
Mannering Colliery Monthly Website Report – November 2022

Site:	Mannering Colliery
Department:	Technical Services
Report Title:	Monthly Environmental Report – November 2022
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Summary

Environmental monitoring results are presented in this report for monitoring undertaken during the period of November 2022.

Introduction

Great Southern Energy Pty Ltd (trading as Delta Coal) operates Manning Colliery, an underground coal mine at the southern end of Lake Macquarie.

Manning Colliery operates under the following regulatory instruments:

- Section 66(6) of the *Protection of the Environmental Operations Act 1997*, to make monitoring data related to an Environment Protection Licence (EPL) publicly available;
- Condition 10 & 13, Schedule 5, of Project Approval 06_0311 (as modified) to provide details of monitoring results and environmental performance;
- An Environment Protection Licence (EPL 191) issued under the *Protection of the Environment Operations Act 1997*; and
- A Water Access Licence (WAL40461), Aquifer (Sydney Basin – North Coast Groundwater Source) for 450-unit shares (megalitres).

Details of the Manning Colliery EPL 191 are provided below.

Manning Colliery Information	
Premises name	Manning Colliery
Address	Ruttleys Road, Doyalson, NSW, 2262
Licensee	Great Southern Energy Pty Ltd
EPL #	191
EPL location	EPL 0191 - 14 April 2021

The overall purpose of this monthly report is to keep stakeholders informed of the environmental monitoring results at Manning Colliery and maintain a transparent and accountable reporting system.

Scope

This report presents the results from the various environmental monitoring programs undertaken for Manning Colliery. Results are presented monthly with annual data, averages and trends in data also shown where relevant.

Where applicable, the results of the monitoring programs are compared with the relevant criteria (from the EPL or Project Approval) to assess compliance.

Monitoring results presented include:

- Water – quality;
- Water – volume;
- Air Quality – Depositional Dust
- Air Quality – PM₁₀
- Air Quality – PM_{2.5}; and
- Meteorological data.

Definitions

g/m²/month – grams per square metre per month;

kL – kilolitre;

ML – megalitre;

mg/L – milligrams per litre;

TSS – total suspended solids;

µg/L – micrograms per litre; and

µS/cm – microSiemens per centimetre.

References

Project Approval 06_0311 (as modified)

Environment Protection Licence 191 (Licence version date: 14 April 2021)

ALS - Dust Deposition Report **November 2022**

ALS – MC Water Analysis Reports **November 2022**

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Monitoring Results

Water – Quality

Weekly water quality results for discharge point LDP001 are presented below.

November 2022				
EPL	191			
Licensee	Great Southern Energy Pty Ltd			
Premises	Manninging Colliery			
Location	LDP001 (EPA ID # 1)			
Sample Frequency	Weekly			
pH limit	6.5 - 8.5			
TSS limit (mg/L)	50			
Oil and grease limit (mg/L)	10			
Water Quality Results				
Date	pH	TSS (mg/L)	Oil and grease (mg/L)	Electrical Conductivity (µS/cm)
04/11/2022	7.70	11	<5	28,500
09/11/2022	7.64	12	<5	28,000
15/11/2022	8.22	12	<5	11,200
24/11/2022	7.86	6	<5	16,400
Average	7.85	10.25	<5	21,025

There were no exceedances of water quality criteria in November 2022 at Manninging Colliery.

Monthly water quality results, primarily metals and metalloids, at LDP001 are presented below for the period.

