	887	-	980	866	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0	8.47	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1038	1609	-	-	1577	-	-	-
HCM Lane V/C Ratio	0.001	-	-	-	-	-	-	-
HCM Control Delay (s/veh)	8.5	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	16	27	687	329	6
Future Vol, veh/h	2	16	27	687	329	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	13	4	5	8	17
Mvmt Flow	2	16	28	708	339	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1106	342	345	0	-	0
Stage 1	342	-	-	-	-	-
Stage 2	764	-	-	-	-	-
Critical Hdwy	6.4	6.33	4.14	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.417	2.236	-	-	-
Pot Cap-1 Maneuver	235	676	1203	-	-	-
Stage 1	724	-	-	-	-	-
Stage 2	463	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	226	676	1203	-	-	-
Mov Cap-2 Maneuver	226	-	-	-	-	-
Stage 1	696	-	-	-	-	-
Stage 2	463	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	11.73	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	68	-	554	-	-
HCM Lane V/C Ratio	0.023	-	0.034	-	-
HCM Control Delay (s/veh)	8.1	0	11.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	18	0	1	32	0	0	0	0	0	0	0
Future Vol, veh/h	0	18	0	1	32	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	92	92	79	79	92	92	92	79	92	79
Heavy Vehicles, %	2	0	2	2	6	2	2	2	2	2	2	2
Mvmt Flow	0	23	0	1	41	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	41	0	0	23	0	0	65	65	23	65	65	41
Stage 1	-	-	-	-	-	-	23	23	-	43	43	-
Stage 2	-	-	-	-	-	-	43	43	-	23	23	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1569	-	-	1592	-	-	928	825	1054	928	825	1031
Stage 1	-	-	-	-	-	-	995	876	-	972	859	-
Stage 2	-	-	-	-	-	-	972	859	-	995	876	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1569	-	-	1592	-	-	927	825	1054	927	825	1031
Mov Cap-2 Maneuver	-	-	-	-	-	-	927	825	-	927	825	-
Stage 1	-	-	-	-	-	-	995	876	-	971	859	-
Stage 2	-	-	-	-	-	-	971	859	-	995	876	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.19	0	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1569	-	-	47	-	-	-
HCM Lane V/C Ratio	-	-	-	-	0.001	-	-	-
HCM Control Delay (s/veh)	0	0	-	-	7.3	0	-	0
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	27	7	261	445	1
Future Vol, veh/h	2	27	7	261	445	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	23	13	0
Mvmt Flow	2	29	7	278	473	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	766	474	474	0	-	0
Stage 1	474	-	-	-	-	-
Stage 2	293	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	373	595	1098	-	-	-
Stage 1	631	-	-	-	-	-
Stage 2	762	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	370	595	1098	-	-	-
Mov Cap-2 Maneuver	370	-	-	-	-	-
Stage 1	625	-	-	-	-	-
Stage 2	762	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	11.67	0.22	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	47	-	571	-	-
HCM Lane V/C Ratio	0.007	-	0.054	-	-
HCM Control Delay (s/veh)	8.3	0	11.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	28	0	0	8	0	0	0	1	0	0	0
Future Vol, veh/h	0	28	0	0	8	0	0	0	1	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	92	92	78	78	92	92	92	78	92	78
Heavy Vehicles, %	2	8	2	2	0	2	2	2	2	2	2	2
Mvmt Flow	0	36	0	0	10	0	0	0	1	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	10	0	0	36	0	0	46	46	36	46	46	10
Stage 1	-	-	-	-	-	-	36	36	-	10	10	-
Stage 2	-	-	-	-	-	-	10	10	-	36	36	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1609	-	-	1575	-	-	955	846	1037	955	846	1071
Stage 1	-	-	-	-	-	-	980	865	-	1011	887	-
Stage 2	-	-	-	-	-	-	1011	887	-	980	865	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1609	-	-	1575	-	-	955	846	1037	954	846	1071
Mov Cap-2 Maneuver	-	-	-	-	-	-	955	846	-	954	846	-
Stage 1	-	-	-	-	-	-	980	865	-	1011	887	-
Stage 2	-	-	-	-	-	-	1011	887	-	979	865	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0	8.48	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1037	1609	-	-	1575	-	-	-
HCM Lane V/C Ratio	0.001	-	-	-	-	-	-	-
HCM Control Delay (s/veh)	8.5	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	17	28	714	342	6
Future Vol, veh/h	2	17	28	714	342	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	13	4	5	8	17
Mvmt Flow	2	18	29	736	353	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1149	356	359	0	-	0
Stage 1	356	-	-	-	-	-
Stage 2	794	-	-	-	-	-
Critical Hdwy	6.4	6.33	4.14	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.417	2.236	-	-	-
Pot Cap-1 Maneuver	221	664	1189	-	-	-
Stage 1	714	-	-	-	-	-
Stage 2	449	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	212	664	1189	-	-	-
Mov Cap-2 Maneuver	212	-	-	-	-	-
Stage 1	684	-	-	-	-	-
Stage 2	449	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	11.88	0.31	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	68	-	543	-	-
HCM Lane V/C Ratio	0.024	-	0.036	-	-
HCM Control Delay (s/veh)	8.1	0	11.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	19	0	1	33	0	0	0	0	0	0	0
