Terms and Conditions of Use of Digitised Theses from Trinity College Library Dublin

Copyright statement

All material supplied by Trinity College Library is protected by copyright (under the Copyright and Related Rights Act, 2000 as amended) and other relevant Intellectual Property Rights. By accessing and using a Digitised Thesis from Trinity College Library you acknowledge that all Intellectual Property Rights in any Works supplied are the sole and exclusive property of the copyright and/or other IPR holder. Specific copyright holders may not be explicitly identified. Use of materials from other sources within a thesis should not be construed as a claim over them.

A non-exclusive, non-transferable licence is hereby granted to those using or reproducing, in whole or in part, the material for valid purposes, providing the copyright owners are acknowledged using the normal conventions. Where specific permission to use material is required, this is identified and such permission must be sought from the copyright holder or agency cited.

Liability statement

By using a Digitised Thesis, I accept that Trinity College Dublin bears no legal responsibility for the accuracy, legality or comprehensiveness of materials contained within the thesis, and that Trinity College Dublin accepts no liability for indirect, consequential, or incidental, damages or losses arising from use of the thesis for whatever reason. Information located in a thesis may be subject to specific use constraints, details of which may not be explicitly described. It is the responsibility of potential and actual users to be aware of such constraints and to abide by them. By making use of material from a digitised thesis, you accept these copyright and disclaimer provisions. Where it is brought to the attention of Trinity College Library that there may be a breach of copyright or other restraint, it is the policy to withdraw or take down access to a thesis while the issue is being resolved.

Access Agreement

By using a Digitised Thesis from Trinity College Library you are bound by the following Terms & Conditions. Please read them carefully.

I have read and I understand the following statement: All material supplied via a Digitised Thesis from Trinity College Library is protected by copyright and other intellectual property rights, and duplication or sale of all or part of any of a thesis is not permitted, except that material may be duplicated by you for your research use or for educational purposes in electronic or print form providing the copyright owners are acknowledged using the normal conventions. You must obtain permission for any other use. Electronic or print copies may not be offered, whether for sale or otherwise to anyone. This copy has been supplied on the understanding that it is copyright material and that no quotation from the thesis may be published without proper acknowledgement.

THE ATTENUATION CAPACITY OF DIFFERENT SUBSOILS RECEIVING DOMESTIC WASTEWATER EFFLUENT

by

Cormac Ó Súilleabháin

APPENDICES

A Thesis Submitted for the Degree of Doctor of Philosophy
to the University of Dublin, Trinity College.

August 2004

Department of Civil, Structural and Environmental Engineering
University of Dublin
Trinity College
Dublin

APPENDICES

APPENDIX A

SITE ASSESSMENT FORMS & PARTICLE SIZE DISTRIBUTION CURVES

SITE 1: ROCHESTOWN

APPENDIX A : SITE CHARACTERISATION FORM

1.0 GENERAL DETAILS (from planning application)

PLANNING APPLICATION Ref. No. : XXXX

NAME & ADDRESS OF APPLICANT : Site 1

SITE LOCATION AND TOWNLAND : Rochestown
Brannockstown
Co. Kildare

TELEPHONE No. :

FAX No. : **E-MAIL :**

MAXIMUM No. OF RESIDENTS	5	**No. OF DOUBLE BEDROOMS :**	1	**No. OF SINGLE BEDROOMS :**	3

PROPOSED CAPACITY OF SEPTIC TANK (litres) :	4000 litres	**NUMBER OF CHAMBERS :**	2

PROPOSED WATER SUPPLY : (tick as appropriate)	**Mains**	**Private well / borehole**	**Group well / borehole**
	√		

2.0 DESK STUDY

Soil type: Grey-Brown Podzolic	**Bedrock type:** Carrighill (CZ) formation – calcareous greywacke & shale
Subsoil type: Gravels	**Aquifer type:** Pu – bedrock generally unproductive
Vulnerability class: High	**Groundwater Protection Response:** R1

Presence of significant sites:
(archaeological, natural and historical)

None

Zoning in county development plan:

Not zoned

Past experience in the area:

None

Comments:

The proposed percolation area lies within the catchment area of the Liffey river. However, the river lies approximately 0.75 km to the north and thus the minimum separation distances outlined by the EPA (EPA, 2000) are met.

3.0 ON-SITE ASSESSMENT

3.1 Visual Assessment

TOPOGRAPHY: Site located in a hollow. **LANDSCAPE:** Free-draining farmland **GEOLOGY:** No obvious geological features.	**SLOPE:** STEEP (>1:5) SHALLOW (1:5 – 1:20) RELATIVELY FLAT (<1:20) √

SURFACE FEATURES

OUTCROPS: None

HOUSES: Nearest dwelling 0.7 km to north east.

DITCHES: None

WELLS: One on site that is no longer in use. When dipped the water level was found to be 7m below ground level or approximately 4.2m below the invert of the percolation trench.

SPRINGS: None

KARST FEATURES: None

ROADS: Site adjacent to regional road R413

WATERCOURSE : Stream flowing in ditch approximately 150m to west in direction of Liffey that is 0.75 km to north.

LAKES/SURFACE WATER PONDING/ BEACH/SHELLFISH AREAS/ WETLANDS :
Adjacent field approximately 40m north of the proposed percolation area experiences surface ponding during the winter months.

SITE BOUNDARIES : Clearance distances as outlined in EPA 2000 adhered to.

EXISTING LAND USE : Grazing for livestock.

LOCAL DRAINAGE: No obvious indicators of poor drainage in immediate vicinity of proposed percolation area.

TYPE OF VEGETATION : Grassland, nettles, docks, dandelions and daisies.

GROUND CONDITIONS: Dry and solid underfoot

COMMENTS:
The potential targets that exist for contamination from the discharge of wastewater are the groundwater and the adjacent stream. The degree of risk and hence the appropriate treatment system will thus depend on the trial hole inspection and results of the percolation test.

3.2 Trial Hole

Depth of Trial Hole: 2.1m	**Date and Time of excavation:** 4/2/02 11:00 **Date and Time of examination:** 8/2/02 10:00

Depth from ground surface to bedrock (m): Bedrock not reached

Depth from ground surface to water table (m): Watertable not reached

Soil Type: Clay loam **Subsoil Type** : sandy Silt (w/clay)

Soil / Subsoil Information

	Soil / subsoil Texture & Classification	**Soil Structure**	**Density**	**Colour**	**Preferential Flowpaths**
0.1M 0.2M 0.3M	A Horizon	Crumb	Medium	Dark brown	Roots
0.4M 0.5M 0.6M 0.7M 0.8M 0.9M	sandy Clay (w/silt)	Structureless -massive	Medium	Reddish brown	Some roots and macropores
1.0M 1.1M 1.2M 1.3M 1.4M 1.5M 1.6M 1.7M 1.8M 1.9M 2.0M 2.1M	sandy Silt (w/clay)	Structureless -massive	Medium	Brown	None evident
2.2M 2.3M 2.4M 2.5M	Base of hole				

BS5930 Analysis :
Cohesive Test : Yes **Thread Test :** Moderate plasticity **Ribbon Test :** 55 mm
Dilatancy Test : Slow **Result** : sandy Silt (w/clay)

3.3 Percolation Test

Type of Test *(T-test or P-test)* T-test

Percolation Test hole	1	2
Depth from ground surface to top of hole (mm) – **A**	550mm	550mm
Depth from ground surface to bottom of hole (mm) – **B**	950mm	950mm
Depth of hole (mm) [**B-A**]	400mm	400mm
Dimensions of hole [length x breadth (mm)]	300mm x 300mm	300mm x 300mm
Date of Test	5/2/2002	5/2/2002
Date pre-soaking started	4/2/2002	4/2/2002
Time filled to 400mm	10:50	10:46
Time water level at 300mm	11:45	12:13

	Test Hole No. 1			Test Hole No. 2		
Fill No.	Start Time (at 300mm)	Finish Time (at 200mm)	Δt (minutes)	Start Time (at 300mm)	Finish Time (at 200mm)	Δt (minutes)
1	11:45	13:05	80	12:13	14:25	132
2	13:08	14:33	85	14:26	16:53	147
3	14:33	16:10	97	16:53	19:22	149
		Average Δt (minutes)	**87**		Average Δt (minutes)	**144**

At hole no. 1 : average $\Delta t/4 = t_1 = 22$ At hole no. 2 : average $\Delta t/4 = t_2 = 36$

T value = $(t_1 + t_2)/2 =$ **28** (minute/25mm) → Result of Test **PASSED**

Comments

Site suitable for conventional septic tank with adequate percolation area in accordance with the EPA Guidance Manual (2000). Also suitable for mechanically aerated system or intermittent filter system.

Note : P-test not required.

4.0 CONCLUSION

Integrate the information from the desk study and on-site assessment (i.e. visual assessment. Trial hole and percolation tests) above and conclude the type of system that is appropriate. This information is also used to choose the optimum final disposal route of the treated wastewater.

Suitable for :

(a) Septic tank & soil percolation system	**SUITABLE**
(b) Septic tank and intermittent filter system and polishing unit ; or septic tank & constructed wetland & polishing unit.	**SUITABLE**
(c) Mechanical aeration system & polishing unit.	**SUITABLE**

And SUITABLE for discharge to ***GROUNDWATER.***

5.0 RECOMMENDATION

Propose to install : Septic tank and mechanical aeration system with soil percolation system

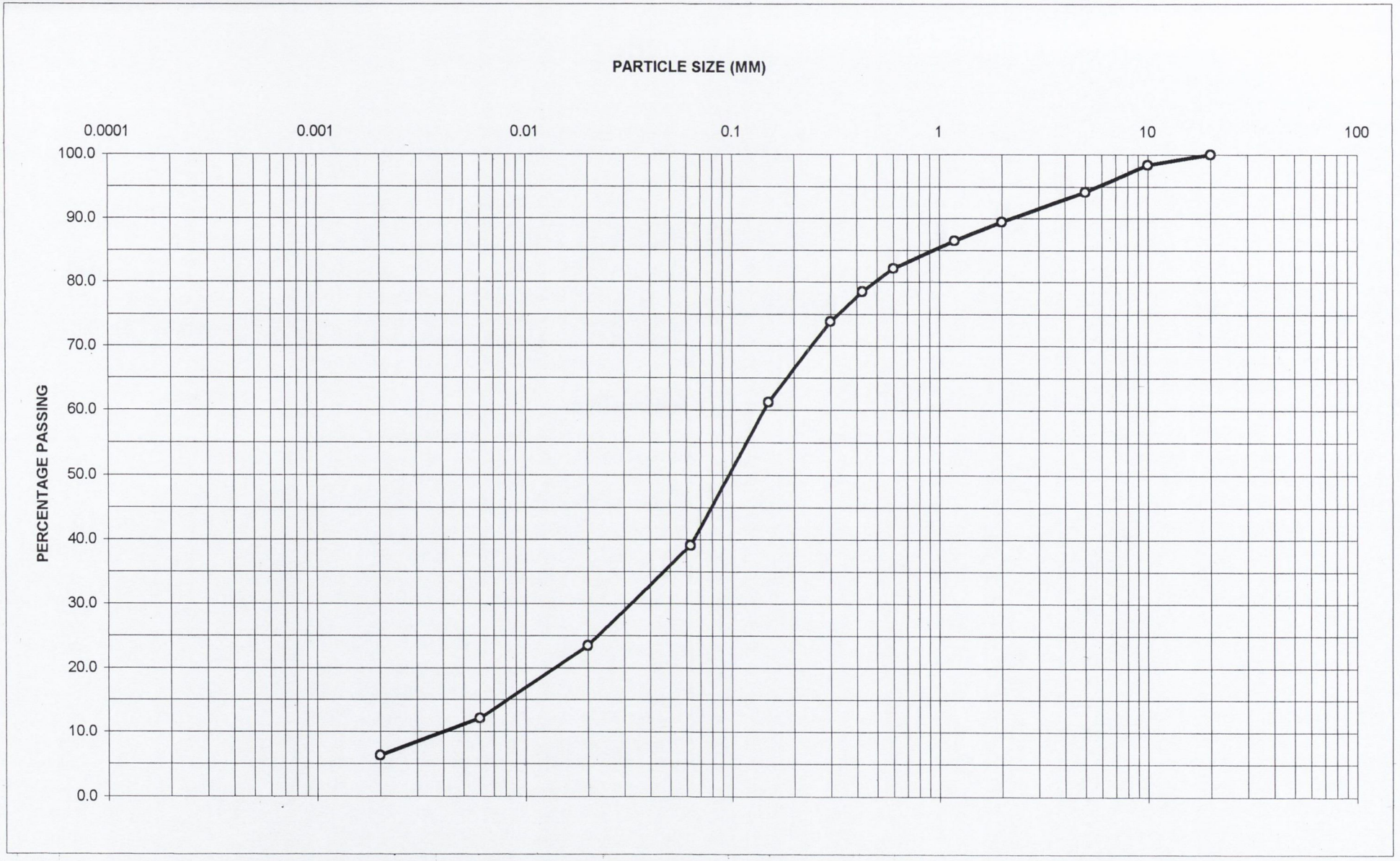
And discharge to : Groundwater

Signed : XXXX Address : XXX
Qualifications : XXXX
Date of report:

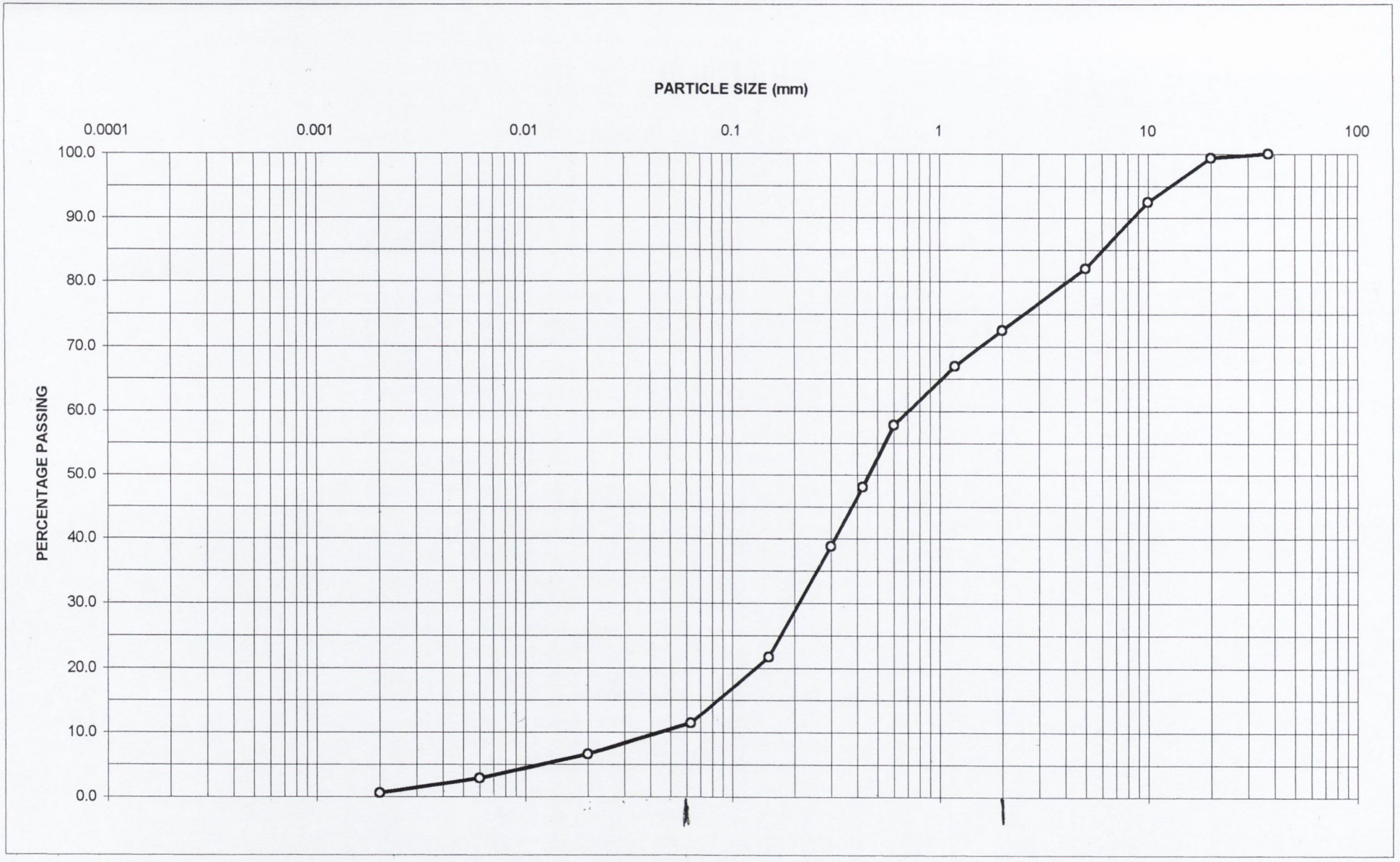
Phone : E-mail :

6.0 REVIEW (by Local Authority)

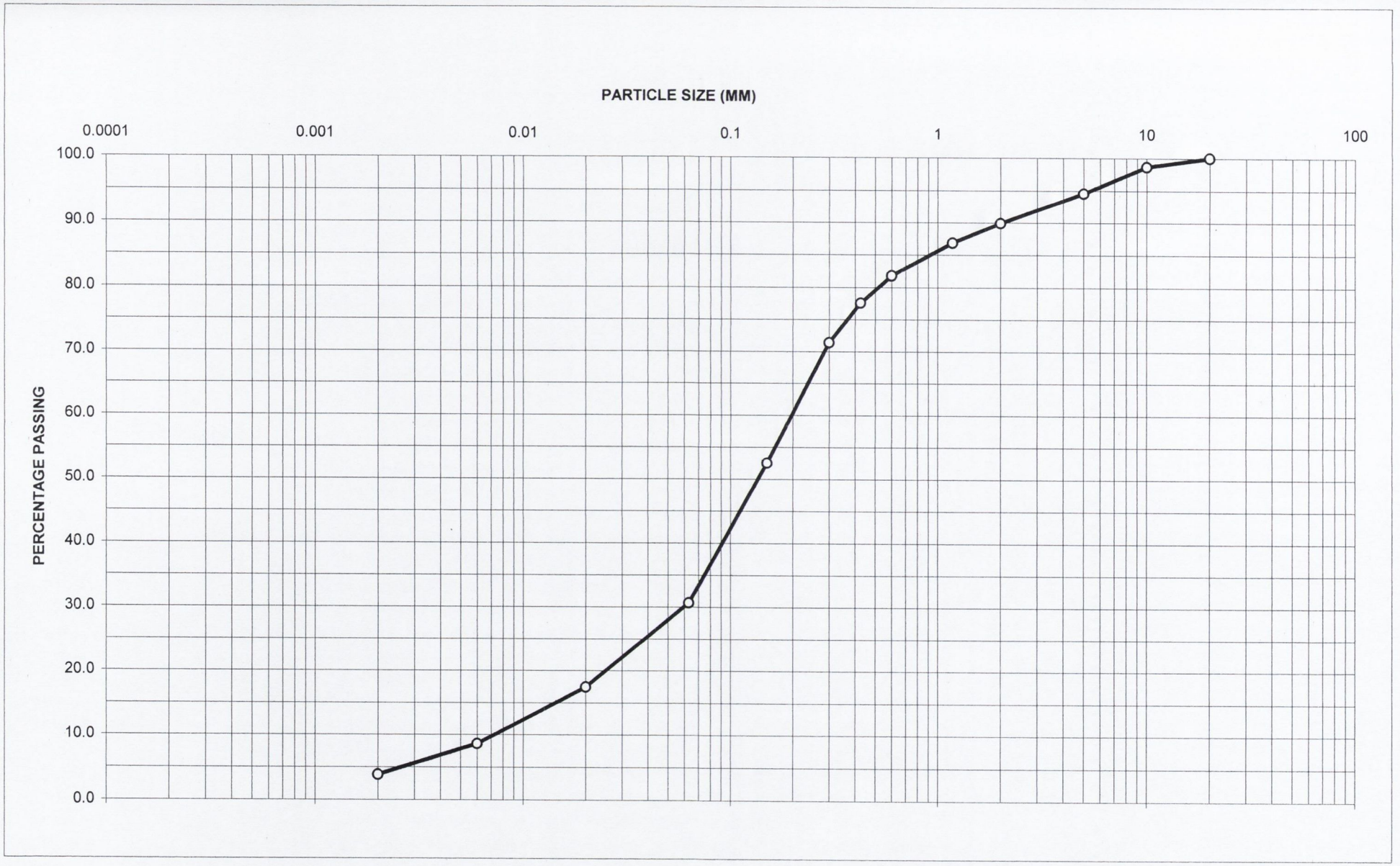
Site Visit	Date :
Inspection of trial hole	Date :
Inspection of percolation Test Holes	Date :
Comments :	
Signed :	**Date :**



Particle Size Distribution Curve for Sample Taken at 1.0m



Particle Size Distribution Curve for Sample Taken at 1.5m



Particle Size Distribution Curve for Sample Taken at 2.0m

SITE 2: THE CURRAGH

APPENDIX A : SITE CHARACTERISATION FORM

1.0 GENERAL DETAILS (from planning application)

PLANNING APPLICATION Ref. No. : XXXX

NAME & ADDRESS OF APPLICANT : Site 2

SITE LOCATION AND TOWNLAND : The Curragh

XXXX

TELEPHONE No. :

FAX No. : **E-MAIL :**

MAXIMUM No. OF RESIDENTS 4	**No. OF DOUBLE BEDROOMS :** 2	**No. OF SINGLE BEDROOMS :** 3

PROPOSED CAPACITY OF SEPTIC TANK (litres) : 2275 litres	**NUMBER OF CHAMBERS :** 2

PROPOSED WATER SUPPLY : (tick as appropriate)	**Mains**	**Private well / borehole**	**Group well / borehole**
	√		

2.0 DESK STUDY

Soil type: Grey-Brown Podzolic	**Bedrock type:** Richardstown Limestone (RK) – dark grey limestones, commonly cherty, partly dolomitised
Subsoil type: Gravels	**Aquifer type:** Rg – regionally important sand/gravel aquifer
Vulnerability class: High	**Groundwater Protection Response:** R1

Presence of significant sites:
(archaeological, natural and historical)

There is a barrow, a prehistoric tomb covered by a mound of earth, located approximately 250m south west of the site at 27880E 21275N.

Zoning in county development plan:

Not zoned

Past experience in the area:

None

Comments:

While the desk study judged the site characteristics to be consistent with the criteria outlined in the Wastewater Treatment Manuals (EPA 2000) and Groundwater Protection Schemes (Dept. of the Environment and Local Government, EPA and GSI, 2000) for the location of wastewater treatment systems an on-site assessment will be necessary to confirm its suitability

3.0 ON-SITE ASSESSMENT

3.1 Visual Assessment

TOPOGRAPHY: Sloping towards stream in north. **LANDSCAPE:** Free-draining farmland **GEOLOGY:** No obvious geological features.	**SLOPE:** STEEP (>1:5) SHALLOW (1:5 – 1:20) √ RELATIVELY FLAT (<1:20)

SURFACE FEATURES

OUTCROPS: None

HOUSES: Cottage which will be serviced by septic tank and constructed wetland in the process of being renovated approximately 30m north east. School 100m to south east.

DITCHES: Ditch with stream at bottom of field – 50m north.

WELLS: None.

SPRINGS: None

KARST FEATURES: None

ROADS: Regional road R413 passes approximately 60m to south west.

WATERCOURSE : Site slopes towards steam 50m to north.

LAKES/SURFACE WATER PONDING/ BEACH/SHELLFISH AREAS/ WETLANDS :

None

SITE BOUNDARIES : Clearance distances as outlined in EPA 2000 adhered to.

EXISTING LAND USE : Grazing for horses.

LOCAL DRAINAGE: No obvious indicators of poor drainage in the vicinity of proposed percolation area.

TYPE OF VEGETATION : Grassland,, docks, dandelions and daisies visible absence of indicators of poor drainage.

GROUND CONDITIONS: Dry and solid underfoot

COMMENTS: The potential targets that exist for contamination from the discharge of wastewater are the groundwater and the adjacent stream there are no obvious surface indicators to suggest that site would be unsuitable for installation of domestic wastewater treatment system. The degree of risk and hence the appropriate treatment system will thus depend on the trial hole inspection and results of the percolation test.

3.2 Trial Hole

Depth of Trial Hole: 2.2m	**Date and Time of excavation:** 6//02/02 11:00 **Date and Time of examination:** 8//02/02 13:00

Depth from ground surface to bedrock (m): Bedrock not reached

Depth from ground surface to water table (m): Watertable not reached

Soil Type: Clay loam **Subsoil Type** : sandy Clay (w/silt)

Soil / Subsoil Information

	Soil / subsoil Texture & Classification	**Soil Structure**	**Density**	**Colour**	**Preferential Flowpaths**
0.1M 0.2M 0.3M	A Horizon	Crumb	Medium	Dark brown	Roots
0.4M 0.5M **0.6M** 0.7M	Silt/Clay	Structureless -massive	Low	Brown	Some root ends and macropores present
0.8M 0.9M 1.0M 1.1M	sandy Clay (w/silt) interspersed with rounded cobbles	Structureless -massive	Medium	Reddish Brown	Macropores, cracks & voids around some cobble
1.2M 1.3M 1.4M 1.5M 1.6M 1.7M 1.8M 1.9M 2.0M 2.1M 2.2M	sandy Clay (w/silt) interspersed with rounded cobbles	Structureless -massive	Medium	Brown	Macropores, cracks & voids around some cobble
2.3M 2.4M 2.5M	Base of hole				

BS 5930 Analysis:
Cohesive Test : Yes **Thread Test :** High plasticity **Ribbon Test :** 110mm
Dilatancy Test : No **Result** : sandy Clay (w/silt)

3.3 Percolation Test

Type of Test *(T-test or P-test)* T-test

Percolation Test hole	1	2
Depth from ground surface to top of hole (mm) – **A**	550mm	550mm
Depth from ground surface to bottom of hole (mm) – **B**	950mm	950mm
Depth of hole (mm) [**B-A**]	400mm	400mm
Dimensions of hole [length x breadth (mm)]	300mm x 300mm	300mm x 300mm
Date of Test	7/2/2002	6/2/2002
Date pre-soaking started	6/2/2002	6/2/2002
Time filled to 400mm	11:19	11:21
Time water level at 300mm	12:04	11:38

	Test Hole No. 1			Test Hole No. 2		
Fill No.	Start Time (at 300mm)	Finish Time (at 200mm)	Δt (minutes)	Start Time (at 300mm)	Finish Time (at 200mm)	Δt (minutes)
1	12:04	13:11	67	11:38	12:15	37
2	13:11	14:30	79	12:15	13:00	45
3	14:30	15:46	76	13:00	13:47	47
		Average Δt (minutes)	**74**		Average Δt (minutes)	**43**

At hole no. 1 : average $\Delta t/4 = t_1 = 18$ At hole no. 2 : average $\Delta t/4 = t_2 = 10$

T value = $(t_1 + t_2)/2$ = **14** (minute/25mm) → Result of Test **PASSED**

Comments

Site suitable for conventional septic tank with adequate percolation area in accordance with the EPA Guidance Manual (2000). Also suitable for mechanically aerated system or intermittent filter system.

Note : P-test not required.

4.0 CONCLUSION

Integrate the information from the desk study and on-site assessment (i.e. visual assessment. Trial hole and percolation tests) above and conclude the type of system that is appropriate. This information is also used to choose the optimum final disposal route of the treated wastewater.

Suitable for :

(a) Septic tank & soil percolation system	**SUITABLE**
(b) Septic tank and intermittent filter system and polishing unit ; or septic tank & constructed wetland & polishing unit.	**SUITABLE**
(c) Mechanical aeration system & polishing unit.	**SUITABLE**

And SUITABLE for discharge to ***GROUNDWATER.***

5.0 RECOMMENDATION

Propose to install: Septic tank with soil percolation system

And discharge to : Groundwater

Signed : XXXX Address : XXX
Qualifications : XXXX
Date of report:

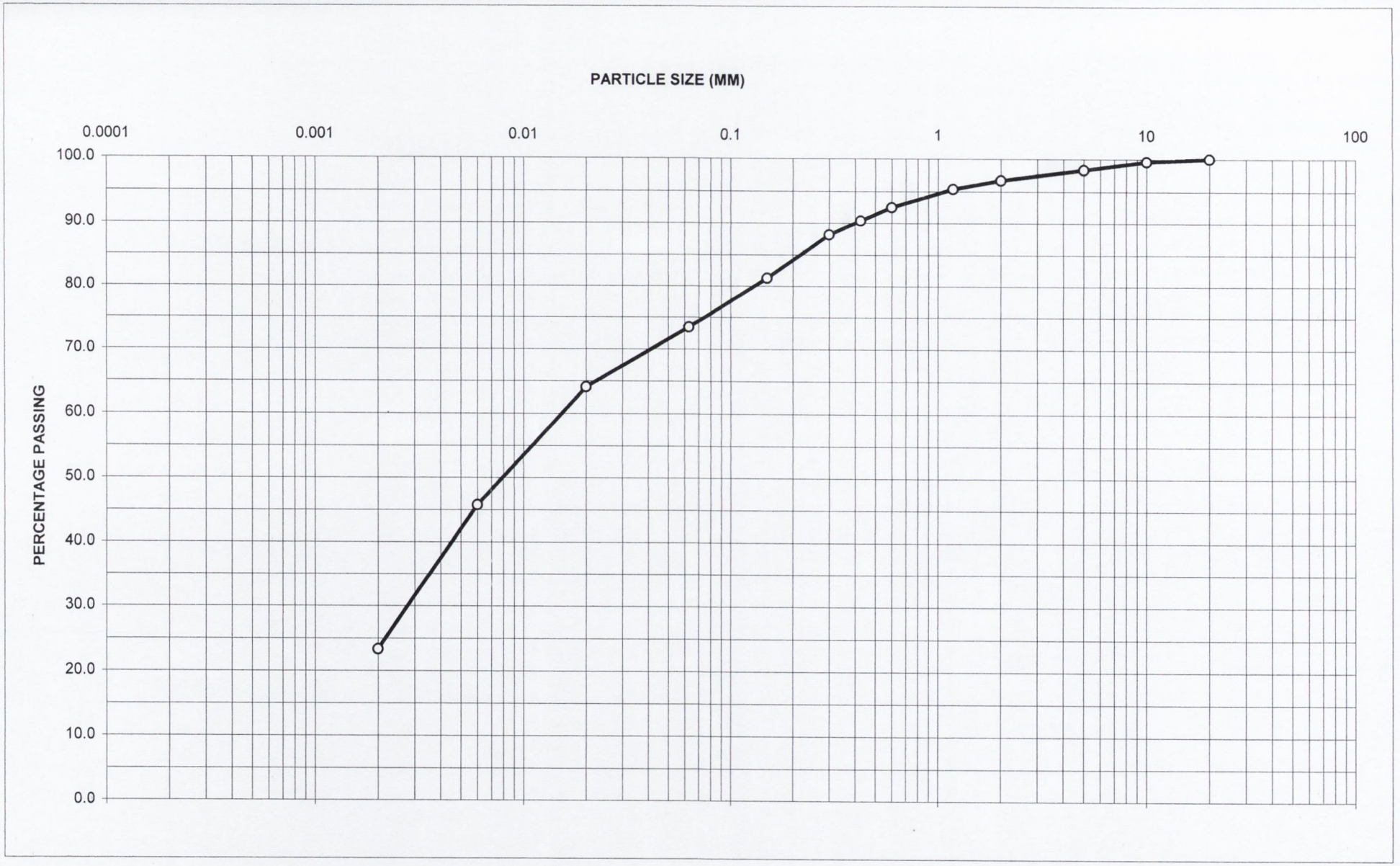
Phone : Fax : E-mail :

6.0 REVIEW (by Local Authority)

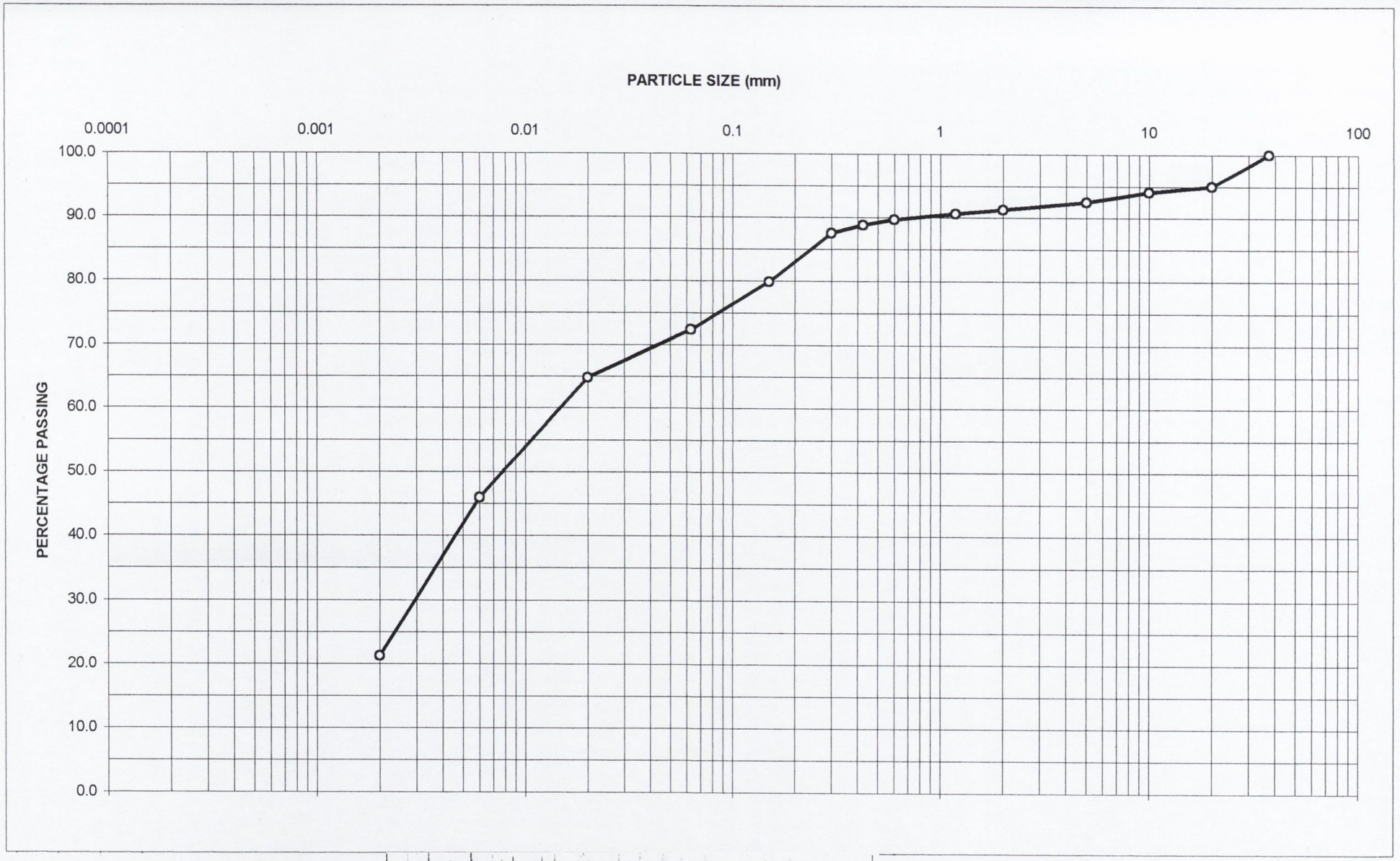
Site Visit	Date :
Inspection of trial hole	Date :
Inspection of percolation Test Holes	Date :

Comments :

Signed : **Date :**

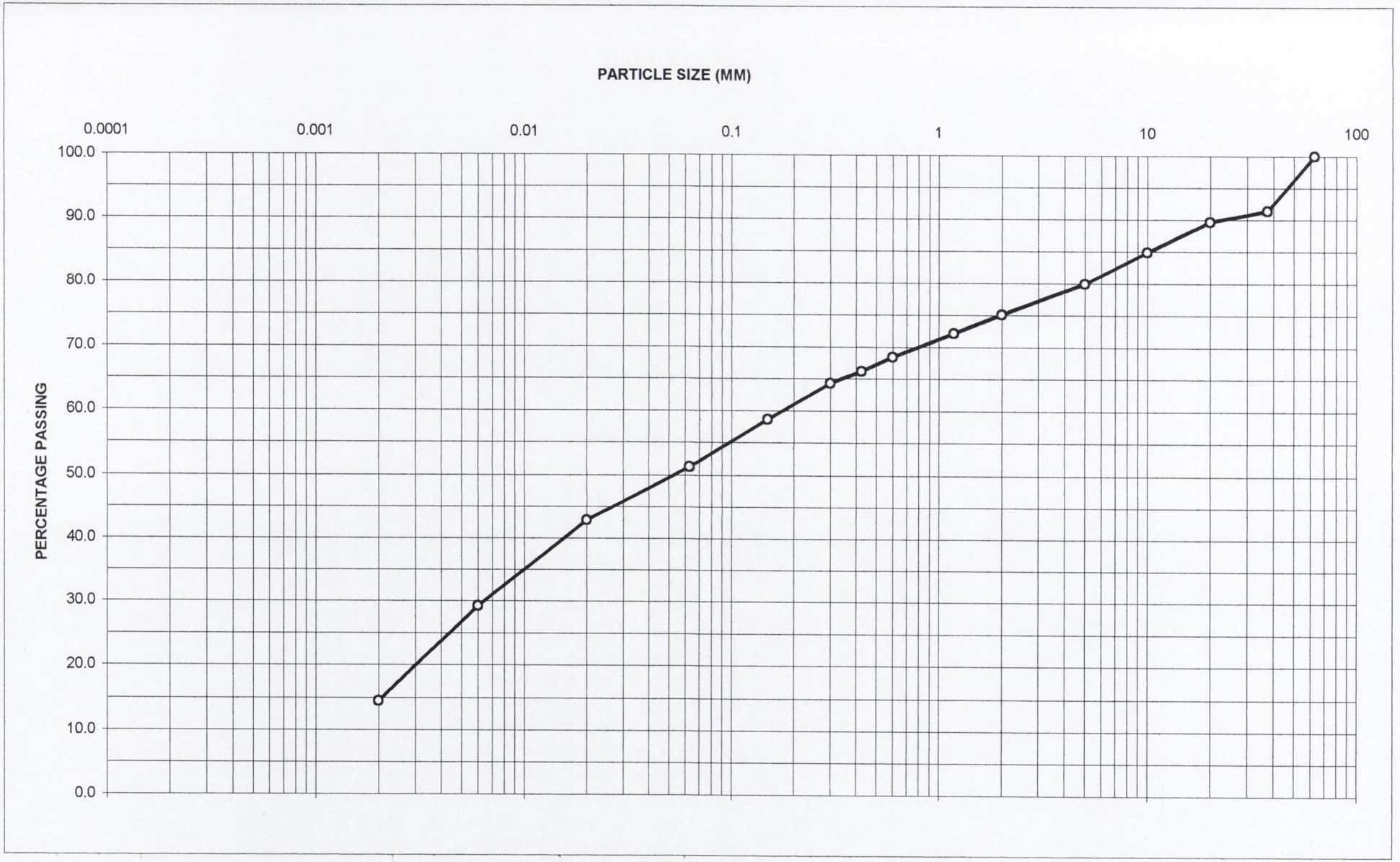


Particle Size Distribution Curve for Sample Taken at 1.0m



Particle Size Distribution Curve for Sample taken at 1.5m

Particle Size Distribution Curve for Sample taken at 1.5m



Particle Size Distribution Curve for Sample taken at 1.0m

SITE 3: KIILLAVENY

APPENDIX A : SITE CHARACTERISATION FORM

1.0 GENERAL DETAILS (from planning application)

PLANNING APPLICATION Ref. No. : XXXX

NAME & ADDRESS OF APPLICANT : Site 4

SITE LOCATION AND TOWNLAND : Killaveny
Tinahely
Co. Wicklow

TELEPHONE No. :

FAX No. : **E-MAIL :**

MAXIMUM No. OF RESIDENTS	5	**No. OF DOUBLE BEDROOMS :**	1	**No. OF SINGLE BEDROOMS :**	4

PROPOSED CAPACITY OF SEPTIC TANK (litres) :	4000 litres	**NUMBER OF CHAMBERS :**	2

PROPOSED WATER SUPPLY : (tick as appropriate)	**Mains**	**Private well / borehole**	**Group well / borehole**
		√	

2.0 DESK STUDY

type: Clay loam	**Bedrock type:** Ribband group, Maulin formation - Slate, phylite, schist, basalt & quartzite
Subsoil type Till with lower palaeozoic schists, sandstones, greywackes and shales dominant.	**Aquifer type:** Ll
Vulnerability class: Extreme (E)	**Groundwater Protection Response:** R2[1]

Presence of significant sites:
(archaeological, natural and historical)

None

Zoning in county development plan:

Not zoned under 1999 County Development Plan.

Past experience in the area:

None

Comments:

While the desk study judged the site characteristics to be consistent with the criteria outlined in the Wastewater Treatment Manuals (EPA 2000) and Groundwater Protection Schemes (Dept. of the Environment and Local Government, EPA and GSI, 2000) for the location of wastewater treatment systems an on-site assessment will be necessary to confirm its suitability.

3.0 ON-SITE ASSESSMENT

3.1 Visual Assessment

TOPOGRAPHY: Gently sloping towards floor of valley to north west. **LANDSCAPE:** Immediate area is free-draining grassland and tillage land sloping towards the north west **GEOLOGY:** No obvious geological features.	**SLOPE:** STEEP (>1:5) SHALLOW (1:5 – 1:20) √ RELATIVELY FLAT (<1:20)

SURFACE FEATURES

OUTCROPS: None

HOUSES: Nearest dwelling approximately 100m north.

DITCHES: None

WELLS: Bore hole on site.

SPRINGS: None

KARST FEATURES: None

ROADS: Site adjacent to regional road (c.f. site map)

WATERCOURSE : Stream approximately 300m to north east.

LAKES/SURFACE WATER PONDING/ BEACH/SHELLFISH AREAS/ WETLANDS : None

SITE BOUNDARIES : N/A

EXISTING LAND USE : N/A

LOCAL DRAINAGE: Naturally well drained

TYPE OF VEGETATION : Grassland.

GROUND CONDITIONS: Dry and solid underfoot.

COMMENTS: The potential targets that exist for contamination from the discharge of wastewater is the adjacent stream and the groundwater. The degree of risk and hence the appropriate treatment system will thus depend on the trial hole inspection and results of the percolation test.

3.2 Trial Hole

Depth of Trial Hole: 2.2mm	**Date and Time of excavation:** 24/1/03 09:30 **Date and Time of examination:** 27/1/03 11:00
Depth from ground surface to bedrock (m): Bedrock not reached **Depth from ground surface to water table (m):** Watertable not evident **Soil Type:** Clay loam **Subsoil Type** : clayey Sand	

Soil / Subsoil Information

	Soil / subsoil Texture & Classification	**Soil Structure**	**Density**	**Colour**	**Preferential Flowpaths**
0.1M 0.2M 0.3M	A horizon	Crumb	Medium	Dark brown	Roots, some evidence of macropores
0.4M 0.5M	clayey Sand with some rounded cobbles	Structureless -single grain	Dense	Light brown	Some root ends
0.6M 0.7M 0.8M 0.9M 1.0M 1.1M **1.2M** 1.3M 1.4M 1.5M 1.6M 1.7M 1.8M 1.9M 2.0M 2.1M 2.2M	gravelly clayey Sand interspersed with gravel and rounded cobbles	Structureless - single grain	Dense	Dark brown	None obvious although pockets of cobbles create macropores
2.3M	Base of hole				

3.3 Percolation Test

Type of Test T-test

Percolation Test hole	1	2
Depth from ground surface to top of hole (mm) – **A**	850mm	900mm
Depth from ground surface to bottom of hole (mm) – **B**	1250mm	1300mm
Depth of hole (mm) [**B-A**]	400mm	400mm
Dimensions of hole [length x breadth (mm)]	300mm x 300mm	300mm x 300mm
Date of Test	27/1/2003	27/1/03
Date pre-soaking started	26/1/03	26/1/03
Time filled to 400mm	10:22	10:00
Time water level at 300mm	12:12	13:20

	Test Hole No. 1			Test Hole No. 2		
Fill No.	Start Time (at 300mm)	Finish Time (at 200mm)	Δt (minutes)	Start Time (at 300mm)	Finish Time (at 200mm)	Δt (minutes)
1	12:12	15:07	175	13:20	17:15	235
2	15:07	18:07	180	17:15	22:15	240
3	18:07	21:14	187			
		AverageΔt (minutes)	**180.6**		AverageΔt (minutes)	**237.5**

At hole no. 1 : average $\Delta t/4 = t_1 =$ 45.2 At hole no. 2 : average $\Delta t/4 = t_2 =$ 59.4

T value = $(t_1 + t_2)/2 =$ **52.3** (minute/25mm) → Result of Test **FAILED**

Comments

T-value deems site unsuitable for conventional septic tank system (EPA, 2000). While a P-test might deem the site suitable for installation of a secondary treatment system in accordance with the Guidance Manual (2000) no P-test was carried out as the site met the project specifications.

4.0 CONCLUSION

Integrate the information from the desk study and on-site assessment (i.e. visual assessment. Trial hole and percolation tests) above and conclude the type of system that is appropriate. This information is also used to choose the optimum final disposal route of the treated wastewater.

Suitable for :

(a) Septic tank & soil percolation system	**UNSUITABLE**
(b) Septic tank and intermittent filter system and polishing unit ; or septic tank & constructed wetland & polishing unit.	**N/A**
(c) Mechanical aeration system & polishing unit.	**N/A**

And SUITABLE for discharge to ***GROUNDWATER.***

5.0 RECOMMENDATION

Propose to install : Puraflo® with effluent split between stratified sand filter ($6m^2$) and 20m of percolation trenches

And discharge to : Groundwater

Signed : XXXX Address : XXX
Qualifications : XXXX
Date of report:

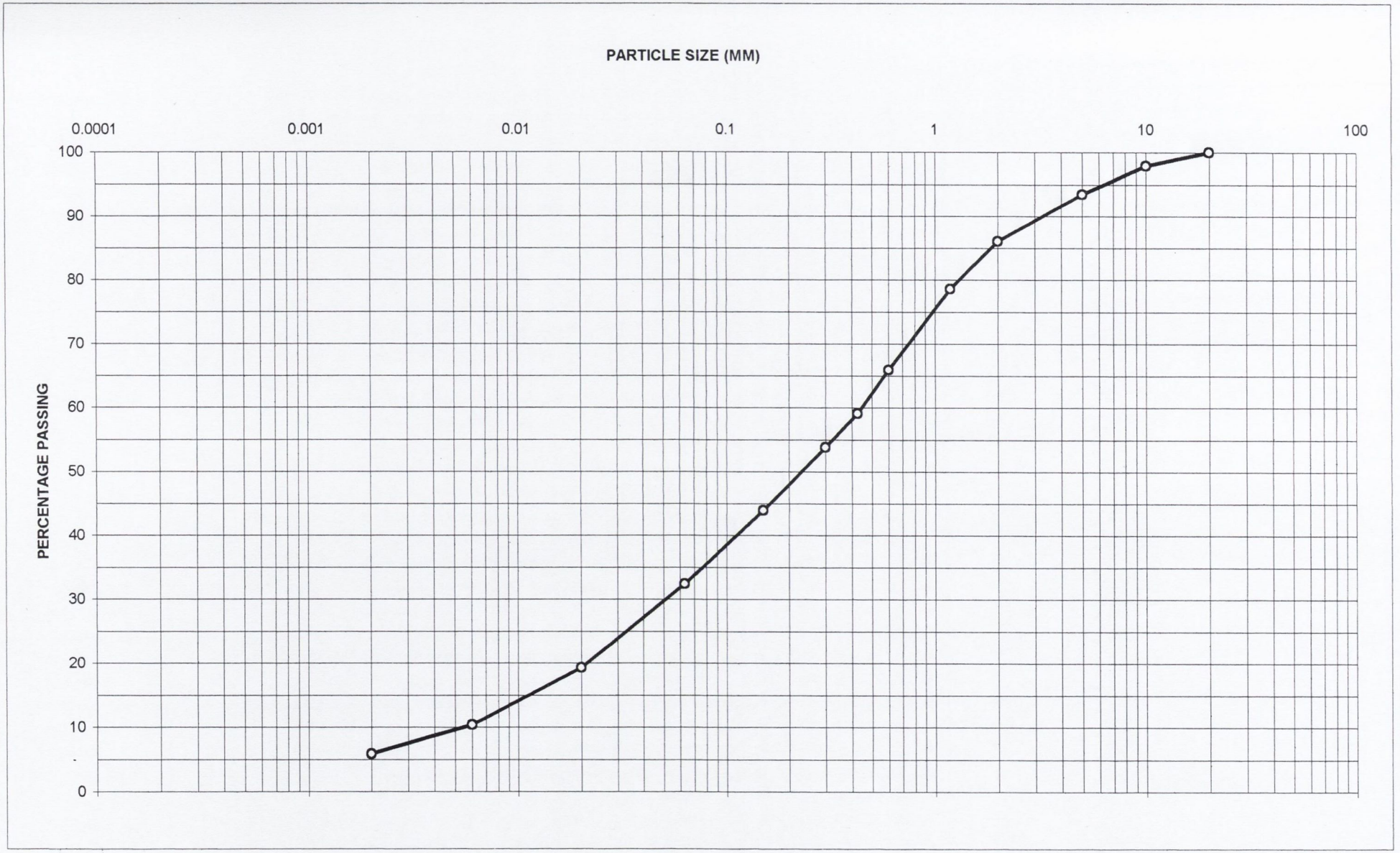
Phone : Fax : E-mail :

6.0 REVIEW (by Local Authority)

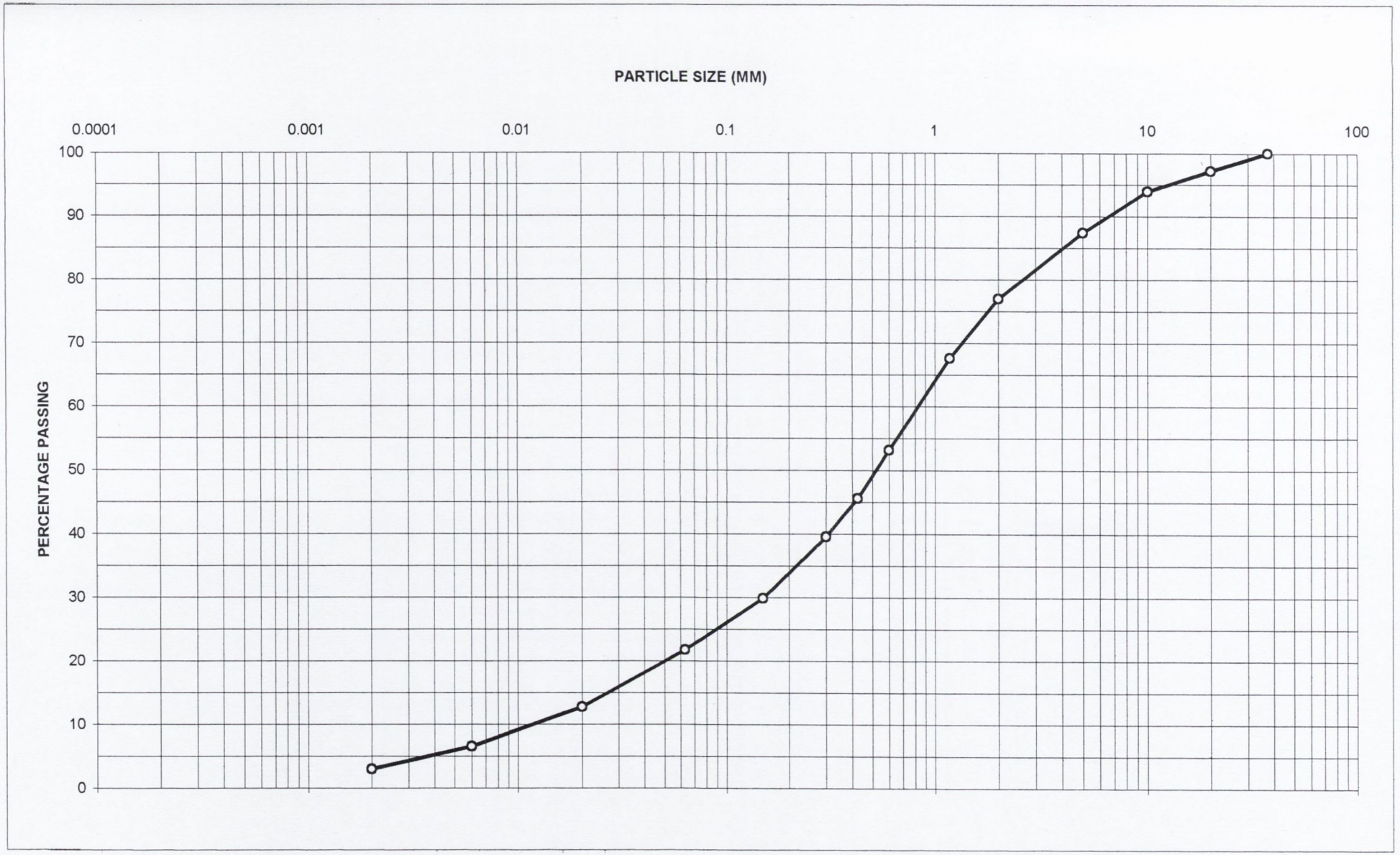
Site Visit	Date :
Inspection of trial hole	Date :
Inspection of percolation Test Holes	Date :

Comments :

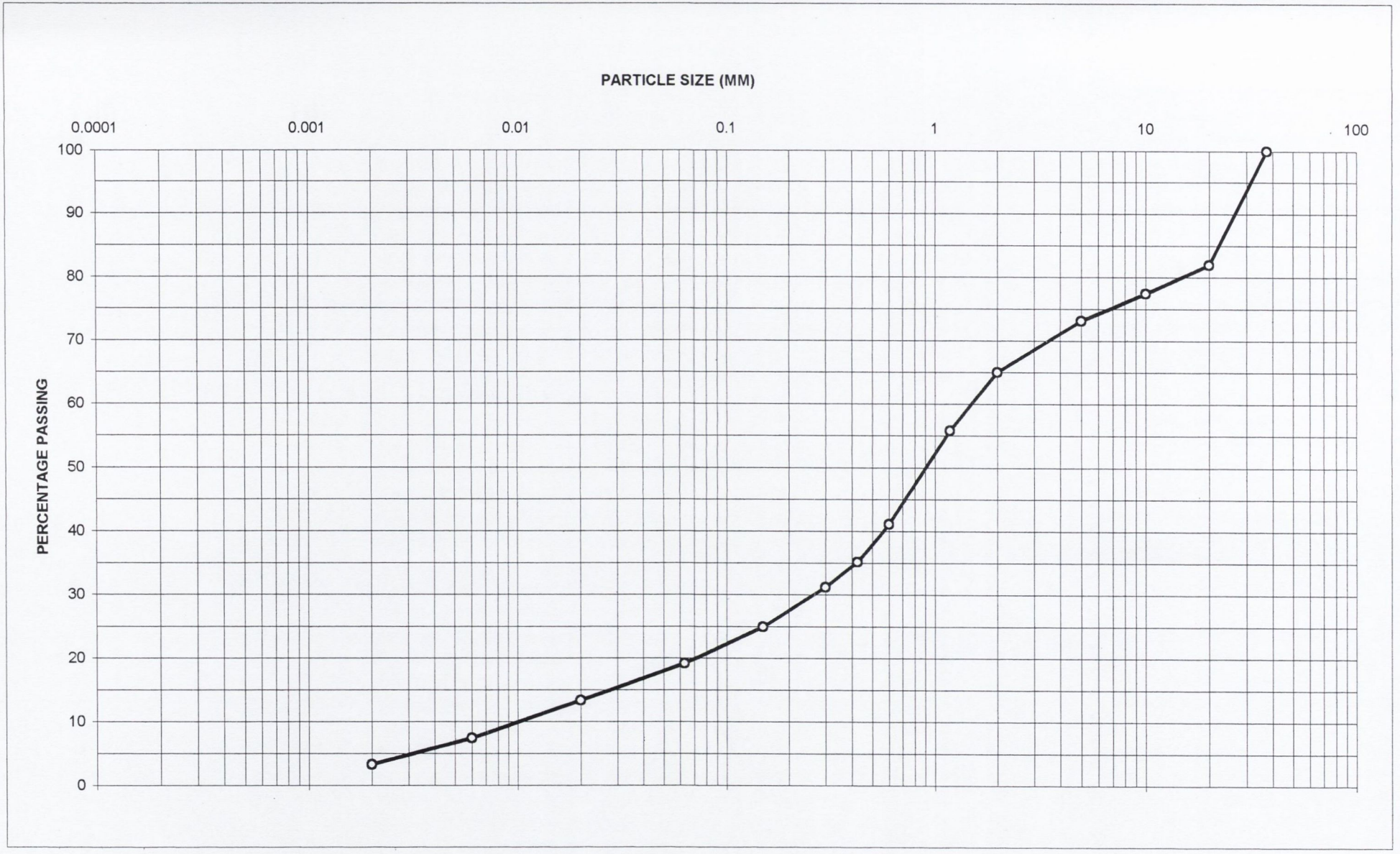
Signed : **Date :**



Particle Size Distribution Curve for Sample taken at 1.0m



Particle Size Distribution for SAmple taken at 1.5m



Particle Size Distribution Curve for Sample taken at 2.0m

SITE 4: THREE WELLS

APPENDIX A : SITE CHARACTERISATION FORM

1.0 GENERAL DETAILS (from planning application)

PLANNING APPLICATION Ref. No. : XXXX

NAME & ADDRESS OF APPLICANT : Site 3

SITE LOCATION AND TOWNLAND : Three Wells
Co. Wicklow

TELEPHONE No. :

FAX No. : **E-MAIL :**

MAXIMUM No. OF RESIDENTS	4	**No. OF DOUBLE BEDROOMS :**	1	**No. OF SINGLE BEDROOMS :**	3

PROPOSED CAPACITY OF SEPTIC TANK (litres) :	4000 litres	**NUMBER OF CHAMBERS :**	2

PROPOSED WATER SUPPLY : (tick as appropriate)	**Mains**	**Private well / borehole**	**Group well / borehole**
		√	

2.0 DESK STUDY

Soil type: Clay loam	**Bedrock type:** Ribband group, Maulin formation - Slate, phylite, schist, basalt & quartzite
Subsoil type: Till with lower palaeozoic schists, sandstones, greywackes and shales dominant.	**Aquifer type:** Ll
Vulnerability class: Extreme (E)	**Groundwater Protection Response:** R2[1]

Presence of significant sites:
(archaeological, natural and historical)

None

Zoning in county development plan:

Not zoned under 1999 County Development Plan.

Past experience in the area:

None

Comments:

While the desk study judged the site characteristics to be consistent with the criteria outlined in the Wastewater Treatment Manuals (EPA 2000) and Groundwater Protection Schemes (Dept. of the Environment and Local Government, EPA and GSI, 2000) for the location of wastewater treatment systems an on-site assessment will be necessary to confirm its suitability.

3.0 ON-SITE ASSESSMENT

3.1 Visual Assessment

TOPOGRAPHY: Slightly sloping towards south west. **LANDSCAPE:** Immediate area is free-draining grassland and tillage land sloping towards the south eat **GEOLOGY:** No obvious geological features.	**SLOPE:** STEEP (>1:5) SHALLOW (1:5 – 1:20) √ RELATIVELY FLAT (<1:20)

SURFACE FEATURES

OUTCROPS: Outcrop behind house exposing 2.5m of unsaturated subsoil.

HOUSES: Nearest dwelling approximately 100m south east.

DITCHES: None

WELLS: Borehole 60m up gradient to west.

SPRINGS: None

KARST FEATURES: None

ROADS: Site adjacent to 3rd class road (c.f. site map)

WATERCOURSE : None

LAKES/SURFACE WATER PONDING/ BEACH/SHELLFISH AREAS/ WETLANDS : None

SITE BOUNDARIES : N/A

EXISTING LAND USE : N/A.

LOCAL DRAINAGE: Naturally well drained

TYPE OF VEGETATION : Grassland. .

GROUND CONDITIONS: Dry and solid underfoot

COMMENTS: The potential target that exist for contamination from the discharge of wastewater is the groundwater. The degree of risk and hence the appropriate treatment system will thus depend on the trial hole inspection and results of the percolation test.

3.2 Trial Hole

Depth of Trial Hole: 2.2mm	**Date and Time of excavation:** 10/05/03 09:30 **Date and Time of examination:** 12/05/03 11:00
Depth from ground surface to bedrock (m): Bedrock not reached **Depth from ground surface to water table (m):** Watertable not evident **Soil Type:** Clay loam **Subsoil Type** : clayey Sand	

Soil / Subsoil Information

	Soil / subsoil Texture & Classification	**Soil Structure**	**Density**	**Colour**	**Preferential Flowpaths**
0.1M 0.2M 0.3M	A horizon	Crumb	Medium	Dark brown	Roots, some evidence of macropores
0.4M 0.5M	sandy Silt (w/clay)	Structureless -single grain	Medium	Reddish brown	Some root ends
0.6M 0.7M 0.8M 0.9M 1.0M 1.1M **1.2M** 1.3M 1.4M 1.5M 1.6M 1.7M 1.8M 1.9M 2.0M 2.1M 2.2M	Very gravelly clayey Sand interspersed striated cobbles	Structureless – single grain	Medium	Dark brown	Some macropores evident in pockets of gravel and around cobbles
2.3M					

3.3 Percolation Test

Type of Test T-test

Percolation Test hole	1	2
Depth from ground surface to top of hole (mm) – **A**	550mm	550mm
Depth from ground surface to bottom of hole (mm) – **B**	950mm	950mm
Depth of hole (mm) [**B-A**]	400mm	400mm
Dimensions of hole [length x breadth (mm)]	300mm x 300mm	300mm x 300mm
Date of Test	12/05/2003	12/05/03
Date pre-soaking started	11/05/03	11/05/03
Time filled to 400mm	10:08	10:09
Time water level at 300mm	11:11	11:07

	Test Hole No. 1			Test Hole No. 2		
Fill No.	Start Time (at 300mm)	Finish Time (at 200mm)	Δt (minutes)	Start Time (at 300mm)	Finish Time (at 200mm)	Δt (minutes)
1	11:11	13:57	166	11:07	12:23	76
2	13:58	16:50	172	12:24	13:58	92
3	16:50	19:45	175	13:58	15:40	102
		AverageΔt (minutes)	**171**		AverageΔt (minutes)	**90.3**

At hole no. 1 : average $\Delta t/4 = t_1 = 42.8$ At hole no. 2 : average $\Delta t/4 = t_2 = 22.6$

T value = $(t_1 + t_2)/2 =$ **32.7** minute/25mm) Result of Test **PASSED**

Comments

Site suitable for conventional septic tank with adequate percolation area in accordance with the EPA Guidance Manual (2000). Also suitable for mechanically aerated system or intermittent filter system.

Note : P-test not required.

4.0 CONCLUSION

Integrate the information from the desk study and on-site assessment (i.e. visual assessment. Trial hole and percolation tests) above and conclude the type of system that is appropriate. This information is also used to choose the optimum final disposal route of the treated wastewater.

Suitable for :

(a) Septic tank & soil percolation system	**SUITABLE**
(b) Septic tank and intermittent filter system and polishing unit ; or septic tank & constructed wetland & polishing unit.	**SUITABLE**
(c) Mechanical aeration system & polishing unit.	**SUITABLE**

And SUITABLE for discharge to ***GROUNDWATER.***

5.0 RECOMMENDATION

Propose to install : Septic Tank with Soil Percolation system

And discharge to : Groundwater

Signed : XXXX Address : XXX
Qualifications : XXXX
Date of report:

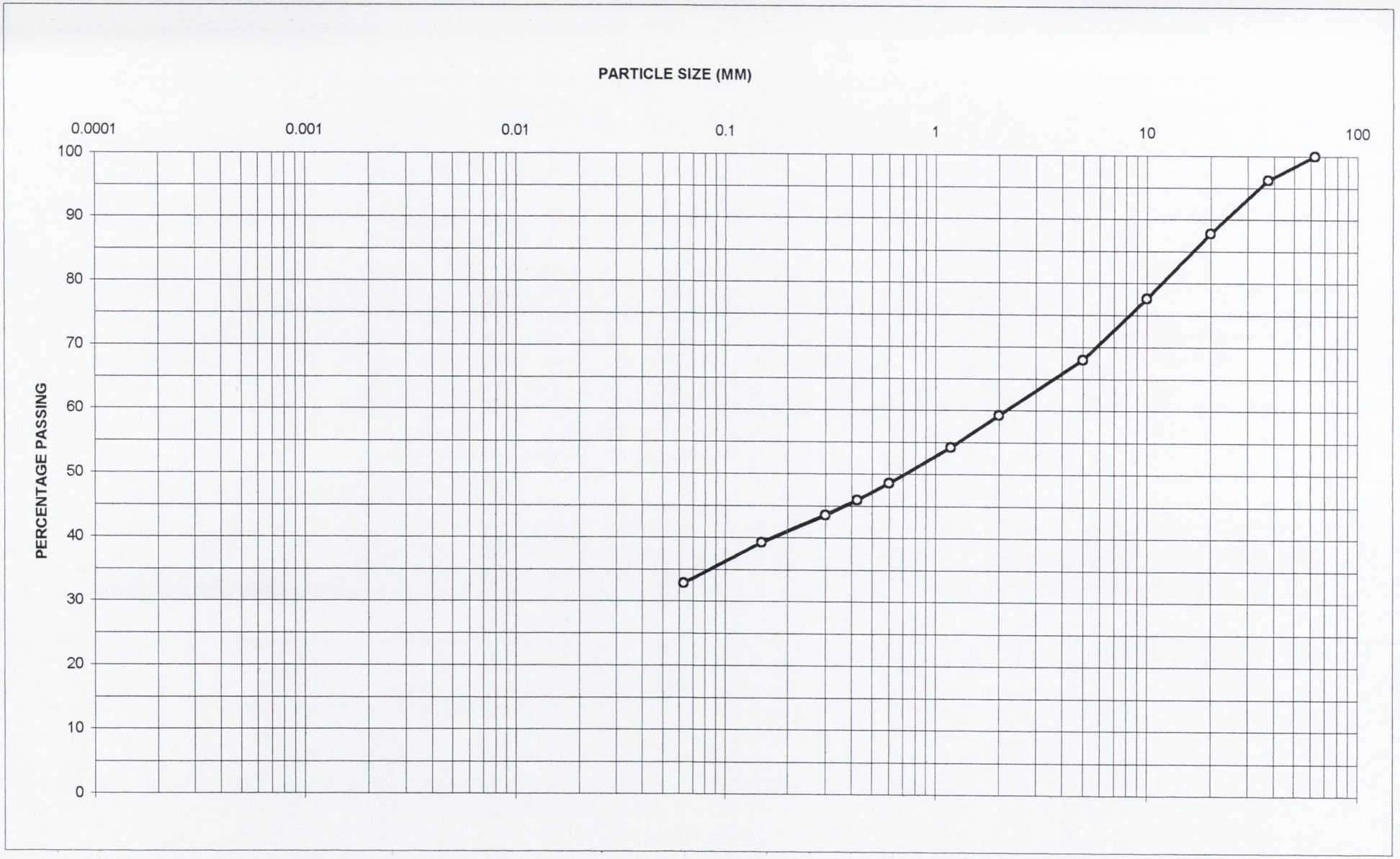
Phone : Fax : E-mail :

6.0 REVIEW (by Local Authority)

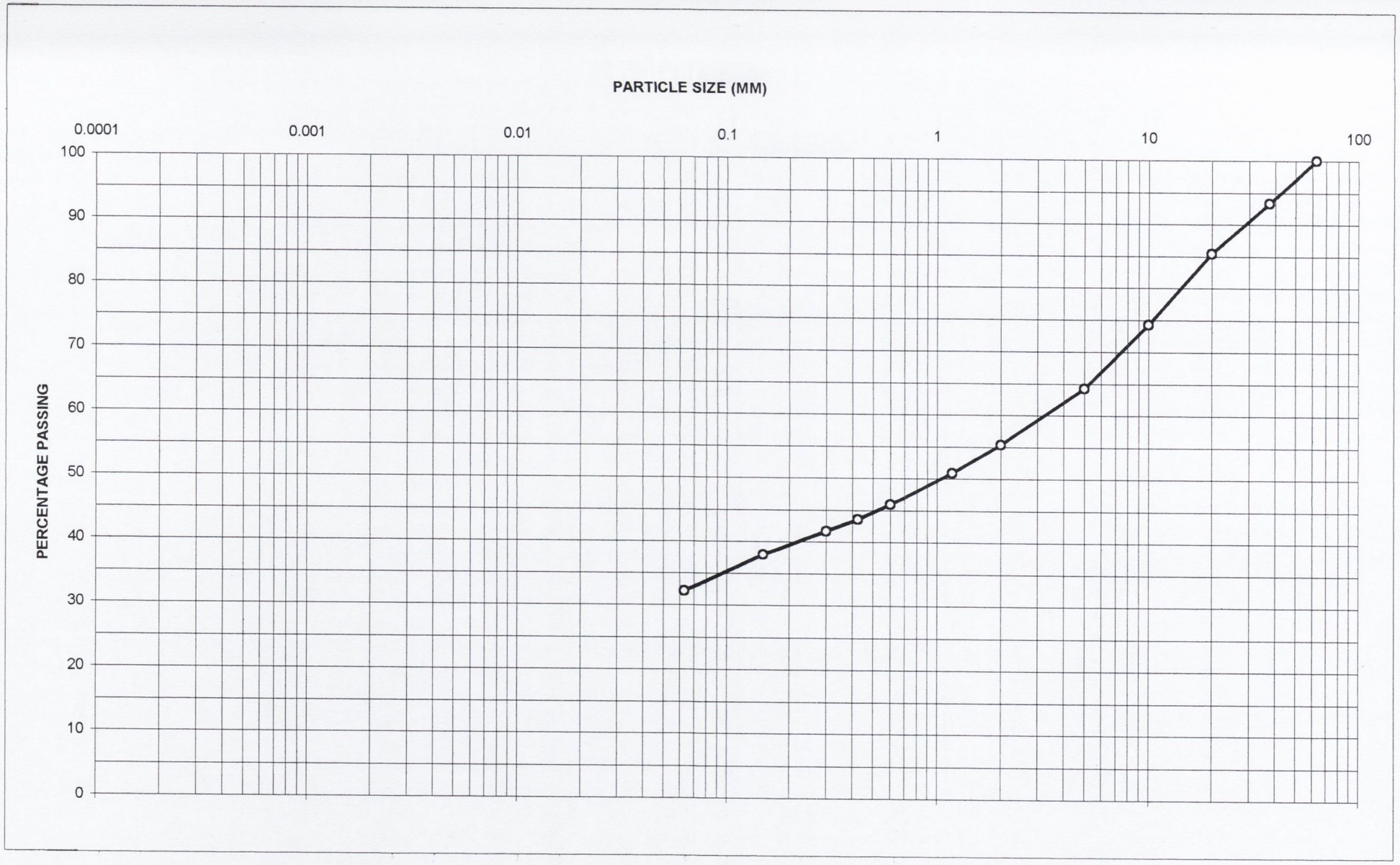
Site Visit	Date :
Inspection of trial hole	Date :
Inspection of percolation Test Holes	Date :

Comments :

Signed : **Date :**



Particle Size Distribution Curve for Sample taken at 1.0m



Particle Size Distribution Curve for Sample taken at 1.5m

Particle Size Distribution Curve for Sample taken at 2.0m

APPENDIX B

SAMPLING METHODOLOGY

SAMPLING METHODOLOGY

Preparation

i. Put all lysimeters under suction of 50 mbar and start sampler programs - record time.

Sampling

ii. Remove all clamps and leave beside lysimeters. When finished sampling slip clamp ring over upright tubing - easy to distinguish between sampled and unsampled lysimeters.

iii. Insert extraction tube until you feel it touch porous cup - inserting further can cause kinks. Ensure no kinks present and if present remove with pliers.

iv. Put conical flask under maximum suction and clamp sidearm. Put ear to side of conical flask to ensure sample being extracted.

v. Once sampling finished reattach vacuum pump, push down extraction tube and put under suction again - ensuring sampling complete.

vi. Ensure sample tube and lip of conical flask clean.

vii. Write sample number on side of sample tube, pour in sample and pour x's into graduated cylinder. Record total volume (Graduated cylinder + 70ml (large sample tube) or 40ml (small sample tube)).

viii. Dispose of any excess effluent down gradient and outside percolation area.

ix. Clean conical flask and extraction tube by inserting into distilled H_2O and putting under suction. At end of week rinse out with dilute Milton solution.

Notes

1. Ensure no liquid enters vacuum pump as causes pump failure. If this occurs unscrew silver casing and fix valves - "o ring" usually falls off.
2. If at step iv no sample entering conical flask but flask is remaining under suction extraction tubing - usually kinked.
3. If lysimeter won't hold suction check seals, extraction tubing and examine for hole.
4. Recharge sampler batteries after 3 sample runs. use (fully charge battery will allow at least 2 sample runs).
5. Clean out sampler after sample run with dilute Milton solution.
6.

TENSIOMETERS

1. Ensure tensimeter reading is zero.
2. Insert needle into tensiometer
3. Record tensimeter reading.
4. Remove needle and ensure it returns to zero.
5. If required remove septum stopper to refill tensiometer, to within half an inch of top, with distilled H_2O.

APPENDIX C

ANALYSIS METHODOLOGY

Spectroquant®

Ammonium Test

MERCK

1.00683.0001

NH_4^+

1. Method

Ammonium nitrogen NH_4-**N** occurs partly in the form of ammonium ions and partly as ammonia. A pH-dependent equilibrium exists between the two forms. In strong alkaline solutions NH_4-**N** is present almost entirely as ammonia. This reacts with hypochlorite ions to form monochloramine, which in turn reacts with a substituted phenol to form a blue indophenol. This is then determined photometrically.

The method is analogous to DIN 38406 E5, ISO 7150/1, APHA 4500-NH_3 D and EPA 350.1.

2. Measuring range and number of determinations

Wavelength[1]	Measuring range	Number of determinations
712 nm	2.0 - 150 mg/l NH_4-N	95
	2.6 - 193 mg/l NH_4^+	

[1] Maximum absorbance; the wavelength stored in system photometers may differ from this value.

3. Applications

This test measures both ammonium ions and dissolved ammonia.

Sample material:
- Groundwater and surface water, seawater
- Drinking water
- Wastewater
- Nutrient solutions for fertilization
- Soils
- Food

4. Influence of foreign substances

This was checked - in the case of interfering ions up to concentrations of 1000 mg/l - in solutions containing 40 and 0 mg/l NH_4-N. The concentrations of foreign substances given in the table lie below the limit at which the determination is interfered with.

Concentrations of foreign substances in mg/l or %					
Al^{3+}	1000	Mn^{2+}	100	EDTA	1000
Ca^{2+}	1000	Ni^{2+}	250	**Primary amines**[1]	**0**
Co^{2+}	1000	NO_2^-	1000	Secondary amines[2]	250
CN^-	100	Pb^{2+}	1000	Aminophenols	10
Cr^{3+}	100	PO_4^{3-}	1000	Aniline	50
$Cr_2O_7^{2-}$	1000	S^{2-}	50	Triethanolamine	1000
Cu^{2+}	1000	SiO_3^{2-}	1000	Surfactants[3]	1000
F^-	1000	Zn^{2+}	500	Na-acetate	10%
Fe^{3+}	25			NaCl	20%
K^+	500			$NaNO_3$	20%
Mg^{2+}	500			Na_2SO_4	20%

Reducing agents interfere with the determination.

[1] Tested with methylamine
[2] Tested with dimethylamine
[3] Tested with nonionic, cationic, and anionic surfactants

5. Reagents and auxiliaries

Please note the warnings on the packaging materials!

The reagents in the test are stable up to the date stated on the pack when stored closed at +15 to +25 °C.

Package contents:
- 2 bottles of reagent NH_4-1
- 1 bottle of reagent NH_4-2 (contains granulate + desiccant capsule)
- 1 AutoSelectors
- 2 blue dose-metering caps (each can be used for 30-40 dosages)

Other reagents and accessories:
- Merckoquant® Ammonium Test, Cat. No. 1.10024.0001, measuring range 10-400 mg/l NH_4^+
- Universal indicator strips pH 0-14, Cat. No. 1.09535.0001
- Sodium hydroxide solution 1 mol/l, Cat. No. 1.09137.
- Sulfuric acid 0.5 mol/l, Cat. No. 1.09072.
- Ammonium standard solution 1000 mg/l NH_4^+, Cat. No. 1.19812.0500
- Positive-displacement pipette 1-5 ml, Cat. No. 1.14716.0001
- Tips and pistons for positive-displacement pipette (10 of each), Cat. No. 1.14717.0001
- Positive-displacement pipette 0.5-2.5 ml, Cat. No. 1.14714.0001
- Tips and pistons for positive-displacement pipette (10 of each), Cat. No. 1.14715.0001
- Rack for positive-displacement pipette, Cat. No. 1.14718.0001

Merck KGaA, 64271 Darmstadt, Germany,
Tel. (0 61 51) 72 0, Telefax (0 61 51) 72 20 00

6. Preparation

At first, **replace the black screw cap of the reagent bottle NH_4-2 by the blue dose-metering cap.**

Place the reagent bottle **upright** *on the opening of the cell. At each dosage, press the slide* **all the way** *into the dose-metering cap.*

Before each dosage, *ensure that the slide is* **completely retracted.**

Reclose the reagent bottle with the black screw cap when not required for a longer period of time.

