

Lake Numalla

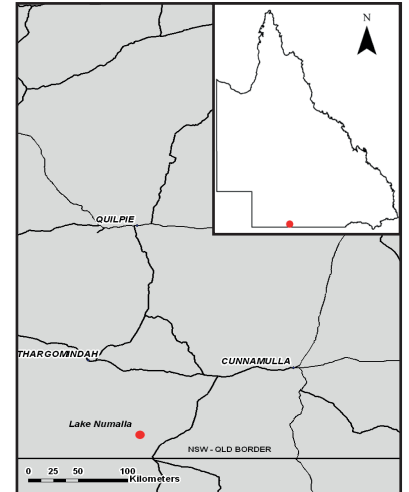


Study Area

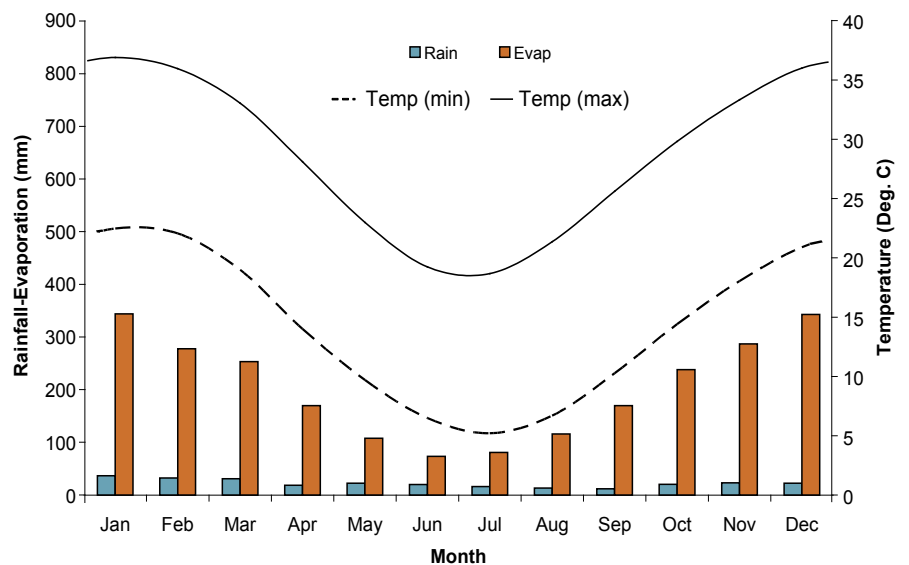
Lake Numalla is located in Currawinya National Park, approximately 120 km south-west of Eulo, South-West Queensland.

The area is an aggregation of large and small ephemeral lakes, claypans and drainage depressions¹. Lake Numalla is part of the Currawinya Lakes which are on the Ramsar List of Wetlands of International Importance.

At the time of sampling the lake was dry. Lake Numalla is an example of a semi-arid floodplain lake in the Mulga Lands Bioregion.



Climate²



The study area is situated within a semi-arid climatic region with no distinct wet or dry season. Evaporation exceeds rainfall in every month. The average annual rainfall for the area is 271 mm.

Landform and Inundation	Freshwater lake on gently undulating sand plains Freshwater permanently inundated lake from overland flow
Soils³	Hydrosols, Rudosols and Podisols
Vegetation⁴	<i>Eleocharis pallens</i> , with or without short grasses, with or without <i>Eragrostis australasica</i> open herbland on clays, associated with ephemeral lakes, billabongs and permanent waterholes (RE 6.3.11)
Geology⁵	Quaternary alluvium
Disturbance	No effective disturbance except grazing by hoofed animals



