

Bow Lake and Peyto Lake Traffic and Parking Activity



PRESENTED TO
Parks Canada

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LIMITATIONS OF REPORT

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1.0 INTRODUCTION

Bow Lake and Peyto Lake are popular tourist destinations in the Banff National Park (BNP). The two sites currently serve a wide mix of vehicles including passenger vehicles, trucks, recreational vehicles, mini buses, and tour buses. In recent years, parking demand at the two sites has reached and often exceeds the available capacity, particularly during the July, August, and September long weekends when demand is such that many vehicles chose not to stay as a result of the parking lots being full.

Tetra Tech Canada Inc. (Tetra tech) was retained by Parks Canada Agency (PCA) to identify the potential need for new and/or expanded parking lots at each recreation area, by undertaking parking, traffic, and washroom utilization surveys. The parking surveys were undertaken in September 2016 and July 2017 while the parking and washroom utilization were only undertaken in September 2016.

An environmental assessment was also undertaken to identify vegetation, wildlife, and aquatics resources that have the potential to be affected by the development of the construction of new parking lots. This is summarized in a separate stand-alone report.

2.0 EXISTING CONDITIONS

2.1 Existing Road Network

Bow Lake and Peyto Lake are accessed via Highway 93, a north-south two lane highway, also referred to as Icefields Parkway. It runs from the Trans-Canada Highway in the south to the Yellowhead Highway at Jasper in the north. In the vicinity of the two sites, it has a posted speed limit of 90 km/h. The highway is maintained by Parks Canada for its entire length. There is currently one travel lane in each direction.

2.2 Existing Traffic

Highway 93 carries approximately 171,000 vehicles in the month of July and 119,000 during the month of September. In the past five years traffic volumes have steadily increased at an average rate of approximately 10% per year between 2013 and 2017. A summary of the historical daily traffic volumes are provided in the Table 2-1 below.

Table 2-1. Historical Traffic Volumes (Monthly)

	2017	2016	2015	2014	2013	Average Annual Growth
July	171,016	157,565	133,917	112,134	106,854	10.4%
September	118,910	102,621	90,247	78,296	74,657	10.3%

2.3 Existing Laning and Controls

The existing laning and traffic controls at intersections covered in this study are summarized in the Table 2-2.

Table 2-2. Existing Laning and Controls

East-West Road	North-South Road	Northbound			Southbound			Eastbound			Control
		L	T	R	L	T	R	L	T	R	
Bow Lake Access	Icefields Parkway	1	1	--	--	1	<	Uncontrolled			EB Stop
Peyto Lake Access	Icefields Parkway	1	1	--	--	1	1	1	--	<	EB Stop
Bow Lake View Point and Picnic Area	Icefields Parkway	1	1	--	--	1	<	>	1	<	EB Stop

Note: '<' or '>' = movement shared with adjacent lane; L = left, T = through, R = right

3.0 PARKING SURVEYS

3.1 Survey Locations

The surveys covered all parking areas and washrooms at Bow Lake and Peyto Lake in Banff National Park, Alberta. This included the viewpoint and picnic area located approximately 2 km southeast of the Bow Lake site access. Each of the surveyed locations is illustrated in Figure 1 with a description provided:

- **Bow Lake Day Use Lot (Photo 1):** This lot is primarily used by day use visitors for hiking, taking up-close photos by the water and for washroom and coffee breaks. It is also a popular stop for tour buses. The lot is unpaved with no markings for parking stalls. The lot provides access to the Hotel Hum-Ti-Jah lodge and is accessed via an internal roadway that connects to the Upper Lot and Highway 93. A total of thirteen washroom are provided. Currently four washroom buildings with 14 washroom stalls (4 male, 8 female, 1 unisex) are provided.
- **Bow Lake Upper Lot (Photo 2):** This parking area is located right off the highway. Based on observations, it is primarily used for short stops for quick photos or when the day use lots are at capacity. No washrooms are provided.
- **Bow Lake Viewpoint (Photo 3):** This viewpoint is accessed via an uncontrolled pull-out 2.0 km southeast of the Bow Lake access. This is another popular spot for tourist buses. No washrooms are provided.
- **Bow Lake Picnic Area (Photo 4):** With limited exposure and signage, this area is rarely utilized. It is accessed via a paved road from the Bow Lake Viewpoint. Several picnic tables are provided by the water. One washroom with four stalls (two male, two female) are also provided by the parking area.
- **Peyto Day Use Lot (Photo 5):** This parking area is used by day use visitors to Peyto Lake. A short 15-20 minutes (min) hike is required to access the Peyto Lake lookout. A separate area is provided for disabled and bus parking at Bow Summit. One washroom building with two stalls, both unisex, are provided.
- **Bow Summit (Photo 6):** This is the designated area for bus and disabled parking. Only a short 2-3 minutes walk is required to access the lookout. No washrooms are provided.



Photo 1: Bow Lake Day Use Lot



Photo 2: Bow Lake Upper Lot

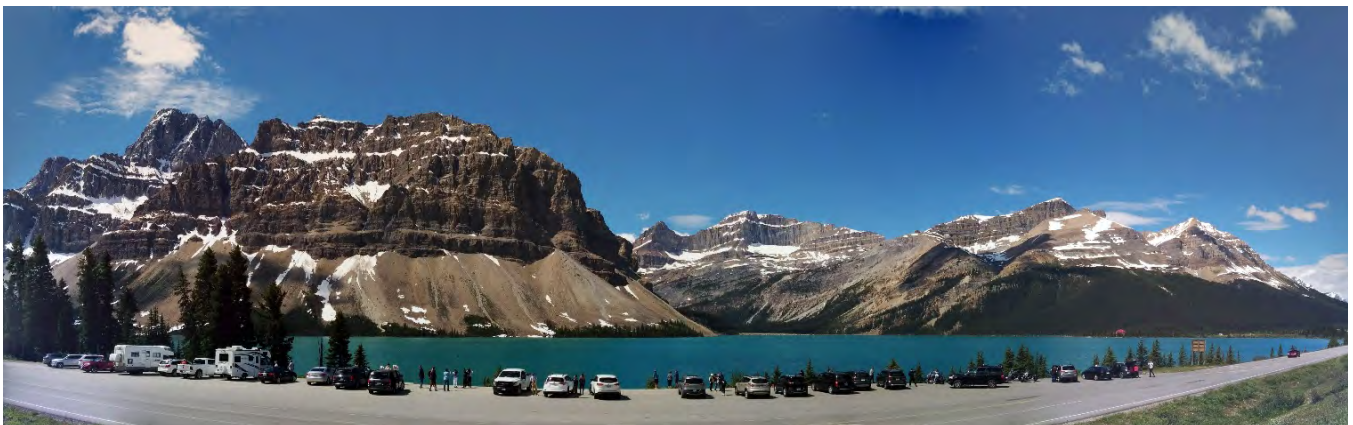


Photo 3: Bow Lake Viewpoint



Photo 4: Bow Lake Picnic Area



Photo 5: Peyto Lake Day Use Lot



Photo 6: Bow Summit

3.2 Survey Conditions and Hours

Surveys were undertaken over the Labour Day Long Weekend (September 2 – 5, 2016) and Canada Day Long Weekend (June 30 – July 3, 2017) between 9:00 a.m. and 6:00 p.m. A summary of the noted survey conditions are provided in Table 3-1.

Table 3-1. Survey Conditions

	2016 Surveys				2017 Surveys			
	2-Sep	3-Sep	4-Sep	5-Sep	30-Jun	1-Jul	2-Jul	3-Jul
9:00 - 11:00 a.m.	Heavy Rain	Moderate Rain	Moderate Rain	Moderate Rain	Sunny/ Dry	Heavy Rain	Sunny/ Dry	Sunny/ Dry
11:00 - 3:00 p.m.	Heavy Rain / Snow	Mostly Dry	Mostly Dry	Moderate Rain	Sunny/ Dry	Light Rain	Sunny/ Dry	Sunny/ Dry
3:00 - 6:00 p.m.	Moderate Rain	Light Rain	Light Rain	Light Rain	Sunny/ Dry	Light Rain	Sunny/ Dry	Sunny/ Dry

The impact of the weather conditions on the surveys is not known.