- Analyze immediately after sampling.
- Decompose or extract solid sample materials by an appropriate method (applications available on request).
- Check the ammonium content with the Merckoquant® Ammonium Test. Samples containing more than 193 mg/l NH_4^+ must be diluted with distilled water.
- **The pH must be within the range 4-13.** Adjust, if necessary, with sodium hydroxide solution or sulfuric acid.
- Filter turbid samples.

7. Procedure

Preparation of measurement sample for measuring range 2.0-75.0 mg/l NH_4-N (2.6-96.6 mg/l NH_4^+):

Reagent NH_4-1	5 ml	Pipette into a test tube.
Pretreated sample (20-30 °C)	**0.2 ml**	Add using pipette and mix.
Reagent NH_4-2	2 doses	Add and shake **vigorously until the reagent is completely dissolved.**
Leave to stand for 15 min, then fill the measurement sample into a 10-mm cell, and measure in the photometer.		

Preparation of measurement sample for measuring range 5-150 mg/l NH_4-N (7-193 mg/l NH_4^+):

Reagent NH_4-1	5 ml	Pipette into a test tube.
Pretreated sample (20-30 °C)	**0.1 ml**	Add using pipette and mix.
Reagent NH_4-2	2 doses	Add and shake **vigorously until the reagent is completely dissolved.**
Leave to stand for 15 min, then fill the measurement sample into a 10-mm cell, and measure in the photometer.		

Measurement:
- Due to the strong temperature dependence of the colour reaction, the temperature of the reagents should be between 20 and 30 °C.
- **Certain photometers may require a blank** (preparation as per measurement sample, but with distilled water instead of sample).
- For photometric measurement the cells must be clean. Wipe, if necessary, with a clean dry cloth.
- Measurement of turbid solutions gives false-high readings.
- Ammonium-free samples turn yellow on addition of reagent NH_4-2.
- The pH of the measurement solution must be within the range 11.5-12.5.
- The colour of the measurement solution remains stable for at least 60 min after the end of the reaction time stated above.
- In the event of ammonium concentrations exceeding 2500 mg/l, other reaction products are formed and false-low readings are yielded. In such cases it is advisable to conduct a plausibility check of the measurement results by diluting the sample (1:10, 1:100).

8. Analytical quality assurance

The measurement results can be officially recognized under the precondition that analytical quality-assurance measures are taken (ATV M 704).
To check the photometric measurement system (test reagents, measurement device, handling) and the mode of working, a dilute ammonium standard solution containing 40.0 or 80 mg/l NH_4-N can be used.
Sample-dependent influences (matrix effects) can be determined by means of standard addition.

Characteristic data of the procedure:

In the production control, the following data were determined in accordance with DIN 38402 A51 (the values in parentheses apply for the measuring range 5-150 mg/l NH_4-N):

Standard deviation of the procedure	± 0.76 (1.6) mg/l NH_4-N
Coefficient of variation of the procedure	± 2.0 (2.0)%
Confidence interval	± 1.8 (4) mg/l NH_4-N
Number of lots	1

Deviation range of a measurement value: max. ± 2.0 (4) mg/l NH_4-N

9. Notes

- Stopper reagent bottles immediately after use.
- Rinse glassware ammonium-free with distilled water. **Do not use detergent!**

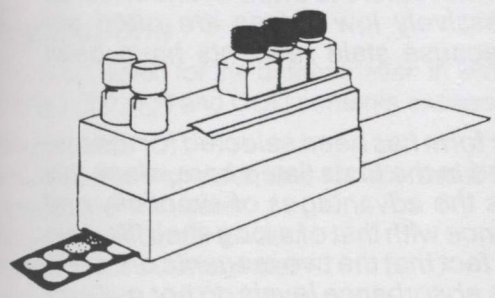
Aquaquant® 1.14408.	*Aquaquant® 1.14424.*	*Microquant® 1.14774.*	*Spectroquant® 1.14776.*
0.005–0.1 mg/l (ppm)	*0.1–2.0 mg/l (ppm)*	*0.1–10 mg/l (ppm)*	*0.005–1.00 mg/l*

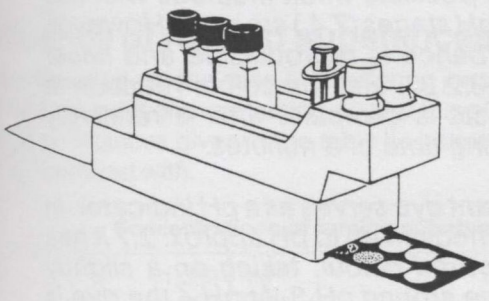
Nitrite

Reaction of nitrite with sulphanilic acid and N-1-naphthylethylenediamine dihydrochloride to a magenta azo dye (Griess' Reaction).

Merck KGaA, 64271 Darmstadt, Germany,
Tel. (0 61 51) 7 20, Telefax (0 61 51) 72 20 00

1. Instructions for use





1.1. Aquaquant® 1.14408.0001 Nitrite. *110 determinations. Graduation 0–0.005–0.012–0.02–0.03–0.04–0.05–0.06–0.08–0.1 mg/l (ppm).*

Aquaquant® 1.14424.0001 Nitrite. *400 determinations. 0–0.1–0.2–0.3–0.4–0.6–0.8–1.0–1.3–2.0 mg/l (ppm).*

Leave comparator block in lower part of plastic box, and orientate it to have glass tubes facing left. Fill both tubes with water sample, adding reagents to inner tube only. (In the case of No. 1.14424.0001: slide block about 4 cm to left within the box, to have tubes suspended on outside. This ensures that the colour card receives sufficient light, which should preferably come from the left). Introduce card from the coloured end into slit on lower right edge of box, and thread it through, until it appears on other side, below the tubes. Move card to obtain matching colours between sample and colour spots under blank.

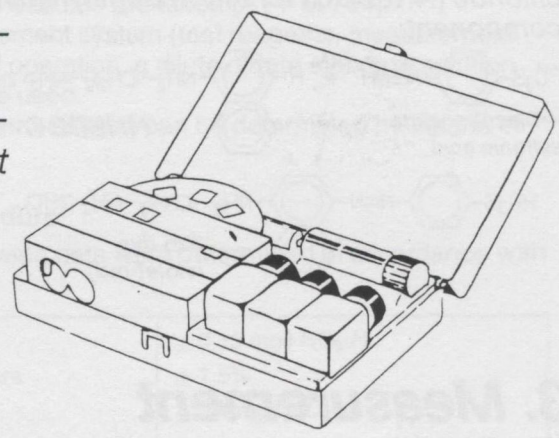
No. 1.14408.0001: *record value from right edge of box.*

No. 1.14424.0001: *record value from right edge of block within the box.*

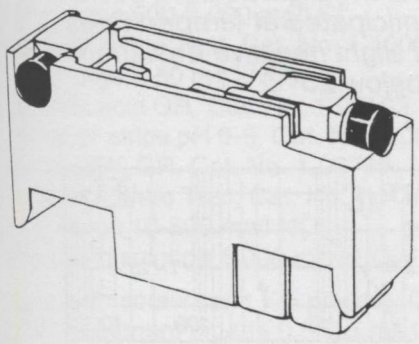
Accessories: 1.1.1. Refill reagents, Spectroquant® Nitrite Cat. No. 1.14776.0001
1.1.2. Aquaquant® tubes. One dozen in stand (long for Cat. No. 1.14408.0001), suitable for serial determinations Cat. No. 1.14901.001

1.2. Microquant® 1.14774.0001 Nitrite. *400 determinations. Graduation 0–0.1–0.2–0.4–0.6–1–1.8–3–6–10 mg/l (ppm).*

Use syringe to fill both tubes with 6 ml of sample solution. Add reagent to right-hand tube only. When colour formation is complete, hold comparator against light and match colours by rotating disc. Record value, convert if necessary.



Accessories: 1.2.1. Refill reagents, Spectroquant® Nitrite Cat. No. 1.14776.0001
1.2.2. Microquant® 12 tubes, suitable for serial determinations Cat. No. 1.14902.0001



1.3. Spectroquant® 1.14776.0001 Nitrite. *400 determinations. 0.005–1.00 mg/l. Reagent kit for photometric analysis. Also serves as double refill pack for Microquant®. The aliquot size for photometry is determined by the volume of the cuvettes used.*

Rectangular cuvettes are filled with solutions prepared in test tubes, whereas round and bottle cuvettes are usually used as reaction vessels as well. In the latter case it is expedient to check whether the proposed aliquot volume is sufficient to cover the photometer light path.

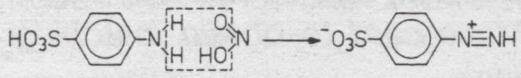
Accessories: 1.3.1. Spectroquant® interference filter R 525 Cat. No. 1.14953.0001
1.3.2. Spectroquant® calibration cell Nitrite Cat. No. 1.14919.0001
1.3.3. Spectroquant® rectangular cell
path lengths: 10 mm Cat. No. 1.14946.0001
20 mm Cat. No. 1.14947.0001
50 mm Cat. No. 1.14944.0001

Operation / Measuring system	Aquaquant® 1.14408.0001	Aquaquant® 1.14424.0001	Microquant® 1.14774.0001	Spectroquant® 1.14776.0001
No. of determinations	110	400	400	400
a) Sample volume (T = 20–40°).	20 ml in each tube	5 ml in each tube	6 ml in each tube	10 ml sample
b) Add NO_2-AN, dissolve	1 red microspoon into inner tube	1 blue microspoon into inner tube	1 blue microspoon into right tube	2 blue microspoons
t	**Set aside for 3 min**			**Set aside for 10 min**
c) Measurement	Colour comparison			Colorimetry at 525 nm

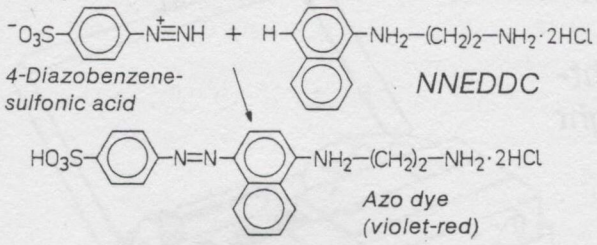
Special note for Microquant® and Spectroquant®. *When working with Spectroquant® 1.14776.0001, the aliquot amounts of sample (5, 10 or 20 ml) also determine the quantity of reagent NO_2-AN to be added. This reagent is supplied both in bottles fitted with a 0.1-ml microspoon (blue screw cap) and in bottles fitted with a 0.3-ml microspoon (red screw cap). Please see the table above for correct proportioning of reagent. If necessary, the screw caps complete with spoon can be transferred from one reagent bottle to another containing the same reagent. Where Spectroquant® 1.14776.0001 is used as a refill pack for Microquant® 1.14774.0001 only the blue spoon should be used.*

2. Colour reaction.

Although the colorimetric nitrite determination according to Griess has a history going back to 1879 (7.1.), there is virtually no other analytical colour reaction which is more appropriate to the current state of the chemical art. The Griess reaction involves the conversion of nitrite (nitrous acid) with sulfanilic acid to form 4-diazobenzenesulfonic acid.



This subsequently condenses with 1-naphthylamine to produce a violet-red dye. Although numerous combinations of reagents are feasible for performing the Griess nitrite reaction – SAWICKI et al. (7.2.), for instance, investigated a total of 52 – the original components sulfanilic acid and 1-naphthylamine were so optimally selected that the underyling reaction has been retained for over a hundred years with only a slight modification introduced by BRATTON et al. 1939 (7.3.), who substituted odourless N-(1-naphthyl)ethylenediammonium dichloride (NNEDDC) for the 1-naphthylamine component:



Numerous authors report on their investigations into the optimum reaction pH as well as into the feasibility of combining both components into a single reagent. It is an established practice nowadays in the industrial synthesis of azo dyes to perform the diazotisation reaction at a lower pH than the subsequent coupling. This procedure prevents undesired coupling reactions between a portion of the diazotised amine and undiazotised components, a process which in nitrite determinations would lead to lower recorded values than are actually present, since correspondingly less of the red-violet dye is formed. RIDER and MELLON 1946 (7.4.) overcame this problem by diazotising at pH 1.4, a pH at which no coupling occurs, and by performing a subsequent quantitative coupling reaction with 1-naphthylamine at pH 2.0 – 2.5. BARNES and FOLKHARD 1951 (7.5.) showed that this method produces results which are 15–18% higher than methods utilising a constant pH (these latter methods usually being performed at pH 3.0 on account of the optimum rate of coupling).

An initial attempt to combine both components in a mixed reagent in liquid form was undertaken by ILOSVAY 1889 (7.6.). His mixture of sulfanilic acid and 1-naphthylamine in an acetic acid solution found widespread use as "Griess-Ilosvay's reagent for nitrite", particularly in rapid tests, although the reagent has the disadvantage of only limited stability. This feature is often overlooked, so that excessively low values are often obtained because stale reagents have been used.

A powder form has been selected for the reagents used in the tests listed here, since this combines the advantages of simplicity and convenience with that of a long shelf life. Owing to the fact that the two reagents are combined, the absorbance levels do not quite attain those possible when methods with two separate pH stages (7.4.) are used. However, the absorbance is reproducible and linear (diagram 3.2.2.), and the colour reaction in optical tests is complete after a relatively short waiting time of 3 minutes.

The resultant dye serves as a pH indicator. In an acidic medium up to pH approx. 2.7 it has a full violet-red colour, taking on a slightly warmer hue around pH 3. At pH 4 the dye is red-orange, while above pH 5 it is orange-yellow. This means that classical methods with reactions performed at pH 3 (7.5.) are disturbed even by sample solutions of only slight alkalinity. For the Merck tests listed, the pH following addition of NO_2-AN is in the safe range at around pH 2.1. In case of doubt, alkaline water samples should be checked for pH using Acilit® test strips pH 0–6 (colour sequence at pH 2.0: yellow/violet/orange-yellow).

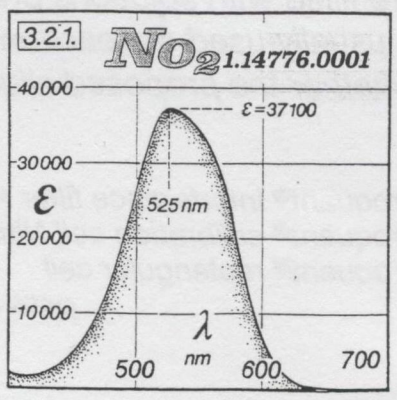
3. Measurement

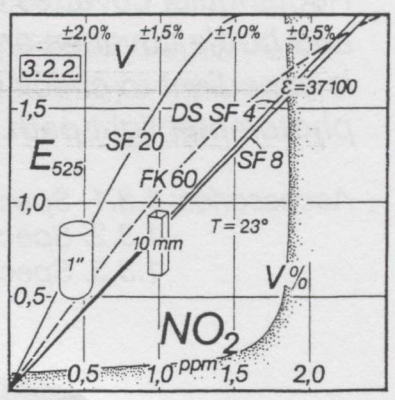
3.1. Optical measurement with Aquaquant® and Microquant®. *The Aquaquant® and Microquant® colours are matched in daylight (5600 K) or, alternatively, under suitable artificial light (5000 K, daylight fluorescent tube). The more common, warmer type of artificial light (4300–2800 K) can lead to colour shifts, although in most cases colours can still be matched.*

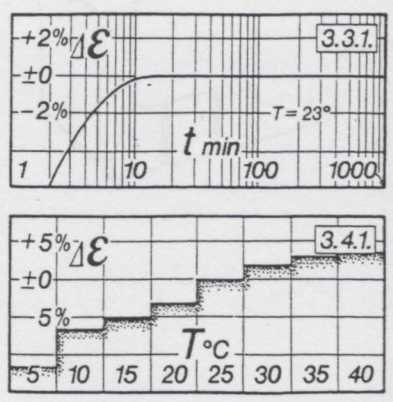
3.2. Photometric measurement with Spectroquant®. *The absorbance curve (diagram 3.2.1.) exhibits a pronounced maximum at 525 nm. Spectrophotometers such as the DS-SF 4 (digital double-beam grating spectrophotometer with 4 nm band width) and the SF 8 (digital single-beam grating spectrophotometer with 8 nm band width) show linear absorbance in accordance with Beer's law up to A 2.0 ≅ 2.3 ppm NO_2^- when square 10-mm cuvettes are used (diagram 3.2.2.). Simpler wide band instruments such as the SF 20 (single-beam grating spectrophotometer with 20 nm band width) and the FK 60 (glass filter colorimeter with filter for 535 nm and with 60 nm band width) give usable ranges up to A 2.0 = 1.5 – 2.5 ppm NO_2^- when 1" round cuvettes are used. The lack of linearity from A = 1.0 on necessitates the use of a calibration curve. Optimum precision (with a standard deviation V < ±1.0%) is attained in diagram 3.2.2. in a DS-SF 4 digital spectrophotometer at between A 0.2 and A 2.0, corresponding to about 0.2–2.4 ppm NO_2^-, using 10-mm square cuvettes.*

3.3. Time stability. *Diagram 3.3.1. shows that the absorbance maximum is achieved after a reaction time of about 10 minutes and remains constant for 1000 minutes (16 h 40 min). Optical measurements can be performed after as little as 3 minutes, however, at which time the reaction is 96% complete.*

3.4. Temperature dependence. *As shown in diagram 3.4.1., slight positive deviations are to be anticipated at temperatures above 25 °C, and slight negative deviations at temperatures below 25 °C.*







Spectroquant®

Nitrate Test

MERCK

1.09713.0001

NO_3^-

1. Method

In a solution acidified with sulfuric and phosphoric acid, nitrate reacts with 2,6-dimethylphenol to form orange-coloured 4-nitro-2,6-dimethylphenol that is determined photometrically.
The method is analogous to DIN 38405 D9 and ISO 7890/1.

2. Measuring range and number of determinations

Wavelength[1]	Measuring range	Number of determinations
338 nm	0.10 - 25.0 mg/l NO_3-N	90
	0.45 - 111.0 mg/l NO_3^-	

[1] Maximum absorbance; the wavelength stored in system photometers may differ from this value.

3. Applications

This test is not suited for the determination in waters with chloride contents exceeding 1,000 mg/l and COD contents exceeding 500 mg/l.

Sample material:
Groundwater, drinking water, and surface water
Spring water and well water
Mineral water and curative water
Wastewater and industrial water
Soils and fertilizers

4. Influence of foreign substances

This was checked - in the case of interfering ions up to concentrations of 1,000 mg/l - in solutions containing 10 and 0 mg/l NO_3-N. The concentrations of foreign substances given in the table lie below the limit at which the determination is interfered with.

Concentrations of foreign substances in mg/l or %					
Al^{3+}	1,000	Mg^{2+}	1,000	EDTA	1,000
Ca^{2+}	500	Mn^{2+}	1,000	Surfactants[2]	1,000
Cd^{2+}	250	NH_4^+	1,000	**COD (K-hydrogen phthalate)**	**500**
Cl^-	**1,000**	Ni^{2+}	500	**Organic substances (glucose)**	**500**
CN^-	100	**NO_2^-**	**5[1]**	Na-acetate	25%
Cr^{3+}	500	Pb^{2+}	100	NaCl	0.2%
$Cr_2O_7^{2-}$	**50**	PO_4^{3-}	1,000	Na_2SO_4	25%
Cu^{2+}	500	SiO_3^{2-}	500		
F^-	1,000	SO_3^{2-}	50		
Fe^{3+}	100	Zn^{2+}	1,000		
Hg^{2+}	100				

[1] In cases in which the nitrite concentration is higher, eliminate nitrite ions acc. to section 6.
[2] tested with nonionic, cationic, and anionic surfactants

5. Reagents and auxiliaries

Please note the warnings on the packaging materials!

The reagents in the test are stable up to the date stated on the pack when stored closed at +15 to +25 °C.

Package contents:
2 bottles of reagent NO_3-1
2 bottles of reagent NO_3-2
2 graduated 5-ml plastic syringes
1 AutoSelector

Other reagents and accessories:
Merckoquant® Chloride Test, Cat. No. 1.10079.0001,
measuring range 500-3,000 mg/l Cl^-
Merckoquant® Nitrite Test, Cat. No. 1.10007.0001,
measuring range 2-80 mg/l NO_2^-
Amidosulfonic acid GR, Cat. No. 1.00103.
Acilit® indicator strips pH 0-6, Cat. No. 1.09531.0001
Sulfuric acid 25% GR, Cat. No. 1.00716.
Merckoquant® Nitrate Test, Cat. No. 1.10020.0001 or 1.10050.0001,
measuring range 10-500 mg/l NO_3^-
Nitrate standard solution 1,000 mg/l NO_3^-, Cat. No. 1.19811.0500

Empty cells with screw caps (25 pieces), Cat. No. 1.14724.0001
Positive-displacement pipette 0,5-2,5 ml, Cat. No. 1.14714.0001
Tips and pistons for positive-displacement pipette (10 of each),
Cat. No. 1.14715.0001
Rack for positive-displacement pipette, Cat. No. 1.14718.0001
Cell rack, Cat. No. 1.14710.0001

6. Preparation

- Analyze immediately after sampling.
- Decompose or extract solid sample materials by an appropriate method (applications available on request).
- Check the chloride content with the Merckoquant® Chloride Test.
  Samples containing more than 1,000 mg/l Cl^- must be diluted with distilled water.
- Check the nitrite content with the Merckoquant® Nitrite Test.
  If neccesary, eliminate interfering nitrite ions (stated amounts apply for nitrite contents of up to 50 mg/l):
  To 10 ml of sample add approx. 50 mg of amidosulfonic acid and dissolve.
  The pH of this solution must be within the range 1-3. Adjust, if necessary, with sulfuric acid. Subsequently boil **briefly** and allow to cool.
- Check the nitrate content with the Merckoquant® Nitrate Test.
  Samples containing more than 111 mg/l NO_3^- must be diluted with distilled water.
- Filter turbid samples.

7. Procedure

Preparation of measurement sample:

Reagent NO_3-1	4 ml	Place into a test tube[1] using one of the enclosed plastic syringes.
Pretreated sample (**5-25 °C**)	0.5 ml	Add using pipette, **do not mix!**
Reagent NO_3-2	0.5 ml	Add using pipette (**Caution! Tube becomes hot!**) and mix.
Leave to stand for 10 min, then fill the measurement sample into a corresponding cell, and measure in the photometer.		

[1] Empty cells, Cat. No. 1.14724.0001, are recommended. These cells can be sealed with the screw caps, thus enabling the sample to be mixed safely.

For measurement in the **50-mm cell**, both the sample volume as well as the quantities of the reagents NO_3-1 and NO_3-2 must be doubled.

Measurement:

- **Certain photometers may require a blank** (preparation as per measurement sample, but with distilled water instead of sample).
- For photometric measurement the cells must be clean.
  Wipe, if necessary, with a clean dry cloth.
- Measurement of turbid solutions gives false-high readings.
- The colour of the measurement solution remains stable for 30 min after the end of the reaction time stated above. Nevertheless it is recommended to exactly observe the reaction time of 10 min.

8. Analytical quality assurance

The measurement results can be officially recognized under the precondition that analytical quality-assurance measures are taken (ATV M 704).
To check the photometric measurement system (test reagents, measurement device, handling) and the mode of operation, a dilute nitrate standard solution containing 10.0 mg/l NO_3-N can be used.
Sample-dependent influences (matrix effects) can be determined by means of standard addition.

Characteristic data of the procedure:

In the production control, the following data were determined in accordance with DIN 38402 A51:

Standard deviation of the procedure	± 0.15 mg/l NO_3-N
Coefficient of variation of the procedure	± 1.5%
Confidence interval	± 0.4 mg/l NO_3-N
Number of lots	1

Deviation range of a measurement value: max. ± 0.5 mg/l NO_3-N (10-mm cell)

9. Note

Stopper reagent bottles immediately after use.

Merck KGaA, 64271 Darmstadt, Germany,
Tel. (0 61 51) 72 0, Telefax (0 61 51) 72 20 00

Spectroquant®

Phosphate Test

MERCK

1.14848.0001

P

for the determination of orthophosphate

1. Method

In a solution acidified with sulfuric acid, orthophosphate ions react with molybdate ions to form molybdophosphoric acid. Ascorbic acid reduces this to phosphomolybdenum blue (PMB), the concentration of which is determined photometrically.

The method is analogous to EPA 365.2+3, US Standard Methods 4500-P E, EN 1189, and ISO 6878/1.

2. Measuring range and number of determinations

Wavelength[1] nm	Cell mm	Measuring range mg/l PO_4-P	mg/l PO_4^{3-}	mg/l P_2O_5	Number of determinations
710	50	**0.010** - 1.000	**0.03** - 3.07	**0.02** - 2.29	420
	20	0.03 - 2.50	0.09 - 7.67	0.07 - 5.73	
	10	0.05 - **5.00**	0.2 - **15.3**	0.11 - **11.46**	

[1] Maximum absorbance; the wavelength stored in system photometers may differ from this value.

3. Applications

This test measures only orthophosphate. Samples must be decomposed by digestion (see section 6) before total phosphorus can be measured.

Sample material:
Groundwater and surface water, seawater
Drinking water
Wastewater
Nutrient solutions for fertilization
Soils after appropriate sample pretreatment
Food after appropriate sample pretreatment

4. Influence of foreign substances

This was checked in solutions containing 2 and 0 mg/l PO_4-P. The concentrations of foreign substances given in the table lie below the limit at which the determination is interfered with.

Concentrations of foreign substances in mg/l or %							
Ag^+	1000	F^-	50	Pb^{2+}	25	EDTA	1000
AsO_4^{3-}	**0.2**	Fe^{3+}	1000	S^{2-}	**2.5**	Surfactants[1]	100
Ca^{2+}	1000	Hg^{2+}	10	SiO_3^{2-}	1000	COD (K-hydrogen	
Cd^{2+}	1000	Mg^{2+}	1000	SO_3^{2-}	1000	phthalate)	150
CN^-	1000	Mn^{2+}	1000	Zn^{2+}	1000	Na-acetate	1 %
Cr^{3+}	1000	NH_4^+	1000			NaCl	5 %
$Cr_2O_7^{2-}$	**5**	Ni^{2+}	500			$NaNO_3$	10 %
Cu^{2+}	250	NO_2^-	1000			Na_2SO_4	10 %

Reducing agents interfere with the determination.
[1] tested with nonionic, cationic, and anionic surfactants

5. Reagents and auxiliaries

Please note the warnings on the packaging materials!

The reagents in the test are stable up to the date stated on the pack when stored closed at +15 to +25 °C.

Package contents:
4 bottles of reagent P-1A
2 bottles of reagent P-2A
1 AutoSelector

Other reagents and accessories:
Spectroquant® Crack Set 10C, Cat. No. 1.14688.0001
+ thermoreactor
Spectroquant® Crack Set 10, Cat. No. 1.14687.0001
+ microwave digestion unit
or + empty cells with screw caps (25 pieces), Cat. No. 1.14724.0001
+ thermoreactor
Merckoquant® Phosphate Test, Cat. No. 1.10428.0001,
measuring range 10 - 500 mg/l PO_4^{3-}
Universal indicator strips pH 0 - 14, Cat. No. 1.09535.0001
Sodium hydroxide solution 1 mol/l, Cat. No. 1.09137.
Sulfuric acid 0.5 mol/l, Cat. No. 1.09072.
Spectroquant® CombiCheck 10, Cat. No. 1.14676.0001
Hydrochloric acid 25 % GR, Cat. No. 1.00316.

Positive-displacement pipette 1 - 5 ml, Cat. No. 1.14716.0001
Tips and pistons for positive-displacement pipette (10 of each),
Cat. No. 1.14717.0001
Rack for positive-displacement pipette, tips, and pistons, Cat. No. 1.14718.0001

6. Preparation

- Analyze immediately after sampling.
- Total phosphorus can be determined after pretreatment of the sample using one of the Spectroquant® Crack Sets.
- Check the phosphate content with the Merckoquant® Phosphate Test. Samples containing more than 5 mg/l PO_4-P (15.3 mg/l PO_4^{3-}) must be diluted with distilled water.
- **The pH must be within the range 0 - 10.**
  Adjust, if necessary, with sodium hydroxide solution or sulfuric acid.
- Filter turbid samples.

7. Procedure

Pretreated sample (10 - 35 °C)	5 ml	Pipette into a test tube.
Reagent P-1A	5 drops	Add and mix
Reagent P-2A	1 level blue microspoon (in the cap of the P-2A bottle)	Add and shake **vigorously until the reagent is completely dissolved.**
Leave to stand for 5 min (reaction time), then fill the measurement sample into the cell, and measure in the photometer.		

For measurement in the **50-mm cell**, both the sample volume as well as the quantities of the reagents P-1A and P-2A must be doubled.

Notes on the measurement:

- **Certain photometers may require a blank** (preparation as per measurement sample, but with distilled water instead of sample).
- For photometric measurement the cells must be clean.
  Wipe, if necessary, with a clean dry cloth.
- Measurement of turbid solutions yields false-high readings.
- The blank is slightly yellow.
- The pH of the measurement solution must be within the range 0.80 - 0.95.
- The colour of the measurement solution remains stable for at least 60 min after the end of the reaction time stated above.

8. Analytical quality assurance

The measurement results can be officially recognized under the precondition that analytical quality-assurance measures are taken (ATV M 704).
Spectroquant® CombiCheck 10 can be used for this purpose.
This article contains a **standard solution** with 0.80 mg/l PO_4-P for checking the photometric measurement system (test reagents, measurement device, handling) and the mode of working and also an **addition solution** for determining sample-dependent interferences (matrix effects).

Characteristic data of the procedure:

In the production control, the following data were determined in accordance with ISO 8466-1 and DIN 38402 A51:

Standard deviation of the procedure	± 0.044 mg/l PO_4-P
Coefficient of variation of the procedure	± 1.8 %
Confidence interval	± 0.07 mg/l PO_4-P
Number of lots	14

Accuracy of a measurement value: max. ± 0.10 mg/l PO_4-P (10-mm cell)

9. Notes

- Reclose the reagent bottles immediately after use.
- Use only phosphate-free detergents to clean glassware. Otherwise fill with hydrochloric acid (approx. 10 %) and leave to stand for several hours.
- All glass surfaces coming into contact with the blue complex must be cleaned periodically as follows:
  Fill sodium hydroxyde solution (approx. 0.5 %) into tubes and cells and leave to stand for max. 1 hour.

Merck KGaA, 64271 Darmstadt, Germany,
Tel. (0 61 51) 72 0, Telefax (0 61 51) 72 20 00

I5101

Spectroquant®

Chloride Test

MERCK

1.14897.0001

Cl⁻

1. Method

Chloride ions react with mercury(II) thiocyanate to form slightly dissociated mercury(II) chloride. The thiocyanate released in the process in turn reacts with iron(III) ions to form red iron(III) thiocyanate that is determined photometrically.
The method is analogous to EPA 325.1+2 and US Standard Methods 4500-Cl⁻ E.

2. Measuring range and number of determinations

Wavelength[1)]	Measuring range	Number of determinations
468 nm	2.5 - 250 mg/l Cl⁻	50

[1)] Maximum absorbance; the wavelength stored in system photometers may differ from this value.

3. Applications

Sample material:
Groundwater, surface water, and seawater (after dilution)
Drinking water, mineral water, and curative water
Industrial water
Wastewater and percolating water

4. Influence of foreign substances

This was checked in solutions containing 125 (12) and 0 mg/l Cl⁻. The concentrations of foreign substances given in the table lie below the limit at which the determination is interfered with. The values in parentheses apply for the low measuring range 2.5 - 25.0 mg/l Cl⁻ (see section7).

Concentrations of foreign substances in mg/l or %							
Ag^+	10 (5)	F^-	100	Pb^{2+}	500	Ascorbic acid	500
Al^{3+}	100	Fe^{3+}	250	PO_4^{3-}	100	Free chlorine	10
Br^-	**5 (1)**	Hg^{2+}	10 (2)	S^{2-}	**2.5 (0.5)[1)]**	Surfactants[2)]	1000
Ca^{2+}	1000	K^+	1000	SCN^-	**2.5 (0.5)**	$NaNO_3$	20 %
Co^{2+}	500	Mg^{2+}	1000	SiO_3^{2-}	1000	**Na_2SO_4**	**1 %**
CN^-	**1 (0.2)**	Mn^{2+}	1000	SO_3^{2-}	100		**(0.25 %)**
Cr^{3+}	500	NH_4^+	1000	$S_2O_8^{2-}$	500		
$Cr_2O_7^{2-}$	250	Ni^{2+}	500	Zn^{2+}	500		
Cu^{2+}	500	NO_2^-	500 (100)				

[1)] In cases in which the sulfide concentration is higher, eliminate sulfide ions by adding hydrogen peroxide (1 drop of Perhydrol® per 10 ml of sample).
[2)] tested with nonionic, cationic, and anionic surfactants

5. Reagents and auxiliaries

Please note the warnings on the packaging materials!

The reagents in the test are stable up to the date stated on the pack when stored closed at +15 to +25 °C.

Package contents:
1 bottle of reagent Cl-1
1 bottle of reagent Cl-2
2 AutoSelectors

Other reagents and accessories:
Hydrogen peroxide 30 % H_2O_2 (Perhydrol®) GR, Cat. No. 1.07209.
Universal indicator strips pH 0 - 14, Cat. No. 1.09535.0001
Ammonia solution 25 % GR, Cat. No. 1.05432.
Nitric acid Titrisol® 1mol/l , Cat. No. 1.09966.0001
Spectroquant® CombiCheck 60, Cat. No. 1.14696.0001

Positive-displacement pipette 1 - 5 ml, Cat. No. 1.14716.0001
Tips and pistons for positive-displacement pipette (10 of each), Cat. No. 1.14717.0001
Positive-displacement pipette 0.5 - 2.5 ml, Cat. No. 1.14714.0001
Tips and pistons for positive-displacement pipette (10 of each), Cat. No. 1.14715.0001
Pack for positive-displacement pipette, tips, and pistons, Cat. No. 1.14718.0001

6. Preparation

- Analyze immediately after sampling.
- Extract solid sample materials by an appropriate method (applications available on request).
- **The pH must be within the range 1 - 12.**
  Adjust, if necessary, with ammonia solution or nitric acid.
- Filter turbid samples.

7. Procedure

for measuring range 2.5 - 25.0 mg/l Cl⁻:

Pretreated sample (10 - 30 °C)	**5 ml**	Pipette into a test tube.
Reagent Cl-1	2.5 ml	Add using pipette and mix.
Reagent Cl-2	0.5 ml	Add using pipette and mix.
Leave to stand for 1 min (reaction time), then fill the measurement sample into a 10-mm cell, and measure in the photometer.		

for measuring range 10 - 250 mg/l Cl⁻:

Pretreated sample (10 - 30 °C)	**1 ml**	Pipette into a test tube.
Reagent Cl-1	2.5 ml	Add using pipette and mix.
Reagent Cl-2	0.5 ml	Add using pipette and mix.
Leave to stand for 1 min (reaction time), then fill the measurement sample into a 10-mm cell, and measure in the photometer.		

Notes on the measurement:

- **Certain photometers may require a blank** (preparation as per measurement sample, but with distilled water instead of sample).
- For photometric measurement the cells must be clean. Wipe, if necessary, with a clean dry cloth.
- Measurement of turbid solutions yields false-high readings.
- The pH of the measurement solution must be approx. 1.
- The colour of the measurement solution remains stable for 30 min after the end of the reaction time stated above. (After 60 min the measurement value would have increased by 5 %.)

8. Analytical quality assurance

The measurement results can be officially recognized under the precondition that analytical quality-assurance measures are taken (ATV M 704). Spectroquant® CombiCheck 60 can be used for this purpose.
This article contains a **standard solution** with 125 mg/l Cl⁻ for checking the photometric measurement system (test reagents, measurement device, handling) and the mode of working and also an **addition solution** for determining sample-dependent interferences (matrix effects).

Characteristic data of the procedure:

In the production control, the following data were determined in accordance with ISO 8466-1 and DIN 38402 A51 (the values in parentheses apply for the low measuring range 2.5 - 25.0 mg/l Cl⁻):

Standard deviation of the procedure	± 2.8 (0.22) mg/l Cl⁻
Coefficient of variation of the procedure	± 2.1 (1.6) %
Confidence interval	± 7 (0.5) mg/l Cl⁻
Number of lots	4

Accuracy of a measurement value: max. ± 10 (1.2) mg/l Cl⁻

9. Notes

- Reclose the reagent bottles immediately after use.
- **The test reagents must not be run off with the wastewater!**
  For information on disposal/return for disposal please contact your local Merck or Merck dealer.

Merck KGaA, 64271 Darmstadt, Germany,
Tel. (0 61 51) 72 0, Telefax (0 61 51) 72 20 00

Methods of Analysis

COD

The analysis is undertaken on a well mixed unfiltered sample using the Dr Lange system – methods LCK 514 and 314. Oxidisable substances react with sulphuric acid – potassium dichromate solution in the presence of silver sulphate as a catalyst. Chloride is masked by mercury sulphate. For LCK 514 the green coloration of Cr^{3+} is evaluated. For LCK 314 the reduction in the yellow coloration of Cr^{6+} is evaluated.

BOD

The analysis is undertaken on a carefully mixed unfiltered sample. On the basis of the COD result dilution is undertaken if necessary with dilution water. The amount of dissolved oxygen is measured using an oxygen meter. The sample is incubated in the dark for 5 days at 20°C in an airtight incubation bottle, after which the dissolved oxygen is measured again in order to calculate the biochemical oxygen demand.

Nitrite

The analysis is undertaken on a settled sample using Dr Lange test LCK 341. Nitrites react with primary aromatic amines in acidic solution to form diazonium salts. These combine with aromatic compounds that contain an amino group or a hydroxyl group to form intensively colored azo dyes which are measured photometrically.

Ammonia

The analysis is undertaken on a settled sample using Dr Lange test LCK 304 and LCK 303. Ammonium ions react at pH 12.6 with hypochlorite ions and salicylate ions in the presence of sodium nitroprusside as a catalyst to form indophenol blue which is measured photometrically.

Chloride

The analysis is undertaken on a settled sample using Dr Lange test LCK 311. During the reaction of chloride ions with mercury thiocyanate the slightly dissociated mercury(II) chloride is formed. Simultaneously an equivalent amount of thiocyanate ions are set free, which react with iron(II) salts to form iron(II) thiocyanate which is measured photometrically.

Sulphate

The analysis is undertaken on a settled sample using Dr Lange LCK 153. Sulphate ions react with barium chloride in aqueous solution to form barium sulphate, which is only sparingly soluble. The resulting turbidity is measured photometrically.

Orthophosphate

The analysis is undertaken on a settled sample using Dr Lange test LCK. Phosphate ions react with molyb . and antimony ions in a cidic solution to form an antimonyl phosphomolybdate complex, which is redu by ascorbic acid to phosphomolybdenum blue which is measured photometrically.

Nitrate

The analysis is undertaken on a settled sample using Dr Lange test LCK 339. Nitrate ions in solutions containing sulphuric and phosphoric acids react with 2,6-dimethylphenol to form 4-nitro-2,6-dimethyphenol which is measured photometrically.

APPENDIX D

FLOW DATA

SITE 1: ROCHESTOWN

Flow Data (Site 1)

SITE 2

Total flows	49094.98	***Vol per hour***	12.01
Total hours	4087.626	***Vol per day***	288.26

20-Jul-02	72.03				
21-Jul-02	178.10				
22-Jul-02	116.31				
23-Jul-02	144.58				
24-Jul-02	107.35	Total time (hrs)	***272.85***		
25-Jul-02	109.13			Vol per hour	7.48
26-Jul-02	168.91				
27-Jul-02	287.27	Total volume (l)		Vol per day	179.54
28-Jul-02	250.55	***2041.11***			
29-Jul-02	320.90				
30-Jul-02	143.78				
31-Jul-02	142.20				

13-Aug-02	218.37				
14-Aug-02	249.10				
15-Aug-02	225.95				
16-Aug-02	331.00	Total time (hrs)	***312.63***		
17-Aug-02	2.89			Vol per hour	9.42
18-Aug-02	0.00				
19-Aug-02	250.33	Total volume (l)		Vol per day	226.08
20-Aug-02	359.36	***2945.00***			
21-Aug-02	285.03				
22-Aug-02	399.27				
23-Aug-02	325.96				
24-Aug-02	8.87				
25-Aug-02	0.00				
26-Aug-02	288.87				

11-Oct-02	148.61				
12-Oct-02	184.90	Total time (hrs)	***151***		
13-Oct-02	159.67			Vol per hour	6.41
14-Oct-02	206.48				
15-Oct-02	93.04	Total volume (l)		Vol per day	153.75
16-Oct-02	104.92	***967.33***			
17-Oct-02	69.71				

23-Oct-02	188.20	Total time (hrs)	***23***	Vol per hour	14.97
24-Oct-02	156.13	Total volume (l)		Vol per day	359.30
		344.33			

1-Nov-02	147.58				
2-Nov-02	174.89	Total time (hrs)	***117.58***	Vol per hour	8.32
3-Nov-02	180.76				
4-Nov-02	293.22	Total volume (l)		Vol per day	199.77
5-Nov-02	131.31	***978.69***			
6-Nov-02	50.92				

28-Nov-02	124.36				
29-Nov-02	174.16	Total time (hrs)	***114.51***	Vol per hour	8.29
30-Nov-02	187.17				
1-Dec-02	177.03	Total volume (l)		Vol per day	199.03
2-Dec-02	127.41	***949.62***			
3-Dec-02	159.48				

24-Dec-02	190.44				
25-Dec-02	342.54			Vol per hour	11.77
26-Dec-02	166.00	Total time (hrs)	***168.92***		
27-Dec-02	288.52			Vol per day	282.50
28-Dec-02	147.12				
29-Dec-02	251.80	Total volume (l)			
30-Dec-02	223.70	***1988.36***			
31-Dec-02	378.24				

Flow Data (Site 1)

20-Jan-03	170.86				
21-Jan-03	357.65				
22-Jan-03	163.10				
23-Jan-03	328.31	Total time (hrs)	153.50	Vol per hour	12.50
24-Jan-03	296.45				
25-Jan-03	208.47	Total volume (l)		Vol per day	300.02
26-Jan-03	394.07	1918.91			

30-Jan-03	128.88				
31-Jan-03	342.74	Total time (hrs)	133.05	Vol per hour	13.73
1-Feb-03	414.28				
2-Feb-03	387.17	Total volume (l)		Vol per day	329.49
3-Feb-03	329.85	1826.59			
4-Feb-03	223.68				

14-Feb-03	78.93				
15-Feb-03	422.20	Total time (hrs)	71	Vol per hour	15.84
16-Feb-03	548.21	Total volume (l)			
17-Feb-03	75.27	1124.61		Vol per day	380.15

19-Feb-03	305.59				
20-Feb-03	274.18	Total time (hrs)	133.166	Vol per hour	16.17
21-Feb-03	346.00				
22-Feb-03	313.20	Total volume (l)		Vol per day	388.19
23-Feb-03	528.62	2153.90			
24-Feb-03	386.32				

26-Feb-03	125.75	Total time (hrs)	23.67	Vol per hour	16.19
27-Feb-03	257.38	Total volume (l)			
		383.13		Vol per day	388.47

5-Mar-03	293.90				
6-Mar-03	274.73	Total time (hrs)	133.32	Vol per hour	17.03
7-Mar-03	343.57				
8-Mar-03	215.32	Total volume (l)		Vol per day	408.74
9-Mar-03	519.56	2270.58			
10-Mar-03	618.84				
11-Mar-03	4.65				

12-Mar-03	98.99				
13-Mar-03	289.29	Total time (hrs)	352.64	Vol per hour	12.29
14-Mar-03	157.46				
15-Mar-03	300.45	Total volume (l)		Vol per day	294.92
16-Mar-03	417.40	4333.33			
17-Mar-03	436.80				
18-Mar-03	369.63				
19-Mar-03	188.42				
20-Mar-03	217.91				
21-Mar-03	223.30				
22-Mar-03	329.26				
23-Mar-03	333.06				
24-Mar-03	330.30				
25-Mar-03	160.42				
26-Mar-03	435.92				
27-Mar-03	44.69				

28-Mar-03	150.65				
29-Mar-03	340.00	Total time (hrs)	132.92	Vol per hour	13.58
30-Mar-03	454.92				
31-Mar-03	318.69	Total volume (l)		Vol per day	325.81
1-Apr-03	221.22	1804.46			
2-Apr-03	315.29				
3-Apr-03	3.68				

Flow Data (Site 1)

7-Apr-03	67.63				
8-Apr-03	252.03				
9-Apr-03	177.36	Total time (hrs)	133.32	Vol per hour	10.42
10-Apr-03	268.88				
11-Apr-03	242.38	Total volume (l)		Vol per day	250.00
12-Apr-03	314.27	1388.76			
13-Apr-03	66.22				

14-Apr-03	165.81				
15-Apr-03	465.24	Total time (hrs)	133.3	Vol per hour	12.49
16-Apr-03	232.96				
17-Apr-03	204.44	Total volume (l)		Vol per day	299.87
18-Apr-03	225.94	1665.53			
19-Apr-03	303.46				
20-Apr-03	67.68				

22-Apr-03	103.92	Total time (hrs)	80.28	Vol per hour	11.80
23-Apr-03	212.40				
24-Apr-03	379.18	Total volume (l)		Vol per day	283.17
25-Apr-03	251.70	947.21			

26-Apr-03	261.82				
27-Apr-03	232.52	Total time (hrs)	125.17	Vol per hour	11.18
28-Apr-03	355.51				
29-Apr-03	162.60	Total volume (l)		Vol per day	268.25
30-Apr-03	362.36	1399.04			
1-May-03	24.23				

9-May-03	95.38				
10-May-03	390.53	Total time (hrs)	131.82	Vol per hour	11.99
11-May-03	255.96				
12-May-03	261.20	Total volume (l)		Vol per day	287.76
13-May-03	413.44	1580.55			
14-May-03	164.03				

15-May-03	305.91				
16-May-03	221.66				
17-May-03	371.97				
18-May-03	351.59				
19-May-03	430.21				
20-May-03	405.92				
21-May-03	211.64				
22-May-03	243.23	Total time (hrs)	265.55	Vol per hour	14.05
23-May-03	293.83				
24-May-03	353.53	Total volume (l)		Vol per day	337.15
25-May-03	434.46	3730.45			
26-May-03	106.49				

29-May-03	189.29				
30-May-03	126.05	Total time (hrs)	133.20	Vol per hour	10.96
31-May-03	270.57				
1-Jun-03	193.54	Total volume (l)		Vol per day	262.97
2-Jun-03	330.13	1459.48			
3-Jun-03	349.91				

5-Jun-03	199.81				
6-Jun-03	300.84	Total time (hrs)	107.15	Vol per hour	17.12
7-Jun-03	359.12				
8-Jun-03	642.28	Total volume (l)		Vol per day	410.89
9-Jun-03	332.41	1834.47			

10-Jun-03	383.91				
11-Jun-03	430.26	Total time (hrs)	120.00	Vol per hour	16.20
12-Jun-03	270.18				
13-Jun-03	541.74	Total volume (l)		Vol per day	388.91
14-Jun-03	318.46	1944.54			

Flow Data (Site 1)

23-Jun-03	142.27				
24-Jun-03	150.74				
25-Jun-03	632.31	Total time (hrs)	133.31	Vol per hour	17.21
26-Jun-03	588.87				
27-Jun-03	491.91	Total volume (l)		Vol per day	413.11
28-Jun-03	272.00	2294.68			
29-Jun-03	16.57				

8-Jul-03	136.57				
9-Jul-03	267.26	Total time (hrs)	133.31	Vol per hour	11.16
10-Jul-03	297.39				
11-Jul-03	298.27	Total volume (l)		Vol per day	267.86
12-Jul-03	165.88	1487.83			
13-Jul-03	312.94				
14-Jul-03	9.51				

29-Jul-03	274.50				
30-Jul-03	183.00				
31-Jul-03	244.00	Total time (hrs)	133.32	Vol per hour	9.01
1-Aug-03	427.00				
2-Aug-03	54.00	Total volume (l)		Vol per day	216.26
3-Aug-03	10.80	1201.30			
4-Aug-03	8.00				

6-Aug-03	102.79				
7-Aug-03	244.00	Total time (hrs)	134.30	Vol per hour	12.06
8-Aug-03	183.00				
9-Aug-03	427.00	Total volume (l)		Vol per day	289.37
10-Aug-03	244.00	1619.25			
11-Aug-03	366.00				
12-Aug-03	52.46				

20-Aug-03	327.57	Total time (hrs)	29.84	Vol per hour	17.16
21-Aug-03	184.40	Total volume (l)			
		511.97		Vol per day	411.77

SITE 2: THE CURRAGH

Flow Data (Site 2)

Note : flow per pump 4.75 litres **SITE 1** Rangers Lodge

Total flows	24744.15		***Vol per hour***	16.66	
Total hours	1484.81		***Vol per day***	399.96	

4-Feb-03	90.25	Total time (hrs)	3.70	Vol per hour	24.39
		Total volume (l)		Vol per day	585.41
		90.25			

11-Feb-03	163.87	Total time	5.75	Vol per hour	28.50
		Total volume (l)		Vol per day	683.98
		163.87			

17-Feb-03	15.50			Vol per hour	7.87
18-Feb-03	76.00	Total time	33.61	Vol per day	188.95
19-Feb-03	137.75	Total volume (l)			
20-Feb-03	35.35	264.60			

21-Feb-03	72.82	Total time (hrs)	46.07	Vol per hour	12.41
22-Feb-03	313.50	Total volume (l)		Vol per day	297.78
23-Feb-03	185.25	571.57			

3-Mar-03	35.77	Total time	22.7	Vol per hour	15.39
4-Mar-03	313.50	Total volume (l)		Vol per day	369.27
		349.27			

no flow rate change

7-Mar-03	72.82				
8-Mar-03	1030.75	Total time	117.7	Vol per hour	28.02
9-Mar-03	365.75				
10-Mar-03	1144.75	Total volume (l)		Vol per day	672.50
11-Mar-03	503.50	3298.07			
12-Mar-03	180.50				

14-Mar-03	73.44				
15-Mar-03	228.00	Total time	166.13	Vol per hour	14.06
16-Mar-03	299.25				
17-Mar-03	916.75	Total volume (l)		Vol per day	337.38
18-Mar-03	371.42	2335.36			
19-Mar-03	204.25				
20-Mar-03	142.50				
21-Mar-03	99.75				

22-Mar-03	95.00	Total time	75.387	Vol per hour	15.00
23-Mar-03	251.75				
24-Mar-03	570.00	Total volume (l)		Vol per day	359.90
25-Mar-03	213.75	1130.50			

7-Apr-03	110.50				
8-Apr-03	251.75				
9-Apr-03	418.00	Total time	189.35	Vol per hour	13.48
10-Apr-03	479.75				
11-Apr-03	266.00	Total volume (l)		Vol per day	323.46
12-Apr-03	270.75	2552			
13-Apr-03	289.75				
14-Apr-03	361.00				
15-Apr-03	104.50				

16-Apr-03	167.50				
17-Apr-03	275.50				
18-Apr-03	180.50	Total time	144.18	Vol per hour	10.62
19-Apr-03	337.25				
20-Apr-03	175.75	Total volume (l)		Vol per day	254.81
21-Apr-03	232.75	1530.75			
22-Apr-03	161.50				

2-May-03	821.25				
3-May-03	1228.00	Total time	116.37	Vol per hour	33.73
4-May-03	916.00				
5-May-03	632.00	Total volume (l)		Vol per day	809.54
6-May-03	328.00	3925.25			

Flow Data (Site 2)

7-May-03	285.25	Total time	72.00	Vol per hour	14.07
8-May-03	348.00	Total volume (l)			
9-May-03	380.00	1013.25		Vol per day	337.75

10-May-03	210.25				
11-May-03	299.25	Total time	120	Vol per hour	15.17
12-May-03	456.00				
13-May-03	555.75	Total volume (l)		Vol per day	364.10
14-May-03	299.25	1820.50			

15-May-03	291.00				
16-May-03	365.75	Total time	144	Vol per hour	10.37
17-May-03	109.25				
18-May-03	190.00	Total volume (l)		Vol per day	248.79
19-May-03	166.25	1492.75			
20-May-03	370.50				

21-May-03	1036.69	Total time	39.2	Vol per hour	32.99
22-May-03	256.50	Total volume (l)		Vol per day	791.75
		1293.19			

6-Jun-03	152.00	Total time	73.1	Vol per hour	12.80
7-Jun-03	346.75				
8-Jun-03	304.00	Total volume (l)		Vol per day	307.22
9-Jun-03	133.00	935.75			

19-Jun-03	251.75	Total time	98.05	Vol per hour	16.68
20-Jun-03	275.50	Total volume (l)		Vol per day	400.25
21-Jun-03	490.44	1635.19			
22-Jun-03	351.50				
23-Jun-03	266.00				

30-Jun-03	199.50	Total time	17.52	Vol per hour	19.52
1-Jul-03	142.50	Total volume (l)		Vol per day	468.49
		342.00			

SITE 3: KIILLAVENY

SITE 3

Total flows	47967.93		***Vol per hour***	13.92	
Total hours	3445.317		***Vol per day***	334.14	
15-Sep-03	200.43				
16-Sep-03	254.04	Total time (hrs)	***133.31***		
17-Sep-03	500.83			Vol per hour	13.55
18-Sep-03	330.58				
19-Sep-03	297.54	Total volume (l)		Vol per day	325.15
20-Sep-03	211.07	***1806.08***			
21-Sep-03	11.59				
23-Sep-03	197.53				
24-Sep-03	252.20	Total time (hrs)	***133.37***		
25-Sep-03	267.77			Vol per hour	12.68
26-Sep-03	350.08				
27-Sep-03	231.51	Total volume (l)		Vol per day	304.25
28-Sep-03	391.64	***1690.73***			
29-Sep-03	138.42				
30-Sep-03	279.39	Total time (hrs)	***133.31***		
1-Oct-03	536.56			Vol per hour	14.88
2-Oct-03	425.45				
3-Oct-03	333.26	Total volume (l)		Vol per day	357.15
4-Oct-03	270.10	***1983.81***			
5-Oct-03	0.62				
5-Oct-03	230.52				
6-Oct-03	395.93				
7-Oct-03	347.27				
8-Oct-03	224.89				
9-Oct-03	219.62				
10-Oct-03	337.77				
11-Oct-03	179.97	Total time (hrs)	***253.5***		
12-Oct-03	90.60			Vol per hour	12.45
13-Oct-03	495.92				
14-Oct-03	182.02	Total volume (l)		Vol per day	298.72
15-Oct-03	0.69	***3155.16***			
16-Oct-03	1.89				
17-Oct-03	-0.81				
18-Oct-03	-1.73				
19-Oct-03	2.21				
20-Oct-03	10.56				
21-Oct-03	0.67				
22-Oct-03	199.19				
23-Oct-03	237.98				
24-Oct-03	240.48	Total time (hrs)	***120***		
25-Oct-03	164.63			Vol per hour	9.67
26-Oct-03	183.31				
27-Oct-03	126.72	Total volume (l)		Vol per day	232.20
28-Oct-03	445.85	***1160.98***			
29-Oct-03	152.29	Total time (hrs)	***120***		
30-Oct-03	634.84			Vol per hour	13.21
31-Oct-03	314.86				
1-Nov-03	117.33	Total volume (l)		Vol per day	316.95
2-Nov-03	365.44	***1584.76***			
3-Nov-03	202.20				
4-Nov-03	97.87				
5-Nov-03	284.40				
6-Nov-03	122.78	Total time (hrs)	***335.58***		
7-Nov-03	536.82			Vol per hour	17.24
8-Nov-03	55.29				
9-Nov-03	37.58	Total volume (l)		Vol per day	413.76
10-Nov-03	288.81	***5785.33***			
11-Nov-03	737.78				
12-Nov-03	543.96				
13-Nov-03	939.88				
14-Nov-03	632.82				
15-Nov-03	523.59				
16-Nov-03	322.69				
17-Nov-03	458.85				

11-Dec-03	0.00				
12-Dec-03	158.60				
13-Dec-03	13.48				
14-Dec-03	82.29	Total time (hrs)	***272.5***		
15-Dec-03	8.94			Vol per hour	1.47
16-Dec-03	0.00				
17-Dec-03	35.37	Total volume (l)		Vol per day	35.26
18-Dec-03	25.71	***400.35***			
19-Dec-03	0.30				
20-Dec-03	11.06				
21-Dec-03	3.50				
22-Dec-03	61.09				

23-Dec-03	12.19				
24-Dec-03	11.88				
25-Dec-03	3.03				
26-Dec-03	324.10				
27-Dec-03	0.00				
28-Dec-03	92.02				
29-Dec-03	0.00	Total time (hrs)	***408***		
30-Dec-03	0.89			Vol per hour	5.82
31-Dec-03	541.10				
1-Jan-04	14.00	Total volume (l)		Vol per day	139.70
2-Jan-04	7.83	***2374.92***			
3-Jan-04	33.76				
4-Jan-04	63.08				
5-Jan-04	92.17				
6-Jan-04	103.35				
7-Jan-04	499.96				
8-Jan-04	575.56				

9-Jan-04	57.42				
10-Jan-04	309.60				
11-Jan-04	806.77				
12-Jan-04	594.44	Total time (hrs)	***264***		
13-Jan-04	422.51			Vol per hour	24.57
14-Jan-04	444.68				
15-Jan-04	1053.95	Total volume (l)		Vol per day	589.62
16-Jan-04	868.04	***6485.79***			
17-Jan-04	609.24				
18-Jan-04	762.89				
19-Jan-04	556.24				

20-Jan-04	436.68				
21-Jan-04	246.67				
22-Jan-04	424.77	Total time (hrs)	***336***		
23-Jan-04	357.40			Vol per hour	13.23
24-Jan-04	165.17				
25-Jan-04	315.24	Total volume (l)		Vol per day	317.57
26-Jan-04	297.80	***4446.03***			
27-Jan-04	335.49				
28-Jan-04	304.57				
29-Jan-04	83.39				
30-Jan-04	210.40				
31-Jan-04	505.58				
1-Feb-04	216.72				
2-Feb-04	546.14				

6-Feb-04	658.88				
7-Feb-04	919.30				
8-Feb-04	804.88				
9-Feb-04	670.67	Total time (hrs)	***252.5***		
10-Feb-04	429.40			Vol per hour	17.70
11-Feb-04	224.09				
12-Feb-04	157.02	Total volume (l)		Vol per day	424.90
13-Feb-04	176.63	***4470.27***			
14-Feb-04	99.62				
15-Feb-04	100.00				
16-Feb-04	229.78				

20-Feb-04	402.67				
21-Feb-04	331.99				
22-Feb-04	317.09				
23-Feb-04	481.40				
24-Feb-04	346.18				
25-Feb-04	602.45	Total time (hrs)	***480***		
26-Feb-04	409.04			Vol per hour	18.96
27-Feb-04	259.64				
28-Feb-04	292.08	Total volume (l)		Vol per day	455.12
29-Feb-04	524.68	***9102.44***			
1-Mar-04	584.17				
2-Mar-04	546.31				
3-Mar-04	194.72				
4-Mar-04	248.82				
5-Mar-04	448.95				
6-Mar-04	638.27				
7-Mar-04	634.89				
8-Mar-04	490.18				
9-Mar-04	719.40				
10-Mar-04	629.49				

11-Mar-04	573.35				
12-Mar-04	448.95				
13-Mar-04	513.85	Total time (hrs)	***203.25***		
14-Mar-04	362.41			Vol per hour	17.32
15-Mar-04	270.45				
16-Mar-04	0.00	Total volume (l)		Vol per day	415.80
17-Mar-04	232.60	***3521.28***			
18-Mar-04	665.31				
19-Mar-04	454.36				

SITE 4: THREE WELLS

SITE 4

Total flows	78193.84		***Vol per hour***	21.28	
Total hours	3675.09		***Vol per day***	510.64	

4-Sep-03	134.33				
5-Sep-03	155.16	Total time (hrs)	***154.5***		
6-Sep-03	260.18			Vol per hour	9.67
7-Sep-03	382.62				
8-Sep-03	151.80	Total volume (l)		Vol per day	231.96
9-Sep-03	300.79	***1493.26***			
10-Sep-03	108.38				
11-Sep-03	245.47				
12-Sep-03	455.25	Total time (hrs)	***168.00***		
13-Sep-03	242.22			Vol per hour	13.92
14-Sep-03	446.54				
15-Sep-03	230.81	Total volume (l)		Vol per day	333.99
16-Sep-03	364.93	***2337.93***			
17-Sep-03	352.71				
18-Sep-03	366.50	Total time (hrs)	***144.00***		
19-Sep-03	471.25			Vol per hour	31.40
20-Sep-03	1754.19				
21-Sep-03	575.41	Total volume (l)		Vol per day	753.53
22-Sep-03	912.06	***4521.20***			
23-Sep-03	441.78				
24-Sep-03	255.47				
25-Sep-03	249.90	Total time (hrs)	***135.60***		
26-Sep-03	365.58			Vol per hour	14.26
27-Sep-03	395.00				
28-Sep-03	528.25	Total volume (l)		Vol per day	342.20
29-Sep-03	139.20	***1933.41***			
30-Sep-03	604.51	Total time (hrs)	***99.22***		
1-Oct-03	217.24			Vol per hour	13.72
2-Oct-03	364.17				
3-Oct-03	113.84	Total volume (l)		Vol per day	329.22
4-Oct-03	61.27	***1361.03***			
22-Oct-03	302.20				
23-Oct-03	377.75				
24-Oct-03	377.75	Total time (hrs)	***158.18***		
25-Oct-03	528.85			Vol per hour	15.45
26-Oct-03	270.45				
27-Oct-03	226.65	Total volume (l)		Vol per day	370.72
28-Oct-03	359.69	***2443.33***			
29-Oct-03	229.79	Total time (hrs)	***120.00***		
30-Oct-03	188.20			Vol per hour	12.30
31-Oct-03	151.10				
1-Nov-03	453.30	Total volume (l)		Vol per day	295.14
2-Nov-03	453.30	***1475.68***			
3-Nov-03	291.38	Total time (hrs)	***51.81***	Vol per hour	16.50
4-Nov-03	226.65				
5-Nov-03	337.03	Total volume (l)		Vol per day	396.09
		855.06			
6-Nov-03	232.06				
7-Nov-03	186.41	Total time (hrs)	***216.00***	Vol per hour	15.23
8-Nov-03	302.20				
9-Nov-03	453.30	Total volume (l)		Vol per day	365.48
10-Nov-03	302.20	***3289.36***			
11-Nov-03	302.20				
12-Nov-03	377.75				
13-Nov-03	679.95				
14-Nov-03	453.30				
15-Nov-03	569.57				
16-Nov-03	528.85	Total time (hrs)	***105.28***	Vol per hour	19.76
17-Nov-03	377.75				
18-Nov-03	453.30	Total volume (l)		Vol per day	474.29
19-Nov-03	151.10	***2080.57***			

Flow Data (Site 4)

28-Nov-03	139.85				
29-Nov-03	1300.84				
30-Nov-03	186.79				
1-Dec-03	259.64	Total time (hrs)	***251.87***	Vol per hour	17.65
2-Dec-03	652.91				
3-Dec-03	271.32	Total volume (l)		Vol per day	423.52
4-Dec-03	358.66	***4444.62***			
5-Dec-03	417.17				
6-Dec-03	276.89				
7-Dec-03	233.52				
8-Dec-03	347.03				

9-Dec-03	195.28				
10-Dec-03	207.07	Total time (hrs)	***192.00***	Vol per hour	17.89
11-Dec-03	723.59				
12-Dec-03	577.03	Total volume (l)		Vol per day	429.37
13-Dec-03	396.51	***3434.95***			
14-Dec-03	559.78				
15-Dec-03	323.72				
16-Dec-03	451.95				

17-Dec-03	419.93				
18-Dec-03	221.40	Total time (hrs)	***144.00***	Vol per hour	14.91
19-Dec-03	215.83				
20-Dec-03	828.45	Total volume (l)		Vol per day	357.95
21-Dec-03	204.04	***2147.68***			
22-Dec-03	258.02				

23-Dec-03	507.27				
24-Dec-03	507.59	Total time (hrs)	***120.00***	Vol per hour	25.74
25-Dec-03	599.26				
26-Dec-03	1161.15	Total volume (l)		Vol per day	617.75
27-Dec-03	313.47	***3088.75***			

28-Dec-03	243.41				
29-Dec-03	381.94				
30-Dec-03	249.07				
31-Dec-03	931.58				
1-Jan-04	571.36				
2-Jan-04	520.25				
3-Jan-04	849.84				
4-Jan-04	356.20				
5-Dec-03	278.57	Total time (hrs)	***552.00***	Vol per hour	24.52
6-Dec-03	352.90				
7-Dec-03	774.59	Total volume (l)		Vol per day	588.36
8-Dec-03	1531.09	***13532.36***			
9-Jan-04	710.04				
10-Jan-04	561.73				
11-Jan-04	625.46				
12-Jan-04	522.01				
13-Jan-04	530.74				
14-Jan-04	450.38				
15-Jan-04	1152.15				
16-Jan-04	564.22				
17-Jan-04	470.87				
18-Jan-04	621.00				
19-Jan-04	282.97				

20-Jan-04	740.41				
21-Jan-04	589.26				
22-Jan-04	565.89				
23-Jan-04	831.37				
24-Jan-04	895.08	Total time (hrs)	***322.50***	Vol per hour	34.11
25-Jan-04	956.51				
26-Jan-04	880.15	Total volume (l)		Vol per day	818.72
27-Jan-04	915.36	***11001.55***			
28-Jan-04	708.50				
29-Jan-04	582.98				
30-Jan-04	717.21				
31-Jan-04	1192.30				
1-Feb-04	1058.67				
2-Feb-04	367.85				

Flow Data (Site 4)

6-Feb-04	906.60				
7-Feb-04	962.41				
8-Feb-04	699.96	Total time (hrs)	***323.45***	Vol per hour	27.94
9-Feb-04	600.40				
10-Feb-04	469.58	Total volume (l)		Vol per day	670.63
11-Feb-04	545.13	***9038.17***			
12-Feb-04	510.52				
13-Feb-04	445.84				
14-Feb-04	737.76				
15-Feb-04	892.43				
16-Feb-04	524.85				
17-Feb-04	600.50				
18-Feb-04	416.74				
19-Feb-04	725.48				

20-Feb-04	757.88				
21-Feb-04	778.10				
22-Feb-04	379.05				
23-Feb-04	542.10				
24-Feb-04	416.96	Total time (hrs)	***251.50***	Vol per hour	21.60
25-Feb-04	492.34				
26-Feb-04	419.17	Total volume (l)		Vol per day	518.33
27-Feb-04	457.52	***5431.63***			
28-Feb-04	463.20				
29-Feb-04	565.08				
1-Mar-04	160.24				

11-Mar-04	902.32				
12-Mar-04	437.51				
13-Mar-04	512.84	Total time (hrs)	***165.18***	Vol per hour	25.93
14-Mar-04	775.51				
15-Mar-04	454.33	Total volume (l)		Vol per day	622.35
16-Mar-04	500.83	***4283.30***			
17-Mar-04	542.58				
18-Mar-04	157.37				

APPENDIX E

RESULTS OF CHEMICAL & BACTERIOLOGICAL ANALYSIS

SITE 1: ROCHESTOWN

Site		Joe Keogh

Sampling Date		09/08/02
Sampling Time		am

Analysis Date	09/08/02
Analysis Time	15:00

Rainfall	
	mm
	mm

Ref	Sample Position	Date	COD	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	SO_4	S	Mn	Fe	Volume
X	Septic Tank	09/08/02												
Y	Puraflo	09/08/02												
1	1,Red,0m	09/08/02	30	>35	0.03	0.1		22	96	48				100
2	1,Blue,0m	09/08/02												
3	1,Black,0m	09/08/02												
4	1,Red,10m	09/08/02												
5	1,Blue,10m	09/08/02	6	17.4	<0.005	0.53		11.76	35	85				200
6	1,Black,10m	09/08/02												
7	1,Red,20m	09/08/02	8	25	<0.005	0.33		3.55	38	283				380
8	1,Blue,20m	09/08/02	6	9	<0.005	0.3		1.59	34	28				50
9	1,Black,20m	09/08/02	8	8.1	<0.005	0.55		13.76	34	108				150
10	2,Red,0m	09/08/02	55	36.2	0.1	0.5		16.76	30	125				200
11	2,Blue,0m	09/08/02	36	38.6	0.46	0.29		1.88	109	171				180
12	2,Black,0m	09/08/02												
13	2,Red,10m	09/08/02	8	28.3	<0.005	0.5		2.09	38	55				280
14	2,Blue,10m	09/08/02	8	21.6	<0.005	0.2		1.04	43	16				200
15	2,Black,10m	09/08/02	14	8.2	<0.005	0.4		1.28	31	131				160
16	2,Red,20m	09/08/02	9	19.7	<0.005	0.28		1.55	31	48				120
17	2,Blue,20m	09/08/02	42	6	<0.005	0.54		2.81	45	0				130
18	2,Black,20m	09/08/02												
19	3,Red,0m	09/08/02												
20	3,Blue,0m	09/08/02												
21	3,Black,0m	09/08/02												
22	3,Red,10m	09/08/02	10	4.8	<0.005	0.33		0.93	27	45				320
23	3,Blue,10m	09/08/02	12	8.1	<0.005	0.55		1.26	23	10				220
24	3,Black,10m	09/08/02	36	6.6	<0.005	1.08		0.84	20	97				220
25	3,Red,20m	09/08/02	44	11.4	<0.005	0.04		0.97	21	30				290
26	3,Blue,20m	09/08/02	8	9.3	<0.005	0.42		0.95	31	0				210
27	3,Black,20m	09/08/02	36	7.3	<0.005	0.41		0.89	20	55				70
28	4,Red,0m	09/08/02												
29	4,Blue,0m	09/08/02												
30	4,Black,0m	09/08/02												
31	4,Red,10m	09/08/02	8	9.3	<0.005	0.4		0.79	23	45				80
32	4,Blue,10m	09/08/02	9	10.7	<0.005	0.59		0.54	24	25				160
33	4,Black,10m	09/08/02	36	7.1	<0.005	0.63		0.54	29	108				340
34	4,Red,20m	09/08/02	740	12.6	<0.005	0.11		0.7	32	291				190
35	4,Blue,20m	09/08/02	2	6.2	<0.005	<0.01		0.78	25	8				90
36	4,Black,20m	09/08/02	30	5.2	<0.005	0.37		0.54	26	75				110
A	3,TS,2m													
B	3,TS,7m,													
C	3,TS,15m													
D	4,TS,2m													
E	4,TS,7m,													
F	4,TS,15m													
G	Small ZT													
H	Big ZT													

Site	Joe Keogh

Sampling Date	15/08/02
Sampling Time	9:00

Analysis Date	15/08/02
Analysis Time	14:30

Ref	Sample Position	Date	COD	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	SO_4	S	Mn	Fe	Vol	Notes
X	Septic Tank	15/08/02	576	3.9	0.31	>20	>5	>5	290	375	0.48				composite
Y	Puraflo	15/08/02	98	44	3	12.21	>5	>5	185	335	0.04				composite
1	1,Red,0m	15/08/02	71	18	0.89	1.86	>5	>5	185	491	0			240	
2	1,Blue,0m	15/08/02	57	79.6	0.17	0.56	0.65	0.58	184	421	0			260	
3	1,Black,0m	15/08/02													no sample
4	1,Red,10m	15/08/02													no sample
5	1,Blue,10m	15/08/02	42	11	0.11	0.3	0.43	0.48	57	311	0			110	
6	1,Black,10m	15/08/02	35	4.7	0.13	0.32	0.73	0.74	45	281	0			67	
7	1,Red,20m	15/08/02	39	6.3	0.11	0.28	0.44	0.39	38	315	0			440	
8	1,Blue,20m	15/08/02	57	6.4	0.12	0.27	0.61	0.43	36	297	0			65	
9	1,Black,20m	15/08/02	45	4.6	0.1	0.29	0.48	0.43	37	299	0			170	
10	2,Red,0m	15/08/02	96	30	1.74	2.72	>5	>5	195	385	0			370	
11	2,Blue,0m	15/08/02	75	30.4	0.21	0.84	2.73	2.42	186	373	0			390	
12	2,Black,0m	15/08/02													no sample
13	2,Red,10m	15/08/02	56	10.5	0.11	0.33	0.59	0.47	46	355	0			280	
14	2,Blue,10m	15/08/02	51	10.4	0.12	0.29	0.53	0.39	53	289	0			220	
15	2,Black,10m	15/08/02	50	4.3	0.1	0.33	0.64	0.43	47	395	0			210	
16	2,Red,20m	15/08/02	50	13.8	0.11	0.28	0.88	0.4	43	369	0			170	
17	2,Blue,20m	15/08/02	35	8.2	0.1	0.35	0.61	0.4	27	269	0			200	
18	2,Black,20m	15/08/02	31	3.8	0.11	0.29	0.64	0.4	31	361	0			180	
19	3,Red,0m	15/08/02	51	4.4	0.12	0.36	0.56	0.47	125	281	0			45	
20	3,Blue,0m	15/08/02													no sample
21	3,Black,0m	15/08/02													no sample
22	3,Red,10m	15/08/02	33	16.9	0.11	0.27	0.56	0.47	27	259	0			350	
23	3,Blue,10m	15/08/02	33	4.9	0.11	0.31	0.55	0.43	39	255	0			320	
24	3,Black,10m	15/08/02	36	4.2	0.11	0.29	0.47	0.47	57	247	0			280	
25	3,Red,20m	15/08/02	12	6.6	0.11	0.28	0.57	0.4	104	233	0			360	
26	3,Blue,20m	15/08/02	24	4.9	0.11	0.29	0.8	0.49	33	219	0			270	
27	3,Black,20m	15/08/02	22	3.9	0.11	0.37			29		0			40	
28	4,Red,0m	15/08/02													no sample
29	4,Blue,0m	15/08/02	87	25.4	2.88	1.99	2.18	2.02	174	283	0			30	
30	4,Black,0m	15/08/02	56	5.9	2.04	1.23	2.28	2.29	183	315	0			210	30 & 31 mixed up
31	4,Red,10m	15/08/02	33	26.7	0.1	0.29	0.51	0.43	42	251	0			160	31 & 31 mixed up
32	4,Blue,10m	15/08/02	18	4.3	0.1	0.25	0.41	0.43	43	245	0			100	
33	4,Black,10m	15/08/02	11	3.2	0.1	0.24	0.44	0.44	11	277	0			360	
34	4,Red,20m	15/08/02	93	6.7	0.11	0.24	0.4	0.45	28	213	0			530	
35	4,Blue,20m	15/08/02	30	4,7	0.1	0.26	0.43	0.41	25	237	0			170	
36	4,Black,20m	15/08/02	22	4.4	0.1	0.25	0.43	0.41	33	221	0			100	
A	3,TS,2m	15/08/02	221	19.2					282		0			7	
B	3,TS,7m,	15/08/02	20	4.3	0.1	0.32	0.46	0.45	38	241	0			180	
C	3,TS,15m	15/08/02	65	3.9	0.11	0.33	0.46	0.44	35	229	0			80	
D	4,TS,2m	15/08/02													no sample
E	4,TS,7m,	15/08/02	54	3.4	0.11	0.32	1.46	0.46	34	247	0			140	
F	4,TS,15m	15/08/02	132	5.8		0.36			57		0			20	
G	Small ZT														
H	Big ZT														

Site	Joe Keogh

Sampling Date	22/08/02
Sampling Time	(am)

