

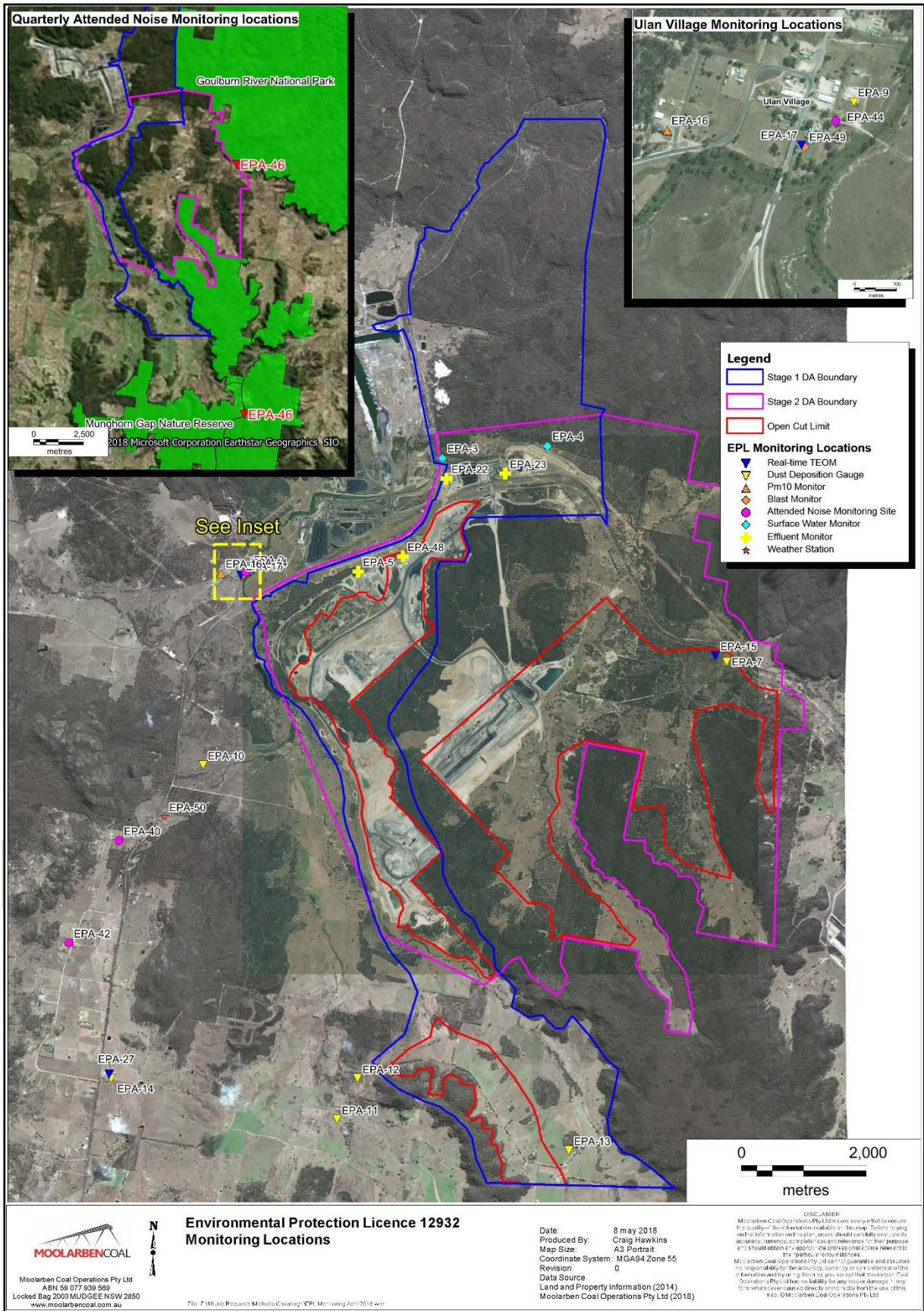


# Monthly Environmental Monitoring Report

For the Month Ending 31 January 2019

<b>Name of Operation</b>	Moolarben Coal Complex
<b>Name of License Holder</b>	Moolarben Coal Operations Pty Ltd
<b>Premises</b>	Moolarben Coal Mine 12 Ulan-Wollar Rd, Ulan NSW 2850
<b>Environmental Protection Licence Number</b>	12932
<b>EPL Link</b>	<a href="http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=75423&amp;SYSUID=1&amp;LICID=12932">http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=75423&amp;SYSUID=1&amp;LICID=12932</a>
<b>Premises</b>	Moolarben Coal Mine
<b>Reporting Period</b>	1 January 2019 to 31 January 2019
<b>Date last sampled data obtained</b>	15 February 2019
<b>Publication Date</b>	28 February 2019
<b>Version</b>	1
<b>Author</b>	M. Yeatman
<b>Approver</b>	G. Chase