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Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		LDP001
		Sampling date / time		15-Nov-2022 12:35
Compound	CAS Number	LOR	Unit	ES2241251-001
				Result
ED040F: Dissolved Major Anions				
Sulfur as S	63705-05-5	1	mg/L	62
Silicon as SiO2	14464-46-1	0.1	mg/L	5.5
ED093T: Total Major Cations				
Calcium	7440-70-2	1	mg/L	108
Magnesium	7439-95-4	1	mg/L	118
Sodium	7440-23-5	1	mg/L	2210
EG020F: Dissolved Metals by ICP-MS				
Aluminium	7429-90-5	10	µg/L	10
Arsenic	7440-38-2	1	µg/L	22
Beryllium	7440-41-7	1	µg/L	<1
Cadmium	7440-43-9	0.1	µg/L	<0.1
Chromium	7440-47-3	1	µg/L	<1
Cobalt	7440-48-4	1	µg/L	<1
Copper	7440-50-8	1	µg/L	<1
Lead	7439-92-1	1	µg/L	<1
Manganese	7439-96-5	1	µg/L	40
Molybdenum	7439-98-7	1	µg/L	8
Nickel	7440-02-0	1	µg/L	1
Selenium	7782-49-2	10	µg/L	<10
Silver	7440-22-4	1	µg/L	<1
Vanadium	7440-62-2	10	µg/L	<10
Zinc	7440-66-6	5	µg/L	8
EG020T: Total Metals by ICP-MS				
Aluminium	7429-90-5	10	µg/L	250
Antimony	7440-36-0	1	µg/L	7
Arsenic	7440-38-2	1	µg/L	24
Beryllium	7440-41-7	1	µg/L	<1
Barium	7440-39-3	1	µg/L	531
Cadmium	7440-43-9	0.1	µg/L	<0.1
Chromium	7440-47-3	1	µg/L	1
Cobalt	7440-48-4	1	µg/L	<1
Copper	7440-50-8	1	µg/L	1
Lead	7439-92-1	1	µg/L	<1
Lithium	7439-93-2	1	µg/L	259
EG020T: Total Metals by ICP-MS - Continued				
Molybdenum	7439-98-7	1	µg/L	10
Nickel	7440-02-0	1	µg/L	2
Selenium	7782-49-2	10	µg/L	<10
Silver	7440-22-4	1	µg/L	<1
Tin	7440-31-5	1	µg/L	<1
Titanium	7440-32-6	10	µg/L	<10
Vanadium	7440-62-2	10	µg/L	<10
Zinc	7440-66-6	5	µg/L	12
Boron	7440-42-8	50	µg/L	220
Iron	7439-89-6	50	µg/L	140
EG035F: Dissolved Mercury by FIMS				
Mercury	7439-97-6	0.0001	mg/L	<0.0001
EG035T: Total Recoverable Mercury by FIMS				
Mercury	7439-97-6	0.1	µg/L	<0.1
EK055G: Ammonia as N by Discrete Analyser				
Ammonia as N	7664-41-7	0.01	mg/L	0.07
EK067G: Total Phosphorus as P by Discrete Analyser				
Total Phosphorus as P	----	0.01	mg/L	0.02

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Water – Volume

Monthly water volumes discharged via LDP001 at Manning Colliery are summarised below.

November 2022	
EPL	191
Licensee	Great Southern Energy Pty Ltd
Premises	Manning Colliery
Date Sampled	Daily
Date Reported	Refer report date
Discharge volume limit	4000 kilolitres per day
Sampling Point	LDP001 (EPA ID # 1)

Date (24 hour period)	LDP 1 Volume (kL/day)	Rainfall (mm)
01/11/2022	1582.23	0.6
02/11/2022	1738.48	0
03/11/2022	416.74	3
04/11/2022	1001.94	1.4
05/11/2022	1677.87	0
06/11/2022	1578.23	0
07/11/2022	1297.09	0
08/11/2022	1284.98	0
09/11/2022	1215.19	0
10/11/2022	1244.67	0
11/11/2022	1221.33	0
12/11/2022	933.65	0.2
13/11/2022	1120.77	13.8
14/11/2022	1589.67	21.2
15/11/2022	487.08	3.4
16/11/2022	600.96	0.2
17/11/2022	919.49	0
18/11/2022	52.96	0
19/11/2022	1571.22	0
20/11/2022	1723.44	0
21/11/2022	1027.45	0
22/11/2022	352.8	0
23/11/2022	0	0
24/11/2022	371.07	0
25/11/2022	303.28	0
26/11/2022	211.38	0.8
27/11/2022	159.82	1.6
28/11/2022	1352.18	0.8
29/11/2022	1676.02	0
30/11/2022	1624.31	0

Average	1011 kL/day	1.6 mm/day
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There were no exceedances of volumetric discharge limits at LDP1 in October 2022.

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Water – Groundwater Discharge

Groundwater discharged from underground workings to the MCs surface retention Dams has been detailed below. Manning Colliery operates Water Access License 40461 permitting the extraction of 450 megalitres per financial year and reports annual use to the Water NSW, Water Accounting System (iWAS).