It should be noted that as part of the Canada 150 celebrations, free Parks Canada Passes were offered to visitors. This has likely attributed to an increase in the number of visitors.

3.3 Parking Inventory

The parking capacities of each of the parking areas were determined by counting the number of cars when the lots were deemed to be at full capacity. The approximate parking capacities of each of the parking areas are summarized in Table 3-2. As each lot is unpaved with unmarked stalls, the maximum capacities can vary depending on how and where vehicles choose to park.

Table 3-2. Existing Parking Inventory (excludes parking on shoulders)

Location	Vehicle + Disabled stalls	Bus stalls
Bow Lake Day Use	55 - 70	4-5
Bow Lake Upper Lot	40 - 50	--
Bow Lake Viewpoint	20 -30	4-5
Peyto Day Use	90 - 120	--
Bow Summit	Disabled parking only	4-5

In addition to the above parking areas, vehicles were observed to park on the side of the road.

3.4 Existing Parking Demand

The peak parking demand was determined using the surveys conducted at the Bow Lake Day Use Area, Bow Lake Viewpoint, and at the Peyto Lake Day Use Area. The results of the surveys are summarized in Tables 3-3, 3-4, and 3-5 and described below. Although the parking demand at the Picnic Area was not surveyed (only in and out traffic volumes and washroom demand was recorded) it was observed that the parking demand peaked at around six vehicles.

Bow Lake Day Use Area:

- Parking demand at this location peaked at different times on all surveyed dates. It was observed that the parking lots were full during these peak times indicating that the approximate parking capacity was 55 to 70 vehicles.
- When the parking lot became full, visitors either parked along the shoulder of the internal roadway or left altogether.
- Bus only parking signs were ignored during the peak periods. This negatively impacted the maneuverability of buses exiting the parking area.
- Approximately 20 vehicles left the parking lot due to the lot being full during the peak period.
- On July 3, the survey data indicates that there were only 33 vehicles parked during the peak period even though the lots were observed to be full. This may have been due to vehicles parking in a non-optimal configuration or there may have been a higher proportion of large vehicles occupying the stalls.

Bow Lake Upper Lot

- The parking demand peaked at 51 vehicles on Monday, July 3.
- The peak parking demand at the Upper Lot was much higher on July 3 compared to the other surveyed dates. This is likely due to the lack of capacity at the day use lot, where it was observed that only 33 vehicles were only able to park in the lot compared to a maximum capacity of 40 to 50 vehicles on typical days.

Bow Lake View Point

- The peak parking demand occurred between 10 a.m. and 12 a.m. on all three surveyed dates;
- Given that the view point has no defined access point (i.e. vehicles can enter/exit from any spot along the 125 m section abutting the highway) it is difficult to quantify the peak parking demand as all vehicles could not be accurately captured (only duration could be accurately captured); however, from observations during the surveys, it was noted that the parking demand peaked at 40-45 vehicles.

Peyto Lake Day Use Area and Bow Summit:

- The peak parking demand occurred between 10 a.m. and 12 p.m. on all four days.
- It was noted that on all four days, the parking lot reached capacity. The differences in the peak parking demand can be attributed to the different parking configurations and differences in vehicle mix (i.e., large vehicles such as RVs or buses occupying more spaces).
- When the parking lots became full, visitors parked along the shoulders of the internal roadway or at the upper lot.

Table 3-3. Bow Lake Day Use Area Parking Demand

Time Period	30-Jun	1-Jul	2-Jul	3-Jul
9:00 - 10:00 a.m.	20	20	53	31
10:00 - 11:00 a.m.	41	25	50	33
11:00 - 12:00 p.m.	34	41	45	27
12:00 - 1:00 p.m.	42	43	45	24
1:00 - 2:00 p.m.	49	56	42	18
2:00 - 3:00 p.m.	62	48	45	27
3:00 - 4:00 p.m.	63	44	42	23
4:00 - 5:00 p.m.	60	41	34	29
5:00 - 6:00 p.m.	53	25	17	23

*daily peak shown in bold

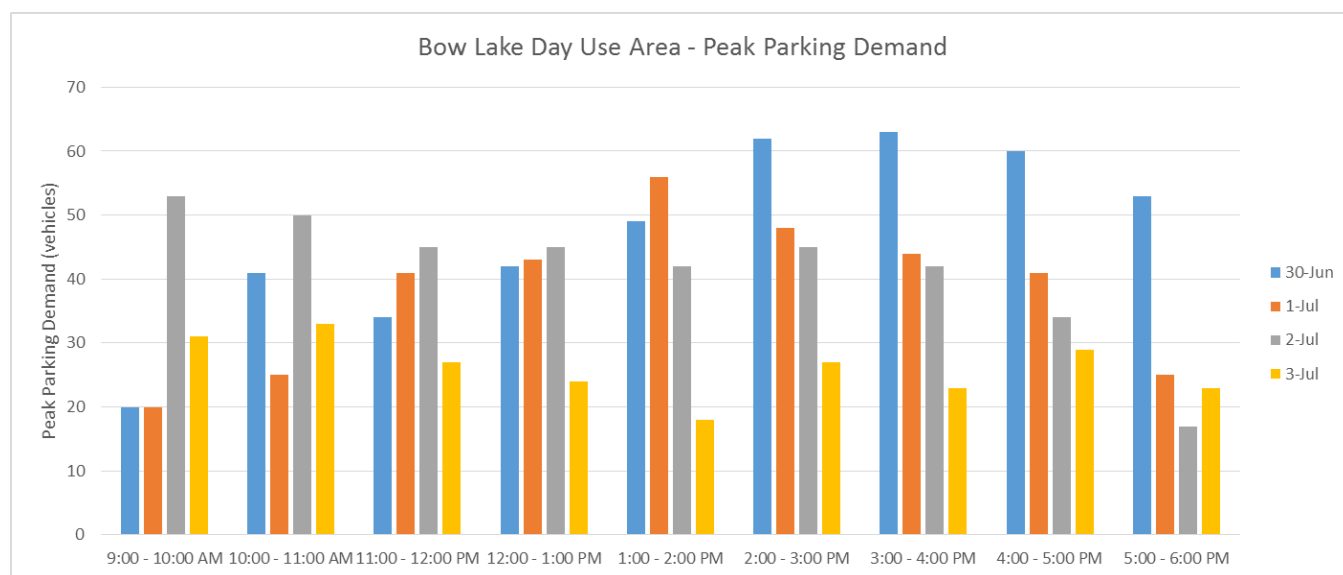


Chart 1: Bow Lake Day Use Area Parking Demand

Table 3-4. Bow Lake Upper Lot Parking Demand

Time Period	30-Jun	1-Jul	2-Jul*	3-Jul
9:00 - 10:00 a.m.	3	4	-	23
10:00 - 11:00 a.m.	6	2	-	26
11:00 - 12:00 p.m.	10	5	-	35
12:00 - 1:00 p.m.	12	7	-	33
1:00 - 2:00 p.m.	10	12	-	44
2:00 - 3:00 p.m.	12	15	-	51
3:00 - 4:00 p.m.	9	22	-	43
4:00 - 5:00 p.m.	17	23	-	23
5:00 - 6:00 p.m.	16	27	-	8

