If you are participating in the presentations this year, please provide a written report and a copy of your final report presentation by 31 October. If not, please provide a written report by 30 September.

Part 1 - Summary Details

Please use your TAB key to complete Parts 1 & 2.

CRDC Project Number: QTT1201

Project Title: Monitoring Diuron in river water in two Cotton Catchments

Project Commencement Date: 2/6/2012 **Project Completion Date:** 30/6/2012

CRDC Program: - Please Select One -

Part 2 – Contact Details

Administrator: Prof Ivan Kennedy
Organisation: Quick Test Technologies Pty Ltd
Postal Address: PO Box 6285, North Ryde NSW 2113
Ph: 02 8627 1046 **Fax:** 02 8627 1099 **E-mail:** ivan.kennedy@sydney.edu.au

Principal Researcher: Dr Angus Crossan
Organisation: Quick Test Technologies Pty Ltd
Postal Address: PO Box 6285, North Ryde NSW 2113

Ph: 04199669140 **Fax:** 02 8627 1099 **E-mail:** anguxn@gmail.com

Supervisor: (Name & position of senior scientist overseeing the project).
Organisation:
Postal Address:
Ph: **Fax:** **E-mail:**

Signature of Research Provider Representative: *Angus Crossan*

Part 2 – Final Report Executive Summary

In response to the APVMA regulatory review of diuron, this project was initiated in response for two main purposes. Firstly, to show that that cotton industry has the technology the effectively manage chemical residues in BMP cotton systems and secondly to provide an assessment of the ecological risk from diuron and atrazine in the Namoi and Emerald cotton catchments.

The project used QuickTests, rapid analytical technology, to analyse 456 samples over a four month period. Ten per cent of samples were sent to an analytical laboratory for instrumental analysis. This rapid analytical technology, develop recently through a Cotton CRC project, enables superior environmental management to support the cotton eco-brand. Not only can analysis be undertaken on site, giving immediate feedback for management, a lot more data is made available as the costs are about 10-20% of contemporary instrumental methods.

Following the principles of ecological risk assessment this project showed that the concentrations of diuron and atrazine detected in the Namoi and Emerald catchments did not pose ecological concern based on the assessment endpoints adopted for this agricultural region (90% of ecological species protected 90% of the time).

This project provides the framework for rapid analytical technology to be included in catchment management and BMP systems. Until now, the costs of analysis have been prohibitive. The technology and systems are available to support good practice of effective pesticides for the industry against increasing regulatory pressure.

Part 3 – Final Report Guide (due 31 October)

Background

1. There was increasing focus on the continued use of Diuron in view of environmental concerns, as indicated by the recent APVMA review and suspension of registration[1] Although the review is not complete, preliminary indication is that application levels of 1.8 kg/ha may be retained for use where such use does not create a "high risk situation". Further, notification from the APVMA indicates that further regulatory action is likely. This short project provides a proactive response aimed to show that diuron use in cotton does not pose a high environmental risk.

   One of the weaknesses with the ecological risk assessments undertaken by the Department of Sustainability, Environment, Water, Population and Communities is that the worst case with respect to use scenario or location is sought and used as a benchmark for label controls. We believe this approach is excessively precautionary as it selects for poor and extreme production environments and practices and therefore strongly biases against improving good practices.

   The recent development of low-cost analytical technology for Diuron (QuickTests) within a Cotton CRC project provides a good opportunity to undertake low-cost sampling of rivers in cotton catchments. River water sampling for herbicides in the Namoi valley

[1] http://www.apvma.gov.au/products/review/current/diuron.php (Accessed 1st September 2012)

catchment has not been undertaken in cotton catchments since ca. 2007. Residues assoicated with newer cotton developments, such as in the Fitzroy River, were yet to be characterised to the same detail.

Objectives

2. The objectives of this project were to use QuickTests to comprehensively analyse river water and provide evidence that the current use of diuron and atrazine in two cotton catchments, the Namoi and Fitzroy Rivers in New South Wales and Queensland respectively, does not cause ecological concern following the principles of ecological risk assessment.

   This objective was based on the null hypothesis that if diuron or atrazine residues were detected at concentrations above 90% of a species sensitivity distribution for more than 90% of the time, then there would be grounds for ecological concern. These assessment endpoints were used because the catchment area is an important agricultural resource and an important social and ecological region. The visual amenity, recreational fishing, ecosystem services, and conservational value are important aspects and functions to balance against agricultural productivity. For regions with grater conservational value a more protective assessment endpoint of 95% ecosystem protection for more than 95% of the time could be used.

   This objective of this project was met. In the Namoi catchment, atrazine was not detected and diuron was detected below the 10% ecosystem protection for 2.4% of samples. In the Fitzroy catchment, low levels of diuron and atrazine were detected, below the 10% threshold) in only 1.2 and 0.6% of samples respectively.

Methods

3. Detail the methodology and justify the methodology used. Include any discoveries in methods that may benefit other related research.

The methodology for this project followed typical environmental sampling and analyse protocol, with the addition of the rapid technology. To fulfil the aim of undertaking a short strategic monitoring program and report against ecological thresholds the following stages were followed:

- Develop sampling plan;
- Seek two local sample coordinators (Namoi and Fitzroy) to recruit and manage sample collection;
- Collect samples and analyse using QuickTests, collect positive samples or approximately 10% of samples for contemporary analytical analysis;
- Collate and analyse data using accepted;
- Prepare report with respect to current practice.

3.1 Sampling locations

The following figures show the location of sampling for this project. Figure 1, showing the Namoi Catchment, also provides the names of the collaborators who assisted with sampling for the project. Figure 2 shows the Emerald Catchment, which was sampled by Renee Anderson (Cotton Australia).

Figure 1: Location of sampling and testing sites within the Namoi Valley Catchment (No data were received from the Walgett site). Project collaborators (samplers) are also indicated. Random sampling took place within the catchment from 4/2/12 to 18/6/12 with a total of 120 samples analysed.

