

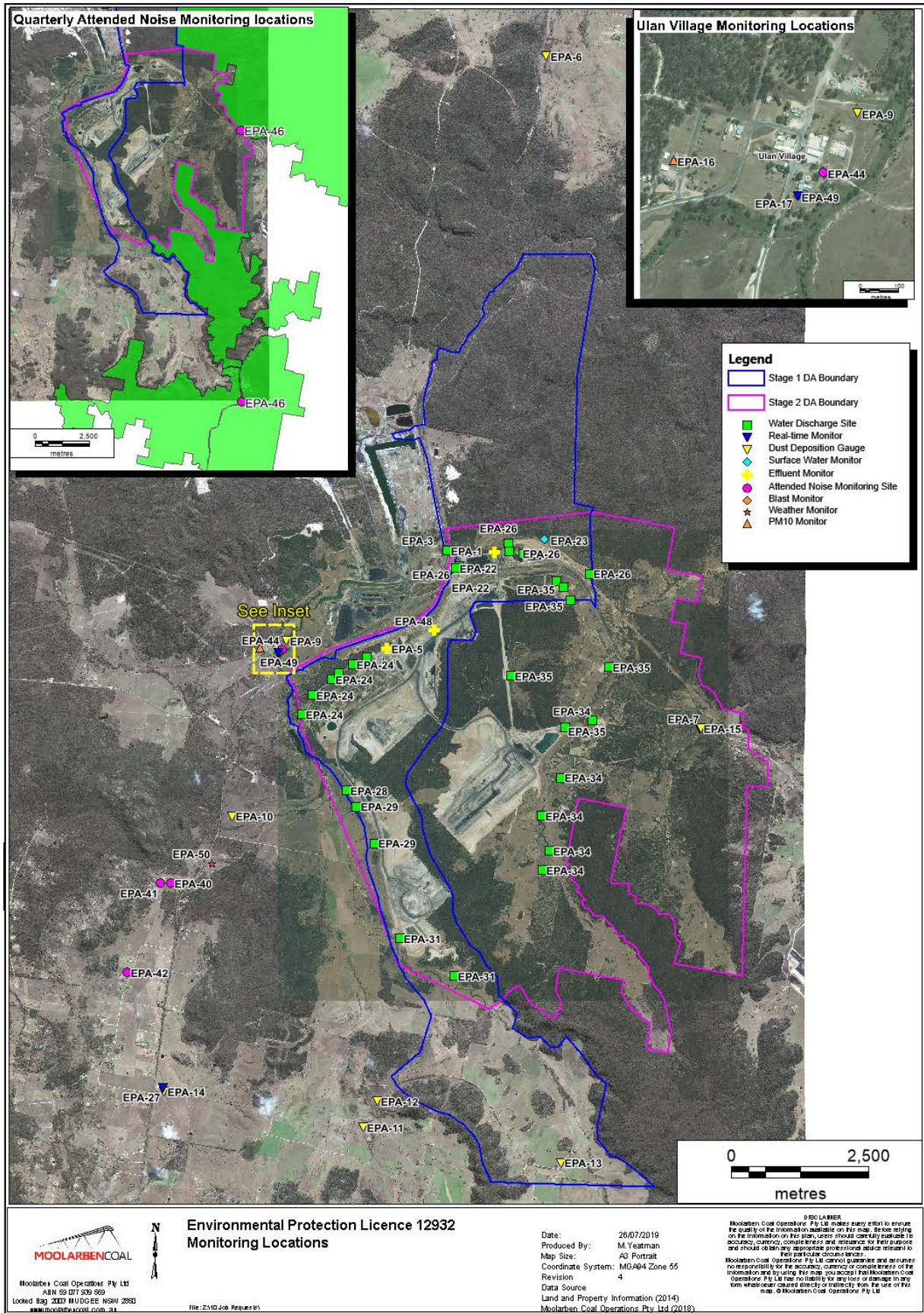


Monthly Environmental Monitoring Report

For the Month Ending 30 September 2019

Name of Operation	Moolarben Coal Complex
Name of License Holder	Moolarben Coal Operations Pty Ltd
Premises	Moolarben Coal Mine 12 Ulan-Wollar Rd, Ulan NSW 2850
Environmental Protection Licence Number	12932
EPL Link	http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=75423&SYSUID=1&LICID=12932
Premises	Moolarben Coal Mine
Reporting Period	1 September 2019 to 30 September 2019
Date last sampled data obtained	24 October 2019
Publication Date	11 November 2019
Version	1
Author	M. Yeatman
Approver	T. Cini