*daily peak shown in bold

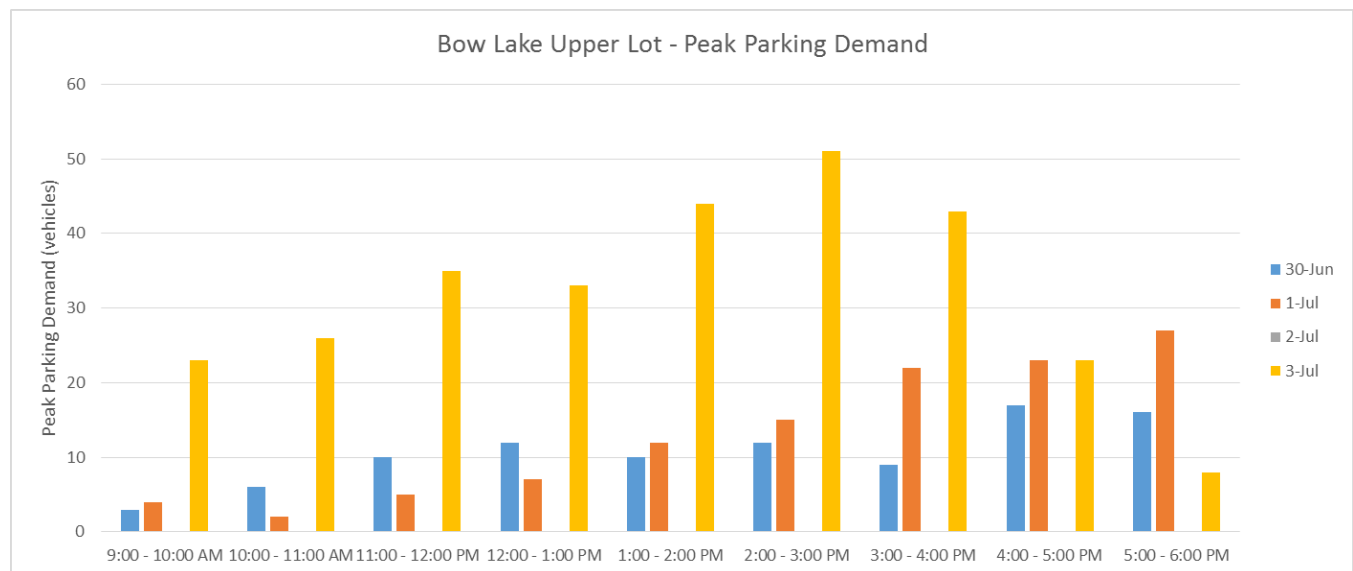


Chart 2: Bow Lake Upper Lot Parking Demand

Table 3-5. Peyto Lake Day Use Area and Bow Summit Parking Demand

Time Period	30-Jun	1-Jul	2-Jul	3-Jul
9:00 - 10:00 a.m.	80	64	51	42
10:00 - 11:00 a.m.	117	98	85	78
11:00 - 12:00 p.m.	118	100	76	79
12:00 - 1:00 p.m.	94	99	82	73
1:00 - 2:00 p.m.	76	88	47	79
2:00 - 3:00 p.m.	45	74	44	67
3:00 - 4:00 p.m.	29	33	33	54
4:00 - 5:00 p.m.	34	35	19	23
5:00 - 6:00 p.m.	3	39	5	18

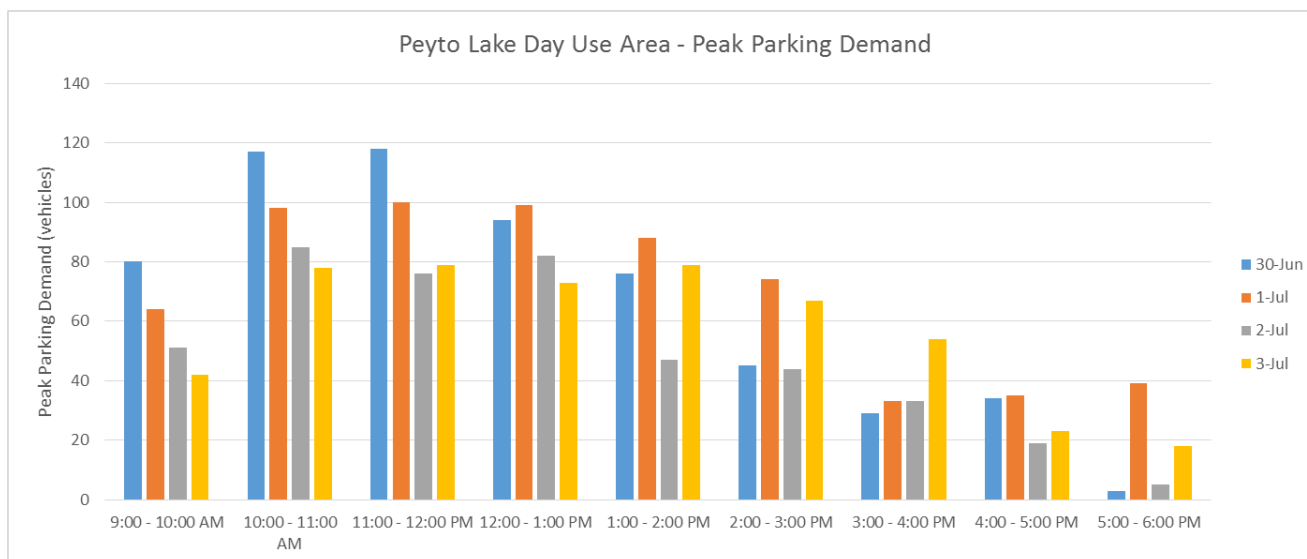


Chart 3: Peyto Lake Day Use Area Parking Demand

3.5 Comparison of 2016 VS 2017 Parking Demand Surveys

The hourly average and maximum parking demand observed at each lot in July 2017 were compared to the parking demand observed in September 2016. As noted earlier given that the Bow Lake Viewpoint has no defined access point the parking demand could not be profiled due to limited data points as such, a comparison is not shown. The results are summarized in Tables 3-6 to 3-8.

- At the Bow Lake Day Use Area, both the 4-day average peak parking demand and the hourly peak parking demand were lower in July 2017 than in September 2016. This drop may be due to increased utilization of the upper lot, where both the 4-day average and peak parking demands were in July 2017.
- At the Peyto Lake Day Use Area and at Bow Summit, both the average and peak parking demand were higher in the morning to early afternoon (9:00 a.m. to 2 p.m.) and lower in early afternoon to evening (2 p.m. to 6 p.m.) in July 2017 compared to September 2016.

The differences can be attributed to the timing of the surveys (July long weekend vs. September long weekend), weather conditions, and changes in visitation in 2017 due to free visitation to Parks Canada locations as part of the Canada 150 celebrations.

Table 3-6: Comparison of Bow Lake Day Use Area Parking Demand

Time Period	4-day Avg.			4-day Max		
	Sep 2016	July 2017	Difference 2017 vs 2016	Sep 2016	July 2017	Difference 2017 vs 2016
9:00 - 10:00 a.m.	28	16	-12	28	53	25
10:00 - 11:00 a.m.	39	27	-8	39	50	11
11:00 - 12:00 p.m.	56	46	-10	56	45	-11
12:00 - 1:00 p.m.	67	56	-11	67	45	-22
1:00 - 2:00 p.m.	68	55	-13	68	56	-12
2:00 - 3:00 p.m.	65	48	-17	65	62	-3
3:00 - 4:00 p.m.	61	39	-22	61	63	2
4:00 - 5:00 p.m.	26	17	-9	26	60	34
5:00 - 6:00 p.m.	32	18	-14	32	53	21

Table 3-7: Comparison of Bow Lake Upper Lot Parking Demand

Time Period	4-day Avg.			4-day Max		
	Sep 2016	July 2017	Difference 2017 vs 2016	Sep 2016	July 2017	Difference 2017 vs 2016
9:00 - 10:00 a.m.	2	10	8	3	23	20
10:00 - 11:00 a.m.	4	11	7	5	26	21
11:00 - 12:00 p.m.	3	17	14	4	35	31
12:00 - 1:00 p.m.	6	17	11	10	33	23
1:00 - 2:00 p.m.	6	22	16	11	44	33
2:00 - 3:00 p.m.	4	26	22	8	51	43
3:00 - 4:00 p.m.	5	25	20	6	43	37
4:00 - 5:00 p.m.	4	21	17	6	23	17
5:00 - 6:00 p.m.	2	17	15	4	27	23

Table 3-8: Comparison of Peyto Lake Day Use Area and Bow Summit Parking Demand

Time Period	4-day Avg.			4-day Max		
	Sep 2016	July 2017	Difference 2017 vs 2016	Sep 2016	July 2017	Difference 2017 vs 2016
9:00 - 10:00 a.m.	30	59	29	41	80	39
10:00 - 11:00 a.m.	62	95	33	72	117	43
11:00 - 12:00 p.m.	77	93	16	78	118	40
12:00 - 1:00 p.m.	69	87	18	79	99	20
1:00 - 2:00 p.m.	64	73	9	82	88	6
2:00 - 3:00 p.m.	59	58	-1	88	74	-14
3:00 - 4:00 p.m.	57	37	-20	89	54	-34
4:00 - 5:00 p.m.	50	28	-22	88	35	-53
5:00 - 6:00 p.m.	30	16	-14	67	39	-28

3.6 Parking Duration

The parking durations were recorded at each of the surveyed parking areas. A four-day summary of each location is provided in Tables 3-9 to 3-13 and described below. As noted earlier, only in and out traffic volumes and washroom surveys were undertaken at the Bow Lake Picnic Area.