EPL 12932 MCO Environmental Monitoring Network



**Concentration Monitoring Summary**

**Air Quality Monitoring**

EPL ID	Location	Pollutant	Unit of Measure	EPL Monitoring Frequency	No. of Samples collected and analysed	Date Sampled	Value	Annual Average (Rolling)	Annual 100%ile concentration limit
6	DG01	Particulates – Deposited Matter	g/m <sup>2</sup> /month	Monthly	1	29/01/2019	2.1	1.03	4.0
7	DG12	Particulates – Deposited Matter	g/m <sup>2</sup> /month	Monthly	1	29/01/2019	2.3	2.08	4.0
9	DG04	Particulates – Deposited Matter	g/m <sup>2</sup> /month	Monthly	1	29/01/2019	1.9	1.39	4.0
10	DG05	Particulates – Deposited Matter	g/m <sup>2</sup> /month	Monthly	1	29/01/2019	2.3	1.88	4.0
11	DG06	Particulates – Deposited Matter	g/m <sup>2</sup> /month	Monthly	1	29/01/2019	1.3	1.7	4.0
12	DG07	Particulates – Deposited Matter	g/m <sup>2</sup> /month	Monthly	1	29/01/2019	2.7	1.55	4.0
13	DG08	Particulates – Deposited Matter	g/m <sup>2</sup> /month	Monthly	1	29/01/2019	2.7	1.83	4.0
14	DG09	Particulates – Deposited Matter	g/m <sup>2</sup> /month	Monthly	1	29/01/2019	2.2	2.01	4.0
N/A	DG13	Particulates – Deposited Matter	g/m <sup>2</sup> /month	N/A	1	29/01/2019	2.6	1.76	4.0

EPL ID	Location	Pollutant	Unit of Measure	No. of Samples collected and analysed	EPL Monitoring Frequency	12 mth rolling average			Annual 100%ile concentration limit
						Min Value	Mean Value	Max Value	
15	TEOM 6	PM10	µg/m <sup>3</sup>	87%	Continuous	15.72	15.8	15.94	30
16	PM01	PM10	µg/m <sup>3</sup>	5	Every 6 days	16.92	17.28	17.49	30
N/A	PM02	PM10	µg/m <sup>3</sup>	5	Every 6 days	18.24	18.42	18.56	30
17	TEOM 1	PM10	µg/m <sup>3</sup>	92%	Continuous	15.11	15.3	15.5	30
27	TEOM 7	PM10	µg/m <sup>3</sup>	74%	Continuous	16.55	16.73	16.89	30
N/A	TEOM 4	PM10	µg/m <sup>3</sup>	93%	Continuous	18.69	18.86	19.11	30

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EPL ID	Location	Pollutant	Unit of Measure	EPL Monitoring Frequency	No. of Samples collected and analysed	Min Value	Mean Value	Max Value	100%ile concentration limit
15	TEOM 6	PM10	µg/m <sup>3</sup>	Continuous (24 Hr Average)	87%	4.3	18.47	33.9	50
16	PM01	PM10	µg/m <sup>3</sup>	Every 6 days	5	16	27	43	50
N/A	PM02	PM10	µg/m <sup>3</sup>	N/A	5	21	27.8	39	50
17	TEOM 1	PM10	µg/m <sup>3</sup>	Continuous (24 Hr Average)	92%	7.9	22.13	61.6	50
27	TEOM 7	PM10	µg/m <sup>3</sup>	Continuous (24 Hr Average)	74%	8.8	21.55	37.9	50
N/A	TEOM 4	PM10	µg/m <sup>3</sup>	N/A (24 Hr Average)	93%	10.8	26.33	49.6	50