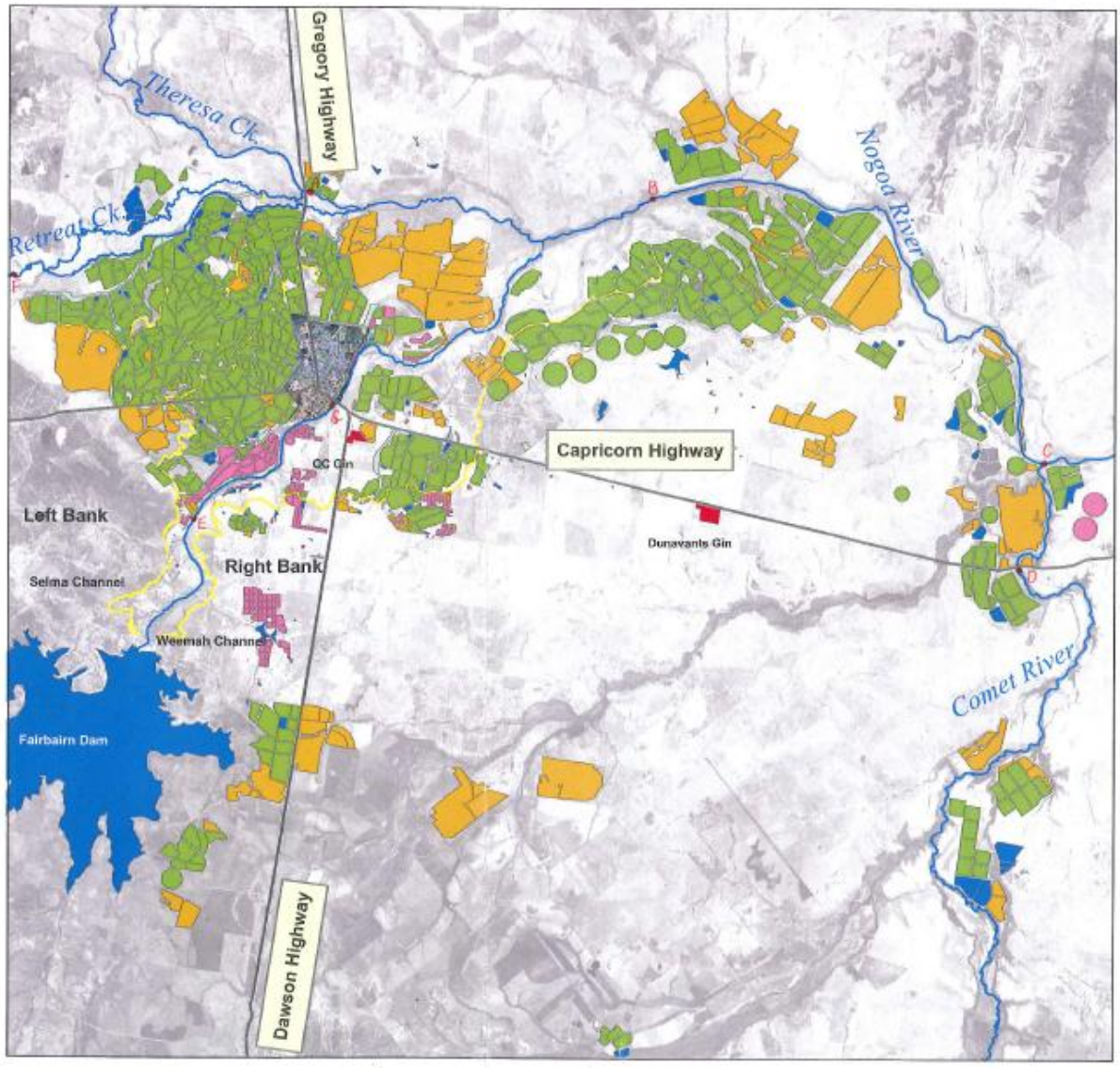

Figure 2: Image of Emerald irrigation area with sampling locations identified by alpha symbols in red typeface (a to g). Sampling occurred regularly from 27/2/12 to 2/5/12 with 168 samples collected and analysed.

3.2 Sampling and analysis by QuickTests

The aim was to take samples from seven sites in both the Namoi and Fitzroy catchments. With samples collected and analysed twice a week for 12 weeks, providing 336 samples in total. For further details regarding the sample collection and analysis, please refer to Appendix 1, "Monitoring diuron in two cotton catchments 2012: Sampling and Testing Protocol".

The rapid detection approach is a semi-quantitative analytical method that uses visual confirmation of colour change to confirm presence of the target analyte. Slight colour change (+) and more change (++) approximately correlate to concentrations around the 5 and 10% ecosystem protection values. The midpoint (half colour displayed in "T" line) was

approximately 5 and 10 µg L^{-1} for diuron and atrazine respectively. No colour will appear in the "T" line when concentrations are around 10 µg L^{-1} for diruon and 20 µg L^{-1} for atrazine. As this these analyses are semi-quantitative, the protocol allowed for any positive samples or up to 10% of sample collected to be stored and sent to the laboratory for analysis.

It was intended that QuickTests would be available from the beginning of the project, however this was not possible. Some samples were collected and frozen prior to analysis by QuickTests.

3.3 Instrumental analysis

Approximately 10% of samples were sent to a NATA accredited commercial analytical laboratory (Agrisearch Analytical Pty Ltd) for instrumental analysis, High Performance Liquid Chromatography coupled with Mass Spectrometry (HPLC-MS). The laboratory followed standard in-house analytical procedure including method validation that produced the standard recovers as shown in Table 1.

Table 1: Analytical recoveries for the instrumental analysis of atrazine and diuron. Recoveries conducted on sample 12-0518-02 at 1µg/L (LOQ) and 0.5µg/L (LOQ) for diuron and atrazine respectively

Replicate	Diuron (%)	Atrazine (%)
1	108	81
2	128	150
3	137	84
4	107	135
5	158	134
Average	**128**	**117**
SD	**21.3**	**32.0**
RSD	**16.7**	**27.4**

Results

4. Detail and discuss the results for each objective including the statistical analysis of results.

The following tables contain a summary of the combined analytical results for QuickTest analyses and instrumental analyses. Appendices 2 and 3 contain the raw data as collected from the samples. Result for instrumental analysis can be found in Appendix 4. Most data from the instrumental analysis are consistent with the results from the QuickTests. All positive data in this project are just above the limit of quantification, therefore some variation is expected as the limits of both analytical technologies are the source of greatest uncertainty. The results from all analyses were included in the summaries below.

It is clear from the abundance of negative values that most samples were negative with respect to concentrations of diuron and atrazine (Tables 2 and 3 respectively). There were a

number of positive samples, however these were low range and only occur to a low frequency, maximum 8.3% at one site, and 1.2% across the Emerald catchment area. For the Namoi catchment, the data shows one region with 18.2% exposure frequency and 2% for combined catchment data.