- **Bow Lake Day Use Area:** More than 60% of all visitors stayed in excess of 15 minutes and approximately 25% of all visitors departed in less than 5 minutes suggesting that they either stopped for a quick washroom break, or the parking area was too full to park. This is consistent with the parking duration observed in the 2016 surveys.
- **Bow Lake Day Upper Lot:** Approximately 70% of all visitors stayed for less than 5 min. This suggests that most stops were for short breaks.
- **Bow Lake Viewpoint:** The data suggests that more than 50% of the visitors stayed no longer than 15 minutes. This suggests that most stops are for short photo stops.
- **Peyto Lake:** As observed in the 2016 surveys, most visitors (73%) parked in excess of 30 minutes. As the hike to the Peyto Lake observation deck is 30-40 minutes roundtrip, this was to be expected.

- **Bow Summit:** The survey data shows that most buses (74%) parked for 15-30 minutes. Some buses were observed to park for less than 5 minutes (3%) suggesting that they were unable to park due to vehicles being illegally parked or the bus parking spaces were occupied by other buses or illegally parked vehicles.

The observed parking durations and behaviors in 2017 closely resembled the survey results of 2016.

Table 3-9. Bow Lake Day Use Area Parking Duration – July 2017

Duration of Stay (min)	30-Jun	1-Jul	2-Jul	3-Jul	4-day Average
0-5	14%	19%	30%	39%	26%
5-15	16%	11%	17%	15%	15%
15-30	28%	29%	21%	20%	25%
30-60	26%	22%	19%	15%	21%
60-120	10%	8%	6%	5%	7%
120+	6%	11%	7%	6%	8%
Total	100%	100%	100%	100%	100%

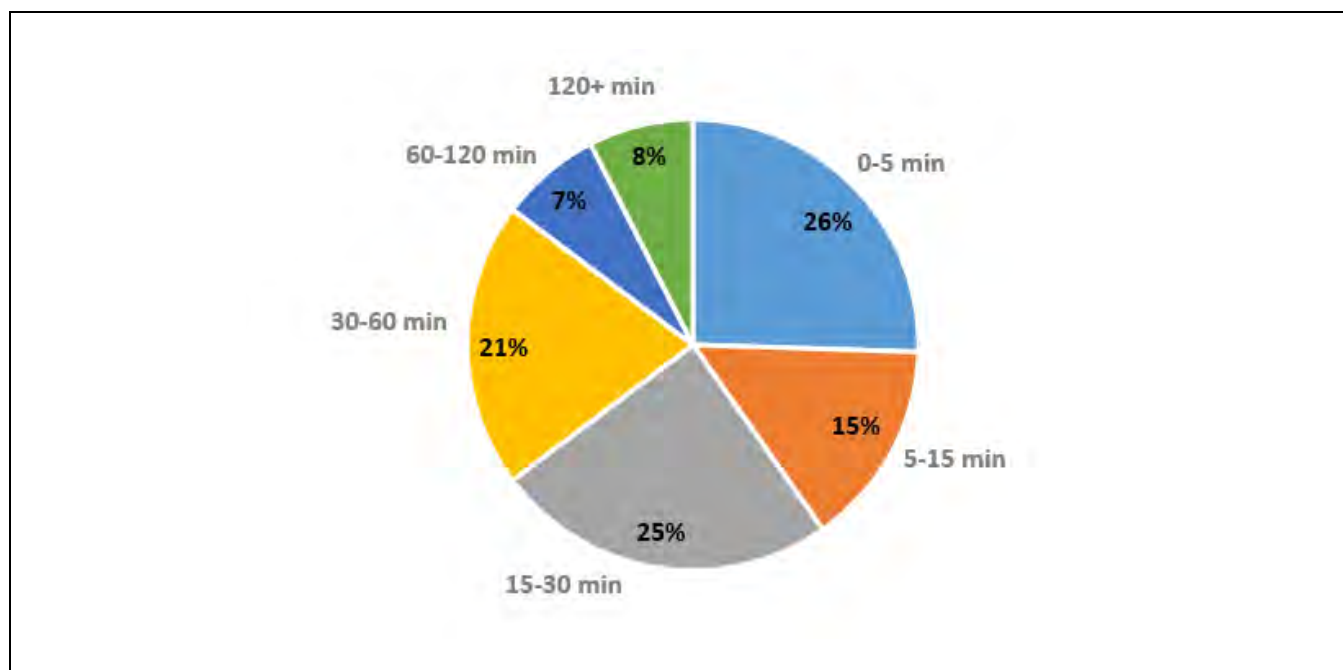


Chart 4: Bow Lake Day Use Area Parking Duration (4-day Average)

Table 3-10. Bow Lake Upper Lot Parking Duration – July 2017

Duration of Stay (min)	30-Jun	1-Jul	2-Jul*	3-Jul	4-day Average
0-5	70%	75%	-	53%	66%
5-15	18%	18%	-	18%	18%
15-30	6%	2%	-	5%	4%
30-60	4%	0%	-	10%	5%
60-120	1%	5%	-	3%	3%
120+	1%	0%	-	11%	4%
Total	100%	100%	-	100%	100%

*Not surveyed due to shortage in staff

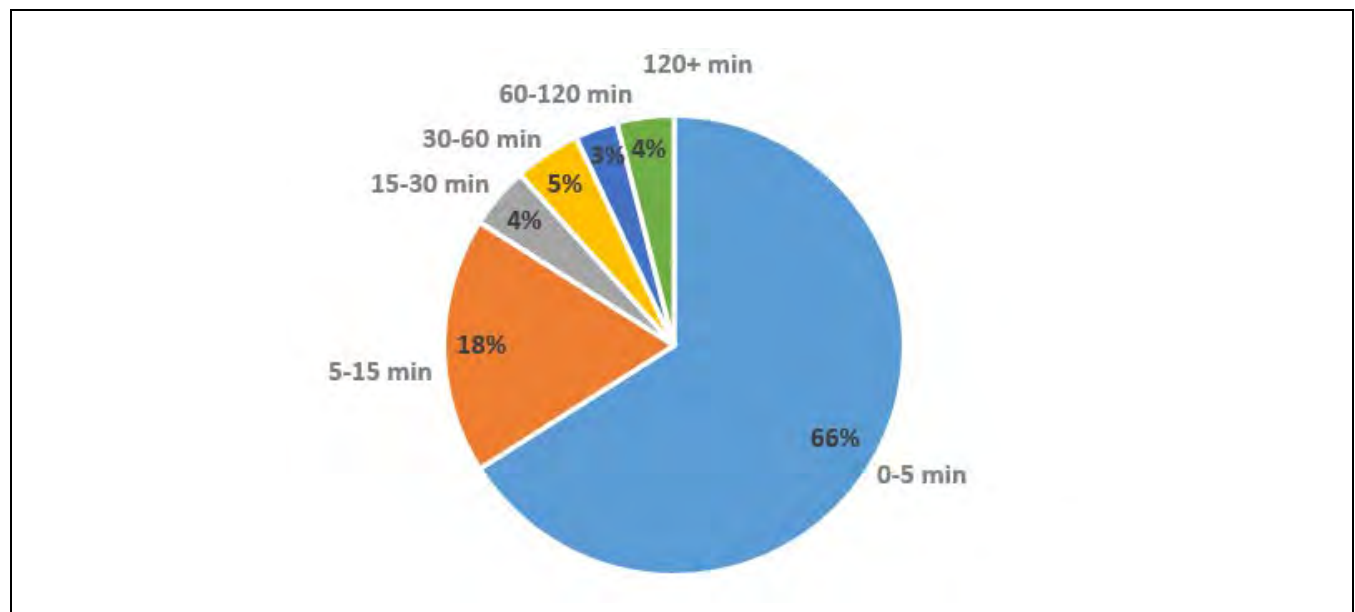


Chart 5: Bow Lake Upper Lot Parking Duration (4-day Average)