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 ² /month	Monthly	1	30/09/2019	1.2	1.10	4.0
7	DG12	Particulates – Deposited Matter	g/m ² /month	Monthly	1	30/09/2019	2.2	1.80	4.0
9	DG04	Particulates – Deposited Matter	g/m ² /month	Monthly	1	30/09/2019	1.7	1.57	4.0
10	DG05	Particulates – Deposited Matter	g/m ² /month	Monthly	1	30/09/2019	1.8	1.81	4.0
11	DG06	Particulates – Deposited Matter	g/m ² /month	Monthly	1	30/09/2019	1.1	1.63	4.0
12	DG07	Particulates – Deposited Matter	g/m ² /month	Monthly	1	30/09/2019	1.5	1.38	4.0
13	DG08	Particulates – Deposited Matter	g/m ² /month	Monthly	1	30/09/2019	1.8	1.83	4.0
14	DG09	Particulates – Deposited Matter	g/m ² /month	Monthly	1	30/09/2019	1.5	2.09	4.0
N/A	DG13	Particulates – Deposited Matter	g/m ² /month	N/A	1	30/09/2019	1.3	1.65	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 ³	94.8%	Continuous	16.18	16.64	17.00	25
16	PM01	PM10	µg/m ³	5	Every 6 days	17.56	17.70	17.88	25
N/A	PM02	PM10	µg/m ³	5	Every 6 days	18.33	18.40	18.49	25
17	TEOM 1	PM10	µg/m ³	98.8%	Continuous	14.75	14.89	14.96	25
27	TEOM 7	PM10	µg/m ³	81.9%	Continuous	15.14	15.27	15.37	25
N/A	TEOM 4	PM10	µg/m ³	99.8%	Continuous	18.60	18.71	18.77	25

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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 ³	Continuous (24 Hr Average)	94.8%	7.21	25.33	47.42	50
16	PM01	PM10	µg/m ³	Every 6 days	5	4.00	15.00	24.00	50
N/A	PM02	PM10	µg/m ³	N/A	5	4.00	13.00	19.00	50
17	TEOM 1	PM10	µg/m ³	Continuous (24 Hr Average)	98.8%	5.02	16.27	38.02 (*94.94)	50
27	TEOM 7	PM10	µg/m ³	Continuous (24 Hr Average)	81.9%	2.03	14.48	36.76 (*62.26)	50
N/A	TEOM 4	PM10	µg/m ³	N/A (24 Hr Average)	99.8%	7.21	25.33	47.42 (*80.39)	50

*Elevated readings excluded based on exceptional event (dust storm)

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	09/09/2019	796	796	796
		pH	pH	N/A	1	09/09/2019	7.58	7.58	7.58
		Total Suspended Solids	mg/L	N/A	1	09/09/2019	<5	<5	<5
N/A	SW02	Conductivity	µS/cm	N/A	1	09/09/2019	814	814	814
		pH	pH	N/A	1	09/09/2019	7.64	7.64	7.64
		Total Suspended Solids	mg/L	N/A	1	09/09/2019	<5	<5	<5
N/A	SW04	Conductivity	µS/cm	N/A	0	09/09/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	09/09/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	09/09/2019	No Flow	No Flow	No Flow
N/A	SW05	Conductivity	µS/cm	N/A	1	09/09/2019	783	783	783
		pH	pH	N/A	1	09/09/2019	7.46	7.46	7.46
		Total Suspended Solids	mg/L	N/A	1	09/09/2019	6.0	6.0	6.0
N/A	SW07	Conductivity	µS/cm	N/A	0	09/09/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	09/09/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	09/09/2019	No Flow	No Flow	No Flow
N/A	SW08	Conductivity	µS/cm	N/A	1	09/09/2019	4820	4820	4820
		pH	pH	N/A	1	09/09/2019	7.31	7.31	7.31
		Total Suspended Solids	mg/L	N/A	1	09/09/2019	<5	<5	<5
N/A	SW09	Conductivity	µS/cm	N/A	1	09/09/2019	4160	4160	4160
		pH	pH	N/A	1	09/09/2019	7.48	7.48	7.48
		Total Suspended Solids	mg/L	N/A	1	09/09/2019	7.0	7.0	7.0
4	SW10	Conductivity	µS/cm	Special Frequency 1	0	09/09/2019	Dry	Dry	Dry
		Oil and Grease	mg/L	Special Frequency 1	0	09/09/2019	Dry	Dry	Dry
		pH	pH	Special Frequency 1	0	09/09/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	Special Frequency 1	0	09/09/2019	Dry	Dry	Dry
3	SW11	Conductivity	µS/cm	Special Frequency 1	0	09/09/2019	Dry	Dry	Dry
		Oil and Grease	mg/L	Special Frequency 1	0	09/09/2019	Dry	Dry	Dry
		pH	pH	Special Frequency 1	0	09/09/2019	Dry	Dry	Dry