These results indicate protection below the 10% threshold for this project for the entire catchment would satisfy a theoretically more protective 95% exposure threshold.

Table 2: Summary results for diruon and atrazine for the Namoi catchment (see Appendix 2 for data)

Site	Sampling		Samples analysed	Positive (#)	Positive (%)
	Start	Finish			
Diuron					
ARCI	26/04/2012	18/06/2012	13	0	0
Narrabri Ck	9/02/2012	30/04/2012	16	0	0
Gunidgera Ck	4/02/2012	5/04/2012	11	2	18.2
Boggabri	10/02/2012	24/04/2012	20	0	0
Peel R	22/02/2012	8/05/2012	11	0	0
Cockburn R	22/02/2012	8/05/2012	11	0	0
TOTAL			82	2	2.4
Atrazine					
ACRI	26/04/2012	30/05/2012	10	0	0
Narrabri Ck	9/02/2012	30/04/2012	16	0	0
Peel R	22/02/2012	8/05/2012	6	0	0
Cockburn R	22/02/2012	8/05/2012	6	0	0
TOTAL			38	0	0

Table 3: Summary results for diuron and atrazine for the Emerald irrigations area (see Appendix 3 for data)

Site	Sampling		Samples analysed	Positive (#)	Positive (%)
	Start	Finish			
Diuron					
A	27/02/2012	2/05/2012	24	0	0
B	27/02/2012	2/05/2012	24	0	0
C	27/02/2012	2/05/2012	24	0	0
D	27/02/2012	2/05/2012	24	0	0
E	27/02/2012	2/05/2012	24	2	8.3
F	27/02/2012	2/05/2012	24	0	0
G	27/02/2012	2/05/2012	24	0	0
Total			168	2	1.2
Atrazine					
A	27/02/2012	2/05/2012	24	0	0
B	27/02/2012	2/05/2012	24	0	0
C	27/02/2012	2/05/2012	24	1	4.2
D	27/02/2012	2/05/2012	24	0	0

E	27/02/2012	2/05/2012	24	0	0
F	27/02/2012	2/05/2012	24	0	0
G	27/02/2012	2/05/2012	24	0	0
Total			168	1	0.6

4.1 Ecological endpoints

A species sensitivity distribution (SSD) is derived from compiling the toxicity results from a series of ecological tests. The data are accumulated according to sensitivity against increasing concentration, that is, the higher the exposure concentration the greater number of species are likely to be affected. In other words, the higher the high the percentile rank. It is then possible, following the practice of ecological risk assessment, to determine the percentage of species likely to be affected at a specific concentration.

4.1.1 Species Sensitivity Distribution (SSD) for Diruon

Burns[2] reviewed the toxicity of diuron to aquatic species using the ECOTOX database. The most sensitive organism was found to be a species of Blue-green algae *Synechococcus sp.*, (EC_{50} = 0.55 µg L^{-1}). The most tolerant species was *Ctenopharyngodon idella* (Grass carp) (LC_{50} = 31,000 µg L^{-1}). The data was arranged in to taxonomic groups of algae, macrophytes, fish, amphibians and invertebrates.

The resulting SSD and table of regression for the species of most significance to this study (algae and macrophytes, see extract in Appendix 5) provided HC5 and HC10 values of 1.0 µg L^{-1} and 1.7 µg L^{-1} respectively. These endpoints are similar to the values APVMA trigger points around this level.

4.1.2 Species Sensitivity Distribution for Atrazine

Giddings [3] reports that after a review of the literature there are data for 92 species of aquatic plants (including algae) that can be used to develop a SSD. From these data it was reported that the 10th percentile was 32 µgL^{-1} for acute exposure and 5.2 µgL^{-1} for chronic exposure. Therefore, these concentrations are the protection goals for atrazine for this project.

4.2 Issues of concern

During this project a number of challenges were managed. We experienced some in delays of tests arriving from the manufacturing facility in China appear to have the same shelf life as previous batches. In practice this saw collection samples being frozen until analysis. Ideally, this additional use of resource (both time and equipment) would not be required.

For concerns regarding self-life and test stability, after further review the QuickTests appears to be working well although the indicator strips did not show the usual brightness. An added safety feature of the QuickTests is the control line, which does not appear if the test is not functioning correctly. A few of these malfunctions were reported in this project, further indicating the possibility of a poor batch of diuron tests.

[2] Burns, M. (2012) Phd Thesis. The University of Sydney

[3] Atrazine in North American Surface Waters: A probabilistic aquatic ecological risk assessment, Giddings JM et. al. (2005) Pensacola (FL), Society of Environmental Toxicology and Chemistry (SETAC)

Less intense colour development in the QuickTests was found to cause concern by operators who either re-tested and/or kept samples for subsequent instrumental analysis. Confirmation that the sampling and testing protocols in the study were robust can be observed by the agreement between the two analytical technologies.

4.3 Sampling models

Two collaborative sampling models were used during this study. One where a team of volunteer samplers were used to undertake testing at their local site (Namoi) and the other where a consultant was engaged to undertake all analysis (Emerald). For this project we found that the technology could be used effectively by all collaborators. We also observed more regular and complete testing and reporting from the consultant, which can be observed from the comparison of Tables 1 and 2. However, it may be acceptable to engage volunteers and risk some sporadic sampling for catchment management purposes, especially when resources are limited and participatory action is desired. Although this analysis was not part of the aims, it seems relevant to note these observations and the need to analyse the benefit-cost in consideration of any future activities.

The period of diuron and atrazine application varies depending on location. It is expected the most applications would occur in winter or spring (June to December), and subsequent rainfall-runoff soon after application would likely pose the greatest risks of ecological contamination. It would be recommended that future program cover this period more directly. However, atrazine and diruon are residual herbicides, with relatively long half-lives observed in natural systems. It therefore would not have been surprising to detect these residues to greater extent (frequency and concentration, we have not analysed river conditions in great details with respect to normality of the river conditions during the study. It should also be noted that atrazine is not used within typical cotton production regime. However, the data clearly indicate that for the locations and duration of the project, these residues do not pose ecological concern.

It is also important to note that the large number of sampling made it possible to sample and analyse the rivers and tributaries in regular and flood conditions. This illustrates another advantage of the technology because there is often concern about different flow regimes and river states with respect to pesticides residue transport. The low cost of the rapid test enables such concerns to be addressed. During this project we did not observe any difference in residue concentration when rivers were in flood, as described by the local sample collectors.