MC Groundwater Pumped to Surface Totals FY2022-2023		
Date (month)	Groundwater Discharge (ML)	Groundwater Discharge (Total ML Water Year to Date)
Jul-22	23.88	24
Aug-22	21.7	46
Sep-22	23.9	69
Oct-22	18.4	88
Nov-22	25.9	114
Dec-22		
Jan-23		
Feb-23		
Mar-23		
Apr-23		
May-23		
Jun-23		

Air Quality

Monthly depositional dust results are shown below. There was one exceedance of depositional dust limits in November 2022 at DG1, the exceedance was reported to the NSW DPE and NSW EPA.

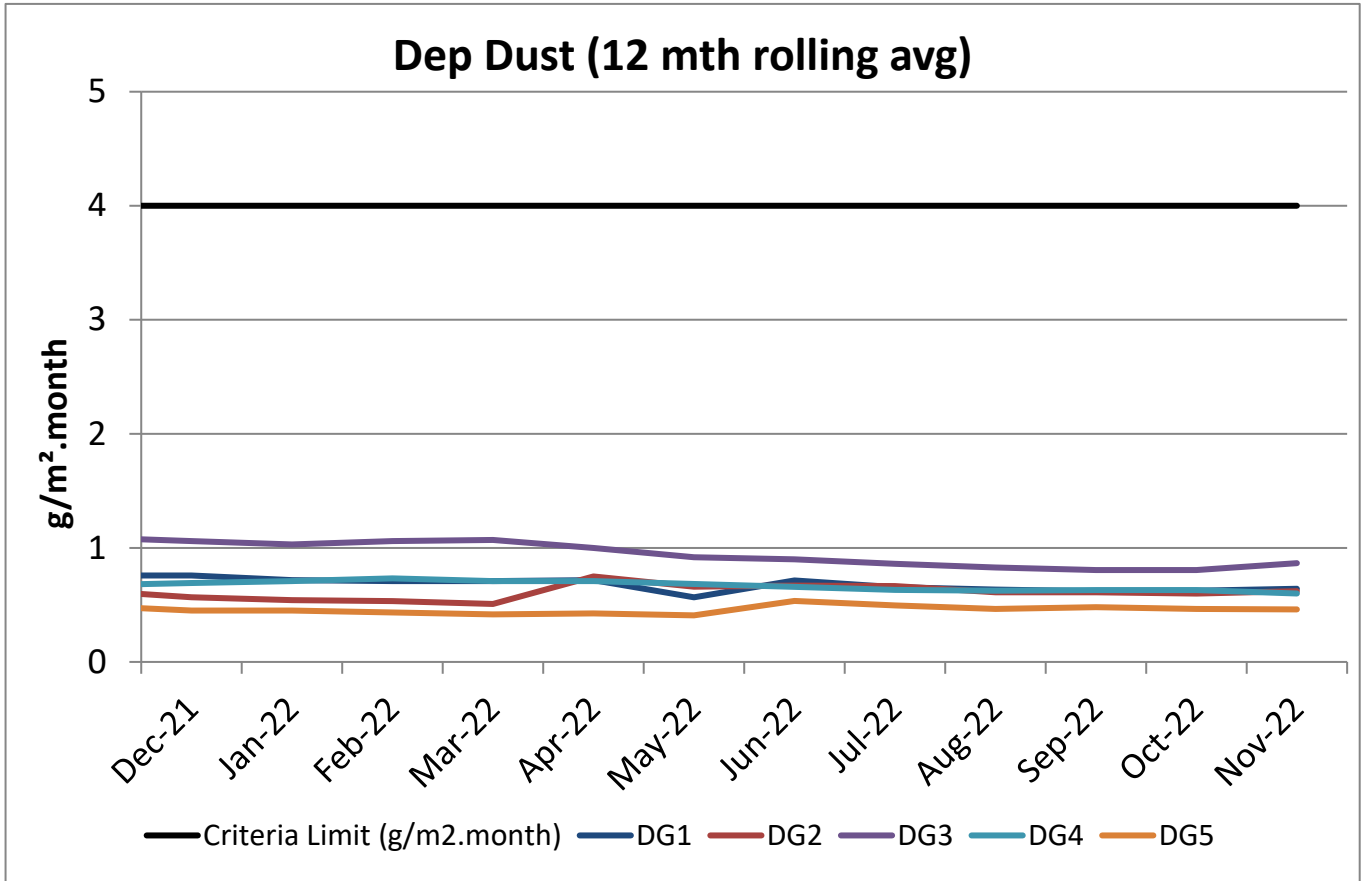
November 2022		
EPL	191	
Limits	Max. total deposited dust level	4g/m ² /month
	Max. increase in deposited dust level	2g/m ² /month
Sampling Date	04/10/2022 to 04/11/2022	
EPA ID no.	Site	Insoluble Matter (g/m ² /month)
3	DG1	9.7*
4	DG2	0.8
5	DG3	1.4
6	DG4	0.3
7	DG5	0.3
Sampling locations provided in Manning Colliery Air Quality Management Plan available on the Delta Coal website. * Dust gauge considered contaminated with results anomalous to nearby gauges and the annual average value.		
Notes:		

