

26 April 2024

This algal report is based on routine algae monitoring at sites in the Murray and Sunraysia Algae Reporting Area. Satellite imagery may be used to supplement the monitoring data.

Summary

General comments: There have been no updated lab results since last week. Satellite imagery also indicates a continued medium to high risk for the Menindee Lakes and a high risk for the Lower Darling River, particularly from Ellerslie to Pomona (refer to Figure 4). General comments from last week have been retained in this report for your reference.

General comments: 18/04/2024

"The recent lab results indicate a reduction in algae levels at Copi Hollow lake in the Menindee lakes and another low result is needed to lift the red alert. However, the red alert remains in place for Lake Tandure and Centre Pamamaroo lakes. The high number of algae biovolume is related to non-toxic cyanobacteria (mostly related to *Synechococcus cf sp.*). Notably, this species has been detected at most sites of Lower Darling River up to Tapio in the 2nd and 3rd April sampling results. The red alert still remains in place at all Lower Darling River sites due to the river's flow and the risk to the community. Satellite imagery also continues to show a medium to high risk for the Menindee lakes and a high risk for the Lower Darling River, specifically from the Ellerslie to Pomona (Figure 4). This is likely related to the same species that flow brings to these sites, but the following sampling results would clarify the species.

Please note that direct comparisons with sampling results should be made with caution as the satellite data is of a later date."

The Wentworth Shire Council has confirmed that "the drinking (filtered) water for Pooncarie, Wentworth, Dareton, Buronga and Gol Gol townships are all suitable for consumption. The Pooncarie township drinking water is currently being sourced from groundwater and not the Darling River." <u>Link to Wentworth Shire Council</u>

Please note that there is a dual reticulated water system, where garden taps have untreated water drawn from the river, for Menindee and Lower Darling River at Pooncarie. Therefore livestock, pets and children should not be exposed to this water and that caution should be practiced if using the water for watering food crops and lawns.

Alert status:

Murray River

Manus Lake at the pontoon is currently on Amber alert for blue-green algae. For more information visit the Snowy valleys Council website at the following link: Link to Snowy Valleys Council

In Hume Dam, Frist Bay Creek is on Red alert for blue-green algae.

The Murray River at Moama, Merbein, Curlwaa, Fort Courage and Lock 8 are on Amber alert.

Lake Benanee Rec Area as well as Lake Victoria Outlet Regulator are on Amber alert.

BILLBONG CREEK, EDWARD & WAKOOL RIVERS

The Gulpa Creek at Mathoura as well as the Edward River at Old Morago and the Wakool River at Wakool-Barham Road are on Amber alert for blue-green algae.

Darling River, Menindee Lakes, and Darling Anabranch



Murray and Sunraysia Regional Algal Coordinating Committees Combined Blue-Green Algae Report

The Menindee Lakes at Lake Menindee Site 19 is currently on Red alert. This alert has been applied by satellite imagery.

The Menindee Lakes at Lake Wetherell, Lake Tandure, Lake Pamamaroo at center, Copi Hollow, Lake Wetherell adjacent to Lake Pamamaroo Inlet, are currently on Red alert for blue-green algae.

The Great Darling Anabranch at the Silver City Highway crossing is on Red alert for blue-green algae. the Lower Darling River from Lake Wetherell to the Darling River confluence with the Murray at Wentworth NSW is on Red alert for blue-green algae.

Amber alerts for blue-green algae are current for the Menindee Lakes at Pamamaroo inlet, outlet, Lake Cawndilla outlet. Please refer to Table 1 on pages 3 for the combined results.

Satellite Imagery: The satellite imagery of Hume Dam (Figure 1) shows low algal activity in Mitta Mitta arm upstream of the Narrows. The satellite imagery from 22/04/2024 indicates that medium algal activity continues across the Menindee system (Figure 2). Furthermore, the satellite image in Figure 3 and 4 suggests continued high algae activity in the Darling River u/s Weir 32,in Lower Darling River at Ellerslie to Pomona, but low algae activity in the Murray River (figure 5). Figure 6 indicates low phytoplankton activity in the Murray River at Yarrawonga Weir, except for increased algal growth around Kyffins reservoir and the Leeward site. The most recent images are displayed on pages 5-9 of this report.