Outcomes

5. Describe how the project's outputs will contribute to the planned outcomes identified in the project application. Describe the planned outcomes achieved to date.

5.1 Comparison of Analytical methods

Most samples analysed were below the limit of quantification (LOQ). Two QuickTest samples, from the Emerald set, testing as possibly marginally positive for diuron did not give positive analyses by the instrumental methods. Other samples testing marginally positive for atrazine by QuickTests (Site C), were not confirmed with the instrumental analysis. Two samples from the Namoi catchment, which did not return positive results when analysed by QuickTests, did show low concentrations of diuron when analysed by HPLC-MS. This latter situation, a false negative, is an extremely unlikely event and maybe because of the poor

batch of diuron tests. However, this scenario shows the benefit of combining the use of instrument analyses to support the use of QuickTests when samples are close to the limits of quantification.

All positive data were included in the ecological analysis as both techniques are considered robust, when results are around the limit of detection, discrepancies are more likely. We recommend that subsequent sampling will be conducted at 'hot-spots' where a new batch of QuickTests are expected to perform more effectively. The site at Gunidgera Ck, appears to be at the end of the catchment and would also provide a good benchmark for chemical use in the catchment.

5.2 Ecological protection

The project achieved the desired goal, to show that the use of diuron can be effectively measured to show ecosystem protection within cotton catchments. There were only a small percentage of slightly positive samples detected. The ecological endpoints, of 90% ecosystem protection for 90% of the time were easily met. In fact, more conservative endpoints of 95% threshold would have been met as well with respect to the whole catchment analysis.

This approach, using the rapid testing technology, provided an abundance of data (*N=456*), overcoming one of the weaknesses with environmental monitoring and subsequent management. In addition, the cost of this technology is in the order of 10-20% of traditional analytical technology.

This project provides the basis to communication with stakeholders regarding the ability of the cotton industry to effectively manage chemical residues. We recommend that the Gunidgera Ck site, which showed to be greater than the frequency threshold when analysed in isolation, be subject to further investigation. Although it has been observed that government regulators do not see management as an effective risk mitigation strategy for chemical residues, this project proves that the technology and the framework exists for the industry to confidently argue the case to keep and effectively manage chemical such as Duron using robust ecological endpoints.

Conclusion

6. Provide an assessment of the likely impact of the results and conclusions of the research project for the cotton industry. What are the take home messages?

   The residues of diuron and atrazine were not detected in the Namoi and Emerald catchments at concentrations to cause ecological concern in during the period analysed.

   The outcomes of this project can be used to strongly support the argument to allow industries, such as the cotton industry, to effectively manage residues in catchments. This ability is increasingly important as greater regulatory pressure mounts to reduce access to chemicals is observed. While the current targets diuron and atrazine, the rapid testing technology can be developed to adapt to most pesticides. This project proves that the technology can be used by effectively for ecological assessment and management purposes and does not required specialist training.

   Based on the current regulatory environment, it will be increasing important to provide actual data to defend the use of agrochemical in production systems. This project illustrated that such a requirement can be met simply and cheaply compared to the contemporary instrumental methodologies.

Extension Opportunities

7. Detail a plan for the activities or other steps that may be taken:
   (a) to further develop or to exploit the project technology.
   We have submitted a PRP to further explore the integration of the technology and associated value within the BMP system. The regulatory pressure on chemical residues from intensive agriculture appears to be ever increasing, we see this technology can provide a rational management approach to retain cost effective chemicals.
   (b) for the future presentation and dissemination of the project outcomes.
   We would like to share the project results with Cotton Australia, who initiated this research project with CRDC. We also think it would be valuable to follow-up further with APVMA to show the result and possibilities.
   (c) for future research.
   We expect it would be prudent to begin research and development on new targets in preparation for the next chemical review or potential issue. It may also be worthwhile to review the current chemicals that are "irreplaceable" in modern BMP system to ensure the technology is in place to maintain access to these chemicals.
   It is getting more difficult and expensive to develop and register new products, a good strategy is to ensure current use is appropriately managed and recorded to defend any criticism.

Appendix 1: Monitoring diuron in two cotton catchments 2012: Sampling and Testing Protocol

Commercial-in-confidence

Monitoring diuron in two cotton catchments 2012:

Sampling and Testing Protocol

(for limited distribution)

Summary of sampling and testing activities

To realise the project aim, the correct sampling and accurate testing of water is critical. This protocol details the activity required. Please contact the Project Manager if there are any questions or problems at any time during the project.

Summary protocol		
1	Select sampling site/s	Discuss with Sampling coordinator
2	Test water at selected site	Twice a week for 12 weeks
3	Collect any samples that are not negative	Store samples in freezer
4	Record results	Use Sample logs provided
5	Provide data (sample logs) and samples to Sampling Coordinator	At competition of sampling

Project Contacts

Project Manager: John McKenzie **m:** 0402 018 318 **e:**john@jmaconsulting.net.au

Sampling Coordinators

Namoi: Guy Roth **m:** 0417 223 179 **e:** guyroth@roth.net.au

Fitzroy: **m:** **e:**

Inventory

The following items are required to undertake the instructions detailed in this protocol:

- Protocol (this document)
- 200 mL plastic sample bottles and screw top lids
- Sticky labels
- Thick clear tape
- Permanent marker
- Sample log sheets
- Access to freezer suitable for sample storage

Declaration

The instructions contained in this “Sampling and Testing Protocol” booklet must be followed and actions recorded in the sample log sheets or by email, as instructed within this booklet of by the Project Manager.

All information contained in or relating to the document(s) or materials referred to in this logbook and project and all information relating to the personnel or operations of this project, including but not limited to information regarding the clients, producers and their enterprises, financial information and arrangements, operating systems, trade secrets or any other information which is marked as “Confidential” or which the Recipient should know to be confidential from the circumstance of its provision during this project.

Please indicate you have read and fully understood all of the instructions and requirements in this document and you agree to keep all project materials confidential and follow all instructions herein:

Name:

Address:

Email:

Signature:

Witnessed by:

Name: Signature:

Date:

Project Outline

There is increasing focus on the continued use of diuron in view of environmental concerns, as indicated by the recent APVMA review and suspension of registration. Although the regulatory review is not complete, preliminary indication is that application levels of 1.8 kg/ha may be retained for use where such use does not create a "high risk situation". Further, notification from the APVMA indicates that further regulatory action is likely. This short project provides a proactive response aimed to show that diuron use in cotton does not pose a high environmental risk.