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		Total Suspended Solids	mg/L	Special Frequency 1	0	09/09/2019	Dry	Dry	Dry
N/A	SW12	Conductivity	µS/cm	N/A	1	09/09/2019	608	608	608
		pH	pH	N/A	1	09/09/2019	7.56	7.56	7.56
		Total Suspended Solids	mg/L	N/A	1	09/09/2019	<5	<5	<5
N/A	SW15	Conductivity	µS/cm	N/A	0	09/09/2019	Dry	Dry	Dry
		pH	pH	N/A	0	09/09/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	09/09/2019	Dry	Dry	Dry
N/A	SW16	Conductivity	µS/cm	N/A	0	09/09/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	09/09/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	09/09/2019	No Flow	No Flow	No Flow
N/A	SW17	Conductivity	µS/cm	N/A	0	09/09/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	09/09/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	09/09/2019	No Flow	No Flow	No Flow
N/A	SW18	Conductivity	µS/cm	N/A	0	09/09/2019	Dry	Dry	Dry
		pH	pH	N/A	0	09/09/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	09/09/2019	Dry	Dry	Dry
N/A	SW19	Conductivity	µS/cm	N/A	0	09/09/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	09/09/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	09/09/2019	No Flow	No Flow	No Flow
N/A	SW20	Conductivity	µS/cm	N/A	0	09/09/2019	Dry	Dry	Dry
		pH	pH	N/A	0	09/09/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	09/09/2019	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	83.4	95.11	106.0	115 (95% of Blasts) 120 (100% of Blasts)
		Ground Vibration	mm/s	Every Blast		0.04	0.14	0.30	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)
N/A	BM5 Ridge Rd	Blast Overpressure	dBL	Every Blast	12	84.5	94.96	113.4	115 (95% of Blasts) 120 (100% of Blasts)
		Ground Vibration	mm/s	Every Blast		0.09	0.13	0.27	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)

Noise

Location	Start Date and Time ¹	Measured Level ² L _{A1,1minute} dB	Measured Level ² L _{Aeq} dB	Limit(s) ³	Weather ⁴	Observation	(Potential) Non-Compliance/Breach ⁵
NA1	11/09/2019 11:06	NA	NM	Daytime (07:00 – 18:00) L _{Aeq,15minute} : 43 dB	Cloud Cover: 0/8 Wind: 0.5 m/s Direction: 316 degrees Stability Class: A	<p>Attended monitoring, nomination of noise sources: Aircraft noise primarily generated the measured L_{A1}, L_{A10} and L_{Aeq}. Local industrial continuum and road traffic tyre noise contributed to the measured L_{A10} and L_{Aeq}. Road traffic noise and breeze in foliage generated the measured L_{A50} and L_{A90}.</p> <p>Estimate of contribution of subject noise source: MCO was audible during the measurement at low levels that were not measurable.</p>	Nil
NA6	10/09/2019 22:00	42	32	Night time (22:00 – 07:00) L _{Aeq,15minute} : 37 dB L _{A1,1minute} : 45 dB	Cloud Cover: 0/8 Wind: 2.4 m/s Direction: 107 degrees Stability Class: E	<p>Attended monitoring, nomination of noise sources: Birds and road traffic noise generated the measured L_{A1} and L_{A10}, and contributed to the measured L_{Aeq}. Continuum from MCO also contributed to the measured L_{Aeq}, and was responsible for the measured L_{A50} and L_{A90}.</p> <p>Estimate of contribution of subject noise source: A mining continuum from MCO was audible throughout the measurement generating the site-only L_{Aeq} of 32 dB. Impact noise was responsible for the measured site-only L_{A1,1minute} of 42 dB. Track noise and engine surges were also noted.</p>	Nil

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Location	Start Date and Time ¹	Measured Level ² L _{A1,1minute} dB	Measured Level ² L _{Aeq} dB	Limit(s) ³	Weather ⁴	Observation	(Potential) Non-Compliance/Breach ⁵
NA12	10/09/2019 22:29	35	<30	Night time (22:00 – 07:00) L _{Aeq,15minute} : 35 dB L _{A1,1minute} : 45 dB	Cloud Cover: 0/8 Wind: 2.2 m/s Direction: 97 degrees Stability Class: E	<p>Attended monitoring, nomination of noise sources: Road traffic tyre noise generated the measured L_{A1}, L_{A10}, and L_{Aeq}. MCO continuum and breeze in foliage and on the microphone were responsible for the measured L_{A50} and L_{A90}.</p> <p>Estimate of contribution of subject noise source: A mining continuum from MCO was audible throughout the measurement generating the site-only L_{Aeq} of less than 30 dB. Impact noise was responsible for the site-only L_{A1,1minute} of 35 dB.</p>	Nil

Notes:

1. Measurement period is 15 minutes;
2. Site-only noise levels attributed to MCO, including modifying factors where applicable;
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, therefore criterion was 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
	Total Suspended Solids	mg/L	Daily During Discharge	0					50

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28	Turbidity	NTU	Daily During Discharge	0					25
	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					
29	Discharge Volume	Kilolitres per day	Continuous during discharge	0					1
	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
30	Turbidity	NTU	Daily During Discharge	0					25
	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
31	Turbidity	NTU	Daily During Discharge	0					25
	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
33	Turbidity	NTU	Daily During Discharge	0					25
	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

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	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