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Air Quality – Depositional Dust

A 12-month rolling average of depositional dust concentrations has been presented below. Manning Colliery's dust gauges are located around the perimeter of the Manning Colliery site boundary.

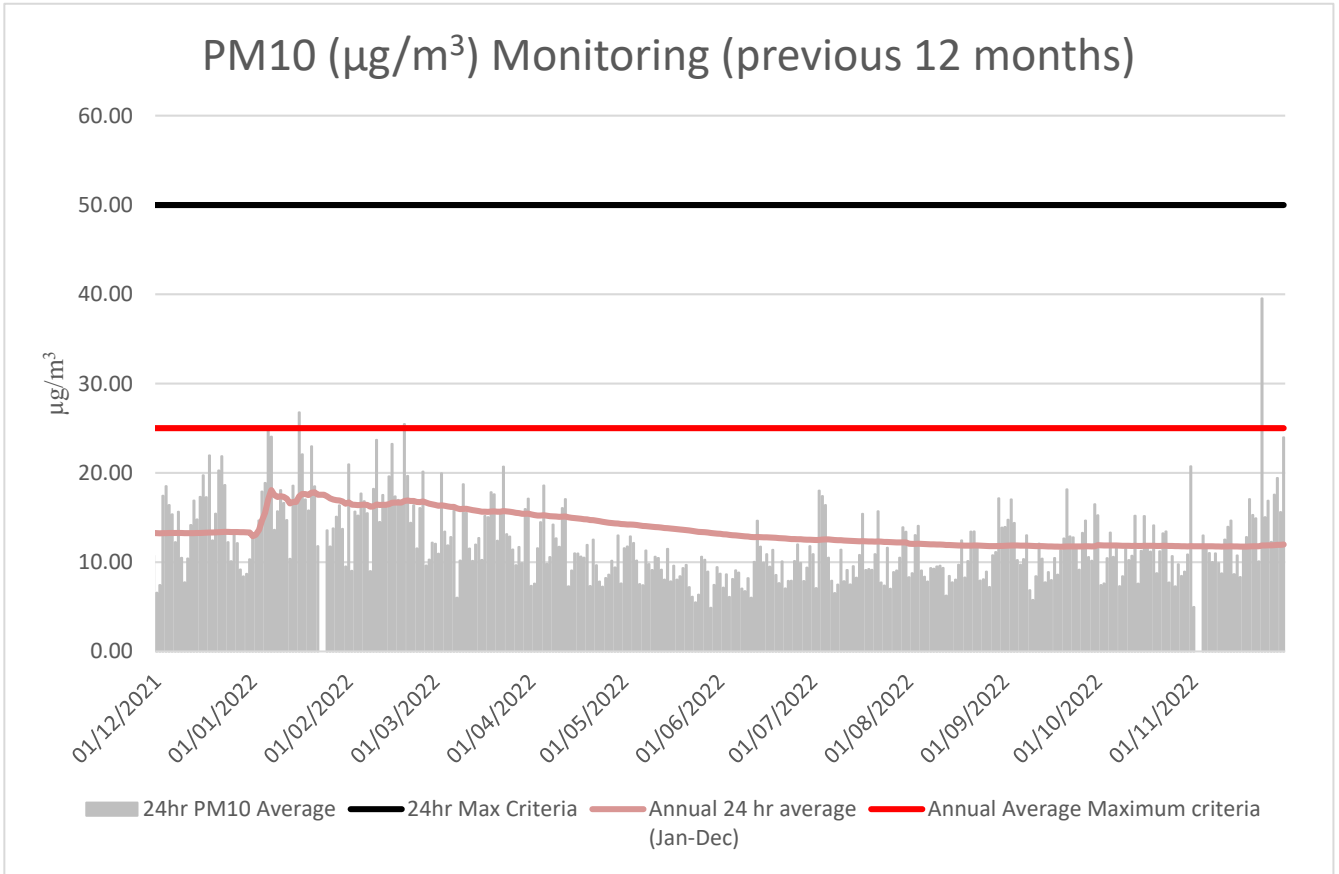


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Air Quality – PM₁₀

The 24hr PM₁₀ average from Delta Coal’s Tapered Element Oscillating Microbalance (TEOM), located at the Manning Park Sewage Treatment Plant, is presented below for the year to date.



Annual 24hr PM₁₀ average maximum criteria for November 2022 was below the annual average maximum criteria limit. A summary of data availability for Delta Coal’s TEOM is presented below for the reporting period. Delta Coals TEOM had a data availability of **98.8%** for the month of October 2022. It was noted that on the 23rd of November, an elevated result was observed (39.5 µg/m³), this was considered to be due to hazard reduction burns being undertaken within the region.

