



Quarterly Water Quality Status of the Vaal Dam Reservoir Catchment

1 April 2011 - 31 March 2012

Sample Points	Sample Point Description	Ammonia	Chloride	Fluoride	M-Alkalinity	Nitrate	Phosphate	Sulphate	Chemical Oxygen Demand	Conductivity	pH	E. coli
VSV	Sandspruit above Volksrust 27°14'26.03"S 29°53'21.78"E	0.12	<10	0.26	115	<0.10	<0.036	24	10	30	7.70	
		0.12	13	0.18	130	<0.10	<0.05	26	13	34	7.90	
		0.12	13	0.27	81	<0.10	<0.05	37	17	31	7.20	
		0.12	12	0.47	65	1.46	<0.05	25	26	20	7.00	
VSS	Sandspruit below Vaal River @ Klipplaatdrift 27°12'30.82"S 29°26'12.83"E	0.12	<10	0.32	190	<0.10	<0.036	38	10	43	8.20	
		0.12	13	0.22	225	<0.10	<0.05	43	13	51	8.50	
		0.12	15	0.35	165	0.13	<0.05	35	13	47	8.20	
		0.12	<10	0.32	110	3.79	<0.05	25	19	33	7.50	
KB	Klip River @ Barnardskop 27°28'12.33"S 29°36'1.76"E	0.12	<10	0.19	64	0.12	<0.036	13	14	18	7.30	
		0.12	<10	0.05	56	<0.10	<0.05	9	14	16	7.70	
		0.12	<10	0.17	56	0.12	<0.05	8	16	19	8.00	
		0.12	<10	0.12	110	0.42	<0.05	14	17	12	6.90	
KW	Klip @ Winkelhaak 27°14'41.55"S 29°23'59.91"E	0.12	<10	0.24	105	<0.10	<0.036	14	9	26	7.50	
		0.12	11	0.10	99	<0.10	<0.05	16	13	26	7.40	
		0.12	12	0.19	85	0.18	<0.05	26	13	31	7.70	
		0.12	<10	0.18	55	1.90	<0.05	8	18	16	6.60	
KD	Klip River @ De Langesdrift 27°10'57.77"S 29°14'5.54"E	0.12	<10	0.30	165	<0.10	<0.036	26	10	38	7.90	
		0.12	11	0.19	165	<0.10	<0.05	24	13	39	8.00	
		0.17	13	0.24	480	8.10	<0.05	30	15	43	7.70	
		0.12	<10	0.21	93	<0.10	<0.05	14	17	24	7.10	
KSV	Spruitsonderdrift downstream of Vrede 27°21'8.15"S 29°10'16.87"E	0.12	15	0.31	185	0.62	0.100	32	20	44	8.30	
		0.12	25	0.23	240	0.46	0.150	41	27	56	8.90	
		0.12	31	0.31	195	0.50	0.460	43	26	63	7.90	
		0.12	15	0.27	185	0.51	<0.05	33	27	48	7.70	
VDS	Vaal River downstream of Standerton 27° 0'55.97"S 129° 30'E	0.12	11	0.28	180	0.27	<0.036	29	15	42	8.00	
		0.12	13	0.19	190	0.34	<0.05	27	18	44	8.40	
		0.12	15	0.27	105	<0.10	<0.05	20	21	41	8.10	
		0.12	<10	0.43	115	1.00	<0.05	19	19	31	7.10	
VGB	Gladdebrift Bridge @ Villiers 26°58'31.24"S 28°43'47.18"E	0.12	<10	0.24	180	<0.10	0.040	22	15	40	8.40	
		0.12	16	0.20	190	0.10	<0.05	37	17	46	8.40	
		0.12	<10	0.34	180	<0.10	<0.05	22	25	46	8.40	
		0.12	<10	0.28	115	1.60	<0.05	20	24	27	6.70	
VV	Vaal @ Villiers 27° 1'20.13"S 28°36'0.32"E	0.12	13	0.28	165	0.11	<0.036	33	16	40	8.30	98
		0.12	17	0.15	185	<0.10	<0.05	37	16	47	8.30	47
		0.12	17	0.26	205	<0.10	<0.05	38	22	52	8.10	6
		0.12	<10	0.29	105	1.50	<0.05	27	20	28	6.50	84
VD4I	Vaal Dam 4 Integrated - Vaal River upstream of Vaal Marina 26°53'27.99"S 28°15'0.16"E	0.12	<10	0.24	70	0.34	<0.036	15	24	20	7.60	5
		0.12	<10	0.10	72	0.33	<0.05	16	19	20	7.50	6
		0.12	<10	0.54	72	<0.10	<0.05	18	16	25	7.60	8
		0.12	13	0.54	140	<0.10	<0.05	33	29	32	7.60	2
WF	Wilge River @ Frankfort 27°16'18.00"S 28°29'28.41"E	0.12	<10	0.10	63	0.57	<0.036	8	14	16	7.30	48500
		0.12	<10	<0.05	56	0.29	0.120	8	<10	14	7.10	3560
		0.12	<10	0.08	135	0.47	<0.05	7	10	14	7.10	335
		0.12	<10	0.11	74	0.73	<0.05	8	13	13	6.40	275
VD3I	Vaal Dam 3 Integrated - Wilge River downstream of Oranjeville 26°59'1.64"S 28°13'25.08"E	0.12	<10	0.20	57	0.30	<0.036	10	22	16	7.60	6
		0.12	<10	0.12	68	0.27	<0.05	10	16	17	7.40	71
		0.12	<10	0.21	59	<0.10	<0.05	14	14	19	7.60	2
		0.12	<10	0.51	135	0.49	<0.05	27	17	19	6.90	3
VD2I	Vaal Dam 2 Integrated - Confluence of Vaal & Wilge 26°53'48.81"S 28°11'9.92"E	0.12	<10	0.31	57	0.44	<0.036	12	21	16	7.50	8
		0.12	<10	0.10	62	0.36	<0.05	11	16	17	7.40	21
		0.12	<10	1.30	55	<0.10	<0.05	13	14	19	7.40	3
		0.12	<10	0.66	135	0.19	<0.05	23	18	20	6.90	1
VD1I	Vaal Dam 1 Integrated @ RW intake 26°53'0.26"S 28° 7'14.35"E	0.12	<10	0.21	57	0.40	<0.036	13	21	17	7.50	4
		0.12	<10	0.08	59	0.41	0.050	12	16	17	7.30	7
		0.12	<10	0.21	52	0.20	<0.05	15	15	18	7.40	110
		0.12	<10	0.37	130	2.40	<0.05	30	17	20	6.90	50
S-ST_NEW	Standerton Sewage Works 26°58'24.60"S 29°13'52.87"E	32.00	44	0.23	260	<0.10	4.700	25	140	76	7.10	3505330
		28.00	47	0.24	240	0.31	4.700	39	240	76	7.10	3315530
		33.00	42	0.33	270	<0.10	4.700	15	170	78	7.20	5436670
		30.00	40	0.48	240	0.18	4.000	31	170	75	6.90	5395670

