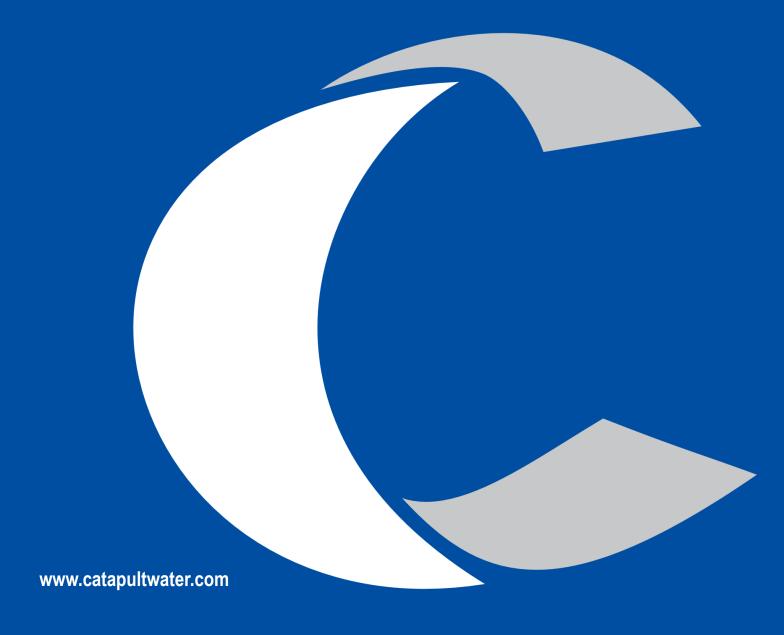
# Catapult Water Intelligence

**Disposal Across the Montney Duvernay** 

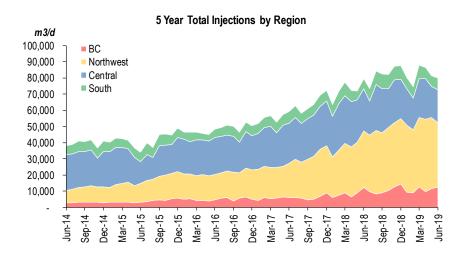




# Disposal Across the Montney Duvernay

Injection Report July 2019

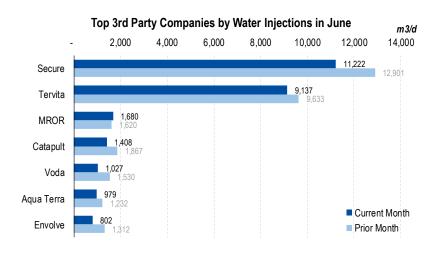
Updated with data from June

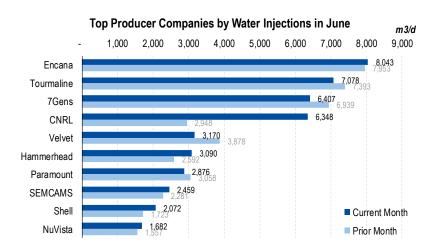


In June, total injections dropped 1,321 m³/d (1.6%) from prior month with conditions finally improving after longer than expected rains. BC saw the most month-over-month increase as area operators are exceeding their limits on pond storage, subsequently bringing the regional total just 2,000 m³/d short of its all time high of 14,459 m³/d in December. Encana leads in disposal injections contributing 6,000 m³/d –almost half of the regional total., Northwest has dropped back to February levels after a prolonged spurt in April-May high of 44-45,000 m³/d. 7Gens has begun to taper off its meteoric growth over the last six months but Hammerhead continues to post a newer high, now at 3,090 m³/d relative to its prior month average of 2,592 m³/d. CNRL Sturgeon is back injecting approximately 3,300 m³/d after being offline for the entire month of May.



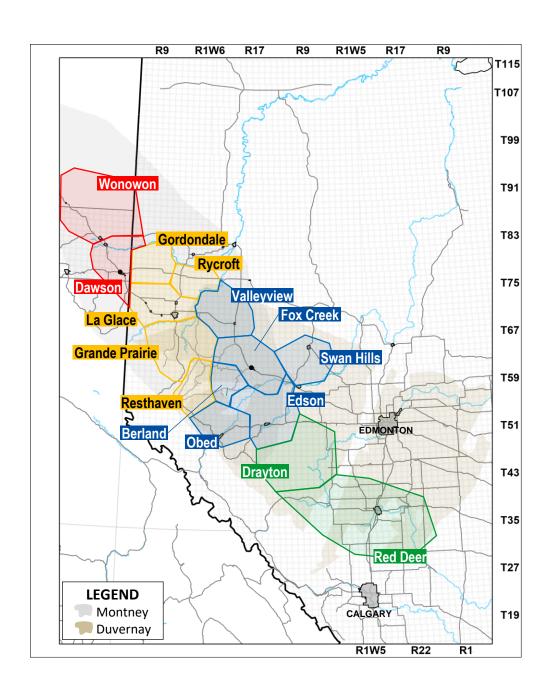






Most producers saw an increase in volume relative to prior month with the exception of 7Gens, Tourmaline, Velvet and Paramount. Hammerhead reached their highest volume injected this month with the majority of water produced and disposed from its 9-3 GGS in its northern Elmworth field. The jump in CNRL volume is due to the reactivation of Sturgeon batteries, which, although are is EOR play, do include third party volume from nearby operators looking for available disposal capacity. Voda Rycroft is dropping back down to 247 m3/d after what appears to be a one-month surge in deliveries in May, with the rest of third party volume in the area falling 1,327 m³/d.