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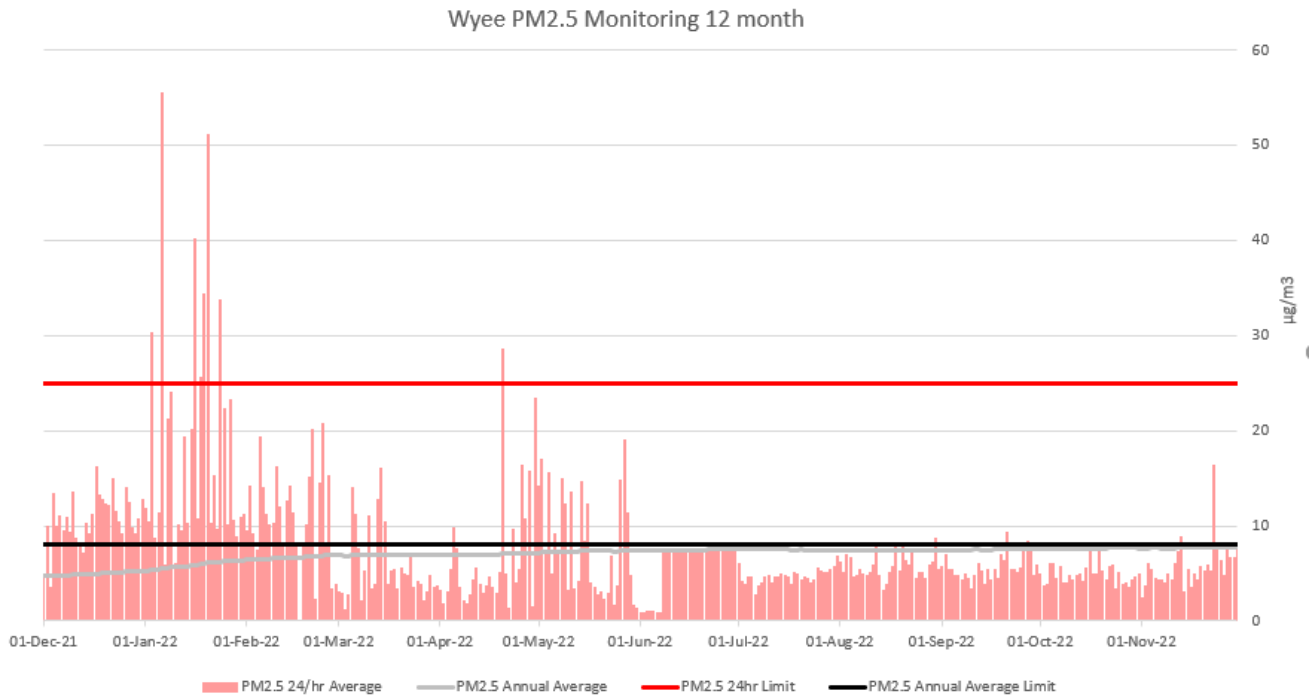
Variable	November	Total	Valid
A/C Temp	99.9%	8640	8629
A1	99.9%	8640	8629
A1_Scaled	99.9%	8640	8629
Bypass Flow	99.9%	8640	8629
Cap Temp	99.9%	8640	8629
Case Temp	99.9%	8640	8629
Config	99.9%	8640	8629
Dew Point	99.9%	8640	8629
Dig-In	99.9%	8640	8629
Dig-Latch	99.9%	8640	8629
ESN	99.9%	8640	8629
Filter Freq	99.9%	8640	8629
Filter Load	99.9%	8640	8629
Humidity	99.9%	8640	8629
MC	99.9%	8640	8629
MC 12Hr	99.9%	8640	8629
MC 1Hr	99.9%	8640	8629
MC 24Hr	99.9%	8640	8629
MC 30min	99.9%	8640	8629
MC 8Hr	99.9%	8640	8629
MC Total	99.9%	8640	8629
Mobile Signal	99.9%	8640	8629
Noise	99.9%	8640	8629
PM10 Flow	99.9%	8640	8629
Pressure	99.9%	8640	8629
Site	0.0%	8640	0
Temperature	99.9%	8640	8629
Tube Temp	99.9%	8640	8629
Vac Pressure	99.9%	8640	8629
Volts	99.9%	8640	8629