Weather Outlook (7 days): In the upper reaches of the catchment near Albury, moderate maximum air temperatures and cool minimum temperatures are expected during most of the days, along with a mix of mostly sunny and partly cloudy conditions. Similar weather patterns are predicted for Menindee Lakes downstream in the catchment, with daily air temperatures expected to be slightly higher. You can find a detailed seven-day weather forecast on page 10.

Algal Outlook: Partly cloudy days, along with moderate maximum air temperatures and cool minimum temperatures, are expected for this region next week. These conditions are expected to be moderately favorable for blue-green algal growth in the upper reaches of the catchment and at Menindee system.



Results Table

These alert levels apply to **non-consumptive or recreational contact**. Drinking water safety thresholds are much more stringent.

indicates that a red alert has been issued based on satellite imagery, which indicate a high risk of algae.

Table 1 Combined Murray and Sunraysia Cyanobacteria Alert Level Update 26 April 2024

Site	Description	Latest Sample Date	Cyanobacteria Total Count (cells/mL)	Cyanobacteria Biovolume (mm3/L)	Potentially Toxic Cyanobacterial Count	Potentially Toxic Cyanobacterial Biovolume	Current Status (based on Latest Sample)	Previous Status	Cyanobacteria dominant potentially toxic taxa	Cyanobacteria Comments
MURR	AY RIVER SYSTEM	15/04/2024	1,393,603	7 200	0	0.000	AMBER	AMBER		
	Corryong Supply - Raw Water Inlet to Corryong TP (NE Water) Mannus Lake (SVC) Lake pontoon	15/04/2024 25/03/2024	0	7.298 0.000	0	0.000	AMBER	AMBER		
DLH003	Lake Hume, Ebden	8/04/2024	3946.000	0.010	408	0.010	No Alert	No Alert	Microcystis sp.	Potentially toxic, taste & odour
DLH001	Lake Hume, Heywoods Bay nr Bethanga	8/04/2024	10860.000	0.327	6,369	0.325	GREEN	No Alert	Microcystis species 2	Potentially toxic, taste & odour
DLH002 DLH004	Lake Hume, Hume Dam Resort	8/04/2024	3028.000	0.029	1,123	0.028	No Alert	No Alert	Microcystis sp.	Potentially toxic, taste & odour
DLH004 DLH010	Lake Hume, Dam Wall Lake Hume, Bowna	8/04/2024 8/04/2024	4627.000 3878.000	0.000 0.041	0 1,565	0.000	No Alert GREEN	No Alert GREEN	Microcystis sp.	Potentially toxic, taste & odour
DLH011	Hume Dam at Frist Bay Creek	25/03/2024	637493.000	1.188	10,580	0.270	RED	RED	Microcystis sp.	Potentially toxic, taste & odour
	Tallangatta Supply - Mitta Mitta River at P/S (NE Water)	19/02/2024	2,253	0.082	235	0.016	GREEN	No Alert	Aphanizomenonaceae Jamily - straight	Potentially toxic
N1000 N1001	Murray R. Union Bridge Albury Murray R. Corowa	2/04/2024 2/04/2024	20046.000 29397.000	0.022 0.039	204	0.004	No Alert No Alert	No Alert No Alert	Microcystis sp.	Potentially toxic, taste & odour
	Yarrawonga Weir (outlet) GMW	8/04/2024	19,666	0.103	62	0.017	GREEN	GREEN	Dolichospermum - coilea	Potentially toxic
N1008	Mulwala Canal Offtake	2/04/2024	18726.000	0.023	0	0.000	No Alert	AMBER	(ZBUM)	