Table 3-11. Bow Lake View Point Parking Duration – July 2017

Duration of Stay (min)	30-Jun	1-Jul	2-Jul	3-Jul*	4-day Average
0-5	33%	31%	30%	-	31%
5-15	46%	46%	43%	-	45%
15-30	19%	22%	27%	-	23%
30-60	2%	1%	1%	-	1%
60-120	0%	0%	0%	-	0%
120+	0%	0%	0%	-	0%
Total	100%	100%	100%	-	100%

*Not surveyed due to shortage in staff

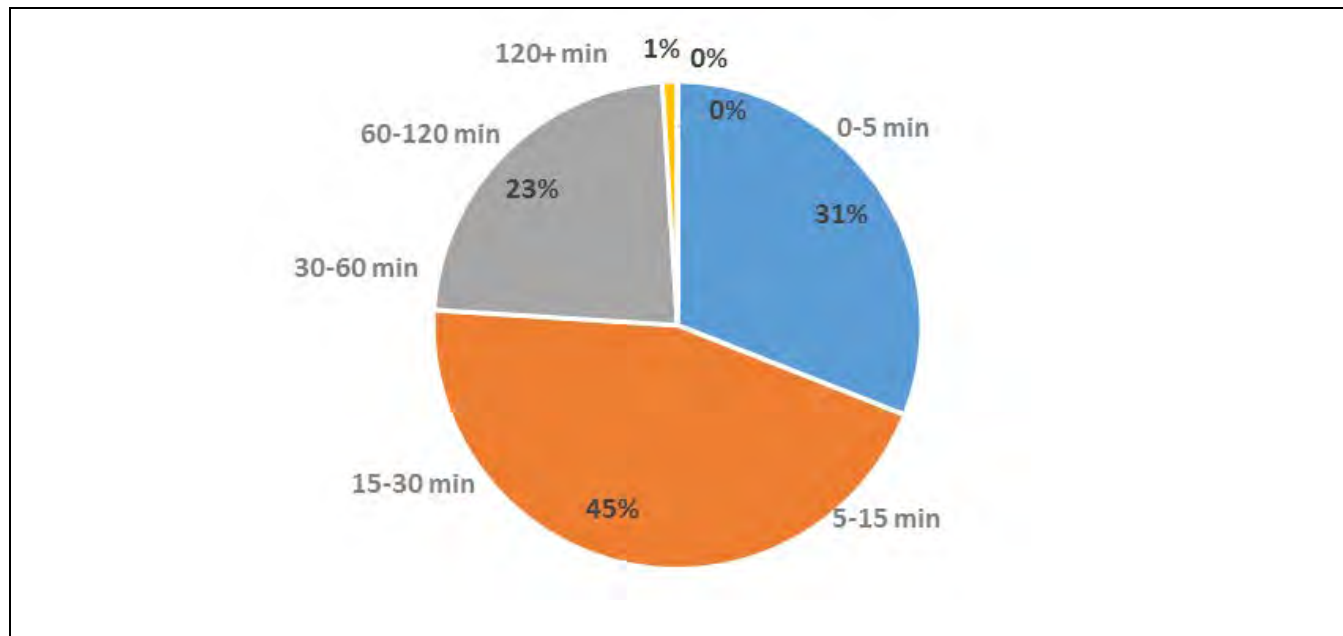


Chart 6: Bow Lake Viewpoint Parking Duration (3-day Average)

Table 3-12. Peyto Lake Day Use Area Parking Duration – July 2017

Duration of Stay (min)	30-Jun	1-Jul	2-Jul	3-Jul	4-day Average
0-5	8%	16%	15%	17%	14%
5-15	9%	6%	6%	4%	6%
15-30	3%	9%	7%	9%	7%
30-60	50%	41%	49%	47%	47%
60-120	21%	17%	19%	20%	19%
120+	9%	11%	4%	3%	7%
Total	100%	100%	100%	100%	100%

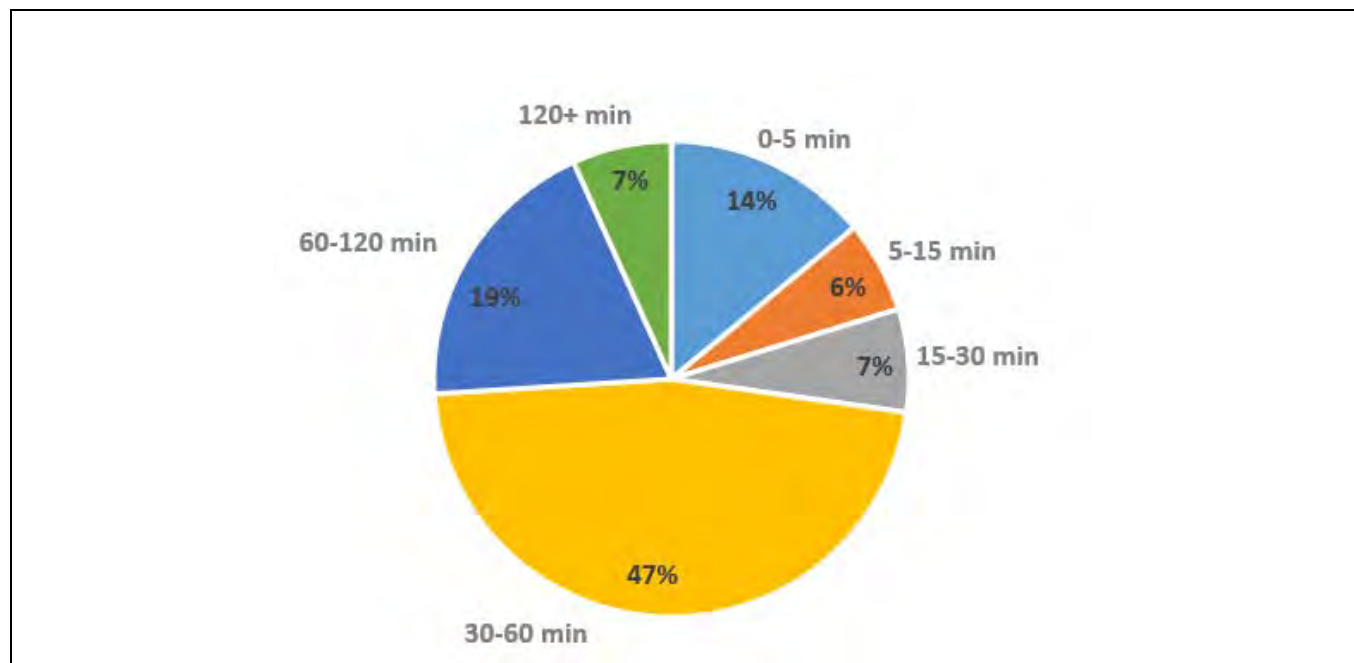


Chart 7: Peyto Lake Day Use Area Parking Duration (4-day Average)

Table 3-13. Bow Summit Parking Duration (Buses Only) – July 2017

Duration	4-day Average
0-5 min	3%
5-15 min	5%
15-30 min	74%
30-60 min	9%
60min+	10%
Total	100%

*Insufficient data points to show data for individual days (only the aggregated average is shown)