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Air Quality – PM2.5

Delta Coal utilises PM_{2.5} data obtained from Delta Electricity owned and operated beta attenuation monitor (BAM). The PM_{2.5} monitor is located on Tingley Road, Wyee.



There were no exceedances of the PM_{2.5} daily average limit in November 2022. The 12-month rolling average PM_{2.5} value on 31 October 2022 was 7.74 µg/m³. PM_{2.5} data availability for October 2022 was 99%. The 2022 year to date PM_{2.5} data availability was 99%.

Weather Data

A summary of weather data recorded by a meteorological monitoring station at the adjacent Manning Colliery is presented below for the year to date. (EPA ID no. 26).

Monthly Weather Data 2022			
Licensee	Great Southern Energy Pty Ltd		
Location	Manning Colliery Meteorological station		
Date published	Refer report date		
Date sampled	Daily		
Date obtained	12 December 2022		
Month	Total Rainfall/Month (mm)	Min Temp	Max Temp
Jan-22	110.6	15.4	30.5
Feb-22	187.2	14.1	34
Mar-22	398.4	13.1	29
Apr-22	174.4	9.8	28.3
May-22	132.4	5.3	26.1
Jun-22	24.8	3	21.5
Jul-22	356.8	2.8	21.4
Aug-22	44	3.9	23.6
Sep-22	120	6	23.6
Oct-22	163.4	6.8	29.2
Nov-22	47	7.3	32.2

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Variable	November	Total	Valid
Baro (Corrected)	94.4%	8640	8160
10m Temp	94.4%	8640	8160
2m Temp	94.4%	8640	8160
A1	94.4%	8640	8160
A1_Scaled	94.4%	8640	8160
Assumed Temp	94.4%	8640	8160
Barometric	94.4%	8640	8160
Config	94.4%	8640	8160
Daily Evap	94.4%	8640	8160
Daily Rain	94.4%	8640	8160
Delta T	94.4%	8640	8160
Dew Point	94.4%	8640	8160
Dig-In	94.4%	8640	8160
Dig-Latch	94.4%	8640	8160
ESN	94.4%	8640	8160
FDI	94.4%	8640	8160
Heat Index	94.4%	8640	8160
Humidity	94.4%	8640	8160
Mobile Signal	94.4%	8640	8160
Rain	94.4%	8640	8160
Raw Evap	94.4%	8640	8160
S Class	94.4%	8640	8160
Scalar WS	94.4%	8640	8160
Sigma	94.4%	8640	8160
Site	0.0%	8640	0
Solar Radiation	94.4%	8640	8160
Vector WD	94.4%	8640	8160
Vector WS	94.4%	8640	8160
Volts	94.4%	8640	8160
Wind Chill	94.4%	8640	8160
Wind Direction	94.4%	8640	8160
Wind Speed	94.4%	8640	8160
WS Avg	94.4%	8640	8160
WS Gust	94.4%	8640	8160