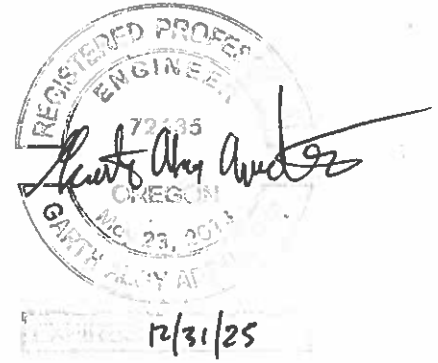




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## MEMORANDUM

DATE: June 12, 2024

TO: Doaa Elhaggan, PMP | Beaverton School District

FROM: Garth Appanaitis, PE; Alex Correa, EIT; Brianna Velasquez, EIT | DKS Associates

SUBJECT: Greenway Elementary School- Land Use Application Trip Generation      Project #24403-000

### INTRODUCTION

The purpose of this memorandum is to summarize the additional vehicle trips generated by adding portable classrooms at Greenway Elementary School (GES). The addition of portable classrooms at GES is due to the rebuilding of Raleigh Hills Elementary School (RHES) and the resulting temporary shift of students and staff from RHES to GES during construction (School years 2024-2025 and 2025-2026). A full Traffic Impact Analysis (TIA) is required if trip generation is above the threshold of 300 vehicles per day in accordance with the City of Beaverton Development Code 60.55.20.2. The following sections describe the project, and summarize trip generation estimations and modes of travel, to ultimately determine if a full TIA is required per City of Beaverton Development Code 60.55.20.2.

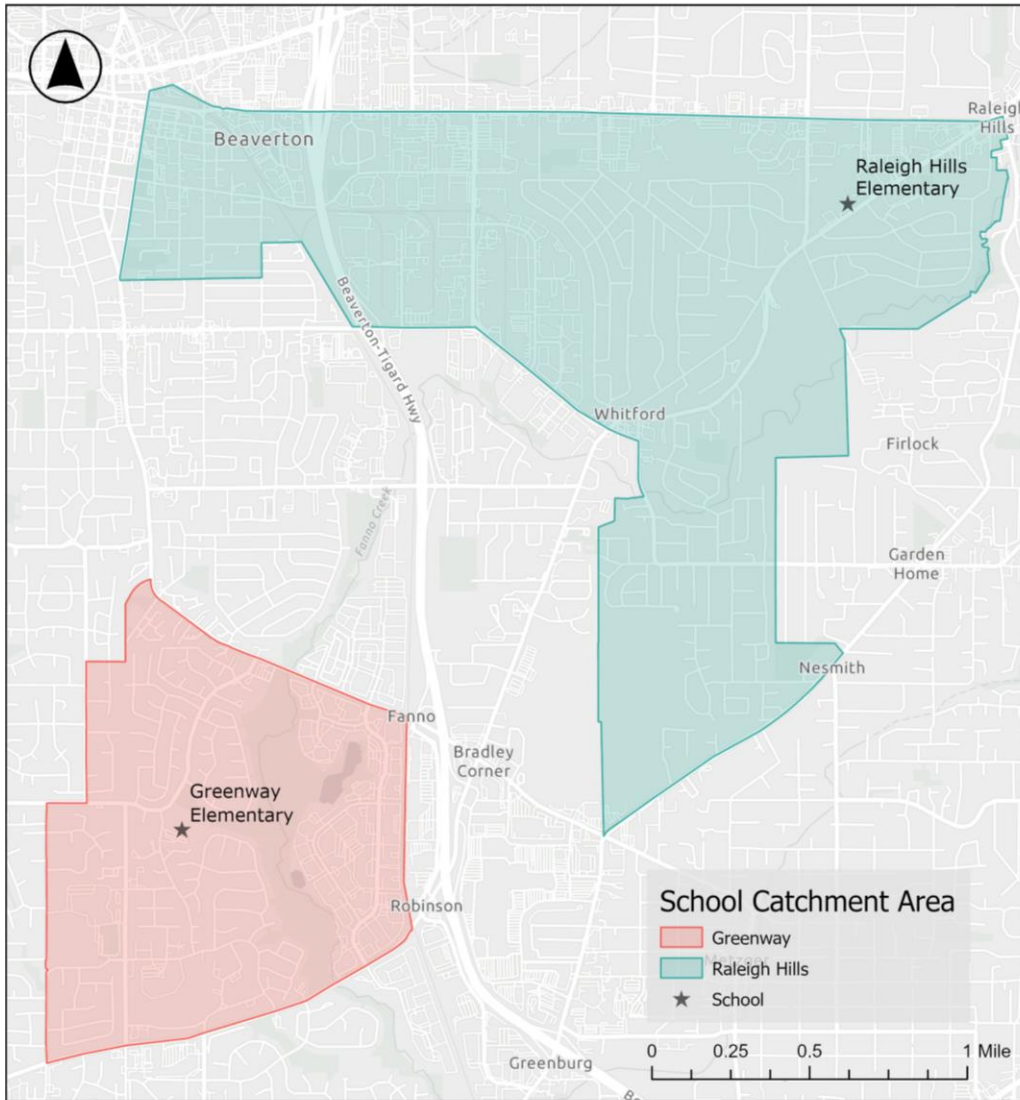
Based on the analysis summarized in the following sections, the relocation of RHES students to GES is anticipated to add approximately 92 daily vehicle trips and would not meet the 300 daily trip threshold to trigger a full traffic study.