N1007	Murray R. @ below Yarrawonga	2/04/2024	29804.000	0.031	0	0.000	No Alert	GREEN		
N1051	Murray R. Cobram (Barooga)	2/04/2024	31878.000	0.030	0	0.000	No Alert GREEN	GREEN GREEN		
N1013	Cobram WTP, raw water (GVW) Murray R. Tocumwal	9/04/2024 2/04/2024	9,421 17583.000	0.050 0.016	0	0.000	No Alert	AMBER		
N1052	Murray R. Picnic Point	8/04/2024	57511.000	0.075	340	0.007	GREEN	AMBER	Microcystis sp.	Potentially toxic, taste & odour
	Barmah WTP raw water (GVW)	9/04/2024	68,717	0.464	612	0.053	AMBER	AMBER	Microcystis	Potentially toxic, taste & odour
N1050	Murray R. Moama (Echuca) Torrumbarry Weir GMW	8/04/2024 8/04/2024	71626.000 37,461	0.159 0.475	55.000	0.000	GREEN AMBER	AMBER GREEN	Raphidiopsis raciborskii	Potentially toxic
N1003	Murray R. Barham (Koondrook)	9/04/2024	14241.000	0.475	0	0.003	GREEN	GREEN	napinaropsis racidorsKII	rotentially toxic
N1054	Murray R. Murray Downs (Swan Hill)	9/04/2024	22243.000	0.079	850	0.035	GREEN	GREEN	Microcystis sp.	Potentially toxic, taste & odour
	Murray River U/S Woorinen pumps GMW	15/04/2024	290	0.126	0	0.000	GREEN	GREEN		
N1055 N1064	Murray R. Tooleybuc (Piangil) Lake Benanee Rec Area	9/04/2024 3/04/2024	46333.000 29940.000	0.305 0.043	374 0	0.044	GREEN AMBER	AMBER AMBER	Aphanizomenonaceae sp.	Potentially toxic, taste & odour
N1028	Murray R. Euston (Robinvale)	3/04/2024	58397.000	0.074	0	0.000	GREEN	GREEN		
N1065	Murray R. Mount Dispersion	3/04/2024	119475.000	0.210	0	0.000	GREEN	AMBER		
N1062	Murray R. Buronga	2/04/2024	117171.000	0.383	306	0.007	GREEN	AMBER	Phormidium sp.	Potentially toxic, taste & odour
N1027	Merbein (LMW) 414206 - Murray River at Merbein	24/04/2023	0 135340.000	0.397 1.347	1,310	0.013 0.154	GREEN AMBER	AMBER AMBER	Microcystis sp Aphanizomenonaceae sp.	Potentially toxic Potentially toxic, taste & odour
N1063	Murray R. Curlwaa	2/04/2024	382456.000	1.368	476	0.036	AMBER	AMBER	Aphanizomenonaceae sp.	Potentially toxic, taste & odour
N1066	Murray R. Fort Courage	3/04/2024	389633.000	1.519	5,882	0.152	AMBER	AMBER	Microcystis sp.	Potentially toxic, taste & odour
	Lock 9 (LMW)	15/05/2023	60,991	1.789	6115	0.416	AMBER	AMBER	Microcystis sp	Potentially toxic
N1077 N1078	Murray R. Lock 8 Lake Victoria Outlet Regulator	4/04/2024 4/04/2024	447735.000 184832.000	1.687 0.269	9,307	0.333	AMBER AMBER	AMBER AMBER	Microcystis sp.	Potentially toxic, taste & odour
	NG CREEK, EDWARD & WAKOOL RIVERS	4/04/2024	104032.000	0.203		0.000				
N1020	Billabong Ck. Walbundrie	2/04/2024	11106.000	0.052	817	0.018	GREEN	GREEN	Microcystis sp.	Potentially toxic, taste & odour
N1015 N1006	Billabong Ck. Jerilderie Gulpa Ck. Mathoura	8/04/2024 8/04/2024	59199.000 68366.000	0.118 0.088	272 68	0.039	GREEN GREEN	GREEN AMBER	Anabaenopsis sp. Microcystis sp.	Potentially toxic Potentially toxic, taste & odour
N1002	Edward R Deniliquin	8/04/2024	55036.000	0.389	0	0.001	GREEN	AMBER	wiciocysus sp.	Fotentially toxic, taste & oddur
N1053	Edward R. Old Morago	9/04/2024	63466.000	0.603	1,019	0.120	AMBER	GREEN	Aphanizomenonaceae sp.	Potentially toxic, taste & odour
