



Quarterly Water Quality Status of the Vaal Dam Reservoir Catchment

1 July 2011 - 30 June 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	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	1.49	<-0.05	25	26	20	7.00	
		0.12	<10	0.30	91	0.12	<-0.05	20	<10	26	7.80	
VSS	Sandspruit below Vaal River @ Klipplaatdrift 27°12'30.82"S 29°26'12.83"E	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	3.70	<-0.05	25	19	33	7.50	
		0.12	15	0.41	255	0.41	<-0.05	32	18	54	8.20	
KB	Klip River @ Barnardskop 27°28'12.33"S 29°36'1.76"E	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	
		0.12	<10	0.15	61	<0.10	0.060	<5.0	<10	15	7.50	
KW	Klip @ Winkelhaak 27°14'41.55"S 29°23'59.91"E	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	
		0.12	<10	0.18	115	0.34	<-0.05	7	<10	26	7.60	
KD	Klip River @ De Langesdrift 27°10'57.77"S 29°14'5.54"E	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	
		0.12	<10	0.25	195	0.27	<-0.05	17	<10	43	8.10	
KSV	Spruitsonderdrift downstream of Vrede 27°21'8.15"S 29°10'16.87"E	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	
		0.12	42	0.31	265	0.70	0.250	44	22	71	8.70	
VDS	Vaal River downstream of Standerton 27° 0'55.97"S 29° 1'29.30"E	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	
		0.12	14	0.30	160	0.56	<-0.05	25	21	40	8.10	
VGB	Gladdeffdrift Bridge @ Villiers 26°58'31.24"S 28°43'47.18"E	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	
		0.12	15	0.28	165	0.28	<-0.05	22	17	41	8.40	
VV	Vaal @ Villiers 27°1'20.13"S 28°36'0.32"E	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
		0.12	22	0.40	170	0.16	<-0.05	50	26	77	8.40	345
VD4I	Vaal Dam 4 Integrated - Vaal River upstream of Vaal Marina 26°53'27.99"S 26°15'0.16"E	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
		0.12	12	<0.30	120	<0.10	<-0.05	28	22	33	7.80	0
WF	Wilge River @ Frankfort 27°16'18.00"S 28°29'28.41"E	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
		0.12	<10	0.13	44	0.82	<-0.05	57	<10	11	7.30	69
		0.12	<10	0.12	68	0.27	<-0.05	10	16	17	7.40	71
VD3I	Vaal Dam 3 Integrated - Wilge River downstream of Oranjeville 26°59'1.64"S 28°13'25.08"E	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
		0.12	<10	0.15	71	0.34	0.070	16	11	18	7.30	1
		0.12	<10	0.10	62	0.36	<-0.05	11	16	17	7.40	21
VD2I	Vaal Dam 2 Integrated - Confluence of Vaal & Wilge 26°53'48.81"S 28°11'9.92"E	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
		0.12	<10	0.17	82	0.11	<-0.05	25	<10	21	7.30	1
		0.12	<10	0.08	59	0.41	0.050	12	16	17	7.30	7
VD1I	Vaal Dam 1 Integrated @ RW intake 26°53'0.26"S 28°7'14.35"E	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
		0.12	<10	0.22	82	0.12	<-0.05	25	<10	21	7.30	10
		23.00	47	0.24	240	0.31	4.700	39	240	76	7.10	3315530
S-ST_NEW	Standerton Sewage Works 26°58'24.60"S 29°13'52.87"E	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
		23.00	42	0.21	260	0.22	3.400	48	175	78	7.50	5291800
		23.00	42	0.21	260	0.22	3.400	48	175	78	7.50	5291800

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

Sample Points	Sample Point Description	Ammonia	Chloride	Fluoride	M-Alkalinity	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	28.00	44	0.24	260	0.31	4.700	25	240	76	7.10	3315530
		33.00	47	0.33	240	<0.10	4.700	39	170	78	7.20	5436670
		30.00	42	0.48	270	0.18	4.000	15	170	75	6.90	5395670
		23.00	40	0.21	240	0.22	3.400	31	175	78	7.50	5291800

Key

VD1I	Vaal Dam 1 Integrated @ RW intake	0.12	-	1 Apr 11 - 30 Jun 11
		0.12	-	1 July 11 - 30 Sept 11
		0.12	-	1 Oct 11 - 31 Dec 11
		0.12	-	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