

From: [Martonen, Dakota](#)
To: [Taylor Kasperick](#)
Cc: [Zisch, John](#); [Scott Aspenlieder](#)
Subject: RE: Blue Creek Car Wash
Date: Monday, December 12, 2022 11:22:46 AM
Attachments: [image002.png](#)
[image003.jpg](#)

Hi Taylor,

Thank for the additional information and documentation on the BCCW queue analysis. I have reviewed the updated letter and have the following comments:

- Land Uses in ITE's most recent Trip Generation Manual are significantly higher than observed trips at the Broadwater Car Wash. However, these ITE land use categories have very limited information and local data is generally much more accurate.
- For future studies, ensure trips are counted as a one-way journey. The study indicates the highest observed peak hour count to be 18 trips, but the data collection actually shows 32 trips (18 vehicles).
- Arrival rate for the auto car wash should be based on peak hour observations which was noted in the study to be 8 vehicles/hour. Using 8 vph with a multi-server queue analysis still shows adequate queue storage on site.

The comments provided do not need a response or update to the analysis and are for information only. Please let me know if you have questions.

Thank you,

Dakota Martonen, P.E.

STAFF ENGINEER II

CITY OF BILLINGS PUBLIC WORKS DEPARTMENT

Office 406.237.6289

Email martonend@billingsmt.gov

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From: Taylor Kasperick <taylor@performance-ec.com>
Sent: Tuesday, December 6, 2022 1:23 PM
To: Martonen, Dakota <martonend@billingsmt.gov>
Cc: Zisch, John <ZischJ@billingsmt.gov>; Scott Aspenlieder <scott@performance-ec.com>
Subject: [EXTERNAL] RE: Blue Creek Car Wash

Hey Dakota,

I hope all is well. John forwarded your comments on the Blue Creek Car Wash Queue Analysis so I wanted to get you over some additional information and answer a couple of the questions. I have attached a revised Queue Analysis Letter with this email for your reference.

In relation to the total daily trips, I have included a summary of the traffic camera footage from the car wash on Broadwater Avenue referenced previously. In this analysis, we noted a peak trips per day of 170 (85 total vehicles in and out). This was on a Thursday from 10:30 AM to 6:10 PM, so may be on the order of 200 factoring in any stragglers outside those core hours. This value is similar to what would be anticipated when looking at the generation statistics from ITE's Trip Generation Manual for Land Use 947 and 948, even though those uses have limited data as well. All in all, the trip generation from this facility should be well under the 500 trips per day based on the analyzed information and from ITE estimates. I have included this discussion in the revised letter as well.

In the revised letter, I have included a summary from the analysis performed at the Broadwater Avenue location, and have linked to the videos below should you wish to watch them yourself. Based on those analysis, the peak hour identified during the study was 18 vehicles utilizing the site, with 8 of those being attributed to the auto wash bays, 9 to the manual bays, and 1 to coin dispenser. These values are actually less than the conservative value of 14 we utilized in the queue analysis which was provided to us by Rocky Mountain Car Wash (unrelated project) for one of their facilities in Wyoming. Similarly, we computed the average service time for both auto and manual bays based on the survey of the Broadwater location. Auto service times greater than 10 minutes were thrown out of consideration as service time through the was is a set period and vehicles within the site longer than this are there utilizing other services such as vacuums or hand drying their vehicles. The average service time in doing so is 7:26, which aligns with that assumed in the submitted queue analysis. This service time was also verified by the wash system supplier for the project as an appropriate service time.

<https://www.dropbox.com/t/wFpRxkLZLibMWBCP>

In the videos observed for the Broadwater Avenue wash facility, there were multiple instances noted where all four manual bays were in use and another customer arrived at the site. In each instance, the newly arriving customer elected to leave after seeing each bay was occupied rather than wait until one of the vehicles in the bays were finished. This leads to the "passer-by" nature of the car was referenced in the Queue Letter, and why it is believed and we are comfortable providing a single queueing location for each manual wash bay for this site.

In relation to site configuration, the layout you reference had been discussed amongst ourselves and the owner. Given this project's relative location in comparison to residences, it has been oriented in this manner to 1) direct noise from the auto-bay blowers away from nearby residences and 2) direct vehicles exiting wash bays towards vacuums placed on the west side of the lot. While I agree with the reduction in potential conflict if rotated, I believe there is sufficient space in the "exit" aisle to allow for two way traffic in that area for vehicles entering and exiting.

Please let me know if you have any further questions after receiving this additional information. I

meant to get it over to you sooner prior to re-submitting for special review, but was unable to do so.

Thank you!