Analysis Date	22/08/02
Analysis Time	14:00

Rainfall	
21/08/02	mm
22/08/02	mm

Ref	Sample Position	Date	COD	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	SO_4	S	Mn	Fe	Volume	
X	Septic Tank	22/08/02	484	0.6	0.2	61.5	76	19.26	117	180	1.46			-	
Y	Puraflo	22/08/02	189	51	2.84	6.85	0	26	90	29	0.06			-	
1	1,Red,0m	22/08/02	92	77.6	1.92	4.19	27.52	13.44	90	116	<0.1			420	
2	1,Blue,0m	22/08/02	57	76.6	<0.005	0.08	6.56	5.7	89	86	<0.1			360	
3	1,Black,0m	22/08/02													
4	1,Red,10m	22/08/02	58	43	-	0.29	7.56	8.18	-	-	<0.1			20	
5	1,Blue,10m	22/08/02	47	8.6	<0.005	<0.01	2	2.46	89	0	<0.1			130	
6	1,Black,10m	22/08/02	38	3.7	<0.005	<0.01	1.6	4.88	4	0	<0.1			70	
7	1,Red,20m	22/08/02	43	12.4	<0.005	<0.01	1.84	3.94	4	0	<0.1			460	
8	1,Blue,20m	22/08/02	56	6.5	<0.005	<0.01	1.84	4.82	2	0	<0.1			80	
9	1,Black,20m	22/08/02	38	6.8	<0.005	<0.01	1.88	1.36	3	30	<0.1			180	
10	2,Red,0m	22/08/02	86	32.5	3.62	7.7	20	13.72	91	47	<0.1			450	
11	2,Blue,0m	22/08/02	69	42.8	<0.005	<0.01	5.08	5.3	89	97	<0.1			460	
12	2,Black,0m	22/08/02													
13	2,Red,10m	22/08/02	27	22	<0.005	<0.01	2.4	8.96	7	0	<0.1			220	
14	2,Blue,10m	22/08/02	47	15.1	<0.005	<0.01	2.12	2.98	3	0	<0.1			200	
15	2,Black,10m	22/08/02	40	5.4	<0.005	<0.01	1.64	11.3	4	108	<0.1			210	
16	2,Red,20m	22/08/02	25	13.4	<0.005	0.02	-	3.6	3	0	<0.1			130	
17	2,Blue,20m	22/08/02	42	6.6	<0.005	<0.01	2	1.76	0	0	<0.1			180	
18	2,Black,20m	22/08/02	35	5.6	<0.005	<0.01	2.16	2.8	1	0	<0.1			180	
19	3,Red,0m	22/08/02	57	77.6	<0.005	0.09	5.92	5.66	12	49	<0.1			50	
20	3,Blue,0m	22/08/02													
21	3,Black,0m	22/08/02													
22	3,Red,10m	22/08/02	32	6	<0.005	<0.01	3.96	2.04	1	0	<0.1			320	
23	3,Blue,10m	22/08/02	35	7.3	<0.005	<0.01	3	2.1	3	0	<0.1			290	
24	3,Black,10m	22/08/02	31	7.1	<0.005	<0.01	2.08	4.94	3	147	<0.1			410	
25	3,Red,20m	22/08/02	46	19.8	<0.005	0.03	2	8.02	25	0	<0.1			360	
26	3,Blue,20m	22/08/02	33	4.9	<0.005	<0.01	-	0	2	0	<0.1			360	
27	3,Black,20m	22/08/02	17	4.8	<0.005	0.09	2.16	8.66	2	0	<0.1			130	
28	4,Red,0m	22/08/02	53	21.5	0.15	0.5	1.84	2.62	60	0	<0.1			48	
29	4,Blue,0m	22/08/02	65	73	2.76	33.9	2.92	0.36	80	40	<0.1			80	
30	4,Black,0m	22/08/02	81	43.3	2.4	2.99	6.44	8.44	87	56	<0.1			190	
31	4,Red,10m	22/08/02	44	5.1	<0.005	<0.01	1.88	1.24	3	0	<0.1			140	
32	4,Blue,10m	22/08/02	70	3	<0.005	<0.01	1.86	1	2	0	<0.1			130	
33	4,Black,10m	22/08/02	41	2.5	<0.005	<0.01	2.04	1.52	0	98	<0.1			370	
34	4,Red,20m	22/08/02	43	1.4	<0.005	<0.01	2.68	5.6	1	0	<0.1			560	
35	4,Blue,20m	22/08/02	50	2	<0.005	0.03	2.96	2.1	0	0	<0.1			140	
36	4,Black,20m	22/08/02	55	0	<0.005	<0.01	-	4.26	0	58	<0.1			150	
A	3,TS,2m	22/08/02	96	85.2	<0.005	0.87	2.08	1.68	83	121	<0.1			250	
B	3,TS,7m,	22/08/02	59	0.6	<0.005	<0.01	2.92	2.58	0	0	<0.1			170	
C	3,TS,15m	22/08/02	80	2.2	<0.005	0.04	2.44	4.12	1	0	<0.1			35	
D	4,TS,2m	22/08/02													
E	4,TS,7m,	22/08/02	48	1.6	<0.005	0	5.22	4.02	0	3	<0.1			150	
F	4,TS,15m	22/08/02	299	8.1	-	-	-	7.6	-	-	-			10	
G	Small ZT														
H	Big ZT														

Site	Joe Keogh

Sampling Date	27/08/02
Sampling Time	09:30

Analysis Date	27/08/02
Analysis Time	13:15

Rainfall	
26/08/02	mm
27/08/02	mm

Ref	Sample Position	Date	COD	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	SO_4	S	Mn	Fe	Volume
X	Septic Tank	27/08/02	524	0.4	0.22	155.1	>5	46.8	125	234	3.27			comp
Y	Puraflo	27/08/02	102	29.8	5.8	14.1	>5	>80	106	194	0.04			comp
1	1,Red,0m	27/08/02	118	70.2	1.4	9.6	5.35	19.8	95	137	<0.1			290
2	1,Blue,0m	27/08/02	53	103.6	0.03	9.4	1.12	12.88	98	118	<0.1			220
3	1,Black,0m	27/08/02												
4	1,Red,10m	27/08/02	71	12	<0.005	0.58	0.71	>5	10	122	<0.1			50
5	1,Blue,10m	27/08/02	104	7.8	<0.005	0.41	1.26	2.4	11	38	<0.1			150
6	1,Black,10m	27/08/02	47	<0.1	<0.005	0.36	1.41	1.73	7	97	<0.1			70
7	1,Red,20m	27/08/02	68	9.2	<0.005	0.34	0.65	1.91	5	20	<0.1			380
8	1,Blue,20m	27/08/02	61	3	<0.005	0.78	0.59	2.49	4	10	<0.1			110
9	1,Black,20m	27/08/02		3.1	<0.005	0.62	0.57	>5	6	69	<0.1			200
10	2,Red,0m	27/08/02	86	88.8	2.16	4.51	5.52	>16	98	176	<0.1			300
11	2,Blue,0m	27/08/02	66	60	0.04	5.3	5.14	>16	96	222	<0.1			300
12	2,Black,0m	27/08/02												
13	2,Red,10m	27/08/02	58	15.8	<0.005	0.6	0.49	2.36	6	108	<0.1			250
14	2,Blue,10m	27/08/02	57	12.9	<0.005	0.47	0.97	5.54	6	151	<0.1			230
15	2,Black,10m	27/08/02	62	5.2	<0.005	1.83	0.95	4.99	6	142	<0.1			210
16	2,Red,20m	27/08/02	47	22.3	<0.005	0.55	0.74	2.26	5	127	<0.1			160
17	2,Blue,20m	27/08/02	57	3.6	<0.005	0.66	0.35	1.77	2	74	<0.1			210
18	2,Black,20m	27/08/02	68	4.2	<0.005	0.64	0.53	4.04	3	91	<0.1			200
19	3,Red,0m	27/08/02	76	27.3	<0.005	0.48	0.46	9.32	60	229	<0.1			30
20	3,Blue,0m	27/08/02												
21	3,Black,0m	27/08/02												
22	3,Red,10m	27/08/02	65	1.6	<0.005	0.47	1.46	4.54	2	239	<0.1			380
23	3,Blue,10m	27/08/02	77	4.2	<0.005	0.7	0.82	>5	6	0	<0.1			320
24	3,Black,10m	27/08/02	66	4.9	<0.005	2.17	0.7	>5	6	171	<0.1			450
25	3,Red,20m	27/08/02	70	30.8	<0.005	0.81	0.36	3.17	29	49	<0.1			220
26	3,Blue,20m	27/08/02	57	5.9	<0.005	0.51	0.65	2.54	3	21	<0.1			300
27	3,Black,20m	27/08/02	49	3.8	<0.005	0.51	0.53	>5	4	89	<0.1			170
28	4,Red,0m	27/08/02	67	92.9	0.17	4.7	0.58	12.8	76	70	<0.1			30
29	4,Blue,0m	27/08/02												
30	4,Black,0m	27/08/02	84	58	1.8	6.6	5.39	22.48	98	142	<0.1			130
31	4,Red,10m	27/08/02	59	5.4	<0.005	0.55	0.92	>5	4	192	<0.1			130
32	4,Blue,10m	27/08/02	62	4.1	<0.005	0.78	2.26	>5	7	129	<0.1			140
33	4,Black,10m	27/08/02	80	3	<0.005	1.53	1.92	>5	3	194	<0.1			400
34	4,Red,20m	27/08/02	68	8.9	<0.005	0.45	0.58	5.41	4	71	<0.1			490
35	4,Blue,20m	27/08/02	66	2.3	<0.005	0.62	0.82	4.7	1	88	<0.1			160
36	4,Black,20m	27/08/02	94	1.1	<0.005	0.65	2.16	4	2	180	<0.1			160
A	3,TS,2m	27/08/02	118	58	<0.005	3.08	0.94	-	83	155	<0.1			220
B	3,TS,7m,	27/08/02	94	0.5	<0.005	0.56	0.58	-	4	128	<0.1			170
C	3,TS,15m	27/08/02												
D	4,TS,2m	27/08/02												
E	4,TS,7m,	27/08/02	72	4.2	<0.005	0.48	1.06		5	119	<0.1			100
F	4,TS,15m	27/08/02	301	9	<0.005	-	-		12	-	<0.1			10
G	Small ZT													
H	Big ZT													

Site	Joe Keogh

Sampling Date	12/09/02
Sampling Time	09:30

Analysis Date	12/09/02
Analysis Time	13:15

Rainfall	
11/09/02	mm
12/08/02	mm

Ref	Sample Position	Date	COD	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	SO_4	S	Mn	Fe	Volume
X	Septic Tank	12/09/02	696	0.9	0.22	124.4		26.4	123	433	2.55			spot
Y	Puraflo	12/09/02	188	43	7.1	17.4		19.8	100	242	<0.1			comp
1	1,Red,0m	12/09/02	139	57.5	4.3	12.4		25.2	93	257	<0.1			170
2	1,Blue,0m	12/09/02	84	40.3	0.07	<0.01		15.05	95	221	<0.1			360
3	1,Black,0m	12/09/02	92	55	3.6	<0.01		3.49	96	448	<0.1			90
4	1,Red,10m	12/09/02												0
5	1,Blue,10m	12/09/02	58	2.9	<0.005	<0.01		0.58	28	149	<0.1			150
6	1,Black,10m	12/09/02	65	0.8	<0.005	0.2		0.15	16	201	<0.1			70
7	1,Red,20m	12/09/02	63	9	<0.005	0.7		1.65	13	159	<0.1			100
8	1,Blue,20m	12/09/02	62	3.2	<0.005	<0.01		0.36	9	127	<0.1			460
9	1,Black,20m	12/09/02	53	3.7	<0.005	<0.01		0.12	18	143	<0.1			160
10	2,Red,0m	12/09/02	102	78	1.3	<0.01		17.6	99	170	<0.1			240
11	2,Blue,0m	12/09/02	94	29.7	<0.005	2.69		12.75	80	321	<0.1			310
12	2,Black,0m	12/09/02												0
13	2,Red,10m	12/09/02	82	12	<0.005	<0.01		0.13	17	232	<0.1			70
14	2,Blue,10m	12/09/02	37	11.2	<0.005	<0.01		0.07	17	196	<0.1			90
15	2,Black,10m	12/09/02	51	<0.1	<0.005	<0.01		0	22	198	<0.1			620
16	2,Red,20m	12/09/02	50	10.3	<0.005	0.26		0.29	23	266	<0.1			100
17	2,Blue,20m	12/09/02	44	5.7	<0.005	0.45		5.18	16	156	<0.1			220
18	2,Black,20m	12/09/02	28	2.5	<0.005	0.67		3.6	14	199	<0.1			220
19	3,Red,0m	12/09/02	52	78	0.04	0.92		25.35	84	362	<0.1			50
20	3,Blue,0m	12/09/02												0
21	3,Black,0m	12/09/02												0
22	3,Red,10m	12/09/02	37	2.9	<0.005	0.32		6.43	18	112	<0.1			280
23	3,Blue,10m	12/09/02	39	3.9	<0.005	<0.01		6.03	16	136	<0.1			290
24	3,Black,10m	12/09/02	43	2.4	<0.005	<0.01		1.05	13	270	<0.1			360
25	3,Red,20m	12/09/02	18	4.1	<0.005	<0.01		0.43	36	212	<0.1			220
26	3,Blue,20m	12/09/02	19	2.3	<0.005	<0.01		1.29	17	193	<0.1			330
27	3,Black,20m	12/09/02	24	<0.1	<0.005	<0.01		0.58	8	190	<0.1			170
28	4,Red,0m	12/09/02	34	21	0.38	0.14		0.36	91	266	<0.1			70
29	4,Blue,0m	12/09/02												0
30	4,Black,0m	12/09/02	51	52.2	0.12	0.45		2.51	89	230	<0.1			50
31	4,Red,10m	12/09/02	28	1.6	<0.005	<0.01		6.35	13	240	<0.1			110
32	4,Blue,10m	12/09/02	35	0.5	<0.005	<0.01		0.31	17	281	<0.1			100
33	4,Black,10m	12/09/02	26	0.7	<0.005	<0.01		0.07	20	273	<0.1			400
34	4,Red,20m	12/09/02	23	<0.1	<0.005	<0.01		0.19	24	186	<0.1			490
35	4,Blue,20m	12/09/02	12	<0.1	<0.005	<0.01		0.16	17	190	<0.1			180
36	4,Black,20m	12/09/02	73	0.3	<0.005	<0.01		0.55	14	162	<0.1			220
A	3,TS,2m	12/09/02	154	110	-	-		-	103	-	-			little
B	3,TS,7m,	12/09/02	57	0.4	<0.005	0.4		0.17	16	138	<0.1			
C	3,TS,15m	12/09/02	57	0.3	<0.005	<0.01		-	15	183	<0.1			
D	4,TS,2m	12/09/02												0
E	4,TS,7m,	12/09/02	38	4	<0.005	0.5		-	20	179	<0.1			
F	4,TS,15m													0
G	Small ZT													
H	Big ZT													

Site	Joe Keogh

Sampling Date	26/09/02
Sampling Time	09:00

Analysis Date	26/09/02
Analysis Time	13:00

Rainfall	
25/09/02	mm
26/09/02	mm

Ref	Sample Position	Date	COD	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	SO_4	S	Mn	Fe	Volume	
X	Septic Tank	26/09/02	842	1.5	0.21	>75		61.9	106		7.5			spot	
Y	Puraflo	26/09/02	264	77.5	>1	19.8		67.4	92		0.03			comp	
1	1,Red,0m	26/09/02	168	74.5	>1	14.44		64.5	71		<.1			310	
2	1,Blue,0m	26/09/02	52	100	0	0.68		49.4	74		<.1			170	
3	1,Black,0m	26/09/02	62	82.5	>1	>3		-	78		<.1			20	
4	1,Red,10m	26/09/02												0	
5	1,Blue,10m	26/09/02	43	9.5	<0.02	0.13		7.82	3					70	
6	1,Black,10m	26/09/02	60	4.3	<0.02	0.1		0.32	<10					60	
7	1,Red,20m	26/09/02	35	8.7	<0.02	0.13		1.4	<10					300	
8	1,Blue,20m	26/09/02	49	7.8	0.02	0.21		1.43	<10					65	
9	1,Black,20m	26/09/02	35	5.7	<0.02	0.33		2.97	<10					90	
10	2,Red,0m	26/09/02	101	105	>1	4.8		67.2	77		<0.1			210	
11	2,Blue,0m	26/09/02	112	77.5	0.64	0.38		60.5	75		<0.1			230	
12	2,Black,0m	26/09/02						0						0	
13	2,Red,10m	26/09/02	47	23.2	<0.02	0.21		0.63	<10					105	
14	2,Blue,10m	26/09/02	39	17.4	<0.02	0.28		0.2	<10					120	
15	2,Black,10m	26/09/02	24	7.7	<0.02	1.28		0.99	<10					180	
16	2,Red,20m	26/09/02	26	15.6	<0.02	0.3		0.47	<10					70	
17	2,Blue,20m	26/09/02	14	9.7	<0.02	0.28		1.24	<10					190	
18	2,Black,20m	26/09/02	34	6.4	<0.02	0.82		6.25	<10					170	
19	3,Red,0m	26/09/02												0	
20	3,Blue,0m	26/09/02												0	
21	3,Black,0m	26/09/02												0	
22	3,Red,10m	26/09/02	26	5.4	0.01	0.14		5.98	<10					210	
23	3,Blue,10m	26/09/02	31	13.5	<0.02	0.04		6.08	2					190	
24	3,Black,10m	26/09/02	67	5.8	<0.02	0.34		5.64	<10					400	
25	3,Red,20m	26/09/02	30	41.2	<0.02	0.15		0.22	29					150	
26	3,Blue,20m	26/09/02	27	8.5	<0.02	0.05		0.17	<10					230	
27	3,Black,20m	26/09/02	15	6.5	0.01	0.23		<0.05	<10					130	
28	4,Red,0m	26/09/02												0	
29	4,Blue,0m	26/09/02												0	
30	4,Black,0m	26/09/02												0	
31	4,Red,10m	26/09/02	26	8.7	-	-		5.58	<10					70	
32	4,Blue,10m	26/09/02	28	8.6	<0.02	0.16		5.62	<10					75	
33	4,Black,10m	26/09/02	33	5.2	<0.02	0.09		5.58	<10					360	
34	4,Red,20m	26/09/02	45	12.2	<0.02	<0.05		<0.05	<10					320	
35	4,Blue,20m	26/09/02	81	5.7	<0.02	0.09		0.06	<10					130	
36	4,Black,20m	26/09/02	49	2.4	<0.02	0.01		0.16	<10					170	
A	3,TS,2m	26/09/02												0	
B	3,TS,7m,	26/09/02	119	2.8	<0.02	0.09		6.01	6.01					140	
C	3,TS,15m	26/09/02	124	3.4	<0.02	0.04		2.08	2.08					65	
D	4,TS,2m	26/09/02												0	
E	4,TS,7m,	26/09/02	82	5.7	<0.02	0.06		0.8	0.8					110	
F	4,TS,15m	26/09/02	309	-	-	-		-	-					5	
G	Small ZT													0	
H	Big ZT													0	

Site	Joe Keogh

Sampling Date	10/10/02
Sampling Time	09:00

Analysis Date	10/10/02
Analysis Time	13:30

Rainfall	
25/09/02	mm
26/09/02	mm

Ref	Sample Position	Date	COD	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	SO_4	S	Mn	Fe	Volume	
X	Septic Tank	10/10/02	758	0.3	0.27	142.4		23.6	74.1					spot	
Y	Puraflo	10/10/02	224	48.5	10.7	22.6		41.9	51.3					comp	
1	1,Red,0m	10/10/02	153	56	9.4	21.2		57.2	56.2					320	
2	1,Blue,0m	10/10/02	72	108	0	0.15		39.5	53.2					200	
3	1,Black,0m	10/10/02	-	-	-	-		-	-					-	
4	1,Red,10m	10/10/02	-	-	-	-		-	-					-	
5	1,Blue,10m	10/10/02	61	11.5	0	0.4		10.5	22.2					70	
6	1,Black,10m	10/10/02	48	1.1	0	0.57		3.27	11.2					30	
7	1,Red,20m	10/10/02	35	8.2	0	0.42		1.1	6.5					220	
8	1,Blue,20m	10/10/02	55	5.2	0	0.27		6.06	8.4					50	
9	1,Black,20m	10/10/02	36	2.9	0	0		6.26	9.7					170	
10	2,Red,0m	10/10/02	116	56.7	7.9	24		57.5	55.1					250	
11	2,Blue,0m	10/10/02	69	148	0.12	0.25		63.5	53					300	
12	2,Black,0m	10/10/02	-	-	-	-		-	-					-	
13	2,Red,10m	10/10/02	35	18	0.31	0.04		2.1	13.6					90	
14	2,Blue,10m	10/10/02	23	12.7	0	0.91		3.85	14.5					130	
15	2,Black,10m	10/10/02	32	3.6	0	0.11		2.49	8.3					170	
16	2,Red,20m	10/10/02	31	11.4	0	0.17		2.4	9.9					45	
17	2,Blue,20m	10/10/02	30	11.5	0	0.01		2.08	6.5					170	
18	2,Black,20m	10/10/02	39	3.4	0	0.09		0.86	9.3					160	
19	3,Red,0m	10/10/02	91	4	0.26	0.1		>4	-					23	
20	3,Blue,0m	10/10/02	-	-	-	-		-	-					-	
21	3,Black,0m	10/10/02	-	-	-	-		-	-					-	
22	3,Red,10m	10/10/02	34	45.1	0	0.01		0.82	6.8					190	
23	3,Blue,10m	10/10/02	30	3.7	0	0.02		0.46	10.4					150	
24	3,Black,10m	10/10/02	42	7.5	0	1.36		0.7	5.8					370	
25	3,Red,20m	10/10/02	41	31.7	0	0		0	26.4					130	
26	3,Blue,20m	10/10/02	44	7	0	0		0.81	10.5					220	
27	3,Black,20m	10/10/02	68	4	0	0		0.4	6					130	
28	4,Red,0m	10/10/02	70	61.6	0	0.32		0.74	-					15	
29	4,Blue,0m	10/10/02	102	104.8	2.9	1.46		12.92	55.4					110	
30	4,Black,0m	10/10/02	91	106	0	0.93		12.56	54.5					170	
31	4,Red,10m	10/10/02	42	5.7	0	0.05		5.96	11.8					65	
32	4,Blue,10m	10/10/02	44	5.1	0	0.04		3.46	9.3					70	
33	4,Black,10m	10/10/02	49	1.9	0	0.07		5.02	6.5					310	
34	4,Red,20m	10/10/02	34	6.5	0	0.04		1.36	6.2					290	
35	4,Blue,20m	10/10/02	35	4.2	0	0.08		1.33	11					100	
36	4,Black,20m	10/10/02	75	2.7	0	0.04		4.53	5.4					150	
A	3,TS,2m	10/10/02	-	-	-	-		-	-					<5	
B	3,TS,7m,	10/10/02	-	-	-	-		-	-					-	
C	3,TS,15m	10/10/02	98	2.9	0	0.09		4.11	-					30	
D	4,TS,2m	10/10/02	0	0	0	-		-	-					-	
E	4,TS,7m,	10/10/02	81	4.8	0	0.28		2.18	7.5					100	
F	4,TS,15m	10/10/02	-	9.5	-	-		-	-					4	
G	Small ZT													-	
H	Big ZT													-	

Site	Joe Keogh

Sampling Date	17/10/02
Sampling Time	09:00

RED = CAL LAB ANALYSIS

	Analysis Date	17/10/02
	Analysis Time	12:45

Rainfall
25/09/02
26/09/02

Ref	Sample Position	Date	BOD	COD	COD	NO_3-N	NO3-N	NO_2-N	NO2-N	NH_4-N	NH4-N	Tot-P	Ortho-P	Ortho-P	Cl	Cl	SO_4	Total Coliforms (c.f.u./100ml)	E.Coli (c.f.u./100ml)	Faecal Streptocci (c.f.u./100ml)	Volume
X	Septic Tank	17/10/02		-		-		-		-			-		-						-
Y	Puraflo	17/10/02	22	192	193	54.6	57.27	13.6	14.94	45.2	13.22		23.7	18.7	74	81	51	3,000,000	200,000	620	comp
1	1,Red,0m	17/10/02		-		-		-		-			-		-						-
2	1,Blue,0m	17/10/02		-		-		-		-			-		-						-
3	1,Black,0m	17/10/02		-		-		-		-			-		-						-
4	1,Red,10m	17/10/02		-		-		-		-			-		-						-
5	1,Blue,10m	17/10/02		-		-		-		-			-		-						-
6	1,Black,10m	17/10/02		-		-		-		-			-		-						-
7	1,Red,20m	17/10/02		-		-		-		-			-		-						-
8	1,Blue,20m	17/10/02		-		-		-		-			-		-						-
9	1,Black,20m	17/10/02		-		-		-		-			-		-						-
10	2,Red,0m	17/10/02	3	128	86.1	65.2	79.58	8.7	11.97	6.4	4.55		24.6	16.9	74	81	57	20,000	<10	<10	250
11	2,Blue,0m	17/10/02	0	80	35.9	84.4	95.68	0.02	0	2.3	0.074		18.8	13.2	66	76	64	530	<10	<10	350
12	2,Black,0m	17/10/02		-		-		-		-			-		-						-
13	2,Red,10m	17/10/02	0	30	8.55	11.4	10.4	0	0	0.36	0.051		1.14	0	0	8	<10	<10	<10	<10	195
14	2,Blue,10m	17/10/02		-		-		-		-			-		-						-
15	2,Black,10m	17/10/02	0	41	9.21	4.9	4.97	0.1	0	1.9	0.52		0.86	0	0	9	<10	<100	<100	<100	150
16	2,Red,20m	17/10/02	0	79	10.2	9.5	9.27	0	0	0.15	0.318		0.2	0	0	7	<10	<10	<10	<10	200
17	2,Blue,20m	17/10/02		-		-		-		-			-		-						-
18	2,Black,20m	17/10/02	0	52	6.79	3.4	4.77	0	0	0.33	0.059		2.52	0	0	8	<10	<10	<10	<10	200
19	3,Red,0m	17/10/02		-		-		-		-			-		-						-
20	3,Blue,0m	17/10/02		-		-		-		-			-		-						-
21	3,Black,0m	17/10/02		-		-		-		-			-		-						-
22	3,Red,10m			-		-		-		-			-		-						-
23	3,Blue,10m			-		-		-		-			-		-						-
24	3,Black,10m			-		-		-		-			-		-						-
25	3,Red,20m			-		-		-		-			-		-						-
26	3,Blue,20m			-		-		-		-			-		-						-
27	3,Black,20m			-		-		-		-			-		-						-
28	4,Red,0m			-		-		-		-			-		-						-
29	4,Blue,0m			-		-		-		-			-		-						-
30	4,Black,0m			-		-		-		-			-		-						-
31	4,Red,10m			-		-		-		-			-		-						-
32	4,Blue,10m			-		-		-		-			-		-						-
33	4,Black,10m			-		-		-		-			-		-						-
34	4,Red,20m			-		-		-		-			-		-						-
35	4,Blue,20m			-		-		-		-			-		-						-
36	4,Black,20m			-		-		-		-			-		-						-
A	3,TS,2m			-		-		-		-			-		-						-
B	3,TS,7m,			-		-		-		-			-		-						-
C	3,TS,15m			-		-		-		-			-		-						-
D	4,TS,2m			-		-		-		-			-		-						-
E	4,TS,7m,			-		-		-		-			-		-						-
F	4,TS,15m			-		-		-		-			-		-						-
G	Small ZT																				-
H	Big ZT																				-

Site	Joe Keogh

Sampling Date	24/10/02
Sampling Time	09:30

Analysis Date	24/10/02
Analysis Time	14:00

Rainfall	
25/09/02	mm
26/09/02	mm

Ref	Sample Position	Date	COD	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	SO_4	S	Mn	Fe	Volume	
X	Septic Tank	24/10/02	612	1.8	0.23	**51.6		55.6	114					spot	1/40 dilution but @1/20 dilution was >80??
Y	Puraflo	24/10/02	164	44.7	*0.04	3.59		85.6	77					comp	* = when dilution (1/4) done results weren't outside boundary????? But when went back to 1/2 all >2
1	1,Red,0m	24/10/02	97	50.2	*0.04	15.5x		38.8	69					300	x = using phials
2	1,Blue,0m	24/10/02	48	66.8	0.59	0.78		19.4	67					170	
3	1,Black,0m	24/10/02	61	-	2.92	0.9		-	-					30	
4	1,Red,10m	24/10/02	46	50.8	0.24	0.37		-	13					440	
5	1,Blue,10m	24/10/02	20	6.9	0	0.13		26.2	0					160	
6	1,Black,10m	24/10/02	25	2.4	0.01	0.27		13.8	0					30	
7	1,Red,20m	24/10/02	<10	6.1	0.01	0.36		0.33	0					330	
8	1,Blue,20m	24/10/02	10	7.2	0	0		0.19	0					90	
9	1,Black,20m	24/10/02	17	5.6	0	0.05		16.4	0					160	
10	2,Red,0m	24/10/02	119	56.8	*0.12	25.5x		38.4	63					300	
11	2,Blue,0m	24/10/02	16	7.6	0.02	0.05		61.5	0					180	
12	2,Black,0m	24/10/02	-	-	-	-		-	-					Briste	
13	2,Red,10m	24/10/02	25	2.4	0	0.02		8.8	0					170	
14	2,Blue,10m	24/10/02	-	-	-	-		-	-					0	
15	2,Black,10m	24/10/02	12	3.9	0	0.07			0					210	<10 = 0
16	2,Red,20m	24/10/02	17	8.9	0	0.1		13.4	58					130	
17	2,Blue,20m	24/10/02	-	-	-	-		-	-					0	
18	2,Black,20m	24/10/02	-	-	-	-		-	-					0	
19	3,Red,0m	24/10/02	64	60.8	-	0.8		58.3	0					20	
20	3,Blue,0m	24/10/02	-	-	-	-		-	-					0	
21	3,Black,0m	24/10/02	-	-	-	-		-	-					0	
22	3,Red,10m	24/10/02	11	1.2	0	0.11		11.8	0					250	
23	3,Blue,10m	24/10/02	<10	2.9	0	0.07		11.96	0					320	
24	3,Black,10m	24/10/02	25	5.5	0	0.71		22.2	0					430	
25	3,Red,20m	24/10/02	40	18.5	0	0.1		9.9	0					200	
26	3,Blue,20m	24/10/02	20	10	0	0.4		4.3	0					200	
27	3,Black,20m	24/10/02	30	6.2	0	0.01		3.93	40					100	
28	4,Red,0m	24/10/02	70	62.4	0.01	0.6		12	-					37	
29	4,Blue,0m	24/10/02	130	66	0.08	1.26		52.3	68					30	
30	4,Black,0m	24/10/02	152	80	*>2	2.78		34.4	0					150	
31	4,Red,10m	24/10/02	34	7.9	0	0.03		8.64	0					110	
32	4,Blue,10m	24/10/02	13	4.1	0	0.05		18.76	0					90	
33	4,Black,10m	24/10/02	25	2.2	0	0.86		5.3	0					450	
34	4,Red,20m	24/10/02	23	10.7	0	0.13		2.91	0					460	
35	4,Blue,20m	24/10/02	28	44	0	0.43		6.19	0					140	
36	4,Black,20m	24/10/02	18	3.7	0	0.11		6.8	0					130	
A	3,TS,2m	24/10/02	70	59.3	0	1.83		1.57	34					200	
B	3,TS,7m,	24/10/02	123	3.7	0	0.2		3.21	0					180	
C	3,TS,15m	24/10/02	29	3.2	0	0.11		1.15	0					100	
D	4,TS,2m	24/10/02	-	-	-	-		-	-					-	not put under suction - in need of repair
E	4,TS,7m,	24/10/02	144	5	0	0.07		0.85	0					150	
F	4,TS,15m	24/10/02	190	7.3	0.01	0.95		0.78	0					30	
G	Small ZT													-	
H	Big ZT													-	

Site	Ranger's Lodge

Sampling Date	03/12/02	Analysis Date	03/12/02
Sampling Time	09:00	Analysis Time	13:00

Rainfall

Ref	Sample Position	Date	COD	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	pH		Volume	
X	Septic Tank	03/12/02	292	0	0.16	44.9		6.63	64	7.6			
1	1,Red,0m	03/12/02	-	-	-	-		-	-	-			
2	1,Blue,0m	03/12/02	46	4.5	0.13	9.5		1.11	35	7.67			
3	1,Black,0m	03/12/02	43	10.4	0.1	6.8		0.53	33	7.67			
4	1,Red,10m	03/12/02	32	5.8	0.09	10.1		1.14	17	7.6			
5	1,Blue,10m	03/12/02	39	11.4	0.15	8.7		2.3	25	7.32			
6	1,Black,10m	03/12/02	49	1.3	1.15	26.6		1.67	24	7.55			
7	1,Red,20m	03/12/02	35	2.5	0.01	2.5		3.13	12	7.7			
8	1,Blue,20m	03/12/02	37	3.3	0.01	0.9		4.66	11	7.42			
9	1,Black,20m	03/12/02	-	-	-	-		-	-	-			
10	2,Red,0m	03/12/02	65	1.4	0.05	5		4.3	34	7.58			
11	2,Blue,0m	03/12/02	49	2.6	1.07	8.8		0.82	26	7.38			
12	2,Black,0m	03/12/02	32	0	0.06	1.7		1.16	41	7.73			
13	2,Red,10m	03/12/02	98	0	0	5.5		0.71	28	7.49			
14	2,Blue,10m	03/12/02	56	2.9	0.01	3.2		0.21	19	8.26			
15	2,Black,10m	03/12/02	41	9.7	0.01	0.6		0.44	21	7.45			
16	2,Red,20m	03/12/02	71	6.2	0.29	12.9		2.98	26	7.44			
17	2,Blue,20m	03/12/02	70	0	0.11	26.7		6.64	18	7.48			
18	2,Black,20m	03/12/02	71	0.9	1.72	18.6		2.38	22	7.49			
19	3,Red,0m	03/12/02	101	0	0.16	26.6		2.5	41	7.39			
20	3,Blue,0m	03/12/02	126	0	0.02	4.2		0.51	47	7.4			
21	3,Black,0m	03/12/02	64	0	0.01	2		0.12	43	7.57			
22	3,Red,10m	03/12/02	74	0	0.08	18.5		2.03	25	7.67			
23	3,Blue,10m	03/12/02	75	2.5	0.45	4.1		4.89	28	7.56			
24	3,Black,10m	03/12/02	84	0	0.04	31.1		4.86	22	7.38			
25	3,Red,20m	03/12/02	48	4.6	0.59	10.5		3.27	7	7.51			
26	3,Blue,20m	03/12/02	62	6.5	0.77	9.1		2.71	14	7.54			
27	3,Black,20m	03/12/02	40	6.6	0.4	5.7		1.11	8	7.72			
28	4,Red,0m	03/12/02	104	5.9	0.02	0.7		0.31	38	7.72			
29	4,Blue,0m	03/12/02	84	0.1	0.04	0.5		0.39	39	7.45			
30	4,Black,0m	03/12/02	77	0.3	0	1.9		0.1	39	7.69			
31	4,Red,10m	03/12/02	49	3.5	0.24	20.2		3.54	20	7.48			
32	4,Blue,10m	03/12/02	57	4.4	1.96	22.2		1.58	15	7.46			
33	4,Black,10m	03/12/02	60	0.4	0.32	31.5		3.41	21	7.52			
34	4,Red,20m	03/12/02	61	9.3	0.53	3.5		1.21	14	7.61			
35	4,Blue,20m	03/12/02	56	9.4	0.28	4.3		1.46	15	7.45			
36	4,Black,20m	03/12/02	61	17.5	0.41	1		1.46	9	7.46			
A	3,TS,2m	03/12/02	85	7.9	0.44	6.6		6.53	38	7.16			
B	3,TS,7m,	03/12/02	54	2.7	0.27	1.9		0.52	28	7.29			
C	3,TS,15m	03/12/02	53	3.3	0.19	1.6		1.07	29	7.25			
D	4,TS,2m	03/12/02	50	2.8	0.11	1.2		1.32	20	7.32			
E	4,TS,7m,	03/12/02	55	14.5	0.01	0.3		0.17	11	7.42			
G	Small ZT	03/12/02											
H	Big ZT	03/12/02											

Site	Joe Keogh

Sampling Date	31/01/03
Sampling Time	08:30

Analysis Date	31/01/03
Analysis Time	12:30

Rainfall

Ref	Sample Position	Date	COD	BOD	TOC	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	pH	Temp		Volume
X	Septic Tank	31/01/03	752			0	0.39	118		21.3	124	8.12	16.4		
y	Puraflo	31/01/03	128			23	4.5	15.5		16.8	152	6.49	16.2		
1	1,Red,0m	31/01/03	79			42.7	6.9	13.2		15.4	214	5.18	16.9		150
2	1,Blue,0m	31/01/03													0
3	1,Black,0m	31/01/03													0
4	1,Red,10m	31/01/03	29			0.1	0	0.14		0.29	0	6.88	16.4		390
5	1,Blue,10m	31/01/03	28			0.1	0.1	0.13		1.22	17	7.21	16.3		230
6	1,Black,10m	31/01/03	16			0	0.01	0.09		2.61	9	7.47	16.5		110
7	1,Red,20m	31/01/03	28			0	0	0.03		0.37	4	7.31	16.5		550
8	1,Blue,20m	31/01/03	33			0.7	0	0.1		0.31	0	6.97	16.3		100
9	1,Black,20m	31/01/03	36			1.2	0.02	0.13		0.05	7	7.3	16.5		240
10	2,Red,0m	31/01/03	71			45.5	0.01	0.6		10.6	93	7.18	16.7		160
11	2,Blue,0m	31/01/03	58			55	0.14	0.29		20.5	78	7.34	16.7		230
12	2,Black,0m	31/01/03													Briste
13	2,Red,10m	31/01/03	51			27.3	0.02	0.02		0.19	31	6.71	16.5		220
14	2,Blue,10m	31/01/03	25			7.6	0	0		0.29	22	6.85	16.4		300
15	2,Black,10m	31/01/03	28			5.5	0	0.08		0.15	15	7.46	16.4		270
16	2,Red,20m	31/01/03													20
17	2,Blue,20m	31/01/03	14			0	0	0.06		0.14	0	7.01	16.3		250
18	2,Black,20m	31/01/03	16			1.9	0	0.01		0.1	0	6.84	16.3		320
19	3,Red,0m	31/01/03													0
20	3,Blue,0m	31/01/03													0
21	3,Black,0m	31/01/03													0
22	3,Red,10m	31/01/03	22			0.2	0	0		0.08	0	6.98	16.5		280
23	3,Blue,10m	31/01/03	14			0	0	0.05		0.03	0	6.91	16.3		380
24	3,Black,10m	31/01/03	15			0	0.01	0.12		0.07	0	7.39	16.2		480
25	3,Red,20m	31/01/03	26			0	0.01	0.1		0.67	10	7.63	16.5		40
26	3,Blue,20m	31/01/03													0
27	3,Black,20m	31/01/03	10			0	0.01	0.06		0.11	13	7.16	16.1		170
28	4,Red,0m	31/01/03	24			9.4	0	0.27		20.8	82	7.12	16.2		40
29	4,Blue,0m	31/01/03													0
30	4,Black,0m	31/01/03													0
31	4,Red,10m	31/01/03	27			0	0	0.03		0.12	3	7.54	15.5		190
32	4,Blue,10m	31/01/03	36			7.4	0.02	0.07		1.06	10	7.3	16		170
33	4,Black,10m	31/01/03	31			1.1	0	0.43		0.03	1	7.37	15.8		430
34	4,Red,20m	31/01/03	38			0.7	0	0.02		0.18	4	6.92	15.9		550
35	4,Blue,20m	31/01/03	47			1.7	0	0.05		0.12	0	7.02	15.9		170
36	4,Black,20m	31/01/03	23			0.6	0	0.02		0.26	0	7.61	15.9		80
A	3,TS,2m	31/01/03									REAGENT FROZEN				0
B	3,TS,7m,	31/01/03													0
C	3,TS,15m	31/01/03													0
D	4,TS,2m	31/01/03													0
E	4,TS,7m,	31/01/03													0
H	4,TS,15m	31/01/03													0
F	4,TS,15m	31/01/03													0
G	Small ZT	31/01/03													0
H	Big ZT	31/01/03													

Site	Joe Keogh

Sampling Date	14/02/03
Sampling Time	08:30

Analysis Date	14/02/03
Analysis Time	13:00

Rainfall

Ref	Sample Position	Date	COD	BOD	TOC	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	pH	Temp		Volume
X	Septic Tank	14/02/03	696+			0.2	0.33	129.2		20.7	123	8.39	16.1		
y	Puraflo	14/02/03	172			32.8	8.2	25.2		24.8	92	6.22	16.2		
1	1,Red,0m	14/02/03	113			46.5	9.9	13.2		18.1	102	5.24	17.9		150
2	1,Blue,0m	14/02/03	158			59.5	0.01	0.15		8.2	77	7.5	14.8		120
3	1,Black,0m	14/02/03													0
4	1,Red,10m	14/02/03	35			2.9	0.01	0.01		0	0	7.18	13.9		310
5	1,Blue,10m	14/02/03	37			0.1	0	0.03		0.06	0	7.17	14.1		150
6	1,Black,10m	14/02/03	53			1	0	0.28		0.13	3	7.43	14.3		70
7	1,Red,20m	14/02/03	48			0	0.02	0.02		0.08	0	7.03	14.6		470
8	1,Blue,20m	14/02/03	46			1	0.01	0.02		0	0	7.11	14.5		70
9	1,Black,20m	14/02/03	44			0.6	0	0.05		0.19	0	7.32	14.4		180
10	2,Red,0m	14/02/03	65			68.4	0.24	0.43		11.3	89	7.12	14.8		130
11	2,Blue,0m	14/02/03	65			50.7	0.01	0.57		10.7	83	7.4	15.3		200
12	2,Black,0m	14/02/03													Briste
13	2,Red,10m	14/02/03	56			16.1	0	0		0.23	19	6.74	14.7		160
14	2,Blue,10m	14/02/03	41			7.9	0	0.03		0.2	11	6.82	14.5		210
15	2,Black,10m	14/02/03	39			5.8	0.02	0.85		0.15	2	7.32	14.4		220
16	2,Red,20m	14/02/03	52			0	0	0.03		0.34	0	7.57	15		35
17	2,Blue,20m	14/02/03	53			1.6	0	0.02		0.11	0	6.59	14.5		180
18	2,Black,20m	14/02/03	36			2.1	0	0.05		0.73	0	6.65	14.5		270
19	3,Red,0m	14/02/03	96			56	3.1	2.55		15.3	84	6.91	14.9		62
20	3,Blue,0m	14/02/03													0
21	3,Black,0m	14/02/03													0
22	3,Red,10m	14/02/03	56			0	0	0.07		0.29	0	6.87	14.8		260
23	3,Blue,10m	14/02/03	40			0	0	0.05		0.28	0	6.86	14.9		320
24	3,Black,10m	14/02/03	46			0	0.01	1.13		0.38	0	7.29	15		370
25	3,Red,20m	14/02/03	52			0.4	0	0.02		0.05	0	6.94	15.4		170
26	3,Blue,20m	14/02/03	49			17.1	0	0.07		0.07	18	6.82	15.4		260
27	3,Black,20m	14/02/03	51			6.9	0.01	0.03		0.02	5	7.13	15.4		110
28	4,Red,0m	14/02/03	83			56	0.02	0.28		3.1	73	N/A	N/A		15
29	4,Blue,0m	14/02/03													0
30	4,Black,0m	14/02/03													0
31	4,Red,10m	14/02/03	34			0.6	0.01	0.08		0.16	0	7.17	15		150
32	4,Blue,10m	14/02/03	39			0.5	0.01	0		0.81	3	7.15	15.1		140
33	4,Black,10m	14/02/03	49			0.9	0	1.07		0.12	2	7.28	15.1		200
34	4,Red,20m	14/02/03	49			1.2	0	0.14		0.08	0	6.81	15.3		550
35	4,Blue,20m	14/02/03	47			1.1	0	0.05		0.11	0	6.93	15.4		130
36	4,Black,20m	14/02/03	46			2.3	0.01	0.14		0.01	0	7.3	15.4		150
A	3,TS,2m	14/02/03													0
B	3,TS,7m,	14/02/03	59			0.9	0	0.18		0.06	0	6.72	15.9		100
C	3,TS,15m	14/02/03													0
D	4,TS,2m	14/02/03													
E	4,TS,7m,	14/02/03	82			7	0	0.06		1.31	2	6.72	15.8		120
H	4,TS,15m	14/02/03	9			2.5	N/A	0.32		0.14	N/A	N/A	N/A		15
F	4,TS,15m	14/02/03													0
G	Small ZT	14/02/03													0
H	Big ZT	14/02/03													

Site	Joe Keogh

Sampling Date	27/02/03
Sampling Time	08:45

Analysis Date	27/02/03
Analysis Time	13:00

Rainfall

Ref	Sample Position	Date	COD	BOD	TOC	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	pH	Temp		Volume
X	Septic Tank	27/02/03	776			1.4	0.4	128		25.5	117	7.56	20.8		
y	Purafio	27/02/03	150			39.8	>10	34		20.8	86	6.36	20.8		
1	1,Red,0m	27/02/03	132			42.5	8.5	17		25.6	94	5.47	20.6		180
2	1,Blue,0m	27/02/03	95			58.3	0.12	8		17.8	84	7.51	21.3		110
3	1,Black,0m	27/02/03													0
4	1,Red,10m	27/02/03	49			3.9	0.02	0.5		0.6	0	7.35	20.3		240
5	1,Blue,10m	27/02/03	56			4.7	0.02	0.1		0.37	0	7.28	20.3		160
6	1,Black,10m	27/02/03	68			2.5	0.07	3.6		0.62	1	7.5	20.9		65
7	1,Red,20m	27/02/03	62			2.3	0.02	1.2		0.64	0	7.18	20.7		400
8	1,Blue,20m	27/02/03	52			1.8	0.03	0		0.36	0	7.01	20.8		70
9	1,Black,20m	27/02/03	47			4.5	0.02	0.8		0.25	0	7.44	21		160
10	2,Red,0m	27/02/03	95			68.4	0.53	1		14.6	79	7.28	21.3		115
11	2,Blue,0m	27/02/03	78			66.5	0.02	1		15.9	82	7.4	20.9		180
12	2,Black,0m	27/02/03													Briste
13	2,Red,10m	27/02/03	72			21.6	0.01	0.9		0.49	18	6.9	20.5		110
14	2,Blue,10m	27/02/03	63			13.7	0.01	0		0.35	17	7.05	20.4		160
15	2,Black,10m	27/02/03	65			6.2	0.02	1.5		0.1	0	7.54	20.6		200
16	2,Red,20m	27/02/03													0
17	2,Blue,20m	27/02/03	46			3.5	0	0.6		0.23	0	7.12	20.5		170
18	2,Black,20m	27/02/03	48			3	0.02	1.5		0.38	0	7.03	20.7		220
19	3,Red,0m	27/02/03	103			77.9	1.2	2		16.1	81	7.04	20.9		75
20	3,Blue,0m	27/02/03													0
21	3,Black,0m	27/02/03													0
22	3,Red,10m	27/02/03	62			2.9	0.03	0.4		0.26	0	7.03	20.7		200
23	3,Blue,10m	27/02/03	45			2.3	0.02	0.4		0.4	0	6.93	20.7		250
24	3,Black,10m	27/02/03	62			0.4	0.02	0.6		0.39	1	7.39	20.7		350
25	3,Red,20m	27/02/03	61			3.3	0.02	0		1.86	0	7.28	20.7		130
26	3,Blue,20m	27/02/03	46			21.5	0.03	1.6		0.62	6	6.49	20.7		250
27	3,Black,20m	27/02/03	24			19.7	0.03	0.4		0.77	9	7.18	20.7		120
28	4,Red,0m	27/02/03													15
29	4,Blue,0m	27/02/03													10
30	4,Black,0m	27/02/03													15
31	4,Red,10m	27/02/03	51			2.3	0	0.5		0.55	0	7.39	20.8		110
32	4,Blue,10m	27/02/03	29			2.8	0.02	1		0.85	0	7.39	20.8		110
33	4,Black,10m	27/02/03	17			5.1	0.03	0.7		0.25	0	7.42	20.8		270
34	4,Red,20m	27/02/03	21			1.9	0.01	0.6		0.37	0	6.99	21.4		440
35	4,Blue,20m	27/02/03	19			2	0.03	1.4		0.96	0	7.07	22		110
36	4,Black,20m	27/02/03	19			3.4	0.02	2		0.46	0	7.46	20.7		140
A	3,TS,2m	27/02/03	294			N/A	N/A	N/A		N/A	N/A	N/A	N/A		5
B	3,TS,7m,	27/02/03	26			4.2	0.04	0		0.36	0	6.89	20.8		120
C	3,TS,15m	27/02/03	21			9.4	0	0.6		0.52	0	6.74	20.9		110
D	4,TS,2m	27/02/03													0
E	4,TS,7m,	27/02/03	274			8.5	0.02	0.3		0.55	0	6.94	20.8		110
H	4,TS,15m	27/02/03	165			4	N/A	1.3		N/A	N/A	N/A	N/A		5
F	4,TS,15m	27/02/03													0
G	Small ZT	27/02/03													0
H	Big ZT	27/02/03													

Site	Joe Keogh

Sampling Date	13/03/03
Sampling Time	11:00

	Analysis Date		13/03/03
	Analysis Time		14:30

Rainfall

Ref	Sample Position	Date	BOD	COD	COD	TOC	NO_3-N	NO_3-N	NO_2-N	NO_2-N	NH_4-N	NH_4-N	Ortho-P	Ortho-P	Cl	Cl	pH	Temp		Volume
X	Septic Tank	13/03/03																		0
y	Puraflo	13/03/03	14	190	156		45.8	51.98	10.00	14.64	35.8	34.8	23.6	18.5	70	79	3.94	19		
1	1,Red,0m	13/03/03																		0
2	1,Blue,0m	13/03/03																		0
3	1,Black,0m	13/03/03																		0
4	1,Red,10m	13/03/03																		0
5	1,Blue,10m	13/03/03																		0
6	1,Black,10m	13/03/03																		0
7	1,Red,20m	13/03/03																		0
8	1,Blue,20m	13/03/03																		0
9	1,Black,20m	13/03/03																		0
10	2,Red,0m	13/03/03	<2	45	36.2		65.4	65.09	0.01	9.72	1.8	0.062	19.4	14.5	100	79	7.04	20		240
11	2,Blue,0m	13/03/03	4	30	32.7		58.5	58.88	0.01	<0.03	1.2	0.043	17.4	13.7	72	82	7.53	19.9		250
12	2,Black,0m	13/03/03																		Briste
13	2,Red,10m	13/03/03	3	16	12.1		4.2	3.43	0.02	<0.03	0	0.042	0.84	0.4	0	10	7.06	19.5		240
14	2,Blue,10m	13/03/03																		0
15	2,Black,10m	13/03/03	<2	8	9.5		2.4	4.72	0.01	<0.03	0	0.038	1.04	0.2	0	8	7.5	19.3		260
16	2,Red,20m	13/03/03																		0
17	2,Blue,20m	13/03/03	<2	0	6.8		0	1.09	0	<0.03	1.5	0.038	0.32	<0.1	2	5	7.05	19.4		280
18	2,Black,20m	13/03/03	<2	14	7.3		1.1	1.68	0.02	<0.03	0.6	0.042	0.24	0.5	0	4	7.08	19.4		320
19	3,Red,0m	13/03/03																		0
20	3,Blue,0m	13/03/03																		0
21	3,Black,0m	13/03/03																		0
22	3,Red,10m	13/03/03																		0
23	3,Blue,10m	13/03/03																		0
24	3,Black,10m	13/03/03																		0
25	3,Red,20m	13/03/03																		0
26	3,Blue,20m	13/03/03																		0
27	3,Black,20m	13/03/03																		0
28	4,Red,0m	13/03/03																		0
29	4,Blue,0m	13/03/03																		0
30	4,Black,0m	13/03/03																		0
31	4,Red,10m	13/03/03																		0
32	4,Blue,10m	13/03/03																		0
33	4,Black,10m	13/03/03																		0
34	4,Red,20m	13/03/03																		0
35	4,Blue,20m	13/03/03																		0
36	4,Black,20m	13/03/03																		0
A	3,TS,2m	13/03/03																		0
B	3,TS,7m,	13/03/03																		0
C	3,TS,15m	13/03/03																		0
D	4,TS,2m	13/03/03																		0
E	4,TS,7m,	13/03/03																		0
H	4,TS,15m	13/03/03																		0
F	4,TS,15m	13/03/03																		0
G	Small ZT	13/03/03																		0
H	Big ZT	13/03/03																		

Site	Joe Keogh

Sampling Date	11/04/03
Sampling Time	08:30

Analysis Date	11/04/03
Analysis Time	13:10

Rainfall

Ref	Sample Position	Date	COD	BOD	TOC	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	pH	Temp		Volume
X	Septic Tank	11/04/03	594			0	0.26	119		20.76	98	7.93	20.3		comp
y	Puraflo	11/04/03	136			40.7	11.1	11.1		21.92	103	6.29	20.3		comp
1	1,Red,0m	11/04/03				47.4	14.8	12.4		22	79	5.13	20.6		110
2	1,Blue,0m	11/04/03				61.6	0.18	1.1		16.68	88	7.06	20.5		120
3	1,Black,0m	11/04/03													0
4	1,Red,10m	11/04/03				0	0	0.7		0.17	0	7.33	20.3		130
5	1,Blue,10m	11/04/03				0	0	0.1		0.26	0	7.24	20.4		80
6	1,Black,10m	11/04/03				0	0.01	0		0.47	0	7.73	20.6		30
7	1,Red,20m	11/04/03				0	0	0		1.12	0	7.01	20.4		290
8	1,Blue,20m	11/04/03													10
9	1,Black,20m	11/04/03				0	0	0.5		0.03	0	7.24	20.6		80
10	2,Red,0m	11/04/03				82.4	0	1.8		17.24	86	7.03	20.9		220
11	2,Blue,0m	11/04/03				58	0.24	1.1		16.08	84	7.13	20.8		150
12	2,Black,0m	11/04/03													Briste
13	2,Red,10m	11/04/03				6.6	0.01	1.1		1.36	5	7.08	20.8		50
14	2,Blue,10m	11/04/03				2.5	0.01	0		0.28	7	6.84	20.6		310
15	2,Black,10m	11/04/03				3.7	0	2.6		0.54	2	7.3	20.5		150
16	2,Red,20m	11/04/03													0
17	2,Blue,20m	11/04/03				0	0	0		0.3	0	7.05	20.5		120
18	2,Black,20m	11/04/03				0.4	0	0		0.25	0	6.65	20.5		110
19	3,Red,0m	11/04/03				58.6	0.2	1.8		19.76	75	7.01	20.7		35
20	3,Blue,0m	11/04/03													0
21	3,Black,0m	11/04/03													0
22	3,Red,10m	11/04/03				0	0	0		0.47	3	6.93	20.5		150
23	3,Blue,10m	11/04/03				0.1	0	0.7		0.28	0	6.86	20.5		150
24	3,Black,10m	11/04/03				0	0	0		0.32	0	7.23	20.5		260
25	3,Red,20m	11/04/03				45.7	0	0		0.2	0	7.08	20.4		150
26	3,Blue,20m	11/04/03				14.1	0.02	0		0.75	15	7.06	20.3		180
27	3,Black,20m	11/04/03				2.4	0	0		0.37	7	6.82	20.8		70
28	4,Red,0m	11/04/03													80
29	4,Blue,0m	11/04/03													0
30	4,Black,0m	11/04/03													0
31	4,Red,10m	11/04/03				0.8	0	0.6		0.95	6	7.46	20.5		55
32	4,Blue,10m	11/04/03				0.5	0	0.6		0.73	0	7.45	20.5		45
33	4,Black,10m	11/04/03				0	0	1.4		0.37	0	7.28	20.2		110
34	4,Red,20m	11/04/03				0	0	3.3		0.2	0	6.86	20.3		320
35	4,Blue,20m	11/04/03				0.8	0	4.3		0.39	0	6.9	20.2		80
36	4,Black,20m	11/04/03				0	0.01	1.6		4.07	10	6.96	20.1		80
A	3,TS,2m	11/04/03				18.2	0.1	1.9		0.44	22	7.93	20.6		35
B	3,TS,7m,	11/04/03				3.2	0.02	0		0.22	0	6.68	20.7		130
C	3,TS,15m	11/04/03				4.5	n/a	0		0.98	0	n/a	n/a		15
D	4,TS,2m	11/04/03													0
E	4,TS,7m,	11/04/03				3.1	n/a	1		0.82	0	6.95	20.7		110
F	4,TS,15m	11/04/03				0	0.01	0.5		0.88	n/a	n/a	n/a		0
G	Small ZT	11/04/03													0
H	Big ZT	11/04/03													

Site	Joe Keogh

Sampling Date	23/04/03
Sampling Time	08:30

Analysis Date	23/04/03
Analysis Time	12:30

Rainfall

Ref	Sample Position	Date	COD	BOD	TOC	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	pH	Temp		Volume
X	Septic Tank	23/04/03	560			0.2	0.25	117		22.32	95	8.09	21.7		comp
y	Puraflo	23/04/03	144			34.8	10.10	34		26.64	88	6.41	21.7		comp
1	1,Red,0m	23/04/03	151			43.6	14.7	21		21.52	97	5.62	21.7		100
2	1,Blue,0m	23/04/03	67			51	0.7	2		21.6	101	7.18	21.6		100
3	1,Black,0m	23/04/03													0
4	1,Red,10m	23/04/03	33			1.2	0	0		0.39	0	7.35	21.7		70
5	1,Blue,10m	23/04/03	23			0.5	0	0		0.73	0	7.2	21.5		70
6	1,Black,10m	23/04/03	28			2.1	0	1		1.43	0	n/a	n/a		30
7	1,Red,20m	23/04/03	23			0	0	1		0.37	0	7.13	21.6		310
8	1,Blue,20m	23/04/03	26			0	0	0		5.1	0	7.18	21.5		35
9	1,Black,20m	23/04/03	10			0	0	0		0.44	0	7.37	21.4		110
10	2,Red,0m	23/04/03	64			54.4	0	0		25.44	92	7.03	21.4		140
11	2,Blue,0m	23/04/03													0
12	2,Black,0m	23/04/03													Briste
13	2,Red,10m	23/04/03	30			1.1	0	0		1.4	0	7.75	21.4		40
14	2,Blue,10m	23/04/03	22			1.1	0	0		1.17	0	6.91	21.4		100
15	2,Black,10m	23/04/03	13			3.4	0	0		0.3	0	7.4	21.6		110
16	2,Red,20m	23/04/03													0
17	2,Blue,20m	23/04/03	18			0.3	0	0		4.49	0	6.96	21.5		140
18	2,Black,20m	23/04/03	10			0	0.1	0		0.35	0	7.02	21.6		110
19	3,Red,0m	23/04/03	89			50.4	0.44	2		21.8	87	7.64	21.6		20
20	3,Blue,0m	23/04/03													0
21	3,Black,0m	23/04/03													0
22	3,Red,10m	23/04/03	19			0.1	0	0		0.84	0	7.01	21.3		140
23	3,Blue,10m	23/04/03	7			0	0	0		0.54	0	7.03	21.2		110
24	3,Black,10m	23/04/03	15			0	0	2		0.44	0	7.35	21.2		270
25	3,Red,20m	23/04/03	18			0	0	3		1.7	0	7.35	21.4		50
26	3,Blue,20m	23/04/03	12			2.4	0	1		2.2	3	6.81	21.4		200
27	3,Black,20m	23/04/03	20			16.7	0	1		0.33	9	7.1	21.4		80
28	4,Red,0m	23/04/03													0
29	4,Blue,0m	23/04/03													0
30	4,Black,0m	23/04/03													0
31	4,Red,10m	23/04/03	16			0	0	1		0.57	0	7.36	21.5		70
32	4,Blue,10m	23/04/03	16			0.5	0.2	0		1.1	0	7.53	21.5		75
33	4,Black,10m	23/04/03	14			0	0	0		0.67	0	7.43	21.5		230
34	4,Red,20m	23/04/03	26			0	0	0		4.45	0	6.97	21.6		390
35	4,Blue,20m	23/04/03	16			0.7	0	0		2.08	0	7	21.5		80
36	4,Black,20m	23/04/03	16			0.8	0	0		1.78	0	7.34	21.5		120
A	3,TS,2m	23/04/03													
B	3,TS,7m,	23/04/03													
C	3,TS,15m	23/04/03													
D	4,TS,2m	23/04/03													
E	4,TS,7m,	23/04/03													
H	4,TS,15m	23/04/03													
F	4,TS,15m	23/04/03													5
G	Small ZT	23/04/03													0
H	Big ZT	23/04/03													

Site	Joe Keogh

Sampling Date	07/05/03
Sampling Time	08:30

Analysis Date	07/05/03
Analysis Time	12:00

Rainfall

Ref	Sample Position	Date	COD	BOD	TOC	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	pH	Temp		Volume
X	Septic Tank	07/05/03	610					87				8.12	22.6		comp
y	Puraflo	07/05/03	210					8.2				6.27	22.6		comp
1	1,Red,0m	07/05/03	128					7.5				5.3	22.9		100
2	1,Blue,0m	07/05/03	63					0.7				6.99	22.8		140
3	1,Black,0m	07/05/03													0
4	1,Red,10m	07/05/03	13					0				7.07	22.4		140
5	1,Blue,10m	07/05/03	17					0				7.28	22.4		60
6	1,Black,10m	07/05/03													0
7	1,Red,20m	07/05/03	10					0				6.94	22.9		360
8	1,Blue,20m	07/05/03	28					0				N/A	N/A		20
9	1,Black,20m	07/05/03	10					0				7.19	23.1		100
10	2,Red,0m	07/05/03	68					0				6.99	22.8		130
11	2,Blue,0m	07/05/03	37					0				7.11	22.7		150
12	2,Black,0m	07/05/03													Briste
13	2,Red,10m	07/05/03	18					0				6.95	21.4		110
14	2,Blue,10m	07/05/03	19					0				7	21.4		100
15	2,Black,10m	07/05/03	13					0				7.32	21.7		120
16	2,Red,20m	07/05/03													0
17	2,Blue,20m	07/05/03	29					0				7.06	22.2		120
18	2,Black,20m	07/05/03	31					0				7.09	22.3		70
19	3,Red,0m	07/05/03													0
20	3,Blue,0m	07/05/03													0
21	3,Black,0m	07/05/03													0
22	3,Red,10m	07/05/03	16					0				6.9	22.5		210
23	3,Blue,10m	07/05/03	25					0				6.87	22.4		210
24	3,Black,10m	07/05/03	32					0				7.28	22.4		270
25	3,Red,20m	07/05/03	22					0				6.98	22.5		130
26	3,Blue,20m	07/05/03	20					0				6.87	22.4		180
27	3,Black,20m	07/05/03	9					0				7.15	22.4		60
28	4,Red,0m	07/05/03													10
29	4,Blue,0m	07/05/03	55					0				6.62	22.6		55
30	4,Black,0m	07/05/03													0
31	4,Red,10m	07/05/03	22					0				7.19	22.5		110
32	4,Blue,10m	07/05/03	16					0				7.37	22.4		80
33	4,Black,10m	07/05/03	15					0				7.35	22.4		180
34	4,Red,20m	07/05/03	10					0				6.88	22.4		400
35	4,Blue,20m	07/05/03	26					0				6.96	22.5		100
36	4,Black,20m	07/05/03	28					0				7.25	22.5		110
A	3,TS,2m	07/05/03	92					0				7.04	22.6		190
B	3,TS,7m,	07/05/03	32					0				6.76	22.7		140
C	3,TS,15m	07/05/03	34					0				6.91	22.7		60
D	4,TS,2m	07/05/03													
E	4,TS,7m,	07/05/03	41					0.1				6.94	22.7		120
H	4,TS,15m	07/05/03	96					0				N/A	N/A		20
F	4,TS,15m	07/05/03													
G	Small ZT	07/05/03													
H	Big ZT	07/05/03													

Site	Joe Keogh

Sampling Date	29/05/03
Sampling Time	08:45

Analysis Date	29/05/03
Analysis Time	12:45

Rainfall

Ref	Sample Position	Date	COD	BOD	TOC	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	pH	Temp		Volume
X	Septic Tank	29/05/03	533			4.7	0.205	137.8		33.5	96.2	7.72	24.3		comp
y	Puraflo	29/05/03	226			60.52	12.24	18		35.3	85.1	6.07	24.5		comp
1	1,Red,0m	29/05/03	193			69.1	11.38	7.58		20	81	5.02	24.2		70
2	1,Blue,0m	29/05/03	100			72.94	1.32	0.7		23.35	82.5	6.91	23.7		60
3	1,Black,0m	29/05/03	61			86.03	0.2	0.045		7.75	77.5	7.27	23.8		60
4	1,Red,10m	29/05/03	47			3.3	0.01	0		0.03	1.07	6.81	23.8		170
5	1,Blue,10m	29/05/03	45			2	0.014	0		0	1.52	6.74	23.7		170
6	1,Black,10m	29/05/03	47			2.4	0.01	0		0.05	3.7	6.97	23.7		120
7	1,Red,20m	29/05/03	49			0.2	0.01	0		0	1.1	6.7	24.1		270
8	1,Blue,20m	29/05/03	46			0.35	0.012	0		0	1.56	6.92	24		60
9	1,Black,20m	29/05/03	43			0.43	0.009	0.038		0.04	0.98	6.82	24		210
10	2,Red,0m	29/05/03	101			73.16	0.16	0.069		23.15	75.5	6.85	24		70
11	2,Blue,0m	29/05/03	82			75.65	0.16	0.005		22.05	76.4	6.95	24		80
12	2,Black,0m	29/05/03													Briste
13	2,Red,10m	29/05/03	54			0.94	0.009	0		0.16	1.24	6.55	23.9		90
14	2,Blue,10m	29/05/03	51			0	0.011	0.008		0.04	0.98	6.41	23.9		210
15	2,Black,10m	29/05/03	51			2.5	0.012	0		0	3.98	7.01	24		140
16	2,Red,20m	29/05/03													0
17	2,Blue,20m	29/05/03	46			1.14	0.009	0.008		0.01	2.6	6.6	24.1		120
18	2,Black,20m	29/05/03	48			1	0.009	0		0	1.15	6.58	24.2		130
19	3,Red,0m	29/05/03													0
20	3,Blue,0m	29/05/03													0
21	3,Black,0m	29/05/03													0
22	3,Red,10m	29/05/03	52			1.51	0.016	0.005		0.11	3.01	6.79	23.9		150
23	3,Blue,10m	29/05/03	39			0.41	0.012	0		0.01	4.08	6.46	23.8		210
24	3,Black,10m	29/05/03	37			0.17	0.009	0		0.01	4.58	6.87	23.8		350
25	3,Red,20m	29/05/03	51			0.26	0.01	0.019		0.03	2.19	6.5	24		190
26	3,Blue,20m	29/05/03	37			1.5	0.016	0		0	2.03	6.33	23.9		240
27	3,Black,20m	29/05/03	36			9.7	0.012	0		0	15.8	6.75	23.9		150
28	4,Red,0m	29/05/03													0
29	4,Blue,0m	29/05/03													0
30	4,Black,0m	29/05/03													0
31	4,Red,10m	29/05/03	43			2.94	0.013	0.154		0.72	5.36	6.78	23.9		150
32	4,Blue,10m	29/05/03	57			1.49	0.016	0.023		0.18	4.93	7.31	23.8		50
33	4,Black,10m	29/05/03	74			0.31	0.015	0.014		0	3.98	7.01	24		180
34	4,Red,20m	29/05/03	36			0.96	0.012	0		0	2.49	6.42	23.9		370
35	4,Blue,20m	29/05/03	47			0.86	0.012	0.017		0.42	2.57	6.57	24		150
36	4,Black,20m	29/05/03	34			1.09	0.014	0		0.02	3.43	6.99	24.1		170
A	3,TS,2m	29/05/03													
B	3,TS,7m,	29/05/03													
C	3,TS,15m	29/05/03													
D	4,TS,2m	29/05/03													
E	4,TS,7m,	29/05/03													
H	4,TS,15m	29/05/03													
F	4,TS,15m	29/05/03													
G	Small ZT	29/05/03													
H	Big ZT	29/05/03													

Site	Joe Keogh

Sampling Date	10/06/03
Sampling Time	09:30

Analysis Date	10/06/03
Analysis Time	08:45

Rainfall

Ref	Sample Position	Date	COD	BOD	TOC	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	pH	Temp		Volume
X	Septic Tank	10/06/03	916			5.3	0.257	144		43.9	98.3	7.65	21.6		Briste
y	Puraflo	10/06/03	260			22.7	3.88	15.5		38.9	81.5	6.4	21.6		comp
1	1,Red,0m	10/06/03	164			41.5	7.04	5.7		21.6	76.1	5.25	21.4		190
2	1,Blue,0m	10/06/03	99			25.11	0.24	0.2		30.9	75	6.29	21.2		190
3	1,Black,0m	10/06/03	96			63.59	0.28	0.1		6.1	76.1	7.15	21.2		100
4	1,Red,10m	10/06/03	40			4.2	0.007	0.012		0.04	0.9	6.96	21.2		240
5	1,Blue,10m	10/06/03	50			9.4	0.008	0.013		0.01	3.7	6.81	21.1		210
6	1,Black,10m	10/06/03	44			4	0.008	0		0.04	4.4	6.99	21.2		150
7	1,Red,20m	10/06/03	49			1.5	0.01	0		0	0.7	6.79	21.3		500
8	1,Blue,20m	10/06/03	37			2.1	0.008	0.007		0	0.45	6.58	21.3		170
9	1,Black,20m	10/06/03	46			3.2	0.026	0.694		0.1	0	6.89	21.2		250
10	2,Red,0m	10/06/03	85			46.65	0.16	0.12		26.2	78.5	6.8	21.2		250
11	2,Blue,0m	10/06/03	73			46.47	0.12	0		26.1	75.1	6.94	21.2		260
12	2,Black,0m	10/06/03													Briste
13	2,Red,10m	10/06/03	37			1.5	0.007	0		0.06	0	6.58	21		210
14	2,Blue,10m	10/06/03	41			2.2	0.006	0		0	0	6.53	20.8		270
15	2,Black,10m	10/06/03	35			7.9	0.008	0.025		0	0.5	7.08	20.9		260
16	2,Red,20m	10/06/03	54			3	0.009	0.052		0	3.06	6.95	21		70
17	2,Blue,20m	10/06/03	34			7	0.007	0.014		0	4.43	6.72	21		260
18	2,Black,20m	10/06/03	47			2.4	0.008	0.025		0	2.58	6.5	21.1		250
19	3,Red,0m	10/06/03	107			33	0.14	0.39		20.1	57	7.14	21.3		100
20	3,Blue,0m	10/06/03													0
21	3,Black,0m	10/06/03	60			42.81	0.14	0.04		7.1	58.5	7.82	21.4		30
22	3,Red,10m	10/06/03	33			2.7	0.01	0.022		0.01	2.65	6.67	21.1		270
23	3,Blue,10m	10/06/03	35			1.3	0.007	0		0	3.39	6.54	21.1		310
24	3,Black,10m	10/06/03	24			1.6	0.006	0		0	5.09	6.95	21.1		450
25	3,Red,20m	10/06/03	35			2.2	0.007	0.021		0	3.03	6.61	21.1		240
26	3,Blue,20m	10/06/03	52			1.2	0.005	0.01		0	2.94	6.39	21.1		340
27	3,Black,20m	10/06/03	37			4.2	0.007	0.021		0	11.8	6.75	21.2		200
28	4,Red,0m	10/06/03	67			50.67	0.12	0.51		0.8	76.4	7.45	21.4		30
29	4,Blue,0m	10/06/03	87			34.86	0.14	0.84		24.7	76.5	6.67	21.3		120
30	4,Black,0m	10/06/03	67			49.36	0.18	0.29		20.7	77.6	7.09	21.4		70
31	4,Red,10m	10/06/03	46			3.1	0.006	0.17		0	4.63	6.97	21.2		150
32	4,Blue,10m	10/06/03	26			10.7	0.014	0.6		0	6.01	6.95	21.2		180
33	4,Black,10m	10/06/03	27			1.3	0.006	0.015		0.02	5.48	7.16	21.4		350
34	4,Red,20m	10/06/03	41			5.6	0.006	0.01		0.16	2.74	6.45	21.3		520
35	4,Blue,20m	10/06/03	37			5.2	0.008	0.018		0.03	3.2	6.63	21.3		200
36	4,Black,20m	10/06/03	35			4.7	0.06	0.011		0	3.26	6.96	21.5		240
A	3,TS,2m	10/06/03													
B	3,TS,7m,	10/06/03													
C	3,TS,15m	10/06/03													
D	4,TS,2m	10/06/03													
E	4,TS,7m,	10/06/03													
H	4,TS,15m	10/06/03													
F	4,TS,15m	10/06/03													
G	Small ZT	10/06/03													
H	Big ZT	10/06/03													

Site	Joe Keogh

Sampling Date	25/06/03
Sampling Time	08:45

Analysis Date	25/06/03
Analysis Time	12:30

Rainfall

Ref	Sample Position	Date	COD	BOD	TOC	NO_3-N	- BLANK	NO_2-N	- BLANK	NH_4-N	- BLANK	Ortho-P	- BLANK	Cl	- BLANK	pH	Temp		Volume
X	Septic Tank	25/06/03	1630			8.5	0.9	0.55	0.42	163	155.2	38.7	38.7	125	97	7.3	23.8		spot
y	Puraflo	25/06/03	316			24.7	17.1	5	4.87	21.2	13.4	42.7	42.7	115	87	7.61	24		comp
1	1,Red,0m	25/06/03	186			37.9	30.3	10	9.87	14.3	6.5	27.5	27.5	104	76	5.49	23.4		190
2	1,Blue,0m	25/06/03	131			27.6	20	0.34	0.21	10	2.2	33.9	33.9	115	87	7.21	23.5		130
3	1,Black,0m	25/06/03	61			57.4	49.8	0.37	0.24	7.8	0	16.5	16.5	140	112	7.45	23.6		80
4	1,Red,10m	25/06/03	37			7.9	0.3	0.11	-0.02	8.9	1.1	1.29	0.46	36	8	7.37	23.2		160
5	1,Blue,10m	25/06/03	38			9.2	1.6	0.12	-0.01	10.2	2.4	1.03	0.2	30	2	7.18	23.2		170
6	1,Black,10m	25/06/03	45			7.8	0.2	0.11	-0.02	8.4	0.6	0.78	-0.05	38	10	7.39	23.3		130
7	1,Red,20m	25/06/03	38			7.3	-0.3	0.11	-0.02	0.43	0	0.98	0.15	33	5	7.3	23.4		380
8	1,Blue,20m	25/06/03	44			7.3	-0.3	0.13	0	8.5	0.7	1.39	0.56	32	4	7.07	23.3		170
9	1,Black,20m	25/06/03	43			8	0.4	0.2	0.07	10.1	2.3	0.86	0.03	25	-3	7.44	23.4		240
10	2,Red,0m	25/06/03	94			39.6	32	0.13	0	7.5	-0.3	33	33	125	97	7.32	23.6		220
11	2,Blue,0m	25/06/03	59			40.6	33	0.19	0.06	7.7	-0.1	61.4	61.4	110	82	7.42	23.6		210
12	2,Black,0m	25/06/03																	Briste
13	2,Red,10m	25/06/03	56			7	-0.6	0.11	-0.02	7.5	-0.3	1.27	0.44	35	7	7.09	23.6		170
14	2,Blue,10m	25/06/03	29			7.5	-0.1	0.11	-0.02	11.6	3.8	0.76	-0.07	33	5	7.13	23.3		230
15	2,Black,10m	25/06/03	21			7.4	-0.2	0.13	0	8.5	0.7	1.17	0.34	27	-1	7.58	23.4		270
16	2,Red,20m	25/06/03	44			7.1	-0.5	0.16	0.03	9	1.2	0.81	-0.02	21	-7	7.52	23.5		80
17	2,Blue,20m	25/06/03	38			7.8	0.2	0.1	-0.03	0.34	-0.09	0.77	-0.06	35	7	7.14	23.4		290
18	2,Black,20m	25/06/03	65			8.4	0.8	0.17	0.04	0.42	-0.01	0.76	-0.07	25	-3	7.15	23.4		240
19	3,Red,0m	25/06/03	135			13.4	5.8	0.2	0.07	9.3	1.5	31	31	54	26	7.87	23.6		70
20	3,Blue,0m	25/06/03																	0
21	3,Black,0m	25/06/03	25			52.2	44.6	0.26	0.13	9.5	1.7	8.2	8.2	92	64	8.51	23.9		35
22	3,Red,10m	25/06/03	38			9.3	1.7	0.13	0	8.8	1	0.91	0.08	26	-2	7.33	23.4		270
23	3,Blue,10m	25/06/03	58			6.7	-0.9	0.13	0	9.1	1.3	1.57	0.74	37	9	7.31	23.5		260
24	3,Black,10m	25/06/03	130			7.4	-0.2	0.13	0	8.1	0.3	1.27	0.44	38	10	7.65	23.5		450
25	3,Red,20m	25/06/03	59			7.2	-0.4	0.16	0.03	9.3	1.5	1.1	0.27	30	2	7.37	23.4		220
26	3,Blue,20m	25/06/03	37			7.6	0	0.14	0.01	8.5	0.7	0.98	0.15	31	3	7.19	23.4		350
27	3,Black,20m	25/06/03	59			7.7	0.1	0.13	0	10.5	2.7	0.98	0.15	33	5	7.47	23.5		170
28	4,Red,0m	25/06/03																	0
29	4,Blue,0m	25/06/03	123			34.9	27.3	0.13	0	10.2	2.4	31.7	31.7	97	69	7.45	23.7		70
30	4,Black,0m	25/06/03	95			34.7	27.1	0.15	0.02	8.2	0.4	30.3	30.3	104	76	7.81	23.8		65
31	4,Red,10m	25/06/03	44			7.8	0.2	0.11	-0.02	9.2	1.4	0.7	-0.13	33	5	7.63	23.6		150
32	4,Blue,10m	25/06/03	63			10.3	2.7	0.13	0	8.5	0.7	1.8	0.97	39	11	7.64	23.5		160
33	4,Black,10m	25/06/03	38			6.8	-0.8	0.13	0	0.45	0.02	0.84	0.01	37	9	7.68	23.5		370
34	4,Red,20m	25/06/03	0			9	1.4	0.14	0.01	0.56	0.13	0.8	-0.03	23	-5	7.36	23.6		470
35	4,Blue,20m	25/06/03	92			8.3	0.7	0.14	0.01	0.53	0.1	0.92	0.09	23	-5	7.28	23.6		200
36	4,Black,20m	25/06/03	82			7.9	0.3	0.13	0	0.5	0.07	0.59	-0.24	25	-3	7.62	23.6		280
A	3,TS,2m	25/06/03																	
B	3,TS,7m,	25/06/03																	
C	3,TS,15m	25/06/03																	
D	4,TS,2m	25/06/03																	
E	4,TS,7m,	25/06/03																	
H	4,TS,15m	25/06/03																	
F	4,TS,15m	25/06/03																	
G	Small ZT	25/06/03																	
H	Big ZT	25/06/03																	