Future Vol, veh/h	0	19	0	1	33	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	92	92	79	79	92	92	92	79	92	79
Heavy Vehicles, %	2	0	2	2	6	2	2	2	2	2	2	2
Mvmt Flow	0	24	0	1	42	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	42	0	0	24	0	0	68	68	24	68	68	42
Stage 1	-	-	-	-	-	-	24	24	-	44	44	-
Stage 2	-	-	-	-	-	-	44	44	-	24	24	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1567	-	-	1591	-	-	925	823	1052	925	823	1029
Stage 1	-	-	-	-	-	-	994	875	-	970	858	-
Stage 2	-	-	-	-	-	-	970	858	-	994	875	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1567	-	-	1591	-	-	924	822	1052	924	822	1029
Mov Cap-2 Maneuver	-	-	-	-	-	-	924	822	-	924	822	-
Stage 1	-	-	-	-	-	-	994	875	-	970	858	-
Stage 2	-	-	-	-	-	-	970	858	-	994	875	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.18	0	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1567	-	-	46	-	-	-
HCM Lane V/C Ratio	-	-	-	-	0.001	-	-	-
HCM Control Delay (s/veh)	0	0	-	-	7.3	0	-	0
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	31	9	261	445	1
Future Vol, veh/h	2	31	9	261	445	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	23	13	0
Mvmt Flow	2	33	10	278	473	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	771	474	474	0	-	0
Stage 1	474	-	-	-	-	-
Stage 2	297	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	371	595	1098	-	-	-
Stage 1	631	-	-	-	-	-
Stage 2	759	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	368	595	1098	-	-	-
Mov Cap-2 Maneuver	368	-	-	-	-	-
Stage 1	624	-	-	-	-	-
Stage 2	759	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	11.69	0.28	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	60	-	573	-	-
HCM Lane V/C Ratio	0.009	-	0.061	-	-
HCM Control Delay (s/veh)	8.3	0	11.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	28	0	0	8	2	0	0	1	4	0	0
Future Vol, veh/h	0	28	0	0	8	2	0	0	1	4	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	92	92	78	78	92	92	92	78	92	78
Heavy Vehicles, %	2	8	2	2	0	2	2	2	2	2	2	2
Mvmt Flow	0	36	0	0	10	3	0	0	1	5	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	13	0	0	36	0	0	46	49	36	47	47	12
Stage 1	-	-	-	-	-	-	36	36	-	12	12	-
Stage 2	-	-	-	-	-	-	10	13	-	36	36	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1606	-	-	1575	-	-	955	843	1037	953	844	1069
Stage 1	-	-	-	-	-	-	980	865	-	1009	886	-
Stage 2	-	-	-	-	-	-	1011	885	-	980	865	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1606	-	-	1575	-	-	955	843	1037	952	844	1069
Mov Cap-2 Maneuver	-	-	-	-	-	-	955	843	-	952	844	-
Stage 1	-	-	-	-	-	-	980	865	-	1009	886	-
Stage 2	-	-	-	-	-	-	1011	885	-	979	865	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0	8.48	8.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1037	1606	-	-	1575	-	-	952
HCM Lane V/C Ratio	0.001	-	-	-	-	-	-	0.005
HCM Control Delay (s/veh)	8.5	0	-	-	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	20	32	714	342	7
Future Vol, veh/h	2	20	32	714	342	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	13	4	5	8	17
Mvmt Flow	2	21	33	736	353	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1158	356	360	0	-	0
Stage 1	356	-	-	-	-	-
Stage 2	802	-	-	-	-	-
Critical Hdwy	6.4	6.33	4.14	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.417	2.236	-	-	-
Pot Cap-1 Maneuver	219	664	1188	-	-	-
Stage 1	713	-	-	-	-	-
Stage 2	445	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	208	664	1188	-	-	-
Mov Cap-2 Maneuver	208	-	-	-	-	-
Stage 1	680	-	-	-	-	-
Stage 2	445	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	11.78	0.35	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	77	-	554	-	-
HCM Lane V/C Ratio	0.028	-	0.041	-	-
HCM Control Delay (s/veh)	8.1	0	11.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	19	0	1	33	5	0	0	0	3	0	0
Future Vol, veh/h	0	19	0	1	33	5	0	0	0	3	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	79	79	92	92	79	79	92	92	92	79	92	79
Heavy Vehicles, %	2	0	2	2	6	2	2	2	2	2	2	2
Mvmt Flow	0	24	0	1	42	6	0	0	0	4	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	48	0	0	24	0	0	68	74	24	71	71	45
Stage 1	-	-	-	-	-	-	24	24	-	47	47	-
Stage 2	-	-	-	-	-	-	44	50	-	24	24	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1559	-	-	1591	-	-	925	816	1052	920	819	1025
Stage 1	-	-	-	-	-	-	994	875	-	966	856	-
Stage 2	-	-	-	-	-	-	970	853	-	994	875	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1559	-	-	1591	-	-	924	815	1052	920	819	1025
Mov Cap-2 Maneuver	-	-	-	-	-	-	924	815	-	920	819	-
Stage 1	-	-	-	-	-	-	994	875	-	966	855	-
Stage 2	-	-	-	-	-	-	970	852	-	994	875	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.16	0	8.93
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1559	-	-	39	-	-	920
HCM Lane V/C Ratio	-	-	-	-	0.001	-	-	0.004
HCM Control Delay (s/veh)	0	0	-	-	7.3	0	-	8.9
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0