### METHODOLOGY:

Areas were divided into four main regions: BC (RED), West (GOLD), Central (BLUE), and South (GREEN). Each region was further subdivided into areas taking into account market, facility location, and road access. The disposal wells included in this analysis were primarily selected based on the producing formation being the Montney/Duvernay but do include other sources (Spirit River, Charlie Lake, etc) that have a material affect on market dynamics for water handling. For the most part, wells that are considered part of an Enhanced Oil Recovery scheme are excluded from this analysis, with the exception of those that are disposing fluid produced from a separate formation.

### **DEFINITIONS:**

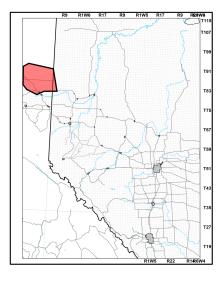
'1st Party' volume refers to injections by facilities owned and operated by the producers themselves, whereas '3rd Party' refers to volume from facilities owned and operated by independent disposal/waste companies. 'Facilities' listed in the following charts are either batteries or waste plants that may be tied to more than one disposal well.







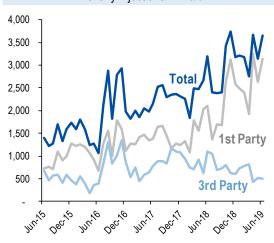
### **WONOWON**



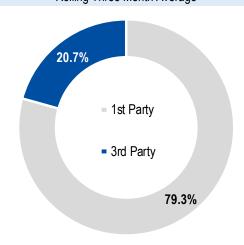
Top 5 Wonowon Facilities by Monthly Volume			
Name	Company	Volume (m3)	
Whitecap Boundary Lake (8-2) Disp	Whitecap	25,402	
Canbriam B-024-H/094-B-08 Disp	Canbriam	17,697	
CNRL Birch C-018-I/094-A-13 Disp	CNRL	13,268	
Kelt LNG C-093-I/094-A-12	Kelt	12,857	
Tervita Mile 103	Tervita	11,138	

Top 5 Wonowon Wells by Monthly Volume			
LSD	Formation	Company	Volume (m3)
100/01-02-085-14W6/2	Cadomin	Whitecap	18,172
202/B-085-H/094-B-08/2	Baldonnel	Canbriam	13,440
202/D-096-K/094-A-12/0	Debolt	Kelt	12,857
200/A-085-H/094-A-13/0	Bluesky	CNRL	12,168
100/01-02-085-14W6/2	Upper Debolt	Tervita	11,138

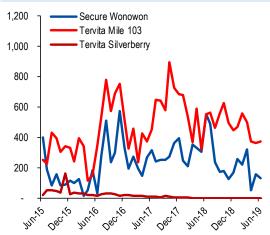
# 1st Party/3rd Party Injections over last Four Years Monthly Injections in m3/d

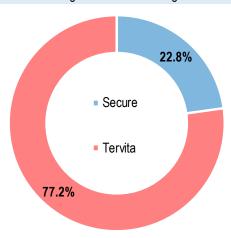


### First Party vs Third Party Rolling Three Month Average



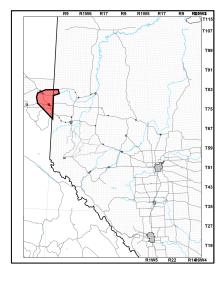
### 3<sup>rd</sup> Party Facility Injections over last Four Years Monthly injections in m3/d







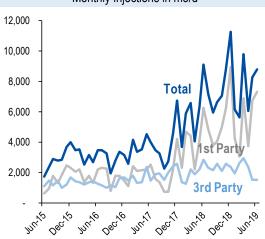
### **DAWSON**



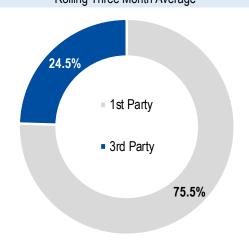
Top 5 Dawson Facilities by Monthly Volume			
Name	Company	Volume (m3)	
ECA Sunrise (01-27) Disp	Encana	48,211	
ECA Sunrise (14-35) Disp	Encana	43,529	
ECA Tower (16-06) Disp	Encana	29,929	
ECA Sunrise (13-33) Disp	Encana	25,307	
ECA Tower (05-11) Disp	Encana	23,400	