N1005	Edward R. Moulamein	9/04/2024	47796.000	0.631	646	0.018	AMBER	GREEN	Radiocystis sp.	Potentially toxic
N1010 N1004	Wakool R. Wakool-Barham Road Wakool R. @ Stoney Crossing	9/04/2024 9/04/2024	89562.000 117236.000	0.435 0.196	653 2,382	0.014	AMBER GREEN	GREEN GREEN	Microcystis sp. Microcystis sp.	Potentially toxic, taste & odour Potentially toxic, taste & odour
N1009	Wakool R. Kyalite	9/04/2024	84212.000	0.165	0	0.000	GREEN	GREEN		
	DEE LAKE SYSTEM & LOWER DARLING RIVER									
N1042	Darling River at Wilcannia	6/03/2024	57033.000	0.062	527	0.012	AMBER	AMBER	Phormidium sp.	Potentially toxic, taste & odour
N1087 N1088	Lake Wetherell Site 1 Lake Wetherell Site 2	9/04/2024 9/04/2024	0.000 5444.000	0.000	0	0.000	No Alert RED	No Alert No Alert		
N1089	Lake Wetherell Site 3	9/04/2024	185931.000	1.391	4,248	0.539	RED	AMBER	Anabaenopsis sp.	Potentially toxic
N1090	Lake Wetherell Site 4	9/04/2024	961383.000	6.917	7,523	0.391	RED	RED	Raphidiopsis raciborskii	Potentially toxic, taste & odour
N1091 N1092	Lake Tandure Site 8 Lake Pamamaroo Inlet (Site 9)	9/04/2024	1517857.000 920818.000	10.367 5.179	17,297 2,719	0.754 0.102	RED AMBER	RED AMBER	Raphidiopsis raciborskii	Potentially toxic, taste & odour Potentially toxic, taste & odour
N1129	42510013 Centre Pamamaroo (Site 13)		1818755.000	33.373	8,325	0.752	RED	AMBER	Anabaenopsis sp.	Potentially toxic
N1093	Lake Pamamaroo Outlet (Site 10)	9/04/2024	1193734.000	8.073	6,116	0.685	AMBER	RED	Anabaenopsis sp.	Potentially toxic
N1094	Menindee Lakes, Copi Hollow		1157222.000	7.001	4,248	0.539	RED	RED	Anabaenopsis sp.	Potentially toxic
N1130 N1128	Lake Menindee Site 19 Lake Cawndilla Site 34 Outlet	26/03/2024 9/04/2024	970430.000	4.657 1.512	1,118 0	0.141	RED AMBER	AMBER AMBER	Anabaenopsis sp.	Potentially toxic
N1095	Darling R. Menindee bhwb pump	9/04/2024	2576416.000	22.259	9,177	0.541	RED	RED	Raphidiopsis raciborskii	Potentially toxic, taste & odour
N1086	Darling R u/s Weir 32	9/04/2024	1226017.000	30.142	5,220	0.674	RED	RED	Anabaenopsis sp.	Potentially toxic
N1043 N1040	Darling R. Tolarno Darling R. Pooncarie		1239504.000	42.647	5,091	0.743	RED RED	RED RED	Anabaenopsis sp. Anabaenopsis sp.	Potentially toxic Potentially toxic
N1040 N1041	Darling R. Burtundy		4554752.000 4913279.000	183.003 207.495	12,573 56,614	1.735 7.569	RED	AMBER	Anabaenopsis sp. Anabaenopsis sp.	Potentially toxic
N1074	Darling R. Ellerslie		2036957.000	77.148	11,758	1.273	RED	RED	Anabaenopsis sp.	Potentially toxic
N1075	Darling R. Tapio	2/04/2024	227306.000	2.213	2,753	0.344	RED	RED	Anabaenopsis sp.	Potentially toxic
Non ro	utine monitoring Wentworth Weir Pool US Pomona (13KM)	3/04/2024	670952.000	2.803	10,071	0.686	RED	AMBER	Radiocystis sp.	Potentially toxic
N1366	Pomona (@ Boat Ramp)	3/04/2024	307402.000	3.365	0	0.000	RED	AMBER	naaiocysus sp.	rotentially toxic
	DARLING ANABRANCH	, , , _ , _ ,								
N1350	Silver City Hwy	3/04/2024	1463183.000	8.931	32,390	3.955	RED	RED	Dolichospermum sp.	Potentially toxic, taste & odour