Sewage Works Compliance (where applicable) to General Standard (GN 1191 Oct 1999)

Sample Points	Sample Point Description	Ammonia	Fluoride	Nitrate	Phosphate	Sulphate	Chemical Oxygen Demand	Conductivity	pH	E. coli		
S-ST_NEW	Standerton Sewage Works 26°58'24.60"S 29°13'52.87"E	32.00	44	0.23	260	<0.10	4.700	25	140	76	7.10	3505330
		28.00	47	0.24	240	0.31	4.700	39	240	76	7.10	3315530
		33.00	42	0.33	270	<0.10	4.700	15	170	78	7.20	5436670
		30.00	40	0.48	240	0.18	4.000	31	170	75	6.90	5395670

Key

Sample Point	Description	Ammonia
VD1I	Vaal Dam 1 Integrated @ RW intake	0.12
		0.12
		0.12
		0.12

- 1 Apr 11 - 30 Jun 11
- 1 July 11 - 30 Sept 11
- 1 Oct 11 - 31 Dec 11
- 1 Jan 12 - 31 Mar 12

Water Quality Guidelines

- Ideal
- Acceptable
- Tolerable
- Unacceptable
- No sample or result available

In-stream Water Quality Guidelines for the Vaal Dam Catchment

Variables	Measured as	Ideal Catchment Background	Acceptable Management Target	Tolerable Interim Target	Unacceptable
Physical					
Conductivity	mS/m	< 10	10 - 30	30 - 45	> 45
pH	pH units	6.5 - 8.5			< 6.5; > 8.5
Organic					
Chemical Oxygen Demand (COD)	mg/l	< 10	10 - 15	15 - 20	> 20
Macro Elements					
Ammonia (NH ₄)	mg/l	< 0.2	0.2 - 0.5	0.5 - 1.0	> 1
Chloride (Cl)	mg/l	< 25	25 - 50	50 - 75	> 75
Fluoride (F)	mg/l	< 0.05	0.05 - 0.20	0.2 - 0.4	> 0.4
Alkalinity	CaCO ₃ mg/l	< 40	40 - 75	75 - 120	> 120
Nitrate (NO ₃)	mg/l	< 0.1	0.1 - 0.2	0.2 - 0.3	> 0.3
Phosphate (PO ₄)	mg/l	< 0.05	0.05 - 0.25	0.25 - 0.50	> 0.5
Sulphate (SO ₄)	mg/l	< 20	20 - 45	45 - 70	> 70
Bacteriological					
Faecal coliforms	counts/100ml	< 10	10 - 60	60 - 120	> 120

Sewage Works Compliance to General Standard (GN 1191 Oct 1999)

Variables	Measured as	Acceptable Management Target	Unacceptable
Physical			
Conductivity	mS/m	<150	>=150
pH	pH units	5.5 - 9.5	< 5.5; > 9.5
Organic			
Chemical Oxygen Demand (COD)**	mg/l	<75	>=75
Macro Elements			
Ammonia (NH ₄)	mg/l	<3	>=3
Fluoride (F)	mg/l	<1	>=1
Nitrate (NO ₃)	mg/l	<15	>=15
Phosphate (PO ₄)	mg/l	<10	>10
Bacteriological			
Faecal coliforms	counts/100ml	<1000	>=1000

** After removal of algae