**Surface Water Quality Monitoring**

EPL ID	Location	Pollutant	Unit of Measure	No. of samples required by Licence	No. of Samples collected and analysed	Date Sampled	Min Value	Mean Value	Max Value
N/A	SW01	Conductivity	µS/cm	N/A	1	07/01/2019	786	786	786
		pH	pH	N/A	1	07/01/2019	6.19	6.19	6.19
		Total Suspended Solids	mg/L	N/A	1	07/01/2019	<5	<5	<5
N/A	SW02	Conductivity	µS/cm	N/A	1	07/01/2019	807	807	807
		pH	pH	N/A	1	07/01/2019	6.09	6.09	6.09
		Total Suspended Solids	mg/L	N/A	1	07/01/2019	6	6	6
N/A	SW04	Conductivity	µS/cm	N/A	0	07/01/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	07/01/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	07/01/2019	No Flow	No Flow	No Flow
N/A	SW05	Conductivity	µS/cm	N/A	1	07/01/2019	641	641	641
		pH	pH	N/A	1	07/01/2019	6.69	6.69	6.69
		Total Suspended Solids	mg/L	N/A	1	07/01/2019	<5	<5	<5
N/A	SW07	Conductivity	µS/cm	N/A	0	07/01/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	07/01/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	07/01/2019	No Flow	No Flow	No Flow
N/A	SW08	Conductivity	µS/cm	N/A	1	07/01/2019	4250	4250	4250
		pH	pH	N/A	1	07/01/2019	6.11	6.11	6.11
		Total Suspended Solids	mg/L	N/A	1	07/01/2019	8	8	8
N/A	SW09	Conductivity	µS/cm	N/A	1	07/01/2019	4540	4540	4540
		pH	pH	N/A	1	07/01/2019	6.47	6.47	6.47
		Total Suspended Solids	mg/L	N/A	1	07/01/2019	13	13	13
4	SW10	Conductivity	µS/cm	Special Frequency 1	0	07/01/2019	Dry	Dry	Dry
		Oil and Grease	mg/L	Special Frequency 1	0	07/01/2019	Dry	Dry	Dry
		pH	pH	Special Frequency 1	0	07/01/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	Special Frequency 1	0	07/01/2019	Dry	Dry	Dry
3	SW11	Conductivity	µS/cm	Special Frequency 1	0	07/01/2019	Dry	Dry	Dry
		Oil and Grease	mg/L	Special Frequency 1	0	07/01/2019	Dry	Dry	Dry
		pH	pH	Special Frequency 1	0	07/01/2019	Dry	Dry	Dry

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EPL ID	Location	Pollutant	Unit of Measure	No. of samples required by Licence	No. of Samples collected and analysed	Date Sampled	Min Value	Mean Value	Max Value
		Total Suspended Solids	mg/L	Special Frequency 1	0	07/01/2019	Dry	Dry	Dry
N/A	SW12	Conductivity	µS/cm	N/A	1	07/01/2019	604	604	604
		pH	pH	N/A	1	07/01/2019	6.86	6.86	6.86
		Total Suspended Solids	mg/L	N/A	1	07/01/2019	30	30	30
N/A	SW15	Conductivity	µS/cm	N/A	0	07/01/2019	Dry	Dry	Dry
		pH	pH	N/A	0	07/01/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	07/01/2019	Dry	Dry	Dry
N/A	SW16	Conductivity	µS/cm	N/A	0	07/01/2019	Dry	Dry	Dry
		pH	pH	N/A	0	07/01/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	07/01/2019	Dry	Dry	Dry
N/A	SW17	Conductivity	µS/cm	N/A	0	07/01/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	07/01/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	07/01/2019	No Flow	No Flow	No Flow
N/A	SW18	Conductivity	µS/cm	N/A	0	07/01/2019	Dry	Dry	Dry
		pH	pH	N/A	0	07/01/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	07/01/2019	Dry	Dry	Dry
N/A	SW19	Conductivity	µS/cm	N/A	0	07/01/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	07/01/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	07/01/2019	No Flow	No Flow	No Flow
N/A	SW20	Conductivity	µS/cm	N/A	0	07/01/2019	Dry	Dry	Dry
		pH	pH	N/A	0	07/01/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	07/01/2019	Dry	Dry	Dry