The recent development of low-cost analytical technology for diuron (QuickTests) within a Cotton CRC project provides a good opportunity to undertake low-cost sampling of rivers in cotton catchments. These data will be used to build on exiting knowledge of diuron concentration and ecological toxicity characterise environmental risk. River water sampling for herbicides in the Namoi valley catchment has not been undertaken in cotton catchments since ca. 2007. Sampling of rivers adjacent to newer cotton developments, such as in the Fitzroy River, are yet to be characterised.

QuickTest Technologies has been commissioned by CRDC, with support from Cotton Australia, to undertake this project.

Project Aim

Use QuickTests to comprehensively analyse river water and provide evidence that the current use of diuron in two cotton catchments, the Namoi and Fitzroy Rivers in New South Wales and Queensland respectively, does not cause ecological concern following the principles of ecological risk assessment.

Sampling and testing activities

To realise the project aim, the correct sampling and accurate testing of water is critical. This protocol details the activity required. Please contact the Project Manager if there are any questions or problems at any time during the project.

Summary protocol		
1	Select sampling site/s	Discuss with Sampling coordinator
2	Test water at selected site	Twice a week for 12 weeks
3	Collect any samples that are not negative	Store samples in freezer
4	Record results	Use Sample logs provided
5	Provide data (sample logs) and samples to Sampling Coordinator	At competition of sampling

Detailed Sampling Instructions

1. **Select site**

    a. Discuss with sampling coordinator
    b. Seven sampling/testing sites need to be selected from the catchment or sub-catchment. The sites should be evenly distributed adjacent to cotton production areas, with two sites above the cotton growing area.
    c. Record sampling location on sample log, ensure that a map/GPS/ or other reference can be provided. (There may be existing water monitoring sites, such a gauging stations, that can be used.)
    d. Take pictures of the site if possible and provide digital copies to the project manager

2. **Test the water at each sampling site twice a week**

    a. Collect all samples until QuickTests become available.
    b. Use QuickTests to test water quality, refer instructions provided with QuickTests for use.
    c. If sample is positive (Yes) or 'Trace', collect sample (see instructions below) for subsequent laboratory analysis.
    d. Record results in the sample log.
    e. Collect all samples according to the instructions below until QuickTests are available[1]

3. **Collecting water samples.**

All samples that are positive (or indicate trace detection) should be collected and stored

    a. Affix label and mark the Sample Location and Date
    b. Use sticky tape to secure the label.
    c. Collected the water sample and seal with the screw cap (leave a 3 cm air gap in neck of bottle to allow for thermal expansion)
    d. Freeze each sample as soon as possible, within 2 hours. Keep samples out of direct sunlight and cool until a freezer is available.
    e. Once QuickTests arrive, thaw samples and test following QuickTest instructions.
    f. Keep and re-freeze positive (Yes) or 'trace' sample.
    g. The sampling coordinator will also contact you periodically to collect random samples for subsequent laboratory analysis.

[1] QuickTests are new technology, developed by researchers from the Cotton Industry. They have been robustly tested and are now being manufactured in response to the need in this project.

4. Ensure all tests are recorded in the sample log

a. Use the Sample Log provided.

5. Sending samples to the laboratory

At the completion of sampling, all samples are to be sent to Agrisearch Analytical, Rozelle, NSW.

a. Please ensure all samples are delivered to the Sampling Coordinator, who will send all samples.
b. Samples are to be packed into foam transport boxes and couriered to the laboratory
c. All sample logs need to be sent to the Project Manager, please ensure an electronic copy is made before posting logs. Please keep electronic copies securely.

Thank you for participating in this project.

Appendix 2: Raw data from the Namoi catchment

Sence #	in Narrabri. Selina St Boat Ramp Newell Hwy.	master list/map)	
ap ref.		Other reference	
Tester's Name	Guy Roth		
Address	14 Roody St		
Town	Narrabri	State NSW	Postcode 2390.
Mobile	0417 223 179	Phone	02 6792 5340
Email	guyroth@roth.net.au		

Test Log for QuickTest:

Date ~~tested~~ Collected	Time	Result				Notes/Action /Reference
9/2/12	3-00	No	+	++	Yes	Tested 1/5 difference in colour b/w C & T (T lighter)
13/2/12	6-30	No	+	++	Yes	" " " " "
16/2		No	+	++	Yes	" " " " "
22/2		No	+	++	Yes	" " " " " (just)
2/3		No	+	++	Yes	Tested 1/5
7/3		No	+	++	Yes	
10/3		No	+	++	Yes	
15/3		No	+	++	Yes	
19/3		No	+	++	Yes	
24/3		No	+	++	Yes	
25/3		No	+	++	Yes	
3/4		No	+	++	Yes	
6/4		No	+	++	Yes	
12/4		No	+	++	Yes	
27/4		No	+	++	Yes	
30/4		No	+	++	Yes	
		No	+	++	Yes	
		No	+	++	Yes	
		No	+	++	Yes	
		No	+	++	Yes	
		No	+	++	Yes	

Note
Don't have distilled water to compare to a control only reminder.

Notes, Comments, Follow-up, or Special conditions (continue overleaf as required)	

Declaration

This is a true and accurate record of the ..... (*insert number*) tests undertaken..... Guy Roth 1/5/12

Atrazine

Test Sample Log: Site

Site reference #		Reference number (from master list/map)	Narrabri Creek (Namoi River) Narrabri JN Newell Hwy.
Map ref.		Other reference	
Tester's Name	Guy Roth		
Address	14 Boody St		
Town	Narrabri	State	NSW
Postcode	2390.		
Mobile	0417 223 179	Phone	67925340
Email	guy roth@roth.net.au		

Test Log for QuickTest:

Date ~~tested~~ collected	Time	Result				Tested	Notes/Action /Reference
9/2/12	3:00	(No)	+	++	Yes	1/5 9.00pm	
13/2/12	6.30	(No)	+	++	Yes		
16/2		(No)	+	++	Yes		
22/2		(No)	+	++	Yes		
2/3		(No)	+	++	Yes		
7/3		(No)	+	++	Yes		
10/3		(No)	+	++	Yes		
15/3		(No)	+	++	Yes		
19/3		(No)	+	++	Yes		
24/3		(No)	+	++	Yes		
29/3		(No)	+	++	Yes		
3/4		(No)	+	++	Yes		
6/4		(No)	+	++	Yes		
12/4		(No)	+	++	Yes		
27/4		(No)	+	++	Yes		
30/4		(No)	+	++	Yes		
		No	+	++	Yes		
		No	+	++	Yes		
		No	+	++	Yes		
		No	+	++	Yes		
		No	+	++	Yes		