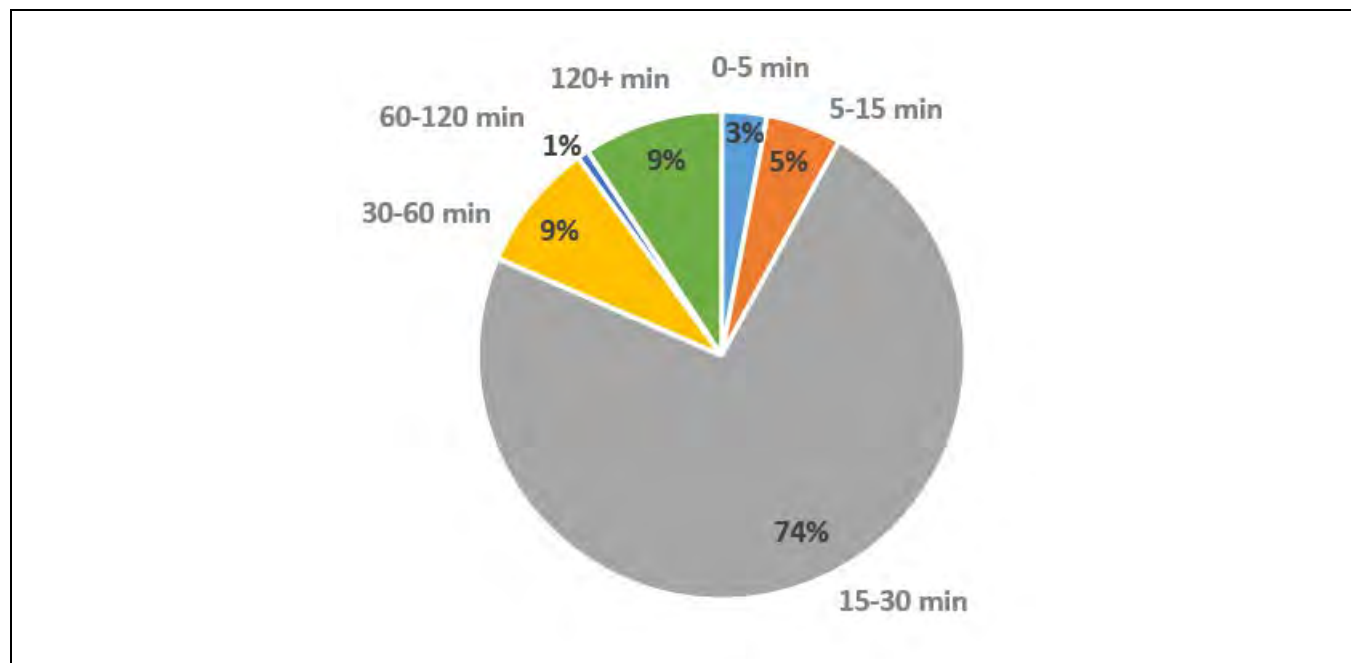


Chart 8: Bow Summit Parking Duration (4-day Average)

3.7 Comparison of 2016 VS 2017 Parking Duration Surveys

The average parking duration observed at each lot in July 2017 was compared to the observed parking duration in September 2016. The results are summarized in Tables 3-14 to 3-18 and described below:

- At the Bow Lake and at the Peyto Lake Day Use Lots, the proportion of vehicles parking 30+ min was slightly higher in July 2017, while proportion of vehicles staying 0-30 min dropped slightly.
- At Bow Lake Viewpoint, the same proportion of vehicles stayed less than 0 min (99%).
- At Bow Summit, a greater proportion of buses were observed to park longer in July 2017 compared to September 2016.

These differences in the duration of stay could be attributed to weather, climate, visibility, and parking/traffic conditions.

Table 3-14: Comparison of Average Parking Duration at Bow Lake Day Use Area

Parking Duration	Sep 2016	July 2017	Difference
0-5 min	18%	26%	+8%
5-15 min	21%	15%	-6%
15-30 min	31%	25%	-6%
30-60 min	17%	21%	4%
60-120 min	5%	7%	2%
120 min+	8%	8%	0%
Total	100%	100%	

Table 3-15: Comparison of Average Parking Duration at Bow Lake Upper Lot

Parking Duration	Sep 2016	July 2017	Difference
0-5 min	60%	66%	6%
5-15 min	24%	18%	-8%
15-30 min	3%	4%	1%
30-60 min	4%	5%	1%
60-120 min	3%	3%	0%
120 min+	4%	4%	0%
Total	100%	100%	

Table 3-16: Comparison of Average Parking Duration at Bow Lake Viewpoint

Parking Duration	Sep 2016	July 2017	Difference
0-5 min	41%	31%	-10%
5-15 min	46%	45%	-1%
15-30 min	12%	23%	11%
30-60 min	1%	1%	0%
60-120 min	0%	0%	0%
120 min+	0%	0%	0%
Total	100%	100%	

Table 3-17: Comparison of Average Parking Duration at Peyto Lake Day Use Area

Parking Duration	Sep 2016	July 2017	Difference
0-5 min	13%	14%	1%
5-15 min	7%	6%	-1%
15-30 min	15%	7%	-8%
30-60 min	38%	47%	9%
60-120 min	20%	19%	-1%
120 min+	6%	7%	1%
Total	100%	100%	

Table 3-18: Comparison of Average Parking Duration at Bow Summit

Parking Duration	Sep 2016	July 2017	Difference
0-5 min	21%	3%	-18%
5-15 min	18%	5%	-13%
15-30 min	50%	74%	+24%
30-60 min	7%	9%	2%
60-120 min	4%	10%	6%
120 min+	0%	0%	0%
Total	100%	100%	

3.8 Picnic Area Traffic Counts

Inbound and outbound surveys were undertaken at the access to the Bow Lake Picnic Area. Two-way traffic volumes averaged 15 vehicles per hour (approximately 8 per direction), and peaked at 30 vehicles per hour on July 2, 2017.

3.9 Vehicle Classification

Vehicle classification data was collected in conjunction with the parking surveys at the Bow Lake and Peyto Lake Day Use lots and at Bow Summit. The vehicle classification data is summarized in Table 3-19. Passenger vehicles includes sedans, vans, convertibles and motorbikes. Pick-up trucks includes all trucks having an enclosed cab and an open cargo area. Compact RVs were identified as vehicles built on a van chassis. All RVs with towable or trailers were classified as a Full RV.

Table 3-19. Vehicle Classification Survey

	Passenger	SUV	Pick-up	Compact RV	Full RV	Compact Bus	Full Bus
Bow Lake Day Use and Upper Lot	32% (46%)	47% (36%)	8% (8%)	1% (3%)	2% (1%)	2% (3%)	2% (4%)
Peyto Day Use	40% (44%)	45% (43%)	5% (4%)	3% (5%)	3% (2%)	1% (1%)	0% (1%)
Bow Summit	20% (30%)	29% (26%)	5% (4%)	2% (3%)	3% (1%)	12% (14%)	24% (21%)

*Average taken across all four days; Results of the 2016 surveys shown in '()'

The vehicle classification data collected in July 2017 closely resembles the data collected in September 2016. Overall, there was a slight increase in SUVs across all three parking lots and slight drop in the proportion of passenger vehicles.

3.10 Summary of Parking Surveys

Both the Bow Lake and Peyto Lake Day Use Lots reached capacity during the midday peak period, indicating that additional parking stalls are needed to support existing demand. Based on the number of cars leaving the lots as a result of the lots being full, **47 additional stalls are required at Bow Lake** (approximately 167 stalls total) and **30 additional stalls are required at Peyto Lake** (140 stalls total) to accommodate the existing parking demand during peak periods. The existing bus parking supply is adequate at all areas if parking rules are enforced. It should be noted that these parking requirements are for the peak season during the peak time of day. During all other times the parking areas will be underutilized.

Under existing conditions, the parking capacities can potentially be maximized by having staff direct vehicles to park in specific configurations and areas. This will only be required during peak times.

3.11 Theoretical Maximum Parking Capacities

The theoretical maximum capacities of the Bow Lake Day Use and Peyto Lake Day Use lots were estimated by overlaying paint markings onto the ground survey data obtained at the two lots. The overlays provide sufficient spacing for proper vehicle circulation and assume each vehicle occupies only one space. In practice some vehicles may encroach into an adjacent space, thus rendering that space unavailable. This situation is more likely to occur where a high proportion of vehicles are pick-up trucks and larger SUV's. Based on the analysis, the Bow Lake Day Use lot could accommodate a maximum of **75 stalls** (2.5 m x 5.5 m) while the Peyto Lake Day Use lot could accommodate **100 stalls**. These theoretical capacities will be reduced if buses are also accommodated within these lots. At 90% of the theoretical capacity, the two lots could accommodate **90** and **68** vehicles at Bow Lake and Peyto Lake respectively.

These theoretical capacities are not significantly different from the observed demand, due to vehicles parking at undesignated spots under existing conditions (i.e. at the parking entrance).

3.12 Future Parking Requirements

If it is assumed that the increase in traffic growth on Highway 93 directly correlates to an increase in parking use, then the parking demand is expected to increase at an average rate of 5.7% per year. In 10 years, the parking demand could be as much as 74% higher than current levels. By the 2027 horizon, **273 stalls** will be needed at Bow Lake and **226 stalls** will be needed at Peyto Lake. This estimate includes vehicles that currently leave due to the parking areas being full.