Site	Joe Keogh

Sampling Date	09/07/03
Sampling Time	08:30

Analysis Date	09/07/03
Analysis Time	12:30

Rainfall

Ref	Sample Position	Date	COD	BOD	TOC	NO_3-N	- BLANK	NO_2-N	- BLANK	NH_4-N	- BLANK	Ortho-P	- BLANK	Cl	- BLANK	Volume
X	Septic Tank	09/07/03	1453			7.5	1.3	0.5	0.4	106	98.8	32.2	31.7	130	107	comp
y	Puraflo	09/07/03	243			28.1	21.9	4.20	4.1	17.3	10.1	28.1	27.6	109	86	comp
1	1,Red,0m	09/07/03	249			32.3	26.1	8	7.9	11.4	4.2	25.4	24.9	98	75	160
2	1,Blue,0m	09/07/03	123			38.5	32.3	2.6	2.5	8.5	1.3	26	25.5	105	82	220
3	1,Black,0m	09/07/03	37			46	39.8	2.8	2.7	8.6	1.4	8.7	8.2	108	85	80
4	1,Red,10m	09/07/03	5			7.2	1	0.16	0.06	8.7	1.5	1.5	1	36	13	110
5	1,Blue,10m	09/07/03	10.2			8.1	1.9	0.11	0.01	8.8	1.6	0.66	0	35	12	140
6	1,Black,10m	09/07/03	14.1			7.2	1	0.11	0.01	8.6	1.4	0.69	0.03	28	5	80
7	1,Red,20m	09/07/03	13.3			6.1	-0.1	0.14	0.04	10.6	3.4	1.27	0.61	29	6	400
8	1,Blue,20m	09/07/03	11.7			6.2	0	0.15	0.05	8.7	1.5	0.7	0.04	33	10	150
9	1,Black,20m	09/07/03	14.4			7.3	1.1	0.24	0.14	8.9	1.7	1.3	0.64	25	2	120
10	2,Red,0m	09/07/03	113			39.4	33.2	2.6	2.5	8.6	1.4	29.8	29.3	97	74	230
11	2,Blue,0m	09/07/03	184			29.6	23.4	2.6	2.5	8.8	1.6	29.6	29.1	108	85	210
12	2,Black,0m	09/07/03														Briste
13	2,Red,10m	09/07/03	24			28.1	21.9	0.13	0.03	9.1	1.9	1.52	0.86	97	74	120
14	2,Blue,10m	09/07/03	0			7.5	1.3	0.13	0.03	8.7	1.5	0.85	0.19	45	22	180
15	2,Black,10m	09/07/03	0			7	0.8	0.13	0.03	7.5	0.3	0.59	-0.07	26	3	230
16	2,Red,20m	09/07/03	16.9			6.6	0.4	0.17	0.07	7.4	0.2	0.85	0.19	30	7	50
17	2,Blue,20m	09/07/03	12.3			7.3	1.1	0.16	0.06	7.9	0.7	0.87	0.21	35	12	220
18	2,Black,20m	09/07/03	13.8			7	0.8	0.14	0.04	7.4	0.2	1.37	0.71	29	6	200
19	3,Red,0m	09/07/03	56			38.6	32.4	2.6	2.5	8.1	0.9	20.6	20.1	112	89	120
20	3,Blue,0m	09/07/03	45			38.9	32.7	2.6	2.5	8.4	1.2	7.4	6.9	104	81	50
21	3,Black,0m	09/07/03	31			50.8	44.6	2.6	2.5	8.6	1.4	7.1	6.6	95	72	30
22	3,Red,10m	09/07/03	8			7.1	0.9	2.6	2.5	8.5	1.3	0.65	-0.01	31	8	180
23	3,Blue,10m	09/07/03	0			7.2	1	0.14	0.04	8.1	0.9	0.7	0.04	30	7	120
24	3,Black,10m	09/07/03	0			6.7	0.5	0.14	0.04	8.4	1.2	0.55	-0.11	31	8	350
25	3,Red,20m	09/07/03	14.6			6.5	0.3	0.16	0.06	8.5	1.3	0.64	-0.02	32	9	190
26	3,Blue,20m	09/07/03	12.9			6.7	0.5	0.16	0.06	8.2	1	0.87	0.21	30	7	310
27	3,Black,20m	09/07/03	14.8			6.4	0.2	0.15	0.05	9.1	1.9	0.58	-0.08	33	10	170
28	4,Red,0m	09/07/03														0
29	4,Blue,0m	09/07/03	61			41.5	35.3	2.6	2.5	8.2	1	24.6	24.1	98	75	280
30	4,Black,0m	09/07/03	45			41.6	35.4	2.6	2.5	8	0.8	24.3	23.8	96	73	170
31	4,Red,10m	09/07/03	17.5			8.7	2.5	0.14	0.04	8	0.8	0.65	-0.01	33	10	130
32	4,Blue,10m	09/07/03	8			7.8	1.6	0.17	0.07	6.7	-0.5	0.72	0.06	34	11	140
33	4,Black,10m	09/07/03	10.9			6.4	0.2	0.15	0.05	9.1	1.9	0.99	0.33	36	13	330
34	4,Red,20m	09/07/03	18.1			8.1	1.9	0.11	0.01	7	-0.2	0.62	-0.04	33	10	390
35	4,Blue,20m	09/07/03	0			7.6	1.4	0.13	0.03	8.3	1.1	0.59	-0.07	32	9	180
36	4,Black,20m	09/07/03	0			7.3	1.1	0.11	0.01	8.7	1.5	0.7	0.04	27	4	250
A	3,TS,2m	09/07/03														
B	3,TS,7m,	09/07/03														
C	3,TS,15m	09/07/03														
D	4,TS,2m	09/07/03														
E	4,TS,7m,	09/07/03														
H	4,TS,15m	09/07/03														
F	4,TS,15m	09/07/03														
G	Small ZT	09/07/03														
H	Big ZT	09/07/03														

Site	Joe Keogh

Sampling Date	22/07/03
Sampling Time	08:30

Analysis Date	22/07/03
Analysis Time	12:30

Rainfall

Ref	Sample Position	Date	COD	BOD	TOC	NO_3-N	NO_2-N	-BLANK	NH_4-N	Ortho-P	Cl	pH	Temp	Volume
X	Septic Tank	22/07/03	1329			1.6	0.4	0.4	109	27.3	90	7.46	23.3	comp
y	Puraflo	22/07/03	283			15.3	0.80	0.78	18.6	32.8	62	7.49	23.1	spot
1	1,Red,0m	22/07/03	155			33.5	0.3	0.28	1	17.6	65	5.84	23.2	110
2	1,Blue,0m	22/07/03	59			32.6	2	1.98	0	19.6	63	7.21	23.2	110
3	1,Black,0m	22/07/03	42			42.4	0.2	0.18	0	8.2	62	7.57	23.2	65
4	1,Red,10m	22/07/03	19			1	0.04	0.04	0	0.1	0	7.47	23.1	70
5	1,Blue,10m	22/07/03	12			2.6	0	0	0	0	0	7.12	23	130
6	1,Black,10m	22/07/03	12			1.2	0.03	0.03	0.2	0	0	7.25	23.1	100
7	1,Red,20m	22/07/03	18			0	0	0	0	0.06	0	7	23.4	330
8	1,Blue,20m	22/07/03	11			0.2	0	0	0	0	0	6.84	23.2	110
9	1,Black,20m	22/07/03	18			0.8	0	0	0	0	0	7.2	23.3	190
10	2,Red,0m	22/07/03	153			24.2	0.15	0.13	0	25.4	67	7.11	23.2	190
11	2,Blue,0m	22/07/03	62			28.7	0.45	0.43	0	25.4	62	7.21	23.1	140
12	2,Black,0m	22/07/03												Briste
13	2,Red,10m	22/07/03	14			1.3	0	0	0	0.83	3	6.87	23.1	150
14	2,Blue,10m	22/07/03	17			0	0.04	0.04	0	0	0	6.79	23	160
15	2,Black,10m	22/07/03	12			0	0	0	0	0	0	7.19	23.1	190
16	2,Red,20m	22/07/03	26			0.9	0.05	0.05	0	0	0	7.35	23.3	55
17	2,Blue,20m	22/07/03	23			1.1	0.02	0.02	0	0	0	6.79	23.2	190
18	2,Black,20m	22/07/03	22			0.5	0.02	0.02	0	0	0	6.83	23.1	160
19	3,Red,0m	22/07/03	78			37.9	0.15	0.13	0	16.5	62	7.46	23	65
20	3,Blue,0m	22/07/03												0
21	3,Black,0m	22/07/03	48			41	0.2	0.18	0	5.68	54	8.12	23	25
22	3,Red,10m	22/07/03	21			1.2	0.04	0.04	0	0.1	0	6.83	22.7	200
23	3,Blue,10m	22/07/03	17			0.6	0.03	0.03	0	0	0	6.74	22.5	170
24	3,Black,10m	22/07/03	17			0.2	0.01	0.01	0	0	0	7.02	22.5	320
25	3,Red,20m	22/07/03	16			0	0.02	0.02	0	0	0	6.81	22.4	160
26	3,Blue,20m	22/07/03	7			0	0.01	0.01	0	0	0	6.62	22.4	270
27	3,Black,20m	22/07/03	19			0.5	0.04	0.04	0	0.06	0	6.93	22.3	160
28	4,Red,0m	22/07/03												0
29	4,Blue,0m	22/07/03	73			36.5	0.3	0.28	0	18.8	55	7.25	22.5	55
30	4,Black,0m	22/07/03	59			35.7	0.3	0.28	0	17.6	59	7.17	22.3	50
31	4,Red,10m	22/07/03	0			1.3	0	0	0	0.21	0	7.08	21.6	120
32	4,Blue,10m	22/07/03	23			1.2	0	0	0	0	0	7.07	21.3	130
33	4,Black,10m	22/07/03	26			0	0	0	0	0	0	7.1	21.1	280
34	4,Red,20m	22/07/03	18			1.3	0.02	0.02	0	0	0	6.83	21.4	150
35	4,Blue,20m	22/07/03	17			1.2	0.03	0.03	0	0	0	6.81	20.4	250
36	4,Black,20m	22/07/03	25			0.3	0.01	0.01	0	0.26	0	7.01	20.5	250
A	3,TS,2m	22/07/03												
B	3,TS,7m,	22/07/03												
C	3,TS,15m	22/07/03												
D	4,TS,2m	22/07/03												
E	4,TS,7m,	22/07/03												
H	4,TS,15m	22/07/03												
F	4,TS,15m	22/07/03												
G	Small ZT	22/07/03												
H	Big ZT	22/07/03												

BACTERIA (cfu/100ml)	DATE	X	Y	1	2		4	5	6	7	8	9
E. coli	17/10/02		200,000									
E. coli	13/03/03		31,000									
E. coli	15/05/03	397,260	4320									
E. coli	28/08/03	1,416,600	5,040	<10	<10		70	10	10	60	<10	<10
Enterococci	28/08/03	238,200	600	<20	<20		<20	<20	<20	<20	<20	<20
Faecal coliforms	28/08/03	1,553,100	6010	<10	<10		90	10	10	70	<10	<10
Faecal Streptococci	17/10/02		620									
Faecal Streptococci	13/03/03		63,000									
Faecal Streptococci	15/05/03	>486,840	17,200									

BACTERIA (cfu/100ml)	DATE	X	Y	10	11		14	15	16	17	18
E. coli	17/10/02		200,000	<10	<10			<100	<10		<10
E. coli	13/03/03		31,000	<100	<100			<100		<100	<100
E. coli	15/05/03	397,260	4320	<3	8			8		<2	14
E. coli	28/08/03	1,416,600	5,040	<10			<10	<10	20	50	<10
Enterococci	28/08/03	238,200	600	<20			<20	<20	<20	<20	<20
Faecal coliforms	28/08/03	1,553,100	6010	<10			<10	<10	30	50	<10
Faecal Streptococci	17/10/02		620	<10	<10			<100	<10		<10
Faecal Streptococci	13/03/03		63,000	<100	<100			<100		<100	<100
Faecal Streptococci	15/05/03	>486,840	17,200	6	2			<2		<2	<2

BACTERIA (cfu/100ml)	DATE	X	Y	
E. coli	17/10/02		200,000	
E. coli	13/03/03		31,000	
E. coli	15/05/03	397,260	4320	
E. coli	28/08/03	1,416,600	5,040	
Enterococci	28/08/03	238,200	600	
Faecal coliforms	28/08/03	1,553,100	6010	
Faecal Streptococci	17/10/02		620	
Faecal Streptococci	13/03/03		63,000	
Faecal Streptococci	15/05/03	>486,840	17,200	

SITE 2: THE CURRAGH

Site	Ranger's Lodge

Sampling Date	08/08/02
Sampling Time	09:00

Analysis Date	CAL labs
Analysis Time	15:30

Ref	Sample Position	Date	COD	BOD	TOC	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	Volume
X	Septic Tank	08/08/02	399.3	150		0.5		50.4	-	9.5	42	
1	1,Red,0m	08/08/02										
2	1,Blue,0m	08/08/02	39.3	6	13.2	16.7	-	16.4	-	0.2	31	
3	1,Black,0m	08/08/02										
4	1,Red,10m	08/08/02	35.6	6	13.9	3.1	-	19.9	-	0.9	36	
5	1,Blue,10m	08/08/02	49.4	6.5	15.8	0.6	-	32.9	-	1.5	37	
6	1,Black,10m	08/08/02	33.3	3.5	15.4	0.6	-	27.2	-	0.8	31	
7	1,Red,20m	08/08/02	18	-	-	6.7	-	0.6	-	<0.1	8	
8	1,Blue,20m	08/08/02	25.9	-	-	7.8	-	1	-	<0.1	9	
9	1,Black,20m	08/08/02										
10	2,Red,0m	08/08/02	38.4	-	-	<0.3	-	1.1	-	<0.1	22	
11	2,Blue,0m	08/08/02	27.1	-	-	0.4	-	6.5	-	0.3	29	
12	2,Black,0m	08/08/02	21	-	-	0.9	-	0.6	-	<0.1	29	
13	2,Red,10m	08/08/02	20.4	-	-	0.4	-	2.2	-	0.5	31	
14	2,Blue,10m	08/08/02	14.3	-	-	0.7	-	2.9	-	0.2	24	
15	2,Black,10m	08/08/02	13.6	-	-	6.9	-	0.5	-	0.2	31	
16	2,Red,20m	08/08/02	35.7	-	14.7	2	-	15.9	-	2.6	29	
17	2,Blue,20m	08/08/02	34.4	4	-	<0.3	-	12.1	-	1.4	30	
18	2,Black,20m	08/08/02	35.7	<2	-	<0.3	-	13.6	-	1.8	28	
19	3,Red,0m	08/08/02	127.5	54	18.9	<0.3	-	25.7	-	3.6	37	
20	3,Blue,0m	08/08/02	37.4	<2	18.2	<0.3	-	1	-	0.2	28	
21	3,Black,0m	08/08/02	34.7	-	-	0.3	-	0.7	-	<0.1	23	
22	3,Red,10m	08/08/02	42.7	4	12.1	<0.3	-	13.2	-	1	34	
23	3,Blue,10m	08/08/02	52.4	7.5	14.2	<0.3	-	22.3	-	3	34	
24	3,Black,10m	08/08/02	51.7	12	13.9	<0.3	-	25.3	-	3.4	31	
25	3,Red,20m	08/08/02										
26	3,Blue,20m	08/08/02										
27	3,Black,20m	08/08/02										
28	4,Red,0m	08/08/02	83.8	-	-	<0.3	-	0.7	-	<0.1	34	
29	4,Blue,0m	08/08/02	71	-	-	<0.3	-	1.2	-	<0.1	29	
30	4,Black,0m	08/08/02	42	-	21.4	<0.3	-	1.1	-	<0.1	29	
31	4,Red,10m	08/08/02	84.1	34	-	<0.3	-	29.7	-	4.8	37	
32	4,Blue,10m	08/08/02	75.2	17	14	<0.3	-	12.4	-	<0.1	38	
33	4,Black,10m	08/08/02										
34	4,Red,20m	08/08/02	13.1	-	-	13.6	-	0.4	-	0.3	11	
35	4,Blue,20m	08/08/02	20.3	-	-	15.4	-	0.4	-	0.4	10	
36	4,Black,20m	08/08/02										
A	3,TS,2m	08/08/02	19.4	-	-	6.3	-	1.2	-	0.4	35	
B	3,TS,7m,	08/08/02	46.4	-	-	1	-	0.5	-	0.5	3	
C	3,TS,15m	08/08/02	28.4	-	-	23.2	-	0.4	-	0.5	34	
D	4,TS,2m	08/08/02	21.3	-	-	0.6	-	1.1	-	0.3	32	
E	4,TS,7m,	08/08/02	12.4	-	-	24.8	-	0.4	-	0.3	28	
G	Small ZT											
H	Big ZT											

Site	Ranger's Lodge

Sampling Date	14/08/02
Sampling Time	09:00

Analysis Date	14/08/02
Analysis Time	15:30

Ref	Sample Position	Date	COD	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	Volume
X	Septic Tank	14/08/02	386	<0.10	0.11	1.49		18.08	75	
1	1,Red,0m	14/08/02								
2	1,Blue,0m	14/08/02	300	<0.10	<0.005	0.6		0.49	64	88
3	1,Black,0m	14/08/02	54	<0.10	<0.005	0.64		0.51	61	120
4	1,Red,10m	14/08/02	70	<0.10	0.72	0.76		1.39	63	370
5	1,Blue,10m	14/08/02	80	<0.10	0.58	1		2.68	70	580
6	1,Black,10m	14/08/02	67	<0.10	0.24	1.1		0.41	65	490
7	1,Red,20m	14/08/02	56	1.3	<0.005	0.27		0.66	34	440
8	1,Blue,20m	14/08/02	54	5.5	<0.005	0.28		0.51	35	670
9	1,Black,20m	14/08/02								
10	2,Red,0m	14/08/02	69	<0.10	<0.005	0.29		0.46	57	60
11	2,Blue,0m	14/08/02	62	1.6	<0.005	1.49		0.42	64	80
12	2,Black,0m	14/08/02	45	<0.10	<0.005	0.35		0.52	64	90
13	2,Red,10m	14/08/02	53	<0.10	<0.005	0.64		0.45	69	160
14	2,Blue,10m	14/08/02	39	1.4	0.31	0.5		0.43	63	80
15	2,Black,10m	14/08/02	58	6.1	0.1	0.28		0.72	75	200
16	2,Red,20m	14/08/02	66	26.1	1.23	0.44		2.25	64	192
17	2,Blue,20m	14/08/02	75	28.7	1.47	0.38		1.21	63	420
18	2,Black,20m	14/08/02	74	26.5	1.23	0.61		1.44	70	450
19	3,Red,0m	14/08/02	156	<0.10	0.28	0.48		4.01	86	650
20	3,Blue,0m	14/08/02	72	<0.10	<0.005	0.35		7.5	63	130
21	3,Black,0m	14/08/02	51	<0.10	<0.005	1.03		1.78	58	70
22	3,Red,10m	14/08/02	85	<0.10	<0.005	1.17		1.97	78	240
23	3,Blue,10m	14/08/02	115	<0.10	0.46	1.58		3.43	87	670
24	3,Black,10m	14/08/02	113	<0.10	<0.005	0.3		4.91	85	910
25	3,Red,20m	14/08/02								
26	3,Blue,20m	14/08/02								
27	3,Black,20m	14/08/02								
28	4,Red,0m	14/08/02	116	<0.10	<0.005	0.5		0.5	86	80
29	4,Blue,0m	14/08/02	122	13.1	<0.005	0.49		0.56	77	110
30	4,Black,0m	14/08/02	85	<0.10	0.1	1.24		0.55	78	100
31	4,Red,10m	14/08/02	74	0.8	<0.005	0.98		4.84	75	500
32	4,Blue,10m	14/08/02	303	4.3	0.81	1.97		1.25	85	540
33	4,Black,10m	14/08/02	236	1.1	0.27	0.3		2.23	77	1000
34	4,Red,20m	14/08/02	147	<0.10	<0.005	0.25		0.53	36	160
35	4,Blue,20m	14/08/02	96	11.5	<0.005	0.36		0.65	33	380
36	4,Black,20m	14/08/02	81	8.1	<0.005	0.31		1.2	35	140
A	3,TS,2m	14/08/02	81	1.6	<0.005	0.28		0.44	70	120
B	3,TS,7m,	14/08/02	59	10.4	0.1	0.31		0.44	77	20
C	3,TS,15m	14/08/02	75	32.9	0.93	0.47		1.14	70	120
D	4,TS,2m	14/08/02	62	9.3	<0.005	0.37			72	160
E	4,TS,7m,	14/08/02	88	3.1	0.42	0.36		1.75	69	100
G	Small ZT									
H	Big ZT									

Site	Ranger's Lodge

Sampling Date	21/08/02
Sampling Time	

Analysis Date	21/08/02
Analysis Time	

Ref	Sample Position	Date	COD	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl		Volume
X	Septic Tank	21/08/02	464	0.2	0.12	26.01	18.2	23.4	93		-
1	1,Red,0m	21/08/02									
2	1,Blue,0m	21/08/02	54	<0.10	<0.005	4.56	1.91	1.38	61		80
3	1,Black,0m	21/08/02	52	<0.10	<0.005	5.51	1.02	0.93	56		45
4	1,Red,10m	21/08/02	78	0.1	<0.005	6.17	1.98	2.33	40		310
5	1,Blue,10m	21/08/02	79	<0.10	<0.005	11.42	2.88	3.69	65		520
6	1,Black,10m	21/08/02	41	<0.10	<0.005	6.25	1.88	2.82	20		420
7	1,Red,20m	21/08/02									
8	1,Blue,20m	21/08/02									
9	1,Black,20m	21/08/02									
10	2,Red,0m	21/08/02	67	<0.10	0.17	2.47	0.92	2.3	39		50
11	2,Blue,0m	21/08/02									
12	2,Black,0m	21/08/02	55	<0.10	<0.005	131	1.14	2.86	39		60
13	2,Red,10m	21/08/02	49	<0.10	<0.005	1.76	0.92	4.57	62		130
14	2,Blue,10m	21/08/02	9	4.1	0.32	1.39		2.97	60		30
15	2,Black,10m	21/08/02	24	3.2	0.07	1.15	1.82	1.77	63		170
16	2,Red,20m	21/08/02									
17	2,Blue,20m	21/08/02									
18	2,Black,20m	21/08/02									
19	3,Red,0m	21/08/02	156	<0.10	<0.005	14.27	5.1	6.78	60		590
20	3,Blue,0m	21/08/02	54	<0.10	0.06	1.59	0.78	2.84	37		160
21	3,Black,0m	21/08/02	58	0.2	<0.005	1.37	0.82	2.98	52		75
22	3,Red,10m	21/08/02	43	0.5	<0.005	6.39	2.16	5.74	70		240
23	3,Blue,10m	21/08/02	84	<0.10	<0.005	4.91	3.96	1.9	73		780
24	3,Black,10m	21/08/02	58	<0.10	<0.005	4.23	3.71	2.03	69		640
25	3,Red,20m	21/08/02									
26	3,Blue,20m	21/08/02									
27	3,Black,20m	21/08/02									
28	4,Red,0m	21/08/02	89	<0.10	0.28	1.39	0.47	0.68	69		65
29	4,Blue,0m	21/08/02	77	1.9	<0.005	1.71	1.82	0.77	62		120
30	4,Black,0m	21/08/02	60	<0.10	0.05	1.59	0.78	0.69	60		50
31	4,Red,10m	21/08/02	99	<0.10	<0.005	12.7	5.22	5.05	70		590
32	4,Blue,10m	21/08/02	73	<0.10	<0.005	4.01	1.34	1.34	70		580
33	4,Black,10m	21/08/02	123	<0.10	<0.005	5.69	2.4	2.3	71		1000
34	4,Red,20m	21/08/02									
35	4,Blue,20m	21/08/02									
36	4,Black,20m	21/08/02									
A	3,TS,2m	21/08/02	33	3.6	0.05	1.37	0.47	0.65	69		65
B	3,TS,7m,	21/08/02	45	4	0.07	1.07	0.68	1.2	68		160
C	3,TS,15m	21/08/02	49	17.6	<0.005	1.07	0.72	0.73	64		60
D	4,TS,2m	21/08/02	47	0.3	0.16	1.13	1.47	1.06	66		50
E	4,TS,7m,	21/08/02	49	0.2	<0.005	1.49	0.79	0.94	70		230
G	Small ZT										
H	Big ZT										

Site	Ranger's Lodge

Sampling Date	27/08/02
Sampling Time	09:00

Analysis Date	27/08/02
Analysis Time	13:30

Ref	Sample Position	Date	COD	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl		Volume	
X	Septic Tank	27/08/02	508	1.8	0.21	53.4		20.4	67			
1	1,Red,0m	27/08/02										
2	1,Blue,0m	27/08/02	164	0.2	<0.005	10.95		1.58	29		70	
3	1,Black,0m	27/08/02	81	<0.10	<0.005	7.55		1.48	36		60	
4	1,Red,10m	27/08/02	106	<0.10	<0.005	>15		1.16	39		350	
5	1,Blue,10m	27/08/02	224	<0.10	<0.005	>15		3.54	42		490	
6	1,Black,10m	27/08/02	83	<0.10	<0.005	>15		1.92	48		400	
7	1,Red,20m	27/08/02										
8	1,Blue,20m	27/08/02										
9	1,Black,20m	27/08/02										
10	2,Red,0m	27/08/02	109	0.4	0.21	0.57		3	24		55	
11	2,Blue,0m	27/08/02										
12	2,Black,0m	27/08/02	71	<0.10	<0.005	0.95		0.72	31		60	
13	2,Red,10m	27/08/02										
14	2,Blue,10m	27/08/02	44	4.6	0.34	1.6		2.88	30		60	
15	2,Black,10m	27/08/02	60	5.3	0.07	0.44		1.56	38		140	
16	2,Red,20m	27/08/02										
17	2,Blue,20m	27/08/02										
18	2,Black,20m	27/08/02										
19	3,Red,0m	27/08/02	184	<0.10	<0.005	3.56		7.02	44		410	
20	3,Blue,0m	27/08/02	92	<0.10	0.26	0.87		2.48	31		150	
21	3,Black,0m	27/08/02	79	<0.10	<0.005	0.68		0.82	22		80	
22	3,Red,10m	27/08/02	113	<0.10	<0.005	>15		1.7	35		220	
23	3,Blue,10m	27/08/02	142	<0.10	<0.005	>15		5.98	46		690	
24	3,Black,10m	27/08/02	160	<0.10	0.03	>15		5.64	45		570	
25	3,Red,20m	27/08/02										
26	3,Blue,20m	27/08/02										
27	3,Black,20m	27/08/02										
28	4,Red,0m	27/08/02	142	0.04	<0.005	0.46		0.72	38		70	
29	4,Blue,0m	27/08/02	102	<0.10	<0.005	1.29		0.32	29		100	
30	4,Black,0m	27/08/02	103	1	<0.005	1.24		0.78	25		90	
31	4,Red,10m	27/08/02	165	<0.10	<0.005	>15		7.5	42		500	
32	4,Blue,10m	27/08/02	139	<0.10	<0.005	16.05		2.34	41		500	
33	4,Black,10m	27/08/02	154	<0.10	<0.005	>15		3.16	46		810	
34	4,Red,20m	27/08/02	57	10.8	<0.005	0.99		0.7			17	
35	4,Blue,20m	27/08/02										
36	4,Black,20m	27/08/02										
A	3,TS,2m	27/08/02	115	5.9	0.03	0.18					20	
B	3,TS,7m,	27/08/02	91	5.9	-	0.02					10	
C	3,TS,15m	27/08/02	85	36	<0.005	0.18		0.38	31		50	
D	4,TS,2m	27/08/02	81	0.8	0.26	0.17		0.76	34		120	
E	4,TS,7m,	27/08/02	155	1.2	0.38	1.64		0.54	39		120	
G	Small ZT											
H	Big ZT											

Site	Ranger's Lodge

Sampling Date	11/09/02
Sampling Time	08:00

Analysis Date	11/09/02
Analysis Time	13:00

Ref	Sample Position	Date	COD	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl		Volume	
X	Septic Tank	11/09/02	620	<0.10	0.14	72.8		104	46		comp	
1	1,Red,0m	11/09/02									0	Briste
2	1,Blue,0m	11/09/02	78	0.3	0.81	9.9		1.07	17		60	
3	1,Black,0m	11/09/02									0	
4	1,Red,10m	11/09/02	112	<0.10	<0.005	32.1		2.76	32		150	
5	1,Blue,10m	11/09/02	140	<0.10	<0.005	41.8		3.74	40		530	
6	1,Black,10m	11/09/02	140	<0.10	<0.005	41.2		2.93	61		320	
7	1,Red,20m	11/09/02									0	
8	1,Blue,20m	11/09/02									0	
9	1,Black,20m	11/09/02									0	Briste
10	2,Red,0m	11/09/02									0	
11	2,Blue,0m	11/09/02									0	
12	2,Black,0m	11/09/02	96	1.1	0.03	0.36		534	20		30	
13	2,Red,10m	11/09/02	80	<0.10	<0.005	0.5		3.09	23		70	
14	2,Blue,10m	11/09/02									0	
15	2,Black,10m	11/09/02	66	11.2	0.03	0.6		0.2	29		170	
16	2,Red,20m	11/09/02									0	
17	2,Blue,20m	11/09/02									0	
18	2,Black,20m	11/09/02									0	
19	3,Red,0m	11/09/02	250	0.8	<0.005	38.6		4.97	32		610	
20	3,Blue,0m	11/09/02	96	1.1	0.02	0.82		1.8	31		190	
21	3,Black,0m	11/09/02	81	0.7	<0.005	0.42		0.9	21		70	
22	3,Red,10m	11/09/02	138	<0.10	0.06	17.8		3.74	32		230	
23	3,Blue,10m	11/09/02	181	0.8	<0.005	43.4		6.34	48		760	
24	3,Black,10m	11/09/02	82	<0.10	0.04	34.6		6.59	50		600	
25	3,Red,20m	11/09/02									0	
26	3,Blue,20m	11/09/02									0	
27	3,Black,20m	11/09/02									0	
28	4,Red,0m	11/09/02	95	0.5	0.03	0.5		0.82	29		40	
29	4,Blue,0m	11/09/02	140	<0.10	0.08	1.4		654	22		160	
30	4,Black,0m	11/09/02	140	1	0.03	0.34		0.55	21		70	
31	4,Red,10m	11/09/02									0	
32	4,Blue,10m	11/09/02	115	<0.10	<0.005	30.4		2.31	35		590	
33	4,Black,10m	11/09/02	78	<0.10	<0.005	37.3		3.96	44		700	
34	4,Red,20m	11/09/02									0	
35	4,Blue,20m	11/09/02									0	
36	4,Black,20m	11/09/02									0	
A	3,TS,2m	11/09/02										
B	3,TS,7m,	11/09/02										
C	3,TS,15m	11/09/02										
D	4,TS,2m	11/09/02										
E	4,TS,7m,	11/09/02										
G	Small ZT											
H	Big ZT											

Site	Ranger's Lodge

Sampling Date	25/09/02
Sampling Time	09:00

Analysis Date	25/09/02
Analysis Time	13:00

Ref	Sample Position	Date	COD	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl		Volume	
X	Septic Tank	25/09/02	638	1.1	0.15	41.4		22.1	55		comp	
1	1,Red,0m	25/09/02									0	Briste
2	1,Blue,0m	25/09/02	104	<0.10	0.7	6.5		1.43	41		50	
3	1,Black,0m	25/09/02									0	
4	1,Red,10m	25/09/02	90	<0.10	0.93	22.3		0.68	43		150	
5	1,Blue,10m	25/09/02	91	<0.10	0.31	19.7		1.44	43		340	
6	1,Black,10m	25/09/02	82	<0.10	1.05	33.5		0.66	48		270	
7	1,Red,20m	25/09/02									0	
8	1,Blue,20m	25/09/02									0	
9	1,Black,20m	25/09/02									0	Briste
10	2,Red,0m	25/09/02	53	<0.10	0.06	1.44		0.65	31		40	
11	2,Blue,0m	25/09/02									0	
12	2,Black,0m	25/09/02									0	
13	2,Red,10m	25/09/02	73	<0.10	0.06	2		0.37	47		80	
14	2,Blue,10m	25/09/02									0	
15	2,Black,10m	25/09/02	43	42.8	0.03	0.08		<0.05	36		220	
16	2,Red,20m	25/09/02	91	1.6	0.12	16		3.87	40		650	
17	2,Blue,20m	25/09/02	104	1.8	0.14	13		2.54	45		660	
18	2,Black,20m	25/09/02	87	<0.10	0.42	8.5		1.78	43		770	
19	3,Red,0m	25/09/02	218	<0.10	0.01	33		4.34	44		520	
20	3,Blue,0m	25/09/02	75	0.9	0.07	0.88		0.32	38		180	
21	3,Black,0m	25/09/02	77	0.8	0.01	0.06		0.09	56		63	
22	3,Red,10m	25/09/02	143	<0.10	0.06	20.2		2.47	45		250	
23	3,Blue,10m	25/09/02	157	<0.10	<0.005	27.2		6.58	44		840	
24	3,Black,10m	25/09/02	153	<0.10	0.05	23.8		9.4	56		1330	
25	3,Red,20m	25/09/02									0	
26	3,Blue,20m	25/09/02									0	
27	3,Black,20m	25/09/02									0	
28	4,Red,0m	25/09/02									0	
29	4,Blue,0m	25/09/02	92	<0.10	<0.005	1.55		0.16	31		80	
30	4,Black,0m	25/09/02	77	0.15	0.01	0.32		0.18	38		50	
31	4,Red,10m	25/09/02	140	<0.10	0.022	38.1		9.13	45		820	
32	4,Blue,10m	25/09/02	166	<0.10	0.03	41..2		2.27	45		500	
33	4,Black,10m	25/09/02	159	<0.10	<0.005	27.1		4.06	59		1270	
34	4,Red,20m	25/09/02									0	
35	4,Blue,20m	25/09/02									0	
36	4,Black,20m	25/09/02									0	
A	3,TS,2m	25/09/02									0	
B	3,TS,7m,	25/09/02	72	0.1	-	0.25		0.41	44		25	
C	3,TS,15m	25/09/02	127	3.9	<0.005	1.15		0.17	39		65	
D	4,TS,2m	25/09/02	110	<0.10	0.14	0.11		0.06	42		75	
E	4,TS,7m,	25/09/02	137	1.5	0.1	0.43		0.14	36		75	
G	Small ZT										0	
H	Big ZT										0	

Site	Ranger's Lodge

Sampling Date	09/10/02
Sampling Time	09:00

Analysis Date	09/10/01
Analysis Time	13:00

Ref	Sample Position	Date	COD	NO_3-N	NO_2-N	NH_4-N*	Tot-P	Ortho-P	Cl		Volume	
X	Septic Tank	09/10/02	404	1.5	0.18	70		54.75	59		comp	
1	1,Red,0m	09/10/02	-	-	-	-		-	-		0	
2	1,Blue,0m	09/10/02	68	10.7	0.31	3.7		3.21	35		47	
3	1,Black,0m	09/10/02	-	-	-	-		-	-		0	
4	1,Red,10m	09/10/02	60	6.4	0.6	29.1		5.28	40		150	
5	1,Blue,10m	09/10/02	67	0	0.43	36.6		3.14	33		420	
6	1,Black,10m	09/10/02	83	9.6	0.76	57.3		3.14	31		260	
7	1,Red,20m	09/10/02	-	-	-	-		-	-		0	
8	1,Blue,20m	09/10/02	-	-	-	-		-	-		0	
9	1,Black,20m	09/10/02	-	-	-	-		-	-		0	
10	2,Red,0m	09/10/02	-	-	-	-		-	-		0	
11	2,Blue,0m	09/10/02	-	-	-	-		-	-		0	
12	2,Black,0m	09/10/02	-	-	-	-		-	-		0	
13	2,Red,10m	09/10/02	98	1.5	0.36	3.6		6.71	38		30	
14	2,Blue,10m	09/10/02	61	1.7	0.02	5		4.98	33		130	
15	2,Black,10m	09/10/02	85	23.1	0.12	2		2.44	44		210	
16	2,Red,20m	09/10/02	99	1.2	0.6	50.7		6.64	29		770	
17	2,Blue,20m	09/10/02	91	1.8	0.37	23		3.02	43		980	
18	2,Black,20m	09/10/02	84	2.3	0.88	43.3		2.36	37		1200	
19	3,Red,0m	09/10/02	182	0.9	0.18	33.8		6.84	31		470	
20	3,Blue,0m	09/10/02	123	0.6	0.43	2.7		1.16	25		160	
21	3,Black,0m	09/10/02	89	0.9	0.07	1.4		1.22	33		70	
22	3,Red,10m	09/10/02	127	1.8	0.07	23.8		3.42	42		220	
23	3,Blue,10m	09/10/02	130	2	0.03	56.4		8	50		850	
24	3,Black,10m	09/10/02	118	1.6	0.05	44.2		10.6	78		1100	
25	3,Red,20m	09/10/02	84	1.8	0.09	19.5		4.44	-		20	
26	3,Blue,20m	09/10/02	-	-	-	-		-	-		0	
27	3,Black,20m	09/10/02	-	-	-	-		-	-		0	
28	4,Red,0m	09/10/02	-	-	-	-		-	-		0	
29	4,Blue,0m	09/10/02	140	1.3	0.03	1.5		0.42	27		75	
30	4,Black,0m	09/10/02	74	2	0.08	9.1		1.64	37		40	
31	4,Red,10m	09/10/02	121	0.2	0.02	68.4		10.72	39		810	
32	4,Blue,10m	09/10/02	137	0	0.05	40.2		2.72	45		620	
33	4,Black,10m	09/10/02	126	1.6	0	64.5		8.8	49		1120	
34	4,Red,20m	09/10/02	79	10.4	0.26	11.4		1.63	32		150	
35	4,Blue,20m	09/10/02	66	11.3	0.94	7.3		1.14	31		540	
36	4,Black,20m	09/10/02	81	9.3	0.44	15.2		3.86	26		370	
A	3,TS,2m	09/10/02	68	2.6	0.02	0.9		0.68	39		25	
B	3,TS,7m,	09/10/02	59	3.4	0.03	0.1		6.71	36		20	
C	3,TS,15m	09/10/02	56	15	0.42	0.8		1.22	38		300	
D	4,TS,2m	09/10/02	50	2.1	0.06	0		0.46	25		110	
E	4,TS,7m,	09/10/02	91	1.5	0.65	8.8		6.59	28		110	
G	Small ZT										0	
H	Big ZT											

Site	Ranger's Lodge

Sampling Date	17/10/02
Sampling Time	09:00

RED = CAL LAB ANALYSIS

	Analysis Date	17/10/02
	Analysis Time	12:45

Notes
Samples taken with ZT fitting
Heavy ground frost

Ref	Sample Position	Date	BOD	COD	COD	NO_3-N	NO_3-N	NO_2-N	NO_2-N	NH_4-N	NH_4-N	Tot-P	Ortho-P	Ortho-P	Cl	Cl	SO_4	Total Coliforms (c.f.u./100ml)	E.Coli (c.f.u./100ml)	Faecal Streptocci (c.f.u./100ml)	Volume
X	Septic Tank	17/10/02	210	334	574	0	1.08	0.2	<0.03	52	46		55.7	19.4	38	52	21	3,800,000	530,000	1,300	Comp
1	1,Red,0m	17/10/02		-		-		-		-			-		-						-
2	1,Blue,0m	17/10/02		-		-		-		-			-		-						-
3	1,Black,0m	17/10/02		-		-		-		-			-		-						-
4	1,Red,10m	17/10/02		-		-		-		-			-		-						-
5	1,Blue,10m	17/10/02		-		-		-		-			-		-						-
6	1,Black,10m	17/10/02		-		-		-		-			-		-						-
7	1,Red,20m	17/10/02		-		-		-		-			-		-						-
8	1,Blue,20m	17/10/02		-		-		-		-			-		-						-
9	1,Black,20m	17/10/02		-		-		-		-			-		-						-
10	2,Red,0m	17/10/02																			-
11	2,Blue,0m	17/10/02																			-
12	2,Black,0m	17/10/02																			-
13	2,Red,10m	17/10/02																			-
14	2,Blue,10m	17/10/02																			-
15	2,Black,10m	17/10/02																			-
16	2,Red,20m	17/10/02																			-
17	2,Blue,20m	17/10/02																			-
18	2,Black,20m	17/10/02																			-
19	3,Red,0m	17/10/02	39	162	102	0	0.39	0.4	<0.03	67.3	29.9		12.72	2.1	38	38	<10	20,000	<10	1780	360
20	3,Blue,0m	17/10/02	8	88	39.3	1.1	0.65	0.1	0.08	2.8	0.899		1.48	<0.1	27	38	12	660,000	<10	<10	190
21	3,Black,0m	17/10/02		-		-		-		-			-		-						50
22	3,Red,10m	17/10/02	18	85	61.5	0.6	<0.23	0.1	0.18	26	19.7		14.48	1	21	39	<10	42,000	<10	<10	260
23	3,Blue,10m	17/10/02	14	91	71	0	<0.23	0.1	0.03	47	35.6		9.28	6.2	34	39	<10	240,000	310	<10	745
24	3,Black,10m	17/10/02	12	82	55.1	0	<0.23	0.1	0.05	36.4	34.1		9.98	7.6	28	35	<10	530,000	150,000	100	720
25	3,Red,20m	17/10/02		-		-		-		-			-		-						-
26	3,Blue,20m	17/10/02		-		-		-		-			-		-						-
27	3,Black,20m	17/10/02	6	71	18.8	21.9	22.2	0.24	0.28	7.9	4.49		3.12	0.9	11	22	<10	3,100,000	42,000	<100	12
28	4,Red,0m	17/10/02		-		-		-		-			-		-						-
29	4,Blue,0m	17/10/02		-		-		-		-			-		-						-
30	4,Black,0m	17/10/02		-		-		-		-			-		-						-
31	4,Red,10m	17/10/02		-		-		-		-			-		-						-
32	4,Blue,10m	17/10/02		-		-		-		-			-		-						-
33	4,Black,10m	17/10/02		-		-		-		-			-		-						-
34	4,Red,20m	17/10/02		-		-		-		-			-		-						-
35	4,Blue,20m	17/10/02		-		-		-		-			-		-						-
36	4,Black,20m	17/10/02		-		-		-		-			-		-						-
A	3,TS,2m	17/10/02		-		-		-		-			-		-						-
B	3,TS,7m,	17/10/02		-		-		-		-			-		-						-
C	3,TS,15m	17/10/02		-		-		-		-			-		-						-
D	4,TS,2m	17/10/02		-		-		-		-			-		-						-
E	4,TS,7m,	17/10/02		-		-		-		-			-		-						-
G	Small ZT																				-
H	Big ZT																				-

Site	Ranger's Lodge

Sampling Date	23/10/02
Sampling Time	10:00

Analysis Date	23/10/02
Analysis Time	14:30

Ref	Sample Position	Date	COD	NO_3-N	NO_2-N	NH_4-N*	Tot-P	Ortho-P	Cl		Volume	
X	Septic Tank	23/10/02	240	3.4	0.15	20.3		54.25	27		comp	
1	1,Red,0m	23/10/02	-	-	-	-		-	-		0	Briste
2	1,Blue,0m	23/10/02	71	1.4	0.19	10.9		25.88	29		150	
3	1,Black,0m	23/10/02	70	1.1	0.18	13.4		21.44	23.8		300	
4	1,Red,10m	23/10/02	43	1.5	0.04	15.5		3.72	12.6		310	
5	1,Blue,10m	23/10/02	30	1.2	0.06	24.5		5.88	20.7		580	
6	1,Black,10m	23/10/02	69	1.4	0.06	29.7		3.14	20.7		420	
7	1,Red,20m	23/10/02	50	1	0.05	2.4			16.2		670	
8	1,Blue,20m	23/10/02	47	0.1	0.27	3			21.5		1110	
9	1,Black,20m	23/10/02	-	-	-	-			-		0	Briste
10	2,Red,0m	23/10/02	68	1.1	0.03	1			22.9		75	
11	2,Blue,0m	23/10/02	60	0.5	0.11	5.9			25.7		75	
12	2,Black,0m	23/10/02	63	1.1	0.08	3.3			30.5		75	
13	2,Red,10m	23/10/02	75	0	0.05	5.5			27.8		200	
14	2,Blue,10m	23/10/02	57	0	0.11	1.5			30.7		65	
15	2,Black,10m	23/10/02	29	0.1	0.01	0.5			30.2		280	
16	2,Red,20m	23/10/02	69	1.9	1.64	24.4			25.6		1030	
17	2,Blue,20m	23/10/02	67	0	0.23	26.6			26.1		1070	
18	2,Black,20m	23/10/02	65	1.9	0.15	24.2			27.2		1340	
19	3,Red,0m	23/10/02	99	1.2	0.06	31.4			25.4		320	
20	3,Blue,0m	23/10/02	71	0	0.04	4.2			28.3		170	
21	3,Black,0m	23/10/02	69	1.3	0.03	4.8			29.1		75	
22	3,Red,10m	23/10/02	54	1.9	0.02	19.2			31.3		280	
23	3,Blue,10m	23/10/02	92	0.5	0.31	30.6			20.7		720	
24	3,Black,10m	23/10/02	74	0.3	0.47	25.9			22.6		1370	
25	3,Red,20m	23/10/02	46	1.5	2.04	7.4			23.2		890	
26	3,Blue,20m	23/10/02	43	0.7	1.72	5.4			17		1150	
27	3,Black,20m	23/10/02	44	10.3	2.36	4.6			20.2		1260	
28	4,Red,0m	23/10/02	97	5	0.01	0.6			31.8		220	
29	4,Blue,0m	23/10/02	85	0.8	0.03	0.7			24.6		150	
30	4,Black,0m	23/10/02	61	2	0.04	1.6			28.7		80	
31	4,Red,10m	23/10/02	74	1.5	0	30.8			20.1		1020	
32	4,Blue,10m	23/10/02	58	3.2	0.01	32.5			26.3		?	
33	4,Black,10m	23/10/02	87	0.4	0.07	43.8			29.1		1070	
34	4,Red,20m	23/10/02	41	1.7	0.41	7.4			20.6		630	
35	4,Blue,20m	23/10/02	43	3.3	0.67	10.4			20.2		1380	
36	4,Black,20m	23/10/02	49	3	0.55	11.8			19.7		1600	
A	3,TS,2m	23/10/02	64	40.1	0.07	0.2			15.6		270	
B	3,TS,7m,	23/10/02	41	13.9	1.52	1.6			21.2		200	B & D mixed up. Used in same order on 23rd but on 24th Cl done by Maria so different order might have been used as sample tubes removed from stand
C	3,TS,15m	23/10/02	22	34	0.61	1.3			23.2		370	
D	4,TS,2m	23/10/02	66	3	0.11	2			27.4		320	
E	4,TS,7m,	23/10/02	39	52.7	0.07	2.9			21		?	
G	Small ZT											
H	Big ZT											

Spectrometer broke down - unable to complete analysis of Ortho-P

Site	Ranger's Lodge

Sampling Date	08/01/03
Sampling Time	09:15

Analysis Date	08/01/03
Analysis Time	13:30

Rainfall

Ref	Sample Position	Date	COD	BOD	TOC	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	pH	Temp		Volume
X	Septic Tank	08/01/03	432			0.5	0.23	63.2		16.2	71	7.81	12.1		spot
1	1,Red,0m	08/01/03	Briste	Briste	Briste	Briste	Briste	Briste	Briste	Briste	Briste	Briste	Briste		Briste
2	1,Blue,0m	08/01/03													0
3	1,Black,0m	08/01/03													0
4	1,Red,10m	08/01/03	42			2.9	0.02	9.8		1.21	13	7.73	11.4		160
5	1,Blue,10m	08/01/03	59			3	0.01	19		3.42	37	7.73	11.4		610
6	1,Black,10m	08/01/03	54			4.8	0.15	15.7		2.04	27	7.71	11.5		180
7	1,Red,20m	08/01/03	37			5.4	0.03	1.9		0.21	24	8.02	11.3		180
8	1,Blue,20m	08/01/03	49			12.4	0.02	4.1		0.91	17	7.79	11.4		400
9	1,Black,20m	08/01/03	Briste	Briste	Briste	Briste	Briste	Briste	Briste	Briste	Briste	Briste	Briste		Briste
10	2,Red,0m	08/01/03	53			4.4	0.04	1.7		0.21	212	7.61	11.8		125
11	2,Blue,0m	08/01/03	46			12.3	0.44	2.8		0.24	34	7.82	12		55
12	2,Black,0m	08/01/03													0
13	2,Red,10m	08/01/03	68			0	0	5.8		0.05	40	7.77	11.7		240
14	2,Blue,10m	08/01/03													0
15	2,Black,10m	08/01/03	43			6.3	0	1.2		0.04	36	7.64	11.7		150
16	2,Red,20m	08/01/03	98			1	0.06	23.1		4.63	54	7.59	11.6		890
17	2,Blue,20m	08/01/03	106			0.2	0.03	30		3.29	50	7.68	11.8		1490
18	2,Black,20m	08/01/03	110			0.5	0.01	34.7		3.49	43	7.71	11.8		1620
19	3,Red,0m	08/01/03	125			1	0.09	19.4		0.9	45	7.77	11.9		360
20	3,Blue,0m	08/01/03	72			0.7	0.01	2.5		0.08	69	7.37	12		280
21	3,Black,0m	08/01/03	105			1.7	0.01	1.5		0.27	37	7.85	12.2		100
22	3,Red,10m	08/01/03	114			1.5	0.04	21.1		3.36	39	7.77	12		250
23	3,Blue,10m	08/01/03	104			0	0.01	49.9		6.64	36	7.75	12		1020
24	3,Black,10m	08/01/03	102			0.4	0.06	45.3		6.2	50	7.65	11.9		1135
25	3,Red,20m	08/01/03	54			13.7	0.84	7.9		3.15	32	7.62	12.2		450
26	3,Blue,20m	08/01/03	70			7.2	0.8	7.2		2.92	35	7.73	12.1		460
27	3,Black,20m	08/01/03	69			7.9	0.52	5.4		2.16	36	7.63	11.9		890
28	4,Red,0m	08/01/03	111			2.6	0	1.3		0.23	62	7.86	12.1		130
29	4,Blue,0m	08/01/03	101			1.2	0	1.3		0.24	40	7.72	12.2		160
30	4,Black,0m	08/01/03													0
31	4,Red,10m	08/01/03	163			1.7	0.1	20.9		4.66	24	7.75	12		350
32	4,Blue,10m	08/01/03	82			9.8	2.04	10.4		2.35	23	7.73	11.6		610
33	4,Black,10m	08/01/03	92			1.5	0.21	23.3		3.24	26	7.68	11.6		1340
34	4,Red,20m	08/01/03	64			14.8	0.08	1.3		1.8	12	7.88	11.8		35
35	4,Blue,20m	08/01/03	96			9.6	0.5	1.1		1.32	87	7.7	11.9		420
36	4,Black,20m	08/01/03	76			10.5	0.44	2.3		1.92	13	7.66	11.8		110
A	3,TS,2m	08/01/03	95			0.8	0.03	9.5		0.22	29	7.46	11.9		120
B	3,TS,7m,	08/01/03	77			0.8	0.2	7.3		0.23	33	7.48	11.8		90
C	3,TS,15m	08/01/03	72			0.2	0.04	4.5		0.38	28	5.75	11.8		80
D	4,TS,2m	08/01/03	55			0.7	0.01	1.9		0.05	22	7.52	11.8		35
E	4,TS,7m,	08/01/03	47			1.7	0	0.8		2.09	11	7.94	11.6		0
G	Small ZT	08/01/03													
H	Big ZT	08/01/03													

Site	Ranger's Lodge

Sampling Date	07/02/03
Sampling Time	08:30

Analysis Date	07/02/03
Analysis Time	13:00

Rainfall

Ref	Sample Position	Date	COD	BOD	TOC	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	pH	Temp		Volume	
X	Septic Tank	07/02/03	294			0	0.19	57.1		10.42	64	7.83	20.1		composite	
1	1,Red,0m	07/02/03													Briste	
2	1,Blue,0m	07/02/03	64			3.6	0.09	4		1	39	7.78	20.6		60	
3	1,Black,0m	07/02/03	42			9.1	0.16	5.3		0.38	25	8.03	20.6		35	
4	1,Red,10m	07/02/03	49			2.9	0.02	9.3		0.51	38	7.81	20.3		200	
5	1,Blue,10m	07/02/03	57			2.3	0.02	13.7		1.68	27	7.76	20.2		500	
6	1,Black,10m	07/02/03	68			10.1	0.18	10.9		1.49	30	7.64	20.3		240	
7	1,Red,20m	07/02/03													0	
8	1,Blue,20m	07/02/03	44			3.7	0.01	0		0.54	2	8.08	20.2		90	
9	1,Black,20m	07/02/03													Briste	
10	2,Red,0m	07/02/03													0	
11	2,Blue,0m	07/02/03													0	
12	2,Black,0m	07/02/03													0	
13	2,Red,10m	07/02/03	52			0	0.02	4.8		0.52	21	7.51	20.4		250	
14	2,Blue,10m	07/02/03													0	
15	2,Black,10m	07/02/03	50			6.2	0.01	0.6		0.44	24	7.74	19.8		180	
16	2,Red,20m	07/02/03	92			0	0.03	27.8		2.39	30	7.75	20		1230	
17	2,Blue,20m	07/02/03	101			0	0.03	28.6		2.49	33	7.76	19.9		1490	
18	2,Black,20m	07/02/03	86			0	0.03	28.3		2.64	26	7.77	19.9		1690	
19	3,Red,0m	07/02/03	88			0	0.04	15.3		2.27	33	7.65	20		270	
20	3,Blue,0m	07/02/03	72			1.4	0.05	1.3		0.27	31	7.65	20		290	
21	3,Black,0m	07/02/03	86			0	0.02	0.6		0.09	34	7.72	20		90	
22	3,Red,10m	07/02/03	226			0	0.02	24.7		2.77	32	7.68	19.8		260	
23	3,Blue,10m	07/02/03	87			0	0.02	39.4		11.44	46	7.68	19.7		1050	
24	3,Black,10m	07/02/03	128			0.3	0.03	40.4		11.7	47	7.65	19.8		1570	
25	3,Red,20m	07/02/03	68			1.6	0.34	12.8		2.55	34	7.52	19.8		830	
26	3,Blue,20m	07/02/03	84			4.3	0.22	10.5		2.09	35	7.69	19.8		1250	
27	3,Black,20m	07/02/03	83			4	0.12	9.4		1.49	34	7.64	19.9		1610	
28	4,Red,0m	07/02/03	143			0.7	0	1		0.48	37	7.88	20.1		80	
29	4,Blue,0m	07/02/03	110			1.4	0.01	0.4		0.35	30	7.88	20.1		150	
30	4,Black,0m	07/02/03	86			2.1	0.01	0		0.21	37	8.2	20.3		50	
31	4,Red,10m	07/02/03	71			0.6	0.4	21.1		2.79	24	7.62	20.1		660	
32	4,Blue,10m	07/02/03	85			0.9	0.02	22.4		2.7	25	7.58	20		620	
33	4,Black,10m	07/02/03	78			0	0.02	25.6		3.8	27	7.67	20		1230	
34	4,Red,20m	07/02/03	86			23.6	0.08	2.1		0.89	11.5	8.3	19.9		30	
35	4,Blue,20m	07/02/03	55			5.2	0.1	1.3		1.01	5	7.81	20.1		80	
36	4,Black,20m	07/02/03													0	
A	3,TS,2m	07/02/03	97			0	0.34	8.4		0.13	25	7.43	20.2		200	
B	3,TS,7m,	07/02/03	85			0	0.06	15.6		0.34	34	7.58	20.1		170	
C	3,TS,15m	07/02/03	52			0	0	1.9		0.35	23	7.5	20		150	
D	4,TS,2m	07/02/03	47			0	0.01	0.6		0.22	21	7.54	20		100	
E	4,TS,7m,	07/02/03	48			13.4	0	0.1		0.11	10.5	7.56	20		70	
G	Small ZT	07/02/03	92			0	0.01	0.7		0.57	22	7.97	20.3		120	FILTERED
H	Big ZT	07/02/03	79			0	0	0.5		0.72	6	7.59	20.4		200	FILTERED

Site	Ranger's Lodge

Sampling Date	20/02/03
Sampling Time	08:30

Analysis Date	20/02/03
Analysis Time	13:00

Rainfall

Ref	Sample Position	Date	COD	BOD	TOC	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	SO_4	S	pH	Temp		Volume
X	Septic Tank	20/02/03	334			3.2	0.18	69.1		13.68	60			7.82	18.5		Spot
1	1,Red,0m	20/02/03															Briste
2	1,Blue,0m	20/02/03	92			6.1	0.09	5.5		0.82	16			6.84	19.2		40
3	1,Black,0m	20/02/03															0
4	1,Red,10m	20/02/03	72			6.9	0.04	10.8		0.84	23			7.76	18.6		110
5	1,Blue,10m	20/02/03	80			1.6	0.02	24.3		3.76	28			7.82	18.6		320
6	1,Black,10m	20/02/03	77			12.9	0.19	13.9		2.06	24			7.84	18.2		230
7	1,Red,20m	20/02/03															0
8	1,Blue,20m	20/02/03	63			5.9	0	1.8		0.88	0			8.09	18.5		130
9	1,Black,20m	20/02/03															Briste
10	2,Red,0m	20/02/03	70			8	0.05	2.9		2.6	18			N/A	N/A		20
11	2,Blue,0m	20/02/03	44			10.4	0.47	5.4		1.18	24			7.8	18.5		40
12	2,Black,0m	20/02/03															0
13	2,Red,10m	20/02/03	50			0	0	10.6		1.03	27			7.75	18.1		110
14	2,Blue,10m	20/02/03															0
15	2,Black,10m	20/02/03	53			15.9	0	1.4		0.3	0			7.71	18.2		110
16	2,Red,20m	20/02/03	115			1.2	0.02	30.4		3.78	0			7.75	18.1		970
17	2,Blue,20m	20/02/03	107			1.3	0.02	32		4.28	22			7.71	18.2		1070
18	2,Black,20m	20/02/03	103			1.3	0.04	34		3.62	29			7.66	18.1		1190
19	3,Red,0m	20/02/03	90			1.5	0.06	13.5		2.03	28			7.69	18.7		150
20	3,Blue,0m	20/02/03	75			0.6	0.04	1.3		0.12	0			7.74	18.7		170
21	3,Black,0m	20/02/03	86			2.8	0.01	1		0.45	8			7.73	18.7		80
22	3,Red,10m	20/02/03	119			1.5	0.03	23.6		3.24	20			7.82	18.7		150
23	3,Blue,10m	20/02/03	50			2.9	0.02	41.9		7.16	27			7.78	18.2		780
24	3,Black,10m	20/02/03	122			1.1	0.03	22.6		7.72	30			7.75	18.1		1630
25	3,Red,20m	20/02/03	86			1.2	0.02	15.9		3.1	33			7.61	18.6		760
26	3,Blue,20m	20/02/03	75			3.4	0.09	16.7		3.22	28			7.69	18.4		1360
27	3,Black,20m	20/02/03	75			1.1	0.48	9.5		1.99	28			7.67	18.2		950
28	4,Red,0m	20/02/03	120			1.1	0.01	0		0.17	39			7.82	18.4		80
29	4,Blue,0m	20/02/03	107			1.8	0.01	0.2		2.45	27			7.75	18.6		110
30	4,Black,0m	20/02/03	93			3.9	0.01	0		1.26	27			7.95	18.9		45
31	4,Red,10m	20/02/03	81			4.5	0.42	19.9		3.4	25			7.73	18.3		300
32	4,Blue,10m	20/02/03	71			2.8	0.14	21.6		2.8	35			7.69	18.3		760
33	4,Black,10m	20/02/03	68			1.9	0.54	17.6		2.23	31			7.82	18.5		360
34	4,Red,20m	20/02/03															0
35	4,Blue,20m	20/02/03															0
36	4,Black,20m	20/02/03															0
A	3,TS,2m	20/02/03	92			0	0.06	11.3		0.26	33			7.55	18		450
B	3,TS,7m,	20/02/03	90			0	0.02	14.2		0.58	23			7.5	17.9		300
C	3,TS,15m	20/02/03	82			2.4	0.08	0.4		0.46	26			7.5	17.9		270
D	4,TS,2m	20/02/03	77			1.1	0	1.5		0.76	21			7.7	18.2		130
E	4,TS,7m,	20/02/03	71			15.7	0.04	0.2		0.31	18			7.58	18.3		80
G	Small ZT	20/02/03								5.32							30
H	Big ZT	20/02/03								6.08							0

Site	Ranger's Lodge

Sampling Date	06/03/03
Sampling Time	08:15

Analysis Date	06/03/03
Analysis Time	13:00

Ref	Sample Position	Date	COD	BOD	TOC	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	pH	Temp		Volume
X	Septic Tank	06/03/03	234			0	0.14	47.3		11	7.86	20.1		Composite
1	1,Red,0m	06/03/03												Briste
2	1,Blue,0m	06/03/03												15
3	1,Black,0m	06/03/03												0
4	1,Red,10m	06/03/03	27			5.6	0.03	13.2		2.59	7.55	20.2		75
5	1,Blue,10m	06/03/03	47			3.4	0.02	26.3		4	7.76	20.9		280
6	1,Black,10m	06/03/03	44			10.4	0.12	14.4		1.64	7.65	20.8		163
7	1,Red,20m	06/03/03	34			6.5	0.02	1.4		0.17	7.95	20.8		105
8	1,Blue,20m	06/03/03	44			9	0.02	0.8		0.31	7.93	20.8		298
9	1,Black,20m	06/03/03												Briste
10	2,Red,0m	06/03/03	39			7.4	0.05	3.2		0.09	8.12	21		55
11	2,Blue,0m	06/03/03	35			10.4	0.7	2.6		0.17	7.72	21		70
12	2,Black,0m	06/03/03	40			4.2	0.06	1.1		0.06	8.33	21.1		35
13	2,Red,10m	06/03/03	39			1.9	0.01	7.9		0.24	7.78	20.8		154
14	2,Blue,10m	06/03/03												0
15	2,Black,10m	06/03/03	10			14.2	0	1.6		0.15	7.49	20.8		140
16	2,Red,20m	06/03/03	84			1.5	0.03	34.2		3.19	7.65	20.6		857
17	2,Blue,20m	06/03/03	59			3.1	0.04	32		2.88	7.65	20.6		1029
18	2,Black,20m	06/03/03	65			0.7	0.04	33.6		2.94	7.65	20.6		1190
19	3,Red,0m	06/03/03	67			1.1	0.07	14.9		2.03	7.53	20.8		140
20	3,Blue,0m	06/03/03	49			0.9	0.06	3.6		0.11	7.65	20.8		186
21	3,Black,0m	06/03/03	33			0.7	0.03	2.6		0.31	7.76	20.8		163
22	3,Red,10m	06/03/03	72			3.2	0.06	27.1		2.48	7.71	20.7		490
23	3,Blue,10m	06/03/03	63			2.7	0.03	49.2		6.49	7.72	20.6		770
24	3,Black,10m	06/03/03	94			0	0.05	51.6		9.95	7.72	20.5		1423
25	3,Red,20m	06/03/03	56			6.1	0.44	24.7		3.2	7.45	20.5		717
26	3,Blue,20m	06/03/03	55			2.1	0.06	25.9		5.08	7.49	20.5		1400
27	3,Black,20m	06/03/03	51			3.3	0.03	22.3		3.53	7.56	20.4		928
28	4,Red,0m	06/03/03	76			3.5	0.03	0.5		0.17	7.59	20.7		105
29	4,Blue,0m	06/03/03	71			0.8	0.02	2.4		0.72	7.66	20.7		93
30	4,Black,0m	06/03/03	50			4	0	0.9		0.76	8.1	20.8		46
31	4,Red,10m	06/03/03	20			2.1	0.59	23.1		1.11	7.69	20.4		210
32	4,Blue,10m	06/03/03	47			0	1.01	21.8		0.98	7.73	20.5		263
33	4,Black,10m	06/03/03	29			0.1	0.59	24.3		2.06	7.75	20.4		630
34	4,Red,20m	06/03/03	25			21	0.03	2.1		3.76	7.34	20.5		60
35	4,Blue,20m	06/03/03	22			9.5	0.02	3.4		1.43	7.68	20.3		140
36	4,Black,20m	06/03/03	28			7.8	0.03	0.6		1.03	7.87	20.3		140
A	3,TS,2m	06/03/03	66			0	0.01	21.8		1.08	7.59	20.3		403
B	3,TS,7m,	06/03/03	91			2.2	0.1	9.4		0.37	7.39	20.1		210
C	3,TS,15m	06/03/03	29			0	0.21	1.3		0.96	7.7.39	20.2		280
D	4,TS,2m	06/03/03	23			0	0.03	2.8		0.21	7.47	20.2		140
E	4,TS,7m,	06/03/03	26			10.8	0.02	1.6		0.59	7.2	20.2		140
G	Small ZT	06/03/03								0.78	N/A	N/A		20
H	Big ZT	06/03/03								1.44	7.2	20.2		35

Site	Ranger's Lodge

Sampling Date	13/03/03
Sampling Time	11:30

	Analysis Date	13/03/03
	Analysis Time	14:30

Rainfall

Ref	Sample Position	Date	BOD	COD	COD	TOC	NO_3-N	NO_3-N	NO_2-N	NO_2-N	NH_4-N	NH_4-N	Ortho-P	Ortho-P	Cl	Cl	S	pH	Temp		Volume
X	Septic Tank	13/03/03	71	205	217		0	0.45	0.14	0.06	41	38.9	5.18	6	40	45		7.32	19.1		Composite
1	1,Red,0m	13/03/03																			Briste
2	1,Blue,0m	13/03/03																			
3	1,Black,0m	13/03/03																			
4	1,Red,10m	13/03/03																			
5	1,Blue,10m	13/03/03																			
6	1,Black,10m	13/03/03																			
7	1,Red,20m	13/03/03																			
8	1,Blue,20m	13/03/03																			
9	1,Black,20m	13/03/03																			Briste
10	2,Red,0m	13/03/03																			
11	2,Blue,0m	13/03/03																			
12	2,Black,0m	13/03/03																			
13	2,Red,10m	13/03/03																			
14	2,Blue,10m	13/03/03																			
15	2,Black,10m	13/03/03																			
16	2,Red,20m	13/03/03																			
17	2,Blue,20m	13/03/03																			
18	2,Black,20m	13/03/03																			
19	3,Red,0m	13/03/03	15	61	49.8		1.1	0.75	0.08	0.05	18.2	13.2	0.99	0.8	31	36		7.47	19.6		120
20	3,Blue,0m	13/03/03																			
21	3,Black,0m	13/03/03	7	38	34.5		0	0.57	0.04	<0.03	1.6	0.57	0.42	<0.1	29	37		8.06	19.5		90
22	3,Red,10m	13/03/03	13	73	43.6		0.9	0.71	0.06	<0.03	25.1	23	2.41	1.2	30	37		7.88	19.3		133
23	3,Blue,10m	13/03/03																			
24	3,Black,10m	13/03/03	17	67	55.5		0	<0.23	0.03	<0.03	43.1	38.2	5.55	5.3	30	37		7.53	18.9		1000
25	3,Red,20m	13/03/03	6	38	31.2		0	1.41	0.24	0.23	20.4	17	2.86	2.6	24	32		7.46	1.9		820
26	3,Blue,20m	13/03/03																			
27	3,Black,20m	13/03/03	5	32	29.2		1	3.4	0.6	0.66	19.3	18.2	2.25	1.7	24	31		7.51	18.9		550
28	4,Red,0m																				
29	4,Blue,0m																				
30	4,Black,0m																				
31	4,Red,10m																				
32	4,Blue,10m																				
33	4,Black,10m																				
34	4,Red,20m																				
35	4,Blue,20m																				
36	4,Black,20m																				
A	3,TS,2m																				
B	3,TS,7m,																				
C	3,TS,15m																				
D	4,TS,2m																				
E	4,TS,7m,																				
G	Small ZT																				
H	Big ZT																				

Site	Ranger's Lodge

Sampling Date	01/04/03	Analysis Date	01/04/03
Sampling Time	08:45	Analysis Time	12:45

Rainfall

Ref	Sample Position	Date	COD	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	pH	Temp		Volume
X	Septic Tank	01/04/03	188	0	0.14	48		6.28	42	8.33	20.6		Composite
1	1,Red,0m	01/04/03											Briste
2	1,Blue,0m	01/04/03											10
3	1,Black,0m	01/04/03											10
4	1,Red,10m	01/04/03	37	5.7	0.15	7		0.53	25	7.45	20.7		150
5	1,Blue,10m	01/04/03	33	0	0.04	28		3.68	26	7.64	20.7		470
6	1,Black,10m	01/04/03	22	1.8	0.18	8		0.84	20	7.47	20.9		190
7	1,Red,20m	01/04/03	40	1.5	0.17	0		1.13	32	7.38	20.6		840
8	1,Blue,20m	01/04/03	34	13.5	0.23	12		2.45	26	7.49	20.6		1020
9	1,Black,20m	01/04/03											Briste
10	2,Red,0m	01/04/03											10
11	2,Blue,0m	01/04/03	43	8.8	0.6	5		1.02	23	N/A	N/A		20
12	2,Black,0m	01/04/03											0
13	2,Red,10m	01/04/03	32	0	0.09	9		0.72	10	7.75	20.8		150
14	2,Blue,10m	01/04/03											0
15	2,Black,10m	01/04/03	25	15.3	0.02	2		0.13	17	7.6	20.8		160
16	2,Red,20m	01/04/03	63	0	0.02	36		3.07	28	7.59	20.7		1000
17	2,Blue,20m	01/04/03	67	0	0.02	40		2.69	19	7.85	20.7		1220
18	2,Black,20m	01/04/03	68	0	0.02	46		2.62	17	7.86	20.7		1420
19	3,Red,0m	01/04/03	39	1.6	0.07	14		1.46	25	7.43	20.7		170
20	3,Blue,0m	01/04/03	53	0	0.05	8		0.18	28	7.82	20.8		300
21	3,Black,0m	01/04/03	21	1.3	0.03	0		0.26	27	7.98	20.8		75
22	3,Red,10m	01/04/03	52	2.7	0.05	23		1.55	26	7.96	20.6		110
23	3,Blue,10m	01/04/03	64	6.2	1.1	53		2.51	24	7.91	20.5		350
24	3,Black,10m	01/04/03	80	0.6	0.42	48		4.81	28	7.93	20.6		570
25	3,Red,20m	01/04/03	46	0.2	0.11	20		2.45	25	7.87	20.6		270
26	3,Blue,20m	01/04/03	46	3.2	0.07	23		2.79	28	8.21	20.6		200
27	3,Black,20m	01/04/03	41	0	0.14	20		1.91	28	8.18	20.7		690
28	4,Red,0m	01/04/03	82	2.1	0	2		0.54	36	8.33	21		10
29	4,Blue,0m	01/04/03	69	0	0.01	3		0.12	24	8.44	20.9		110
30	4,Black,0m	01/04/03											0
31	4,Red,10m	01/04/03											0
32	4,Blue,10m	01/04/03	43	5.7	0.25	16		0.48	22	8.29	20.8		210
33	4,Black,10m	01/04/03	34	0	0.02	26		2.96	23	8.28	20.7		710
34	4,Red,20m	01/04/03											0
35	4,Blue,20m	01/04/03											0
36	4,Black,20m	01/04/03											0
A	3,TS,2m	01/04/03	44	0.8	0.03	22		0.65	26	8.12	20.5		360
B	3,TS,7m,	01/04/03	18	5.9	0.14	2		0.2	29	8.26	20.6		40
C	3,TS,15m	01/04/03	50	3.3	0.03	2		0.16	27	7.93	20.6		180
D	4,TS,2m	01/04/03	49	3	0	5		0.21	25	N/A	N/A		20
E	4,TS,7m,	01/04/03	37	22.8	0.01	2		0.2	18	7.87	20.5		70
G	Small ZT	01/04/03	92	0	0.02	3		0.11	0	8.22	20.6		85
H	Big ZT	01/04/03											0

Site	Ranger's Lodge

Sampling Date	16/04/03	Analysis Date	16/04/03
Sampling Time	08:45	Analysis Time	12:30

Rainfall

Ref	Sample Position	Date	COD	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	-BLANK	Cl	pH	Temp		Volume
X	Septic Tank	16/04/03	296	0	0.15	61.7		6.67	6.5	85	7.9	25		comp
1	1,Red,0m	16/04/03												Briste
2	1,Blue,0m	16/04/03	63	6.6	0.11	9		0.23	0.06	46	7.95	25.5		50
3	1,Black,0m	16/04/03												0
4	1,Red,10m	16/04/03	35	4	0.6	9.4		0.32	0.15	46	7.78	25.1		75
5	1,Blue,10m	16/04/03	58	1.8	0.01	28.6		3.94	3.77	64	7.81	25		400
6	1,Black,10m	16/04/03	31	13.8	0.15	10.4		1.96	1.79	57	7.66	25.1		170
7	1,Red,20m	16/04/03												0
8	1,Blue,20m	16/04/03	46	4.6	0.96	5		0.74	0.57	46	7.69	25		220
9	1,Black,20m	16/04/03												Briste
10	2,Red,0m	16/04/03												15
11	2,Blue,0m	16/04/03												0
12	2,Black,0m	16/04/03												0
13	2,Red,10m	16/04/03	39	0	0.02	5.7		0.44	0.27	47	7.8	25.2		170
14	2,Blue,10m	16/04/03												5
15	2,Black,10m	16/04/03	30	18.8	0.01	0.7		0.07	-0.1	37	7.56	25.2		170
16	2,Red,20m	16/04/03	64	0	0.03	37.8		2.06	1.89	54	7.56	25.1		890
17	2,Blue,20m	16/04/03	65	0	0.02	33.2		2.22	2.05	57	7.54	25.1		970
18	2,Black,20m	16/04/03	60	0	0.05	35.7		1.98	1.81	61	7.58	25.1		1080
19	3,Red,0m	16/04/03	70	0	0.16	13.3		1.57	1.4	52	7.62	25		130
20	3,Blue,0m	16/04/03	54	0	0.05	4.3		0.24	0.07	44	7.71	25		100
21	3,Black,0m	16/04/03	46	0	0.03	0.7		0.12	-0.05	44	7.87	25.2		60
22	3,Red,10m	16/04/03	57	5.1	0.1	26.4		1.36	1.19	51	7.79	24.7		100
23	3,Blue,10m	16/04/03	68	0	0.43	49.2		2.53	2.36	60	7.63	24.8		700
24	3,Black,10m	16/04/03	60	0	0.01	44.1		3.47	3.3	59	7.64	24.8		730
25	3,Red,20m	16/04/03	55	46.4	?	7.2		1.57	1.4	64	7.3	24.8		300
26	3,Blue,20m	16/04/03	69	55.7	0.91	8.6		1.78	1.61	70	7.38	24.7		400
27	3,Black,20m	16/04/03	58	35.3	0.79	17		1.19	1.02	61	7.57	24.8		670
28	4,Red,0m	16/04/03												0
29	4,Blue,0m	16/04/03	71	0.8	0	0.6		0.08	-0.09	43	7.87	25.1		70
30	4,Black,0m	16/04/03	Briste	2.9	0.03	1.3		1.67	1.5	46	N/A	N/A		30
31	4,Red,10m	16/04/03	63	9.9	0.65	21.2		1.98	1.81	61	7.36	25		530
32	4,Blue,10m	16/04/03	58	11.9	0.55	16.7		0.31	0.14	57	7.47	24.9		400
33	4,Black,10m	16/04/03	74	0	0.05	23.5		1.86	1.69	62	7.62	25		640
34	4,Red,20m	16/04/03												0
35	4,Blue,20m	16/04/03												0
36	4,Black,20m	16/04/03												0
A	3,TS,2m	16/04/03												5
B	3,TS,7m,	16/04/03	32	20.3	0.03	1.4		0.88	0.71	N/A	N/A	N/A		20
C	3,TS,15m	16/04/03	35	5.2	0.21	2.7		0.21	0.04	47	7.28	25.1		330
D	4,TS,2m	16/04/03	33	1.5	0.01	1.9		0.14	-0.03	44	7.7	25.2		100
E	4,TS,7m,	16/04/03	26	31	0.11	1.9		0.01	-0.16	45	7.24	25.2		270
G	Small ZT	16/04/03												0
H	Big ZT	16/04/03												0