Australian Government

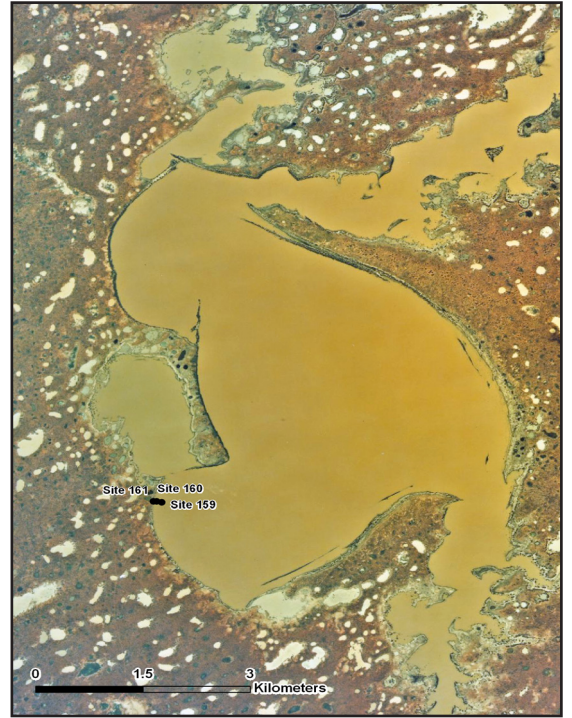


Queensland Government

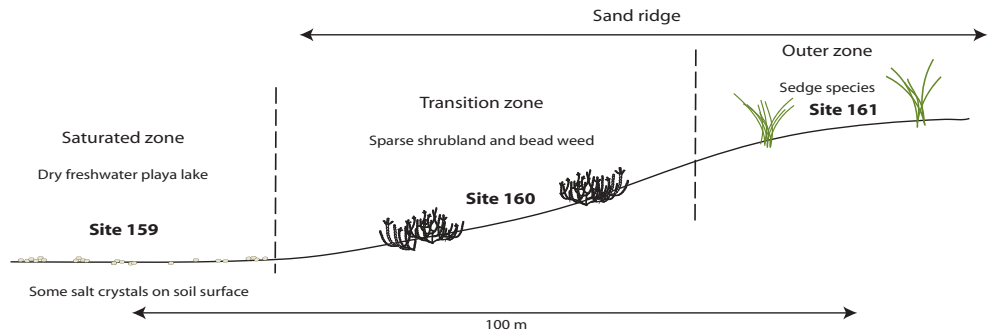
Queensland
Wetlands Program

Location

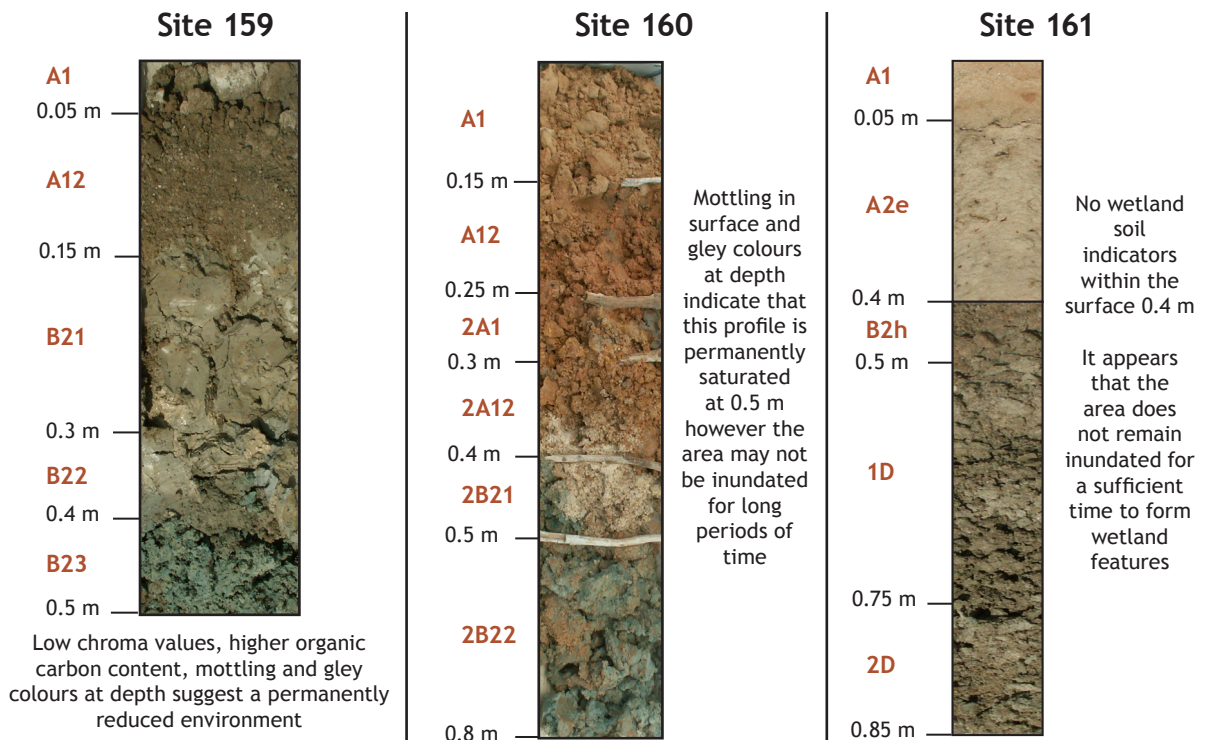
GDA94 • MGA Coordinates : 236184 E, 6816422 N, Zone 55 • Lat/Long : -28.75267 S, 144.29836 E\