### PROJECT DESCRIPTION

RHES is currently the second oldest school in the Beaverton School District dating back to 1927. Today, the school does not meet current seismic standards and contains other systems that are not adequate for the size of the school. The school is slated to be demolished in the summer of 2024 and will be rebuilt and opened in the fall of 2026. During this two-year rebuilding period, students and staff at RHES will temporarily move to GES.

The bus service for the Beaverton School District is consistent with Oregon Revised Statute 327.043. Due to the location of GES (boundaries for each school are shown in Figure 1 during the temporary relocation, bus service will be provided for all RHES students to travel to GES. The GES and RHES start times would be staggered by approximately 30 minutes to minimize traffic impacts to existing conditions; GES and pre-kindergarten (Pre-K) programs would be an early-start

elementary school, scheduled from 7:45 a.m. to 2:20 p.m., while RHES would be a late-start elementary school with a schedule from 8:15 a.m. to 2:50 p.m.<sup>1</sup> There are currently no buses serving GES, allowing parent pick up to be complete prior to bus and parent arrival for RHES student pick up. Parent pick up and drop off vehicles are expected to park in available parking lot stalls.



**FIGURE 1: GREENWAY ELEMENTARY SCHOOL AND RALEIGH HILLS SCHOOL BOUNDARIES**

<sup>1</sup> Beaverton School District New Bell Schedule for 2024-2025 School Year full access online: <https://www.beaverton.k12.or.us/about-us/new-bell-schedule-for-2024-2025-school-year>

## TRIP GENERATION

Trip generation is the method used to estimate the number of vehicles added to site roadways and the adjacent roadway network by a development during a specified period (i.e., the p.m. peak hour). For this study, two trip generation scenarios are included:

1. The "Full Capacity" scenario assesses the trips added to the GES campus if both GES and RHES each had an enrollment that equals their approved land use capacity. This scenario is not anticipated but is included here due to code requirements.
2. A "Projected Capacity" scenario assesses the trips added to the GES campus for the most likely outcome based on current and projected enrollment. Today, the combined enrollment of GES and RHES is at approximately 41% of the combined capacity, and the combined enrollment of both schools is less than the previously approved capacity of GES. Although scheduled start times for GES and RHES would be staggered, a conservative approach was utilized to estimate peak hour trips hence all trips are assumed to arrive at once.

The objective in evaluating both scenarios is to determine if the proposed (temporary) site use will add 300 or more daily trips when compared to the previously established site capacity, and thus trigger a full Transportation Impact Study.