Alert Definitions for Recreational Waters

Alert Definitions as specified in The National Health and Medical Research Council (NHMRC) *Guidelines for Managing Risks in Recreational Water* 2008. The use of these guidelines is endorsed by the Scientific Subcommittee of the NSW Algal Advisory Group.

RED ALERT

These alert levels represent 'bloom' conditions. Water will appear green or discoloured and clumps or scums could be visible. It can also give off a strong musty or organic odour. Algae may be toxic to humans and animals. Contact with or use of water from red alert areas should be avoided due to the risk of eye and skin irritation. Drinking untreated or boiled water from these supplies can cause stomach upsets. Alternative water supplies should be sought or activated carbon treatment employed to remove toxins. People should not fish when an algal scum is present. Owners should keep dogs away from high alert areas and provide alternative watering points for stock.

AMBER ALERT

Blue-green algae may be multiplying, and the water may have a green tinge and musty or organic taste and odour. The water should be considered as unsuitable for potable use and alternative supplies or prior treatment of raw water for domestic purposes should be considered. The water may also be unsuitable for stock watering. Generally suitable for water sports, however people are advised to exercise caution in these areas, as blue-green algal concentrations can rise to red alert levels quickly under warm, calm weather conditions.

GREEN ALERT

Blue-green algae occur naturally at low numbers. At these concentrations, algae would not normally be visible, however some species may affect taste and odour of water even at low numbers and does not pose any problems for recreational, stock or household use.

Key to Alerts for Recreational Waters

RED Alert ≥ 50 000 cells/mL toxic M. aeruginosa OR biovolume equivalent of ≥4 mm³/L for the combined total of all cyanobacteria where a known toxin producer is dominant OR The total biovolume of all cyanobacteria exceeds 10 mm³/L OR Cyanobacterial blooms are consistently present	 High levels of Blue Green Algae detected Indicates "bloom" conditions Toxicity should be presumed Water will appear green or brownish and may have a strong musty taste and odour Surface scums could occur Extreme care should be exercised, and contact with the water should be avoided Action Issue Media Release Water supply authorities to increase filtering with activated carbon as appropriate Local authority and health authorities to warn the public that the water body is unsuitable for primary contact recreation
AMBER Alert ≥5000 to <50 000 cells/mL M. aeruginosa OR biovolume equivalent of ≥ 0.4 to < 4 mm3/L for the combined total of all cyanobacteria OR ≥ 0.4 to < 10mm3/L combined total for all blue-green algae where known toxin producers are not dominant	 Indicates blue-green algae are multiplying Water may have a green tinge and musty taste and odour Action Water supply authorities to consider filtering with activated carbon Investigations into the causes of the elevated levels and increased sampling to enable the risks to recreational users to be more accurately assessed.
GREEN Alert > 500 to < 5000 cells/mL M. aeruginosa OR biovolume equivalent of > 0.04 to < 0.4 mm³/L for the combined total of all cyanobacteria	 Low levels of potentially toxic species detected – suggesting base crop of blue green algae may be on the increase Action Continue/increase routine sampling to measure cyanobacterial levels



<u>Livestock Drinking Water Guidelines Based on ARMCANZ (2000), Orr and Schneider (2006) and WQRA (2010)</u>

This guideline should be used when water is used for livestock drinking water purposes.