**Blasting**

EPL ID	Location	Pollutant	Unit of Measure	Frequency	No. of Blasts during the reporting period	Min Value	Mean Value	Max Value	Limits dBL
49	BM1 Ulan School	Blast Overpressure	dBL	Every Blast	12	84.1	94.9	107.6	115 (95% of Blasts) 120 (100% of Blasts)
		Ground Vibration	mm/s	Every Blast		0.07	0.2	0.39	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)
N/A	BM5 Ridge Rd	Blast Overpressure	dBL	Every Blast	12	88.1	95.4	105.5	115 (95% of Blasts) 120 (100% of Blasts)
		Ground Vibration	mm/s	Every Blast		0.1	0.26	0.71	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)



## Noise

Location	Start Date and Time <sup>1</sup>	Measured Level <sup>2</sup> L <sub>A1,1minute</sub> dB	Measured Level <sup>2</sup> L <sub>Aeq</sub> dB	Limit(s) <sup>3</sup>	Weather <sup>4</sup>	Observation	(Potential) Non-Compliance/Breach <sup>5</sup>
NA1	22/01/2019 11:47	NA	IA	Daytime (07:00 – 18:00) L <sub>Aeq,15minute</sub> : 43 dB	Cloud Cover 4/8, wind at 10m 0.8m/s, Stability Class A	<p><b>Attended monitoring, nomination of noise sources:</b></p> <p>Insects contributed to the measured L<sub>A1</sub>, and was primarily responsible the measured L<sub>A10</sub>, L<sub>Aeq</sub>, L<sub>A50</sub> and L<sub>A90</sub>. Road traffic was primarily responsible for the measured L<sub>A1</sub> and contributed to the measured L<sub>Aeq</sub>.</p> <p><b>Estimate of contribution of subject noise source:</b> MCO was inaudible.</p>	Nil
NA6	21/01/2019 22:00	40	34	Night time (22:00 – 07:00) L <sub>Aeq,15minute</sub> : 37 dB L <sub>A1,1minute</sub> : 45 dB	Cloud Cover 7/8, wind at 10m 0.4m/s, Stability Class E	<p><b>Attended monitoring, nomination of noise sources:</b></p> <p>Dogs generated the measured L<sub>A1</sub> and contributed to the measured L<sub>A10</sub> and L<sub>Aeq</sub>. MCO continuum also contributed to the measured L<sub>A10</sub>, L<sub>A50</sub> and L<sub>Aeq</sub>, and generated the measured L<sub>A90</sub>.</p> <p><b>Estimate of contribution of subject noise source:</b> A mining continuum from MCO was audible throughout the measurement generating the site-only L<sub>Aeq</sub> of 34 dB. Impacts generated the</p>	Nil

Location	Start Date and Time <sup>1</sup>	Measured Level <sup>2</sup> LA1,1minute dB	Measured Level <sup>2</sup> LAeq dB	Limit(s) <sup>3</sup>	Weather <sup>4</sup>	Observation	(Potential) Non-Compliance/Breach <sup>5</sup>
						measured LA1,1minute of 40 dB.	
NA12	21/01/2019 22:30	38	32	Night time (22:00 – 07:00) LAeq,15minute: 35 dB LA1,1minute: 45 dB	Cloud Cover 8/8, wind at 10m 0.9m/s, Stability Class E	<p><b>Attended monitoring, nomination of noise sources:</b></p> <p>An aircraft generated the measured LA1, and was primarily responsible for the measured LAeq. Dogs and road traffic tyre noise contributed to the measured LA10 and LAeq. Insects also contributed to the measured LA10, LA50 and LAeq, and generated the measured LA90.</p> <p><b>Estimate of contribution of subject noise source:</b></p> <p>A continuum from MCO was audible throughout the measurement generating the site-only LAeq of 32 dB. Surges in this continuum generated the site-only LA1,1minute of 38 dB.</p>	Nil

Notes:

1. Measurement period is 15 minutes;
2. Levels in these columns are MCO only;
3. As detailed in the EPL, noise emission limits apply under all meteorological conditions except:
  - Wind speeds greater than 3 m/s at 10 metres above ground level; or
  - Stability class F temperature inversion conditions, and wind speeds greater than 2 m/s at 10 metres above ground level; or
  - Stability class G temperature inversions;
4. Cloud cover from field sheet observations. Wind speed, wind direction and stability class based on WCM weather station data; and
5. NA in last column means atmospheric conditions outside those specified in EPL and so criterion is not applicable.