If the parking lots were to be designed to 80% of the 2027 future parking demand, then this would translate to 218 stalls at Bow Lake and 182 stalls at Peyto Lake. This would be sufficient to meet current demand levels and sufficient for most of the year in 2027 horizon year.

4.0 WASHROOM SURVEYS

4.1 Washroom Inventory

The following Table 4-1 summarizes the existing washroom inventory at each location.

Table 4-1. Existing Washroom Inventory

Location	Male	Female	Unisex	Total
Bow Lake Day Use	4	8	1	13
Bow Lake Upper Lot	0	0	0	0
Bow Lake Picnic	2	2	0	4
Bow Lake Viewpoint	0	0	0	0
Peyto Day Use	0	0	2	2
Bow Summit	0	0	0	0

4.2 Washroom Demand

Washroom surveys were undertaken in September 2016 at the washrooms located at the Bow Lake Picnic Area, Bow Lake Day Use Area, and the Peyto Lake Parking Area to the existing demand versus the supply. Specifically, the queue length and average wait times were recorded. A summary of the survey results are provided in Tables 4-2, 4-3, and 4-4 and described below.

- **Bow Lake Day Use Area (Photo 7):** The Bow Lake Day Use Area is serviced by eight female stalls, four male stalls and one handicap stall. Given that the maximum observed queue was 3 min and on average, there is little to no wait, the existing washroom supply is therefore considered adequate. It was noted during the surveys that users were observed queueing outside the restrooms even when there were unoccupied stalls inside. This indicates that visitors are unaware that there are multiple stalls in each restroom.
- **Peyto Lake Day Use Area (Photo 8):** Two unisex stalls are provided at the Peyto Lake Day Use Area. During the peak time a maximum queue of seven persons and a wait time of 14 min was recorded; however, it was noted that one washroom was closed for cleaning. When both washroom were open a maximum queue of six persons with a wait of 11 min was observed. This suggests that additional washroom capacity may be required at peak times.
- **Bow Lake Picnic Area (Photo 9):** The picnic area provides two female stalls and two male stalls. As reflected in Table 4-4, all visitors were able to access the washrooms with no wait. Based this observations additional capacity are not needed.

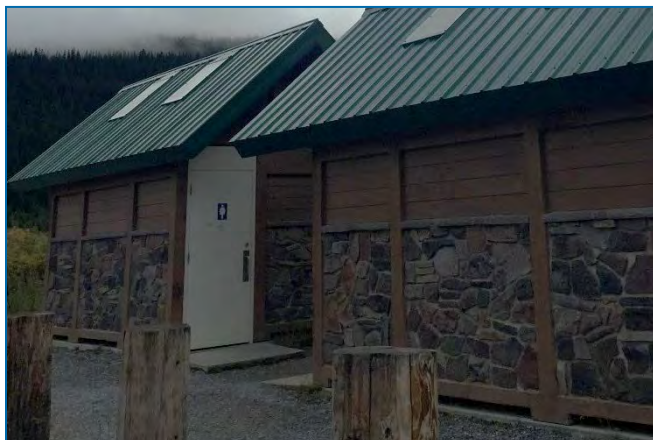


Photo 7: Bow Lake Day Use Area Washroom

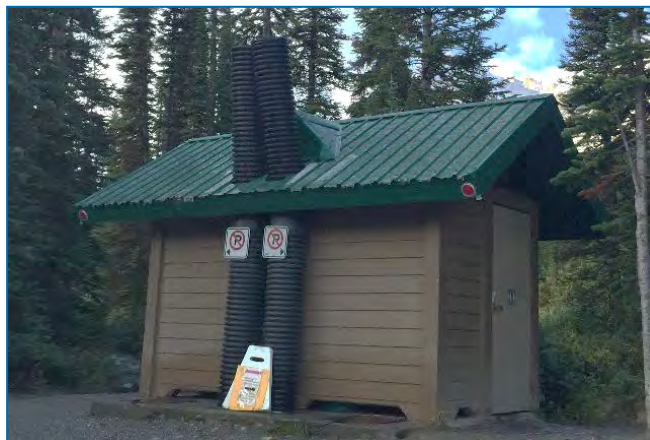


Photo 8: Peyto Lake Day Use Area Washroom



Photo 9: Bow Lake Picnic Area Washroom

Table 4-2. Bow Lake Washroom Surveys –Wait Times and Queue Lengths

Time Period	2-Sep		3-Sep		4-Sep		5-Sep	
	Average	Max	Average	Max	Average	Max	Average	Max
9:00 -11:00 a.m.	0 min (0)	1 min (1)	0 min (0)	0 min (0)	0 min (0)	2 min (2)	0 min (0)	0 min (0)
11:00-3:00 p.m.	0 min (0)	0 min (0)	0 min (0)	0 min (0)	0 min (0)	0 min (0)	0 min (0)	0 min (0)
3:00-6:00 p.m.	0 min (0)	1 min (1)	0 min (0)	4 min (2)	0 min (0)	0 min (0)	0 min (0)	2 min (2)

*XX (XX) = Wait time (Queue Length in persons)

Table 4-3. Peyto Lake Washroom Surveys – Wait Times and Queue Lengths

Time Period	2-Sep		3-Sep		4-Sep		5-Sep	
	Average	Max	Average	Max	Average	Max	Average	Max
9:00-11:00 a.m.	1 min (1)	3 min (3)	1 min (1)	4 min (3)	2 min (1)	7 min (5)	2 min (2)	8 min (5)
11:00-3:00 p.m.	2 min (1)	10 min (6)	3 min (2)	9 min (6)	4 min (3)	14 min (7)	4 min (3)	11 min (6)
3:00-6:00 p.m.	1 min (2)	4 min (3)	2 min (2)	7 min (5)	7 min (4)	7 min (3)	1 min (1)	4 min (3)

*XX (XX) = Wait time (Queue length in persons)

Table 4-4. Bow Lake Picnic Area – Wait Times and Queue Lengths

	2-Sep		3-Sep		4-Sep		5-Sep	
Time Period	Average	Max	Average	Max	Average	Max	Average	Max
9:00-11:00 a.m.	0 min (0)	0 min (0)	0 min (0)	0 min (0)	0 min (0)	0 min (0)	0 min (0)	0 min (0)
11:00-3:00 p.m.	0 min (0)	0 min (0)	0 min (0)	0 min (0)	0 min (0)	0 min (0)	0 min (0)	0 min (0)
3:00-6:00 p.m.	0 min (0)	0 min (0)	0 min (0)	0 min (0)	0 min (0)	0 min (0)	0 min (0)	0 min (0)

*XX (XX) = Wait time (Queue Length in persons)

4.3 Summary of Washroom Surveys

It is estimated that two additional stalls will be sufficient at the Peyto Lake Day Use Parking Area. No additional stalls are required at either Bow Lake Day Use Area or at the Picnic Area. Signage to indicate that the number of stalls provided in a restroom will be beneficial to visitors.

5.0 TRAIL SURVEYS

Trail counters were installed at major trail entrances and junctions to quantify the number of hikers. The locations of the trail counters are mapped in Figures 4 and 5.

Upon retrieval of the data in July 2017, several trail counters were missing. This may have been due to:

- Tampering by hikers / park visitors (likely);
- Removal by park staff; and
- Extreme weather conditions (unlikely).

While most of these counters were well hidden and well secured, any of the above reasons may have contributed to their disappearance. For future trail surveys, these trail counters should be monitored on at least a weekly basis by Parks Staff. An effort was made to salvage some data but meaningful results could not be extrapolated from the numbers.

6.0 SUMMARY AND CONCLUSIONS

A summary of our findings and recommendations is provided below:

- Parking surveys were undertaken over the Canada Day long weekend, between June 30 and July 3, 2017.
- The estimated parking capacity of the lots are as follows: Bow Lake 55 – 70 stalls, Bow Lake Upper Lot 40 – 50 stalls, Bow Lake Viewpoint 20 – 30 stalls, and Peyto Lake Day Use area 90 – 110 stalls.
- **Bow Lake Day Use Lot:** The parking demand reached capacity on all four surveyed dates. The parking lot had an observed capacity of 70 vehicles which is insufficient to supply existing demand. It is estimated that approximately 47 additional stalls are required to accommodate peak parking demand.
- **Peyto Lake Day Use Lot:** The parking demand peaked around noon and reached capacity on all four surveyed dates. It is estimated that approximately 30 additional stalls are required to supply existing demand.