- If visual scums are present, then a High alert should be declared. This would be applicable for both farm dams and publicly managed water bodies (streams, rivers, etc). Such advice should also be given to farmers who phone the department seeking information on managing blooms in their dams.
- Where blooms dominated by *Microcystis aeruginosa* are present, then the ANZECC/ARMCANZ (2000) guideline of 11,500 cells/mL should be used. Excess of this cell count will constitute a High alert.
- Where blooms dominated by **Dolichospermum circinale** are present, then the Orr and Schneider (2006) guideline of 25,000 cells/mL should be used. Excess of this cell count will constitute a High alert.
- Blooms of blue-green algae other than *M. aeruginosa* and *D. circinale* are also common in NSW. These can be of either known potentially toxic species, or of species not considered to be toxin producers. When these blooms are present, a total blue-green algal biovolume in excess of 6 mm³/L will constitute a High alert. (These are based on Very High alert recommendations for raw water sourced for potable human supply published by WQRA (2010), in lieu of there being nothing else available).

Satellite imagery

The key to the approximate total algae (blue green and non-blue green) concentrations using the Custom Algae Script can be found Table 1. The actual values can potentially vary by a significant margin due to the geology of the waterbody, species of algae, turbidity, aquatic plants, time of day of the image capture, aerosols in the atmosphere, etc. This variability is a result of the nature of satellite imagery being a large-scale remote sensing format and is not function of the technology or the script itself. For this reason, these colours and descriptors are not the official "Algae Alert Level" but rather provides information on the potential risk on algae formation.

Table 1: Observed risk levels based on the estimated photosynthetic activity for Custom Algae Script

Map Colour	Risk Level	Starting concentration guide	RACC recreational alert values
		range	approx. equivalence
Blue	Very low	<0.05 mm3/L	No Alert
Green	Low	0.05 to 0.5 mm3/L	Green
Yellow	Medium	0.5 to 5.0 mm3/L	Amber
Red	High	5.0 to 20.0 mm3/L	Red
Dark red	Extreme	> 20 mm3/L	Red



Murray and Sunraysia Regional Algal Coordinating Committees Combined Blue-Green Algae Report

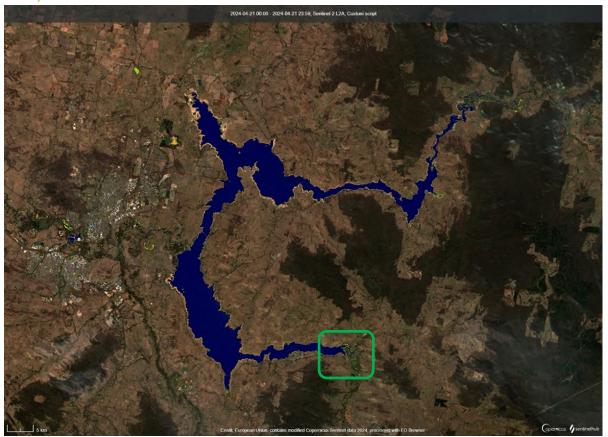


Figure 1: Hume Dam 21/04/2024 SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TF, WaterNSW