Top 5 Dawson Wells by Monthly Volume			
LSD	Formation	Company	Volume (m3)
100/14-28-078-17W6/0	Cadotte	Encana	48,211
100/14-35-078-17W6/4	Paddy/Cadotte	Encana	43,529
102/06-05-081-17W6	Cadomin	Encana	29,929
100/15-32-078-17W6	Paddy/Cadotte	Encana	25,307
100/08-11-081-18W6	Cadomin	Encana	23,400

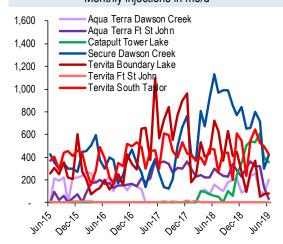
# 1st Party/3rd Party Injections over last Four Years Monthly Injections in m3/d

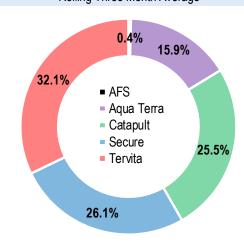


### First Party vs Third Party Rolling Three Month Average



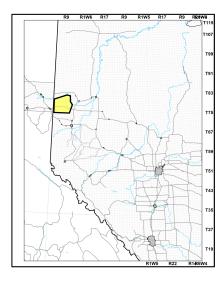
# **3**<sup>rd</sup> **Party Facility Injections over last Four Years**Monthly injections in m3/d







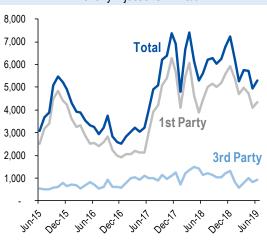
### **GORDONDALE**



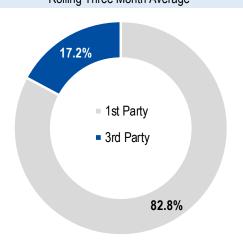
Top 5 Gordondale Facilities by Monthly Volume			
Name	Company	Volume (m3)	
Tourmaline 15-13 Disp	Tourmaline	49,971	
Tourmaline 12-6 Disp	Tourmaline	29,312	
Birchcliff 3-22 Disp	Birchcliff	18,467	
Birchcliff 5-27 Disp	Birchcliff	11,624	
Kelt 6-19 Disp	Kelt	8,007	

Top 5 Gordondale Wells by Monthly Volume			
LSD	Formation	Company	Volume (m3)
102-12-13-082-09W6/0	Belloy	Tourmaline	27,096
100/13-15-081-08W6/2	Belloy	Tourmaline	26,665
102/07-13-082-09W6/4	Belloy	Tourmaline	22,876
100/11-22-078-12W6/3	Paddy-Cadotte	Birchcliff	16,537
103/07-06-079-11W6/0	Paddy-Cadotte	Birchcliff	11,624

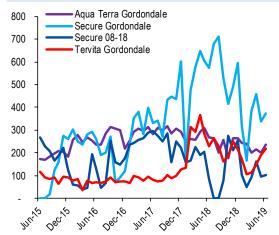
# 1st Party/3rd Party Injections over last Four Years Monthly Injections in m3/d

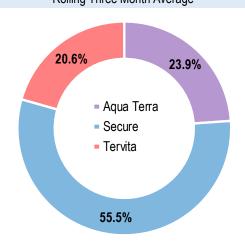


### First Party vs Third Party Rolling Three Month Average



# 3<sup>rd</sup> Party Facility Injections over last Four Years Monthly injections in m3/d

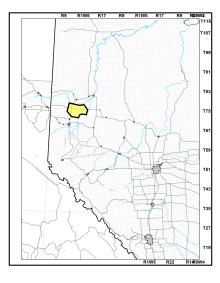








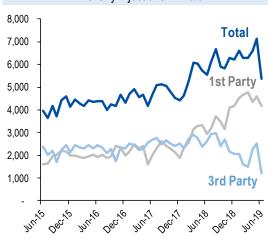
### **RYCROFT**



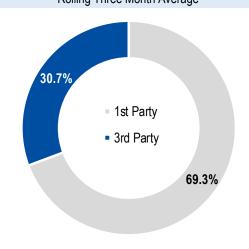
Top 4 Rycroft Facilities by Monthly Volume			
Name	Company	Volume (m3)	
Tourmaline Spirit River Inj	Tourmaline	125,093	
Tervita Spirit River	Tervita	20,662	
Secure Rycroft	Secure	15,477	
Voda Rycroft	Voda	11,141	

Top 5 Rycroft Wells by Monthly Volume			
LSD	Formation	Company	Volume (m3)
100/09-01-078-07W6/0	Belloy	Tourmaline	34,136
100/14-22-077-07W6/4	Belloy	Tourmaline	21,768
102/06-04-077-07W6/2	Belloy	Tourmaline	16,795
100/03-03-078-07W6/0	Belloy	Tourmaline	16,413
100/01-31-077-05W6/2	Cadomin	Tervita	16,033