### FULL CAPACITY SCENARIO

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Initial trip generation estimates were developed using rates published in the ITE Trip Generation Manual, 11th Edition<sup>2</sup>. ITE land use code 565 (Day Care Center) and land use code 520 (Elementary School) were used to estimate the trip generation for the proposed (temporary) site use in a fully utilized capacity scenario.

Prior land use decisions established a GES capacity of 539 students and 45 staff. For RHES, the approved school capacity (for future growth needs) is 770 students, of which 20 are Pre-K, and 69 staff. Based on these assumptions, the proposed temporary relocation of the RHES students is estimated to have a worst-case potential to generate up to 577 a.m. peak hour trips, 358 mid-day (student release) trips, and 138 p.m. peak hour trips if the school was operating at full long-term capacity (Table 1).

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<sup>2</sup> Trip Generation Manual, 11<sup>th</sup> Edition, Institute of Transportation Engineers, 2021.

**TABLE 1: ESTIMATED PROJECT TRIP GENERATION – FULL CAPACITY SCENARIO**

LAND USE	A.M. PEAK HOUR			M.D. PEAK HOUR			P.M. PEAK HOUR			DAILY TRIPS ADDED
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL	
PRE-K – ITE 565 (20 STUDENTS)	11	11	22	10	10	20	9	9	18	60
ELEMENTARY SCHOOL – ITE 520 (750 STUDENTS)	300	255	555	155	183	338	55	65	120	1,589
<b>TOTAL</b>	<b>311</b>	<b>266</b>	<b>577</b>	<b>165</b>	<b>193</b>	<b>358</b>	<b>64</b>	<b>74</b>	<b>138</b>	<b>1,649</b>

However, these site-generated trip estimations are an extreme worst case since they do not consider the mode share that would take place, as RHES students are expected to be bussed to/from GES. The current bus ridership at RHES is 57 percent of eligible riders.<sup>3</sup> Riding the bus to GES will not be mandatory for all RHES students, but bus ridership is anticipated to be higher than typical since the distance to GES will not support walking and during other recent swing school operations in the City (Hazeldale, William Walker, and Vose), bus ridership exceeded 90 percent on average. Further, it is worth noting that this scenario is unlikely to occur as combined enrollment at the schools would have to double in the next several years. Over the last several years the enrollment at both schools has continued to decline.<sup>4</sup> According to the School District’s Demographer, which maintains detailed enrollment and projection statistics of the school district, the upcoming projected combined enrollment for the two schools is 519 students; 259 students from GES and 260 from RHES

**PROJECTED CAPACITY SCENARIO**

It is estimated that the total enrollment for the two schools combined for SY 2024-2025 will be at most 519 students if there are no major changes in enrollment. This is a conservative assumption based on the declining enrollment at both schools mentioned previously.

There will be an increase of 24 staff at the GES site due to those that move over from RHES, from 45 current staff to 69 total staff. The current land use entitlement for staff at GES is for a total capacity of 45 staff. Trip generation estimates for the Projected Capacity Scenario are made by utilizing estimates for added vehicle trips based on the number of buses and staff added to the GES

<sup>3</sup> Refer to Beaverton School District Transportation Frequently Asked Questions webpage for elementary school Transportation Service eligibility: <https://www.beaverton.k12.or.us/departments/transportation/transportation-faq#:~:text=Students%20enrolled%20in%20a%20K,that%20schools%20non%2Dtransportation%20zone.>

<sup>4</sup> Over the past five years, the enrollment at GES has dropped an average of 10 students a year and the enrollment at RHES has declined by an average of 18 students per year. These trends indicate that the maximum number of students will most likely be less than the full capacity.

campus. The following section details the trip generation potential for the Projected Capacity Scenario.