Landscape Diagram



Soil Profiles



Soil Indicators Present (within 0.3 m of surface)

Indicator ⁶	Site 159	Site 160	Site 161
Organic materials and organic carbon (OC)*	No organic materials OC: 0.98%	No organic materials OC: 0.05%	No organic materials OC: <0.05% (sample taken at 0.2 m)
Matrix colour	Brownish grey to grey	Reddish yellow	Pink
Chroma (thickness of layer)**	Present (0.3 m)	Not present	Not present
Mottles and Segregations	Few <5 mm faint brown mottles Many <5 mm distinct red mottles Many 5-15 mm distinct brown mottles Common <2 mm saline crystals	Common <5 mm faint orange mottles Many <5 mm prominent orange mottles Few <2 mm saline crystals	Not present
Depth to groundwater	Not present	Not present	Not present
Ferruginous root channel and pore linings	Not present	Not present	Not present
pH ⁷	Moderately alkaline	Strongly alkaline	Mildly alkaline (sample taken at 0.2 m)
Texture	Silty light clay to medium heavy clay	Sand to silty clay	Sand
Acid sulfate material	Not present	Not present	Not present
Electrical Conductivity (EC) ⁷	Highly saline	Moderately saline	Non saline (sample taken at 0.2 m)

*Organic carbon % (Dumas method) and pH taken from surface (0-0.1 m)

**Chroma value is less than or equal to 2

Summary of Field Observations

- Organic carbon content increases moving into the saturated zone, whilst there is no visible accumulation of plant materials this can be attributed to the presence of microscopic algae
- Faint, distinct and prominent mottling all indicative of water fluctuation throughout soil profiles in the saturated and transition zone
- Gley colours and low chroma values in the saturated zone suggests a permanently reduced environment
- Ferruginous root channel linings (below 0.3 m) at site 161 indicate that the site has been waterlogged, there is also faint mottling at depth where clay content increases
- Evaporative profiles observed at sites 159 and 161, with salt accumulation on the soil surface