ATTACHMENT 12

McMullen Well Drilling Corp

36061 Construction Way / PO Box 283 St. Helens, Oregon 97051
503-397-2356
mcmullenwelldrilling@gmail.com

WATER AVAILABILITY REPORT

Property: Tax & Map No. 6225-00-00400
47.9 ac parcel / Tide Creek Road
Proposal: Lupine Meadow, S 23-01

Current recorded well records show that this property has available water adequate to serve the eight (8) residential lots proposed at Lupine Meadow.

Well Logs On Site Include:

COLU 55654

COLU 55655

COLU 55656

Well Logs show that the wells drilled on this property have a:

1) depth of 303' to 324' and

2) water flow of 20gpm to 25gpm, see attached Well Report Query Results.

Arthur McMullen 10 /27 /2023
Oregon Water Resources License #1480

Well Report Query Results *GPS points, where available are at the far right of the table. Click link to view on map*

Well Log: COLU 55654, Well Log: COLU 55656

Well Log	Details	T-R-S/ QQ-Q	Taxlot	Street of Well	Owner	Company	Special Standards	Well Type	First Water	Completed Depth	Static Water Level	Yield	Completed Date	Received Date	Bonded Constructor	Startcard	Well Id #	New	Abandon	Deepen	Alteration	Conversion	Domestic	Irrigation	Community	Livestock	Industrial	Injection	Thermal	Dewatering	Piezometer	Latitude/ Longitude
COLU 55654 Exempt Use Map Groundwater Info	Details	6.00N-2.00W-25 NE-SW	400	33625 TIDE CREEK ROAD, DEER ISLAND, OR 97054	PETERSEN, AGNES 33625 TIDE CREEK ROAD DEER ISLAND OR 97054			W	265.00	303.00	162.0	20.0	09/08/2020	10/20/2020	MCMULLEN, ARTHUR MCMULLEN DRILLING CORP.	1048875	139456	✓					✓									45.9711 -122.8793
COLU 55655 Exempt Use Map Groundwater Info	Details	6.00N-2.00W-25 NE-SW	400	33625 TIDE CREEK ROAD, DEER ISLAND, OR 97054	PETERSEN, AGNES 33625 TIDE CREEK ROAD DEER ISLAND OR 97054			W	240.00	305.00	187.0	25.0	09/07/2020	10/20/2020	MCMULLEN, ARTHUR MCMULLEN DRILLING CORP.	1048646	139454	✓					✓									45.9718, -122.8814
COLU 55656 Exempt Use Map Groundwater Info	Details	6.00N-2.00W-25 NE-SW	400	33625 TIDE CREEK ROAD, DEER ISLAND, OR 97054	PETERSEN, AGNES 33625 TIDE CREEK ROAD DEER ISLAND OR 97054			W	294.00	324.00	157.0	25.0	10/05/2020	10/20/2020	MCMULLEN, ARTHUR MCMULLEN DRILLING CORP.	1048763	139455	✓					✓									45.9724, -122.8812

Download Data