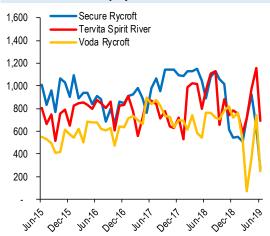
# 1st Party/3rd Party Injections over last Four Years Monthly Injections in m3/d

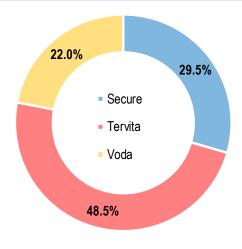


### First Party vs Third Party Rolling Three Month Average



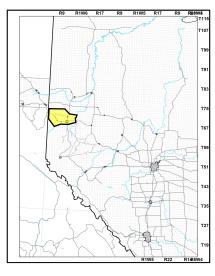
# 3<sup>rd</sup> Party Facility Injections over last Four Years Monthly injections in m3/d







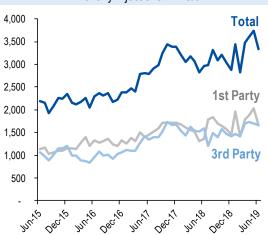
### **LA GLACE**



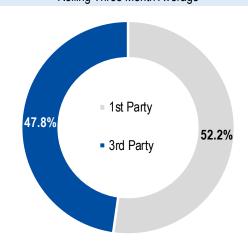
Top 5 La Glace Facilities by Monthly Volume			
Name	Company	Volume (m3)	
Tervita La Glace	Tervita	36,570	
Encana Saddle Hills GP	Encana	12,713	
CNRL 14-34 Disp	CNRL	11,507	
Advantage Glacier GP	Advantage	11,084	
Secure Emerson	Secure	8,278	

Top 5 La Glace Wells by Monthly Volume			
LSD	Formation	Company	Volume (m3)
100/13-36-072-09W6/0	Paddy	Tervita	13,001
100/08-09-072-08W6/0	Paddy	Tervita	12,718
100/06-17-075-07W6/2	Montney	Encana	12,713
100/04-34-075-12W6/0	Baldonnel	Advantage	11,084
100/13-36-072-09W6/0	Paddy	Tervita	10,851

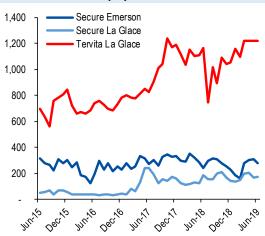
# 1st Party/3rd Party Injections over last Four Years Monthly Injections in m3/d

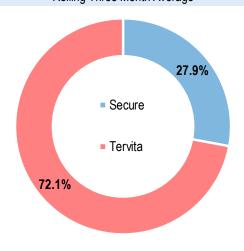


### First Party vs Third Party Rolling Three Month Average



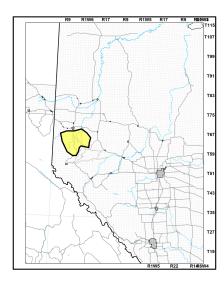
# 3<sup>rd</sup> Party Facility Injections over last Four Years Monthly injections in m3/d







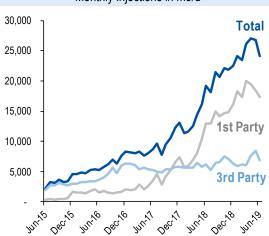
### **GOLD CREEK**



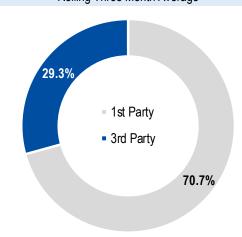
Top 5 Gold Creek Facilities by Monthly Volume			
Name	Company	Volume (m3)	
7Gens 9-10 Disp (Karr)	7Gens	98,213	
7Gens 16-17 Disp (Karr)	7Gens	93,995	
Hammerhead GGS (9-3)	Hammerhead	73,296	
Secure Big Mountain Creek	Secure	59,734	
NuVista 12-22 Disp	NuVista	50,471	

Top 5 Gold Creek Wells by Monthly Volume			
LSD	Formation	Company	Volume (m3)
100/12-11-064-04W6/0	Winterburn	7Gens	98,213
100/05-21-064-04W6/0	Winterburn	7Gens	93,995
100/12-22-066-06W6/3	Leduc	NuVista	50,471
100/12-04-069-02W6/2	Cadotte	Velvet	33,239
100/06-08-067-05W6/0	Leduc	Secure	27,029

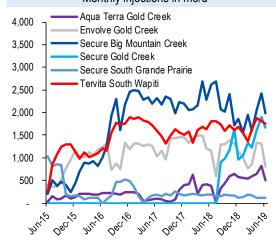
# 1st Party/3rd Party Injections over last Four Years Monthly Injections in m3/d