Taylor

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From: Zisch, John <ZischJ@billingsmt.gov>
Sent: Monday, November 21, 2022 10:25 AM
To: Taylor Kasperick <taylor@performance-ec.com>
Subject: FW: Blue Creek Car Wash

Taylor,

Dakota reviewed the queuing analysis and had some comments .

Regards,

John Zisch
City of Billings Public Works Department
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2224 Montana Avenue
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From: Martonen, Dakota <martonend@billingsmt.gov>
Sent: Monday, November 21, 2022 9:09 AM
To: Zisch, John <ZischJ@billingsmt.gov>
Subject: RE: Blue Creek Car Wash

John,

I have reviewed the Blue Creek Car Wash Queuing Analysis memo and have the following

comments/questions:

- Additional information should be provided in the memo to document the expected total daily trips and demonstrate that a traffic impact study is not required.
- Provide documentation of data collected for the Broadwater Avenue Car & RV Wash that was used in this analysis.
 - This documentation needs to show peak hour of total vehicles, peak hour of automatic wash vehicles, arrival rates, and service rates.
- The analysis notes that manual bays are not expected to stack. Were there any observations in the service count that prove this to be accurate? If they were to stack even one additional vehicle, it could create conflicts at the approach due to the current site layout.
- Can the site be configured to allow for counterclockwise flow to reduce the conflict at the site approach?

Let me know if there are any questions or concerns. Thank you!

Dakota Martonen, P.E.

STAFF ENGINEER II

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From: Zisch, John <ZischJ@billingsmt.gov>
Sent: Thursday, November 10, 2022 11:43 AM
To: Martonen, Dakota <martonend@billingsmt.gov>
Subject: FW: Blue Creek Car Wash

Dakota,

Preliminary queuing analysis for the Blue Creek Car Wash is attached. I let Taylor know we had concerns about the traffic circulation (see email chain below) and they would expect this to resolve some of those concerns.

I'll let Taylor know that you will work through it and get back to him before Thanksgiving.

Regards,

John Zisch
City of Billings Public Works Department

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From: Taylor Kasperick <taylor@performance-ec.com>
Sent: Thursday, November 10, 2022 11:25 AM
To: Zisch, John <ZischJ@billingsmt.gov>
Cc: Scott Aspenlieder <scott@performance-ec.com>; Alex Neale <aneale@performance-ec.com>
Subject: [EXTERNAL] RE: Blue Creek Car Wash

John,

Thanks for the update following talking with Mac. I have attached our preliminary queuing analysis that was prepared before moving the approach east, and as can be seen would anticipate being able to provide enough queuing storage for up to 13 auto bay vehicles (95% chance 8 or fewer vehicles would arrive at peak hour with a max being calculated at 11 cars) and 8 manual bay vehicles which is anticipated to be sufficient based on review of similar car washes (in discussions with Dakota and background on manual bays, if they are full or have people waiting additional customers will inevitably move along and come back later). Let me know if you have any thoughts/questions on this portion.

In relation to the other points listed below, I have a couple follow-up questions/confirmations that I have included in [blue](#), with the biggest concern being in reference to sidewalk on both sides of Santiago and along Blue Creek Road. Please feel free to give me a shout to discuss or let me know what your thoughts are. Thanks!

Taylor

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From: Zisch, John <ZischJ@billingsmt.gov>
Sent: Wednesday, November 9, 2022 2:06 PM
To: Taylor Kasperick <taylor@performance-ec.com>
Cc: Scott Aspenlieder <scott@performance-ec.com>; Alex Neale <aneale@performance-ec.com>
Subject: RE: Blue Creek Car Wash

Taylor,

Mac was back in the office this morning, so a few of us took another look at your mock-up and would add the following narrative to what I sent Monday:

1. No change.

Noted

2. The taper at the fill station approach will likely be eliminated and the right turn width extended to the west side of the fill station approach. Final configuration would be determined by evaluation of Santiago Blvd/Blue Creek Rd traffic data.

Noted

3. The SIA reads that the entire subdivision frontage improvements for Santiago Boulevard are left to the timing of Lot 1 development, so the extent of the curb, sidewalk, and 30' asphalt width for Santiago Blvd should be extended to the Blue Creek Storage Subdivision Lot 2/Cedar Park Subdivision 1st Filing Block 2, Lot 6 lot line.

While the SIA doesn't necessarily say **that** in the statement "Additional street improvements may be required on Santiago at the time of development of Lot 1," I understand Lot 2's double frontage on Santiago wouldn't be built out unless an SID is created without requiring this. If there is still discussion regarding an SID for road/sidewalk improvements outside Blue Creek Subdivision in the area, I would ask is if Lot 2 could be included in the SID instead given 1) the vagueness of this requirement in the SIA and 2) coordination with adjacent properties' approaches as noted in Item 5 below.