Notes, Comments, Follow-up, or Special conditions (continue overleaf as required)	

Declaration

This is a true and accurate record of the ..... (*insert number*) tests undertaken..... Guy Roth

QuickTest Sample Log: Site

Sample site reference #	#1. Peel River #2 Cockburn River	Reference number (from master list/map)	
Map ref.		Other reference	
Tester's Name	S WARDEN		
Address	P.O. Box 523		
Town	TAMWORTH	State	N.S.W Postcode 2340
Mobile	0427255357	Phone	02 6766 2375.
Email			

Test Log: *Diuron QuickTest* — PEEL — Atrazine — Diuron — Cockburn River — Atrazine

Date tested	*Time*	*Result*	*Notes/Action /Reference*		
22.2.12	11.30	Yes **No** Trace	NO	No [redacted]	NO
29.2/12		Yes **No** Trace	NO	No	NO
9/3/12		Yes **No** Trace		No	
14/3/12		Yes **No** Trace		No	
22/3/12		Yes **No** Trace		No	
29/3/12		Yes **No** Trace		No	
11/4		Yes **No** Trace	NO	No	NO
17/4		Yes **No** Trace	NO	No	NO
24/4		Yes **No** Trace	NO	No	NO
3/5		Yes **No** Trace		No	
8/5		Yes **No** Trace	NO Gr	No	NO Gr
		Yes No Trace			
		Yes No Trace			
Note;		Yes No Trace		Note	
4 quick tests		Yes No Trace		2 Quick tests	
didnt work		Yes No Trace		didnt work. ie Error	
ie Error.		Yes No Trace			
		Yes No Trace			
		Yes No Trace			
		Yes No Trace			
		Yes No Trace			

Notes, Comments, Follow-up, or Special conditions (continue overleaf as required)	

Tester' declaration:
This is a true and accurate record of the 11 (Peel) GR 11 (Cockburn) GR (*insert number*) tests undertaken..... 17/5/12

QuickTest Sample Log: Site

Sample site reference #	ACRI	**Reference number (from master list/map)**	DIURON
Map ref.	55J 0749788 6654722	**Other reference**	
Tester's Name	PETER VERWEY		
Address	AUSTRALIAN COTTON RESEARCH INSTITUTE 21888 KAMILAROI HIGHWAY		
Town	NARRABRI	**State** NSW	**Postcode** 2390
Mobile	0416 119 467	**Phone**	02 6799 2476
Email	PETER.VERWEY@COTTONCRC.ORG.AU (from 01/07/12 use PETER.VERWEY@GMAIL.COM)		

Test Log for QuickTest:

Date tested	*Time*	*Result*	*Notes/Action /Reference*
26/04/12	0945	(No) + ++ Yes	
27/04/12	1120	(No) + ++ Yes	
30/04/12 *	1000	(No) + ++ Yes	very slow reaction RPT
03/05/12	1345	(No) + ++ Yes	
08/05/12	1200	(No) + ++ Yes	? maybe (+)
11/05/12	1645	(No) + ++ Yes	
14/05/12 *	0940	(No) + ++ Yes	very slow reaction RPT
18/05/12 *	1400	(No) + ++ Yes	very slow reaction. RPT
28/05/12	0945	(No) + ++ Yes	? maybe (+)
30/05/12	1300	(No) + ++ Yes	? maybe (+)
13/06/12	1500	(No) + ++ Yes	
15/06/12	1630	(No) + ++ Yes	
18/06/12	1330	(No) + ++ Yes	
		~~No + ++ Yes~~	
		~~No + ++ Yes~~	
		~~No + ++ Yes~~	
		~~No + ++ Yes~~	
		~~No + ++ Yes~~	
		~~No + ++ Yes~~	
		~~No + ++ Yes~~	
		~~No + ++ Yes~~	
		~~No + ++ Yes~~	

Notes, Comments, Follow-up, or Special conditions (continue overleaf as required)

RPT = repeat test done.
difficult to determine 'No' vs (+).

Declaration
This is a true and accurate record of the 13 (*insert number*) tests undertaken.....

QuickTest technologies

= sent away for further testing.

QuickTest Sample Log: Site

Sample site reference #	ACRI	**Reference number (from master list/map)**	ATRAZINE
Map ref.	55J 0749788 6654722	**Other reference**	
Tester's Name	PETER VERWEY		
Address	AUSTRALIAN COTTON RESEARCH INSTITUTE 21888 KAMILAROI HIGHWAY		
Town	NARRABRI	**State** NSW	**Postcode** 2390
Mobile	0416 119 467	**Phone** 02 6799 2476	
Email	PETER.VERWEY@COTTONCRC.ORG.AU (from 01/07/12 use PETER.VERWEY@GMAIL.COM)		

Test Log for QuickTest:

Date tested	*Time*	*Result*	*Notes/Action /Reference*
26/04/12	0945	(No) + ++ Yes	control is lighter.
27/04/12	1120	(No) + ++ Yes	
30/04/12	1000	(No) + ++ Yes	control is lighter.
03/05/12	1345	(No) + ++ Yes	
08/05/12	1200	(No) + ++ Yes	
11/05/12	1645	(No) + ++ Yes	
14/05/12	0940	(No) + ++ Yes	
18/05/12	1400	(No) + ++ Yes	
28/05/12	0945	(No) + ++ Yes	
30/05/12	1300	(No) + ++ Yes	
~~13/06/12~~	1500	~~No + ++ Yes~~	not tested
~~15/06/12~~	1630	~~No + ++ Yes~~	not tested
~~18/06/12~~	1330	~~No + ++ Yes~~	not tested.
		~~No + ++ Yes~~	
		~~No + ++ Yes~~	
		~~No + ++ Yes~~	
		~~No + ++ Yes~~	
		~~No + ++ Yes~~	
		~~No + ++ Yes~~	
		~~No + ++ Yes~~	
		~~No + ++ Yes~~	

Notes, Comments, Follow-up, or Special conditions (continue overleaf as required)

results are much clearer than diuron tests.