- At Bow Lake and Peyto Lake, passenger vehicles and SUVs account for over 80% of all vehicles that use the parking areas. The other 20% is a combination of pick-up trucks, Compact RVs, Full RVs (1-2%), compact buses (1-3%) and full buses (4%).
- **Bow Lake Viewpoint:** The existing parking supply is sufficient for existing demands. No additional stalls are required.
- The Bow Lake Day Use Lot saw a slight reduction in parking demand while the Bow Lake Upper Lot saw a significant increase in July 2017 compared to September 2016. At Peyto Lake, parking demand increased in the morning and decreased slightly in the afternoon in July 2017 compared to surveys undertaken in 2016.
- The average parking duration was observed to be roughly the same in September 2016 and July 2017. No significant differences were observed between the two survey periods.
- If it is assumed that traffic growth directly correlates to an increase in parking use, then in ten years, the parking demand could be 74% higher than current levels. By the 2027 horizon, 273 stalls will be needed at the Bow Lake Day Use Area and 226 stalls will be needed at the Peyto Lake Day Use Area.

7.0 CLOSURE

We trust this report meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.

ISSUED FOR REVIEW

ISSUED FOR REVIEW

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FIGURES

- Figure 1 Bow Lake Study Area
- Figure 2 Bow Lake Viewpoint and Picnic Area
- Figure 3 Peyto Lake Day Use Area and Bow Summit
- Figure 4 Bow Lake Trail Counter Locations
- Figure 5 Peyto Lake Trail Counter Locations



LEGEND

-  Washroom
-  Parking Area

NOTES

STATUS

CLIENT

Parks Canada



Bow Lake and Peyto Lake Parking Study

Bow Lake Study Areas

PROJECT NO.

DWN
YT

CKD
VT

APVD
VT

REV
0



OFFICE
EBA-Vancouver

DATE
October 2016

Figure 1



LEGEND

-  Washroom
-  Parking Area

NOTES

STATUS

CLIENT

Parks Canada



Bow Lake and Peyto Lake Parking Study

Bow Lake Viewpoint and Picnic Area

PROJECT NO.

DWN
YT

CKD
VT

APVD
VT

REV
0

OFFICE
EBA-Vancouver

DATE
October 2016

Figure 2



LEGEND

- Washroom
- Parking Area

NOTES

STATUS

CLIENT

Parks Canada



Bow Lake and Peyto Lake Parking Study

Peyto Lake Day Use Area and Bow Summit

PROJECT NO.

OFFICE
EBA-Vancouver

DWN
YT

DATE
October 2016

CKD
VT

APVD
VT

REV
0

Figure 3



LEGEND

- Trail Counter
- Trail

NOTES

STATUS

CLIENT

Parks Canada

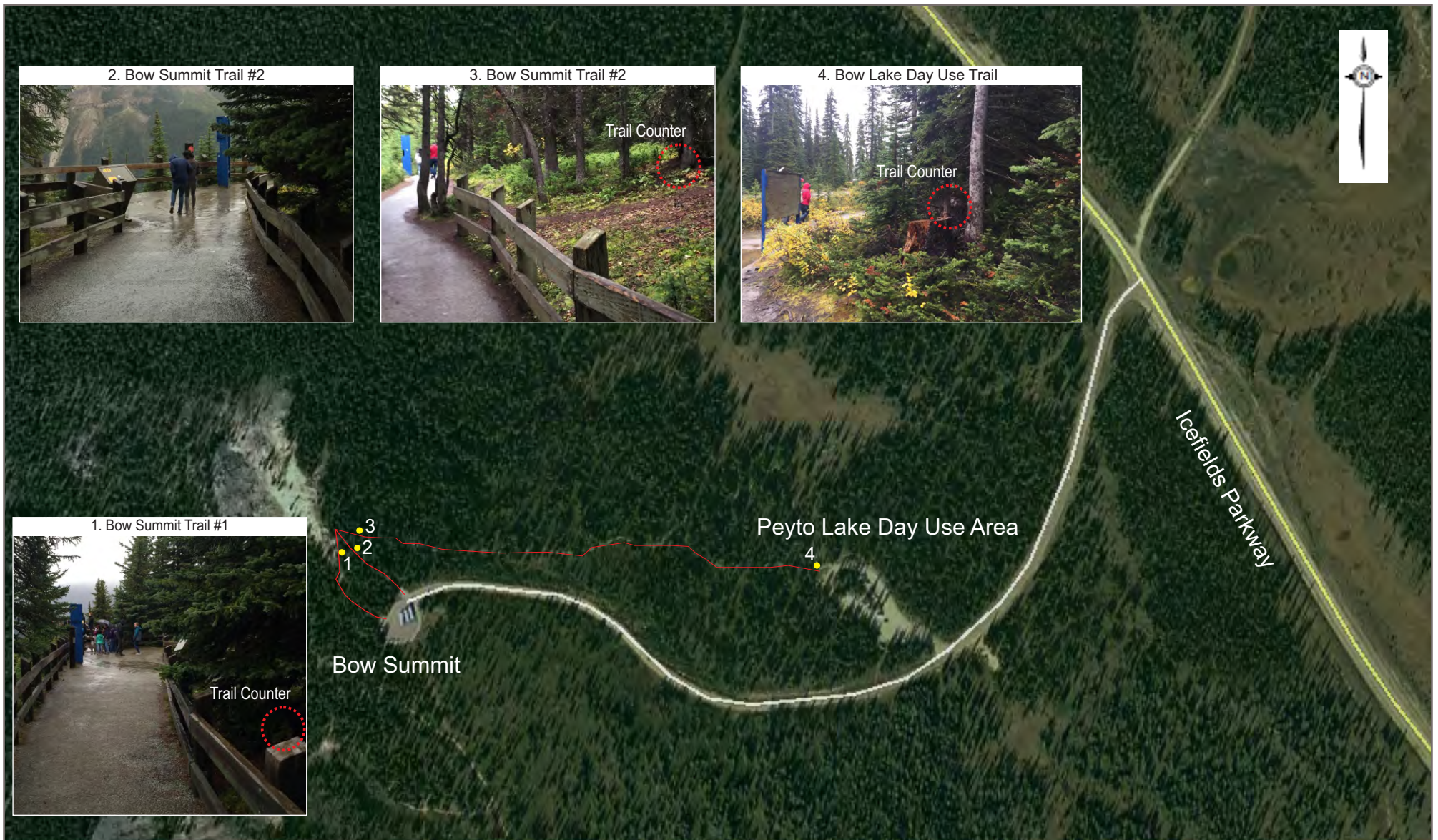


Bow Lake and Peyto Lake Parking Study

Bow Lake Trail Counter Locations

PROJECT NO.	DWN	CKD	APVD	REV
YT	VT	VT	VT	0
OFFICE	DATE			
EBA-Vancouver	October 2016			

Figure 4



LEGEND

● Trail Counter

— Trail Counter

NOTES

STATUS

CLIENT

Parks Canada



Bow Lake and Peyto Lake Parking Study

Peyto Lake Trail Counter Locations

PROJECT NO.

OFFICE
EBA-Vancouver

DWN

YT

CKD

VT

APVD

VT

REV

0

DATE

October 2016

Figure 5

APPENDIX A

TETRA TECH'S GENERAL CONDITIONS

GENERAL CONDITIONS

TRAFFIC / TRANSPORTATION REPORT

This report incorporates and is subject to these "General Conditions".

1.1 USE OF REPORT AND OWNERSHIP

This Traffic/Transportation Report pertains to a specific site, a specific development, and a specific scope of work. The Traffic/Transportation Report may include plans, drawings, profiles and other support documents that collectively constitute the Traffic/Transportation Report. The Report and all supporting documents are intended for the sole use of TETRA TECH's Client. TETRA TECH does not accept any responsibility for the accuracy of any of the data, analyses or other contents of the Traffic/Transportation Report when it is used or relied upon by any party other than TETRA TECH's Client, unless authorized in writing by TETRA TECH. Any unauthorized use of the Traffic/Transportation Report is at the sole risk of the user.

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