4. Boulevard Walk per BMCC would be anticipated on both sides of the street and the Blue Creek Storage Subdivision would need to have it all installed with the Lot 1 development as mentioned above in item 3.

Confirming improvement (C&G and sidewalk) on both sides of Santiago is not being implied as an expectation of Lot 1 with this comment? Sidewalks would only be being required on the south side of Santiago correct? If we are explicitly going off the SIA, it notes "No sidewalks are required with this subdivision but are included in the Waiver."

5. The extended required frontage improvements (whole subdivision frontage of Santiago Blvd) will put the taper close to the approach for 2110 Santiago Blvd. We will need to have an updated mock-up to provide further input on how that would be configured. We would also look for MDT to provide input on the configuration of the sidewalk/crossing in their ROW. The dead end sidewalk at the ROW would likely need an ADA ramp and crossing to get to the north side of Santiago Blvd, but without MDT input on the intersection and/or continuation of walk along Blue Creek Rd the City cannot determine final configuration.

Thoughts on the taper close to 2110 Santiago are above in Item 3. In relation to MDT input on sidewalk/crossing in the ROW, my understanding is we would only be constructing C&G and sidewalk improvements up to where COB right-of-way ends, with only asphalt approach widening occurring in MDT's ROW and being in their purvey. Am I missing something there?

6. Without a queuing analysis, the Engineering Division cannot confirm that the site layout will be acceptable. There are concerns with the queuing and circulation of traffic on site which cannot be vetted prior to queuing analysis being reviewed.

Noted. Attached is the preliminary queuing analysis based on the current plan.

7. Data for traffic has not been processed yet. We can get you the video, but we haven't

determined any results nor if sufficient data is available from what we collected to determine satisfactory intersection lengths.

When this is available, it would be much appreciated. Thank you!

Regards,

John Zisch
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From: Zisch, John

Sent: Monday, November 7, 2022 10:19 AM

To: Taylor Kasperick <taylor@performance-ec.com>

Cc: Scott Aspenlieder <scott@performance-ec.com>; Alex Neale <aneale@performance-ec.com>

Subject: RE: Blue Creek Car Wash

Taylor,

Mac is out this week so I can't get a final confirmation on your mock-ups. From my conversations following the zoning change Council meeting though, I have the following thoughts:

1. The shift in the approach to line up with the fill station approach is good.
2. The addition of a 39' wide roadway from Blue Creek Rd to the car wash/fill station approach in order to have 3 lanes is what we are looking for. The right out wouldn't have a through option since it doesn't line up with a lane on the other side of Blue Creek.
3. The full height curbing for the length of the frontage is good.
4. Installing sidewalk on the south side of Santiago for the length of the frontage is good. The SIA doesn't spell out that this has to be boulevard walk, but I'm not sure that we would go with curbside since we have a full Right-of-Way. I'm sure some of the through here is for the slope adjacent. I would anticipate the lot being required to have a fence along the frontage for screening (like was mentioned in the Council meeting for the storage lot). With a fence being installed along the property I wouldn't see why we would vary from the Table 23-406.B.1. requirement of 5' boulevard walk.
5. I need to confirm the length of the required widening of Santiago Blvd, but it looks like you are showing 30' of asphalt east of the car wash approach. I think 30' will hold, but need to confirm. During review we will also be looking at the taper length. I think for a 25 mph zone the taper would need to be 10:1. I measured about 6' of taper width so the length would be 60' instead of the 20' shown.

I will confirm next week when Mac is back, but this should give you a good update.

Regards,

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From: Taylor Kasperick <taylor@performance-ec.com>
Sent: Thursday, November 3, 2022 12:18 PM
To: Zisch, John <ZischJ@billingsmt.gov>
Cc: Scott Aspenlieder <scott@performance-ec.com>; Alex Neale <aneale@performance-ec.com>
Subject: [EXTERNAL] Blue Creek Car Wash

John,

Attached is a mock-up of the revised Blue Creek Car Wash layout incorporating c&g, sidewalk, and road widening near Santiago's intersection with Blue Creek Road. I wanted to get this over to you so we can discuss the sidewalk as well as street widening to make sure we have a nailed down approach prior to submitting for special review.

Also, can you share the traffic data that was collected at the intersection as part of this or what the City determined from it?

Thanks a bunch and I will give you a shout tomorrow to discuss.

Taylor

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