Site	Ranger's Lodge

Sampling Date	29/04/03
Sampling Time	08:30

Analysis Date	29/04/03
Analysis Time	12:00

Rainfall

Ref	Sample Position	Date	COD	BOD	TOC	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	-BLANK	Cl	pH	Temp		Volume
X	Septic Tank	29/04/03	318			0	0.17	60		9.84	9.71	60	7.66	24.9		comp
1	1,Red,0m	29/04/03														Briste
2	1,Blue,0m	29/04/03	18			11.1	0.07	5		0.53	0.4	69	7.36	24.4		100
3	1,Black,0m	29/04/03														0
4	1,Red,10m	29/04/03	11			10.9	0.12	6.4		0.61	0.48	32	7.91	24.7		35
5	1,Blue,10m	29/04/03	36			0.6	0.02	30.3		3.93	3.8	32	7.59	24.4		290
6	1,Black,10m	29/04/03	16			21.3	0.15	9.9		1.3	1.17	41	7.22	24.1		140
7	1,Red,20m	29/04/03														0
8	1,Blue,20m	29/04/03														0
9	1,Black,20m	29/04/03														Briste
10	2,Red,0m	29/04/03	39			4.2	0.04	2.8		0.31	0.18	28	7.96	24.7		45
11	2,Blue,0m	29/04/03														0
12	2,Black,0m	29/04/03														0
13	2,Red,10m	29/04/03	16			0	0.05	9.7		0.27	0.14	38	7.56	24.4		110
14	2,Blue,10m	29/04/03														0
15	2,Black,10m	29/04/03	?			23.2	0	1.1		0.27	0.14	24	7.28	24.4		150
16	2,Red,20m	29/04/03	58			0	0.14	34.9		1.56	1.43	42	7.35	24.1		750
17	2,Blue,20m	29/04/03	62			0	0.09	42.4		1.74	1.61	44	7.35	24.3		770
18	2,Black,20m	29/04/03	60			0	0.2	37.7		1.66	1.53	50	7.34	24.3		820
19	3,Red,0m	29/04/03	61			0	0.14	8.5		0.97	0.84	30	7.49	24.2		100
20	3,Blue,0m	29/04/03	40			0.5	0.08	3.7		0.5	0.37	33	7.46	24.1		150
21	3,Black,0m	29/04/03	22			0	0.09	1		0.07	-0.06	30	7.7	24		65
22	3,Red,10m	29/04/03	35			3.7	0.07	23.9		2.17	2.04	40	7.49	23.8		110
23	3,Blue,10m	29/04/03	57			0	0.03	47.3		5.86	5.73	50	7.56	23.7		610
24	3,Black,10m	29/04/03	53			0	0.03	43.7		5.12	4.99	50	7.5	23.9		570
25	3,Red,20m	29/04/03	46			29.5	1	8.8		2.87	2.74	44	7.12	24.1		270
26	3,Blue,20m	29/04/03	25			37.7	0.3	6.1		2.89	2.76	44	7.18	24.2		600
27	3,Black,20m	29/04/03	18			38	0.5	10.6		1.3	1.17	45	7.29	24.4		540
28	4,Red,0m	29/04/03														0
29	4,Blue,0m	29/04/03	61			0	0	0		0.09	-0.04	35	7.49	24.5		50
30	4,Black,0m	29/04/03	24			2.6	0.01	0.3		0.1	-0.03	26	8.06	24.5		40
31	4,Red,10m	29/04/03	37			2.2	0.08	26.3		3.22	3.09	45	7.33	24.5		460
32	4,Blue,10m	29/04/03	35			0.7	0.21	19.7		1.21	1.08	46	7.3	24.5		370
33	4,Black,10m	29/04/03	72			0	0.01	30.5		3.07	2.94	53	7.37	24.5		530
34	4,Red,20m	29/04/03														0
35	4,Blue,20m	29/04/03														0
36	4,Black,20m	29/04/03														0
A	3,TS,2m	29/04/03	51			26.8	9	1.1		N/A	N/A	34	N/A	N/A		10
B	3,TS,7m,	29/04/03	40			25.8	0	1.2		1.19	1.06	32	N/A	N/A		15
C	3,TS,15m	29/04/03	8			16.5	0	0.9		0.57	0.44	0	7.3	24.8		140
D	4,TS,2m	29/04/03	30			1.2	0.01	2		0.14	0.01	32	7.5	24.9		70
E	4,TS,7m,	29/04/03	15			10.5	0.15	1.1		0.15	0.02	41	7.07	24.8		180
G	Small ZT	29/04/03														0
H	Big ZT	29/04/03														0

Site	Ranger's Lodge

Sampling Date	23/05/03	Analysis Date	23/05/03
Sampling Time	08:50	Analysis Time	13/30

Rainfall

Ref	Sample Position	Date	COD	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	pH	Temp		Volume
X	Septic Tank	23/05/03	224	2.9	0.103	47.4		7.16	41.8	7.59	22.3		comp
1	1,Red,0m	23/05/03											Briste
2	1,Blue,0m	23/05/03	169	10	0.238	1.85		0.2	N/A	7.73	24.3		20
3	1,Black,0m	23/05/03	101	9.7	0.224	8.79		0.33	50.3	8.1	24		20
4	1,Red,10m	23/05/03	35	5.1	0.101	10.33		0.23	36.3	7.4	23.9		180
5	1,Blue,10m	23/05/03	95	1.9	0.039	42.2		3.05	42.1	7.45	23.8		300
6	1,Black,10m	23/05/03	37	7.7	0.324	13.22		1.78	41.6	7.38	23.8		200
7	1,Red,20m	23/05/03	30	4.4	0.046	2.49		0.42	30.1	7.46	24		500
8	1,Blue,20m	23/05/03	35	5.3	0.215	3.61		0.73	40.5	7.42	23.8		860
9	1,Black,20m	23/05/03											Briste
10	2,Red,0m	23/05/03	50	8.1	0.097	2.002		0.03	37.4	7.67	23.8		75
11	2,Blue,0m	23/05/03	29	7.4	0.395	2.51		0	34.5	7.37	23.7		120
12	2,Black,0m	23/05/03	48	5.8	0.126	1.01		N/A	33.3	N/A	N/A		20
13	2,Red,10m	23/05/03	32	3.6	0.012	7.16		0.05	38.8	7.39	23.7		160
14	2,Blue,10m	23/05/03	46	9.6	N/A	8.82		N/A	38.4	N/A	N/A		15
15	2,Black,10m	23/05/03	15	28.68	0.023	0.178		0.17	35	7.2	23.8		190
16	2,Red,20m	23/05/03	42	2.4	0.029	41		2.01	40.9	7.16	23.8		830
17	2,Blue,20m	23/05/03	48	2.9	0.029	47.8		1.7	45.5	7.43	23.7		690
18	2,Black,20m	23/05/03	38	2.6	0.011	47.6		1.55	45.6	7.44	23.8		760
19	3,Red,0m	23/05/03	64	4.9	0.12	9.33		0.8	43.2	7.28	23.5		80
20	3,Blue,0m	23/05/03	25	4.2	0.066	4.59		0.06	42	7.42	23.4		140
21	3,Black,0m	23/05/03	42	5.5	0.037	0.959		0	38	7.44	23.1		70
22	3,Red,10m	23/05/03	62	4.6	0.062	31.4		1.93	47.9	7.39	23.1		150
23	3,Blue,10m	23/05/03	71	4.5	0.026	55.2		5.62	51.5	7.41	23		470
24	3,Black,10m	23/05/03	68	2.2	0.037	44		4.82	36.6	7.35	22.8		1100
25	3,Red,20m	23/05/03	38	21.68	0.346	5.57		2.43	29.2	7.08	23.1		370
26	3,Blue,20m	23/05/03	32	30.03	0.105	1.02		1.58	27.8	7.15	23		620
27	3,Black,20m	23/05/03	24	35.23	0.314	6.79		0.98	32.3	7.31	22.8		550
28	4,Red,0m	23/05/03	68	6.7	0.023	0		0.04	39.8	7.62	22.8		70
29	4,Blue,0m	23/05/03	64	2.2	0.02	0.223		0.02	36.8	7.45	22.8		150
30	4,Black,0m	23/05/03	50	4	0.044	0.9367		0	37.4	7.64	22.9		70
31	4,Red,10m	23/05/03	50	3.8	0.115	25.2		5.04	36.8	7.15	21.7		400
32	4,Blue,10m	23/05/03	46	3	0.043	24		3.34	49.3	7.19	22		280
33	4,Black,10m	23/05/03	84	1.7	0.04	37.4		4.81	49.5	7.22	22.3		400
34	4,Red,20m	23/05/03	18	14.1	0.052	0.72		0.37	14.4	7.6	22.3		80
35	4,Blue,20m	23/05/03	26	7.3	0.036	0.06		0.56	12.3	7.52	22.5		180
36	4,Black,20m	23/05/03	31	8.1	0.046	0		0.76	12.8	7.52	22.6		120
A	3,TS,2m	23/05/03	30	21	0.27	1.58		0.08	20.3	7.08	23.1		280
B	3,TS,7m,	23/05/03	21	20.77	0.021	0.005		0.03	40	7.84	23.2		35
C	3,TS,15m	23/05/03	34	13.5	0.143	0.523		0.12	46.6	N/A	N/A		400
D	4,TS,2m	23/05/03	26	7.2	0.042	1.553		0	40.7	7.47	23.1		100
E	4,TS,7m,	23/05/03	24	9.1	0.01	0.135		0	26	7.08	23.1		340
G	Small ZT	23/05/03											
H	Big ZT	23/05/03											

Site	Ranger's Lodge

Sampling Date	06/06/03			Analysis Date	06/06/03
Sampling Time	08:50			Analysis Time	13:00

Rainfall

Ref	Sample Position	Date	COD				NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	pH	Temp		Volume
X	Septic Tank	06/06/03	630	1.1	4.85	1.10	0.163	72.3		>10	59	7.38	23.1		comp
1	1,Red,0m	06/06/03													Briste
2	1,Blue,0m	06/06/03	86	19.3	19.3	19.30	0.141	1.92		0	60.2	7.54	22.5		75
3	1,Black,0m	06/06/03													0
4	1,Red,10m	06/06/03	82	5.06	22.4	5.06	0.149	15.4		0.38	40.6	7.43	22.7		140
5	1,Blue,10m	06/06/03	153	0.43	1.9	0.43	0.13	40.4		2.47	44.1	7.33	22.6		320
6	1,Black,10m	06/06/03	65	12.92	57.2	12.92	0.339	14		1.08	44.7	7.3	22.6		200
7	1,Red,20m	06/06/03	70	0.39	1.71	0.39	0.019	9.23		0.75	37.5	7.41	22.6		570
8	1,Blue,20m	06/06/03	77		4.26	0.96	0.299	11.5		0.97	40	7.23	22.6		850
9	1,Black,20m	06/06/03													Briste
10	2,Red,0m	06/06/03	85		41.3	9.33	0.09	1.56		0.06	36	7.75	22.7		70
11	2,Blue,0m	06/06/03													0
12	2,Black,0m	06/06/03													0
13	2,Red,10m	06/06/03	64		5.88	1.33	0.94	8.8		0.22	40.8	7.49	22.5		140
14	2,Blue,10m	06/06/03	68		78.5	17.73	0.027	0.96		0.12	36.4	8.15	22.5		30
15	2,Black,10m	06/06/03	50		133	30.03	0.03	0.746		0.08	30.9	7.28	22.7		140
16	2,Red,20m	06/06/03	122		1.18	0.27	0.04	41		3.51	42.4	7.23	22.4		950
17	2,Blue,20m	06/06/03	105		2.47	0.56	0.05	46.3		2.8	43.1	7.23	22.5		900
18	2,Black,20m	06/06/03	102		0.88	0.20	0.03	43.2		2.76	43.4	7.26	22.7		1020
19	3,Red,0m	06/06/03	93		15.2	3.43	0.152	9.74		0.59	41.7	7.36	22.7		100
20	3,Blue,0m	06/06/03	107		9.42	2.13	0.193	5.31		0.36	43.5	7.43	22.7		90
21	3,Black,0m	06/06/03	96		5.91	1.33	0.05	1.71		0.03	38.4	7.79	22.7		60
22	3,Red,10m	06/06/03	118		64.7	14.61	0.823	28.8		0.94	39.5	7.63	22.6		60
23	3,Blue,10m	06/06/03	77		7.43	1.68	0.479	49		4.45	42.6	7.34	22.5		440
24	3,Black,10m	06/06/03	98		2.51	0.57	0.256	33.3		3.34	29.3	7.13	22.6		300
25	3,Red,20m	06/06/03	66		252	56.90	0.055	6.81		1.25	31.6	7.99	22.7		30
26	3,Blue,20m	06/06/03	53		159	35.90	0.051	0.8		1.66	26.2	7.61	22.7		60
27	3,Black,20m	06/06/03	62		158	35.68	0.535	3.8		1.97	31.2	7.44	22.8		130
28	4,Red,0m	06/06/03	108		22.4	5.06	0.021	0.062				7.84	22.8		60
29	4,Blue,0m	06/06/03	126		7.19	1.62	0.019	0.67				7.93	22.8		60
30	4,Black,0m	06/06/03	86		20.8	4.70	0.329	2.31				8.2	22.9		30
31	4,Red,10m	06/06/03													0
32	4,Blue,10m	06/06/03	145				0.12	15.1				7.33	22.8		130
33	4,Black,10m	06/06/03	137		1.5	0.34	0.054	35.7				7.22	22.9		380
34	4,Red,20m	06/06/03	72		12	2.71	0.277	1.52				N/A	N/A		20
35	4,Blue,20m	06/06/03													0
36	4,Black,20m	06/06/03													0
A	3,TS,2m	06/06/03													20
B	3,TS,7m,	06/06/03	69												90
C	3,TS,15m	06/06/03	15												60
D	4,TS,2m	06/06/03	23												70
E	4,TS,7m,	06/06/03	176												60
G	Small ZT	06/06/03								0.02					100
H	Big ZT	06/06/03								0.07					100

Site	Ranger's Lodge

Sampling Date	20/06/03
Sampling Time	08:45

Analysis Date	20/06/03
Analysis Time	12:30

Rainfall

Ref	Sample Position	Date	COD	BOD	TOC	NO_3-N	-BLANK	NO_2-N	-BLANK	NH_4-N	-BLANK	Tot-P	Ortho-P	-BLANK	Cl	-BLANK	pH	Temp		Volume
X	Septic Tank	20/06/03	530			6.7	-0.6	0.3	0.19	87	72		12.6	11.93	106	80	7.66	22.7		comp
1	1,Red,0m	20/06/03																		Briste
2	1,Blue,0m	20/06/03	108			27.1	19.8	0.27	0.16	24	9		1.64	0.97	80	54	7.86	22.3		50
3	1,Black,0m	20/06/03	53			40.3	33	0.35	0.24	25	10		1.07	0.4	74	48	7.57	22.2		60
4	1,Red,10m	20/06/03	45			10.2	2.9	0.26	0.15	37	22		1.11	0.44	72	46	7.51	22.3		170
5	1,Blue,10m	20/06/03	92			7	-0.3	0.21	0.1	56	41		3.47	2.8	77	51	7.46	22.3		370
6	1,Black,10m	20/06/03	54			21.1	13.8	0.63	0.52	38	23		2.09	1.42	65	39	7.37	22.3		230
7	1,Red,20m	20/06/03	65			17.4	10.1	0.27	0.16	25	10		1.08	0.41	66	40	7.4	22.5		180
8	1,Blue,20m	20/06/03	76			11.9	4.6	0.36	0.25	28	13		1.63	0.96	74	48	7.44	22.4		600
9	1,Black,20m	20/06/03																		Briste
10	2,Red,0m	20/06/03	73			17.2	9.9	0.22	0.11	21	6		0.73	0.06	62	36	7.95	22.2		70
11	2,Blue,0m	20/06/03	73			13.8	6.5	0.56	0.45	26	11		0.66	-0.01	60	34	7.64	22.1		120
12	2,Black,0m	20/06/03	53			9.7	2.4	0.15	0.04	20	5		1.08	0.41	64	38	7.94	22.3		70
13	2,Red,10m	20/06/03	49			8	0.7	0.3	0.19	33	18		0.76	0.09	72	46	7.47	22.1		220
14	2,Blue,10m	20/06/03	27			24.5	17.2	0.17	0.06	15	0		0.59	-0.08	62	36	7.52	22.1		100
15	2,Black,10m	20/06/03	20			23.4	16.1	0.13	0.02	16	1		0.98	0.31	58	32	7.3	22.2		170
16	2,Red,20m	20/06/03	86			6.6	-0.7	0.14	0.03	61	46		4.56	3.89	76	50	7.39	22.4		940
17	2,Blue,20m	20/06/03	83			7.6	0.3	0.27	0.16	56	41		4.2	3.53	74	48	7.39	22.3		950
18	2,Black,20m	20/06/03	94			6.7	-0.6	0.45	0.34	60	45		4.11	3.44	75	49	7.42	22.5		1020
19	3,Red,0m	20/06/03	86			8.8	1.5	0.17	0.06	30	15		1.3	0.63	70	44	7.41	22.3		170
20	3,Blue,0m	20/06/03	87			7.3	0	0.17	0.06	29	14		1.09	0.42	67	41	7.66	22.1		240
21	3,Black,0m	20/06/03	53			8	0.7	0.19	0.08	21	6		1.24	0.57	71	45	7.62	22.2		130
22	3,Red,10m	20/06/03	102			23.9	16.6	3.85	3.74	46	31		0.78	0.11	65	39	7.27	22.1		270
23	3,Blue,10m	20/06/03	96			11.8	4.5	3.6	3.49	61	46		1.78	1.11	68	42	7.38	22.1		570
24	3,Black,10m	20/06/03	81			9.5	2.2	0.72	0.61	53	38		2.36	1.69	68	42	7.16	22		330
25	3,Red,20m	20/06/03	59			56.3	49	0.3	0.19	19	4		1.73	1.06	69	43	N/A	N/A		35
26	3,Blue,20m	20/06/03	16			46.8	39.5	0.28	0.17	16	1		2.35	1.68	62	36	N/A	N/A		35
27	3,Black,20m	20/06/03	72			37.3	30	6.1	5.99	16	1		1.62	0.95	63	37	7.67	22.2		50
28	4,Red,0m	20/06/03	73			10.5	3.2	0.42	0.31	19	4		1.19	0.52	69	43	N/A	N/A		30
29	4,Blue,0m	20/06/03	98			7.8	0.5	0.15	0.04	18	3		0.78	0.11	86	60	8.2	22.2		50
30	4,Black,0m	20/06/03	95			10.3	3	0.25	0.14	17	2		0.73	0.06	58	32	7.76	22.3		90
31	4,Red,10m	20/06/03	72			14.5	7.2	0.54	0.43	31	16		2.28	1.61	63	37	7.11	22.2		500
32	4,Blue,10m	20/06/03	52			19.8	12.5	0.7	0.59	32	17		1.1	0.43	88	62	7.19	22.2		490
33	4,Black,10m	20/06/03	101			10.9	3.6	0.23	0.12	54	39		0.91	0.24	71	45	7.23	22.1		760
34	4,Red,20m	20/06/03	26			15.7	8.4	0.37	0.26	15	0		0.92	0.25	39	13	7.75	22.3		80
35	4,Blue,20m	20/06/03	83			14.1	6.8	0.19	0.08	20	5		1.25	0.58	37	11	8.01	22.3		50
36	4,Black,20m	20/06/03	50			19.1	11.8	0.24	0.13	19	4		1.36	0.69	40	14	N/A	N/A		30
A	3,TS,2m	20/06/03																		
B	3,TS,7m,	20/06/03																		
C	3,TS,15m	20/06/03																		
D	4,TS,2m	20/06/03																		
E	4,TS,7m,	20/06/03																		
G	Small ZT	20/06/03																		
H	Big ZT	20/06/03																		

Site	Ranger's Lodge

Sampling Date	01/07/03
Sampling Time	09:00

	Analysis Date		01/07/03
	Analysis Time		12:30

Rainfall

Ref	Sample Position	Date	COD	BOD	TOC	NO_3-N	-BLANK	NO_2-N	-BLANK	NH_4-N	-BLANK	Tot-P	Ortho-P	-BLANK	Cl	-BLANK	pH	Temp		Volume
X	Septic Tank	01/07/03				7.1	0.5	0.21	0.08	41.3	34.4		8.14	7.47	60	39				comp
1	1,Red,0m	01/07/03																		Briste
2	1,Blue,0m	01/07/03	65			15.4	8.8	1.4	1.27	21.5	14.6		1.2	0.53	62	41				170
3	1,Black,0m	01/07/03	39.9			23.8	17.2	1.2	1.07	17.5	10.6		0.74	0.07	34	13				90
4	1,Red,10m	01/07/03	30.1			13.2	6.6	0.26	0.13	21.1	14.2		1.01	0.34	39	18				150
5	1,Blue,10m	01/07/03	59			7.5	0.9	0.2	0.07	44.6	37.7		4.1	3.43	62	41				360
6	1,Black,10m	01/07/03	32.3			16.9	10.3	0.47	0.34	20.6	13.7		2.04	1.37	67	46				260
7	1,Red,20m	01/07/03	50			24.8	18.2	1.3	1.17	9.4	2.5		1.96	1.29	51	30				470
8	1,Blue,20m	01/07/03	303			36.5	29.9	1.6	1.47	11.3	4.4		2.29	1.62	65	44				530
9	1,Black,20m	01/07/03																		Briste
10	2,Red,0m	01/07/03	41			16	9.4	1.5	1.37	10.6	3.7		0.69	0.02	61	40				60
11	2,Blue,0m	01/07/03	19			17.6	11	1.9	1.77	9.6	2.7		0.91	0.24	58	37				70
12	2,Black,0m	01/07/03	23.6			10.7	4.1	0.18	0.05	8.1	1.2		0.79	0.12	60	39				60
13	2,Red,10m	01/07/03	33			11	4.4	0.3	0.17	16.3	9.4		1	0.33	80	59				160
14	2,Blue,10m	01/07/03	20.3			25.3	18.7	1.5	1.37	11.6	4.7		0.66	-0.01	60	39				110
15	2,Black,10m	01/07/03	12.2			24.9	18.3	1.1	0.97	8.4	1.5		0.65	-0.02	62	41				180
16	2,Red,20m	01/07/03	92			6.7	0.1	0.14	0.01	45.2	38.3		3.82	3.15	75	54				850
17	2,Blue,20m	01/07/03	61			7	0.4	0.3	0.17	47.9	41		3.71	3.04	79	58				730
18	2,Black,20m	01/07/03	53			7	0.4	0.28	0.15	46.8	39.9		3.68	3.01	75	54				760
19	3,Red,0m	01/07/03	93			9.3	2.7	0.57	0.44	16.5	9.6		0.76	0.09	72	51				100
20	3,Blue,0m	01/07/03	50			11.1	4.5	0.51	0.38	12.5	5.6		0.82	0.15	60	39				130
21	3,Black,0m	01/07/03	26.1			13	6.4	0.26	0.13	11.6	4.7		1.36	0.69	66	45				60
22	3,Red,10m	01/07/03	47			15.9	9.3	1.5	1.37	34.7	27.8		1.46	0.79	78	57				210
23	3,Blue,10m	01/07/03	57			6.9	0.3	0.19	0.06	50.3	43.4		3.24	2.57	81	60				530
24	3,Black,10m	01/07/03	107			7.7	1.1	0.2	0.07	41.5	34.6		5.63	4.96	71	50				1610
25	3,Red,20m	01/07/03	66			12.7	6.1	0.55	0.42	17.8	10.9		4.48	3.81	52	31				700
26	3,Blue,20m	01/07/03	55.8			17.4	10.8	0.54	0.41	17.4	10.5		3.82	3.15	52	31				550
27	3,Black,20m	01/07/03	25			39.3	32.7	1.7	1.57	10.1	3.2		2.13	1.46	60	39				290
28	4,Red,0m	01/07/03	53			11	4.4	0.2	0.07	9.3	2.4		1.21	0.54	65	44				80
29	4,Blue,0m	01/07/03	73			8.2	1.6	0.19	0.06	7.5	0.6		0.78	0.11	46	25				60
30	4,Black,0m	01/07/03	63			8.3	1.7	0.17	0.04	8.3	1.4		0.98	0.31	56	35				40
31	4,Red,10m	01/07/03	97			9.2	2.6	0.24	0.11	28.4	21.5		4.42	3.75	61	40				500
32	4,Blue,10m	01/07/03	39.6			10	3.4	0.33	0.2	22.9	16		1.71	1.04	70	49				370
33	4,Black,10m	01/07/03	72			7.4	0.8	0.19	0.06	34.6	27.7		4.04	3.37	80	59				620
34	4,Red,20m	01/07/03	42.8			13.3	6.7	0.18	0.05	9.3	2.4		1.72	1.05	31	10				140
35	4,Blue,20m	01/07/03	28			9.2	2.6	0.23	0.1	11.2	4.3		1.69	1.02	20	-1				440
36	4,Black,20m	01/07/03	67			9	2.4	0.37	0.24	12	5.1		1.83	1.16	42	21				420
A	3,TS,2m	01/07/03																		
B	3,TS,7m,	01/07/03																		
C	3,TS,15m	01/07/03																		
D	4,TS,2m	01/07/03																		
E	4,TS,7m,	01/07/03																		
G	Small ZT	01/07/03																		
H	Big ZT	01/07/03																		

Site	Ranger's Lodge

Sampling Date	15/07/03
Sampling Time	08:45

Analysis Date	15/07/03
Analysis Time	12:00

Rainfall

Ref	Sample Position	Date	COD	BOD	TOC	NO_3-N	NO_2-N	NH_4-N	Tot-P	Ortho-P	Cl	pH	Temp		Volume
X	Septic Tank	15/07/03	465			0	0.21	60.8		9.6	56	7.65	25.3		comp
1	1,Red,0m	15/07/03													Briste
2	1,Blue,0m	15/07/03	55.6			13.8	0.52	3.5		0.52	42	7.45	23.2		70
3	1,Black,0m	15/07/03	54.8			12.1	0.5	5.9		0.44	46	7.68	24.1		50
4	1,Red,10m	15/07/03	31.4			8.8	0.25	8.5		0.26	40	7.61	24		65
5	1,Blue,10m	15/07/03	50.7			0	0.15	26.3		4.7	38	7.57	23.7		300
6	1,Black,10m	15/07/03	33.9			13.9	0.4	9.9		2.52	32	7.4	24.2		230
7	1,Red,20m	15/07/03	28.4			8.6	0.08	2		0.96	16	7.42	24		250
8	1,Blue,20m	15/07/03	84			10.1	0.31	5.6		0.85	32	7.39	29.9		640
9	1,Black,20m	15/07/03													Briste
10	2,Red,0m	15/07/03													0
11	2,Blue,0m	15/07/03													0
12	2,Black,0m	15/07/03													0
13	2,Red,10m	15/07/03	32			1.2	0.3	10.3		0.24	37	7.51	24.5		190
14	2,Blue,10m	15/07/03	18.5			10.6	0.06	0.3		0.65	40	7.54	24.3		110
15	2,Black,10m	15/07/03	15			20.3	0.3	0.2		1.22	38	7.26	24.5		180
16	2,Red,20m	15/07/03	50.9			0	0.02	28.1		5.9	35	7.43	24.5		1020
17	2,Blue,20m	15/07/03	45.2			0	0.05	34.1		4.8	40	7.47	24.4		920
18	2,Black,20m	15/07/03	49			0	0.02	33.5		6.5	35	7.46	24.5		1060
19	3,Red,0m	15/07/03	54.7			2	0.48	7.7		0.59	45	8.05	25.1		35
20	3,Blue,0m	15/07/03	48.1			0.7	0.19	1.8		0.18	50	7.72	24.9		150
21	3,Black,0m	15/07/03													0
22	3,Red,10m	15/07/03	105			7.9	0.22	14.9		1.55	38	7.47	24.9		180
23	3,Blue,10m	15/07/03	104			0	0	27.1		6.1	43	7.54	24.6		630
24	3,Black,10m	15/07/03	180			0	0.29	25.9		6.3	35	7.27	24.7		1770
25	3,Red,20m	15/07/03	41.2			27.5	0.38	3.6		2.67	30	7.69	25		70
26	3,Blue,20m	15/07/03	31.9			20.8	0.3	0.9		2.6	29	7.39	24.9		220
27	3,Black,20m	15/07/03	33..2			12.1	0.39	6		1.54	29	7.48	24.9		380
28	4,Red,0m	15/07/03													0
29	4,Blue,0m	15/07/03	55.1			0	0.38	0.7		0.13	40	8.27	25.4		55
30	4,Black,0m	15/07/03	50.1			2.2	0.02	2.5		0.1	34	8.2	25.5		60
31	4,Red,10m	15/07/03	106			0	0.13	17.7		7.2	31	7.36	25.2		640
32	4,Blue,10m	15/07/03	150			0	0.17	14.1		3.7	37	7.35	25.2		500
33	4,Black,10m	15/07/03	144			0	0.09	24		6.8	40	7.44	25.2		770
34	4,Red,20m	15/07/03	24.5			5.1	0.03	0		0.88	6	7.81	25.2		90
35	4,Blue,20m	15/07/03	33.2			5.6	0.01	0		2.09	15	7.63	25.2		100
36	4,Black,20m	15/07/03													0
A	3,TS,2m	15/07/03													
B	3,TS,7m,	15/07/03													
C	3,TS,15m	15/07/03													
D	4,TS,2m	15/07/03													
E	4,TS,7m,	15/07/03													
G	Small ZT	15/07/03													
H	Big ZT	15/07/03													

BACTERIA (cfu/100ml)	DATE	X	10	11		13	14
E. coli	17/10/02	530,000					
E. coli	13/03/03	189,000					
E. coli	15/05/03	120,330					
E. coli	28/08/03	1,986,300	<10	<10		<10	<10
Enterococci	28/08/03	19,200	<20	<20		<20	<20
Faecal coliforms	28/08/03	1,732,900	<10	<10		<10	<10
Faecal Streptococci	17/10/02	1,300					
Faecal Streptococci	13/03/03	26,020					
Faecal Streptococci	15/05/03	8390					

BACTERIA (cfu/100ml)	DATE	X	19	20		22	23	25	26	
E. coli	17/10/02	530,000	<10	<10		<10	310			
E. coli	13/03/03	189,000	<100			<100		<100		
E. coli	15/05/03	120,330	<2			<2		<2	<1	
E. coli	28/08/03	1,986,300	<10	<10				<10	10	
Enterococci	28/08/03	19,200	<20	<20				<20	<20	
Faecal coliforms	28/08/03	1,732,900	<10	<10				<10	10	
Faecal Streptococci	17/10/02	1,300	1780	<10		<10	<10			
Faecal Streptococci	13/03/03	26,020	<100			<100		<100		
Faecal Streptococci	15/05/03	8390	<2			<2		<2	<1	

BACTERIA (cfu/100ml)	DATE	X	31	32		34	35
E. coli	17/10/02	530,000					
E. coli	13/03/03	189,000					
E. coli	15/05/03	120,330					
E. coli	28/08/03	1,986,300	<10	<10		<10	<10
Enterococci	28/08/03	19,200	<20	<20		<20	<20
Faecal coliforms	28/08/03	1,732,900	<10	<10		<10	<10
Faecal Streptococci	17/10/02	1,300					
Faecal Streptococci	13/03/03	26,020					
Faecal Streptococci	15/05/03	8390					

SITE 3: KIILLAVENY

Site	John Healy

Sampling Date	23/09/03
Sampling Time	

Analysis Date	
Analysis Time	

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	23/09/03	Septic Tank	446	0.8		0.28		31		5.75		43		6.08		spot
Y	23/09/03	Puraflo	102	45.2		0.1		4.7		5.3		30		6.16		spot
1	23/09/03	1,Red,0m	73	51.4		2		1.3		6.4		61		6.13		490
2	23/09/03	1,Blue,0m	46	48.9		1.4		1.7		5.68		32		6.13		1050
3	23/09/03	1,Black,0m	52	63.1		0.4		0		0.61		35		6.42		80
4	23/09/03	1,Red,10m	85	20.1		0.3		0		0		62		7.43		50
5	23/09/03	1,Blue,10m	-	-		-		-		-		-		-		0
6	23/09/03	1,Black,10m	-	-		-		-		-		-		-		0
7	23/09/03	1,Red,20m	-	-		-		-		-		-		-		0
8	23/09/03	1,Blue,20m	-	-		-		-		-		-		-		0
9	23/09/03	1,Black,20m	-	-		-		-		-		-		-		820
10	23/09/03	2,Red,0m	129	45.8		0.6		2.4		5.28		37		6.41		410
11	23/09/03	2,Blue,0m	45	42.6		0.3		0		2.17		22		6.53		90
12	23/09/03	2,Black,0m	71	58.1		0.08		0		0.04		58		6.52		0
13	23/09/03	2,Red,10m	-	-		-		-		-		-		-		0
14	23/09/03	2,Blue,10m	-	-		-		-		-		-		-		0
15	23/09/03	2,Black,10m	-	-		-		-		-		-		-		0
16	23/09/03	2,Red,20m	-	-		-		-		-		-		-		0
17	23/09/03	2,Blue,20m	-	-		-		-		-		-		-		0
18	23/09/03	2,Black,20m	-	-		-		-		-		-		-		0
19	23/09/03	Right red front of sand	102	55		0.3		0		0		59		6.38		220
20	23/09/03	Right blue front of sand	51	44.9		0.3		0		0		53		6.38		350
21	23/09/03	Right black front of sand	65	22.3		0.08		0		0.07		21		6.91		130
22	23/09/03	Left red front of sand	-	-		-		-		-		-		-		-
23	23/09/03	Left blue front of sand	-	-		-		-		-		-		-		-
24	23/09/03	Left black front of sand	-	-		-		-		-		-		-		-
A	23/09/03	Left front sand filter	96	39.4		1.2		3.8		5.28		31		6.88		45
B	23/09/03	Middle front of sand filter	-	33.8		-		0		1.4		-		-		10
C	23/09/03	Right front of sand filter	-	39.4		-		0		-		-		-		5
D	23/09/03	Right back of sand filter	-	-		-		-		-		-		-		0
E	23/09/03	Middle back of sand filter	-	-		-		-		-		-		-		0
F	23/09/03	Left back of sand filter	-	47.1		-		0.7		1.2		-		-		5

Site	John Healy

Sampling Date	30/09/03
Sampling Time	

Analysis Date	
Analysis Time	

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	30/09/03	Septic Tank	670	1.3		0		64		12.5	8.2	96	75	7.27		spot
Y	30/09/03	Puraflo	130	49.6		1.1		0		5.55		73		6.02		spot
1	30/09/03	1,Red,0m	169	48.6		0.4		0		7.5		68		5.26		400
2	30/09/03	1,Blue,0m	88	42.6		1.6		2.1		5.25		64		5.48		650
3	30/09/03	1,Black,0m	108	50.8		0.1		0.8		1.14		65		6.35		80
4	30/09/03	1,Red,10m	-	-		-		-		-		-		-		40
5	30/09/03	1,Blue,10m	-	-		-		-		-		-		-		0
6	30/09/03	1,Black,10m	-	-		-		-		-		-		-		0
7	30/09/03	1,Red,20m	-	-		-		-		-		-		-		0
8	30/09/03	1,Blue,20m	-	-		-		-		-		-		-		0
9	30/09/03	1,Black,20m	-	-		-		-		-		-		-		0
10	30/09/03	2,Red,0m	114	40.5		0.2		2.1		5.4		61		5.82		420
11	30/09/03	2,Blue,0m	127	43.2		0.2		0		4.3		59		6.28		820
12	30/09/03	2,Black,0m	207	52.1		0.2		0		0.4		60		6.35		100
13	30/09/03	2,Red,10m	-	-		-		-		-		-		-		0
14	30/09/03	2,Blue,10m	-	-		-		-		-		-		-		0
15	30/09/03	2,Black,10m	-	-		-		-		-		-		-		0
16	30/09/03	2,Red,20m	-	-		-		-		-		-		-		0
17	30/09/03	2,Blue,20m	-	-		-		-		-		-		-		0
18	30/09/03	2,Black,20m	-	-		-		-		-		-		-		0
19	30/09/03	Right red front of sand	104	48.6		0.1		2.8		0		48		6.2		170
20	30/09/03	Right blue front of sand	70	52.6		0.5		2.4		0.06		64		6.15		310
21	30/09/03	Right black front of sand	98	31.4		0.1		2.3		0		44		6.85		110
22	30/09/03	Left red front of sand	183	17.3		0.31		0		0.26		24		7.02		60
23	30/09/03	Left blue front of sand	94	18.6		0.12		0		0		30		6.45		130
24	30/09/03	Left black front of sand	57	18		0.05		0		0		32		6.87		300
A	30/09/03	Left front sand filter	84	44.6		-		3.5		10.3		76		6.67		50
B	30/09/03	Middle front of sand filter	172	46.2		-		0		3.28		74		7.19		50
C	30/09/03	Right front of sand filter	-	-		-		-		-		-		-		0
D	30/09/03	Right back of sand filter	-	-		-		-		-		-		-		0
E	30/09/03	Middle back of sand filter	-	-		-		-		-		-		-		0
F	30/09/03	Left back of sand filter	-	-		-		-		-		-		-		0

Site	John Healy

Sampling Date	23/10/03
Sampling Time	

Analysis Date	
Analysis Time	

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	23/10/03	Septic Tank	766	1.4	1	0.36	0.28	74.2	68.6	11.75	11	80	76			spot
Y	23/10/03	Puraflo	168	47.2		0.25		7.2		10.3		63				comp
1	23/10/03	1,Red,0m	60	61.8		0.9		3.5		10.6		75				510
2	23/10/03	1,Blue,0m	48	55		0.4		3.2		8		58				590
3	23/10/03	1,Black,0m	55	53.2		0.05		1		0.73		55				130
4	23/10/03	1,Red,10m	47	8.3		0.08		0.8		0		3				110
5	23/10/03	1,Blue,10m	-	-		-		-		-		-				0
6	23/10/03	1,Black,10m	-	-		-		-		-		-				0
7	23/10/03	1,Red,20m	-	-		-		-		-		-				0
8	23/10/03	1,Blue,20m	-	-		-		-		-		-				0
9	23/10/03	1,Black,20m	-	-		-		-		-		-				0
10	23/10/03	2,Red,0m	123	56		0.5		2.4		10.1		63				480
11	23/10/03	2,Blue,0m	46	61.8		0.3		2.1		5.9		78				370
12	23/10/03	2,Black,0m	32	57.2		0.04		0		0		64				140
13	23/10/03	2,Red,10m	-	-		-		-		-		-				0
14	23/10/03	2,Blue,10m	-	-		-		-		-		-				0
15	23/10/03	2,Black,10m	-	-		-		-		-		-				0
16	23/10/03	2,Red,20m	53	6.7		0.1		1.2		0.16		60				30
17	23/10/03	2,Blue,20m	57	9		0.07		2.5		0.23		61				30
18	23/10/03	2,Black,20m	-	-		-		-		-		-				0
19	23/10/03	Right red front of sand	37	49		0.04		0		0		65				250
20	23/10/03	Right blue front of sand	34	47.9		0.04		0.9		0		55				380
21	23/10/03	Right black front of sand	30	42.1		0.04		2.3		0		46				180
22	23/10/03	Left red front of sand	33	33.1		0.06		0.8		0		37				30
23	23/10/03	Left blue front of sand	38	21		0.08		0.6		0		19				110
24	23/10/03	Left black front of sand	37	12.5		0.04		0		0		22				140
A	23/10/03	Left front sand filter	-	-		-		-		-		-				0
B	23/10/03	Middle front of sand filter	145	52.5		0.34		3.5		3.98		48				50
C	23/10/03	Right front of sand filter	116	22		0.7		3.2		0		30				15
D	23/10/03	Right back of sand filter	136	51.5		0.42		3.8		8		84				35
E	23/10/03	Middle back of sand filter	-	-		-		-		-		-				0
F	23/10/03	Left back of sand filter	91	52.3		0.14		2.2		1.25		58				50
											RF	6				

Site	John Healy

Sampling Date	04/11/03
Sampling Time	

Analysis Date	
Analysis Time	

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	04/11/03	Septic Tank	616	8.5		-		62.2		10.7		54		8.27		spot
Y	04/11/03	Puraflo	68	34.7		-		13.4		6.92		38		7.74		comp
1	04/11/03	1,Red,0m	79	51.9		1		6.8		8.82		48		6.2		480
2	04/11/03	1,Blue,0m	48	54.2		0.85		5.3		8.06		41		6.09		700
3	04/11/03	1,Black,0m	52	48.9		0.24		4.7		2.5		52		7.17		35
4	04/11/03	1,Red,10m	32	7.1		0.04		2.6		0.21		0		7.69		240
5	04/11/03	1,Blue,10m	32	7.5		0.04		3.5		0.23		5		7.54		300
6	04/11/03	1,Black,10m	61	7.7		0.02		2.8		0		0		7.36		420
7	04/11/03	1,Red,20m	69	10.1		0.02		3.1		0.3		12		7.54		80
8	04/11/03	1,Blue,20m	-	-		-		-		-		-		-		0
9	04/11/03	1,Black,20m	-	-		-		-		-		-		-		0
10	04/11/03	2,Red,0m	57	57.3		0.11		3.8		7.4		58		6.61		140
11	04/11/03	2,Blue,0m	52	54.2		0.07		2.4		4.86		59		6.78		240
12	04/11/03	2,Black,0m	38	46.6		0.02		3.3		0.68		56		7.18		120
13	04/11/03	2,Red,10m	-	-		-		-		-		-		-		0
14	04/11/03	2,Blue,10m	48	18		0.04		0.2		0.1		24		7.16		440
15	04/11/03	2,Black,10m	-	-		-		-		-		-		-		0
16	04/11/03	2,Red,20m	36	8.5		0.03		2.8		0.27		0		7.53		310
17	04/11/03	2,Blue,20m	40	11		0.01		1.7		0		6		7.54		340
18	04/11/03	2,Black,20m	-	-		-		-		-		-		-		0
19	04/11/03	Right red front of sand	0	54.5		-		0		0.23		50		7.16		300
20	04/11/03	Right blue front of sand	31	55.1		-		1.9		0.08		47		7.03		350
21	04/11/03	Right black front of sand	29	50.8		-		1		0.1		44		7.5		150
22	04/11/03	Left red front of sand	31	40.3		-		2.2		0		38		7.51		90
23	04/11/03	Left blue front of sand	32	39.6		-		1.6		0.02		20		7.14		190
24	04/11/03	Left black front of sand	40	34		-		2.2		0		30		7.5		300
A	04/11/03	Left front sand filter	109	45.9		-		5.5		5.74		23		7.36		50
B	04/11/03	Middle front of sand filter	-	28.4		-		6.9		3.74		-		-		5
C	04/11/03	Right front of sand filter	71	28.6		-		3.5		2.82		35		7.92		60
D	04/11/03	Right back of sand filter	-	-		-		-		-		-		-		0
E	04/11/03	Middle back of sand filter	-	-		-		-		-		-		-		0
F	04/11/03	Left back of sand filter	119	37.6		-		10.5		3.2		30		7.85		55
											RF	0				

Site	John Healy

Sampling Date	19/11/03
Sampling Time	

Analysis Date	
Analysis Time	

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	19/11/03	Septic Tank	1086	1.1	5.8	0.35	0.55	73.4	57.2	11.18	7.64	82	71			spot
Y	19/11/03	Puraflo	350	45.8		0		0.1		10.64		57				spot
1	19/11/03	1,Red,0m	57	52		0.18		0.1		7.86		50				410
2	19/11/03	1,Blue,0m	45	45.4		0.1		0.4		6.58		48				290
3	19/11/03	1,Black,0m	40	47.6		0.03		1.8		3.64		42				35
4	19/11/03	1,Red,10m	35	2.7		0.02		0		0		4				450
5	19/11/03	1,Blue,10m	38	1.1		0		0		0		11				440
6	19/11/03	1,Black,10m	30	2.5		0		0		0		4				340
7	19/11/03	1,Red,20m	26	2.9		0		0		0		0				180
8	19/11/03	1,Blue,20m	6	2		0.03		1.3		0.79		4				240
9	19/11/03	1,Black,20m	23	2.6		0		0		0		0				390
10	19/11/03	2,Red,0m	48	54.8		0		0.2		6.38		51				210
11	19/11/03	2,Blue,0m	38	54.2		0		0.5		4.62		39				300
12	19/11/03	2,Black,0m	37	47.1		0		0		0.54		49				180
13	19/11/03	2,Red,10m	-	-		-		-		-		-				0
14	19/11/03	2,Blue,10m	46	3.8		0		0		1.23		10				570
15	19/11/03	2,Black,10m	-	-		-		-		-		-				0
16	19/11/03	2,Red,20m	35	0.6		0.05		0		0		0				380
17	19/11/03	2,Blue,20m	55	3.5		0.02		0		0		0				510
18	19/11/03	2,Black,20m	37	5.6		0		0.5		0		4				30
19	19/11/03	Right red front of sand	30	53.3		0		0		1.8		47				420
20	19/11/03	Right blue front of sand	33	48.2		0.04		1.9		0.16		52				280
21	19/11/03	Right black front of sand	31	48.1		0		0		1.14		53				240
22	19/11/03	Left red front of sand	-	-		-		-		-		-				-
23	19/11/03	Left blue front of sand	-	-		-		-		-		-				-
24	19/11/03	Left black front of sand	-	-		-		-		-		-				-
A	19/11/03	Left front sand filter	154	55.4		0.17		0		7.16		43				70
B	19/11/03	Middle front of sand filter	483	55.2		0.1		1.5		2.82		15				35
C	19/11/03	Right front of sand filter	234	59.8		0.05		0.1		4.7		38				80
D	19/11/03	Right back of sand filter	-	-		-		-		-		-				-
E	19/11/03	Middle back of sand filter	-	-		-		-		-		-				-
F	19/11/03	Left back of sand filter	-	-		-		-		-		-				-

Site	John Healy

Sampling Date	09/12/03
Sampling Time	

Analysis Date	
Analysis Time	

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	09/12/03	Septic Tank	804	2.9	2.6			77.8	66.4	7.72	6.36	100	81	7.8		spot
Y	09/12/03	Puraflo	154	55.5				5.6		7.74		83		5.95		spot
1	09/12/03	1,Red,0m	65	65.4				0.5		5.42		64		5.73		530
2	09/12/03	1,Blue,0m	137	62.8				0.2		4.8		62		5.61		580
3	09/12/03	1,Black,0m	70	56.4				0		0		51		6.42		80
4	09/12/03	1,Red,10m	-	-				-		-		-		-		0
5	09/12/03	1,Blue,10m	96	1.7				0.3		0		12		7.03		300
6	09/12/03	1,Black,10m	112	1.4				0		0		13		7.07		280
7	09/12/03	1,Red,20m	78	2.5				0.1		1.81		18		7.06		140
8	09/12/03	1,Blue,20m	109	1.7				0		0		0		7.02		130
9	09/12/03	1,Black,20m	102	2.2				1.4		0		0		6.91		330
10	09/12/03	2,Red,0m	151	61.6				0		2.8		0		5.17		90
11	09/12/03	2,Blue,0m	146	54.6				1		0		49		6.3		240
12	09/12/03	2,Black,0m	81	53.2				1.7		0		46		6.71		90
13	09/12/03	2,Red,10m	-	-				-		-		-		-		0
14	09/12/03	2,Blue,10m	99	2				2.2		0		18		6.8		410
15	09/12/03	2,Black,10m	-	-				-		-		-		-		0
16	09/12/03	2,Red,20m	67	1				0		0		0		7.08		310
17	09/12/03	2,Blue,20m	52	2.5				0		0		0		6.96		430
18	09/12/03	2,Black,20m	-	-				-		-		-		-		0
19	09/12/03	Right red front of sand	26	50.3				0		0		42		6.75		190
20	09/12/03	Right blue front of sand	65	41.6				0.4		0		37		6.7		320
21	09/12/03	Right black front of sand	46	77.4				0.4		0		43		6.97		150
22	09/12/03	Left red front of sand	-	-				-		-		-		-		-
23	09/12/03	Left blue front of sand	-	-				-		-		-		-		-
24	09/12/03	Left black front of sand	-	-				-		-		-		-		-
A	09/12/03	Left front sand filter	128	76.4				4.3		5.96		78		6.77		70
B	09/12/03	Middle front of sand filter	110	60.8				2.2		0		84		7.21		35
C	09/12/03	Right front of sand filter	116	65.2				1.7		2.46		69		7.07		50
D	09/12/03	Right back of sand filter	220	62.8				12.1		3.5		68		7.05		35
E	09/12/03	Middle back of sand filter	-	-				-		-		-		-		0
F	09/12/03	Left back of sand filter	97	60				0		3.16		68		6.89		50
											RF	0				

Site	John Healy

Sampling Date	17/12/03
Sampling Time	

Analysis Date	
Analysis Time	

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	17/12/03	Septic Tank	1393	2	1.7	0.3	0.46	120	83	8.32	8.48	159	116	7.16		spot
Y	17/12/03	Puraflo	356	53.8		0.03		3.9		7.42		87		5.57		comp
1	17/12/03	1,Red,0m	86	62.2		0.03		1.7		7.01		68		5.27		470
2	17/12/03	1,Blue,0m	63	42.4		0.01		0		6.24		70		5.15		480
3	17/12/03	1,Black,0m	51	54		0		0		0		60		6.03		60
4	17/12/03	1,Red,10m	67	7.9		0		0		0		9		6.8		35
5	17/12/03	1,Blue,10m	24	1.1		0		0		0		5		6.72		320
6	17/12/03	1,Black,10m	44	1.8		0		0		0		7		6.49		330
7	17/12/03	1,Red,20m	50	3.6		0		0.1		0		4		6.48		130
8	17/12/03	1,Blue,20m	104	1.6		0		0		0		6		6.44		140
9	17/12/03	1,Black,20m	57	2.5		0		0.4		0		7		6.28		330
10	17/12/03	2,Red,0m	63	58		0		0.1		3.7		68		4.63		60
11	17/12/03	2,Blue,0m	60	55		0		0.7		0		66		5.72		220
12	17/12/03	2,Black,0m	131	46.8		0.06		0		0		50		6.09		80
13	17/12/03	2,Red,10m	-	-		-		-		-		-		-		0
14	17/12/03	2,Blue,10m	9	2.8		0.02		1.5		0		12		6.23		380
15	17/12/03	2,Black,10m	-	-		-		-		-		-		-		0
16	17/12/03	2,Red,20m	56	2.5		0		0		0		0		6.39		330
17	17/12/03	2,Blue,20m	39	1.6		0.03		0		0		3		6.39		420
18	17/12/03	2,Black,20m	-	-		-		-		-		-		-		0
19	17/12/03	Right red front of sand	59	50.5		0.01		0.3		0		60		6.06		200
20	17/12/03	Right blue front of sand	0	40.7		0.01		1.9		0		45		6.08		310
21	17/12/03	Right black front of sand	46	44.2		0		0.2		0		47		6.33		130
22	17/12/03	Left red front of sand	-	-		-		-		-		-		-		-
23	17/12/03	Left blue front of sand	-	-		-		-		-		-		-		-
24	17/12/03	Left black front of sand	-	-		-		-		-		-		-		-
A	17/12/03	Left front sand filter	313	62.6		0.02		0		6.88		81		81		35
B	17/12/03	Middle front of sand filter	350	60		0.04		1.4		2.82		70		70		40
C	17/12/03	Right front of sand filter	311	51.4		0.02		0		4.19		75		75		50
D	17/12/03	Right back of sand filter	328	61.2		0.13		0		6.03		79		79		35
E	17/12/03	Middle back of sand filter	-	-		-		-		-		-		-		0
F	17/12/03	Left back of sand filter	400	61		0.15		0		5.08		81		81		50
											RF	0				

Site	John Healy

Sampling Date	09/01/04
Sampling Time	08:30

Analysis Date	09/01/04
Analysis Time	12:00

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	09/01/04	Septic Tank	350	12.3	11.9	1.2	1.15	18.4	14.2	4.74	4.58	42	45	7.29		spot
Y	09/01/04	Puraflo	110	24.6		0.11		7.1		3.62		40		3.77		comp
1	09/01/04	1,Red,0m														
2	09/01/04	1,Blue,0m														
3	09/01/04	1,Black,0m														
4	09/01/04	1,Red,10m														
5	09/01/04	1,Blue,10m														
6	09/01/04	1,Black,10m														
7	09/01/04	1,Red,20m														
8	09/01/04	1,Blue,20m														
9	09/01/04	1,Black,20m														
10	09/01/04	2,Red,0m														
11	09/01/04	2,Blue,0m														
12	09/01/04	2,Black,0m														
13	09/01/04	2,Red,10m														
14	09/01/04	2,Blue,10m														
15	09/01/04	2,Black,10m														
16	09/01/04	2,Red,20m														
17	09/01/04	2,Blue,20m														
18	09/01/04	2,Black,20m														
19	09/01/04	Right red front of sand	45	36.2		0.07		0		0		57		6.72		440
20	09/01/04	Right blue front of sand	44	41.6		0		0		0		53		6.32		600
21	09/01/04	Right black front of sand	32	39.2		0.06		0		0		52		6.32		840
22	09/01/04	Left red front of sand														
23	09/01/04	Left blue front of sand														
24	09/01/04	Left black front of sand														
A	09/01/04	Left front sand filter	270	31.2		0.27		6.1		4.48		55		5.8		60
B	09/01/04	Middle front of sand filter	202	23.6		0.38		3.1		7.8		51		6.71		45
C	09/01/04	Right front of sand filter	188	19.2		0.18		2.1		4.86		50		7.06		40
D	09/01/04	Right back of sand filter	178	26.6		0.38		2		5.08		48		6.97		40
E	09/01/04	Middle back of sand filter	165	20		0.21		3.4		6.24		35		7.1		40
F	09/01/04	Left back of sand filter	179	23.6		0.13		0		5.8		49		6.98		60

Site	John Healy

Sampling Date	20/01/04
Sampling Time	

Analysis Date	20/01/04
Analysis Time	

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	20/01/04	Septic Tank	842	0.8	9.2	0.3	0.07	101	108	10.34	9.4	140	122	6.91		spot
Y	20/01/04	Puraflo	102	43.6		0.16		14		7.8		74		6.4		comp
1	20/01/04	1,Red,0m														
2	20/01/04	1,Blue,0m														
3	20/01/04	1,Black,0m														
4	20/01/04	1,Red,10m														
5	20/01/04	1,Blue,10m														
6	20/01/04	1,Black,10m														
7	20/01/04	1,Red,20m														
8	20/01/04	1,Blue,20m														
9	20/01/04	1,Black,20m														
10	20/01/04	2,Red,0m														
11	20/01/04	2,Blue,0m														
12	20/01/04	2,Black,0m														
13	20/01/04	2,Red,10m														
14	20/01/04	2,Blue,10m														
15	20/01/04	2,Black,10m														
16	20/01/04	2,Red,20m														
17	20/01/04	2,Blue,20m														
18	20/01/04	2,Black,20m														
19	20/01/04	Right red front of sand	45	40.4		0.09		0		0		58		6.35		140
20	20/01/04	Right blue front of sand	18	41.6		0.05		5		0		64		6.41		340
21	20/01/04	Right black front of sand	40	37.6		0.02		0		0		67		6.38		700
22	20/01/04	Left red front of sand														
23	20/01/04	Left blue front of sand														
24	20/01/04	Left black front of sand														
A	20/01/04	Left front sand filter														40
B	20/01/04	Middle front of sand filter	160	46.8		0.4		9		6.3		68		6.36		35
C	20/01/04	Right front of sand filter	126	47.6		0.4		5		5.9		62		6.17		50
D	20/01/04	Right back of sand filter														35
E	20/01/04	Middle back of sand filter														
F	20/01/04	Left back of sand filter	104	43.2		0.05		0		5.13		65		6.19		50

Site	John Healy

Sampling Date	03/02/04
Sampling Time	

Analysis Date	03/02/04
Analysis Time	

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	03/02/04	Septic Tank		1.6	1.9	0.17	0.05	36.3	31.7	5.02	3.84	63	48	7.54		spot
Y	03/02/04	Puraflo		37		0.14		13.6		8.04		73		7		comp
1	03/02/04	1,Red,0m	80	37.6		0.1		9.7		9.36		77		5.71		520
2	03/02/04	1,Blue,0m	82	39.6		0.09		12.9		8.22		92		5.79		820
3	03/02/04	1,Black,0m	70	41.6		0.02		7.1		0.5		83		6.41		130
4	03/02/04	1,Red,10m	67	0.9		0.02		6		0		14		7.15		80
5	03/02/04	1,Blue,10m	91	0.9		0		7.7		0		20		7.19		420
6	03/02/04	1,Black,10m	79	1		0.03		6.4		0		13		6.9		810
7	03/02/04	1,Red,20m	107	1.5		0		N/A		0		12		6.95		160
8	03/02/04	1,Blue,20m	91	0.9		0.02		N/A		0		4		6.85		500
9	03/02/04	1,Black,20m	74	0.3		0.13		N/A		0		12		6.83		850
10	03/02/04	2,Red,0m	111	37.6		0.07		10.4		6.3		72		6.4		210
11	03/02/04	2,Blue,0m	92	33.4		0.04		8		1.28		56		6.47		210
12	03/02/04	2,Black,0m	72	35.2		0.03		8.3		0		50		6.66		70
13	03/02/04	2,Red,10m	95	5.7		0.03		11.2		0.73		15		7.6		40
14	03/02/04	2,Blue,10m	53	1.1		0		6.8		0		4		6.68		400
15	03/02/04	2,Black,10m														0
16	03/02/04	2,Red,20m	32	0.7		0		7.1		0		4		6.98		470
17	03/02/04	2,Blue,20m	30	0.8		0.3		8.6		0		6		6.94		700
18	03/02/04	2,Black,20m	27	1.1		0		N/A		0		15		6.93		55
19	03/02/04	Right red front of sand	57	36.4		0.02		6.5		0.08		73		6.66		250
20	03/02/04	Right blue front of sand	49	34.8		0		6		0		74		6.67		300
21	03/02/04	Right black front of sand	37	41		0		7.1		0		80		6.62		200
22	03/02/04	Left red front of sand														
23	03/02/04	Left blue front of sand														
24	03/02/04	Left black front of sand														
A	03/02/04	Left front sand filter	258	40.6		0.21		6.5		7.4		70		6.29		
B	03/02/04	Middle front of sand filter	200	41.8		0.19		5.8		7.22		90		6.63		
C	03/02/04	Right front of sand filter	226	44		0.08		6.6		6.72		80		6.37		
D	03/02/04	Right back of sand filter														
E	03/02/04	Middle back of sand filter														
F	03/02/04	Left back of sand filter														

Site	John Healy

Sampling Date	12/02/04
Sampling Time	

Analysis Date	12/02/04
Analysis Time	

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	12/02/04	Septic Tank	748	0				12.2		8.42		87				spot
Y	12/02/04	Puraflo	260	27.8				10.8		6.92		42				comp
1	12/02/04	1,Red,0m	24	42.2				4.1		8.14		47				400
2	12/02/04	1,Blue,0m	48	36.8				7.9		4.82		28				300
3	12/02/04	1,Black,0m	29	23.6				4.2		0.92		19				190
4	12/02/04	1,Red,10m	36	0				2.2		0.27		7				460
5	12/02/04	1,Blue,10m	48	0				0		0.09		12				480
6	12/02/04	1,Black,10m	62	0				0		0		8				780
7	12/02/04	1,Red,20m	55	0				3.8		0		10				160
8	12/02/04	1,Blue,20m	41	0				0		0.14		6				610
9	12/02/04	1,Black,20m	58	0				0		0.26		7				600
10	12/02/04	2,Red,0m	71	10.4								34				20
11	12/02/04	2,Blue,0m	59	6.9						0.12		19				200
12	12/02/04	2,Black,0m	40	8.2						0		14				180
13	12/02/04	2,Red,10m	45	0.6						0		21				80
14	12/02/04	2,Blue,10m	52	0.8						0		12				440
15	12/02/04	2,Black,10m	37	0								9				25
16	12/02/04	2,Red,20m	33	0.4						0		8				530
17	12/02/04	2,Blue,20m	28	0						0		10				580
18	12/02/04	2,Black,20m	40	0						0		6				570
19	12/02/04	Right red front of sand	81	11.6				8.9		0.24		42				100
20	12/02/04	Right blue front of sand	63	4.8				8.1		0		21				350
21	12/02/04	Right black front of sand	39	3.9				3.9		0		28				280
22	12/02/04	Left red front of sand														0
23	12/02/04	Left blue front of sand	37	8.4						0.08		22				250
24	12/02/04	Left black front of sand	52	5.2						0		28				100
A	12/02/04	Left front sand filter	110	12.6						2.88		39				65
B	12/02/04	Middle front of sand filter	246	18.4						3.14		26				60
C	12/02/04	Right front of sand filter	226	16.3						2.26		47				60
D	12/02/04	Right back of sand filter	358	19.7						6.12		63				50
E	12/02/04	Middle back of sand filter	246	22.1						2.94		19				55
F	12/02/04	Left back of sand filter	190	14.2						3.36		24				60

Site	John Healy

Sampling Date	19/02/04
Sampling Time	

Analysis Date	19/02/04
Analysis Time	

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	19/02/04	Septic Tank	692	1.8				28.4		10.8		64		7.35		
Y	19/02/04	Puraflo	184	23.6				3.7		12.35		22		6.23		
1	19/02/04	1,Red,0m	67	22				2.9		6.4		72		6.45		90
2	19/02/04	1,Blue,0m	83	19.8				0		0.9		22		6.82		70
3	19/02/04	1,Black,0m														
4	19/02/04	1,Red,10m														
5	19/02/04	1,Blue,10m	57	0				0		0.03		8		6.71		50
6	19/02/04	1,Black,10m	55	0				0		0		12		6.59		140
7	19/02/04	1,Red,20m	53	0				0		0.09		11		6.83		90
8	19/02/04	1,Blue,20m		0				0		0		4		6.77		410
9	19/02/04	1,Black,20m	42	0				0		0		7		6.61		450
10	19/02/04	2,Red,0m		19.7				0.8		2.1		28		6.42		0
11	19/02/04	2,Blue,0m	85	15.3				0		1.4		32		6.37		120
12	19/02/04	2,Black,0m	68	14.7				0		0.09		9		6.61		40
13	19/02/04	2,Red,10m														
14	19/02/04	2,Blue,10m	72	0				0		0		10		6.38		270
15	19/02/04	2,Black,10m	71	24.1				0		0		14		6.49		100
16	19/02/04	2,Red,20m	48	0				0		0		10		6.71		400
17	19/02/04	2,Blue,20m	37	0				0		0		6		6.49		600
18	19/02/04	2,Black,20m	35	0				0		0.05		8		6.58		410
19	19/02/04	Right red front of sand	127	21.4				0		0.03		48		6.44		140
20	19/02/04	Right blue front of sand	55	10.1				0		0		54		6.61		50
21	19/02/04	Right black front of sand	40	1.8				0		0.12		23		6.39		60
22	19/02/04	Left red front of sand	50	13.3				0		0.06		49		6.83		50
23	19/02/04	Left blue front of sand	42	7				0		0.09		31		6.79		40
24	19/02/04	Left black front of sand	39	0				0		0		30		6.56		45
A	19/02/04	Left front sand filter	158	47.4				4.8		12.2		58		6.34		30
B	19/02/04	Middle front of sand filter	348	28.8				2.6		8.6		17		6.4		300
C	19/02/04	Right front of sand filter	206	22.4				2.1		9.4		28		6.58		120
D	19/02/04	Right back of sand filter	224	40.4				3.5		9.8		63				320
E	19/02/04	Middle back of sand filter	254	37.6				0		7.4		40		6.65		120
F	19/02/04	Left back of sand filter	156	18				0		6.8		28		6.58		30

Site	John Healy

Sampling Date	27/02/04
Sampling Time	

Analysis Date	27/02/04
Analysis Time	

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	27/02/04	Septic Tank	826	2.8		0.23		73.6		18.4		96		6.91		
Y	27/02/04	Puraflo	232	35.8		0.1		9.2		12.3		69		6.06		
1	27/02/04	1,Red,0m	317	35.8		0.01		11.5		4.8		>250		6.76		
2	27/02/04	1,Blue,0m	235	42.2		0		7.2		4.84		222		6.332		
3	27/02/04	1,Black,0m	226	37.2		0		6.8		0.44		57		6.53		
4	27/02/04	1,Red,10m	142	14.2		0		6		0.03		0		7.32		
5	27/02/04	1,Blue,10m	204	0		0		7.9		0		0		7.28		
6	27/02/04	1,Black,10m	201	0		0.01		7		0.45		0		7.07		
7	27/02/04	1,Red,20m	203	0		0		7.7		0.014		0		7.13		
8	27/02/04	1,Blue,20m	181	0		0		6.9		0.02		0		6.96		
9	27/02/04	1,Black,20m	234	3.6		0		5.6		0.06		3		6.94		
10	27/02/04	2,Red,0m														
11	27/02/04	2,Blue,0m														
12	27/02/04	2,Black,0m	214	0		0		5.3		0.04		30		6.73		
13	27/02/04	2,Red,10m														
14	27/02/04	2,Blue,10m	217	0		0		5.7		0		5		6.69		
15	27/02/04	2,Black,10m														
16	27/02/04	2,Red,20m	194	0		0		7.7		0.03		6		6.99		
17	27/02/04	2,Blue,20m	190	1.8		0		7		0		4		6.96		
18	27/02/04	2,Black,20m	197	1		0		6.6		0		0		6.88		
19	27/02/04	Right red front of sand	189	52		0		7.5		0.02		75		6.61		
20	27/02/04	Right blue front of sand	208	49.2		0		6.4		0		56		6.71		
21	27/02/04	Right black front of sand	220	49.2		0		7.6		0.15		49		6.72		
22	27/02/04	Left red front of sand														
23	27/02/04	Left blue front of sand														
24	27/02/04	Left black front of sand														
A	27/02/04	Left front sand filter														
B	27/02/04	Middle front of sand filter														
C	27/02/04	Right front of sand filter	148	52		0.03		6.1		9.48		73		6.69		
D	27/02/04	Right back of sand filter														
E	27/02/04	Middle back of sand filter														
F	27/02/04	Left back of sand filter														

Site	John Healy

Sampling Date	18/03/04
Sampling Time	

Analysis Date	18/03/04
Analysis Time	

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	18/03/04	Septic Tank	892	1.6	0	0		56.3		8.2		80	80	7.86		spot
Y	18/03/04	Puraflo	370	63.4		0.06		2.8		8.9		85		6.8		spot
1	18/03/04	1,Red,0m	108	50.2		0.21		3.6		9.24		60		6.88		800
2	18/03/04	1,Blue,0m	118	54.2		0.03		2.7		8.94		73		6.2		1200
3	18/03/04	1,Black,0m	154	39.8		0.03		1.3		0		44		6.78		200
4	18/03/04	1,Red,10m	166	0		0.1		1.1		0		0		7.34		800
5	18/03/04	1,Blue,10m	150	0		0.02		1.9		0		8		7.36		600
6	18/03/04	1,Black,10m	274	0		0		0.9		0		13		7.21		1000
7	18/03/04	1,Red,20m	94	0.1		0.03		1.7		0		3		7.27		400
8	18/03/04	1,Blue,20m	92	0		0.01		1.7		0		59		7.16		800
9	18/03/04	1,Black,20m	172	0.4		0.03		2.2		0		8		7.21		900
10	18/03/04	2,Red,0m	186	47.8		0.18		3.8		5.82		81		6.51		300
11	18/03/04	2,Blue,0m	122	41.2		0.01		2.9		1.13		75		6.6		400
12	18/03/04	2,Black,0m	188	23.2		0.02		0.3		0		34		6.9		250
13	18/03/04	2,Red,10m	196	0		0		2.9		0.69		2		7.48		100
14	18/03/04	2,Blue,10m	78	0		0		1.1		0		8		6.92		700
15	18/03/04	2,Black,10m														0
16	18/03/04	2,Red,20m	128	0		0.07		2.1		0		1		6.98		700
17	18/03/04	2,Blue,20m	218	0.1		0.02		3.5		0		0		7.26		1200
18	18/03/04	2,Black,20m	168	0.3		0.03		0.6		0		1		7.23		700
19	18/03/04	Right red front of sand	94	43.6		0.01		0.8		0		82		7.1		100
20	18/03/04	Right blue front of sand	144	41.6		0.01		0.6		0		68		7.02		400
21	18/03/04	Right black front of sand	202	15.3		0		2.5		0		26		7.32		400
22	18/03/04	Left red front of sand	242	47		0		0.6		0		81		7.06		400
23	18/03/04	Left blue front of sand	110	47.6		0		0.5		0		74		7.02		500
24	18/03/04	Left black front of sand	230	54.2		0		1.4		0		9		7.1		300
A	18/03/04	Left front sand filter	330	45		0.15		5.3		8.34		58		5.95		
B	18/03/04	Middle front of sand filter														
C	18/03/04	Right front of sand filter	378	48.4		0.04		2.3		9.64		58		6.09		
D	18/03/04	Right back of sand filter	350	43.2		0.12		0.9		8.64		53		6.77		
E	18/03/04	Middle back of sand filter	264	39.6		0.17		4.1		5.37		59		7		
F	18/03/04	Left back of sand filter	352	35.2		0.08		2		5.25		58		6.44		

Site	John Healy

Date Reported	02/12/03
Sampling Time	

Ref	Sample Position	Coliforms	E. coli	Enterococci	Faecal Coliforms
X	Septic Tank	21,600,000	616,000	2,696	760,000
Y	Puraflo	2,000	58	2	72
1	1,Red,0m	1,298	<2	<2	<2
2	1,Blue,0m	1,534	<2	<2	<2
3	1,Black,0m	1,534	<3	<3	<3
4	1,Red,10m	1,732	20	116	28
5	1,Blue,10m	182	<2	<4	<2
6	1,Black,10m	3,972	2	2	2
7	1,Red,20m	3,466	<2	<2	<2
8	1,Blue,20m	582	2	<2	2
9	1,Black,20m	6,200	12	4	12
10	2,Red,0m				
11	2,Blue,0m				
12	2,Black,0m				
13	2,Red,10m				
14	2,Blue,10m				
15	2,Black,10m				
16	2,Red,20m				
17	2,Blue,20m				
18	2,Black,20m				
19	Right red front of sand	2,092	<2	158	<2
20	Right blue front of sand	28,600	<2	44	<2
21	Right black front of sand	1,034,000	<2	20	10
22	Left red front of sand				
23	Left blue front of sand				
24	Left black front of sand				
A	Left front sand filter				
B	Middle front of sand filter				
C	Right front of sand filter	3,464	26	13	13
D	Right back of sand filter				
E	Middle back of sand filter				
F	Left back of sand filter				

Site	John Healy

Date Reported	11/04/03
Sampling Time	

Ref	Sample Position	Coliforms	E. coli	Enterococci	Faecal Coliforms
X	Septic Tank	4,110,000	24,190		
Y	Puraflo	5,480	710		
1	1,Red,0m	170	<10		
2	1,Blue,0m	240	<10		
3	1,Black,0m				
4	1,Red,10m	70	<10		
5	1,Blue,10m	130	<10		
6	1,Black,10m	20	<10		
7	1,Red,20m	40	<10		
8	1,Blue,20m	400	<10		
9	1,Black,20m	260	<10		
10	2,Red,0m				
11	2,Blue,0m				
12	2,Black,0m				
13	2,Red,10m				
14	2,Blue,10m				
15	2,Black,10m				
16	2,Red,20m				
17	2,Blue,20m				
18	2,Black,20m				
19	Right red front of sand	20	<10		
20	Right blue front of sand	30	<10		
21	Right black front of sand				
22	Left red front of sand				
23	Left blue front of sand				
24	Left black front of sand				
A	Left front sand filter	4,570	810		
B	Middle front of sand filter				
C	Right front of sand filter	2,500	60		
D	Right back of sand filter				
E	Middle back of sand filter				
F	Left back of sand filter				

SITE 4: THREE WELLS

Site	Nicole Kavanagh

Sampling Date	23/09/03
Sampling Time	

Analysis Date	
Analysis Time	

Ref	Sample Position	COD	NO3	NO2	NH4	Ortho-P	Cl		pH		VOL
							Unfiltered	Filtered			
X	Septic Tank	1351	1.9	1.72	55	8.35	103	61	7.65		comp
1	1,Red,0m	-	-	-	-	-	-		-		0
2	1,Blue,0m	-	-	-	-	-	-		-		0
3	1,Black,0m	-	-	-	-	-	-		-		0
4	1,Red,10m	-	-	-	-	-	-		-		0
5	1,Blue,10m	-	-	-	-	-	-		-		5
6	1,Black,10m	-	-	-	-	-	-		-		0
7	1,Red,20m	-	-	-	-	-	-		-		0
8	1,Blue,20m	-	-	-	-	-	-		-		0
9	1,Black,20m	-	-	-	-	-	-		-		0
10	2,Red,0m	-	-	-	-	-	-		-		0
11	2,Blue,0m	-	-	-	-	-	-		-		0
12	2,Black,0m	44	6.3	0.36	0	0	53		6.63		90
13	2,Red,10m	-	-	-	-	-	-		-		0
14	2,Blue,10m	-	-	-	-	-	-		-		0
15	2,Black,10m	-	-	-	-	-	-		-		0
16	2,Red,20m	119	7.5	0.2	0	0.37	5		-		30
17	2,Blue,20m	-	-	-	-	-	-		-		0
18	2,Black,20m	-	-	-	-	-	-		-		0
19	Right red front of sand	48	34.4	0.3	0	0.34	44		6.65		70
20	Right blue front of sand	57	4.1	0.05	0	0	24		6.55		100
21	Right black front of sand	35	3.4	0.03	0	0	6		6.83		100
22	Left red front of sand	64	1.5	0.02	0	0	9		6.93		70
23	Left blue front of sand	-	-	-	-	-	-		-		0
24	Left black front of sand	-	-	-	-	-	-		-		75
A	Left front sand filter	394	1.5	0.47	15	1.71	63		7.42		100
B	Middle front of sand filter	-	-	-	-	-	-		-		0
C	Right front of sand filter	-	-	-	-	-	-		-		0
D	Right back of sand filter	895	4	0.52	20	2.79	80		7.54		50
E	Middle back of sand filter	-	-	-	-	-	-		-		0
F	Left back of sand filter	-	-	-	-	-	-		-		0

Site	Nicole Kavanagh

Sampling Date	30/09/03
Sampling Time	

	Analysis Date	
	Analysis Time	

						Ortho-P		Cl				
Ref	Sample Position	COD	NO3	NO2	NH4	Unfiltered	Filtered	Unfiltered	Filtered	pH		VOL
X	Septic Tank	1270	0.8	0	69.1	9	6.7	135	105			comp
1	1,Red,0m	-	-	-	-	-		-				0
2	1,Blue,0m	-	-	-	-	-		-				0
3	1,Black,0m	-	-	-	-	-		-				0
4	1,Red,10m	-	-	-	-	-		-				0
5	1,Blue,10m	104	12.5	0.05	0.6	0		14				60
6	1,Black,10m	-	-	-	-	-		-				0
7	1,Red,20m	-	-	-	-	-		-				0
8	1,Blue,20m	-	-	-	-	-		-				0
9	1,Black,20m	-	-	-	-	-		-				0
10	2,Red,0m	86	25	0.12	1.3	0.42		34				25
11	2,Blue,0m	-	-	-	-	-		-				0
12	2,Black,0m	155	5.2	0.08	1.9	0		55				70
13	2,Red,10m	78	7.2	0.09	0	0		28				60
14	2,Blue,10m	-	-	-	-	-		-				0
15	2,Black,10m	-	-	-	-	-		-				0
16	2,Red,20m	-	-	-	-	-		-				0
17	2,Blue,20m	-	-	-	-	-		-				0
18	2,Black,20m	-	-	-	-	-		-				0
19	Right red front of sand	103	3	0.08	1.3	0.27		19				90
20	Right blue front of sand	-	-	-	-	-		-				0
21	Right black front of sand	150	2	0.05	0.7	0.24		13				50
22	Left red front of sand	101	40.5	0.4	0	0.51		65				65
23	Left blue front of sand	124	7.1	0.04	1.9	0		16				90
24	Left black front of sand	83	3.7	0	0.9	0		12				80
A	Left front sand filter	229	5	0.83	16.5	0.73		91				80
B	Middle front of sand filter	-	-	-	-	-		-				0
C	Right front of sand filter	-	-	-	-	-		-				0
D	Right back of sand filter	366	1.4	0.35	32.8	3.96		106				60
E	Middle back of sand filter	-	-	-	-	-		-				0
F	Left back of sand filter	-	-	-	-	-		-				0