**Effluent Discharge Points**

EPL ID	Pollutant	Unit of Measure	No. of samples required by Licence	No. of Samples collected and analysed	Date Sampled	Min Value	Mean Value	Max Value
5	BOD	mg/L	Quarterly					
	Nitrogen (total)	mg/L	Quarterly					
	Oil and Grease	mg/L	Quarterly					
	pH	pH	Quarterly					
	Phosphorus (total)	mg/L	Quarterly					
	Total Suspended Solids	mg/L	Quarterly					
22	BOD	mg/L	Quarterly					
	Nitrogen (total)	mg/L	Quarterly					
	Oil and Grease	mg/L	Quarterly					
	pH	pH	Quarterly					
	Phosphorus (total)	mg/L	Quarterly					
	Total Suspended Solids	mg/L	Quarterly					
23	BOD	mg/L	Quarterly					
	Nitrogen (total)	mg/L	Quarterly					
	Oil and Grease	mg/L	Quarterly					
	pH	pH	Quarterly					
	Phosphorus (total)	mg/L	Quarterly					
	Total Suspended Solids	mg/L	Quarterly					
48	BOD	mg/L	Quarterly					
	Nitrogen (total)	mg/L	Quarterly					
	Oil and Grease	mg/L	Quarterly					
	pH	pH	Quarterly					
	Phosphorus (total)	mg/L	Quarterly					
	Total Suspended Solids	mg/L	Quarterly					

**Discharge Points**

Moolarben Coal did not have any licensed discharges during the period.

EPL ID	Pollutant	Unit of Measure	No. of samples required by Licence	No. of Samples collected and analysed	Date Sampled	Min Value	Mean Value	Max Value	100%ile concentration limit
1	Conductivity	µS/cm	Continuous during discharge	0					900
	Iron	mg/L	Daily During Discharge	0					
	Oil and Grease	mg/L	Daily During Discharge	0					10
	pH	pH	Continuous during discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Continuous during discharge	0					25
	Zinc	mg/L	Daily During Discharge	0					
	Discharge Volume	Megalitres per day	Continuous during discharge	0					10
2	Conductivity	µS/cm	Continuous during discharge	0					900
	Iron	mg/L	Daily During Discharge	0					
	Oil and Grease	mg/L	Daily During Discharge	0					10
	pH	pH	Continuous during discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Continuous during discharge	0					25
	Zinc	mg/L	Daily During Discharge	0					
	Discharge Volume	Megalitres per day	Continuous during discharge	0					10
24	Oil and Grease	mg/L	Daily During Discharge	0					
	pH	pH	Daily During Discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Daily During Discharge	0					25
26	Oil and Grease	mg/L	Daily During Discharge	0					
	pH	pH	Daily During Discharge	0					6.5-8.5

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	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Daily During Discharge	0					25
28	Conductivity	µS/cm	Continuous during discharge	0					900
	Iron	mg/L	Daily During Discharge	0					
	Oil and Grease	mg/L	Daily During Discharge	0					10
	pH	pH	Continuous during discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Continuous during discharge	0					25
	Zinc	mg/L	Daily During Discharge	0					
	Discharge Volume	Kilolitres per day	Continuous during discharge	0					1
29	Oil and Grease	mg/L	Daily During Discharge	0					
	pH	pH	Daily During Discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Daily During Discharge	0					25
30	Oil and Grease	mg/L	Daily During Discharge	0					
	pH	pH	Daily During Discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Daily During Discharge	0					25
31	Oil and Grease	mg/L	Daily During Discharge	0					
	pH	pH	Daily During Discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Daily During Discharge	0					25
33	Oil and Grease	mg/L	Daily During Discharge	0					
	pH	pH	Daily During Discharge	0					6.5-8.5

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	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Daily During Discharge	0					25
35	Oil and Grease	mg/L	Daily During Discharge	0					
	pH	pH	Daily During Discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Daily During Discharge	0					25