October 2007



April 2008

Soil Morphology

Site 159		Classification			Australian Soil Classification				Mottled, Hypersalic Hydrosol		
		Landform Element			Playa				Flat		
		Morphological Type									
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence		
A1	0 to .05	-	medium heavy clay	dark greyish brown (2.5Y42)	few (2-10%) fine (<5 mm) faint brown mottles	none	strong 2-5 mm granular	common (10-20%) fine (<2 mm) saline crystals	-		
A12	.05 to .15	-	medium heavy clay	grey (5Y51)	many (20-50%) fine (<5 mm) distinct red mottles	none	strong 5-10 mm subangular blocky	very few (<2%) fine (<2 mm) saline crystals	-		
B21	.15 to .3	-	silty light clay	light brownish grey (2.5Y62)	many (20-50%) medium (5-15 mm) distinct brown mottles	none	massive	none	-		
B22	.3 to .4	-	silty light clay	grey (5Y51)	common (10-20%) fine (<5 mm) faint grey mottles	none	massive	none	-		
B23	.4 to .5	-	silty light clay	greenish grey (10G61)	common (10-20%) fine (<5 mm) faint grey mottles	none	massive	none	-		
Site 160		Classification			Australian Soil Classification				Basic, Halic, Hypersalic Rudosol		
		Landform Element			Lunette				Lower slope		
		Morphological Type									
Horizon	Depth (m)	Boundary	Texture	Colour	Mottles	Coarse Fragments	Structure	Segregations	Consistence		
A1	0 to .15	-	loamy sand	reddish yellow (5YR76)	none	none	single grain	few (2-10%) fine (<2 mm) saline crystals	-		
A12	.15 to .25	-	sand	reddish yellow (5YR78)	common (10-20%) fine (<5 mm) faint orange mottles	none	single grain	none	-		
2A1	.25 to .3	-	silty clay	reddish yellow (5YR78)	many (20-50%) fine (<5 mm) prominent orange mottles	none	massive	none	-		
2A12	.3 to .4	-	sand	reddish yellow (5YR68)	many (20-50%) medium (5-15 mm) distinct orange mottles	none	single grain	none	-		
2B21	.4 to .5	-	sand	very pale brown (10YR74)	common (10-20%) fine (<5 mm) distinct red mottles	few (2-10%) subangular quartz small pebbles (2-6 mm)	single grain	none	-		
2B22	.5 to .8	-	sandy light clay	greenish grey (10G51)	common (10-20%) coarse (15-30 mm) faint grey mottles	none	massive	none	-		

Site 161		Classification			Australian Soil Classification				Humic, Semiaquic Podosol													
		Boundary			Colour			Mottles			Coarse Fragments			Structure			Segregations			Consistence		
Horizon		Depth (m)		Texture		Mottles		Colour		Coarse Fragments		Structure		Segregations		Consistence						
A1		0 to .05	gradual to	sand	pale brown (10YR63)	none	none	single grain	none	single grain	none	single grain	none	single grain	none	single grain	-					
A2e		.05 to .4	clear to	sand	pink (7.5YR83)	none	none	single grain	none	single grain	none	single grain	none	single grain	none	single grain	-					
B2h		.4 to .5	abrupt to	sand	brown (7.5YR42)	none	none	massive	none	massive	none	massive	few (2-10%) fine (<2 mm) ferruginous root linings	massive	massive	few (2-10%) fine (<2 mm) ferruginous root linings	-					
1D		.5 to .75	clear to	sandy medium heavy clay	light brownish grey (2.5Y62)	none	none	massive	none	massive	none	massive	few (2-10%) fine (<2 mm) ferruginous root linings	massive	massive	few (2-10%) fine (<2 mm) ferruginous root linings	-					
2D		.75 to .85	-	sandy medium heavy clay	light brownish grey (2.5Y62)	common (10-20%) fine (<5 mm) faint brown mottles	common (10-20%) fine (<5 mm) faint brown mottles	-	none	-	none	-	none	-	none	-	-					

Soil Chemistry

Site	Depth (m)	pH*	EC dS/m	Cl mg/kg	NO3-N mg/kg	TC** %	TN** %	Ca meq/100g	Mg meq/100g	Na meq/100g	K meq/100g	ESP %	CEC meq/100g
159	0.00-0.10	8.3	19.6	27000	59	0.98	0.1	5.8	5.28	23.6	3.31	63.8	37
	0.20-0.30	8.3	17.2	24200	20	1.08	0.1	4.57	4.01	21	2.58	60	35
	0.40-0.50	9.2	3.45	3640	22	0.49	<0.03	3.17	3.42	8.07	3.7	36.7	22
160	0.00-0.10	9.1	2.86	2790	11	0.05	<0.03	1.53	0.34	1.1	0.95	24.2	5
	0.20-0.30	7.9	1.2	1280	4	<0.05	<0.03	0.598	<0.310	0.85	0.41	28.3	<3
	0.40-0.50	7.6	0.83	476	1	0.07	<0.03	1.16	<0.310	0.41	0.24	13.7	<3
161	0.20-0.30	7.5	0.01	<20	1	<0.05	<0.03	<0.180	<0.310	<0.091	0.09	3	<3
	0.40-0.50	8.3	0.15	101	2	0.09	<0.03	0.946	0.36	0.76	0.27	25.3	<3

*Aqueous 1:5

**Total carbon and total nitrogen

References

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