### **ADDED VEHICLE TRIPS**

Bussing is currently provided to all RHES students and during the temporary relocation of RHES students, bussing will continue to be offered to all RHES students to get to GES. It is assumed that most students will continue to take the bus and that few students will be dropped off at GES. Riding the bus to GES will not be mandatory for all RHES students, but bus ridership is anticipated to be higher than typical since the distance to GES will not support walking and during other recent swing school operations in the City (Hazeldale, William Walker, and Vose), bus ridership exceeded 90 percent on average. Final routes have not yet been determined for the bus routes of RHES to GES. New daily trips will primarily come from the RHES buses and additional staff.

Trip generation estimates are made based on local data at the two schools and some supplementary assumptions, as follows:

1. The total number of students will remain below the approved capacity of GES (539 students) in SY 24-25 and SY 25-26.
2. Five buses will be serving the school per period (morning and afternoon), resulting in a total of 20 daily bus trips.<sup>5</sup>
3. The total number of staff will stay the same in SY 24-25 and SY 25-26, resulting in a net increase of 24 staff at GES. Conservatively, 50 percent of the added staff (i.e. 12 staff members) are assumed to make four trips to the school per day, indicating that they leave and come back to the school for after-school activities, lunch, or some other reason. Therefore, it is estimated that there would be approximately 72 added daily trips made by staff.
4. Peak hour trips for RHES and GES are assumed to arrive at the same time, despite the staggered schedules, to have a conservative estimate of the traffic impacts.

According to data provided by the district and assumptions described above, there are estimated to be an addition of 92 daily vehicle trips. That leaves 208 more daily trips that would be needed to trigger a transportation impact analysis. To reach that threshold, about 100 more students more than the 539-student full GES approved capacity (and current enrollment of the schools) would need to begin attending GES between SY 24-25 and SY 25-26 per ITE Trip Generation Surveys (Land Use Code 520).

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<sup>5</sup>5 buses per period \* 2 periods per day \* 2 trip ends (arriving and departing) per period = 20 bus trips per day

## INTERNAL CIRCULATION EVALUATION

The proposed (temporary) site plan was reviewed to ensure adequate internal circulation (see Figure 2) during the temporary relocation of RHES. The site currently contains two parking lots for staff and visitor use with one-way circulation in the parking drive aisles. An additional parking lot with 17 spaces would be constructed beside the current smaller parking lot to accommodate the increase of 24 staff parking needs. The current parking lot is not filled to capacity with staff parking. There will be an internal sidewalk connection between the proposed parking lot on the east side of the property to the existing sidewalk in front of the permanent school building.