Site	Nicole Kavanagh

Sampling Date	28/10/03
Sampling Time	

Analysis Date	
Analysis Time	

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	28/10/03	Septic Tank	1692	4.3	0.4	0.7	0.18	71.1	64.6	16.7	8.5	132	64	8.53		Spot
1	28/10/03	1,Red,0m	-	-		-		-		-		-		-		0
2	28/10/03	1,Blue,0m	-	-		-		-		-		-		-		0
3	28/10/03	1,Black,0m	-	-		-		-		-		-		-		0
4	28/10/03	1,Red,10m	60	7.6		0.04		2.2		1.01		18		7.83		35
5	28/10/03	1,Blue,10m	0	9.4		0		3.7		0		10		7.52		310
6	28/10/03	1,Black,10m	41	5.4		0.11		0.6		0		7		7.78		35
7	28/10/03	1,Red,20m	0	3.6		0.06		0.5		0		7		7.56		190
8	28/10/03	1,Blue,20m	-	-		-		-		-		-		-		0
9	28/10/03	1,Black,20m	-	-		-		-		-		-		-		0
10	28/10/03	2,Red,0m	2	10		0.01		0.2		0		49		7.34		120
11	28/10/03	2,Blue,0m	68	1.2		0.04		4.2		0		68		7.23		160
12	28/10/03	2,Black,0m	56	1.4		0.05		3.5		0		58		6.83		290
13	28/10/03	2,Red,10m	11	13.3		0.01		0		0		4		7.07		340
14	28/10/03	2,Blue,10m	29	7.8		0.03		1.6		0		10		7.23		80
15	28/10/03	2,Black,10m	43	3.1		0.06		0		0		11		7.43		60
16	28/10/03	2,Red,20m	27	9		0.06		1.4		0		6		7.66		190
17	28/10/03	2,Blue,20m	32	5.8		0.12		2		0.64		9		-		25
18	28/10/03	2,Black,20m	48	1.2		0.02		2.2		0		10		7.99		55
19	28/10/03	Right red front of sand	30	42		0.03		1.5		0		65		6.95		120
20	28/10/03	Right blue front of sand	0	14.1		0.05		0.2		0		22		6.8		280
21	28/10/03	Right black front of sand	48	8.5		0.02		0		0		12		6.97		210
22	28/10/03	Left red front of sand	30	1.5		0.03		0		0		8		7.16		270
23	28/10/03	Left blue front of sand	38	2.9		0.04		0.2		0		8		7.42		50
24	28/10/03	Left black front of sand	74	1.2		0.05		0.5		0		9		7.03		160
A	28/10/03	Left front sand filter	400	0.7		0.16		32.2		6.65		84		8.38		90
B	28/10/03	Middle front of sand filter	-	-		-		-		-		-		-		0
C	28/10/03	Right front of sand filter	-	-		-		-		-		-		-		0
D	28/10/03	Right back of sand filter	758	4.2		0.24		43.6		10.2		108		8.43		55
E	28/10/03	Middle back of sand filter	-	-		-		-		-		-		-		0
F	28/10/03	Left back of sand filter	-	-		-		-		-		-		-		0

Site	Nicole Kavanagh

Sampling Date	04/11/03
Sampling Time	

Analysis Date	
Analysis Time	

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	04/11/03	Septic Tank	1208	6.8				49.6		10.35		73		8.42		comp
1	04/11/03	1,Red,0m	132	19.3				19		0.11		12		-		15
2	04/11/03	1,Blue,0m	-					-		-		-		-		0
3	04/11/03	1,Black,0m	-					-		-		-		-		0
4	04/11/03	1,Red,10m	61	12.7				1.3		0.46		3		8.27		30
5	04/11/03	1,Blue,10m	35	12.1				1		0		2		7.74		210
6	04/11/03	1,Black,10m	42	10.8				3.2		3.39		7		7.68		100
7	04/11/03	1,Red,20m	45	9.9				1.7		0		0		7.86		270
8	04/11/03	1,Blue,20m	-	-				-		-		-		-		0
9	04/11/03	1,Black,20m	29	21.5				1.2		0		9		7.17		500
10	04/11/03	2,Red,0m	69	22.6				9.4		0		62		8.14		40
11	04/11/03	2,Blue,0m	-	-				-		-		-		-		0
12	04/11/03	2,Black,0m	46	7.3				2.4		0		68		7.27		100
13	04/11/03	2,Red,10m	0	27.4				3.1		0.33		60		7.67		35
14	04/11/03	2,Blue,10m	43	10.2				1.2		0.67		12		7.72		400
15	04/11/03	2,Black,10m	38	13.1				1.4		0.22		0		7.57		170
16	04/11/03	2,Red,20m	49	20.4				0.6		0.23		4		7.75		160
17	04/11/03	2,Blue,20m	48	19				1.7		0.37		12		7.76		60
18	04/11/03	2,Black,20m	-	-				-		-		-		-		0
19	04/11/03	Right red front of sand	42	43.7				1.6		0.22		67		7.43		70
20		Right blue front of sand	36	22.8				1.4		0		24		7.04		170
21		Right black front of sand	50	14				1		0.12		8		7.63		270
22		Left red front of sand	37	9.7				0.1		0.14		8		8		35
23		Left blue front of sand	-	-				-		-		-		-		0
24		Left black front of sand	-	-				-		-		-		-		70
A		Left front sand filter	340	7.8				20.1		1.84		46		8.45		70
B		Middle front of sand filter	338	11.9				14.9		2.42		48		8.06		70
C		Right front of sand filter	-	-				-		-		-		-		0
D		Right back of sand filter	516	11.7				25.9		2.66		53		8.59		35
E		Middle back of sand filter	260	27.9				1.9		0.28		25		8.71		40
F		Left back of sand filter	-	-				-		-		-		0		0

Site	Nicole Kavanagh

Sampling Date	19/11/03
Sampling Time	

Analysis Date	
Analysis Time	

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	19/11/03	Septic Tank	807	0.5	0.5	0.33	0.15	19.8	21	10.22	8.82	57	44			comp
1	19/11/03	1,Red,0m	72	21.5		>1		11.5		0		33				770
2	19/11/03	1,Blue,0m	92	13.1		>1		11.1		0		59				60
3	19/11/03	1,Black,0m	87	1.4		0.24		15.9		0		68				130
4	19/11/03	1,Red,10m	56	7.2		0.1		0		0		5				370
5	19/11/03	1,Blue,10m	45	3		0.45		0.6		0		14				1000
6	19/11/03	1,Black,10m	46	5.2		0.25		1.1		0		18				1050
7	19/11/03	1,Red,20m	12	4.7		0.04		0		0		5				830
8	19/11/03	1,Blue,20m	37	15.3		0		0		0		8				580
9	19/11/03	1,Black,20m	33	3.2		0		1		0		9				1020
10	19/11/03	2,Red,0m	41	10		0.03		1.7		0.03		54				140
11	19/11/03	2,Blue,0m	67	19.3		0.6		17.2		0		41				820
12	19/11/03	2,Black,0m	34	1.5		0.06		4.5		0		24				690
13	19/11/03	2,Red,10m	26	14.1		0.01		0		0.86		3				340
14	19/11/03	2,Blue,10m	32	6.2		0		0		0.57		10				680
15	19/11/03	2,Black,10m	33	8.4		0		0		0		8				740
16	19/11/03	2,Red,20m	34	9.8		0		0		0.85		1				200
17	19/11/03	2,Blue,20m	24	12		0		0.5		1.19		8				460
18	19/11/03	2,Black,20m	13	2.4		0		0.8		1.15		0				400
19	19/11/03	Right red front of sand	34	21.7		0		0		0		25				870
20		Right blue front of sand	20	18.2		0.06		0		0		24				680
21		Right black front of sand	3	15.1		0		0		0		19				1070
22		Left red front of sand	-	-		-		-		-		-				-
23		Left blue front of sand	-	-		-		-		-		-				-
24		Left black front of sand	-	-		-		-		-		-				-
A		Left front sand filter	362	3.2		0.38		16.3		2.87		37				70
B		Middle front of sand filter	124	10.4		0.07		11.4		2.04		35				70
C		Right front of sand filter	164	14.1		0.12				0		33				Flooded
D		Right back of sand filter	291	2		0.09		21.9		3.7		65				70
E		Middle back of sand filter	128	14.9		0.35		6.7		0		39				60
F		Left back of sand filter	66	17.8		0.1		2.2		0		38				Flooded

Site	Nicole Kavanagh

Sampling Date	09/12/03
Sampling Time	

Analysis Date	
Analysis Time	

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	09/12/03	Septic Tank	1434	2.6	3.5			49.3	44.7	5.04	2.36	85	54	7.7		comp
1	09/12/03	1,Red,0m	69	1.1				9.3		1.22		15		6.8		130
2	09/12/03	1,Blue,0m	67	15.1				6.9		2.4		38		7.17		530
3	09/12/03	1,Black,0m	76	3.2				11.2		0		52		6.99		520
4	09/12/03	1,Red,10m	50	4.5				8.9		0		0		7.31		470
5	09/12/03	1,Blue,10m	45	3.1				3.2		0		0		7.17		1200
6	09/12/03	1,Black,10m	37	3.2				2.5		0		0		7.18		1750
7	09/12/03	1,Red,20m	48	1.6				2		0		0		6.99		740
8	09/12/03	1,Blue,20m	50	15.8				22.3		0		0		6.68		1350
9	09/12/03	1,Black,20m	37	4.5				0		0		0		6.67		1750
10	09/12/03	2,Red,0m	-	-				-		-		-		-		0
11	09/12/03	2,Blue,0m	58	32.1				12.8		0		21		6.96		700
12	09/12/03	2,Black,0m	41	5.3				1.1		0		11		6.6		820
13	09/12/03	2,Red,10m	36	22.4				6		0		0		6.75		300
14	09/12/03	2,Blue,10m	41	5.2				1.4		0		0		6.89		700
15	09/12/03	2,Black,10m	75	7.1				17.7		0		0		7.03		970
16	09/12/03	2,Red,20m	39	6.5				0.5		0		0		7.09		35
17	09/12/03	2,Blue,20m	45	15.1				0		0		0		7.08		370
18	09/12/03	2,Black,20m	42	2.4				0		0		0		7.68		470
19	09/12/03	Right red front of sand	76	16.9				0		0		13		7.04		1100
20	09/12/03	Right blue front of sand	43	16.5				0		0		19		7.03		1000
21	09/12/03	Right black front of sand	49	14				0		0		13		6.85		2050
22	09/12/03	Left red front of sand	-	-				-		-		-		-		-
23	09/12/03	Left blue front of sand	-	-				-		-		-		-		-
24		Left black front of sand	-	-				-		-		-		-		-
A		Left front sand filter	-	-				-		-		-		-		0
B		Middle front of sand filter	150	52.2				4.7		0		30		7.9		70
C		Right front of sand filter	-	-				-		-		-				0
D		Right back of sand filter	496	3.4				18		0		57		8.26		70
E		Middle back of sand filter	-	-				-		-		-				0
F		Left back of sand filter	-	-				-		-		-				0

Site	Nicole Kavanagh

Sampling Date	16/12/03
Sampling Time	

Analysis Date	
Analysis Time	

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	16/12/02	Septic Tank	1033	1.6	0.9	0.56	0.37	34.2	33.3	3.04	3.21	63	60	7.17		comp
1	16/12/02	1,Red,0m	97	40.6		0.73		1.5		0		22		6.01		35
2	16/12/02	1,Blue,0m	106	14.3		0.73		1.3		0		30		6.63		65
3	16/12/02	1,Black,0m	41	2.2		0.26		5.3		0		50		6.28		190
4	16/12/02	1,Red,10m	17	5.5		0.12		0		0		7		6.48		230
5	16/12/02	1,Blue,10m	42	2.9		0.15		0		0		11		6.32		850
6	16/12/02	1,Black,10m	129	2		0.15		0		0		6		6.4		1290
7	16/12/02	1,Red,20m	100	3.9		0.13		0		0		12		6.26		550
8	16/12/02	1,Blue,20m	80	9		0.13		0		0		15		5.96		700
9	16/12/02	1,Black,20m	0	2.1		0.12		0		0		10		5.53		1420
10	16/12/02	2,Red,0m	2	27.1		0.87		0		0		33		6.33		110
11	16/12/02	2,Blue,0m	19	50.1		1.21		5.8		0		3		6.22		230
12	16/12/02	2,Black,0m	61	3.2		0.18		0		0		9		6.22		340
13	16/12/02	2,Red,10m	44	28.9		0.1		0.3		0		5		5.97		290
14	16/12/02	2,Blue,10m	0	7.3		0.13		3.5		0		3		6.12		250
15	16/12/02	2,Black,10m	37	13		0.17		0.5		0		9		6.16		330
16	16/12/02	2,Red,20m	90	15.8		0.13		1.8		0		12		6.45		180
17	16/12/02	2,Blue,20m	9	17.1		0.11		1.6		0		5		6.3		140
18	16/12/02	2,Black,20m	49	3.4		0.09		0.7		0		7		6.73		180
19	16/12/02	Right red front of sand	112	13.9		0		1.2		0		19		6.71		120
20		Right blue front of sand	0	7		0		0.9		0		23		6.46		380
21		Right black front of sand	32	12.7		0		1.6		0		22		6.22		760
22		Left red front of sand	-	-		-		-		-		-		-		-
23		Left blue front of sand	-	-		-		-		-		-		-		-
24		Left black front of sand	-	-		-		-		-		-		-		-
A		Left front sand filter	-	-		-		-		-		-		-		0
B		Middle front of sand filter	-	-		-		-		-		-		-		0
C		Right front of sand filter	246	8.8		0.03		5		0		23		7.13		70
D		Right back of sand filter	-	-		-		-		-		-		-		0
E		Middle back of sand filter	-	-		-		-		-		-		-		0
F		Left back of sand filter	-	-		-		-		-		-		-		0

Site	Nicole Kavanagh

Sampling Date	09/01/04
Sampling Time	09:00

Analysis Date	09/01/04
Analysis Time	12:00

				NO3		NO2		NH4		Ortho-P		Cl				
Ref		Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	09/01/04	Septic Tank	580	1.8	0.6	0.42	0	26.5	24.1	3.2	2.26	56	48	7.42		comp
1		1,Red,0m														
2		1,Blue,0m														
3		1,Black,0m														
4		1,Red,10m														
5		1,Blue,10m														
6		1,Black,10m														
7		1,Red,20m														
8		1,Blue,20m														
9		1,Black,20m														
10		2,Red,0m														
11		2,Blue,0m														
12		2,Black,0m														
13		2,Red,10m														
14		2,Blue,10m														
15		2,Black,10m														
16		2,Red,20m														
17		2,Blue,20m														
18		2,Black,20m														
19		Right red front of sand	82	12.5		0.73		2.2		0		23		6.63		1070
20		Right blue front of sand	43	12.8		0.18		0		0		18		6.58		1000
21		Right black front of sand	66	6.6		0.43		0		0		19		6.44		1630
22		Left red front of sand														
23		Left blue front of sand														
24		Left black front of sand														
A		Left front sand filter	630	0.7		0.4		20.2		5.38		35		N/A		25
B		Middle front of sand filter	348	0.2		0.32		14		0		31		7.72		70
C		Right front of sand filter	320	1.3		0.2		12.6		0		29		7.51		60
D		Right back of sand filter														15
E		Middle back of sand filter	226	0.9		0.13		2.3		0		18		7.95		50
F		Left back of sand filter	244	1.8		0.14		8.8		0		18		7.56		60

Site	Nicole Kavanagh

Sampling Date	20/01/04
Sampling Time	09:00

Analysis Date	20/01/04
Analysis Time	12:00

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	20/01/03	Septic Tank	540	1.1	0.9	0.22	0.09	25	28	3.55	2.82	62	58	6.96		comp
1		1,Red,0m														
2		1,Blue,0m														
3		1,Black,0m														
4		1,Red,10m														
5		1,Blue,10m														
6		1,Black,10m														
7		1,Red,20m														
8		1,Blue,20m														
9		1,Black,20m														
10		2,Red,0m														
11		2,Blue,0m														
12		2,Black,0m														
13		2,Red,10m														
14		2,Blue,10m														
15		2,Black,10m														
16		2,Red,20m														
17		2,Blue,20m														
18		2,Black,20m														
19		Right red front of sand	57	5.1		0.24		19		0		41		6.68		1350
20		Right blue front of sand	63	5.6		0.06		0		0		26		6.63		1650
21		Right black front of sand	40	4.1		0.26		0		0		24		6.56		2000
22		Left red front of sand														
23		Left blue front of sand														
24		Left black front of sand														
A		Left front sand filter	370	0.4		0.18		42		2.26		59		6.93		70
B		Middle front of sand filter	290	0.2		0.1		50		1.04		45		7.09		flooded
C		Right front of sand filter	310	0		0.06		39		0.23		41		7.11		flooded
D		Right back of sand filter														70
E		Middle back of sand filter	240	0.7		0.02		39		0.07		36		7.19		flooded
F		Left back of sand filter	230	0.1		0.06		22		0.27		28		7.11		flooded

Site	Nicole Kavanagh

Sampling Date	03/02/04
Sampling Time	09:00

Analysis Date	03/02/04
Analysis Time	12:00

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	03/02/04	Septic Tank	1238	2	2.3	0.45	0.21	53.1	44.6	8.22	5.64	103	76	7.59		
1	03/02/04	1,Red,0m	87	19		0.04		5.9		0		62		6.78		70
2	03/02/04	1,Blue,0m								0						0
3	03/02/04	1,Black,0m	36	10.2		0.11		4.7		0		41		7.11		130
4	03/02/04	1,Red,10m	45	406		0		5.9		0		15		7.31		270
5	03/02/04	1,Blue,10m	44	9.6		0.04		7		0		27		7.13		190
6	03/02/04	1,Black,10m	58	3.6		0		5		0		21		7.2		800
7	03/02/04	1,Red,20m	50	6.5		0		N/A		0		18		6.86		
8	03/02/04	1,Blue,20m	65	8.3		0		N/A		0		20		6.88		
9	03/02/04	1,Black,20m	85	2.3		0		N/A		0		21		6.35		
10	03/02/04	2,Red,0m	47	85.9		0.05		7.9		0		32		6.86		
11	03/02/04	2,Blue,0m	67	91.8		0.59		5.3		0		37		6.47		
12	03/02/04	2,Black,0m	50	11.4		0.22		6.3		0		44		6.8		
13	03/02/04	2,Red,10m	74	68.6		0.06		5.4		0		34		6.61		
14	03/02/04	2,Blue,10m	49	4.7		0		8.6		0		12		6.77		
15	03/02/04	2,Black,10m	49	15.6		0.03		6.8		0		15		6.93		
16	03/02/04	2,Red,20m	36	22.9		0.06		N/A		0		18		7.01		
17	03/02/04	2,Blue,20m	36	14.6		0		N/A		0		18		7		
18	03/02/04	2,Black,20m	54	3		0.02		N/A		0		11		7.49		
19	03/02/04	Right red front of sand	63	2.3		0.12		5.2		0		35		7.06		
20		Right blue front of sand	59	3.2		0.02		8.3		0		30		6.91		
21		Right black front of sand	68	1.7		0.03		8.9		0		38		6.87		
22		Left red front of sand														
23		Left blue front of sand														
24		Left black front of sand														
A		Left front sand filter	518	2.2		0.39		39.5		4.29		78		7.59		
B		Middle front of sand filter	156	6		0.99		29.1		0		43		7.72		
C		Right front of sand filter	196	6		0.96		13.9		1.11		44		7.88		
D		Right back of sand filter														
E		Middle back of sand filter														
F		Left back of sand filter														

Site	Nicole Kavanagh

Sampling Date	11/02/04
Sampling Time	09:00

Analysis Date	11/02/04
Analysis Time	12:00

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	11/02/04	Septic Tank	1422													comp
1	11/02/04	1,Red,0m	458													850
2	11/02/04	1,Blue,0m	211													550
3	11/02/04	1,Black,0m	108													10
4	11/02/04	1,Red,10m	76													590
5	11/02/04	1,Blue,10m	82													590
6	11/02/04	1,Black,10m	70													570
7	11/02/04	1,Red,20m	54													640
8	11/02/04	1,Blue,20m	82													170
9	11/02/04	1,Black,20m	68													180
10	11/02/04	2,Red,0m	104													360
11	11/02/04	2,Blue,0m	128													340
12	11/02/04	2,Black,0m	82													350
13	11/02/04	2,Red,10m	76													330
14	11/02/04	2,Blue,10m	48													390
15	11/02/04	2,Black,10m	54													350
16	11/02/04	2,Red,20m	48													120
17	11/02/04	2,Blue,20m	60													180
18	11/02/04	2,Black,20m	52													310
19	11/02/04	Right red front of sand	102													220
20		Right blue front of sand	134													360
21		Right black front of sand	87													400
22		Left red front of sand	84													400
23		Left blue front of sand	70													420
24		Left black front of sand	82													380
A		Left front sand filter	684													90
B		Middle front of sand filter	362													420
C		Right front of sand filter	214													440
D		Right back of sand filter	494													140
E		Middle back of sand filter	408													120
F		Left back of sand filter	248													420

Site	Nicole Kavanagh

Sampling Date	18/02/04
Sampling Time	09:00

Analysis Date	18/02/04
Analysis Time	12:00

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	18/02/04	Septic Tank	2088	3.4				14.2		4.5		42		7.64		
1	18/02/04	1,Red,0m														
2	18/02/04	1,Blue,0m	134	1.2				6.9		0.84		14		6.82		30
3	18/02/04	1,Black,0m	65	0.6				5.2		0.28		9		6.47		120
4	18/02/04	1,Red,10m	53	3.4				0		0				6.53		40
5	18/02/04	1,Blue,10m														
6	18/02/04	1,Black,10m	43	1.8				0		0		8		6.62		480
7	18/02/04	1,Red,20m	37	7.4				0		0		12		6.79		460
8	18/02/04	1,Blue,20m	36	3.1				0		0		7		6.84		30
9	18/02/04	1,Black,20m	18	2.6				4.8		0		6		6.69		570
10	18/02/04	2,Red,0m	33	14.3				2		0.24		22		6.88		5
11	18/02/04	2,Blue,0m	35	10.8				0		0		10		6.58		5
12	18/02/04	2,Black,0m	43	2.9				0		0		9		6.92		90
13	18/02/04	2,Red,10m	38	3.4				0		0.12		5		7.04		80
14	18/02/04	2,Blue,10m	40	2.8				2.1		0		7		7.11		250
15	18/02/04	2,Black,10m	51	1.2				0		0		4		6.92		400
16	18/02/04	2,Red,20m	63	0.8				0		0.1		9		7.27		180
17	18/02/04	2,Blue,20m	42	1.2				0		0		5		7.35		120
18	18/02/04	2,Black,20m	44	0.4				0		0		4		6.97		450
19	18/02/04	Right red front of sand	64	12.8				2.3		2.3		17		6.84		440
20		Right blue front of sand	>150	12.4				0		0		12		7.04		230
21		Right black front of sand	59	8.9				0		0		10		7.12		540
22		Left red front of sand	44	2.8				0		0.62		18		7.14		45
23		Left blue front of sand	65	1.4				0		0.3		14		7.28		300
24		Left black front of sand	51	1.7				0		0.28		8		7.49		610
A		Left front sand filter	1092	8.4				18.3		8.42		37		7.76		65
B		Middle front of sand filter	254	7.3				12.9		6.94		23		7.39		60
C		Right front of sand filter	256	2.8				10.6		5.12		20		7.51		50
D		Right back of sand filter	932	6.1				17.1		7.38		29		7.43		120
E		Middle back of sand filter	586	5.8				8.2		7.1		18		7.27		40
F		Left back of sand filter	250	4.1				11.8		5.4		25		7.6		65

Site	Nicole Kavanagh

Sampling Date	27/02/04
Sampling Time	09:00

Analysis Date	27/02/04
Analysis Time	12:00

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	27/02/04	Septic Tank	2703	1.2		0.51		57.3		26.5		117				
1	27/02/04	1,Red,0m	223	9.4		0.52		8.8		0.27		33		6.02		
2	27/02/04	1,Blue,0m														
3	27/02/04	1,Black,0m	191	7.9		1.46		10.8		0.37		36		7.85		
4	27/02/04	1,Red,10m														
5	27/02/04	1,Blue,10m														
6	27/02/04	1,Black,10m														
7	27/02/04	1,Red,20m	217	2.3		0		9.3		0.15		21		6.89		
8	27/02/04	1,Blue,20m	210	5.8		0		8.5		0.22		0		6.79		
9	27/02/04	1,Black,20m	228	2.9		0		8		0.37		11		6.42		
10	27/02/04	2,Red,0m	225	18		0.14		6.1		0.19		31		6.67		
11	27/02/04	2,Blue,0m	228			0.7		10.2		0.06		60		6.8		
12	27/02/04	2,Black,0m	193	8.5				10.7		0.17		71		6.8		
13	27/02/04	2,Red,10m														
14	27/02/04	2,Blue,10m	180	5.2		0.27		7.7		0.21		0		6.83		
15	27/02/04	2,Black,10m	210	4.1				7		0.09		12		6.93		
16	27/02/04	2,Red,20m	199	14.7		0.34		5.8		0.26		7		7.06		
17	27/02/04	2,Blue,20m	186	9.2		0		6.5		0.03		8		7.05		
18	27/02/04	2,Black,20m	197	3.4		0		6.7		0.08		6		7.21		
19	27/02/04	Right red front of sand	189	2.3		0.07		5.5		0.11		29		7.21		
20		Right blue front of sand														
21		Right black front of sand	176	1.1		0		6.7		0.04		30		6.9		
22		Left red front of sand														
23		Left blue front of sand														
24		Left black front of sand														
A		Left front sand filter	212	1.8		0.93		49.5		7.8		146		7.55		
B		Middle front of sand filter	922	5				18.5		0.52		54		7.8		
C		Right front of sand filter														
D		Right back of sand filter														
E		Middle back of sand filter														
F		Left back of sand filter														

Site	Nicole Kavanagh

Sampling Date	18/03/04
Sampling Time	09:00

Analysis Date	18/03/04
Analysis Time	12:00

				NO3		NO2		NH4		Ortho-P		Cl				
Ref	Date	Sample Position	COD	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	Unfil	Fil	pH		VOL
X	18/03/04	Septic Tank	940	2.1	1.8			54.6	53.6	7.17						
1	18/03/04	1,Red,0m														
2	18/03/04	1,Blue,0m														
3	18/03/04	1,Black,0m	150	3.7		>1.0		2.7		1.1		19		7.85		50
4	18/03/04	1,Red,10m	138	5.3		0.03		1.4		0.67		17		7.46		200
5	18/03/04	1,Blue,10m	112	16.4		0		1.5		0.5		12		7.38		400
6	18/03/04	1,Black,10m	138	9.7		0.02		0.9		1.01		11		7.28		300
7	18/03/04	1,Red,20m	128	10.7		0.02		2.9		1.01		9		7.2		500
8	18/03/04	1,Blue,20m	84	6.5		0.02		0.8		0.66		18		7.15		200
9	18/03/04	1,Black,20m	248	6		0.02		1.9		1.59		12		7.1		150
10	18/03/04	2,Red,0m	200	51.2		0.05		2		1.18		56		7.27		250
11	18/03/04	2,Blue,0m														
12	18/03/04	2,Black,0m	172	31.4		0.56		2.7		0.59		38		7.41		200
13	18/03/04	2,Red,10m	74	42.2		0		1.4		0.41		28		7.29		150
14	18/03/04	2,Blue,10m	86	4.2		0.02		1.3		0.22		21		7.52		400
15	18/03/04	2,Black,10m	104	9.2		0.04		0.3		0		18		7.38		150
16	18/03/04	2,Red,20m	98	23.4		0.04		0.3		0.43		18		7.42		300
17	18/03/04	2,Blue,20m	94	11.2		0.03		1.3		0.69		11		7.46		200
18	18/03/04	2,Black,20m	84	3		0.15		0.7		4.41		15		7.21		120
19	18/03/04	Right red front of sand	108	1.3		0.05		2.3		0.59		23		7.3		200
20		Right blue front of sand														
21		Right black front of sand	110	2.1		0.02		1.4				16		7.08		350
22		Left red front of sand	112	9.8		0.09		1.5		0.73		34		7.82		120
23		Left blue front of sand	116	3.9		0		1.2		0.41		34		7.41		250
24		Left black front of sand	112	1.5		0.03		1.5		0.14		23		7.48		200
A		Left front sand filter	734	2.4		0.32		46.2		4.8		91		6.89		
B		Middle front of sand filter														
C		Right front of sand filter														
D		Right back of sand filter	270	26.3		0.18		2.7		1.29		50		6.58		
E		Middle back of sand filter	342	5		0.24		23.3		1.24		72		6.82		
F		Left back of sand filter	394	5.9		0.07		31.5		4.45		85		6.7		

Site	Nicole Kavanagh

Date Reported	02/12/03
Sampling Time	

Ref	Sample Position	Coliforms	E. coli	Enterococci	Faecal Coliforms
X	Septic Tank	6,880,000,000	344,000	6,000	520,000
1	1,Red,0m				
2	1,Blue,0m				
3	1,Black,0m				
4	1,Red,10m				
5	1,Blue,10m				
6	1,Black,10m				
7	1,Red,20m				
8	1,Blue,20m				
9	1,Black,20m				
10	2,Red,0m	1,160	<3	<3	<3
11	2,Blue,0m	75,800	<2	<2	<2
12	2,Black,0m	472	<2	<2	<2
13	2,Red,10m	1,096	<2	4	<2
14	2,Blue,10m	456	<2	<2	<2
15	2,Black,10m	156	<2	<2	<2
16	2,Red,20m	156	<2	<2	<2
17	2,Blue,20m	42	<2	<2	<2
18	2,Black,20m	210	<2	<2	<2
19	Right red front of sand	730	<2	<2	<2
20	Right blue front of sand	428	<2	<2	<2
21	Right black front of sand	176	<2	<2	<2
22	Left red front of sand				
23	Left blue front of sand				
24	Left black front of sand				
A	Left front sand filter	6,520,000,000	154,000	4,838	248,000
B	Middle front of sand filter	967,600,000	40,000	28,000	40,000
C	Right front of sand filter	13,200,000	870	4,838	1,226
D	Right back of sand filter				
E	Middle back of sand filter				
F	Left back of sand filter				

Site	Nicole Kavanagh

Date Reported	11/03/04
Sampling Time	

Ref	Sample Position	Coliforms	E. coli	Enterococci	Faecal Coliforms
X	Septic Tank	24,190,000	24,190		
1	1,Red,0m				
2	1,Blue,0m				
3	1,Black,0m				
4	1,Red,10m				
5	1,Blue,10m				
6	1,Black,10m				
7	1,Red,20m				
8	1,Blue,20m				
9	1,Black,20m				
10	2,Red,0m	260	20		
11	2,Blue,0m				
12	2,Black,0m	20	<10		
13	2,Red,10m				
14	2,Blue,10m	840	20		
15	2,Black,10m	<10	<10		
16	2,Red,20m	20	<10		
17	2,Blue,20m	<10	<10		
18	2,Black,20m				
19	Right red front of sand	680	<10		
20	Right blue front of sand				
21	Right black front of sand	1,030	<10		
22	Left red front of sand				
23	Left blue front of sand				
24	Left black front of sand				
A	Left front sand filter	24,190,000	24,190		
B	Middle front of sand filter				
C	Right front of sand filter	100,000	10		
D	Right back of sand filter				
E	Middle back of sand filter				
F	Left back of sand filter				

APPENDIX F

RESULTS OF BROMIDE ANALYSIS

SITE 1: ROCHESTOWN

DATE **29/07/03**
Comments: Tracer test commenced.

DATE **30/07/03**
Comments: No Br in samples at either site.

Date	31/07/03				
		Trench			
		1	2	3	4
0m	Red	0.461	0	Missing	missing
	Blue	3.825	0	missing	12.148
	Black	0.425	Briste	missing	1.003
10m	Red	0	0	0	0
	Blue	0	0	0	0
	Black	0	0	0	Missing
20m	Red	0	0	0	0
	Blue	0	0	0	0
	Black	0	0	0	0

Date	01/08/03				
		Trench			
		1	2	3	4
0m	Red	0.966	0	2.692	missing
	Blue	3.954	0	0	9.593
	Black	0.37	Briste	0.343	1.232
10m	Red	0	Missing	0	0
	Blue	0	Missing	0	0
	Black	0	Missing	0	0
20m	Red	0	0	0	0
	Blue	0	0	0	0
	Black	0	0	0	0

Date	06/08/03				
		Trench			
		1	2	3	4
0m	Red	1.228	0.322	2.202	3.623
	Blue	2.211	0	0.359	19.323
	Black	0	Briste	0.266	Missing
10m	Red	0	0	0	0
	Blue	0	0	0	0
	Black	0	0	0	0
20m	Red	0	0	0	0
	Blue	0	0	0	0
	Black	0	0	0	0

SITE 2: THE CURRAGH

DATE **29/07/03**
Comments: Tracer test commenced.

DATE **30/07/03**
Comments: No Br in samples at either site.

Date	31/07/03				
		Trench			
		1	2	3	4
0m	Red	Briste	0.257	0.265	0.27
	Blue	0	0	0.294	0.312
	Black	0	0.249	missing	0.261
10m	Red	4.903	4.06	9.275	2.617
	Blue	24.616	0.818	9.344	2.558
	Black	5.599	0	16.256	2.9
20m	Red	0	0	0	0
	Blue	0	0	missing	0
	Black	Briste	0	0.3	0.305

Date	01/08/03				
		Trench			
		1	2	3	4
0m	Red	Briste	missing	0.251	0
	Blue	0	0	0.29	0.316
	Black	0	0	0.254	0.283
10m	Red	4.804	2.786	4.363	1.707
	Blue	11.816	0.335	9.316	1.723
	Black	4.35	0	16.256	2.35
20m	Red	0.288	6.633	0	0
	Blue	0	0.476	0	0
	Black	Briste	0.274	0	0

Date	06/08/03				
		Trench			
		1	2	3	4
0m	Red	Briste	0.298	0.284	0
	Blue	0.254	0.254	0	0.288
	Black	0	missing	0	0.269
10m	Red	2.952	1.849	1.42	0.615
	Blue	5.66	0.26	3.238	0.9
	Black	4.557	0	1.555	1.038
20m	Red	0	19.141	0.7	0
	Blue	0	8.436	1.498	0
	Black	Briste	5.645	0	0

APPENDIX G

CALCULATION OF EVAPOTRANSPIRATION AND EFFECTIVE RAINFALL

SITE 1: ROCHESTOWN

Results of Evapotranspitation and Effelctive Rainfall Calculations for Site 1 using the Penman Method

Meteorological balance

DAILY DATA

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	04/03/02	0.40	0.82	0.00	0.00	0.40
	05/03/02	0.20	1.36	1.16	1.36	0.00
	06/03/02	0.20	1.16	2.12	1.16	0.00
	07/03/02	0.00	1.12	3.24	1.12	0.00
	08/03/02	2.80	1.53	1.97	1.53	0.00
wed	09/03/02	10.40	1.00	0.00	1.00	7.43
	10/03/02	6.40	1.32	0.00	1.32	5.08
	11/03/02	0.00	1.55	1.55	1.55	0.00
	12/03/02	0.20	1.03	2.38	1.03	0.00
	13/03/02	0.60	1.17	2.95	1.17	0.00
	14/03/02	0.00	1.08	4.02	1.08	0.00
	15/03/02	0.40	0.89	4.51	0.89	0.00
wed	16/03/02	0.40	1.66	5.77	1.66	0.00
	17/03/02	1.40	1.06	5.43	1.06	0.00
I	18/03/02	1.60	0.99	4.82	0.99	0.00
	19/03/02	0.20	1.12	5.74	1.12	0.00
	20/03/02	2.40	1.10	4.44	1.10	0.00
	21/03/02	0.40	1.92	5.96	1.92	0.00
	22/03/02	0.00	1.44	7.41	1.44	0.00
wed	23/03/02	0.00	0.96	8.37	0.96	0.00
	24/03/02	0.20	0.91	9.08	0.91	0.00
	25/03/02	0.60	1.53	10.01	1.53	0.00
	26/03/02	0.20	1.84	11.65	1.84	0.00
	27/03/02	0.00	1.98	13.63	1.98	0.00
	28/03/02	0.00	2.13	15.76	2.13	0.00
	29/03/02	0.20	1.85	17.41	1.85	0.00
wed	30/03/02	4.40	1.93	14.94	1.93	0.00
	31/03/02	1.00	1.59	15.53	1.59	0.00
	01/04/02	3.60	1.55	13.48	1.55	0.00
	02/04/02	2.80	1.40	12.09	1.40	0.00
	03/04/02	3.80	2.28	10.56	2.28	0.00
	04/04/02	0.00	1.86	12.42	1.86	0.00
	05/04/02	0.00	1.62	14.04	1.62	0.00
wed	06/04/02	0.00	1.84	15.88	1.84	0.00
	07/04/02	0.00	2.41	18.29	2.41	0.00
	08/04/02	0.20	1.94	20.03	1.94	0.00
	09/04/02	0.00	2.08	22.10	2.08	0.00
	10/04/02	0.00	1.77	23.87	1.77	0.00
	11/04/02	0.20	1.51	25.19	1.51	0.00
	12/04/02	0.40	1.79	26.58	1.79	0.00
wed	13/04/02	0.20	1.57	27.95	1.57	0.00
	14/04/02	1.00	2.06	29.01	2.06	0.00
	15/04/02	0.00	2.19	31.20	2.19	0.00
	16/04/02	0.40	1.95	32.75	1.95	0.00
I	17/04/02	36.60	1.26	0.00	1.26	2.60
	18/04/02	1.60	2.49	0.89	2.49	0.00
	19/04/02	0.60	2.25	2.54	2.25	0.00
wed	20/04/02	1.60	1.35	2.29	1.35	0.00
	21/04/02	10.20	1.19	0.00	1.19	6.72
	22/04/02	0.00	2.01	2.01	2.01	0.00
I	23/04/02	0.00	3.13	5.14	3.13	0.00
	24/04/02	0.80	2.12	6.46	2.12	0.00
	25/04/02	1.80	2.02	6.69	2.02	0.00
	26/04/02	9.40	2.16	0.00	2.16	0.56
wed	27/04/02	9.80	1.27	0.00	1.27	8.53
	28/04/02	9.40	1.77	0.00	1.77	7.63
	29/04/02	1.40	2.19	0.79	2.19	0.00
I	30/04/02	5.40	2.17	0.00	2.17	2.44
	01/05/02	4.00	2.25	0.00	2.25	1.75
	02/05/02	2.80	2.53	0.00	2.53	0.27
	03/05/02	0.40	2.42	2.02	2.42	0.00
wed	04/05/02	0.00	3.28	5.30	3.28	0.00
	05/05/02	0.00	2.80	8.10	2.80	0.00
	06/05/02	0.00	2.32	10.42	2.32	0.00
	07/05/02	1.00	2.10	11.53	2.10	0.00
	08/05/02	0.00	2.53	14.05	2.53	0.00
	09/05/02	0.00	2.35	16.40	2.35	0.00
	10/05/02	0.20	2.15	18.35	2.15	0.00
wed	11/05/02	0.00	2.88	21.24	2.88	0.00
	12/05/02	0.80	2.19	22.63	2.19	0.00
	13/05/02	5.00	2.29	19.92	2.29	0.00
	14/05/02	1.20	2.35	21.07	2.35	0.00
	15/05/02	0.00	2.25	23.32	2.25	0.00
	16/05/02	0.20	2.62	25.73	2.62	0.00
	17/05/02	29.00	2.19	0.00	2.19	1.08
wed	18/05/02	0.20	2.59	2.39	2.59	0.00
	19/05/02	3.20	2.66	1.85	2.66	0.00
	20/05/02	4.20	2.77	0.42	2.77	0.00
	21/05/02	3.00	1.90	0.00	1.90	0.67
	22/05/02	5.80	2.76	0.00	2.76	3.04
	23/05/02	5.60	2.18	0.00	2.18	3.42
I	24/05/02	6.80	1.76	0.00	1.76	5.04
wed	25/05/02	3.40	2.33	0.00	2.33	1.07
	26/05/02	0.40	2.19	1.79	2.19	0.00
	27/05/02	1.60	2.30	2.49	2.30	0.00
	28/05/02	8.80	2.40	0.00	2.40	3.91
	29/05/02	3.40	2.62	0.00	2.62	0.78
	30/05/02	3.20	3.18	0.00	3.18	0.02
	31/05/02	0.00	2.62	2.62	2.62	0.00
wed	01/06/02	1.00	3.10	4.73	3.10	0.00
	02/06/02	7.80	2.66	0.00	2.66	0.42
	03/06/02	4.20	2.90	0.00	2.90	1.30
	04/06/02	1.60	2.17	0.57	2.17	0.00
	05/06/02	0.00	3.30	3.87	3.30	0.00
	06/06/02	0.00	2.85	6.72	2.85	0.00
	07/06/02	4.00	2.61	5.34	2.61	0.00
wed	08/06/02	1.60	1.83	5.56	1.83	0.00
	09/06/02	9.80	2.55	0.00	2.55	1.69
	10/06/02	6.20	2.82	0.00	2.82	3.38
	11/06/02	1.00	2.80	1.80	2.80	0.00
	13/06/02	3.40	2.11	2.91	2.11	0.00
	14/06/02	4.20	2.78	1.48	2.78	0.00
wed	15/06/02	0.00	2.31	3.79	2.31	0.00
	16/06/02	7.40	1.88	0.00	1.88	1.73
	17/06/02	0.20	3.09	2.89	3.09	0.00
	18/06/02	0.00	2.84	5.73	2.84	0.00
	19/06/02	0.40	2.83	8.16	2.83	0.00
	20/06/02	0.40	2.86	10.63	2.86	0.00
	21/06/02	2.00	3.40	12.02	3.40	0.00
wed	22/06/02	2.20	2.84	12.66	2.84	0.00
	23/06/02	1.80	2.84	13.71	2.84	0.00
	24/06/02	0.20	2.12	15.62	2.12	0.00
	25/06/02	0.00	2.93	18.55	2.93	0.00
	26/06/02	0.00	2.78	21.33	2.78	0.00
	27/06/02	0.00	3.07	24.40	3.07	0.00
	28/06/02	0.00	3.11	27.50	3.11	0.00
wed	29/06/02	0.60	3.03	29.93	3.03	0.00
	30/06/02	3.60	2.08	28.41	2.08	0.00
	01/07/02	0.00	2.46	30.87	2.46	0.00
	02/07/02	0.20	1.91	32.58	1.91	0.00
	03/07/02	0.60	3.34	35.33	3.34	0.00
	04/07/02	8.20	2.09	29.22	2.09	0.00
	05/07/02	2.60	2.72	29.34	2.72	0.00
wed	06/07/02	0.80	2.06	30.59	2.06	0.00
	07/07/02	2.40	2.25	30.45	2.25	0.00
	08/07/02	0.20	2.43	32.68	2.43	0.00
	09/07/02	1.80	2.69	33.56	2.69	0.00
	10/07/02	4.40	2.84	32.00	2.84	0.00
	11/07/02	14.20	2.35	20.15	2.35	0.00
	12/07/02	2.00	2.57	20.72	2.57	0.00
wed	13/07/02	0.00	3.44	24.16	3.44	0.00
	14/07/02	0.00	3.26	27.41	3.26	0.00
	15/07/02	0.00	2.23	29.65	2.23	0.00
	16/07/02	0.00	2.71	32.36	2.71	0.00
	17/07/02	0.00	2.88	35.24	2.88	0.00
	18/07/02	0.00	2.70	37.94	2.70	0.00
	19/07/02	9.00	2.41	31.35	2.41	0.00
wed	20/07/02	0.40	2.88	33.83	2.88	0.00
	21/07/02	0.00	3.14	36.97	3.14	0.00
	22/07/02	0.80	2.46	38.63	2.46	0.00
	23/07/02	2.60	2.37	38.40	2.37	0.00
	24/07/02	0.00	1.88	40.28	1.88	0.00
	25/07/02	0.00	3.00	42.94	2.66	0.00
	26/07/02	0.60	2.81	44.74	2.41	0.00
wed	27/07/02	0.00	2.90	47.17	2.42	0.00
	28/07/02	4.20	2.27	44.80	1.84	0.00
	29/07/02	3.40	2.15	43.20	1.80	0.00
	30/07/02	6.40	2.61	39.03	2.23	0.00
	31/07/02	4.00	2.26	37.29	2.26	0.00
	01/08/02	7.40	2.16	32.05	2.16	0.00
	02/08/02	8.20	1.85	25.70	1.85	0.00
wed	03/08/02	1.60	2.01	26.12	2.01	0.00
	04/08/02	1.60	2.43	26.95	2.43	0.00
	05/08/02	0.00	2.91	29.86	2.91	0.00
	06/08/02	2.80	2.22	29.28	2.22	0.00
	07/08/02	4.60	1.81	26.49	1.81	0.00
	08/08/02	11.40	1.52	16.61	1.52	0.00
	09/08/02	0.00	2.63	19.24	2.63	0.00
wed	10/08/02	0.00	2.83	22.07	2.83	0.00
	11/08/02	1.80	2.58	22.85	2.58	0.00
	12/08/02	0.00	2.63	25.48	2.63	0.00
	13/08/02	12.20	2.13	15.41	2.13	0.00
	14/08/02	0.80	1.69	16.30	1.69	0.00
	15/08/02	1.00	3.30	18.60	3.30	0.00
	16/08/02	0.00	2.84	21.44	2.84	0.00
wed	17/08/02	0.20	3.58	24.82	3.58	0.00
	18/08/02	0.00	1.86	26.69	1.86	0.00
	19/08/02	0.20	2.06	28.55	2.06	0.00
	20/08/02	1.80	2.82	29.57	2.82	0.00
	21/08/02	0.00	2.56	32.13	2.56	0.00
	22/08/02	9.60	2.05	24.58	2.05	0.00
	23/08/02	3.00	2.83	24.41	2.83	0.00
wed	24/08/02	4.60	2.08	21.89	2.08	0.00
	25/08/02	0.00	2.49	24.38	2.49	0.00
	26/08/02	0.00	2.81	27.19	2.81	0.00
	27/08/02	1.80	1.83	27.22	1.83	0.00
	28/08/02	5.40	2.12	23.93	2.12	0.00
	29/08/02	0.20	2.48	26.21	2.48	0.00
	30/08/02	1.00	2.23	27.45	2.23	0.00
wed	31/08/02	0.00	2.04	29.49	2.04	0.00
	01/09/02	0.00	2.90	32.39	2.90	0.00
	02/09/02	0.00	2.55	34.94	2.55	0.00
	03/09/02	0.00	1.99	36.93	1.99	0.00
	04/09/02	0.00	1.95	38.88	1.95	0.00
	05/09/02	0.20	1.93	40.61	1.93	0.00
	06/09/02	1.20	1.86	41.05	1.64	0.00
wed	07/09/02	4.20	2.26	38.84	1.98	0.00
	08/09/02	0.40	1.70	40.14	1.70	0.00
	09/09/02	1.60	1.82	40.15	1.61	0.00
	10/09/02	0.00	2.39	42.27	2.12	0.00
	11/09/02	0.00	2.57	44.49	2.22	0.00
	12/09/02	0.00	2.25	46.37	1.89	0.00
	13/09/02	0.20	2.27	48.03	1.86	0.00
wed	14/09/02	0.20	1.91	49.36	1.52	0.00
	15/09/02	0.00	1.75	50.73	1.38	0.00
	16/09/02	0.00	1.11	51.58	0.85	0.00
	17/09/02	0.00	1.14	52.45	0.87	0.00
	18/09/02	0.00	1.75	53.76	1.31	0.00
	19/09/02	0.00	1.32	54.73	0.97	0.00
	20/09/02	0.00	1.45	55.79	1.06	0.00

Results of Evapotranspitation and Effelctive Rainfall Calculations for Site 1 using the Penman Method

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
wed	21/09/02	0.00	1.59	56.92	1.13	0.00
	22/09/02	0.00	1.18	57.75	0.83	0.00
	23/09/02	0.00	1.63	58.87	1.13	0.00
	24/09/02	0.20	1.32	59.57	0.90	0.00
	25/09/02	0.00	1.58	60.64	1.06	0.00
	26/09/02	0.00	1.41	61.57	0.93	0.00
	27/09/02	0.00	0.87	62.13	0.57	0.00
wed	28/09/02	0.00	1.33	62.99	0.85	0.00
	29/09/02	0.00	1.93	64.21	1.22	0.00
	30/09/02	8.40	1.49	56.73	0.92	0.00
	01/10/02	0.80	1.35	56.88	0.95	0.00
	02/10/02	7.60	1.71	50.48	1.20	0.00
	03/10/02	0.20	1.57	51.49	1.22	0.00
	04/10/02	0.00	1.68	52.78	1.28	0.00
wed	05/10/02	0.00	1.58	53.95	1.18	0.00
	06/10/02	0.20	0.90	54.41	0.66	0.00
	07/10/02	0.00	1.24	55.31	0.90	0.00
	08/10/02	10.80	0.81	45.10	0.58	0.00
	09/10/02	0.80	0.76	44.93	0.64	0.00
	10/10/02	0.00	0.92	45.70	0.77	0.00
	11/10/02	32.00	0.78	14.35	0.65	0.00
wed	12/10/02	0.20	1.20	15.35	1.20	0.00
	13/10/02	5.40	0.76	10.71	0.76	0.00
	14/10/02	0.00	0.75	11.46	0.75	0.00
	15/10/02	7.40	0.87	4.93	0.87	0.00
	16/10/02	0.00	1.07	6.00	1.07	0.00
	17/10/02	3.20	0.55	3.35	0.55	0.00
	18/10/02	0.20	0.75	3.89	0.75	0.00
wed	19/10/02	0.20	0.46	4.15	0.46	0.00
	20/10/02	21.20	0.77	0.00	0.77	16.28
	21/10/02	17.40	0.82	0.00	0.82	16.58
	22/10/02	0.80	0.99	0.19	0.99	0.00
	23/10/02	0.40	0.88	0.67	0.88	0.00
	24/10/02	1.60	1.15	0.22	1.15	0.00
	25/10/02	4.80	0.92	0.00	0.92	3.66
wed	26/10/02	6.40	1.26	0.00	1.26	5.14
	27/10/02	2.80	1.47	0.00	1.47	1.33
	28/10/02	0.80	0.82	0.02	0.82	0.00
	29/10/02	17.00	0.43	0.00	0.43	16.55
	30/10/02	0.20	0.50	0.30	0.50	0.00
l	31/10/02	2.40	0.89	0.00	0.89	1.41
	01/11/02	3.60	1.05	0.00	1.05	2.55
wed	02/11/02	11.00	1.59	0.00	1.59	9.41
	03/11/02	6.00	0.57	0.00	0.57	5.43
	04/11/02	0.00	0.95	0.95	0.95	0.00
	05/11/02	0.80	1.05	1.20	1.05	0.00
	06/11/02	4.40	1.06	0.00	1.06	2.14
	07/11/02	0.20	0.67	0.47	0.67	0.00
	08/11/02	13.80	1.07	0.00	1.07	12.26
wed	09/11/02	7.20	0.48	0.00	0.48	6.72
	10/11/02	4.40	0.63	0.00	0.63	3.77
	11/11/02	2.00	0.56	0.00	0.56	1.44
	12/11/02	3.20	0.73	0.00	0.73	2.47
	13/11/02	1.20	0.56	0.00	0.56	0.64
	14/11/02	15.20	0.41	0.00	0.41	14.79
	15/11/02	8.00	0.31	0.00	0.31	7.69
wed	16/11/02	15.40	0.33	0.00	0.33	15.07
	17/11/02	1.60	0.32	0.00	0.32	1.28
	18/11/02	0.40	0.99	0.59	0.99	0.00
	19/11/02	0.60	0.51	0.51	0.51	0.00
	20/11/02	0.40	0.75	0.86	0.75	0.00
	21/11/02	0.60	0.60	0.86	0.60	0.00
	22/11/02	2.40	0.73	0.00	0.73	0.81
wed	23/11/02	1.00	0.62	0.00	0.62	0.38
	24/11/02	7.00	0.57	0.00	0.57	6.43
	25/11/02	5.00	0.52	0.00	0.52	4.48
	26/11/02	1.20	0.62	0.00	0.62	0.58
	27/11/02	38.00	1.02	0.00	1.02	36.98
	28/11/02	1.00	0.40	0.00	0.40	0.60
	29/11/02	0.20	0.23	0.03	0.23	0.00
wed	30/11/02	7.60	0.71	0.00	0.71	6.86
	01/12/02	8.00	0.48	0.00	0.48	7.52
	02/12/02	2.20	0.29	0.00	0.29	1.91
	03/12/02	2.80	0.43	0.00	0.43	2.37
hydrol	04/12/02	0.00	0.56	0.56	0.56	0.00
	05/12/02	0.20	0.36	0.72	0.36	0.00
	06/12/02	0.20	-0.02	0.50	-0.02	0.00
wed	07/12/02	0.60	0.18	0.08	0.18	0.00
	08/12/02	0.00	0.18	0.26	0.18	0.00
	09/12/02	0.00	0.23	0.49	0.23	0.00
	10/12/02	0.00	0.25	0.74	0.25	0.00
	11/12/02	0.00	0.20	0.95	0.20	0.00
	12/12/02	7.40	0.16	0.00	0.16	6.29
	13/12/02	0.80	-0.15	0.00	-0.15	0.95
wed	14/12/02	0.20	0.35	0.15	0.35	0.00
	15/12/02	3.00	0.27	0.00	0.27	2.58
	16/12/02	0.80	0.20	0.00	0.20	0.60
	17/12/02	0.20	0.07	0.00	0.07	0.13
	18/12/02	0.00	0.45	0.45	0.45	0.00
	19/12/02	0.00	0.51	0.96	0.51	0.00
	20/12/02	2.80	0.22	0.00	0.22	1.62
wed	21/12/02	6.60	0.43	0.00	0.43	6.17
	22/12/02	0.60	0.32	0.00	0.32	0.28
	23/12/02	4.60	0.75	0.00	0.75	3.85
	24/12/02	0.60	0.40	0.00	0.40	0.20
	25/12/02	2.80	0.30	0.00	0.30	2.50
	26/12/02	6.40	0.06	0.00	0.06	6.34
	27/12/02	13.00	0.18	0.00	0.18	12.82
wed	28/12/02	0.40	0.26	0.00	0.26	0.14
	29/12/02	20.40	0.65	0.00	0.65	19.75
	30/12/02	2.80	0.36	0.00	0.36	2.44

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	31/12/02	2.40	0.31	0.00	0.31	2.09
	01/01/03	8.60	0.37	0.00	0.37	8.23
	02/01/03	2.40	0.53	0.00	0.53	1.87
	03/01/03	1.00	0.29	0.00	0.29	0.71
wed	04/01/03	0.00	0.02	0.02	0.02	0.00
	05/01/03	0.60	0.22	0.00	0.22	0.36
	06/01/03	0.00	0.37	0.37	0.37	0.00
	07/01/03	0.00	0.33	0.70	0.33	0.00
	08/01/03	2.40	0.23	0.00	0.23	1.46
	09/01/03	1.80	0.24	0.00	0.24	1.56
	10/01/03	0.00	0.17	0.17	0.17	0.00
wed	11/01/03	0.20	0.13	0.11	0.13	0.00
	12/01/03	0.40	0.87	0.57	0.87	0.00
	13/01/03	0.40	0.37	0.54	0.37	0.00
	14/01/03	0.20	0.25	0.59	0.25	0.00
	15/01/03	3.00	0.67	0.00	0.67	1.74
	16/01/03	0.40	1.04	0.64	1.04	0.00
	17/01/03	12.60	0.79	0.00	0.79	11.17
wed	18/01/03	7.60	0.73	0.00	0.73	6.87
	19/01/03	0.80	0.24	0.00	0.24	0.56
	20/01/03	8.20	0.51	0.00	0.51	7.69
	21/01/03	0.60	0.43	0.00	0.43	0.17
	22/01/03	0.00	0.58	0.58	0.58	0.00
	23/01/03	0.20	1.05	1.43	1.05	0.00
	24/01/03	4.20	0.52	0.00	0.52	2.26
wed	25/01/03	4.60	0.54	0.00	0.54	4.06
	26/01/03	0.00	0.68	0.68	0.68	0.00
	27/01/03	2.80	1.18	0.00	1.18	0.94
	28/01/03	3.00	0.42	0.00	0.42	2.58
	29/01/03	0.60	0.49	0.00	0.49	0.11
	30/01/03	2.00	0.73	0.00	0.73	1.27
	31/01/03	2.20	0.76	0.00	0.76	1.44
wed	01/02/03	0.20	0.51	0.31	0.51	0.00
	02/02/03	2.20	0.54	0.00	0.54	1.34
	03/02/03	0.00	0.53	0.53	0.53	0.00
	04/02/03	0.20	0.49	0.82	0.49	0.00
	05/02/03	0.20	0.67	1.29	0.67	0.00
	06/02/03	1.40	0.81	0.70	0.81	0.00
	07/02/03	0.00	0.64	1.34	0.64	0.00
wed	08/02/03	5.20	0.54	0.00	0.54	3.32
	09/02/03	0.80	0.70	0.10	0.70	0.00
	10/02/03	10.20	1.12	0.00	1.12	8.98
	11/02/03	0.00	0.45	0.45	0.45	0.00
	12/02/03	0.20	0.24	0.49	0.24	0.00
	13/02/03	0.20	0.56	0.85	0.56	0.00
	14/02/03	0.00	0.41	1.25	0.41	0.00
wed	15/02/03	0.00	0.73	1.99	0.73	0.00
	16/02/03	0.00	0.77	2.76	0.77	0.00
	17/02/03	0.00	0.55	3.31	0.55	0.00
	18/02/03	0.00	0.52	3.82	0.52	0.00
	19/02/03	0.00	0.73	4.56	0.73	0.00
	20/02/03	1.20	0.44	3.80	0.44	0.00
	21/02/03	0.20	1.05	4.65	1.05	0.00
wed	22/02/03	1.20	1.21	4.66	1.21	0.00
	23/02/03	1.20	1.39	4.85	1.39	0.00
	24/02/03	0.20	1.16	5.81	1.16	0.00
	25/02/03	0.00	0.62	6.44	0.62	0.00
	26/02/03	2.20	0.44	4.68	0.44	0.00
	27/02/03	0.80	0.91	4.79	0.91	0.00
	28/02/03	14.80	1.26	0.00	1.26	8.75
wed	01/03/03	4.80	1.02	0.00	1.02	3.78
	02/03/03	0.20	1.27	1.07	1.27	0.00
	03/03/03	0.80	1.07	1.35	1.07	0.00
	04/03/03	1.00	1.13	1.48	1.13	0.00
	05/03/03	0.20	1.39	2.67	1.39	0.00
	06/03/03	0.20	1.41	3.88	1.41	0.00
	07/03/03	7.80	0.94	0.00	0.94	2.98
wed	08/03/03	5.00	1.35	0.00	1.35	3.65
	09/03/03	2.60	0.94	0.00	0.94	1.66
	10/03/03	9.60	1.12	0.00	1.12	8.48
	11/03/03	2.40	1.44	0.00	1.44	0.96
	12/03/03	0.00	1.28	1.28	1.28	0.00
	13/03/03	0.00	1.00	2.28	1.00	0.00
	14/03/03	0.20	1.47	3.55	1.47	0.00
wed	15/03/03	0.00	1.58	5.13	1.58	0.00
	16/03/03	0.00	1.66	6.80	1.66	0.00
	17/03/03	0.00	1.42	8.21	1.42	0.00
	18/03/03	0.00	1.61	9.82	1.61	0.00
	19/03/03	0.20	1.42	11.04	1.42	0.00
	20/03/03	0.00	1.39	12.42	1.39	0.00
	21/03/03	0.00	1.57	13.99	1.57	0.00
wed	22/03/03	0.00	1.78	15.78	1.78	0.00
	23/03/03	0.00	1.89	17.67	1.89	0.00
	24/03/03	0.20	1.54	19.00	1.54	0.00
	25/03/03	0.00	1.52	20.52	1.52	0.00
	26/03/03	0.00	1.78	22.30	1.78	0.00
	27/03/03	0.00	1.67	23.97	1.67	0.00
	28/03/03	0.40	1.16	24.72	1.16	0.00
wed	29/03/03	0.20	1.85	26.38	1.85	0.00
	30/03/03	0.00	1.78	28.15	1.78	0.00
	31/03/03	0.00	2.40	30.55	2.40	0.00
	01/04/03	3.20	1.87	29.22	1.87	0.00
	02/04/03	0.40	1.95	30.77	1.95	0.00
	03/04/03	0.00	1.53	32.30	1.53	0.00
	04/04/03	0.20	2.44	34.54	2.44	0.00
wed	05/04/03	0.00	1.82	36.36	1.82	0.00
	06/04/03	0.00	1.88	38.24	1.88	0.00
	07/04/03	0.00	1.28	39.52	1.28	0.00
	08/04/03	0.00	1.88	41.41	1.88	0.00
	09/04/03	0.00	1.94	43.10	1.69	0.00
	10/04/03	0.00	1.37	44.27	1.17	0.00

Results of Evapotranspitation and Effeictive Rainfall Calculations for Site 1 using the Penman Method

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	11/04/03	0.00	1.39	45.44	1.17	0.00
wed	12/04/03	0.00	1.35	46.56	1.12	0.00
	13/04/03	1.80	1.70	46.15	1.39	0.00
	14/04/03	0.60	2.03	47.21	1.67	0.00
	15/04/03	0.00	2.69	49.39	2.18	0.00
	16/04/03	0.00	2.95	51.70	2.31	0.00
	17/04/03	0.00	3.19	54.13	2.42	0.00
	18/04/03	0.00	2.78	56.16	2.03	0.00
wed	19/04/03	0.00	2.13	57.67	1.51	0.00
	20/04/03	0.00	1.73	58.87	1.20	0.00
	21/04/03	19.20	1.31	40.55	0.89	0.00
	22/04/03	0.20	2.40	42.47	2.12	0.00
	23/04/03	0.00	2.62	44.73	2.26	0.00
	24/04/03	2.60	2.32	44.08	1.94	0.00
	25/04/03	6.40	2.46	39.75	2.07	0.00
wed	26/04/03	3.80	2.51	38.47	2.51	0.00
	27/04/03	3.20	2.39	37.65	2.39	0.00
	28/04/03	5.20	1.51	33.96	1.51	0.00
	29/04/03	2.20	2.72	34.48	2.72	0.00
	30/04/03	3.20	2.15	33.43	2.15	0.00
	01/05/03	8.80	2.09	26.72	2.09	0.00
	02/05/03	2.60	2.73	26.84	2.73	0.00
wed	03/05/03	3.20	2.06	25.70	2.06	0.00
	04/05/03	26.00	1.62	1.32	1.62	0.00
	05/05/03	5.20	2.72	0.00	2.72	1.16
	06/05/03	1.60	2.69	1.09	2.69	0.00
	07/05/03	0.20	2.50	3.39	2.50	0.00
	08/05/03	0.00	2.99	6.37	2.99	0.00
	09/05/03	1.80	2.88	7.45	2.88	0.00
wed	10/05/03	1.80	2.78	8.43	2.78	0.00
	11/05/03	1.80	2.59	9.22	2.59	0.00
	12/05/03	4.40	2.53	7.35	2.53	0.00
	13/05/03	1.20	3.24	9.39	3.24	0.00
	14/05/03	0.00	3.04	12.43	3.04	0.00
	15/05/03	3.00	1.91	11.35	1.91	0.00
	16/05/03	7.00	2.31	6.65	2.31	0.00
wed	17/05/03	15.20	2.25	0.00	2.25	6.30
	18/05/03	19.80	2.50	0.00	2.50	17.30
	19/05/03	6.80	1.96	0.00	1.96	4.84
	20/05/03	3.20	1.91	0.00	1.91	1.29
	21/05/03	7.40	2.19	0.00	2.19	5.21
	22/05/03	0.60	2.50	1.90	2.50	0.00
	23/05/03	2.20	2.58	2.28	2.58	0.00
wed	24/05/03	1.40	2.49	3.37	2.49	0.00
	25/05/03	0.40	2.14	5.11	2.14	0.00
	26/05/03	1.40	2.29	6.00	2.29	0.00
	27/05/03	1.40	2.08	6.68	2.08	0.00
	28/05/03	1.80	2.06	6.95	2.06	0.00
	29/05/03	1.20	2.89	8.64	2.89	0.00
	30/05/03	0.00	4.84	13.48	4.84	0.00
wed	31/05/03	0.00	3.01	16.49	3.01	0.00
	01/06/03	0.80	3.26	18.95	3.26	0.00
	02/06/03	0.00	3.17	22.12	3.17	0.00
	03/06/03	10.80	1.89	13.21	1.89	0.00
	04/06/03	0.20	2.60	15.61	2.60	0.00
	05/06/03	0.60	2.44	17.45	2.44	0.00
	06/06/03	0.20	3.96	21.21	3.96	0.00
wed	07/06/03	0.60	3.27	23.87	3.27	0.00
	08/06/03	6.60	3.12	20.39	3.12	0.00
	09/06/03	5.20	2.39	17.58	2.39	0.00
	10/06/03	4.80	2.98	15.75	2.98	0.00
	11/06/03	0.20	2.67	18.23	2.67	0.00
	12/06/03	0.80	3.32	20.75	3.32	0.00
	13/06/03	0.00	2.99	23.74	2.99	0.00
wed	14/06/03	0.00	3.86	27.59	3.86	0.00
	15/06/03	0.00	3.44	31.03	3.44	0.00
	16/06/03	0.00	3.12	34.16	3.12	0.00
	17/06/03	0.00	2.84	37.00	2.84	0.00
	18/06/03	0.40	2.95	39.55	2.95	0.00
	19/06/03	0.00	3.00	42.55	3.00	0.00
	20/06/03	0.00	3.44	45.51	2.96	0.00
wed	21/06/03	0.00	2.59	47.66	2.14	0.00
	22/06/03	0.00	2.66	49.79	2.14	0.00
	23/06/03	0.00	2.76	51.95	2.16	0.00
	24/06/03	0.00	2.76	54.03	2.08	0.00
	25/06/03	0.00	4.14	57.07	3.03	0.00
	26/06/03	1.00	2.83	58.04	1.98	0.00
	27/06/03	20.20	2.95	39.88	2.03	0.00
wed	28/06/03	0.00	2.53	42.41	2.53	0.00
	29/06/03	0.40	3.20	44.76	2.76	0.00
	30/06/03	16.80	2.46	30.02	2.05	0.00
	01/07/03	3.40	2.19	28.81	2.19	0.00
	02/07/03	2.00	3.38	30.19	3.38	0.00
	03/07/03	0.00	2.15	32.34	2.15	0.00
	04/07/03	0.20	1.88	34.02	1.88	0.00
wed	05/07/03	0.00	1.98	36.00	1.98	0.00
	06/07/03	0.00	2.35	38.35	2.35	0.00
	07/07/03	0.80	2.49	40.04	2.49	0.00
	08/07/03	0.20	2.99	42.49	2.66	0.00
	09/07/03	0.00	2.53	44.67	2.18	0.00
	10/07/03	2.00	3.53	45.63	2.96	0.00
	11/07/03	0.00	3.28	48.34	2.71	0.00
wed	12/07/03	0.00	3.13	50.83	2.49	0.00
	13/07/03	0.80	3.24	52.52	2.49	0.00
	14/07/03	0.00	3.11	54.85	2.33	0.00
	15/07/03	8.20	2.18	48.22	1.58	0.00
	16/07/03	1.00	2.52	49.24	2.01	0.00
	17/07/03	19.60	2.44	31.55	1.92	0.00
	18/07/03	0.40	3.49	34.64	3.49	0.00
wed	19/07/03	6.60	3.29	31.33	3.29	0.00
	20/07/03	6.60	2.87	27.60	2.87	0.00
	21/07/03	2.80	3.19	27.99	3.19	0.00
	22/07/03	0.40	2.11	29.70	2.11	0.00
	23/07/03	3.60	2.47	28.57	2.47	0.00
	24/07/03	4.00	2.24	26.81	2.24	0.00
	25/07/03	1.00	2.81	28.62	2.81	0.00
wed	26/07/03	0.00	2.89	31.51	2.89	0.00
	27/07/03	18.20	3.12	16.43	3.12	0.00
	28/07/03	8.00	2.64	11.07	2.64	0.00
	29/07/03	4.80	2.41	8.68	2.41	0.00
	30/07/03	3.80	2.99	7.87	2.99	0.00
	31/07/03	0.00	2.92	10.79	2.92	0.00

Results of Evapotranspiration and Effective Rainfall Calculations for Site 1 using Hargreaves Method

Meteorological balance

DAILY DATA

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	04/03/02	0.40	0.83	0.00	0.00	0.40
	05/03/02	0.20	1.16	0.96	1.16	0.00
	06/03/02	0.20	0.98	1.75	0.98	0.00
	07/03/02	0.00	1.05	2.79	1.05	0.00
	08/03/02	2.80	1.36	1.35	1.36	0.00
wed	09/03/02	10.40	0.87	0.00	0.87	8.18
	10/03/02	6.40	1.08	0.00	1.08	5.32
	11/03/02	0.00	1.36	1.36	1.36	0.00
	12/03/02	0.20	1.30	2.46	1.30	0.00
	13/03/02	0.60	1.05	2.91	1.05	0.00
	14/03/02	0.00	0.96	3.87	0.96	0.00
	15/03/02	0.40	0.94	4.40	0.94	0.00
wed	16/03/02	0.40	1.44	5.44	1.44	0.00
	17/03/02	1.40	1.03	5.07	1.03	0.00
	18/03/02	1.60	1.19	4.66	1.19	0.00
	19/03/02	0.20	1.32	5.78	1.32	0.00
	20/03/02	2.40	1.25	4.63	1.25	0.00
	21/03/02	0.40	1.77	6.00	1.77	0.00
	22/03/02	0.00	1.59	7.59	1.59	0.00
wed	23/03/02	0.00	1.00	8.59	1.00	0.00
	24/03/02	0.20	0.84	9.23	0.84	0.00
	25/03/02	0.60	1.78	10.40	1.78	0.00
	26/03/02	0.20	2.00	12.21	2.00	0.00
	27/03/02	0.00	1.84	14.05	1.84	0.00
	28/03/02	0.00	2.05	16.09	2.05	0.00
	29/03/02	0.20	2.32	18.22	2.32	0.00
wed	30/03/02	4.40	1.95	15.77	1.95	0.00
	31/03/02	1.00	1.55	16.32	1.55	0.00
	01/04/02	3.60	1.67	14.39	1.67	0.00
	02/04/02	2.80	1.53	13.12	1.53	0.00
	03/04/02	3.80	2.13	11.44	2.13	0.00
	04/04/02	0.00	2.10	13.54	2.10	0.00
	05/04/02	0.00	1.84	15.37	1.84	0.00
wed	06/04/02	0.00	1.49	16.86	1.49	0.00
	07/04/02	0.00	2.20	19.06	2.20	0.00
	08/04/02	0.20	2.52	21.38	2.52	0.00
	09/04/02	0.00	2.34	23.72	2.34	0.00
	10/04/02	0.00	2.00	25.71	2.00	0.00
	11/04/02	0.20	2.23	27.74	2.23	0.00
	12/04/02	0.40	1.96	29.30	1.96	0.00
wed	13/04/02	0.20	2.35	31.45	2.35	0.00
	14/04/02	1.00	1.70	32.15	1.70	0.00
	15/04/02	0.00	2.49	34.64	2.49	0.00
	16/04/02	0.40	2.13	36.37	2.13	0.00
	17/04/02	36.60	1.50	1.27	1.50	0.00
	18/04/02	1.60	2.37	2.04	2.37	0.00
	19/04/02	0.60	2.73	4.16	2.73	0.00
wed	20/04/02	1.60	1.59	4.15	1.59	0.00
	21/04/02	10.20	1.35	0.00	1.35	4.70
	22/04/02	0.00	2.38	2.38	2.38	0.00
	23/04/02	0.00	3.06	5.44	3.06	0.00
	24/04/02	0.80	2.42	7.06	2.42	0.00
	25/04/02	1.80	2.44	7.69	2.44	0.00
	26/04/02	9.40	1.92	0.22	1.92	0.00
wed	27/04/02	9.80	1.55	0.00	1.55	8.03
	28/04/02	9.40	1.72	0.00	1.72	7.68
	29/04/02	1.40	2.19	0.79	2.19	0.00
	30/04/02	5.40	2.13	0.00	2.13	2.48
	01/05/02	4.00	2.32	0.00	2.32	1.68
	02/05/02	2.80	2.62	0.00	2.62	0.18
	03/05/02	0.40	2.85	2.45	2.85	0.00
wed	04/05/02	0.00	3.49	5.94	3.49	0.00
	05/05/02	0.00	3.44	9.38	3.44	0.00
	06/05/02	0.00	3.03	12.40	3.03	0.00
	07/05/02	1.00	3.07	14.47	3.07	0.00
	08/05/02	0.00	2.63	17.10	2.63	0.00
	09/05/02	0.00	2.86	19.96	2.86	0.00
	10/05/02	0.20	3.50	23.26	3.50	0.00
wed	11/05/02	0.00	2.64	25.91	2.64	0.00
	12/05/02	0.80	2.91	28.01	2.91	0.00
	13/05/02	5.00	2.31	25.32	2.31	0.00
	14/05/02	1.20	2.81	26.93	2.81	0.00
	15/05/02	0.00	2.80	29.72	2.80	0.00
	16/05/02	0.20	3.30	32.83	3.30	0.00
	17/05/02	29.00	2.53	6.35	2.53	0.00
wed	18/05/02	0.20	2.87	9.03	2.87	0.00
	19/05/02	3.20	2.94	8.77	2.94	0.00
	20/05/02	4.20	2.73	7.30	2.73	0.00
	21/05/02	3.00	2.34	6.64	2.34	0.00
	22/05/02	5.80	3.03	3.87	3.03	0.00
	23/05/02	5.60	2.69	0.95	2.69	0.00
	24/05/02	6.80	2.11	0.00	2.11	3.74
wed	25/05/02	3.40	2.78	0.00	2.78	0.62
	26/05/02	0.40	3.17	2.77	3.17	0.00
	27/05/02	1.60	3.16	4.32	3.16	0.00
	28/05/02	8.80	2.97	0.00	2.97	1.50
	29/05/02	3.40	2.65	0.00	2.65	0.75
	30/05/02	3.20	3.05	0.00	3.05	0.15
	31/05/02	0.00	3.56	3.56	3.56	0.00
wed	01/06/02	1.00	4.05	6.61	4.05	0.00
	02/06/02	7.80	3.10	1.90	3.10	0.00
	03/06/02	4.20	2.96	0.66	2.96	0.00
	04/06/02	1.60	2.64	1.70	2.64	0.00
	05/06/02	0.00	3.64	5.34	3.64	0.00
	06/06/02	0.00	3.23	8.57	3.23	0.00
	07/06/02	4.00	2.44	7.00	2.44	0.00
wed	08/06/02	1.60	1.90	7.30	1.90	0.00
	09/06/02	9.80	2.85	0.35	2.85	0.00
	10/06/02	6.20	2.80	0.00	2.80	3.05
	11/06/02	1.00	3.22	2.22	3.22	0.00
	12/06/02	0.20	3.50	5.52	3.50	0.00
	13/06/02	3.40	2.55	4.67	2.55	0.00
	14/06/02	4.20	3.16	3.63	3.16	0.00
wed	15/06/02	0.00	2.86	6.48	2.86	0.00
	16/06/02	7.40	2.49	1.58	2.49	0.00
	17/06/02	0.20	3.24	4.62	3.24	0.00
	18/06/02	0.00	3.11	7.73	3.11	0.00
	19/06/02	0.40	3.45	10.77	3.45	0.00
	20/06/02	0.40	3.84	14.22	3.84	0.00
	21/06/02	2.00	3.98	16.20	3.98	0.00
wed	22/06/02	2.20	3.30	17.29	3.30	0.00
	23/06/02	1.80	3.48	18.97	3.48	0.00
	24/06/02	0.20	2.88	21.65	2.88	0.00
	25/06/02	0.00	3.44	25.10	3.44	0.00
	26/06/02	0.00	3.32	28.42	3.32	0.00
	27/06/02	0.00	3.35	31.77	3.35	0.00
	28/06/02	0.00	3.79	35.56	3.79	0.00
wed	29/06/02	0.60	3.92	38.88	3.92	0.00
	30/06/02	3.60	1.76	37.04	1.76	0.00
	01/07/02	0.00	2.82	39.86	2.82	0.00
	02/07/02	0.20	2.62	42.29	2.62	0.00
	03/07/02	0.60	3.63	44.82	3.14	0.00
	04/07/02	8.20	3.15	39.25	2.63	0.00
	05/07/02	2.60	3.34	39.99	3.34	0.00
wed	06/07/02	0.80	3.16	42.35	3.16	0.00
	07/07/02	2.40	3.10	42.63	2.68	0.00
	08/07/02	0.20	3.04	45.04	2.61	0.00
	09/07/02	1.80	3.49	46.15	2.91	0.00
	10/07/02	4.40	3.22	44.39	2.64	0.00
	11/07/02	14.20	2.84	32.58	2.39	0.00
	12/07/02	2.00	3.57	34.14	3.57	0.00
wed	13/07/02	0.00	4.16	38.31	4.16	0.00
	14/07/02	0.00	3.97	42.28	3.97	0.00
	15/07/02	0.00	3.46	45.27	2.99	0.00
	16/07/02	0.00	2.31	47.19	1.92	0.00
	17/07/02	0.00	3.26	49.83	2.64	0.00
	18/07/02	0.00	4.16	53.08	3.25	0.00
	19/07/02	9.00	2.95	46.27	2.19	0.00
wed	20/07/02	0.40	3.11	48.42	2.55	0.00
	21/07/02	0.00	3.85	51.48	3.06	0.00
	22/07/02	0.80	3.35	53.23	2.55	0.00
	23/07/02	2.60	2.72	52.65	2.02	0.00
	24/07/02	0.00	2.53	54.54	1.89	0.00
	25/07/02	0.00	3.49	57.08	2.54	0.00
	26/07/02	0.60	3.19	58.71	2.23	0.00
wed	27/07/02	0.00	3.46	61.07	2.36	0.00
	28/07/02	4.20	2.73	58.66	1.79	0.00
	29/07/02	3.40	2.80	57.16	1.91	0.00
	30/07/02	6.40	2.55	52.54	1.78	0.00
	31/07/02	4.00	2.48	50.40	1.86	0.00
	01/08/02	7.40	2.83	45.19	2.19	0.00
	02/08/02	8.20	1.30	38.07	1.08	0.00
wed	03/08/02	1.60	2.36	38.82	2.36	0.00
	04/08/02	1.60	3.88	41.11	3.88	0.00
	05/08/02	0.00	4.61	45.14	4.04	0.00
	06/08/02	2.80	3.39	45.16	2.82	0.00
	07/08/02	4.60	2.25	42.43	1.87	0.00
	08/08/02	11.40	2.06	32.81	1.78	0.00
	09/08/02	0.00	2.74	35.54	2.74	0.00
wed	10/08/02	0.00	3.15	38.69	3.15	0.00
	11/08/02	1.80	2.98	39.87	2.98	0.00
	12/08/02	0.00	3.54	43.41	3.54	0.00
	13/08/02	12.20	2.80	33.42	2.21	0.00
	14/08/02	0.80	1.77	34.39	1.77	0.00
	15/08/02	1.00	3.27	36.66	3.27	0.00
	16/08/02	0.00	3.39	40.05	3.39	0.00
wed	17/08/02	0.20	3.22	42.72	2.86	0.00
	18/08/02	0.00	2.63	44.98	2.26	0.00
	19/08/02	0.20	2.53	46.88	2.11	0.00
	20/08/02	1.80	2.78	47.34	2.26	0.00
	21/08/02	0.00	3.75	50.37	3.03	0.00
	22/08/02	9.60	3.35	43.36	2.59	0.00
	23/08/02	3.00	2.76	42.71	2.35	0.00
wed	24/08/02	4.60	2.05	39.88	1.76	0.00
	25/08/02	0.00	3.00	42.88	3.00	0.00
	26/08/02	0.00	3.33	45.73	2.86	0.00
	27/08/02	1.80	3.19	46.57	2.63	0.00
	28/08/02	5.40	2.24	43.00	1.83	0.00
	29/08/02	0.20	2.29	44.75	1.96	0.00
	30/08/02	1.00	2.17	45.57	1.81	0.00
wed	31/08/02	0.00	2.54	47.67	2.10	0.00
	01/09/02	0.00	3.16	50.21	2.54	0.00
	02/09/02	0.00	3.03	52.56	2.35	0.00
	03/09/02	0.00	3.22	54.97	2.41	0.00
	04/09/02	0.00	2.42	56.72	1.75	0.00
	05/09/02	0.20	2.13	58.02	1.50	0.00
	06/09/02	1.20	2.05	58.23	1.41	0.00
wed	07/09/02	4.20	2.00	55.40	1.38	0.00
	08/09/02	0.40	1.77	56.27	1.27	0.00
	09/09/02	1.60	2.43	56.39	1.72	0.00
	10/09/02	0.00	2.64	58.26	1.87	0.00
	11/09/02	0.00	2.34	59.87	1.60	0.00
	12/09/02	0.00	2.54	61.56	1.70	0.00
	13/09/02	0.20	2.58	63.04	1.68	0.00
wed	14/09/02	0.20	2.32	64.31	1.47	0.00
	15/09/02	0.00	2.55	65.88	1.58	0.00
	16/09/02	0.00	1.43	66.75	0.86	0.00
	17/09/02	0.00	1.78	67.80	1.05	0.00
	18/09/02	0.00	1.76	68.82	1.02	0.00
	19/09/02	0.00	2.15	70.04	1.22	0.00