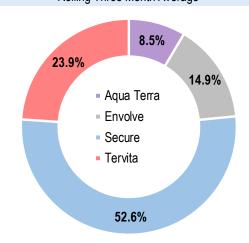


### First Party vs Third Party Rolling Three Month Average



# 3<sup>rd</sup> Party Facility Injections over last Four Years Monthly injections in m3/d

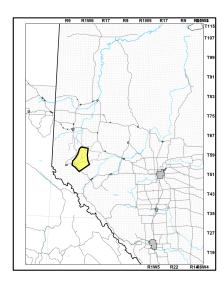








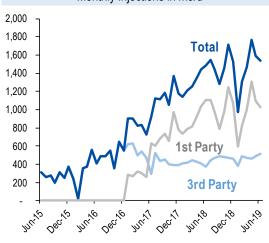
### **RESTHAVEN**



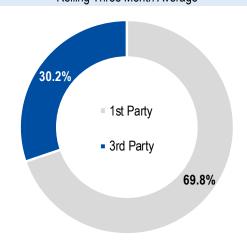
Top 4 Resthaven Facilities by Monthly Volume			
Name	Company	Volume (m3)	
Strath Jayar 06-08-062-03W6	Strath	24,473	
Cequence 100/02-21-061-26W5/2	Cequence	2,447	
XTO Resthaven 2-10-060-01W6	XTO	2,137	
Cequence 100/04-23-061-27W5/0	Cequence	1,606	

Top 4 Resthaven Wells by Monthly Volume			
LSD	Formation	Company	Volume (m3)
100/10-07-062-03W6/0	Leduc	Strath	24,473
100/02-21-061-26W5/2	Cadotte	Cequence	2,447
100/11-03-060-01W6/0	Belloy	XTO	2,137
100/04-23-061-27W5/2	Paddy Cadotte	Cequence	1,606

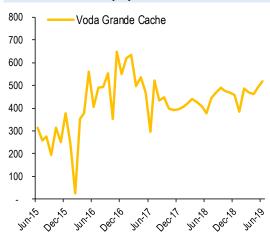
# 1st Party/3rd Party Injections over last Four Years Monthly Injections in m3/d



### First Party vs Third Party Rolling Three Month Average



# **3rd Party Facility Injections over last Four Years**Monthly injections in m3/d

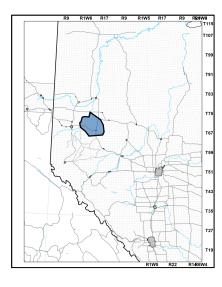








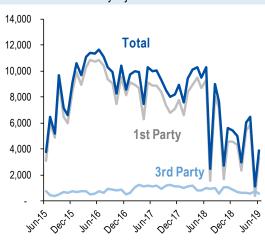
### **VALLEYVIEW**



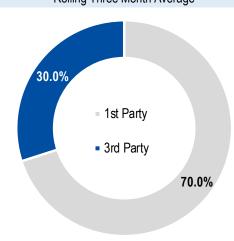
Top 5 Valleyview Facilities by Monthly Volume			
Name	Company	Volume (m3)	
CNRL Sturgeon 9-26 Disp	CNRL	34,857	
CNRL Sturgeon 7-31 Disp	CNRL	24,377	
CNRL Sturgeon 12-5 Disp	CNRL	23,008	
CNRL Sturgeon 11-2 Disp	CNRL	17,029	
Tervita Valleyview	Tervita	13,451	

Top 5 Valleyview Wells by Monthly Volume			
LSD	Formation	Company	Volume (m3)
100/01-02-069-22W5/2	Leduc	CNRL	24,771
100/04-05-069-21W5/0	Leduc	CNRL	12,596
100/14-30-068-21W5/0	Leduc	CNRL	12,324
100/05-32-068-21W5/0	Leduc	CNRL	12,052
100/07-10-069-22W5/0	Leduc	CNRL	10,591

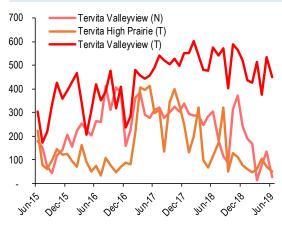
# 1st Party/3rd Party Injections over last Four Years Monthly Injections in m3/d

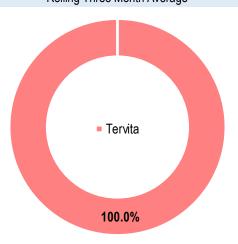


### First Party vs Third Party Rolling Three Month Average



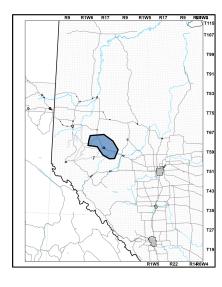
### 3<sup>rd</sup> Party Facility Injections over last Four Years Monthly injections in m3/d