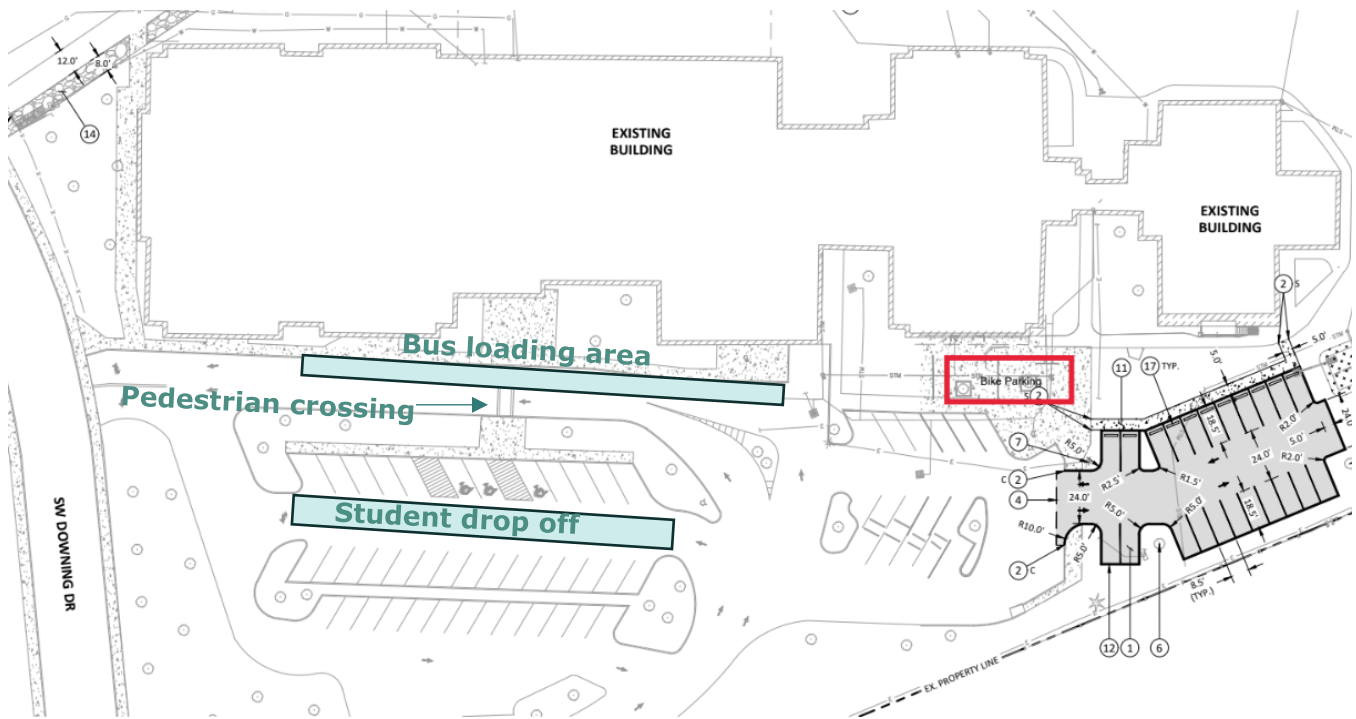
The site would accommodate buses curbside adjacent to the school building for drop-off and pick-up. This direct bus loading area adjacent to the school will allow students to follow the pedestrian path through the permanent school building access points and minimizes pedestrian conflicts for the additional RHES students that will be bussed to and from the school. Also, minimal conflicts are foreseen between buses and personal vehicles. During the morning period, buses that arrive would drop students off at this location and then exit the site. In the afternoon period, the buses would stack approximately as shown in Figure 2.<sup>6</sup>

The existing parent loading area will remain the same, leading from the existing marked crosswalk into the parking lot. The additional drive aisle beside the queued buses would allow other vehicles to circulate through and exit the site in either direction while buses are loading or unloading students. The bus stacking configuration shown in Figure 2 would maximize the space for personal vehicles leaving the site, allowing approximately six personal vehicles (average vehicle length of 20 feet) to queue for the right-turn ahead of the buses. The drive aisle entering the site would provide additional stacking distance for parents (approximately 500 feet).

When buses are present, vehicles would be able to drop off students as shown in Figure 2. This location would allow students to use the crosswalk to access the site building. When buses are not at the curb, guardians can drop students off directly at the curb and no additional pedestrian crossing would be required.

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<sup>6</sup> The five buses shown in Figure 2 represents the worst-case scenario for site queuing. Not represented in Figure 2 are periods staggered with general student arrival/departure where 2-3 special education buses will queue at the school frontage to pick up/drop off students in the SPED program.



**FIGURE 2: GREENWAY PROPOSED (TEMPORARY) SITE PLAN**

## FINDINGS

The following summarizes the findings from the trip generation analysis of the proposed project.

- The land use entitlement for GES can already accommodate trips related to up to 539 students which is greater than the projected combined enrollment.
- The Projected Capacity Scenario is assumed to be the most likely scenario for trip generation potential during the temporary condition at GES.
- The addition of five buses and the 24 staff are estimated to add approximately 92 additional daily trips.
- The proposed (temporary) site plan is expected to be able to accommodate the existing and future bus, vehicle, and pedestrian traffic.
- A cumulative impact will not occur by adding RHES students to GES since the schools' schedules will be staggered. Additional queuing beyond what currently exists is not expected.
- If the number of students enrolled is above the 539-student fully utilized capacity, then it would take around 100 students in addition to the new staff to meet the 300-trip threshold for a full TIA.