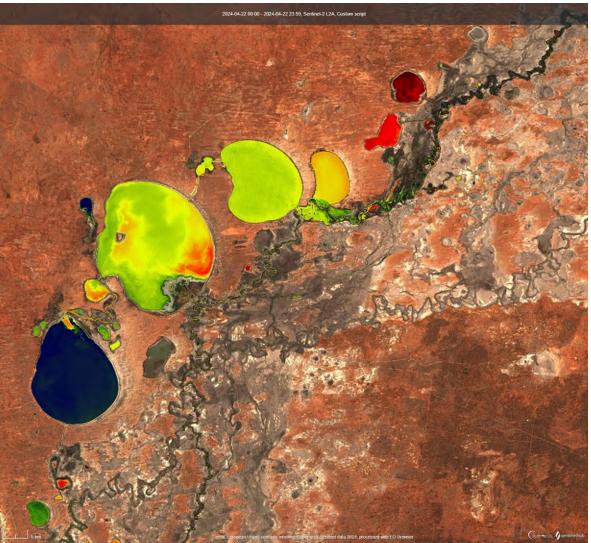


Figure 2: Menindee Lakes 22/04/2024 SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TF, WaterNSW



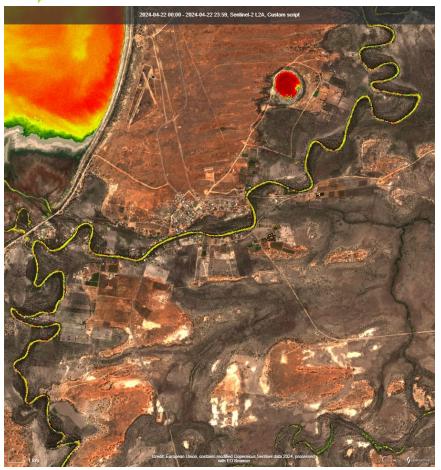


Figure 3: Darling River up stream Weir 32. 22/04/2024 SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TF, WaterNSW



Figure 4: Darling River at Tapio, US Pomona, and Pomona. **22/04/2024**. SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TF, WaterNSW





Figure 5: Murray and Darling Rivers as well as the great Darling anabranch near Wentworth **22/04/2024** SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TF, WaterNSW



Figure 6: Murray River at Yarrawonga Weir 24/04/2024 SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TF, WaterNSW



Weather forecast

Albury and Menindee lake, BOM 7-day weather forecast

	Fri.	Sat.	Sun.	Mon.	Tue.	Wed.	Thu.
	26 Apr	27 Apr	28 Apr	29 Apr	30 Apr	1 May	2 May
	***	100	2	2	10	10	10
	Sunny.	Sunny.	Partly cloudy.	Partly cloudy.	Sunny.	Sunny.	Sunny
Max. Temperature	21 °C	23 °C	24 °C	23 °C	21 °C	21 °C	21 °C
Min. Temperature		4 °C	7 °C	0.10	710	E 10	5 °C
wiiii. Temperature		4 0	10	9 °C	7 °C	5°C	5 0
Menindee	EST on Friday 2		7 0	9.0		etailed Menin	
Menindee Forecast updated at 9:24 am	EST on Friday 2 Fri. 26 Apr		Sun. 28 Apr	Mon. 29 Apr			dee Forec
Menindee	Fri.	26 April 2024. Sat.	Sun.	Mon.	<u>r</u>	etailed Menin	dee Fored
Menindee	Fri.	26 April 2024. Sat.	Sun.	Mon.	<u>r</u>	etailed Menin	Thu. 2 May
Menindee	Fri. 26 Apr	26 April 2024. Sat. 27 Apr	Sun. 28 Apr	Mon. 29 Apr	Tue. 30 Apr	Wed. 1 May	dee Forec

Further Information and Contacts

Links to websites of VIC and other agencies

Link to Snowy Valleys Council

Link to North East Water

Link to Goulburn-Murray Water blue-green algal alerts

Link to Goulburn Valley Water blue-green algal information

Link to Lower Murray Water blue-green algal alerts

Link to Central Darling Shire Council

Link to Wentworth Shire Council

Go to the Water NSW Algal Website

www.waternsw.com.au/algae or at WaterInsights:

Murray regulated river - https://waterinsights.waternsw.com.au/11904-new-south-wales-murray-regulated-river/updates

Lower-Darling regulated river - https://waterinsights.waternsw.com.au/12104-lower-darling-regulated-river/updates

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