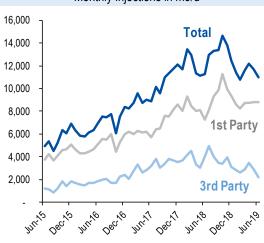
### **FOX CREEK**



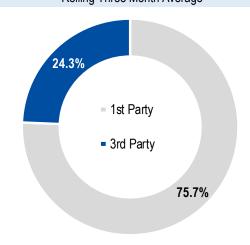
Top 5 Fox Creek Facilities by Monthly Volume			
Name	Company	Volume (m3)	
SEMCAMS KA	SEMCAMS	49,802	
Paramount 16-7 Injection	Paramount	45,939	
Shell 5-33 Dehy	Shell	34,556	
Paramount 8-9 Gas Plant	Paramount	24,200	
SEMCAMS K3	SEMCAMS	23,508	

Top 5 Fox Creek Wells by Monthly Volume			
LSD	Formation	Company	Volume (m3)
100/14-06-062-19W5/0	Swan Hills	SEMCAMS	49,802
100/04-20-064-18W5/0	Debolt	Paramount	45,939
100/10-05-064-20W5/2	Debolt	Shell	34,556
100/12-14-064-19W5/2	Swan Hills	Paramount	24,200
100/04-09-058-17W5/0	Leduc	SEMCAMS	23,508

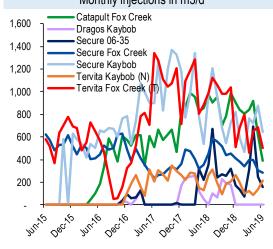
# 1st Party/3rd Party Injections over last Four Years Monthly Injections in m3/d

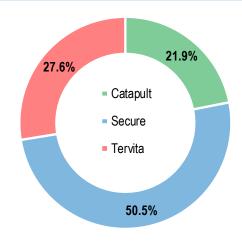


### First Party vs Third Party Rolling Three Month Average



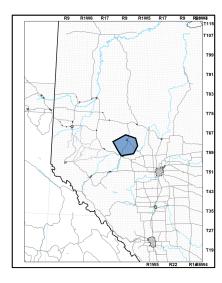
### 3<sup>rd</sup> Party Facility Injections over last Four Years Monthly injections in m3/d







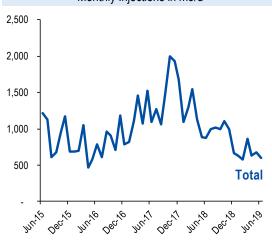
### **SWAN HILLS**



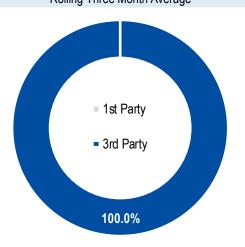
Top 5 Swan Hills Facilities by Monthly Volume			
Name	Company	Volume (m3)	
Tervita Greencourt (N)	Tervita	6,875	
Tervita Judy Creek	Tervita	4,179	
Secure Judy Creek	Secure	3,056	
Tervita Swan Hills	Tervita	2,653	
Voda Mayerthorpe	Voda	1,342	

Top 5 Swan Hills Wells			
LSD	Formation	Company	Volume (m3)
102/06-31-058-09W5/0	Pekisko	Tervita	6,536
100/02-06-063-11W5/2	Nisku	Tervita	2,768
102/06-30-063-10W5/0	Wabamun	Tervita	2,653
100/06-29-063-09W5/2	Wabamun	Secure	2,650
100/02-06-063-11W5/2	Nisku	Tervita	1,411

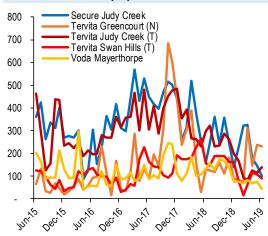
# 1st Party/3rd Party Injections over last Four Years Monthly Injections in m3/d

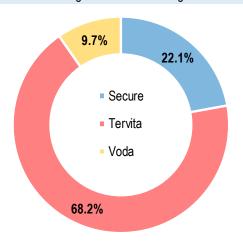


### First Party vs Third Party Rolling Three Month Average



# 3<sup>rd</sup> Party Facility Injections over last Four Years Monthly injections in m3/d

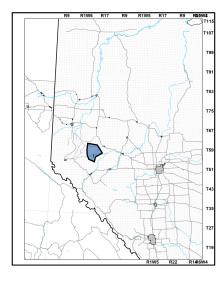








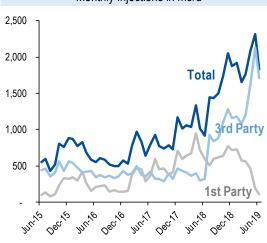
### **BERLAND**



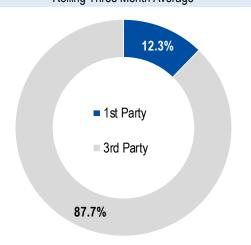
Top 5 Berland Facilities by Monthly Volume			
Name	Company	Volume (m3)	
Secure Tony Creek	Secure	20,591	
Catapult Berland	Catapult	19,977	
Secure Wild River	Secure	10,783	
CNRL Wild River (4-3 Plant)	CNRL	2,637	
SEMCAMS 16-32 GGS	SEMCAMS	448	