Results of Evapotranspiration and Effective Rainfall Calculations for Site 1 using Hargreaves Method

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d		DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	20/09/02	0.00	2.39	71.37	1.33	0.00		30/12/02	2.80	0.28	0.00	0.28	2.52
wed	21/09/02	0.00	2.35	72.64	1.27	0.00		31/12/02	2.40	0.22	0.00	0.22	2.18
	22/09/02	0.00	1.91	73.64	1.01	0.00		01/01/03	8.60	0.26	0.00	0.26	8.34
	23/09/02	0.00	2.09	74.72	1.08	0.00		02/01/03	2.40	0.32	0.00	0.32	2.08
	24/09/02	0.20	2.20	75.63	1.11	0.00		03/01/03	1.00	0.23	0.00	0.23	0.77
	25/09/02	0.00	2.14	76.69	1.06	0.00	wed	04/01/03	0.00	0.30	0.30	0.30	0.00
	26/09/02	0.00	1.51	77.42	0.73	0.00		05/01/03	0.60	0.35	0.05	0.35	0.00
	27/09/02	0.00	1.63	78.19	0.77	0.00		06/01/03	0.00	0.33	0.38	0.33	0.00
wed	28/09/02	0.00	1.52	78.89	0.70	0.00		07/01/03	0.00	0.19	0.57	0.19	0.00
	29/09/02	0.00	1.81	79.71	0.83	0.00		08/01/03	2.40	0.29	0.00	0.29	1.54
	30/09/02	8.40	1.41	71.94	0.63	0.00		09/01/03	1.80	0.26	0.00	0.26	1.54
	01/10/02	0.80	1.23	71.80	0.65	0.00		10/01/03	0.00	0.23	0.23	0.23	0.00
	02/10/02	7.60	1.57	65.04	0.84	0.00	wed	11/01/03	0.20	0.37	0.40	0.37	0.00
	03/10/02	0.20	1.72	65.89	1.05	0.00		12/01/03	0.40	0.42	0.42	0.42	0.00
	04/10/02	0.00	1.90	67.03	1.14	0.00		13/01/03	0.40	0.26	0.28	0.26	0.00
wed	05/10/02	0.00	1.84	68.11	1.08	0.00		14/01/03	0.20	0.18	0.26	0.18	0.00
	06/10/02	0.20	1.66	68.86	0.95	0.00		15/01/03	3.00	0.42	0.00	0.42	2.32
	07/10/02	0.00	1.39	69.65	0.79	0.00		16/01/03	0.40	0.46	0.06	0.46	0.00
	08/10/02	10.80	0.74	59.27	0.42	0.00		17/01/03	12.60	0.46	0.00	0.46	12.08
	09/10/02	0.80	0.73	58.97	0.49	0.00	wed	18/01/03	7.60	0.40	0.00	0.40	7.20
	10/10/02	0.00	1.44	59.94	0.98	0.00		19/01/03	0.80	0.40	0.00	0.40	0.40
	11/10/02	32.00	0.84	28.50	0.56	0.00		20/01/03	8.20	0.37	0.00	0.37	7.83
wed	12/10/02	0.20	1.33	29.63	1.33	0.00		21/01/03	0.60	0.40	0.00	0.40	0.20
	13/10/02	5.40	1.11	25.34	1.11	0.00		22/01/03	0.00	0.44	0.44	0.44	0.00
	14/10/02	0.00	1.17	26.51	1.17	0.00		23/01/03	0.20	0.58	0.82	0.58	0.00
	15/10/02	7.40	0.90	20.01	0.90	0.00		24/01/03	4.20	0.35	0.00	0.35	3.04
	16/10/02	0.00	1.03	21.04	1.03	0.00	wed	25/01/03	4.60	0.41	0.00	0.41	4.19
	17/10/02	3.20	1.00	18.84	1.00	0.00		26/01/03	0.00	0.58	0.58	0.58	0.00
	18/10/02	0.20	1.02	19.66	1.02	0.00		27/01/03	2.80	0.63	0.00	0.63	1.59
wed	19/10/02	0.20	1.04	20.49	1.04	0.00		28/01/03	3.00	0.30	0.00	0.30	2.70
	20/10/02	21.20	0.75	0.05	0.75	0.00		29/01/03	0.60	0.35	0.00	0.35	0.25
	21/10/02	17.40	0.92	0.00	0.92	16.43		30/01/03	2.00	0.47	0.00	0.47	1.53
	22/10/02	0.80	0.87	0.07	0.87	0.00		31/01/03	2.20	0.51	0.00	0.51	1.69
	23/10/02	0.40	0.71	0.38	0.71	0.00	wed	01/02/03	0.20	0.49	0.29	0.49	0.00
	24/10/02	1.60	0.94	0.00	0.94	0.28		02/02/03	2.20	0.40	0.00	0.40	1.51
	25/10/02	4.80	0.77	0.00	0.77	4.03		03/02/03	0.00	0.41	0.41	0.41	0.00
wed	26/10/02	6.40	0.82	0.00	0.82	5.58		04/02/03	0.20	0.45	0.66	0.45	0.00
	27/10/02	2.80	0.85	0.00	0.85	1.95		05/02/03	0.20	0.59	1.05	0.59	0.00
	28/10/02	0.80	0.74	0.00	0.74	0.06		06/02/03	1.40	0.62	0.27	0.62	0.00
	29/10/02	17.00	0.52	0.00	0.52	16.48		07/02/03	0.00	0.59	0.86	0.59	0.00
	30/10/02	0.20	0.70	0.50	0.70	0.00	wed	08/02/03	5.20	0.44	0.00	0.44	3.89
	31/10/02	2.40	0.90	0.00	0.90	1.00		09/02/03	0.60	0.68	0.08	0.68	0.00
	01/11/02	3.60	0.82	0.00	0.82	2.78		10/02/03	10.20	0.69	0.00	0.69	9.43
wed	02/11/02	11.00	0.94	0.00	0.94	10.06		11/02/03	0.00	0.84	0.84	0.84	0.00
	03/11/02	6.00	0.50	0.00	0.50	5.50		12/02/03	0.20	0.85	1.49	0.85	0.00
	04/11/02	0.00	0.68	0.68	0.68	0.00		13/02/03	0.20	0.75	2.03	0.75	0.00
	05/11/02	0.80	0.78	0.66	0.78	0.00		14/02/03	0.00	0.64	2.67	0.64	0.00
	06/11/02	4.40	0.75	0.00	0.75	2.99	wed	15/02/03	0.00	0.82	3.49	0.82	0.00
	07/11/02	0.20	0.52	0.32	0.52	0.00		16/02/03	0.00	0.57	4.06	0.57	0.00
	08/11/02	13.80	0.66	0.00	0.66	12.82		17/02/03	0.00	0.45	4.51	0.45	0.00
wed	09/11/02	7.20	0.55	0.00	0.55	6.65		18/02/03	0.00	0.42	4.93	0.42	0.00
	10/11/02	4.40	0.58	0.00	0.58	3.82		19/02/03	0.00	0.70	5.63	0.70	0.00
	11/11/02	2.00	0.45	0.00	0.45	1.55		20/02/03	1.20	0.67	5.10	0.67	0.00
	12/11/02	3.20	0.54	0.00	0.54	2.66		21/02/03	0.20	0.99	5.90	0.99	0.00
	13/11/02	1.20	0.55	0.00	0.55	0.65	wed	22/02/03	1.20	0.89	5.58	0.89	0.00
	14/11/02	15.20	0.41	0.00	0.41	14.79		23/02/03	1.20	1.02	5.40	1.02	0.00
	15/11/02	8.00	0.26	0.00	0.26	7.74		24/02/03	0.20	0.94	6.15	0.94	0.00
wed	16/11/02	15.40	0.43	0.00	0.43	14.97		25/02/03	0.00	0.59	6.74	0.59	0.00
	17/11/02	1.60	0.39	0.00	0.39	1.21		26/02/03	2.20	0.34	4.88	0.34	0.00
	18/11/02	0.40	0.52	0.12	0.52	0.00		27/02/03	0.80	0.86	4.94	0.86	0.00
	19/11/02	0.60	0.34	0.00	0.34	0.13		28/02/03	14.80	0.98	0.00	0.98	8.89
	20/11/02	0.40	0.45	0.05	0.45	0.00	wed	01/03/03	4.80	0.97	0.00	0.97	3.83
	21/11/02	0.60	0.45	0.00	0.45	0.11		02/03/03	0.20	1.26	1.06	1.26	0.00
	22/11/02	2.40	0.44	0.00	0.44	1.96		03/03/03	0.80	0.96	1.22	0.96	0.00
wed	23/11/02	1.00	0.38	0.00	0.38	0.62		04/03/03	1.00	0.98	1.19	0.98	0.00
	24/11/02	7.00	0.38	0.00	0.38	6.62		05/03/03	0.20	1.19	2.18	1.19	0.00
	25/11/02	5.00	0.36	0.00	0.36	4.64		06/03/03	0.20	1.22	3.20	1.22	0.00
	26/11/02	1.20	0.34	0.00	0.34	0.86		07/03/03	7.80	0.80	0.00	0.80	3.80
	27/11/02	38.00	0.44	0.00	0.44	37.56	wed	08/03/03	5.00	1.18	0.00	1.18	3.82
	28/11/02	1.00	0.32	0.00	0.32	0.68		09/03/03	2.60	0.86	0.00	0.86	1.74
	29/11/02	0.20	0.45	0.25	0.45	0.00		10/03/03	9.60	1.02	0.00	1.02	8.58
wed	30/11/02	7.60	0.44	0.00	0.44	6.91		11/03/03	2.40	1.21	0.00	1.21	1.19
	01/12/02	8.00	0.27	0.00	0.27	7.73		12/03/03	0.00	1.24	1.24	1.24	0.00
	02/12/02	2.20	0.26	0.00	0.26	1.94		13/03/03	0.00	1.20	2.44	1.20	0.00
	03/12/02	2.80	0.30	0.00	0.30	2.50		14/03/03	0.20	1.55	3.79	1.55	0.00
hydroL..	04/12/02	0.00	0.37	0.37	0.37	0.00	wed	15/03/03	0.00	1.60	5.39	1.60	0.00
	05/12/02	0.20	0.33	0.50	0.33	0.00		16/03/03	0.00	1.85	7.24	1.85	0.00
	06/12/02	0.20	0.34	0.64	0.34	0.00		17/03/03	0.00	2.16	9.40	2.16	0.00
wed	07/12/02	0.60	0.23	0.27	0.23	0.00		18/03/03	0.00	2.19	11.59	2.19	0.00
	08/12/02	0.00	0.16	0.43	0.16	0.00		19/03/03	0.20	1.70	13.10	1.70	0.00
	09/12/02	0.00	0.18	0.61	0.18	0.00		20/03/03	0.00	1.67	14.77	1.67	0.00
	10/12/02	0.00	0.22	0.82	0.22	0.00		21/03/03	0.00	1.91	16.68	1.91	0.00
	11/12/02	0.00	0.17	0.99	0.17	0.00	wed	22/03/03	0.00	1.82	18.50	1.82	0.00
	12/12/02	7.40	0.18	0.00	0.18	6.23		23/03/03	0.00	2.45	20.95	2.45	0.00
	13/12/02	0.80	0.29	0.00	0.29	0.51		24/03/03	0.20	2.08	22.83	2.08	0.00
wed	14/12/02	0.20	0.32	0.12	0.32	0.00		25/03/03	0.00	1.72	24.55	1.72	0.00
	15/12/02	3.00	0.21	0.00	0.21	2.67		26/03/03	0.00	2.47	27.01	2.47	0.00
	16/12/02	0.80	0.29	0.00	0.29	0.51		27/03/03	0.00	1.98	29.00	1.98	0.00
	17/12/02	0.20	0.29	0.09	0.29	0.00		28/03/03	0.40	1.85	30.45	1.85	0.00
	18/12/02	0.00	0.29	0.38	0.29	0.00	wed	29/03/03	0.20	1.95	32.20	1.95	0.00
	19/12/02	0.00	0.33	0.71	0.33	0.00		30/03/03	0.00	1.97	34.17	1.97	0.00
	20/12/02	2.80	0.24	0.00	0.24	1.85		31/03/03	0.00	2.25	36.42	2.25	0.00
wed	21/12/02	6.60	0.31	0.00	0.31	6.29		01/04/03	3.20	1.70	34.92	1.70	0.00
	22/12/02	0.60	0.25	0.00	0.25	0.35		02/04/03	0.40	1.91	36.43	1.91	0.00
	23/12/02	4.60	0.31	0.00	0.31	4.29		03/04/03	0.00	1.86	38.29	1.86	0.00
	24/12/02	0.60	0.27	0.00	0.27	0.33		04/04/03	0.20	2.53	40.62	2.53	0.00
	25/12/02	2.80	0.24	0.00	0.24	2.56	wed	05/04/03	0.00	2.17	42.53	1.91	0.00
	26/12/02	6.40	0.21	0.00	0.21	6.19		06/04/03	0.00	1.74	44.03	1.49	0.00
	27/12/02	13.00	0.18	0.00	0.18	12.82		07/04/03	0.00	1.81	45.55	1.53	0.00
wed	28/12/02	0.40	0.29	0.00	0.29	0.11		08/04/03	0.00	1.95	47.17	1.62	0.00
	29/12/02	20.40	0.39	0.00	0.39	20.01		09/04/03	0.00	2.21	48.96	1.79	0.00

Results of Evapotranspiration and Effective Rainfall Calculations for Site 1 using Hargreaves Method

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	10/04/03	0.00	1.81	50.39	1.43	0.00
	11/04/03	0.00	1.93	51.88	1.49	0.00
wed	12/04/03	0.00	1.86	53.29	1.41	0.00
	13/04/03	1.80	2.02	52.99	1.50	0.00
	14/04/03	0.60	2.41	54.18	1.79	0.00
	15/04/03	0.00	3.25	56.56	2.37	0.00
	16/04/03	0.00	3.57	59.08	2.52	0.00
	17/04/03	0.00	3.00	61.11	2.03	0.00
	18/04/03	0.00	2.51	62.75	1.64	0.00
wed	19/04/03	0.00	1.78	63.88	1.13	0.00
	20/04/03	0.00	1.74	64.97	1.09	0.00
	21/04/03	19.20	1.63	46.77	1.00	0.00
	22/04/03	0.20	2.58	48.66	2.10	0.00
	23/04/03	0.00	2.67	50.78	2.12	0.00
	24/04/03	2.60	2.33	49.97	1.79	0.00
	25/04/03	6.40	2.47	45.49	1.92	0.00
wed	26/04/03	3.80	2.41	43.68	1.99	0.00
	27/04/03	3.20	2.55	42.64	2.16	0.00
	28/04/03	5.20	1.83	39.01	1.57	0.00
	29/04/03	2.20	2.87	39.68	2.87	0.00
	30/04/03	3.20	2.39	38.87	2.39	0.00
	01/05/03	8.80	2.28	32.35	2.28	0.00
	02/05/03	2.60	2.69	32.44	2.69	0.00
wed	03/05/03	3.20	2.54	31.78	2.54	0.00
	04/05/03	26.00	1.88	7.67	1.88	0.00
	05/05/03	5.20	2.57	5.03	2.57	0.00
	06/05/03	1.60	2.96	6.40	2.96	0.00
	07/05/03	0.20	3.05	9.25	3.05	0.00
	08/05/03	0.00	2.98	12.23	2.98	0.00
	09/05/03	1.80	2.88	13.31	2.88	0.00
wed	10/05/03	1.80	3.06	14.57	3.06	0.00
	11/05/03	1.80	2.71	15.48	2.71	0.00
	12/05/03	4.40	2.42	13.50	2.42	0.00
	13/05/03	1.20	2.93	15.23	2.93	0.00
	14/05/03	0.00	3.26	18.49	3.26	0.00
	15/05/03	3.00	2.80	18.10	2.80	0.00
	16/05/03	7.00	2.68	13.77	2.68	0.00
wed	17/05/03	15.20	2.20	0.77	2.20	0.00
	18/05/03	19.80	2.68	0.00	2.68	16.34
	19/05/03	6.80	2.05	0.00	2.05	4.75
	20/05/03	3.20	2.40	0.00	2.40	0.80
	21/05/03	7.40	3.08	0.00	3.08	4.32
	22/05/03	0.60	3.30	2.70	3.30	0.00
	23/05/03	2.20	2.54	3.04	2.54	0.00
wed	24/05/03	1.40	2.44	4.08	2.44	0.00
	25/05/03	0.40	2.92	6.59	2.92	0.00
	26/05/03	1.40	3.31	8.50	3.31	0.00
	27/05/03	1.40	2.90	10.01	2.90	0.00
	28/05/03	1.80	2.74	10.95	2.74	0.00
	29/05/03	1.20	3.89	13.64	3.89	0.00
	30/05/03	0.00	5.29	18.94	5.29	0.00
wed	31/05/03	0.00	3.76	22.69	3.76	0.00
	01/06/03	0.80	3.37	25.26	3.37	0.00
	02/06/03	0.00	3.50	28.76	3.50	0.00
	03/06/03	10.80	2.52	20.48	2.52	0.00
	04/06/03	0.20	3.05	23.33	3.05	0.00
	05/06/03	0.60	3.16	25.89	3.16	0.00
	06/06/03	0.20	3.92	29.61	3.92	0.00
wed	07/06/03	0.60	3.03	32.05	3.03	0.00
	08/06/03	6.60	3.94	29.38	3.94	0.00
	09/06/03	5.20	3.13	27.32	3.13	0.00
	10/06/03	4.80	3.30	25.82	3.30	0.00
	11/06/03	0.20	3.53	29.14	3.53	0.00
	12/06/03	0.80	3.55	31.90	3.55	0.00
	13/06/03	0.00	3.78	35.68	3.78	0.00
wed	14/06/03	0.00	4.84	40.52	4.84	0.00
	15/06/03	0.00	3.91	43.97	3.45	0.00
	16/06/03	0.00	4.73	47.97	4.00	0.00
	17/06/03	0.00	3.52	50.78	2.81	0.00
	18/06/03	0.40	3.45	53.04	2.65	0.00
	19/06/03	0.00	3.55	55.67	2.64	0.00
	20/06/03	0.00	3.71	58.33	2.65	0.00
wed	21/06/03	0.00	4.03	61.09	2.76	0.00
	22/06/03	0.00	3.91	63.65	2.56	0.00
	23/06/03	0.00	3.48	65.82	2.18	0.00
	24/06/03	0.00	4.46	68.51	2.68	0.00
	25/06/03	0.00	5.09	71.42	2.91	0.00
	26/06/03	1.00	3.81	72.48	2.06	0.00
	27/06/03	20.20	3.24	53.99	1.71	0.00
wed	28/06/03	0.00	3.82	56.79	2.80	0.00
	29/06/03	0.40	4.43	59.50	3.11	0.00
	30/06/03	16.80	2.55	44.41	1.71	0.00
	01/07/03	3.40	3.28	43.76	2.76	0.00
	02/07/03	2.00	4.01	45.16	3.40	0.00
	03/07/03	0.00	2.77	47.47	2.31	0.00
	04/07/03	0.20	2.58	49.34	2.08	0.00
wed	05/07/03	0.00	2.96	51.86	2.32	0.00
	06/07/03	0.00	3.39	54.24	2.57	0.00
	07/07/03	0.80	3.11	55.71	2.27	0.00
	08/07/03	0.20	3.78	58.21	2.70	0.00
	09/07/03	0.00	3.57	60.66	2.45	0.00
	10/07/03	2.00	3.58	61.01	2.36	0.00
	11/07/03	0.00	3.46	63.28	2.27	0.00
wed	12/07/03	0.00	4.28	65.98	2.70	0.00
	13/07/03	0.80	4.74	68.02	2.85	0.00
	14/07/03	0.00	4.96	70.89	2.87	0.00
	15/07/03	8.20	3.38	64.53	1.84	0.00
	16/07/03	1.00	4.73	66.45	2.92	0.00
	17/07/03	19.60	1.97	48.02	1.17	0.00
	18/07/03	0.40	4.26	51.03	3.41	0.00
wed	19/07/03	6.60	3.21	46.88	2.46	0.00

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	20/07/03	6.60	3.31	42.97	2.69	0.00
	21/07/03	2.80	3.38	43.06	2.89	0.00
	22/07/03	0.40	3.07	45.29	2.62	0.00
	23/07/03	3.60	2.92	44.11	2.42	0.00
	24/07/03	4.00	3.12	42.74	2.63	0.00
	25/07/03	1.00	3.32	44.58	2.85	0.00
wed	26/07/03	0.00	3.39	47.42	2.84	0.00
	27/07/03	18.20	3.67	32.18	2.96	0.00
	28/07/03	8.00	3.48	27.66	3.48	0.00
	29/07/03	4.80	2.91	25.77	2.91	0.00
	30/07/03	3.80	3.25	25.22	3.25	0.00
	31/07/03	0.00	3.34	28.56	3.34	0.00

SITE 2: THE CURRAGH

Results of Evapotranspiration and Effective Rainfall Calculations for Site 2 using Penman Method

Meteorological balance DAILY DATA

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	04/03/02	0.40	0.82	0.00	0.00	0.40
	05/03/02	0.20	1.36	1.16	1.36	0.00
	06/03/02	0.20	1.16	2.12	1.16	0.00
	07/03/02	0.00	1.12	3.24	1.12	0.00
	08/03/02	2.80	1.53	1.97	1.53	0.00
wed	09/03/02	10.40	1.00	0.00	1.00	7.43
	10/03/02	6.40	1.32	0.00	1.32	5.08
	11/03/02	0.00	1.55	1.55	1.55	0.00
	12/03/02	0.20	1.03	2.38	1.03	0.00
	13/03/02	0.60	1.17	2.95	1.17	0.00
	14/03/02	0.00	1.08	4.02	1.08	0.00
	15/03/02	0.40	0.89	4.51	0.89	0.00
wed	16/03/02	0.40	1.66	5.77	1.66	0.00
	17/03/02	1.40	1.06	5.43	1.06	0.00
I	18/03/02	1.60	0.99	4.82	0.99	0.00
	19/03/02	0.20	1.12	5.74	1.12	0.00
	20/03/02	2.40	1.10	4.44	1.10	0.00
	21/03/02	0.40	1.92	5.96	1.92	0.00
	22/03/02	0.00	1.44	7.41	1.44	0.00
wed	23/03/02	0.00	0.96	8.37	0.96	0.00
	24/03/02	0.20	0.91	9.08	0.91	0.00
	25/03/02	0.60	1.53	10.01	1.53	0.00
	26/03/02	0.20	1.84	11.65	1.84	0.00
	27/03/02	0.00	1.98	13.63	1.98	0.00
	28/03/02	0.00	2.13	15.76	2.13	0.00
	29/03/02	0.20	1.85	17.41	1.85	0.00
wed	30/03/02	4.40	1.93	14.94	1.93	0.00
	31/03/02	1.00	1.59	15.53	1.59	0.00
	01/04/02	3.60	1.55	13.48	1.55	0.00
	02/04/02	2.80	1.40	12.09	1.40	0.00
	03/04/02	3.80	2.28	10.56	2.28	0.00
	04/04/02	0.00	1.86	12.42	1.86	0.00
	05/04/02	0.00	1.62	14.04	1.62	0.00
wed	06/04/02	0.00	1.84	15.88	1.84	0.00
	07/04/02	0.00	2.41	18.29	2.41	0.00
	08/04/02	0.20	1.94	20.03	1.94	0.00
	09/04/02	0.00	2.08	22.10	2.08	0.00
	10/04/02	0.00	1.77	23.87	1.77	0.00
	11/04/02	0.20	1.51	25.19	1.51	0.00
	12/04/02	0.40	1.79	26.58	1.79	0.00
wed	13/04/02	0.20	1.57	27.95	1.57	0.00
	14/04/02	1.00	2.06	29.01	2.06	0.00
	15/04/02	0.00	2.19	31.20	2.19	0.00
	16/04/02	0.40	1.95	32.75	1.95	0.00
I	17/04/02	36.60	1.26	0.00	1.26	2.60
	18/04/02	1.60	2.49	0.89	2.49	0.00
	19/04/02	0.60	2.25	2.54	2.25	0.00
wed	20/04/02	1.60	1.35	2.29	1.35	0.00
	21/04/02	10.20	1.19	0.00	1.19	6.72
	22/04/02	0.00	2.01	2.01	2.01	0.00
I	23/04/02	0.00	3.13	5.14	3.13	0.00
	24/04/02	0.80	2.12	6.46	2.12	0.00
	25/04/02	1.80	2.02	6.69	2.02	0.00
	26/04/02	9.40	2.16	0.00	2.16	0.56
wed	27/04/02	9.80	1.27	0.00	1.27	8.53
	28/04/02	9.40	1.77	0.00	1.77	7.63
	29/04/02	1.40	2.19	0.79	2.19	0.00
I	30/04/02	5.40	2.17	0.00	2.17	2.44
	01/05/02	4.00	2.25	0.00	2.25	1.75
	02/05/02	2.80	2.53	0.00	2.53	0.27
	03/05/02	0.40	2.42	2.02	2.42	0.00
wed	04/05/02	0.00	3.28	5.30	3.28	0.00
	05/05/02	0.00	2.80	8.10	2.80	0.00
	06/05/02	0.00	2.32	10.42	2.32	0.00
	07/05/02	1.00	2.10	11.53	2.10	0.00
	08/05/02	0.00	2.53	14.05	2.53	0.00
	09/05/02	0.00	2.35	16.40	2.35	0.00
	10/05/02	0.20	2.15	18.35	2.15	0.00
wed	11/05/02	0.00	2.88	21.24	2.88	0.00
	12/05/02	0.80	2.19	22.63	2.19	0.00
	13/05/02	5.00	2.29	19.92	2.29	0.00
	14/05/02	1.20	2.35	21.07	2.35	0.00
	15/05/02	0.00	2.25	23.32	2.25	0.00
	16/05/02	0.20	2.62	25.73	2.62	0.00
	17/05/02	29.00	2.19	0.00	2.19	1.08
wed	18/05/02	0.20	2.59	2.39	2.59	0.00
	19/05/02	3.20	2.66	1.85	2.66	0.00
	20/05/02	4.20	2.77	0.42	2.77	0.00
	21/05/02	3.00	1.90	0.00	1.90	0.67
	22/05/02	5.80	2.76	0.00	2.76	3.04
	23/05/02	5.60	2.18	0.00	2.18	3.42
I	24/05/02	6.80	1.76	0.00	1.76	5.04
wed	25/05/02	3.40	2.33	0.00	2.33	1.07
	26/05/02	0.40	2.19	1.79	2.19	0.00
	27/05/02	1.60	2.30	2.49	2.30	0.00
	28/05/02	8.80	2.40	0.00	2.40	3.91
	29/05/02	3.40	2.62	0.00	2.62	0.78
	30/05/02	3.20	3.18	0.00	3.18	0.02
	31/05/02	0.00	2.62	2.62	2.62	0.00
wed	01/06/02	1.00	3.10	4.73	3.10	0.00
	02/06/02	7.80	2.66	0.00	2.66	0.42
	03/06/02	4.20	2.90	0.00	2.90	1.30
	04/06/02	1.60	2.17	0.57	2.17	0.00
	05/06/02	0.00	3.30	3.87	3.30	0.00
	06/06/02	0.00	2.85	6.72	2.85	0.00
	07/06/02	4.00	2.61	5.34	2.61	0.00
wed	08/06/02	1.60	1.83	5.56	1.83	0.00
	09/06/02	9.80	2.55	0.00	2.55	1.69
	10/06/02	6.20	2.82	0.00	2.82	3.38
	11/06/02	1.00	2.80	1.80	2.80	0.00
	12/06/02	0.20	2.59	4.19	2.59	0.00
	13/06/02	3.40	2.11	2.91	2.11	0.00
	14/06/02	4.20	2.78	1.48	2.78	0.00
wed	15/06/02	0.00	2.31	3.79	2.31	0.00
	16/06/02	7.40	1.88	0.00	1.88	1.73
	17/06/02	0.20	3.09	2.89	3.09	0.00
	18/06/02	0.00	2.84	5.73	2.84	0.00
	19/06/02	0.40	2.83	8.16	2.83	0.00
	20/06/02	0.40	2.86	10.63	2.86	0.00
	21/06/02	2.00	3.40	12.02	3.40	0.00
wed	22/06/02	2.20	2.84	12.66	2.84	0.00
	23/06/02	1.80	2.84	13.71	2.84	0.00
	24/06/02	0.20	2.12	15.62	2.12	0.00
	25/06/02	0.00	2.93	18.55	2.93	0.00
	26/06/02	0.00	2.78	21.33	2.78	0.00
	27/06/02	0.00	3.07	24.40	3.07	0.00
	28/06/02	0.00	3.11	27.50	3.11	0.00
wed	29/06/02	0.60	3.03	29.93	3.03	0.00
	30/06/02	3.60	2.08	28.41	2.08	0.00
	01/07/02	0.00	2.46	30.87	2.46	0.00
	02/07/02	0.00	1.91	32.78	1.91	0.00
	03/07/02	0.40	3.34	35.73	3.34	0.00
	04/07/02	8.40	2.09	29.42	2.09	0.00
	05/07/02	2.60	2.72	29.54	2.72	0.00
wed	06/07/02	0.80	2.06	30.79	2.06	0.00
	07/07/02	3.20	2.25	29.85	2.25	0.00
	08/07/02	2.60	2.43	29.68	2.43	0.00
	09/07/02	3.80	2.69	28.56	2.69	0.00
	10/07/02	4.20	2.84	27.20	2.84	0.00
	11/07/02	20.20	2.35	9.35	2.35	0.00
	12/07/02	6.60	2.57	5.32	2.57	0.00
wed	13/07/02	0.00	3.44	8.76	3.44	0.00
	14/07/02	0.00	3.26	12.01	3.26	0.00
	15/07/02	0.00	2.23	14.25	2.23	0.00
	16/07/02	0.00	2.71	16.96	2.71	0.00
	17/07/02	0.00	2.88	19.84	2.88	0.00
	18/07/02	0.00	2.70	22.54	2.70	0.00
	19/07/02	6.00	2.41	18.95	2.41	0.00
wed	20/07/02	0.20	2.88	21.63	2.88	0.00
	21/07/02	0.80	3.14	23.97	3.14	0.00
	22/07/02	2.60	2.46	23.83	2.46	0.00
	23/07/02	0.00	2.37	26.20	2.37	0.00
	24/07/02	0.00	1.88	28.08	1.88	0.00
	25/07/02	0.00	3.00	31.08	3.00	0.00
	26/07/02	0.00	2.81	33.89	2.81	0.00
wed	27/07/02	0.00	2.90	36.79	2.90	0.00
	28/07/02	6.40	2.27	32.66	2.27	0.00
	29/07/02	4.60	2.15	30.21	2.15	0.00
	30/07/02	4.40	2.61	28.42	2.61	0.00
	31/07/02	3.80	2.26	26.88	2.26	0.00
	01/08/02	9.80	2.16	19.24	2.16	0.00
	02/08/02	7.60	1.85	13.50	1.85	0.00
wed	03/08/02	2.80	2.01	12.71	2.01	0.00
	04/08/02	0.80	2.43	14.34	2.43	0.00
	05/08/02	0.00	2.91	17.25	2.91	0.00
	06/08/02	3.80	2.22	15.67	2.22	0.00
	07/08/02	2.80	1.81	14.68	1.81	0.00
	08/08/02	8.40	1.52	7.80	1.52	0.00
	09/08/02	0.00	2.63	10.43	2.63	0.00
wed	10/08/02	0.00	2.83	13.26	2.83	0.00
	11/08/02	2.20	2.58	13.64	2.58	0.00
	12/08/02	0.00	2.63	16.27	2.63	0.00
	13/08/02	12.60	2.13	5.81	2.13	0.00
	14/08/02	0.00	1.69	7.50	1.69	0.00
	15/08/02	1.00	3.30	9.79	3.30	0.00
	16/08/02	0.00	2.84	12.64	2.84	0.00
wed	17/08/02	2.00	3.58	14.22	3.58	0.00
	18/08/02	0.00	1.86	16.08	1.86	0.00
	19/08/02	0.00	2.06	18.14	2.06	0.00
	20/08/02	0.60	2.82	20.36	2.82	0.00
	21/08/02	0.00	2.56	22.92	2.56	0.00
	22/08/02	0.00	2.05	24.97	2.05	0.00
	23/08/02	0.00	2.83	27.80	2.83	0.00
wed	24/08/02	3.20	2.08	26.68	2.08	0.00
	25/08/02	0.00	2.49	29.17	2.49	0.00
	26/08/02	0.20	2.81	31.78	2.81	0.00
	27/08/02	0.60	1.83	33.01	1.83	0.00
	28/08/02	4.00	2.12	31.12	2.12	0.00
	29/08/02	0.00	2.48	33.61	2.48	0.00
	30/08/02	3.20	2.23	32.64	2.23	0.00
wed	31/08/02	0.00	2.04	34.68	2.04	0.00
	01/09/02	0.00	2.90	37.58	2.90	0.00
	02/09/02	0.00	2.55	40.14	2.55	0.00
	03/09/02	0.00	1.99	41.90	1.76	0.00
	04/09/02	0.00	1.95	43.59	1.69	0.00
	05/09/02	0.00	1.93	45.23	1.64	0.00
	06/09/02	0.00	1.86	46.78	1.55	0.00
wed	07/09/02	0.00	2.26	48.62	1.84	0.00
	08/09/02	1.60	1.70	48.36	1.35	0.00
	09/09/02	0.20	1.82	49.61	1.45	0.00
	10/09/02	0.00	2.39	51.48	1.87	0.00
	11/09/02	0.00	2.57	53.44	1.96	0.00
	12/09/02	0.00	2.25	55.10	1.66	0.00
	13/09/02	0.00	2.27	56.74	1.64	0.00
wed	14/09/02	0.20	1.91	57.88	1.34	0.00
	15/09/02	0.20	1.75	58.89	1.21	0.00
	16/09/02	0.00	1.11	59.64	0.75	0.00
	17/09/02	0.00	1.14	60.40	0.76	0.00
	18/09/02	0.00	1.75	61.56	1.16	0.00
	19/09/02	0.00	1.32	62.41	0.86	0.00

Results of Evapotranspiration and Effective Rainfall Calculations for Site 2 using Penman Method

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	20/09/02	0.00	1.45	63.35	0.93	0.00
wed	21/09/02	0.00	1.59	64.34	1.00	0.00
	22/09/02	0.00	1.18	65.07	0.73	0.00
	23/09/02	0.00	1.63	66.07	0.99	0.00
	24/09/02	0.00	1.32	66.86	0.79	0.00
	25/09/02	0.00	1.58	67.80	0.94	0.00
	26/09/02	0.00	1.41	68.61	0.82	0.00
	27/09/02	0.00	0.87	69.11	0.50	0.00
wed	28/09/02	0.00	1.33	69.86	0.75	0.00
	29/09/02	0.00	1.93	70.94	1.07	0.00
	30/09/02	10.00	1.49	61.75	0.81	0.00
	01/10/02	1.00	1.35	61.62	0.87	0.00
	02/10/02	8.20	1.71	54.53	1.11	0.00
	03/10/02	0.40	1.57	55.28	1.15	0.00
	04/10/02	0.00	1.68	56.49	1.21	0.00
wed	05/10/02	0.20	1.58	57.40	1.11	0.00
	06/10/02	0.20	0.90	57.83	0.63	0.00
	07/10/02	0.00	1.24	58.68	0.85	0.00
	08/10/02	8.40	0.81	50.83	0.55	0.00
	09/10/02	4.40	0.76	47.02	0.59	0.00
	10/10/02	0.00	0.92	47.77	0.75	0.00
	11/10/02	29.60	0.78	18.80	0.63	0.00
wed	12/10/02	0.20	1.20	19.80	1.20	0.00
	13/10/02	4.40	0.76	16.16	0.76	0.00
	14/10/02	0.20	0.75	16.71	0.75	0.00
	15/10/02	10.00	0.87	7.58	0.87	0.00
	16/10/02	0.00	1.07	8.64	1.07	0.00
	17/10/02	3.00	0.55	6.19	0.55	0.00
	18/10/02	0.20	0.75	6.74	0.75	0.00
wed	19/10/02	0.00	0.46	7.20	0.46	0.00
	20/10/02	32.00	0.77	0.00	0.77	24.03
	21/10/02	18.20	0.82	0.00	0.82	17.38
	22/10/02	0.80	0.99	0.19	0.99	0.00
	23/10/02	0.40	0.88	0.67	0.88	0.00
	24/10/02	1.80	1.15	0.02	1.15	0.00
	25/10/02	6.80	0.92	0.00	0.92	5.86
wed	26/10/02	7.20	1.26	0.00	1.26	5.94
	27/10/02	3.60	1.47	0.00	1.47	2.13
	28/10/02	1.40	0.82	0.00	0.82	0.58
	29/10/02	23.80	0.43	0.00	0.43	23.37
	30/10/02	0.00	0.50	0.50	0.50	0.00
I	31/10/02	0.20	0.69	0.99	0.69	0.00
	01/11/02	2.20	1.05	0.00	1.05	0.16
wed	02/11/02	11.00	1.59	0.00	1.59	9.41
	03/11/02	6.80	0.57	0.00	0.57	6.23
	04/11/02	0.40	0.95	0.55	0.95	0.00
	05/11/02	1.00	1.05	0.60	1.05	0.00
	06/11/02	3.80	1.06	0.00	1.06	2.14
	07/11/02	0.00	0.67	0.67	0.67	0.00
	08/11/02	14.20	1.07	0.00	1.07	12.46
wed	09/11/02	9.00	0.48	0.00	0.48	8.52
	10/11/02	4.60	0.63	0.00	0.63	3.97
	11/11/02	0.40	0.56	0.16	0.56	0.00
	12/11/02	0.60	0.73	0.29	0.73	0.00
	13/11/02	0.60	0.56	0.26	0.56	0.00
	14/11/02	26.40	0.41	0.00	0.41	25.74
	15/11/02	20.20	0.31	0.00	0.31	19.89
wed	16/11/02	0.00	0.33	0.33	0.33	0.00
	17/11/02	0.00	0.32	0.65	0.32	0.00
	18/11/02	5.60	0.99	0.00	0.99	3.95
	19/11/02	5.20	0.51	0.00	0.51	4.69
	20/11/02	1.00	0.75	0.00	0.75	0.25
	21/11/02	7.60	0.60	0.00	0.60	7.00
	22/11/02	0.60	0.73	0.13	0.73	0.00
wed	23/11/02	2.20	0.62	0.00	0.62	1.45
	24/11/02	2.80	0.57	0.00	0.57	2.23
	25/11/02	1.80	0.52	0.00	0.52	1.28
	26/11/02	3.40	0.62	0.00	0.62	2.78
	27/11/02	15.60	1.02	0.00	1.02	14.58
	28/11/02	0.00	0.40	0.40	0.40	0.00
	29/11/02	0.20	0.23	0.43	0.23	0.00
wed	30/11/02	8.60	0.71	0.00	0.71	7.46
	01/12/02	7.80	0.48	0.00	0.48	7.32
	02/12/02	2.60	0.29	0.00	0.29	2.31
	03/12/02	3.60	0.43	0.00	0.43	3.17
hydroL	04/12/02	0.20	0.56	0.36	0.56	0.00
	05/12/02	0.20	0.36	0.52	0.36	0.00
	06/12/02	0.20	-0.02	0.30	-0.02	0.00
wed	07/12/02	0.60	0.18	0.00	0.18	0.12
	08/12/02	0.00	0.18	0.18	0.18	0.00
	09/12/02	0.00	0.23	0.41	0.23	0.00
	10/12/02	0.00	0.25	0.66	0.25	0.00
	11/12/02	0.00	0.20	0.86	0.20	0.00
	12/12/02	4.20	0.16	0.00	0.16	3.18
	13/12/02	0.80	-0.15	0.00	-0.15	0.95
wed	14/12/02	0.00	0.35	0.35	0.35	0.00
	15/12/02	3.20	0.27	0.00	0.27	2.58
	16/12/02	0.00	0.20	0.20	0.20	0.00
	17/12/02	0.20	0.07	0.07	0.07	0.00
	18/12/02	0.00	0.45	0.52	0.45	0.00
	19/12/02	0.00	0.51	1.03	0.51	0.00
	20/12/02	1.60	0.22	0.00	0.22	0.36
wed	21/12/02	5.60	0.43	0.00	0.43	5.17
	22/12/02	0.20	0.32	0.12	0.32	0.00
	23/12/02	3.40	0.75	0.00	0.75	2.52
	24/12/02	0.60	0.40	0.00	0.40	0.20
	25/12/02	1.40	0.30	0.00	0.30	1.10
	26/12/02	1.80	0.06	0.00	0.06	1.74
	27/12/02	9.40	0.18	0.00	0.18	9.22
wed	28/12/02	0.20	0.26	0.06	0.26	0.00
	29/12/02	24.00	0.65	0.00	0.65	23.29

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	30/12/02	2.20	0.36	0.00	0.36	1.84
	31/12/02	2.80	0.31	0.00	0.31	2.49
	01/01/03	7.00	0.37	0.00	0.37	6.63
	02/01/03	1.00	0.53	0.00	0.53	0.47
	03/01/03	1.60	0.29	0.00	0.29	1.31
wed	04/01/03	0.20	0.02	0.00	0.02	0.18
	05/01/03	0.20	0.22	0.02	0.22	0.00
	06/01/03	0.00	0.37	0.39	0.37	0.00
	07/01/03	0.00	0.33	0.72	0.33	0.00
	08/01/03	2.40	0.23	0.00	0.23	1.44
	09/01/03	2.60	0.24	0.00	0.24	2.36
	10/01/03	0.00	0.17	0.17	0.17	0.00
wed	11/01/03	0.00	0.13	0.31	0.13	0.00
	12/01/03	0.20	0.87	0.97	0.87	0.00
	13/01/03	0.40	0.37	0.94	0.37	0.00
	14/01/03	0.00	0.25	1.19	0.25	0.00
	15/01/03	0.00	0.67	1.86	0.67	0.00
	16/01/03	0.20	1.04	2.70	1.04	0.00
	17/01/03	11.40	0.79	0.00	0.79	7.91
wed	18/01/03	8.60	0.73	0.00	0.73	7.87
	19/01/03	1.40	0.24	0.00	0.24	1.16
	20/01/03	6.60	0.51	0.00	0.51	6.09
	21/01/03	1.20	0.43	0.00	0.43	0.77
	22/01/03	0.00	0.58	0.58	0.58	0.00
	23/01/03	0.20	1.05	1.43	1.05	0.00
	24/01/03	4.00	0.52	0.00	0.52	2.06
wed	25/01/03	7.60	0.54	0.00	0.54	7.06
	26/01/03	0.00	0.68	0.68	0.68	0.00
	27/01/03	1.00	1.18	0.86	1.18	0.00
	28/01/03	4.20	0.42	0.00	0.42	2.92
	29/01/03	0.40	0.49	0.09	0.49	0.00
	30/01/03	1.60	0.73	0.00	0.73	0.78
	31/01/03	2.00	0.76	0.00	0.76	1.24
wed	01/02/03	0.40	0.51	0.11	0.51	0.00
	02/02/03	2.20	0.54	0.00	0.54	1.54
	03/02/03	0.20	0.53	0.33	0.53	0.00
	04/02/03	0.80	0.49	0.02	0.49	0.00
	05/02/03	0.20	0.67	0.49	0.67	0.00
	06/02/03	2.00	0.81	0.00	0.81	0.70
	07/02/03	0.20	0.64	0.44	0.64	0.00
wed	08/02/03	4.00	0.54	0.00	0.54	3.01
	09/02/03	1.20	0.70	0.00	0.70	0.50
	10/02/03	6.60	1.12	0.00	1.12	5.48
	11/02/03	0.40	0.45	0.05	0.45	0.00
	12/02/03	0.20	0.24	0.09	0.24	0.00
	13/02/03	0.00	0.56	0.65	0.56	0.00
	14/02/03	0.00	0.41	1.05	0.41	0.00
wed	15/02/03	0.20	0.73	1.59	0.73	0.00
	16/02/03	0.00	0.77	2.36	0.77	0.00
	17/02/03	0.00	0.55	2.91	0.55	0.00
	18/02/03	0.00	0.52	3.42	0.52	0.00
	19/02/03	0.00	0.73	4.16	0.73	0.00
	20/02/03	0.80	0.44	4.00	0.44	0.00
	21/02/03	0.20	1.05	4.85	1.05	0.00
wed	22/02/03	0.00	1.21	6.06	1.21	0.00
	23/02/03	0.60	1.39	6.85	1.39	0.00
	24/02/03	0.20	1.16	7.81	1.16	0.00
	25/02/03	0.00	0.62	8.44	0.62	0.00
	26/02/03	2.20	0.44	6.68	0.44	0.00
	27/02/03	0.40	0.91	7.19	0.91	0.00
	28/02/03	16.80	1.26	0.00	1.26	8.35
wed	01/03/03	3.60	1.02	0.00	1.02	2.58
	02/03/03	2.80	1.27	0.00	1.27	1.53
	03/03/03	1.40	1.07	0.00	1.07	0.33
	04/03/03	0.80	1.13	0.33	1.13	0.00
	05/03/03	0.40	1.39	1.33	1.39	0.00
	06/03/03	0.00	1.41	2.74	1.41	0.00
	07/03/03	3.20	0.94	0.47	0.94	0.00
wed	08/03/03	8.80	1.35	0.00	1.35	6.98
	09/03/03	1.40	0.94	0.00	0.94	0.46
	10/03/03	10.80	1.12	0.00	1.12	9.68
	11/03/03	1.20	1.44	0.24	1.44	0.00
	12/03/03	0.20	1.28	1.32	1.28	0.00
	13/03/03	0.00	1.00	2.31	1.00	0.00
	14/03/03	0.20	1.47	3.58	1.47	0.00
wed	15/03/03	0.00	1.58	5.17	1.58	0.00
	16/03/03	0.00	1.66	6.83	1.66	0.00
	17/03/03	0.00	1.42	8.25	1.42	0.00
	18/03/03	0.20	1.61	9.66	1.61	0.00
	19/03/03	0.20	1.42	10.88	1.42	0.00
	20/03/03	0.00	1.39	12.26	1.39	0.00
	21/03/03	0.00	1.57	13.83	1.57	0.00
wed	22/03/03	0.00	1.78	15.62	1.78	0.00
	23/03/03	0.00	1.89	17.50	1.89	0.00
	24/03/03	0.00	1.54	19.04	1.54	0.00
	25/03/03	0.00	1.52	20.56	1.52	0.00
	26/03/03	0.00	1.78	22.34	1.78	0.00
	27/03/03	0.00	1.67	24.01	1.67	0.00
	28/03/03	1.00	1.16	24.16	1.16	0.00
wed	29/03/03	0.00	1.85	26.02	1.85	0.00
	30/03/03	0.00	1.78	27.79	1.78	0.00
	31/03/03	0.00	2.40	30.19	2.40	0.00
	01/04/03	3.40	1.87	28.66	1.87	0.00
	02/04/03	0.80	1.95	29.81	1.95	0.00
	03/04/03	0.00	1.53	31.34	1.53	0.00
	04/04/03	0.20	2.44	33.58	2.44	0.00
wed	05/04/03	0.00	1.82	35.40	1.82	0.00
	06/04/03	0.00	1.88	37.28	1.88	0.00
	07/04/03	0.00	1.28	38.56	1.28	0.00
	08/04/03	0.00	1.88	40.45	1.88	0.00
	09/04/03	0.00	1.94	42.16	1.71	0.00

Results of Evapotranspiration and Effective Rainfall Calculations for Site 2 using Penman Method

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	10/04/03	0.00	1.37	43.34	1.18	0.00
	11/04/03	0.00	1.39	44.53	1.18	0.00
wed	12/04/03	0.00	1.35	45.66	1.14	0.00
	13/04/03	1.60	1.70	45.46	1.40	0.00
	14/04/03	0.60	2.03	46.55	1.68	0.00
	15/04/03	0.00	2.69	48.74	2.20	0.00
	16/04/03	0.00	2.95	51.08	2.33	0.00
	17/04/03	0.00	3.19	53.52	2.45	0.00
	18/04/03	0.00	2.78	55.58	2.05	0.00
wed	19/04/03	0.00	2.13	57.10	1.52	0.00
	20/04/03	0.00	1.73	58.31	1.21	0.00
	21/04/03	10.00	1.31	49.20	0.90	0.00
	22/04/03	0.00	2.40	51.09	1.89	0.00
	23/04/03	0.00	2.62	53.10	2.01	0.00
	24/04/03	1.80	2.32	53.03	1.73	0.00
	25/04/03	6.40	2.46	48.46	1.83	0.00
wed	26/04/03	3.60	2.51	46.86	2.00	0.00
	27/04/03	2.00	2.39	46.80	1.94	0.00
	28/04/03	5.60	1.51	42.42	1.23	0.00
	29/04/03	0.20	2.72	44.56	2.34	0.00
	30/04/03	1.40	2.15	44.96	1.80	0.00
	01/05/03	20.60	2.09	26.11	1.74	0.00
	02/05/03	0.60	2.73	28.23	2.73	0.00
wed	03/05/03	2.20	2.06	28.09	2.06	0.00
	04/05/03	24.00	1.62	5.71	1.62	0.00
	05/05/03	4.40	2.72	4.03	2.72	0.00
	06/05/03	1.20	2.69	5.52	2.69	0.00
	07/05/03	0.20	2.50	7.82	2.50	0.00
	08/05/03	0.00	2.99	10.80	2.99	0.00
	09/05/03	1.80	2.88	11.88	2.88	0.00
wed	10/05/03	1.00	2.78	13.66	2.78	0.00
	11/05/03	1.80	2.59	14.45	2.59	0.00
	12/05/03	3.40	2.53	13.58	2.53	0.00
	13/05/03	0.20	3.24	16.62	3.24	0.00
	14/05/03	0.00	3.04	19.67	3.04	0.00
	15/05/03	3.60	1.91	17.98	1.91	0.00
	16/05/03	9.80	2.31	10.48	2.31	0.00
wed	17/05/03	5.60	2.25	7.13	2.25	0.00
	18/05/03	13.40	2.50	0.00	2.50	3.77
	19/05/03	6.80	1.96	0.00	1.96	4.84
	20/05/03	1.00	1.91	0.91	1.91	0.00
	21/05/03	7.60	2.19	0.00	2.19	4.50
	22/05/03	0.40	2.50	2.10	2.50	0.00
	23/05/03	4.60	2.58	0.08	2.58	0.00
wed	24/05/03	0.20	2.49	2.37	2.49	0.00
	25/05/03	0.00	2.14	4.51	2.14	0.00
	26/05/03	2.20	2.29	4.60	2.29	0.00
	27/05/03	1.00	2.08	5.68	2.08	0.00
	28/05/03	3.00	2.06	4.75	2.06	0.00
	29/05/03	1.60	2.89	6.04	2.89	0.00
	30/05/03	0.00	4.84	10.88	4.84	0.00
wed	31/05/03	0.00	3.01	13.89	3.01	0.00
	01/06/03	0.40	3.26	16.75	3.26	0.00
	02/06/03	0.00	3.17	19.92	3.17	0.00
	03/06/03	10.80	1.89	11.01	1.89	0.00
	04/06/03	0.20	2.60	13.41	2.60	0.00
	05/06/03	2.00	2.44	13.85	2.44	0.00
	06/06/03	0.00	3.96	17.81	3.96	0.00
wed	07/06/03	11.40	3.27	9.67	3.27	0.00
	08/06/03	1.80	3.12	10.99	3.12	0.00
	09/06/03	4.40	2.39	8.98	2.39	0.00
	10/06/03	3.00	2.98	8.95	2.98	0.00
	11/06/03	0.20	2.67	11.43	2.67	0.00
	12/06/03	0.60	3.32	14.15	3.32	0.00
	13/06/03	0.00	2.99	17.14	2.99	0.00
wed	14/06/03	0.20	3.86	20.79	3.86	0.00
	15/06/03	0.00	3.44	24.23	3.44	0.00
	16/06/03	0.20	3.12	27.16	3.12	0.00
	17/06/03	0.00	2.84	30.00	2.84	0.00
	18/06/03	0.20	2.95	32.75	2.95	0.00
	19/06/03	0.00	3.00	35.75	3.00	0.00
	20/06/03	0.00	3.44	39.19	3.44	0.00
wed	21/06/03	0.40	2.59	41.38	2.59	0.00
	22/06/03	0.00	2.66	43.71	2.33	0.00
	23/06/03	0.00	2.76	46.05	2.34	0.00
	24/06/03	0.00	2.76	48.31	2.26	0.00
	25/06/03	0.00	4.14	51.61	3.30	0.00
	26/06/03	1.20	2.83	52.56	2.15	0.00
	27/06/03	20.80	2.95	33.97	2.21	0.00
wed	28/06/03	0.00	2.53	36.50	2.53	0.00
	29/06/03	2.00	3.20	37.70	3.20	0.00
	30/06/03	24.00	2.46	16.16	2.46	0.00
	01/07/03	3.20	2.19	15.14	2.19	0.00
	02/07/03	0.20	3.38	18.33	3.38	0.00
	03/07/03	0.20	2.15	20.28	2.15	0.00
	04/07/03	0.00	1.88	22.16	1.88	0.00
wed	05/07/03	0.00	1.98	24.13	1.98	0.00
	06/07/03	0.40	2.35	26.08	2.35	0.00
	07/07/03	4.00	2.49	24.57	2.49	0.00
	08/07/03	11.60	2.99	15.96	2.99	0.00
	09/07/03	0.00	2.53	18.49	2.53	0.00
	10/07/03	1.20	3.53	20.83	3.53	0.00
	11/07/03	0.00	3.28	24.10	3.28	0.00
wed	12/07/03	0.00	3.13	27.23	3.13	0.00
	13/07/03	0.00	3.24	30.47	3.24	0.00
	14/07/03	0.40	3.11	33.18	3.11	0.00
	15/07/03	6.60	2.18	28.76	2.18	0.00
	16/07/03	0.80	2.52	30.48	2.52	0.00
	17/07/03	19.60	2.44	13.32	2.44	0.00
	18/07/03	0.40	3.49	16.41	3.49	0.00
wed	19/07/03	5.00	3.29	14.69	3.29	0.00

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	20/07/03	0.20	2.87	17.36	2.87	0.00
	21/07/03	6.40	3.19	14.15	3.19	0.00
	22/07/03	0.20	2.11	16.07	2.11	0.00
	23/07/03	3.80	2.47	14.73	2.47	0.00
	24/07/03	3.40	2.24	13.57	2.24	0.00
	25/07/03	0.20	2.81	16.18	2.81	0.00
wed	26/07/03	0.00	2.89	19.07	2.89	0.00
	27/07/03	5.00	3.12	17.20	3.12	0.00
	28/07/03	4.20	2.64	15.63	2.64	0.00
	29/07/03	2.60	2.41	15.44	2.41	0.00
	30/07/03	1.00	2.99	17.43	2.99	0.00
	31/07/03	3.40	2.92	16.96	2.92	0.00

Results of Evapotranspiration and Effective Rainfall Calculations for Site 2 using Hargreaves Method

Meteorological balance — DAILY DATA

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	04/03/02	0.40	0.83	0.00	0.00	0.40
	05/03/02	0.20	1.16	0.96	1.16	0.00
	06/03/02	0.20	0.98	1.75	0.98	0.00
	07/03/02	0.00	1.05	2.79	1.05	0.00
	08/03/02	2.80	1.36	1.35	1.36	0.00
wed	09/03/02	10.40	0.87	0.00	0.87	8.18
	10/03/02	6.40	1.08	0.00	1.08	5.32
	11/03/02	0.00	1.36	1.36	1.36	0.00
	12/03/02	0.20	1.30	2.46	1.30	0.00
	13/03/02	0.60	1.05	2.91	1.05	0.00
	14/03/02	0.00	0.96	3.87	0.96	0.00
	15/03/02	0.40	0.94	4.40	0.94	0.00
wed	16/03/02	0.40	1.44	5.44	1.44	0.00
	17/03/02	1.40	1.03	5.07	1.03	0.00
l	18/03/02	1.60	1.19	4.66	1.19	0.00
	19/03/02	0.20	1.32	5.78	1.32	0.00
	20/03/02	2.40	1.25	4.63	1.25	0.00
	21/03/02	0.40	1.77	6.00	1.77	0.00
	22/03/02	0.00	1.59	7.59	1.59	0.00
wed	23/03/02	0.00	1.00	8.59	1.00	0.00
	24/03/02	0.20	0.84	9.23	0.84	0.00
	25/03/02	0.60	1.78	10.40	1.78	0.00
	26/03/02	0.20	2.00	12.21	2.00	0.00
	27/03/02	0.00	1.84	14.05	1.84	0.00
	28/03/02	0.00	2.05	16.09	2.05	0.00
	29/03/02	0.20	2.32	18.22	2.32	0.00
wed	30/03/02	4.40	1.95	15.77	1.95	0.00
	31/03/02	1.00	1.55	16.32	1.55	0.00
	01/04/02	3.60	1.67	14.39	1.67	0.00
	02/04/02	2.80	1.53	13.12	1.53	0.00
	03/04/02	3.80	2.13	11.44	2.13	0.00
	04/04/02	0.00	2.10	13.54	2.10	0.00
	05/04/02	0.00	1.84	15.37	1.84	0.00
wed	06/04/02	0.00	1.49	16.86	1.49	0.00
	07/04/02	0.00	2.20	19.06	2.20	0.00
	08/04/02	0.20	2.52	21.38	2.52	0.00
	09/04/02	0.00	2.34	23.72	2.34	0.00
	10/04/02	0.00	2.00	25.71	2.00	0.00
	11/04/02	0.20	2.23	27.74	2.23	0.00
	12/04/02	0.40	1.96	29.30	1.96	0.00
wed	13/04/02	0.20	2.35	31.45	2.35	0.00
	14/04/02	1.00	1.70	32.15	1.70	0.00
	15/04/02	0.00	2.49	34.64	2.49	0.00
	16/04/02	0.40	2.13	36.37	2.13	0.00
l	17/04/02	36.60	1.50	1.27	1.50	0.00
	18/04/02	1.60	2.37	2.04	2.37	0.00
	19/04/02	0.60	2.73	4.16	2.73	0.00
wed	20/04/02	1.60	1.59	4.15	1.59	0.00
	21/04/02	10.20	1.35	0.00	1.35	4.70
	22/04/02	0.00	2.38	2.38	2.38	0.00
l	23/04/02	0.00	3.06	5.44	3.06	0.00
	24/04/02	0.80	2.42	7.06	2.42	0.00
	25/04/02	1.80	2.44	7.69	2.44	0.00
	26/04/02	9.40	1.92	0.22	1.92	0.00
wed	27/04/02	9.80	1.55	0.00	1.55	8.03
	28/04/02	9.40	1.72	0.00	1.72	7.68
	29/04/02	1.40	2.19	0.79	2.19	0.00
l	30/04/02	5.40	2.13	0.00	2.13	2.48
	01/05/02	4.00	2.32	0.00	2.32	1.68
	02/05/02	2.80	2.62	0.00	2.62	0.18
	03/05/02	0.40	2.85	2.45	2.85	0.00
wed	04/05/02	0.00	3.49	5.94	3.49	0.00
	05/05/02	0.00	3.44	9.38	3.44	0.00
	06/05/02	0.00	3.03	12.40	3.03	0.00
	07/05/02	1.00	3.07	14.47	3.07	0.00
	08/05/02	0.00	2.63	17.10	2.63	0.00
	09/05/02	0.00	2.86	19.96	2.86	0.00
	10/05/02	0.20	3.50	23.26	3.50	0.00
wed	11/05/02	0.00	2.64	25.91	2.64	0.00
	12/05/02	0.80	2.91	28.01	2.91	0.00
	13/05/02	5.00	2.31	25.32	2.31	0.00
	14/05/02	1.20	2.81	26.93	2.81	0.00
	15/05/02	0.00	2.80	29.72	2.80	0.00
	16/05/02	0.20	3.30	32.83	3.30	0.00
	17/05/02	29.00	2.53	6.35	2.53	0.00
wed	18/05/02	0.20	2.87	9.03	2.87	0.00
	19/05/02	3.20	2.94	8.77	2.94	0.00
	20/05/02	4.20	2.73	7.30	2.73	0.00
	21/05/02	3.00	2.34	6.64	2.34	0.00
	22/05/02	5.80	3.03	3.87	3.03	0.00
	23/05/02	5.60	2.89	0.95	2.89	0.00
l	24/05/02	6.80	2.11	0.00	2.11	3.74
wed	25/05/02	3.40	2.78	0.00	2.78	0.62
	26/05/02	0.40	3.17	2.77	3.17	0.00
	27/05/02	1.60	3.16	4.32	3.16	0.00
	28/05/02	8.80	2.97	0.00	2.97	1.50
	29/05/02	3.40	2.65	0.00	2.65	0.75
	30/05/02	3.20	3.05	0.00	3.05	0.15
	31/05/02	0.00	3.56	3.56	3.56	0.00
wed	01/06/02	1.00	4.05	6.61	4.05	0.00
	02/06/02	7.80	3.10	1.90	3.10	0.00
	03/06/02	4.20	2.96	0.66	2.96	0.00
	04/06/02	1.60	2.64	1.70	2.64	0.00
	05/06/02	0.00	3.64	5.34	3.64	0.00
	06/06/02	0.00	3.23	8.57	3.23	0.00
	07/06/02	4.00	2.44	7.00	2.44	0.00
wed	08/06/02	1.60	1.90	7.30	1.90	0.00
	09/06/02	9.80	2.85	0.35	2.85	0.00
	10/06/02	6.20	2.80	0.00	2.80	3.05
	11/06/02	1.00	3.22	2.22	3.22	0.00

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	12/06/02	0.20	3.50	5.52	3.50	0.00
	13/06/02	3.40	2.55	4.67	2.55	0.00
	14/06/02	4.20	3.16	3.63	3.16	0.00
wed	15/06/02	0.00	2.86	6.48	2.86	0.00
	16/06/02	7.40	2.49	1.58	2.49	0.00
	17/06/02	0.20	3.24	4.62	3.24	0.00
	18/06/02	0.00	3.11	7.73	3.11	0.00
	19/06/02	0.40	3.45	10.77	3.45	0.00
	20/06/02	0.40	3.84	14.22	3.84	0.00
	21/06/02	2.00	3.98	16.20	3.98	0.00
wed	22/06/02	2.20	3.30	17.29	3.30	0.00
	23/06/02	1.80	3.48	18.97	3.48	0.00
	24/06/02	0.20	2.88	21.65	2.88	0.00
	25/06/02	0.00	3.44	25.10	3.44	0.00
	26/06/02	0.00	3.32	28.42	3.32	0.00
	27/06/02	0.00	3.35	31.77	3.35	0.00
	28/06/02	0.00	3.79	35.56	3.79	0.00
wed	29/06/02	0.60	3.92	38.88	3.92	0.00
	30/06/02	3.60	1.76	37.04	1.76	0.00
	01/07/02	0.00	2.82	39.86	2.82	0.00
	02/07/02	0.00	2.62	42.49	2.62	0.00
	03/07/02	0.40	3.63	45.22	3.13	0.00
	04/07/02	8.40	3.15	39.43	2.61	0.00
	05/07/02	2.60	3.34	40.17	3.34	0.00
wed	06/07/02	0.80	3.16	42.17	2.81	0.00
	07/07/02	3.20	3.10	41.65	2.68	0.00
	08/07/02	2.60	3.04	41.70	2.65	0.00
	09/07/02	3.80	3.49	40.94	3.04	0.00
	10/07/02	4.20	3.22	39.57	2.83	0.00
	11/07/02	20.20	2.84	22.21	2.84	0.00
	12/07/02	6.60	3.57	19.17	3.57	0.00
wed	13/07/02	0.00	4.16	23.34	4.16	0.00
	14/07/02	0.00	3.97	27.31	3.97	0.00
	15/07/02	0.00	3.46	30.77	3.46	0.00
	16/07/02	0.00	2.31	33.09	2.31	0.00
	17/07/02	0.00	3.26	36.35	3.26	0.00
	18/07/02	0.00	4.16	40.51	4.16	0.00
	19/07/02	6.00	2.95	37.11	2.60	0.00
wed	20/07/02	0.20	3.11	40.03	3.11	0.00
	21/07/02	0.80	3.85	42.85	3.42	0.00
	22/07/02	2.60	3.35	42.93	2.88	0.00
	23/07/02	0.00	2.72	45.26	2.33	0.00
	24/07/02	0.00	2.53	47.36	2.10	0.00
	25/07/02	0.00	3.49	50.17	2.81	0.00
	26/07/02	0.00	3.19	52.65	2.48	0.00
wed	27/07/02	0.00	3.46	55.24	2.59	0.00
	28/07/02	6.40	2.73	50.81	1.97	0.00
	29/07/02	4.60	2.80	48.36	2.15	0.00
	30/07/02	4.40	2.55	45.99	2.03	0.00
	31/07/02	3.80	2.48	44.22	2.04	0.00
	01/08/02	9.80	2.83	36.80	2.38	0.00
	02/08/02	7.60	1.30	30.50	1.30	0.00
wed	03/08/02	2.80	2.36	30.06	2.36	0.00
	04/08/02	0.80	3.88	33.14	3.88	0.00
	05/08/02	0.00	4.61	37.75	4.61	0.00
	06/08/02	3.80	3.39	37.34	3.39	0.00
	07/08/02	2.80	2.25	36.79	2.25	0.00
	08/08/02	8.40	2.06	30.45	2.06	0.00
	09/08/02	0.00	2.74	33.18	2.74	0.00
wed	10/08/02	0.00	3.15	36.33	3.15	0.00
	11/08/02	2.20	2.98	37.11	2.98	0.00
	12/08/02	0.00	3.54	40.65	3.54	0.00
	13/08/02	12.60	2.60	30.34	2.29	0.00
	14/08/02	0.00	1.77	32.11	1.77	0.00
	15/08/02	1.00	3.27	34.38	3.27	0.00
	16/08/02	0.00	3.39	37.77	3.39	0.00
wed	17/08/02	2.00	3.22	39.00	3.22	0.00
	18/08/02	0.00	2.63	41.63	2.63	0.00
	19/08/02	0.00	2.53	43.83	2.20	0.00
	20/08/02	0.60	2.78	45.58	2.35	0.00
	21/08/02	0.00	3.75	48.69	3.10	0.00
	22/08/02	0.00	3.35	51.34	2.65	0.00
	23/08/02	0.00	2.76	53.44	2.10	0.00
wed	24/08/02	3.20	2.05	51.76	1.52	0.00
	25/08/02	0.00	3.00	54.04	2.28	0.00
	26/08/02	0.20	3.33	56.28	2.44	0.00
	27/08/02	0.60	3.19	57.94	2.26	0.00
	28/08/02	4.00	2.24	55.49	1.55	0.00
	29/08/02	0.00	2.29	57.13	1.64	0.00
	30/08/02	3.20	2.17	55.44	1.51	0.00
wed	31/08/02	0.00	2.54	57.26	1.82	0.00
	01/09/02	0.00	3.16	59.47	2.21	0.00
	02/09/02	0.00	3.03	61.51	2.04	0.00
	03/09/02	0.00	3.22	63.60	2.09	0.00
	04/09/02	0.00	2.42	65.11	1.52	0.00
	05/09/02	0.00	2.13	66.41	1.30	0.00
	06/09/02	0.00	2.05	67.63	1.22	0.00
wed	07/09/02	0.00	2.00	68.80	1.17	0.00
	08/09/02	1.60	1.77	68.21	1.01	0.00
	09/09/02	0.20	2.43	69.40	1.40	0.00
	10/09/02	0.00	2.64	70.89	1.49	0.00
	11/09/02	0.00	2.34	72.17	1.28	0.00
	12/09/02	0.00	2.54	73.52	1.35	0.00
	13/09/02	0.00	2.58	74.85	1.33	0.00
wed	14/09/02	0.20	2.32	75.81	1.16	0.00
	15/09/02	0.20	2.55	76.86	1.25	0.00
	16/09/02	0.00	1.43	77.55	0.69	0.00
	17/09/02	0.00	1.78	78.39	0.84	0.00
	18/09/02	0.00	1.76	79.20	0.81	0.00
	19/09/02	0.00	2.15	80.18	0.98	0.00

Results of Evapotranspiration and Effective Rainfall Calculations for Site 2 using Hargreaves Method