Top 5 Berland Wells by Monthly Volume			
LSD	Formation	Company	Volume (m3)
100/06-21-062-22W5/0	Blueridge	Secure	20,591
100/01-19-059-23W5/0	Leduc	Catapult	19,977
100/06-09-057-22W5/0	Nisku	Secure	10,783
100/12-29-056-22W5/0	Montney	CNRL	2,637
100/10-02-059-22W5/0	Pekisko	SEMCAMS	448

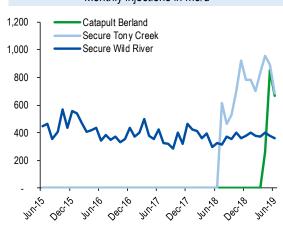
### 1st Party/3rd Party Injections over last Four Years Monthly Injections in m3/d

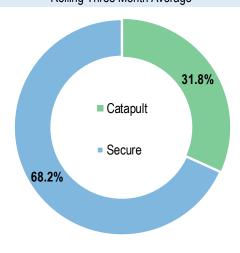


### **First Party vs Third Party** Rolling Three Month Average



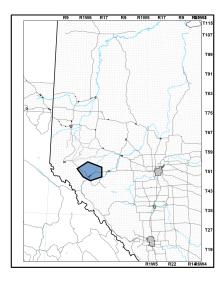
### 3<sup>rd</sup> Party Facility Injections over last Four Years Monthly injections in m3/d







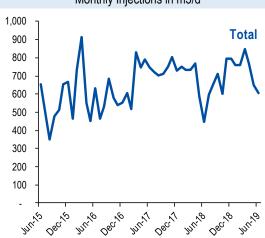
### **OBED**



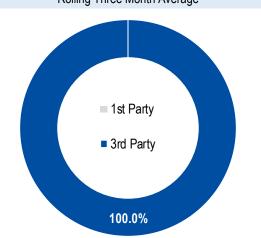
Top 3 Obed Facilities by Monthly Volume			
Name	Company	Volume (m3)	
Secure Obed (Dalehurst)	Secure	8,138	
Secure Obed (Lambert)	Secure	7,851	
Secure Eccles (Sundance)	Secure	2,166	

Top 3 Obed Wells by Monthly Volume			
LSD	Formation	Company	Volume (m3)
100/04-26-052-23W5/3	Leduc	Secure	8,110
100/09-30-052-22W5/2	Leduc	Secure	7,851
100/06-24-054-23W5/0	Leduc	Secure	2,166

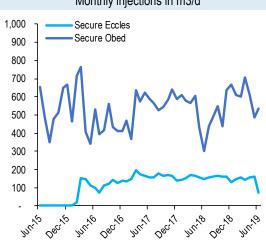
# 1st Party/3rd Party Injections over last Four Years Monthly Injections in m3/d

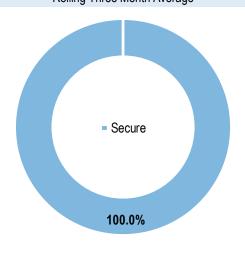


### First Party vs Third Party Rolling Three Month Average



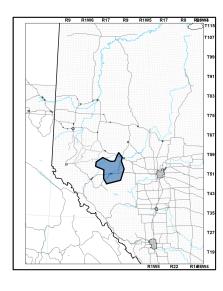
### 3<sup>rd</sup> Party Facility Injections over last Four Years Monthly injections in m3/d







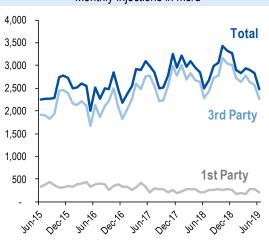
### **EDSON**



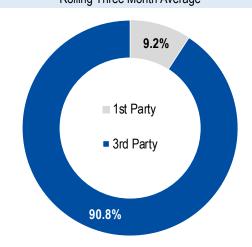
Top 5 Edson Facilities by Monthly Volume			
Name	Company	Volume (m3)	
Secure Pine Creek	Secure	18,411	
Tervita West Edson	Tervita	16,727	
Secure Nosehill	Secure	14,488	
Tervita Moose Creek	Tervita	10,199	
Tervita Niton Junction (N)	Tervita	8,076	

Top 5 Edson Wells by Monthly Volume			
LSD	Formation	Company	Volume (m3)
100/08-01-055-18W5/0	Leduc	Secure	18,411
100/09-31-055-20W5/2	Leduc	Secure	14,488
100/15-16-053-19W5/0	Elkton	Tervita	14,095
100/06-13-052-16W5/2	Swan Hills	Tervita	6,667
100/11-19-054-17W5/0	Leduc	Repsol	5,875

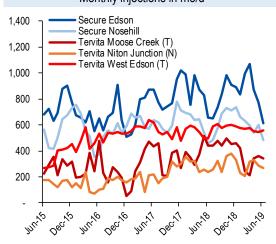
# 1st Party/3rd Party Injections over last Four Years Monthly Injections in m3/d