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	20/09/02	0.00	2.39	81.23	1.06	0.00
wed	21/09/02	0.00	2.35	82.25	1.01	0.00
	22/09/02	0.00	1.91	83.05	0.80	0.00
	23/09/02	0.00	2.09	83.91	0.86	0.00
	24/09/02	0.00	2.20	84.79	0.88	0.00
	25/09/02	0.00	2.14	85.63	0.84	0.00
	26/09/02	0.00	1.51	86.21	0.58	0.00
	27/09/02	0.00	1.63	86.82	0.61	0.00
wed	28/09/02	0.00	1.52	87.38	0.56	0.00
	29/09/02	0.00	1.81	88.03	0.65	0.00
	30/09/02	10.00	1.41	78.53	0.50	0.00
	01/10/02	1.00	1.23	78.10	0.57	0.00
	02/10/02	8.20	1.57	70.63	0.73	0.00
	03/10/02	0.40	1.72	71.17	0.94	0.00
	04/10/02	0.00	1.90	72.20	1.03	0.00
wed	05/10/02	0.20	1.84	72.98	0.98	0.00
	06/10/02	0.20	1.66	73.64	0.86	0.00
	07/10/02	0.00	1.39	74.36	0.72	0.00
	08/10/02	8.40	0.74	66.33	0.38	0.00
	09/10/02	4.40	0.73	62.37	0.44	0.00
	10/10/02	0.00	1.44	63.29	0.92	0.00
	11/10/02	29.60	0.84	34.22	0.53	0.00
wed	12/10/02	0.20	1.33	35.35	1.33	0.00
	13/10/02	4.40	1.11	32.06	1.11	0.00
	14/10/02	0.20	1.17	33.03	1.17	0.00
	15/10/02	10.00	0.90	23.93	0.90	0.00
	16/10/02	0.00	1.03	24.96	1.03	0.00
	17/10/02	3.00	1.00	22.96	1.00	0.00
	18/10/02	0.20	1.02	23.78	1.02	0.00
wed	19/10/02	0.00	1.04	24.81	1.04	0.00
	20/10/02	32.00	0.75	0.00	0.75	6.43
	21/10/02	18.20	0.92	0.00	0.92	17.28
	22/10/02	0.80	0.87	0.07	0.87	0.00
	23/10/02	0.40	0.71	0.38	0.71	0.00
	24/10/02	1.80	0.94	0.00	0.94	0.48
	25/10/02	6.80	0.77	0.00	0.77	6.03
wed	26/10/02	7.20	0.82	0.00	0.82	6.38
	27/10/02	3.60	0.85	0.00	0.85	2.75
	28/10/02	1.40	0.74	0.00	0.74	0.66
	29/10/02	23.80	0.52	0.00	0.52	23.28
	30/10/02	0.00	0.70	0.70	0.70	0.00
I	31/10/02	0.20	0.90	1.40	0.90	0.00
	01/11/02	2.20	0.82	0.01	0.82	0.00
wed	02/11/02	11.00	0.94	0.00	0.94	10.05
	03/11/02	6.80	0.50	0.00	0.50	6.30
	04/11/02	0.40	0.68	0.28	0.68	0.00
	05/11/02	1.00	0.78	0.06	0.78	0.00
	06/11/02	3.80	0.75	0.00	0.75	2.99
	07/11/02	0.00	0.52	0.52	0.52	0.00
	08/11/02	14.20	0.66	0.00	0.66	13.02
wed	09/11/02	9.00	0.55	0.00	0.55	8.45
	10/11/02	4.60	0.58	0.00	0.58	4.02
	11/11/02	0.40	0.45	0.05	0.45	0.00
	12/11/02	0.60	0.54	0.00	0.54	0.01
	13/11/02	0.60	0.55	0.00	0.55	0.05
	14/11/02	26.40	0.41	0.00	0.41	25.99
	15/11/02	20.20	0.26	0.00	0.26	19.94
wed	16/11/02	0.00	0.43	0.43	0.43	0.00
	17/11/02	0.00	0.39	0.82	0.39	0.00
	18/11/02	5.60	0.52	0.00	0.52	4.26
	19/11/02	5.20	0.34	0.00	0.34	4.86
	20/11/02	1.00	0.45	0.00	0.45	0.55
	21/11/02	7.60	0.45	0.00	0.45	7.15
	22/11/02	0.60	0.44	0.00	0.44	0.16
wed	23/11/02	2.20	0.38	0.00	0.38	1.82
	24/11/02	2.80	0.38	0.00	0.38	2.42
	25/11/02	1.80	0.36	0.00	0.36	1.44
	26/11/02	3.40	0.34	0.00	0.34	3.06
	27/11/02	15.60	0.44	0.00	0.44	15.16
	28/11/02	0.00	0.32	0.32	0.32	0.00
	29/11/02	0.20	0.45	0.58	0.45	0.00
wed	30/11/02	8.60	0.44	0.00	0.44	7.58
	01/12/02	7.80	0.27	0.00	0.27	7.53
	02/12/02	2.60	0.26	0.00	0.26	2.34
	03/12/02	3.60	0.30	0.00	0.30	3.30
hydroL	04/12/02	0.20	0.37	0.17	0.37	0.00
	05/12/02	0.20	0.33	0.30	0.33	0.00
	06/12/02	0.20	0.34	0.44	0.34	0.00
wed	07/12/02	0.60	0.23	0.07	0.23	0.00
	08/12/02	0.00	0.16	0.23	0.16	0.00
	09/12/02	0.00	0.18	0.41	0.18	0.00
	10/12/02	0.00	0.22	0.62	0.22	0.00
	11/12/02	0.00	0.17	0.79	0.17	0.00
	12/12/02	4.20	0.18	0.00	0.18	3.23
	13/12/02	0.80	0.29	0.00	0.29	0.51
wed	14/12/02	0.00	0.32	0.32	0.32	0.00
	15/12/02	3.20	0.21	0.00	0.21	2.67
	16/12/02	0.00	0.29	0.29	0.29	0.00
	17/12/02	0.20	0.29	0.38	0.29	0.00
	18/12/02	0.00	0.29	0.67	0.29	0.00
	19/12/02	0.00	0.33	1.01	0.33	0.00
	20/12/02	1.60	0.24	0.00	0.24	0.35
wed	21/12/02	5.60	0.31	0.00	0.31	5.29
	22/12/02	0.20	0.25	0.05	0.25	0.00
	23/12/02	3.40	0.31	0.00	0.31	3.03
	24/12/02	0.60	0.27	0.00	0.27	0.33
	25/12/02	1.40	0.24	0.00	0.24	1.16
	26/12/02	1.80	0.21	0.00	0.21	1.59
	27/12/02	9.40	0.18	0.00	0.18	9.22
wed	28/12/02	0.20	0.29	0.09	0.29	0.00
	29/12/02	24.00	0.39	0.00	0.39	23.52
	30/12/02	2.20	0.28	0.00	0.28	1.92
	31/12/02	2.80	0.22	0.00	0.22	2.58
	01/01/03	7.00	0.26	0.00	0.26	6.74
	02/01/03	1.00	0.32	0.00	0.32	0.68
	03/01/03	1.60	0.23	0.00	0.23	1.37
wed	04/01/03	0.20	0.30	0.10	0.30	0.00
	05/01/03	0.20	0.35	0.25	0.35	0.00
	06/01/03	0.00	0.33	0.58	0.33	0.00
	07/01/03	0.00	0.19	0.77	0.19	0.00
	08/01/03	2.40	0.29	0.00	0.29	1.34
	09/01/03	2.60	0.26	0.00	0.26	2.34
	10/01/03	0.00	0.23	0.23	0.23	0.00
wed	11/01/03	0.00	0.37	0.60	0.37	0.00
	12/01/03	0.20	0.42	0.82	0.42	0.00
	13/01/03	0.40	0.26	0.68	0.26	0.00
	14/01/03	0.00	0.18	0.86	0.18	0.00
	15/01/03	0.00	0.42	1.28	0.42	0.00
	16/01/03	0.20	0.46	1.54	0.46	0.00
	17/01/03	11.40	0.46	0.00	0.46	9.40
wed	18/01/03	8.60	0.40	0.00	0.40	8.20
	19/01/03	1.40	0.40	0.00	0.40	1.00
	20/01/03	6.60	0.37	0.00	0.37	6.23
	21/01/03	1.20	0.40	0.00	0.40	0.80
	22/01/03	0.00	0.44	0.44	0.44	0.00
	23/01/03	0.20	0.58	0.82	0.58	0.00
	24/01/03	4.00	0.35	0.00	0.35	2.84
wed	25/01/03	7.60	0.41	0.00	0.41	7.19
	26/01/03	0.00	0.58	0.58	0.58	0.00
	27/01/03	1.00	0.63	0.21	0.63	0.00
	28/01/03	4.20	0.30	0.00	0.30	3.69
	29/01/03	0.40	0.35	0.00	0.35	0.05
	30/01/03	1.60	0.47	0.00	0.47	1.13
	31/01/03	2.00	0.51	0.00	0.51	1.49
wed	01/02/03	0.40	0.49	0.09	0.49	0.00
	02/02/03	2.20	0.40	0.00	0.40	1.71
	03/02/03	0.20	0.41	0.21	0.41	0.00
	04/02/03	0.80	0.45	0.00	0.45	0.14
	05/02/03	0.20	0.59	0.39	0.59	0.00
	06/02/03	2.00	0.62	0.00	0.62	0.99
	07/02/03	0.20	0.59	0.39	0.59	0.00
wed	08/02/03	4.00	0.44	0.00	0.44	3.16
	09/02/03	1.20	0.68	0.00	0.68	0.52
	10/02/03	6.60	0.69	0.00	0.69	5.91
	11/02/03	0.40	0.84	0.44	0.84	0.00
	12/02/03	0.20	0.85	1.09	0.85	0.00
	13/02/03	0.00	0.75	1.83	0.75	0.00
	14/02/03	0.00	0.64	2.47	0.64	0.00
wed	15/02/03	0.20	0.82	3.09	0.82	0.00
	16/02/03	0.00	0.57	3.66	0.57	0.00
	17/02/03	0.00	0.45	4.11	0.45	0.00
	18/02/03	0.00	0.42	4.53	0.42	0.00
	19/02/03	0.00	0.70	5.23	0.70	0.00
	20/02/03	0.60	0.67	5.30	0.67	0.00
	21/02/03	0.20	0.99	6.10	0.99	0.00
wed	22/02/03	0.00	0.89	6.98	0.89	0.00
	23/02/03	0.60	1.02	7.40	1.02	0.00
	24/02/03	0.20	0.94	8.15	0.94	0.00
	25/02/03	0.00	0.59	8.74	0.59	0.00
	26/02/03	2.20	0.34	6.88	0.34	0.00
	27/02/03	0.40	0.86	7.34	0.86	0.00
	28/02/03	16.80	0.98	0.00	0.98	8.49
wed	01/03/03	3.60	0.97	0.00	0.97	2.63
	02/03/03	2.80	1.26	0.00	1.26	1.54
	03/03/03	1.40	0.96	0.00	0.96	0.44
	04/03/03	0.80	0.98	0.18	0.98	0.00
	05/03/03	0.40	1.19	0.96	1.19	0.00
	06/03/03	0.00	1.22	2.18	1.22	0.00
	07/03/03	3.20	0.80	0.00	0.80	0.22
wed	08/03/03	8.80	1.18	0.00	1.18	7.62
	09/03/03	1.40	0.86	0.00	0.86	0.54
	10/03/03	10.80	1.02	0.00	1.02	9.78
	11/03/03	1.20	1.21	0.01	1.21	0.00
	12/03/03	0.20	1.24	1.05	1.24	0.00
	13/03/03	0.00	1.20	2.25	1.20	0.00
	14/03/03	0.20	1.55	3.60	1.55	0.00
wed	15/03/03	0.00	1.60	5.20	1.60	0.00
	16/03/03	0.00	1.85	7.05	1.85	0.00
	17/03/03	0.00	2.16	9.21	2.16	0.00
	18/03/03	0.20	2.19	11.20	2.19	0.00
	19/03/03	0.20	1.70	12.71	1.70	0.00
	20/03/03	0.00	1.67	14.38	1.67	0.00
	21/03/03	0.00	1.91	16.29	1.91	0.00
wed	22/03/03	0.00	1.82	18.11	1.82	0.00
	23/03/03	0.00	2.45	20.56	2.45	0.00
	24/03/03	0.00	2.08	22.64	2.08	0.00
	25/03/03	0.00	1.72	24.36	1.72	0.00
	26/03/03	0.00	2.47	26.82	2.47	0.00
	27/03/03	0.00	1.98	28.81	1.98	0.00
	28/03/03	1.00	1.85	29.66	1.85	0.00
wed	29/03/03	0.00	1.95	31.61	1.95	0.00
	30/03/03	0.00	1.97	33.58	1.97	0.00
	31/03/03	0.00	2.25	35.83	2.25	0.00
	01/04/03	3.40	1.70	34.13	1.70	0.00
	02/04/03	0.80	1.91	35.24	1.91	0.00
	03/04/03	0.00	1.86	37.10	1.86	0.00
	04/04/03	0.20	2.53	39.43	2.53	0.00
wed	05/04/03	0.00	2.17	41.60	2.17	0.00
	06/04/03	0.00	1.74	43.11	1.51	0.00
	07/04/03	0.00	1.81	44.66	1.55	0.00
	08/04/03	0.00	1.95	46.29	1.64	0.00
	09/04/03	0.00	2.21	48.10	1.81	0.00

Results of Evapotranspiration and Effective Rainfall Calculations for Site 2 using Hargreaves Method

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	10/04/03	0.00	1.81	49.55	1.45	0.00
	11/04/03	0.00	1.93	51.06	1.51	0.00
wed	12/04/03	0.00	1.86	52.49	1.43	0.00
	13/04/03	1.60	2.02	52.41	1.52	0.00
	14/04/03	0.60	2.41	53.61	1.81	0.00
	15/04/03	0.00	3.25	56.01	2.39	0.00
	16/04/03	0.00	3.57	58.55	2.54	0.00
	17/04/03	0.00	3.00	60.60	2.05	0.00
	18/04/03	0.00	2.51	62.26	1.65	0.00
wed	19/04/03	0.00	1.78	63.40	1.14	0.00
	20/04/03	0.00	1.74	64.49	1.10	0.00
	21/04/03	10.00	1.63	55.50	1.00	0.00
	22/04/03	0.00	2.58	57.34	1.85	0.00
	23/04/03	0.00	2.67	59.20	1.86	0.00
	24/04/03	1.80	2.33	58.98	1.57	0.00
	25/04/03	6.40	2.47	54.25	1.67	0.00
wed	26/04/03	3.60	2.41	52.41	1.76	0.00
	27/04/03	2.00	2.55	52.32	1.92	0.00
	28/04/03	5.60	1.83	48.10	1.37	0.00
	29/04/03	0.20	2.87	50.19	2.29	0.00
	30/04/03	1.40	2.39	50.64	1.85	0.00
	01/05/03	20.60	2.28	31.79	1.76	0.00
	02/05/03	0.60	2.69	33.89	2.69	0.00
wed	03/05/03	2.20	2.54	34.23	2.54	0.00
	04/05/03	24.00	1.88	12.11	1.88	0.00
	05/05/03	4.40	2.57	10.28	2.57	0.00
	06/05/03	1.20	2.96	12.04	2.96	0.00
	07/05/03	0.20	3.05	14.89	3.05	0.00
	08/05/03	0.00	2.98	17.88	2.98	0.00
	09/05/03	1.80	2.88	18.96	2.88	0.00
wed	10/05/03	1.00	3.06	21.01	3.06	0.00
	11/05/03	1.80	2.71	21.93	2.71	0.00
	12/05/03	3.40	2.42	20.95	2.42	0.00
	13/05/03	0.20	2.93	23.68	2.93	0.00
	14/05/03	0.00	3.26	26.94	3.26	0.00
	15/05/03	3.60	2.60	25.94	2.60	0.00
	16/05/03	9.80	2.68	18.82	2.68	0.00
wed	17/05/03	5.60	2.20	15.42	2.20	0.00
	18/05/03	13.40	2.68	4.70	2.68	0.00
	19/05/03	6.80	2.05	0.00	2.05	0.05
	20/05/03	1.00	2.40	1.40	2.40	0.00
	21/05/03	7.60	3.08	0.00	3.08	3.12
	22/05/03	0.40	3.30	2.90	3.30	0.00
	23/05/03	4.60	2.54	0.84	2.54	0.00
wed	24/05/03	0.20	2.44	3.08	2.44	0.00
	25/05/03	0.00	2.92	5.99	2.92	0.00
	26/05/03	2.20	3.31	7.10	3.31	0.00
	27/05/03	1.00	2.90	9.01	2.90	0.00
	28/05/03	3.00	2.74	8.75	2.74	0.00
	29/05/03	1.60	3.89	11.04	3.89	0.00
	30/05/03	0.00	5.29	16.34	5.29	0.00
wed	31/05/03	0.00	3.76	20.09	3.76	0.00
	01/06/03	0.40	3.37	23.06	3.37	0.00
	02/06/03	0.00	3.50	26.56	3.50	0.00
	03/06/03	10.80	2.52	18.28	2.52	0.00
	04/06/03	0.20	3.05	21.13	3.05	0.00
	05/06/03	2.00	3.16	22.29	3.16	0.00
	06/06/03	0.00	3.92	26.21	3.92	0.00
wed	07/06/03	11.40	3.03	17.85	3.03	0.00
	08/06/03	1.80	3.94	19.98	3.94	0.00
	09/06/03	4.40	3.13	18.72	3.13	0.00
	10/06/03	3.00	3.30	19.02	3.30	0.00
	11/06/03	0.20	3.53	22.34	3.53	0.00
	12/06/03	0.60	3.55	25.30	3.55	0.00
	13/06/03	0.00	3.78	29.08	3.78	0.00
wed	14/06/03	0.20	4.84	33.72	4.84	0.00
	15/06/03	0.00	3.91	37.63	3.91	0.00
	16/06/03	0.20	4.73	42.16	4.73	0.00
	17/06/03	0.00	3.52	45.20	3.04	0.00
	18/06/03	0.20	3.45	47.87	2.86	0.00
	19/06/03	0.00	3.55	50.71	2.84	0.00
	20/06/03	0.00	3.71	53.57	2.86	0.00
wed	21/06/03	0.40	4.03	56.14	2.98	0.00
	22/06/03	0.00	3.91	58.91	2.77	0.00
	23/06/03	0.00	3.48	61.27	2.36	0.00
	24/06/03	0.00	4.46	64.18	2.91	0.00
	25/06/03	0.00	5.09	67.34	3.16	0.00
	26/06/03	1.20	3.81	68.37	2.23	0.00
	27/06/03	20.80	3.24	49.43	1.86	0.00
wed	28/06/03	0.00	3.82	52.42	2.99	0.00
	29/06/03	2.00	4.43	53.75	3.32	0.00
	30/06/03	24.00	2.55	31.62	1.87	0.00
	01/07/03	3.20	3.28	31.70	3.28	0.00
	02/07/03	0.20	4.01	35.51	4.01	0.00
	03/07/03	0.20	2.77	38.08	2.77	0.00
	04/07/03	0.00	2.58	40.66	2.58	0.00
wed	05/07/03	0.00	2.96	43.27	2.61	0.00
	06/07/03	0.40	3.39	45.76	2.89	0.00
	07/07/03	4.00	3.11	44.32	2.57	0.00
	08/07/03	11.60	3.78	35.90	3.18	0.00
	09/07/03	0.00	3.57	39.46	3.57	0.00
	10/07/03	1.20	3.58	41.84	3.58	0.00
	11/07/03	0.00	3.46	44.85	3.01	0.00
wed	12/07/03	0.00	4.28	48.42	3.57	0.00
	13/07/03	0.00	4.74	52.19	3.77	0.00
	14/07/03	0.40	4.96	55.53	3.74	0.00
	15/07/03	6.60	3.38	51.35	2.42	0.00
	16/07/03	0.80	4.73	54.16	3.61	0.00
	17/07/03	19.60	1.97	36.00	1.44	0.00
	18/07/03	0.40	4.26	39.85	4.26	0.00
wed	19/07/03	5.00	3.21	38.06	3.21	0.00
	20/07/03	0.20	3.31	41.17	3.31	0.00
	21/07/03	6.40	3.38	37.73	2.96	0.00
	22/07/03	0.20	3.07	40.60	3.07	0.00
	23/07/03	3.80	2.92	39.37	2.57	0.00
	24/07/03	3.40	3.12	39.09	3.12	0.00
	25/07/03	0.20	3.32	42.20	3.32	0.00
wed	26/07/03	0.00	3.39	45.13	2.93	0.00
	27/07/03	5.00	3.67	43.18	3.05	0.00
	28/07/03	4.20	3.48	41.95	2.97	0.00
	29/07/03	2.60	2.91	41.88	2.53	0.00
	30/07/03	1.00	3.25	43.70	2.82	0.00
	31/07/03	3.40	3.34	43.13	2.83	0.00

SITE 3: KIILLAVENY

Results of Evapotranspiration and Effective Rainfall Calculations for Site 3 using Hargreaves Method

Meteorological balance — DAILY DATA

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	01/01/03	7.00	0.26	0.00	0.00	7.00
	02/01/03	1.00	0.32	0.00	0.32	0.68
	03/01/03	1.60	0.23	0.00	0.23	1.37
	04/01/03	0.20	0.30	0.10	0.30	0.00
	05/01/03	0.20	0.35	0.25	0.35	0.00
wed	06/01/03	0.00	0.33	0.58	0.33	0.00
	07/01/03	0.00	0.19	0.77	0.19	0.00
	08/01/03	2.40	0.29	0.00	0.29	1.34
	09/01/03	2.60	0.26	0.00	0.26	2.34
	10/01/03	0.00	0.23	0.23	0.23	0.00
	11/01/03	0.00	0.37	0.60	0.37	0.00
	12/01/03	0.20	0.42	0.82	0.42	0.00
wed	13/01/03	0.40	0.26	0.68	0.26	0.00
	14/01/03	0.00	0.18	0.86	0.18	0.00
	15/01/03	0.00	0.42	1.28	0.42	0.00
	16/01/03	0.20	0.46	1.54	0.46	0.00
	17/01/03	11.40	0.46	0.00	0.46	9.40
	18/01/03	8.60	0.40	0.00	0.40	8.20
	19/01/03	1.40	0.40	0.00	0.40	1.00
wed	20/01/03	6.60	0.37	0.00	0.37	6.23
	21/01/03	1.20	0.40	0.00	0.40	0.80
	22/01/03	0.00	0.44	0.44	0.44	0.00
	23/01/03	0.20	0.58	0.82	0.58	0.00
	24/01/03	4.00	0.35	0.00	0.35	2.84
	25/01/03	7.60	0.41	0.00	0.41	7.19
	26/01/03	0.00	0.58	0.58	0.58	0.00
wed	27/01/03	1.00	0.63	0.21	0.63	0.00
	28/01/03	4.20	0.30	0.00	0.30	3.69
	29/01/03	0.40	0.35	0.00	0.35	0.05
	30/01/03	1.60	0.47	0.00	0.47	1.13
	31/01/03	2.00	0.51	0.00	0.51	1.49
	01/02/03	0.40	0.49	0.09	0.49	0.00
	02/02/03	2.20	0.40	0.00	0.40	1.71
wed	03/02/03	0.20	0.41	0.21	0.41	0.00
	04/02/03	0.80	0.45	0.00	0.45	0.14
	05/02/03	0.20	0.59	0.39	0.59	0.00
	06/02/03	2.00	0.62	0.00	0.62	0.99
	07/02/03	0.20	0.59	0.39	0.59	0.00
	08/02/03	4.00	0.44	0.00	0.44	3.16
	09/02/03	1.20	0.68	0.00	0.68	0.52
wed	10/02/03	6.60	0.69	0.00	0.69	5.91
	11/02/03	0.40	0.84	0.44	0.84	0.00
	12/02/03	0.20	0.85	1.09	0.85	0.00
	13/02/03	0.00	0.75	1.83	0.75	0.00
	14/02/03	0.00	0.64	2.47	0.64	0.00
	15/02/03	0.20	0.82	3.09	0.82	0.00
	16/02/03	0.00	0.57	3.66	0.57	0.00
wed	17/02/03	0.00	0.45	4.11	0.45	0.00
	18/02/03	0.00	0.42	4.53	0.42	0.00
	19/02/03	0.00	0.70	5.23	0.70	0.00
	20/02/03	0.60	0.67	5.30	0.67	0.00
	21/02/03	0.20	0.99	6.10	0.99	0.00
	22/02/03	0.00	0.89	6.98	0.89	0.00
	23/02/03	0.60	1.02	7.40	1.02	0.00
wed	24/02/03	0.20	0.94	8.15	0.94	0.00
	25/02/03	0.00	0.59	8.74	0.59	0.00
	26/02/03	2.20	0.34	6.88	0.34	0.00
	27/02/03	0.40	0.86	7.34	0.86	0.00
	28/02/03	16.80	0.98	0.00	0.98	8.49
	01/03/03	3.60	0.97	0.00	0.97	2.63
	02/03/03	2.80	1.26	0.00	1.26	1.54
wed	03/03/03	1.40	0.96	0.00	0.96	0.44
	04/03/03	0.80	0.98	0.18	0.98	0.00
	05/03/03	0.40	1.19	0.96	1.19	0.00
	06/03/03	0.00	1.22	2.18	1.22	0.00
	07/03/03	3.20	0.80	0.00	0.80	0.22
	08/03/03	8.80	1.18	0.00	1.18	7.62
	09/03/03	1.40	0.86	0.00	0.86	0.54
wed	10/03/03	10.80	1.02	0.00	1.02	9.78
	11/03/03	1.20	1.21	0.01	1.21	0.00
	12/03/03	0.20	1.24	1.05	1.24	0.00
	13/03/03	0.00	1.20	2.25	1.20	0.00
	14/03/03	0.20	1.55	3.60	1.55	0.00
	15/03/03	0.00	1.60	5.20	1.60	0.00
	16/03/03	0.00	1.85	7.05	1.85	0.00
wed	17/03/03	0.00	2.16	9.21	2.16	0.00
	18/03/03	0.20	2.19	11.20	2.19	0.00
	19/03/03	0.20	1.70	12.71	1.70	0.00
	20/03/03	0.00	1.67	14.38	1.67	0.00
	21/03/03	0.00	1.91	16.29	1.91	0.00
	22/03/03	0.00	1.82	18.11	1.82	0.00
	23/03/03	0.00	2.45	20.56	2.45	0.00
wed	24/03/03	0.00	2.08	22.64	2.08	0.00
	25/03/03	0.00	1.72	24.36	1.72	0.00
	26/03/03	0.00	2.47	26.82	2.47	0.00
	27/03/03	0.00	1.98	28.81	1.98	0.00
	28/03/03	1.00	1.85	29.66	1.85	0.00
	29/03/03	0.00	1.95	31.61	1.95	0.00
	30/03/03	0.00	1.97	33.58	1.97	0.00
wed	31/03/03	0.00	2.25	35.83	2.25	0.00
	01/04/03	3.40	1.70	34.13	1.70	0.00
	02/04/03	0.80	1.91	35.24	1.91	0.00
	03/04/03	0.00	1.86	37.10	1.86	0.00
	04/04/03	0.20	2.53	39.43	2.53	0.00
	05/04/03	0.00	2.17	41.60	2.17	0.00
	06/04/03	0.00	1.74	43.11	1.51	0.00
wed	07/04/03	0.00	1.81	44.66	1.55	0.00
	08/04/03	0.00	1.95	46.29	1.64	0.00
	09/04/03	0.00	2.21	48.10	1.81	0.00
	10/04/03	0.00	1.81	49.55	1.45	0.00

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	11/04/03	0.00	1.93	51.06	1.51	0.00
	12/04/03	0.00	1.86	52.49	1.43	0.00
	13/04/03	1.60	2.02	52.41	1.52	0.00
wed	14/04/03	0.60	2.41	53.61	1.81	0.00
	15/04/03	0.00	3.25	56.01	2.39	0.00
	16/04/03	0.00	3.57	58.55	2.54	0.00
	17/04/03	0.00	3.00	60.60	2.05	0.00
	18/04/03	0.00	2.51	62.26	1.65	0.00
	19/04/03	0.00	1.78	63.40	1.14	0.00
	20/04/03	0.00	1.74	64.49	1.10	0.00
wed	21/04/03	10.00	1.63	55.50	1.00	0.00
	22/04/03	0.00	2.58	57.34	1.85	0.00
	23/04/03	0.00	2.67	59.20	1.86	0.00
	24/04/03	1.80	2.33	58.98	1.57	0.00
	25/04/03	6.40	2.47	54.25	1.67	0.00
	26/04/03	3.60	2.41	52.41	1.76	0.00
	27/04/03	2.00	2.55	52.32	1.92	0.00
wed	28/04/03	5.60	1.83	48.10	1.37	0.00
	29/04/03	0.20	2.87	50.19	2.29	0.00
	30/04/03	1.40	2.39	50.64	1.85	0.00
	01/05/03	20.60	2.28	31.79	1.76	0.00
	02/05/03	0.60	2.69	33.89	2.69	0.00
	03/05/03	2.20	2.54	34.23	2.54	0.00
	04/05/03	24.00	1.88	12.11	1.88	0.00
wed	05/05/03	4.40	2.57	10.28	2.57	0.00
	06/05/03	1.20	2.96	12.04	2.96	0.00
	07/05/03	0.20	3.05	14.89	3.05	0.00
	08/05/03	0.00	2.98	17.88	2.98	0.00
	09/05/03	1.80	2.88	18.96	2.88	0.00
	10/05/03	1.00	3.06	21.01	3.06	0.00
	11/05/03	1.80	2.71	21.93	2.71	0.00
wed	12/05/03	3.40	2.42	20.95	2.42	0.00
	13/05/03	0.20	2.93	23.68	2.93	0.00
	14/05/03	0.00	3.26	26.94	3.26	0.00
	15/05/03	3.60	2.60	25.94	2.60	0.00
	16/05/03	9.80	2.68	18.82	2.68	0.00
	17/05/03	5.60	2.20	15.42	2.20	0.00
	18/05/03	13.40	2.68	4.70	2.68	0.00
wed	19/05/03	6.80	2.05	0.00	2.05	0.05
	20/05/03	1.00	2.40	1.40	2.40	0.00
	21/05/03	7.60	3.08	0.00	3.08	3.12
	22/05/03	0.40	3.30	2.90	3.30	0.00
	23/05/03	4.60	2.54	0.84	2.54	0.00
	24/05/03	0.20	2.44	3.08	2.44	0.00
	25/05/03	0.00	2.92	5.99	2.92	0.00
wed	26/05/03	2.20	3.31	7.10	3.31	0.00
	27/05/03	1.00	2.90	9.01	2.90	0.00
	28/05/03	3.00	2.74	8.75	2.74	0.00
	29/05/03	1.60	3.89	11.04	3.89	0.00
	30/05/03	0.00	5.29	16.34	5.29	0.00
	31/05/03	0.00	3.76	20.09	3.76	0.00
	01/06/03	0.40	3.37	23.06	3.37	0.00
wed	02/06/03	0.00	3.50	26.56	3.50	0.00
	03/06/03	10.80	2.52	18.28	2.52	0.00
	04/06/03	0.20	3.05	21.13	3.05	0.00
	05/06/03	2.00	3.16	22.29	3.16	0.00
	06/06/03	0.00	3.92	26.21	3.92	0.00
	07/06/03	11.40	3.03	17.85	3.03	0.00
	08/06/03	1.80	3.94	19.98	3.94	0.00
wed	09/06/03	4.40	3.13	18.72	3.13	0.00
	10/06/03	3.00	3.30	19.02	3.30	0.00
	11/06/03	0.20	3.53	22.34	3.53	0.00
	12/06/03	0.60	3.55	25.30	3.55	0.00
	13/06/03	0.00	3.78	29.08	3.78	0.00
	14/06/03	0.20	4.84	33.72	4.84	0.00
	15/06/03	0.00	3.91	37.63	3.91	0.00
wed	16/06/03	0.20	4.73	42.16	4.73	0.00
	17/06/03	0.00	3.52	45.20	3.04	0.00
	18/06/03	0.20	3.45	47.87	2.86	0.00
	19/06/03	0.00	3.55	50.71	2.84	0.00
	20/06/03	0.00	3.71	53.57	2.86	0.00
	21/06/03	0.40	4.03	56.14	2.98	0.00
	22/06/03	0.00	3.91	58.91	2.77	0.00
wed	23/06/03	0.00	3.48	61.27	2.36	0.00
	24/06/03	0.00	4.46	64.18	2.91	0.00
	25/06/03	0.00	5.09	67.34	3.16	0.00
	26/06/03	1.20	3.81	68.37	2.23	0.00
	27/06/03	20.80	3.24	49.43	1.86	0.00
	28/06/03	0.00	3.82	52.42	2.99	0.00
	29/06/03	2.00	4.43	53.75	3.32	0.00
wed	30/06/03	24.00	2.55	31.62	1.87	0.00
	01/07/03	3.20	3.28	31.70	3.28	0.00
	02/07/03	0.20	4.01	35.51	4.01	0.00
	03/07/03	0.20	2.77	38.08	2.77	0.00
	04/07/03	0.00	2.58	40.66	2.58	0.00
	05/07/03	0.00	2.96	43.27	2.61	0.00
	06/07/03	0.40	3.39	45.76	2.89	0.00
wed	07/07/03	4.00	3.11	44.32	2.57	0.00
	08/07/03	11.60	3.78	35.90	3.18	0.00
	09/07/03	0.00	3.57	39.46	3.57	0.00
	10/07/03	1.20	3.58	41.84	3.58	0.00
	11/07/03	0.00	3.46	44.85	3.01	0.00
	12/07/03	0.00	4.28	48.42	3.57	0.00
	13/07/03	0.00	4.74	52.19	3.77	0.00
wed	14/07/03	0.40	4.96	55.53	3.74	0.00
	15/07/03	6.60	3.38	51.35	2.42	0.00
	16/07/03	0.80	4.73	54.16	3.61	0.00
	17/07/03	19.60	1.97	36.00	1.44	0.00
	18/07/03	0.40	4.26	39.85	4.26	0.00
	19/07/03	5.00	3.21	38.06	3.21	0.00

Results of Evapotranspiration and Effective Rainfall Calculations for Site 3 using Hargreaves Method

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	20/07/03	0.20	3.31	41.17	3.31	0.00
wed	21/07/03	6.40	3.38	37.73	2.96	0.00
	22/07/03	0.20	3.07	40.60	3.07	0.00
	23/07/03	3.80	2.92	39.37	2.57	0.00
	24/07/03	3.40	3.12	39.09	3.12	0.00
	25/07/03	0.20	3.32	42.20	3.32	0.00
	26/07/03	0.00	3.39	45.13	2.93	0.00
	27/07/03	5.00	3.67	43.18	3.05	0.00
wed	28/07/03	4.20	3.48	41.95	2.97	0.00
	29/07/03	2.60	2.91	41.88	2.53	0.00
	30/07/03	1.00	3.25	43.70	2.82	0.00
	31/07/03	3.40	3.34	43.13	2.83	0.00
	01/08/03	0.00	3.01	45.70	2.57	0.00
	02/08/03	0.20	3.95	48.76	3.26	0.00
	03/08/03	0.20	3.66	51.45	2.89	0.00
wed	04/08/03	0.00	4.55	54.92	3.46	0.00
	05/08/03	0.20	4.98	58.32	3.60	0.00
	06/08/03	0.20	3.99	60.85	2.73	0.00
	07/08/03	0.00	5.07	64.18	3.33	0.00
	08/08/03	0.20	5.27	67.25	3.27	0.00
	09/08/03	0.00	3.61	69.37	2.12	0.00
	10/08/03	0.00	3.75	71.47	2.11	0.00
wed	11/08/03	0.00	4.34	73.82	2.34	0.00
	12/08/03	0.00	4.43	76.09	2.27	0.00
	13/08/03	0.00	3.43	77.76	1.67	0.00
	14/08/03	0.20	3.87	79.38	1.82	0.00
	15/08/03	0.00	3.55	80.98	1.60	0.00
	16/08/03	0.00	4.17	82.79	1.81	0.00
	17/08/03	1.40	3.42	82.81	1.42	0.00
wed	18/08/03	0.20	3.31	83.98	1.37	0.00
	19/08/03	0.00	2.62	85.02	1.05	0.00
	20/08/03	0.00	2.82	86.12	1.09	0.00
	21/08/03	0.00	3.15	87.30	1.19	0.00
	22/08/03	3.40	2.71	84.89	0.98	0.00
	23/08/03	0.00	3.09	86.09	1.21	0.00
	24/08/03	0.00	3.16	87.28	1.19	0.00
wed	25/08/03	0.20	2.36	87.94	0.86	0.00
	26/08/03	0.00	2.23	88.73	0.79	0.00
	27/08/03	0.20	2.94	89.56	1.02	0.00
	28/08/03	0.60	2.56	89.82	0.87	0.00
	29/08/03	0.40	2.54	90.27	0.85	0.00
I	30/08/03	0.00	2.65	91.15	0.88	0.00
	31/08/03	0.20	2.29	91.68	0.73	0.00
wed	01/09/03	0.00	2.97	92.62	0.94	0.00
	02/09/03	0.00	2.28	93.31	0.69	0.00
	03/09/03	0.00	2.64	94.10	0.78	0.00
	04/09/03	0.00	2.63	94.85	0.76	0.00
	05/09/03	0.60	2.20	94.87	0.62	0.00
	06/09/03	0.40	2.76	95.24	0.77	0.00
	07/09/03	4.20	2.58	91.75	0.71	0.00
wed	08/09/03	0.20	2.69	92.39	0.84	0.00
	09/09/03	4.00	2.12	89.04	0.65	0.00
	10/09/03	0.40	1.65	89.21	0.57	0.00
	11/09/03	0.60	2.67	89.52	0.91	0.00
	12/09/03	0.00	2.42	90.34	0.82	0.00
	13/09/03	0.00	1.96	90.99	0.65	0.00
	14/09/03	0.00	2.50	91.79	0.81	0.00
wed	15/09/03	0.00	2.66	92.63	0.83	0.00
	16/09/03	0.20	3.07	93.36	0.93	0.00
	17/09/03	0.00	2.73	94.17	0.81	0.00
	18/09/03	0.80	2.01	93.95	0.58	0.00
	19/09/03	5.20	1.71	89.24	0.50	0.00
	20/09/03	16.80	1.64	73.00	0.56	0.00
	21/09/03	2.80	2.64	71.58	1.38	0.00
wed	22/09/03	7.60	1.88	64.99	1.01	0.00
	23/09/03	0.00	1.65	66.00	1.01	0.00
	24/09/03	0.00	1.82	67.09	1.09	0.00
	25/09/03	0.00	1.94	68.23	1.14	0.00
	26/09/03	1.40	1.57	67.73	0.90	0.00
	27/09/03	0.00	1.61	68.67	0.93	0.00
	28/09/03	0.00	1.82	69.70	1.04	0.00
wed	29/09/03	2.80	1.21	67.58	0.68	0.00
	30/09/03	9.60	1.45	58.83	0.84	0.00
	01/10/03	0.20	1.74	59.81	1.19	0.00
	02/10/03	0.00	1.77	60.99	1.18	0.00
hydrol	03/10/03	0.20	1.38	61.70	0.91	0.00
	04/10/03	0.20	1.36	62.38	0.88	0.00
	05/10/03	4.00	1.37	59.26	0.88	0.00
wed	06/10/03	0.00	1.06	59.97	0.71	0.00
	07/10/03	5.40	0.99	55.23	0.66	0.00
	08/10/03	1.00	1.44	55.27	1.04	0.00
	09/10/03	0.40	1.42	55.89	1.02	0.00
	10/10/03	0.40	1.41	56.49	1.00	0.00
	11/10/03	0.00	1.45	57.51	1.02	0.00
	12/10/03	3.20	0.82	54.88	0.57	0.00
wed	13/10/03	5.80	1.16	49.92	0.84	0.00
	14/10/03	0.00	1.27	50.91	0.99	0.00
	15/10/03	0.00	1.36	51.95	1.04	0.00
	16/10/03	0.00	1.39	53.00	1.05	0.00
	17/10/03	0.00	1.38	54.03	1.03	0.00
	18/10/03	0.20	1.13	54.66	0.83	0.00
	19/10/03	0.60	0.90	54.72	0.66	0.00
wed	20/10/03	0.40	0.89	54.96	0.64	0.00
	21/10/03	0.40	0.85	55.18	0.62	0.00
	22/10/03	11.00	0.55	44.58	0.39	0.00
	23/10/03	0.00	1.01	45.42	0.84	0.00
	24/10/03	0.20	0.91	45.98	0.76	0.00
	25/10/03	0.40	0.88	46.30	0.72	0.00
	26/10/03	0.20	0.94	46.87	0.77	0.00
wed	27/10/03	0.00	1.00	47.69	0.81	0.00
	28/10/03	3.60	0.74	44.68	0.59	0.00

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	29/10/03	1.60	0.72	43.68	0.60	0.00
	30/10/03	32.60	0.70	11.68	0.60	0.00
	31/10/03	15.80	0.59	0.00	0.59	3.53
	01/11/03	9.40	0.74	0.00	0.74	8.66
	02/11/03	1.40	0.65	0.00	0.65	0.75
wed	03/11/03	2.60	0.72	0.00	0.72	1.88
	04/11/03	0.40	0.84	0.44	0.84	0.00
	05/11/03	3.60	0.53	0.00	0.53	2.64
	06/11/03	0.00	0.88	0.88	0.88	0.00
	07/11/03	0.00	0.87	1.75	0.87	0.00
	08/11/03	0.00	0.42	2.17	0.42	0.00
	09/11/03	2.20	0.71	0.68	0.71	0.00
wed	10/11/03	0.20	0.62	1.10	0.62	0.00
	11/11/03	25.20	0.44	0.00	0.44	23.66
	12/11/03	8.00	0.64	0.00	0.64	7.36
	13/11/03	23.80	0.60	0.00	0.60	23.20
	14/11/03	3.60	0.37	0.00	0.37	3.23
	15/11/03	0.20	0.47	0.27	0.47	0.00
	16/11/03	0.00	0.55	0.82	0.55	0.00
wed	17/11/03	2.60	0.58	0.00	0.58	1.20
	18/11/03	0.00	0.34	0.34	0.34	0.00
	19/11/03	14.80	0.41	0.00	0.41	14.06
	20/11/03	9.80	0.59	0.00	0.59	9.21
	21/11/03	0.20	0.49	0.29	0.49	0.00
	22/11/03	0.20	0.47	0.56	0.47	0.00
	23/11/03	0.20	0.48	0.85	0.48	0.00
wed	24/11/03	0.40	0.48	0.93	0.48	0.00
	25/11/03	7.00	0.37	0.00	0.37	5.70
	26/11/03	1.20	0.36	0.00	0.36	0.84
	27/11/03	0.20	0.41	0.21	0.41	0.00
	28/11/03	1.40	0.53	0.00	0.53	0.66
	29/11/03	18.00	0.46	0.00	0.46	17.54
	30/11/03	0.20	0.42	0.22	0.42	0.00
wed	01/12/03	1.60	0.41	0.00	0.41	0.97
	02/12/03	11.20	0.40	0.00	0.40	10.80
	03/12/03	0.20	0.25	0.05	0.25	0.00
	04/12/03	0.00	0.44	0.49	0.44	0.00
	05/12/03	0.20	0.41	0.70	0.41	0.00
	06/12/03	0.20	0.43	0.93	0.43	0.00
	07/12/03	0.00	0.38	1.31	0.38	0.00
wed	08/12/03	0.80	0.41	0.92	0.41	0.00
	09/12/03	2.20	0.29	0.00	0.29	0.98
	10/12/03	6.20	0.23	0.00	0.23	5.97
	11/12/03	8.20	0.43	0.00	0.43	7.77
	12/12/03	11.60	0.50	0.00	0.50	11.10
	13/12/03	1.40	0.41	0.00	0.41	0.99
	14/12/03	0.00	0.35	0.35	0.35	0.00
wed	15/12/03	0.00	0.31	0.66	0.31	0.00
	16/12/03	0.00	0.30	0.96	0.30	0.00
	17/12/03	0.00	0.33	1.29	0.33	0.00
	18/12/03	0.00	0.33	1.62	0.33	0.00
	19/12/03	0.60	0.24	1.27	0.24	0.00
	20/12/03	10.20	0.34	0.00	0.34	8.59
	21/12/03	0.40	0.28	0.00	0.28	0.12
wed	22/12/03	0.60	0.29	0.00	0.29	0.31
	23/12/03	0.80	0.32	0.00	0.32	0.48
	24/12/03	0.00	0.23	0.23	0.23	0.00
	25/12/03	10.00	0.24	0.00	0.24	9.53
	26/12/03	17.40	0.39	0.00	0.39	17.01
	27/12/03	0.20	0.30	0.10	0.30	0.00
	28/12/03	0.20	0.26	0.16	0.26	0.00
wed	29/12/03	1.60	0.33	0.00	0.33	1.11
	30/12/03	2.60	0.31	0.00	0.31	2.29
	31/12/03	14.40	0.38	0.00	0.38	14.02
	01/01/04	0.40	0.30	0.00	0.30	0.10
	02/01/04	5.20	0.22	0.00	0.22	4.98
	03/01/04	5.20	0.41	0.00	0.41	4.79
	04/01/04	0.60	0.35	0.00	0.35	0.25
wed	05/01/04	2.80	0.32	0.00	0.32	2.48
	06/01/04	3.20	0.36	0.00	0.36	2.84
	07/01/04	11.40	0.33	0.00	0.33	11.07
	08/01/04	20.00	0.32	0.00	0.32	19.68
	09/01/04	3.80	0.33	0.00	0.33	3.47
	10/01/04	2.80	0.41	0.00	0.41	2.39
	11/01/04	6.80	0.42	0.00	0.42	6.38
wed	12/01/04	7.20	0.39	0.00	0.39	6.81
	13/01/04	0.40	0.34	0.00	0.34	0.06
	14/01/04	3.20	0.28	0.00	0.28	2.92
	15/01/04	15.60	0.44	0.00	0.44	15.16
	16/01/04	0.80	0.32	0.00	0.32	0.48
	17/01/04	0.20	0.37	0.17	0.37	0.00
	18/01/04	0.20	0.47	0.44	0.47	0.00
wed	19/01/04	0.60	0.38	0.22	0.38	0.00
	20/01/04	0.20	0.24	0.26	0.24	0.00
	21/01/04	0.00	0.28	0.54	0.28	0.00
	22/01/04	4.00	0.60	0.00	0.60	2.86
	23/01/04	8.40	0.52	0.00	0.52	7.88
	24/01/04	1.20	0.46	0.00	0.46	0.74
	25/01/04	0.20	0.46	0.26	0.46	0.00
wed	26/01/04	7.20	0.43	0.00	0.43	6.50
	27/01/04	2.20	0.37	0.00	0.37	1.83
	28/01/04	1.40	0.53	0.00	0.53	0.87
	29/01/04	0.00	0.42	0.42	0.42	0.00
	30/01/04	7.20	0.61	0.00	0.61	6.17
	31/01/04	14.00	0.62	0.00	0.62	13.38
	01/02/04	2.60	0.53	0.00	0.53	2.07
wed	02/02/04	7.20	0.61	0.00	0.61	6.59
	03/02/04	13.00	0.68	0.00	0.68	12.32
	04/02/04	13.00	0.67	0.00	0.67	12.33
	05/02/04	0.00	0.62	0.62	0.62	0.00
	06/02/04	12.80	0.48	0.00	0.48	11.70

Results of Evapotranspiration and Effective Rainfall Calculations for Site 3 using Hargreaves Method

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	07/02/04	0.40	0.59	0.19	0.59	0.00
	08/02/04	0.00	0.70	0.89	0.70	0.00
wed	09/02/04	0.00	0.78	1.67	0.78	0.00
	10/02/04	0.00	0.67	2.34	0.67	0.00
	11/02/04	0.00	0.93	3.27	0.93	0.00
	12/02/04	0.20	0.98	4.05	0.98	0.00
	13/02/04	0.00	0.86	4.91	0.86	0.00
	14/02/04	0.00	0.83	5.74	0.83	0.00
	15/02/04	0.00	0.89	6.63	0.89	0.00
wed	16/02/04	0.60	0.80	6.84	0.80	0.00
	17/02/04	0.00	1.01	7.85	1.01	0.00
	18/02/04	0.00	0.90	8.75	0.90	0.00
	19/02/04	0.00	0.86	9.60	0.86	0.00
	20/02/04	0.00	0.67	10.27	0.67	0.00
	21/02/04	0.00	0.65	10.92	0.65	0.00
	22/02/04	0.00	0.74	11.66	0.74	0.00
wed	23/02/04	0.00	0.89	12.55	0.89	0.00
	24/02/04	0.20	0.78	13.13	0.78	0.00
	25/02/04	0.00	0.67	13.80	0.67	0.00
	26/02/04	0.60	0.63	13.83	0.63	0.00
	27/02/04	0.00	0.72	14.55	0.72	0.00
	28/02/04	0.00	0.90	15.45	0.90	0.00
	29/02/04	0.00	0.99	16.44	0.99	0.00
wed	01/03/04	0.00	1.07	17.50	1.07	0.00
	02/03/04	0.00	1.11	18.61	1.11	0.00
	03/03/04	11.00	1.12	8.73	1.12	0.00
	04/03/04	0.40	1.36	9.69	1.36	0.00
	05/03/04	0.00	1.31	11.00	1.31	0.00
	06/03/04	0.60	1.31	11.71	1.31	0.00
	07/03/04	0.00	1.29	13.00	1.29	0.00
wed	08/03/04	0.00	1.24	14.24	1.24	0.00
	09/03/04	0.00	1.26	15.50	1.26	0.00
	10/03/04	0.00	1.07	16.57	1.07	0.00
	11/03/04	15.80	0.51	1.28	0.51	0.00
	12/03/04	20.40	1.21	0.00	1.21	17.92
	13/03/04	3.60	1.35	0.00	1.35	2.25
	14/03/04	6.60	1.50	0.00	1.50	5.10
wed	15/03/04	2.40	1.57	0.00	1.57	0.83
	16/03/04	2.00	1.12	0.00	1.12	0.88
	17/03/04	0.00	1.64	1.64	1.64	0.00
	18/03/04	5.60	1.27	0.00	1.27	2.69
		640.40	183.67	4412.64	133.79	414.93

DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d

SITE 4: THREE WELLS

Results of Evapotranspiration and Effective Rainfall Calculations for Site 4 using Hargreaves Method

Meteorological balance DAILY DATA

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	01/01/03	7.00	0.26	0.00	0.00	7.00
	02/01/03	1.00	0.32	0.00	0.32	0.68
	03/01/03	1.60	0.23	0.00	0.23	1.37
	04/01/03	0.20	0.30	0.10	0.30	0.00
	05/01/03	0.20	0.35	0.25	0.35	0.00
wed	06/01/03	0.00	0.33	0.58	0.33	0.00
	07/01/03	0.00	0.19	0.77	0.19	0.00
	08/01/03	2.40	0.29	0.00	0.29	1.34
	09/01/03	2.60	0.26	0.00	0.26	2.34
	10/01/03	0.00	0.23	0.23	0.23	0.00
	11/01/03	0.00	0.37	0.60	0.37	0.00
	12/01/03	0.20	0.42	0.82	0.42	0.00
wed	13/01/03	0.40	0.26	0.68	0.26	0.00
	14/01/03	0.00	0.18	0.86	0.18	0.00
	15/01/03	0.00	0.42	1.28	0.42	0.00
	16/01/03	0.20	0.46	1.54	0.46	0.00
	17/01/03	11.40	0.46	0.00	0.46	9.40
	18/01/03	8.60	0.40	0.00	0.40	8.20
	19/01/03	1.40	0.40	0.00	0.40	1.00
wed	20/01/03	6.60	0.37	0.00	0.37	6.23
	21/01/03	1.20	0.40	0.00	0.40	0.80
	22/01/03	0.00	0.44	0.44	0.44	0.00
	23/01/03	0.20	0.58	0.82	0.58	0.00
	24/01/03	4.00	0.35	0.00	0.35	2.84
	25/01/03	7.60	0.41	0.00	0.41	7.19
	26/01/03	0.00	0.58	0.58	0.58	0.00
wed	27/01/03	1.00	0.63	0.21	0.63	0.00
	28/01/03	4.20	0.30	0.00	0.30	3.69
	29/01/03	0.40	0.35	0.00	0.35	0.05
	30/01/03	1.60	0.47	0.00	0.47	1.13
	31/01/03	2.00	0.51	0.00	0.51	1.49
	01/02/03	0.40	0.49	0.09	0.49	0.00
	02/02/03	2.20	0.40	0.00	0.40	1.71
wed	03/02/03	0.20	0.41	0.21	0.41	0.00
	04/02/03	0.80	0.45	0.00	0.45	0.14
	05/02/03	0.20	0.59	0.39	0.59	0.00
	06/02/03	2.00	0.62	0.00	0.62	0.99
	07/02/03	0.20	0.59	0.39	0.59	0.00
	08/02/03	4.00	0.44	0.00	0.44	3.16
	09/02/03	1.20	0.68	0.00	0.68	0.52
wed	10/02/03	6.60	0.69	0.00	0.69	5.91
	11/02/03	0.40	0.84	0.44	0.84	0.00
	12/02/03	0.20	0.85	1.09	0.85	0.00
	13/02/03	0.00	0.75	1.83	0.75	0.00
	14/02/03	0.00	0.64	2.47	0.64	0.00
	15/02/03	0.20	0.82	3.09	0.82	0.00
	16/02/03	0.00	0.57	3.66	0.57	0.00
wed	17/02/03	0.00	0.45	4.11	0.45	0.00
	18/02/03	0.00	0.42	4.53	0.42	0.00
	19/02/03	0.00	0.70	5.23	0.70	0.00
	20/02/03	0.60	0.67	5.30	0.67	0.00
	21/02/03	0.20	0.99	6.10	0.99	0.00
	22/02/03	0.00	0.89	6.98	0.89	0.00
	23/02/03	0.60	1.02	7.40	1.02	0.00
wed	24/02/03	0.20	0.94	8.15	0.94	0.00
	25/02/03	0.00	0.59	8.74	0.59	0.00
	26/02/03	2.20	0.34	6.88	0.34	0.00
	27/02/03	0.40	0.86	7.34	0.86	0.00
	28/02/03	16.80	0.98	0.00	0.98	8.49
	01/03/03	3.60	0.97	0.00	0.97	2.63
	02/03/03	2.80	1.26	0.00	1.26	1.54
wed	03/03/03	1.40	0.96	0.00	0.96	0.44
	04/03/03	0.80	0.98	0.18	0.98	0.00
	05/03/03	0.40	1.19	0.96	1.19	0.00
	06/03/03	0.00	1.22	2.18	1.22	0.00
	07/03/03	3.20	0.80	0.00	0.80	0.22
	08/03/03	8.80	1.18	0.00	1.18	7.62
	09/03/03	1.40	0.86	0.00	0.86	0.54
wed	10/03/03	10.80	1.02	0.00	1.02	9.78
	11/03/03	1.20	1.21	0.01	1.21	0.00
	12/03/03	0.20	1.24	1.05	1.24	0.00
	13/03/03	0.00	1.20	2.25	1.20	0.00
	14/03/03	0.20	1.55	3.60	1.55	0.00
	15/03/03	0.00	1.60	5.20	1.60	0.00
	16/03/03	0.00	1.85	7.05	1.85	0.00
wed	17/03/03	0.00	2.16	9.21	2.16	0.00
	18/03/03	0.20	2.19	11.20	2.19	0.00
	19/03/03	0.20	1.70	12.71	1.70	0.00
	20/03/03	0.00	1.67	14.38	1.67	0.00
	21/03/03	0.00	1.91	16.29	1.91	0.00
	22/03/03	0.00	1.82	18.11	1.82	0.00
	23/03/03	0.00	2.45	20.56	2.45	0.00
wed	24/03/03	0.00	2.08	22.64	2.08	0.00
	25/03/03	0.00	1.72	24.36	1.72	0.00
	26/03/03	0.00	2.47	26.82	2.47	0.00
	27/03/03	0.00	1.98	28.81	1.98	0.00
	28/03/03	1.00	1.85	29.66	1.85	0.00
	29/03/03	0.00	1.95	31.61	1.95	0.00
	30/03/03	0.00	1.97	33.58	1.97	0.00
wed	31/03/03	0.00	2.25	35.83	2.25	0.00
	01/04/03	3.40	1.70	34.13	1.70	0.00
	02/04/03	0.80	1.91	35.24	1.91	0.00
	03/04/03	0.00	1.86	37.10	1.86	0.00
	04/04/03	0.20	2.53	39.43	2.53	0.00
	05/04/03	0.00	2.17	41.60	2.17	0.00
	06/04/03	0.00	1.74	43.11	1.51	0.00
wed	07/04/03	0.00	1.81	44.66	1.55	0.00
	08/04/03	0.00	1.95	46.29	1.64	0.00
	09/04/03	0.00	2.21	48.10	1.81	0.00
	10/04/03	0.00	1.81	49.55	1.45	0.00
	11/04/03	0.00	1.93	51.06	1.51	0.00
	12/04/03	0.00	1.86	52.49	1.43	0.00
	13/04/03	1.60	2.02	52.41	1.52	0.00
wed	14/04/03	0.60	2.41	53.61	1.81	0.00
	15/04/03	0.00	3.25	56.01	2.39	0.00
	16/04/03	0.00	3.57	58.55	2.54	0.00
	17/04/03	0.00	3.00	60.60	2.05	0.00
	18/04/03	0.00	2.51	62.26	1.65	0.00
	19/04/03	0.00	1.78	63.40	1.14	0.00
	20/04/03	0.00	1.74	64.49	1.10	0.00
wed	21/04/03	10.00	1.63	55.50	1.00	0.00
	22/04/03	0.00	2.58	57.34	1.85	0.00
	23/04/03	0.00	2.67	59.20	1.86	0.00
	24/04/03	1.80	2.33	58.98	1.57	0.00
	25/04/03	6.40	2.47	54.25	1.67	0.00
	26/04/03	3.60	2.41	52.41	1.76	0.00
	27/04/03	2.00	2.55	52.32	1.92	0.00
wed	28/04/03	5.60	1.83	48.10	1.37	0.00
	29/04/03	0.20	2.87	50.19	2.29	0.00
	30/04/03	1.40	2.39	50.64	1.85	0.00
	01/05/03	20.60	2.28	31.79	1.76	0.00
	02/05/03	0.60	2.69	33.89	2.69	0.00
	03/05/03	2.20	2.54	34.23	2.54	0.00
	04/05/03	24.00	1.88	12.11	1.88	0.00
wed	05/05/03	4.40	2.57	10.28	2.57	0.00
	06/05/03	1.20	2.96	12.04	2.96	0.00
	07/05/03	0.20	3.05	14.89	3.05	0.00
	08/05/03	0.00	2.98	17.88	2.98	0.00
	09/05/03	1.80	2.88	18.96	2.88	0.00
	10/05/03	1.00	3.06	21.01	3.06	0.00
	11/05/03	1.80	2.71	21.93	2.71	0.00
wed	12/05/03	3.40	2.42	20.95	2.42	0.00
	13/05/03	0.20	2.93	23.68	2.93	0.00
	14/05/03	0.00	3.26	26.94	3.26	0.00
	15/05/03	3.60	2.60	25.94	2.60	0.00
	16/05/03	9.80	2.68	18.82	2.68	0.00
	17/05/03	5.60	2.20	15.42	2.20	0.00
	18/05/03	13.40	2.68	4.70	2.68	0.00
wed	19/05/03	6.80	2.05	0.00	2.05	0.05
	20/05/03	1.00	2.40	1.40	2.40	0.00
	21/05/03	7.60	3.08	0.00	3.08	3.12
	22/05/03	0.40	3.30	2.90	3.30	0.00
	23/05/03	4.60	2.54	0.84	2.54	0.00
	24/05/03	0.20	2.44	3.08	2.44	0.00
	25/05/03	0.00	2.92	5.99	2.92	0.00
wed	26/05/03	2.20	3.31	7.10	3.31	0.00
	27/05/03	1.00	2.90	9.01	2.90	0.00
	28/05/03	3.00	2.74	8.75	2.74	0.00
	29/05/03	1.60	3.89	11.04	3.89	0.00
	30/05/03	0.00	5.29	16.34	5.29	0.00
	31/05/03	0.00	3.76	20.09	3.76	0.00
	01/06/03	0.40	3.37	23.06	3.37	0.00
wed	02/06/03	0.00	3.50	26.56	3.50	0.00
	03/06/03	10.80	2.52	18.28	2.52	0.00
	04/06/03	0.20	3.05	21.13	3.05	0.00
	05/06/03	2.00	3.16	22.29	3.16	0.00
	06/06/03	0.00	3.92	26.21	3.92	0.00
	07/06/03	11.40	3.03	17.85	3.03	0.00
	08/06/03	1.80	3.94	19.98	3.94	0.00
wed	09/06/03	4.40	3.13	18.72	3.13	0.00
	10/06/03	3.00	3.30	19.02	3.30	0.00
	11/06/03	0.20	3.53	22.34	3.53	0.00
	12/06/03	0.60	3.55	25.30	3.55	0.00
	13/06/03	0.00	3.78	29.08	3.78	0.00
	14/06/03	0.20	4.84	33.72	4.84	0.00
	15/06/03	0.00	3.91	37.63	3.91	0.00
wed	16/06/03	0.20	4.73	42.16	4.73	0.00
	17/06/03	0.00	3.52	45.20	3.04	0.00
	18/06/03	0.20	3.45	47.87	2.86	0.00
	19/06/03	0.00	3.55	50.71	2.84	0.00
	20/06/03	0.00	3.71	53.57	2.86	0.00
	21/06/03	0.40	4.03	56.14	2.98	0.00
	22/06/03	0.00	3.91	58.91	2.77	0.00
wed	23/06/03	0.00	3.48	61.27	2.36	0.00
	24/06/03	0.00	4.46	64.18	2.91	0.00
	25/06/03	0.00	5.09	67.34	3.16	0.00
	26/06/03	1.20	3.81	68.37	2.23	0.00
	27/06/03	20.80	3.24	49.43	1.86	0.00
	28/06/03	0.00	3.82	52.42	2.99	0.00
	29/06/03	2.00	4.43	53.75	3.32	0.00
wed	30/06/03	24.00	2.55	31.62	1.87	0.00
	01/07/03	3.20	3.28	31.70	3.28	0.00
	02/07/03	0.20	4.01	35.51	4.01	0.00
	03/07/03	0.20	2.77	38.08	2.77	0.00
	04/07/03	0.00	2.58	40.66	2.58	0.00
	05/07/03	0.00	2.96	43.27	2.61	0.00
	06/07/03	0.40	3.39	45.76	2.89	0.00
wed	07/07/03	4.00	3.11	44.32	2.57	0.00
	08/07/03	11.60	3.78	35.90	3.18	0.00
	09/07/03	0.00	3.57	39.46	3.57	0.00
	10/07/03	1.20	3.58	41.84	3.58	0.00
	11/07/03	0.00	3.46	44.85	3.01	0.00
	12/07/03	0.00	4.28	48.42	3.57	0.00
	13/07/03	0.00	4.74	52.19	3.77	0.00
wed	14/07/03	0.40	4.96	55.53	3.74	0.00
	15/07/03	6.60	3.38	51.35	2.42	0.00
	16/07/03	0.80	4.73	54.16	3.61	0.00
	17/07/03	19.60	1.97	36.00	1.44	0.00
	18/07/03	0.40	4.26	39.85	4.26	0.00
	19/07/03	5.00	3.21	38.06	3.21	0.00

Results of Evapotranspiration and Effective Rainfall Calculations for Site 4 using Hargreaves Method

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	20/07/03	0.20	3.31	41.17	3.31	0.00
wed	21/07/03	6.40	3.38	37.73	2.96	0.00
	22/07/03	0.20	3.07	40.60	3.07	0.00
	23/07/03	3.80	2.92	39.37	2.57	0.00
	24/07/03	3.40	3.12	39.09	3.12	0.00
	25/07/03	0.20	3.32	42.20	3.32	0.00
	26/07/03	0.00	3.39	45.13	2.93	0.00
	27/07/03	5.00	3.67	43.18	3.05	0.00
wed	28/07/03	4.20	3.48	41.95	2.97	0.00
	29/07/03	2.60	2.91	41.88	2.53	0.00
	30/07/03	1.00	3.25	43.70	2.82	0.00
	31/07/03	3.40	3.34	43.13	2.83	0.00
	01/08/03	0.00	3.01	45.70	2.57	0.00
	02/08/03	0.20	3.95	48.76	3.26	0.00
	03/08/03	0.20	3.66	51.45	2.89	0.00
wed	04/08/03	0.00	4.55	54.92	3.46	0.00
	05/08/03	0.20	4.98	58.32	3.60	0.00
	06/08/03	0.20	3.99	60.85	2.73	0.00
	07/08/03	0.00	5.07	64.18	3.33	0.00
	08/08/03	0.20	5.27	67.25	3.27	0.00
	09/08/03	0.00	3.61	69.37	2.12	0.00
	10/08/03	0.00	3.75	71.47	2.11	0.00
wed	11/08/03	0.00	4.34	73.82	2.34	0.00
	12/08/03	0.00	4.43	76.09	2.27	0.00
	13/08/03	0.00	3.43	77.76	1.67	0.00
	14/08/03	0.20	3.87	79.38	1.82	0.00
	15/08/03	0.00	3.55	80.98	1.60	0.00
	16/08/03	0.00	4.17	82.79	1.81	0.00
	17/08/03	1.40	3.42	82.81	1.42	0.00
wed	18/08/03	0.20	3.31	83.98	1.37	0.00
	19/08/03	0.00	2.62	85.02	1.05	0.00
	20/08/03	0.00	2.82	86.12	1.09	0.00
	21/08/03	0.00	3.15	87.30	1.19	0.00
	22/08/03	3.40	2.71	84.89	0.98	0.00
	23/08/03	0.00	3.09	86.09	1.21	0.00
	24/08/03	0.00	3.16	87.28	1.19	0.00
wed	25/08/03	0.20	2.36	87.94	0.86	0.00
	26/08/03	0.00	2.23	88.73	0.79	0.00
	27/08/03	0.20	2.94	89.56	1.02	0.00
	28/08/03	0.60	2.56	89.82	0.87	0.00
	29/08/03	0.40	2.54	90.27	0.85	0.00
	30/08/03	0.00	2.65	91.15	0.88	0.00
	31/08/03	0.20	2.29	91.68	0.73	0.00
wed	01/09/03	0.00	2.97	92.62	0.94	0.00
	02/09/03	0.00	2.28	93.31	0.69	0.00
	03/09/03	0.00	2.64	94.10	0.78	0.00
	04/09/03	0.00	2.63	94.85	0.76	0.00
	05/09/03	0.60	2.20	94.87	0.62	0.00
	06/09/03	0.40	2.76	95.24	0.77	0.00
	07/09/03	4.20	2.58	91.75	0.71	0.00
wed	08/09/03	0.20	2.69	92.39	0.84	0.00
	09/09/03	4.00	2.12	89.04	0.65	0.00
	10/09/03	0.40	1.65	89.21	0.57	0.00
	11/09/03	0.60	2.67	89.52	0.91	0.00
	12/09/03	0.00	2.42	90.34	0.82	0.00
	13/09/03	0.00	1.96	90.99	0.65	0.00
	14/09/03	0.00	2.50	91.79	0.81	0.00
wed	15/09/03	0.00	2.66	92.63	0.83	0.00
	16/09/03	0.20	3.07	93.36	0.93	0.00
	17/09/03	0.00	2.73	94.17	0.81	0.00
	18/09/03	0.80	2.01	93.95	0.58	0.00
	19/09/03	5.20	1.71	89.24	0.50	0.00
	20/09/03	16.80	1.64	73.00	0.56	0.00
	21/09/03	2.80	2.64	71.58	1.38	0.00
wed	22/09/03	7.60	1.88	64.99	1.01	0.00
	23/09/03	0.00	1.65	66.00	1.01	0.00
	24/09/03	0.00	1.82	67.09	1.09	0.00
	25/09/03	0.00	1.94	68.23	1.14	0.00
	26/09/03	1.40	1.57	67.73	0.90	0.00
	27/09/03	0.00	1.81	68.67	0.93	0.00
	28/09/03	0.00	1.82	69.70	1.04	0.00
wed	29/09/03	2.80	1.21	67.58	0.68	0.00
	30/09/03	9.60	1.45	58.83	0.84	0.00
	01/10/03	0.20	1.74	59.81	1.19	0.00
	02/10/03	0.00	1.77	60.99	1.18	0.00
hydrol...	03/10/03	0.20	1.38	61.70	0.91	0.00
	04/10/03	0.20	1.36	62.38	0.88	0.00
	05/10/03	4.00	1.37	59.26	0.88	0.00
wed	06/10/03	0.00	1.06	59.97	0.71	0.00
	07/10/03	5.40	0.99	55.23	0.66	0.00
	08/10/03	1.00	1.44	55.27	1.04	0.00
	09/10/03	0.40	1.42	55.89	1.02	0.00
	10/10/03	0.40	1.41	56.49	1.00	0.00
	11/10/03	0.00	1.45	57.51	1.02	0.00
	12/10/03	3.20	0.82	54.88	0.57	0.00
wed	13/10/03	5.80	1.16	49.92	0.84	0.00
	14/10/03	0.00	1.27	50.91	0.99	0.00
	15/10/03	0.00	1.36	51.95	1.04	0.00
	16/10/03	0.00	1.39	53.00	1.05	0.00
	17/10/03	0.00	1.38	54.03	1.03	0.00
	18/10/03	0.20	1.13	54.66	0.83	0.00
	19/10/03	0.60	0.90	54.72	0.66	0.00
wed	20/10/03	0.40	0.89	54.96	0.64	0.00
	21/10/03	0.40	0.85	55.18	0.62	0.00
	22/10/03	11.00	0.55	44.58	0.39	0.00
	23/10/03	0.00	1.01	45.42	0.84	0.00
	24/10/03	0.20	0.91	45.98	0.76	0.00
	25/10/03	0.40	0.88	46.30	0.72	0.00
	26/10/03	0.20	0.94	46.87	0.77	0.00
wed	27/10/03	0.00	1.00	47.69	0.81	0.00
	28/10/03	3.60	0.74	44.68	0.59	0.00

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	29/10/03	1.60	0.72	43.68	0.60	0.00
	30/10/03	32.60	0.70	11.68	0.60	0.00
	31/10/03	15.80	0.59	0.00	0.59	3.53
	01/11/03	9.40	0.74	0.00	0.74	8.66
	02/11/03	1.40	0.65	0.00	0.65	0.75
wed	03/11/03	2.60	0.72	0.00	0.72	1.88
	04/11/03	0.40	0.84	0.44	0.84	0.00
	05/11/03	3.60	0.53	0.00	0.53	2.64
	06/11/03	0.00	0.88	0.88	0.88	0.00
	07/11/03	0.00	0.87	1.75	0.87	0.00
	08/11/03	0.00	0.42	2.17	0.42	0.00
	09/11/03	2.20	0.71	0.88	0.71	0.00
wed	10/11/03	0.20	0.62	1.10	0.62	0.00
	11/11/03	25.20	0.44	0.00	0.44	23.66
	12/11/03	8.00	0.64	0.00	0.64	7.36
	13/11/03	23.80	0.60	0.00	0.60	23.20
	14/11/03	3.60	0.37	0.00	0.37	3.23
	15/11/03	0.20	0.47	0.27	0.47	0.00
	16/11/03	0.00	0.55	0.82	0.55	0.00
wed	17/11/03	0.20	0.58	1.20	0.58	0.00
	18/11/03	0.00	0.34	1.53	0.34	0.00
	19/11/03	27.00	0.41	0.00	0.41	25.06
	20/11/03	17.20	0.59	0.00	0.59	16.61
	21/11/03	0.40	0.49	0.09	0.49	0.00
	22/11/03	0.40	0.47	0.16	0.47	0.00
	23/11/03	0.40	0.48	0.25	0.48	0.00
wed	24/11/03	1.20	0.48	0.00	0.48	0.47
	25/11/03	13.80	0.37	0.00	0.37	13.43
	26/11/03	1.80	0.36	0.00	0.36	1.44
	27/11/03	0.60	0.41	0.00	0.41	0.19
	28/11/03	2.20	0.53	0.00	0.53	1.67
	29/11/03	32.60	0.46	0.00	0.46	32.14
	30/11/03	0.20	0.42	0.22	0.42	0.00
wed	01/12/03	6.20	0.41	0.00	0.41	5.57
	02/12/03	31.00	0.40	0.00	0.40	30.60
	03/12/03	0.40	0.25	0.00	0.25	0.15
	04/12/03	0.00	0.44	0.44	0.44	0.00
	05/12/03	0.20	0.41	0.66	0.41	0.00
	06/12/03	1.00	0.43	0.09	0.43	0.00
	07/12/03	0.00	0.38	0.47	0.38	0.00
wed	08/12/03	3.00	0.41	0.00	0.41	2.13
	09/12/03	4.20	0.29	0.00	0.29	3.91
	10/12/03	9.60	0.23	0.00	0.23	9.37
	11/12/03	16.20	0.43	0.00	0.43	15.77
	12/12/03	26.40	0.50	0.00	0.50	25.90
	13/12/03	5.20	0.41	0.00	0.41	4.79
	14/12/03	0.00	0.35	0.35	0.35	0.00
wed	15/12/03	0.00	0.31	0.66	0.31	0.00
	16/12/03	0.00	0.30	0.96	0.30	0.00
	17/12/03	0.00	0.33	1.29	0.33	0.00
	18/12/03	0.00	0.33	1.62	0.33	0.00
	19/12/03	0.80	0.24	1.07	0.24	0.00
	20/12/03	16.60	0.34	0.00	0.34	15.19
	21/12/03	1.40	0.28	0.00	0.28	1.12
wed	22/12/03	1.60	0.29	0.00	0.29	1.31
	23/12/03	2.60	0.32	0.00	0.32	2.28
	24/12/03	0.00	0.23	0.23	0.23	0.00
	25/12/03	18.20	0.24	0.00	0.24	17.73
	26/12/03	34.40	0.39	0.00	0.39	34.01
	27/12/03	0.20	0.30	0.10	0.30	0.00
	28/12/03	0.20	0.26	0.16	0.26	0.00
wed	29/12/03	4.00	0.33	0.00	0.33	3.51
	30/12/03	6.60	0.31	0.00	0.31	6.29
	31/12/03	26.60	0.38	0.00	0.38	26.22
	01/01/04	1.00	0.30	0.00	0.30	0.70
	02/01/04	9.80	0.22	0.00	0.22	9.58
	03/01/04	10.20	0.41	0.00	0.41	9.79
	04/01/04	1.60	0.35	0.00	0.35	1.25
wed	05/01/04	4.80	0.32	0.00	0.32	4.48
	06/01/04	6.00	0.36	0.00	0.36	5.64
	07/01/04	18.60	0.33	0.00	0.33	18.27
	08/01/04	30.80	0.32	0.00	0.32	30.48
	09/01/04	8.00	0.33	0.00	0.33	7.67
	10/01/04	6.80	0.41	0.00	0.41	6.39
	11/01/04	14.20	0.42	0.00	0.42	13.78
wed	12/01/04	9.20	0.39	0.00	0.39	8.81
	13/01/04	1.40	0.34	0.00	0.34	1.06
	14/01/04	4.40	0.28	0.00	0.28	4.12
	15/01/04	30.60	0.44	0.00	0.44	30.16
	16/01/04	4.80	0.32	0.00	0.32	4.48
	17/01/04	0.80	0.37	0.00	0.37	0.43
	18/01/04	0.20	0.47	0.27	0.47	0.00
wed	19/01/04	0.80	0.38	0.00	0.38	0.15
	20/01/04	0.80	0.24	0.00	0.24	0.56
	21/01/04	0.00	0.28	0.28	0.28	0.00
	22/01/04	6.60	0.60	0.00	0.60	5.72
	23/01/04	13.00	0.52	0.00	0.52	12.48
	24/01/04	2.40	0.46	0.00	0.46	1.94
	25/01/04	0.20	0.46	0.26	0.46	0.00
wed	26/01/04	21.40	0.43	0.00	0.43	20.70
	27/01/04	7.20	0.37	0.00	0.37	6.83
	28/01/04	3.00	0.53	0.00	0.53	2.47
	29/01/04	0.00	0.42	0.42	0.42	0.00
	30/01/04	13.20	0.61	0.00	0.61	12.17
	31/01/04	27.40	0.62	0.00	0.62	26.78
	01/02/04	3.80	0.53	0.00	0.53	3.27
wed	02/02/04	9.60	0.61	0.00	0.61	8.99
	03/02/04	10.40	0.68	0.00	0.68	9.72
	04/02/04	11.00	0.67	0.00	0.67	10.33
	05/02/04	0.00	0.62	0.62	0.62	0.00
	06/02/04	9.20	0.48	0.00	0.48	8.10

Results of Evapotranspiration and Effective Rainfall Calculations for Site 4 using Hargreaves Method

	DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d
	07/02/04	0.40	0.59	0.19	0.59	0.00
	08/02/04	0.00	0.70	0.89	0.70	0.00
wed	09/02/04	0.00	0.78	1.67	0.78	0.00
	10/02/04	0.00	0.67	2.34	0.67	0.00
	11/02/04	0.00	0.93	3.27	0.93	0.00
	12/02/04	0.00	0.98	4.25	0.98	0.00
	13/02/04	0.40	0.86	4.71	0.86	0.00
	14/02/04	0.00	0.83	5.54	0.83	0.00
	15/02/04	0.20	0.89	6.23	0.89	0.00
wed	16/02/04	0.80	0.80	6.24	0.80	0.00
	17/02/04	0.00	1.01	7.25	1.01	0.00
	18/02/04	0.20	0.90	7.95	0.90	0.00
	19/02/04	0.00	0.86	8.80	0.86	0.00
	20/02/04	0.20	0.67	9.27	0.67	0.00
	21/02/04	0.00	0.65	9.92	0.65	0.00
	22/02/04	0.00	0.74	10.66	0.74	0.00
wed	23/02/04	0.00	0.89	11.55	0.89	0.00
	24/02/04	1.20	0.78	11.13	0.78	0.00
	25/02/04	0.00	0.67	11.80	0.67	0.00
	26/02/04	0.80	0.63	11.63	0.63	0.00
	27/02/04	0.00	0.72	12.35	0.72	0.00
	28/02/04	0.00	0.90	13.25	0.90	0.00
	29/02/04	0.00	0.99	14.24	0.99	0.00
wed	01/03/04	0.20	1.07	15.10	1.07	0.00
	02/03/04	0.00	1.11	16.21	1.11	0.00
	03/03/04	13.40	1.12	3.93	1.12	0.00
	04/03/04	0.20	1.36	5.09	1.36	0.00
	05/03/04	0.00	1.31	6.40	1.31	0.00
	06/03/04	0.20	1.31	7.51	1.31	0.00
	07/03/04	0.00	1.29	8.80	1.29	0.00
wed	08/03/04	0.00	1.24	10.04	1.24	0.00
	09/03/04	0.20	1.26	11.10	1.26	0.00
	10/03/04	0.00	1.07	12.17	1.07	0.00
	11/03/04	30.60	0.51	0.00	0.51	17.92
	12/03/04	5.40	1.21	0.00	1.21	4.19
	13/03/04	3.80	1.35	0.00	1.35	2.45
	14/03/04	7.80	1.50	0.00	1.50	6.30
wed	15/03/04	3.60	1.57	0.00	1.57	2.03
	16/03/04	2.20	1.12	0.00	1.12	1.08
	17/03/04	1.20	1.64	0.44	1.64	0.00
	18/03/04	6.00	1.27	0.00	1.27	4.29

DATE	meas. RF mm/d	calc. Eto (mm/d)	calc. SMD (mm)	Et actual	Eff RF mm/d