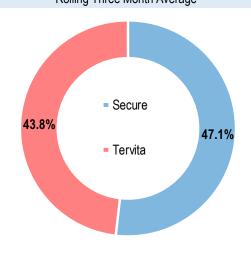


### First Party vs Third Party Rolling Three Month Average



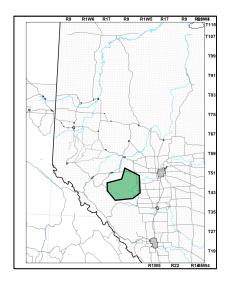
### 3<sup>rd</sup> Party Facility Injections over last Four Years Monthly injections in m3/d







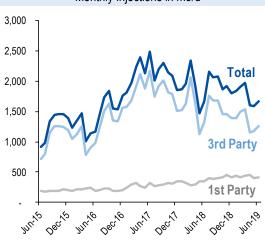
### **DRAYTON**



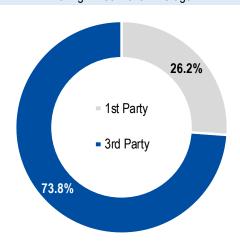
Top 5 Drayton Facilities by Monthly Volume			
Name	Company	Volume (m3)	
Secure Brazeau	Secure	19,509	
Tervita Drayton (N)	Tervita	6,568	
Voda Cynthia	Voda	6,517	
Tervita Brazeau	Tervita	5,038	
Journey 2-1 Inj	Journey	3,978	

Top 5 Drayton Wells by Monthly Volume			
LSD	Formation	Company	Volume (m3)
100/09-26-047-11W5/2	Nisku	Secure	12,572
104/06-02-049-10W5/0	Nisku	Voda	6,517
1W0/13-08-047-10W5/4	Nisku	Secure	5,485
102/08-23-048-08W5/0	Pekisko	Tervita	4,857
100/15-01-046-04W5/0	Viking	Journey	3,978

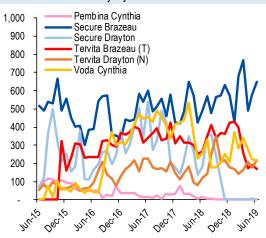
# 1st Party/3rd Party Injections over last Four Years Monthly Injections in m3/d

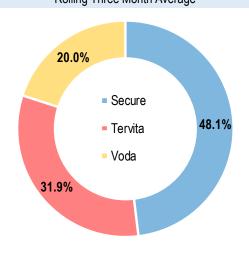


### First Party vs Third Party Rolling Three Month Average



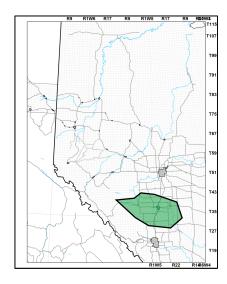
# 3<sup>rd</sup> Party Facility Injections over last Four Years Monthly injections in m3/d







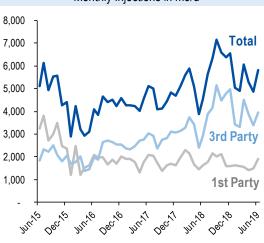
### **RED DEER**



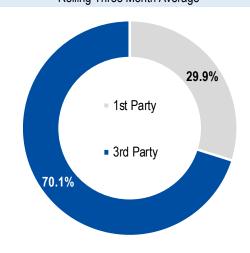
Top 5 Red Deer Facilities by Monthly Volume			
Name	Company	Volume (m3)	
MROR Eckville	MROR	50,394	
Secure Rocky Mountain House	Secure	33,455	
Shell Caroline GP (3-30)	Shell	27,312	
Tervita Eckville (N)	Tervita	15,339	
Tervita Buck Creek	Tervita	13,516	

Top 5 Red Deer Wells by Monthly Volume			
LSD	Formation	Company	Volume (m3)
102/06-29-034-05W5/2	Leduc	Shell	26,892
100/08-34-039-03W5/2	Leduc	MROR	25,492
102/10-07-040-08W5/2	Nisku	Secure	20,724
100/01-30-039-03W5/0	Nisku	Tervita	13,594
103/04-04-040-08W5/0	Nisku	Secure	12,632

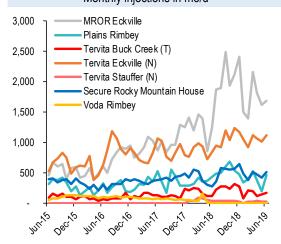
# 1st Party/3rd Party Injections over last Four Years Monthly Injections in m3/d

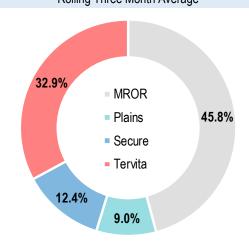


### First Party vs Third Party Rolling Three Month Average



### 3<sup>rd</sup> Party Facility Injections over last Four Years Monthly injections in m3/d







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