Declaration

This is a true and accurate record of the 10 (*insert number*) tests undertaken.....

QTTmattersSiteSampleLogv2

QuickTest technologies

= sent away for further testing.

Sence #	in Narrabri. Selina St Boat Ramp Newell Hwy.	master list/map)	
ap ref.		Other reference	
Tester's Name	Guy Roth		
Address	14 Roody St		
Town	Narrabri	State NSW	Postcode 2390.
Mobile	0417 223 179	Phone	02 6792 5340
Email	guyroth@roth.net.au		

Test Log for QuickTest:

Date ~~tested~~ Collected	Time	Result				Notes/Action /Reference
9/2/12	3-00	No	+	++	Yes	Tested 1/5 difference in colour b/w C & T (T lighter)
13/2/12	6-30	No	+	++	Yes	" " " " "
16/2		No	+	++	Yes	" " " " "
22/2		No	+	++	Yes	" " " " " (just)
2/3		No	+	++	Yes	Tested 1/5
7/3		No	+	++	Yes	
10/3		No	+	++	Yes	
15/3		No	+	++	Yes	
19/3		No	+	++	Yes	
24/3		No	+	++	Yes	
25/3		No	+	++	Yes	
3/4		No	+	++	Yes	
6/4		No	+	++	Yes	
12/4		No	+	++	Yes	
27/4		No	+	++	Yes	
30/4		No	+	++	Yes	
		No	+	++	Yes	
		No	+	++	Yes	
		No	+	++	Yes	
		No	+	++	Yes	
		No	+	++	Yes	

Note
Don't have distilled water to compare to a control only reminder.

Notes, Comments, Follow-up, or Special conditions (continue overleaf as required)	

Declaration

This is a true and accurate record of the ..... (*insert number*) tests undertaken..... Guy Roth 1/5/12

Atrazine

Test Sample Log: Site

Site reference #		Reference number (from master list/map)	Narrabri Creek (Namoi River) Narrabri JN Newell Hwy.
Map ref.		Other reference	
Tester's Name	Guy Roth		
Address	14 Boody St		
Town	Narrabri	State	NSW
Postcode	2390.		
Mobile	0417 223 179	Phone	67925340
Email	guy roth@roth.net.au		

Test Log for QuickTest:

Date ~~tested~~ collected	Time	Result				Tested	Notes/Action /Reference
9/2/12	3:00	(No)	+	++	Yes	1/5 9.00pm	
13/2/12	6.30	(No)	+	++	Yes		
16/2		(No)	+	++	Yes		
22/2		(No)	+	++	Yes		
2/3		(No)	+	++	Yes		
7/3		(No)	+	++	Yes		
10/3		(No)	+	++	Yes		
15/3		(No)	+	++	Yes		
19/3		(No)	+	++	Yes		
24/3		(No)	+	++	Yes		
29/3		(No)	+	++	Yes		
3/4		(No)	+	++	Yes		
6/4		(No)	+	++	Yes		
12/4		(No)	+	++	Yes		
27/4		(No)	+	++	Yes		
30/4		(No)	+	++	Yes		
		No	+	++	Yes		
		No	+	++	Yes		
		No	+	++	Yes		
		No	+	++	Yes		
		No	+	++	Yes		

Notes, Comments, Follow-up, or Special conditions (continue overleaf as required)	

Declaration

This is a true and accurate record of the ..... (*insert number*) tests undertaken..... Guy Roth

Gunidgera Creek Water Sampling 2012 by Stacey Vogel

Date	Reading
4/2/12	Negative
8/2/12	Negative
13/2/12	Negative
21/2/12	Negative
24/2/12	Negative
5/3/12	Negative
7/3/12	Negative
20/3/12	Negative
25/3/12	Negative
1/4/12	Negative
5/4/12	Negative

Note: Readings taken on the 4/2/12 & 8/2/12 were taken in flood water near the sampling site

Photo 1: Water Sampling Site on Gunidgera Creek approximately 1km down stream of Gunidgera bridge

Appendix 3: Raw data from the Emerald catchment

QuickTest Sample Log: Site A

Sample site reference #	Site A	**Reference number (from master list/map)**		Theresa Creek Bridge Site, Theresa Creek on Gregory Highway, Emerald	
Map ref.		**Other reference**		Within cotton catchment	
Tester's Name	Renee Anderson				
Address	"Kerry Downs" Tyson Road, POBox 1288				
Town	Emerald	**State**	QLD	**Postcode**	4720
Mobile	0448 125 156	**Phone**	07 4987 5066		
Email	reneeanderson.cotton@bigpond.com				

Test Log for QuickTest: Atrazine

Date tested	*Time*	*Result*	*Notes/Action /Reference*
27/2/2012	12.30pm	***No*** ***+*** ***++*** ***Yes***	flooding
2/3/2012	12.45pm	***No*** ***+*** ***++*** ***Yes***	flooding
5/3/2012	12.30pm	***No*** ***+*** ***++*** ***Yes***	flooding
8/3/2012	2.00pm	***No*** ***+*** ***++*** ***Yes***	
12/3/2012	1.30pm	***No*** ***+*** ***++*** ***Yes***	
15/3/2012	12.30pm	***No*** ***+*** ***++*** ***Yes***	
18/3/2012	12.45pm	***No*** ***+*** ***++*** ***Yes***	
20/3/2012	1.30pm	***No*** ***+*** ***++*** ***Yes***	flooding
23/3/2012	2.30pm	***No*** ***+*** ***++*** ***Yes***	flooding
26/3/2012	2.00pm	***No*** ***+*** ***++*** ***Yes***	flooding
27/3/2012	12.30pm	***No*** ***+*** ***++*** ***Yes***	flooding
28/3/2012	11.30am	***No*** ***+*** ***++*** ***Yes***	flooding
29/3/2012	11.30am	***No*** ***+*** ***++*** ***Yes***	flooding
30/3/2012	12.30pm	***No*** ***+*** ***++*** ***Yes***	
2/4/2012	11.30am	***No*** ***+*** ***++*** ***Yes***	
5/4/2012	12.30pm	***No*** ***+*** ***++*** ***Yes***	
10/4/2012	12.45pm	***No*** ***+*** ***++*** ***Yes***	
13/4/2012	1.00pm	***No*** ***+*** ***++*** ***Yes***	
16/4/2012	12.30pm	***No*** ***+*** ***++*** ***Yes***	
19/4/2012	1.30pm	***No*** ***+*** ***++*** ***Yes***	
22/4/2012	1.00pm	***No*** ***+*** ***++*** ***Yes***	
26/4/2012	12.30pm	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing
30/4/2012	11.30am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing
2/5/2012	12.30pm	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing

QuickTest Sample Log: Site A

Sample site reference #	Site A	**Reference number (from master list/map)**		Theresa Creek Bridge Site, Theresa Creek on Gregory Highway, Emerald	
Map ref.		**Other reference**		Within cotton catchment	
Tester's Name	Renee Anderson				
Address	"Kerry Downs" Tyson Road, POBox 1288				
Town	Emerald	**State**	QLD	**Postcode**	4720
Mobile	0448 125 156	**Phone**	07 4987 5066		
Email	reneeanderson.cotton@bigpond.com				

Test Log for QuickTest: Diuron

Date tested	*Time*	*Result*	*Notes/Action /Reference*
27/2/2012	12.30pm	***No*** ***+*** ***++*** ***Yes***	flooding
2/3/2012	12.45pm	***No*** ***+*** ***++*** ***Yes***	flooding
5/3/2012	12.30pm	***No*** ***+*** ***++*** ***Yes***	flooding
8/3/2012	2.00pm	***No*** ***+*** ***++*** ***Yes***	
12/3/2012	1.30pm	***No*** ***+*** ***++*** ***Yes***	
15/3/2012	12.30pm	***No*** ***+*** ***++*** ***Yes***	
18/3/2012	12.45pm	***No*** ***+*** ***++*** ***Yes***	
20/3/2012	1.30pm	***No*** ***+*** ***++*** ***Yes***	flooding
23/3/2012	2.30pm	***No*** ***+*** ***++*** ***Yes***	flooding
26/3/2012	2.00pm	***No*** ***+*** ***++*** ***Yes***	flooding
27/3/2012	12.30pm	***No*** ***+*** ***++*** ***Yes***	flooding
28/3/2012	11.30am	***No*** ***+*** ***++*** ***Yes***	flooding
29/3/2012	11.30am	***No*** ***+*** ***++*** ***Yes***	flooding
30/3/2012	12.30pm	***No*** ***+*** ***++*** ***Yes***	
2/4/2012	11.30am	***No*** ***+*** ***++*** ***Yes***	
5/4/2012	12.30pm	***No*** ***+*** ***++*** ***Yes***	
10/4/2012	12.45pm	***No*** ***+*** ***++*** ***Yes***	
13/4/2012	1.00pm	***No*** ***+*** ***++*** ***Yes***	
16/4/2012	12.30pm	***No*** ***+*** ***++*** ***Yes***	
19/4/2012	1.30pm	***No*** ***+*** ***++*** ***Yes***	
22/4/2012	1.00pm	***No*** ***+*** ***++*** ***Yes***	
26/4/2012	12.30pm	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing
30/4/2012	11.30am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing
2/5/2012	12.30pm	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing

QuickTest Sample Log: Site B

Sample site reference #	Site B	**Reference number (from master list/map)**		Bridge Flats Crossing on Nogoa River on Bridge Flats Road, Emerald	
Map ref.		**Other reference**		Within Cotton Catchment	
Tester's Name	Renee Anderson				
Address	"Kerry Downs" Tyson Road, POBox 1288				
Town	Emerald	**State**	QLD	**Postcode**	4720
Mobile	0448 125 156	**Phone**	07 4987 5066		
Email	reneeanderson.cotton@bigpond.com				

Test Log for QuickTest: Atrazine

Date tested	*Time*	*Result*	*Notes/Action /Reference*
27/2/2012	9.55am	***No*** ***+*** ***++*** ***Yes***	flooding
2/3/2012	10.10am	***No*** ***+*** ***++*** ***Yes***	flooding
5/3/2012	9.55am	***No*** ***+*** ***++*** ***Yes***	flooding
8/3/2012	11.25am	***No*** ***+*** ***++*** ***Yes***	
12/3/2012	10.55am	***No*** ***+*** ***++*** ***Yes***	
15/3/2012	9.55am	***No*** ***+*** ***++*** ***Yes***	
18/3/2012	10.10am	***No*** ***+*** ***++*** ***Yes***	
20/3/2012	10.55am	***No*** ***+*** ***++*** ***Yes***	flooding
23/3/2012	11.55am	***No*** ***+*** ***++*** ***Yes***	flooding
26/3/2012	11.25am	***No*** ***+*** ***++*** ***Yes***	flooding
27/3/2012	9.55am	***No*** ***+*** ***++*** ***Yes***	flooding
28/3/2012	8.55am	***No*** ***+*** ***++*** ***Yes***	flooding
29/3/2012	8.55am	***No*** ***+*** ***++*** ***Yes***	flooding
30/3/2012	9.55am	***No*** ***+*** ***++*** ***Yes***	
2/4/2012	8.55am	***No*** ***+*** ***++*** ***Yes***	
5/4/2012	9.55am	***No*** ***+*** ***++*** ***Yes***	
10/4/2012	10.10am	***No*** ***+*** ***++*** ***Yes***	
13/4/2012	10.25am	***No*** ***+*** ***++*** ***Yes***	
16/4/2012	9.55am	***No*** ***+*** ***++*** ***Yes***	
19/4/2012	10.55am	***No*** ***+*** ***++*** ***Yes***	
22/4/2012	10.25am	***No*** ***+*** ***++*** ***Yes***	
26/4/2012	9.55am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing
30/4/2012	8.55am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing
2/5/2012	9.55am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing

QuickTest Sample Log: Site B

Sample site reference #	Site B	**Reference number (from master list/map)**		Bridge Flats Crossing on Nogoa River on Bridge Flats Road, Emerald	
Map ref.		**Other reference**		Within Cotton Catchment	
Tester's Name	Renee Anderson				
Address	"Kerry Downs" Tyson Road, POBox 1288				
Town	Emerald	**State**	QLD	**Postcode**	4720
Mobile	0448 125 156	**Phone**	07 4987 5066		
Email	reneeanderson.cotton@bigpond.com				

Test Log for QuickTest: Diuron

Date tested	*Time*	*Result*	*Notes/Action /Reference*
27/2/2012	9.55am	***No*** ***+*** ***++*** ***Yes***	flooding
2/3/2012	10.10am	***No*** ***+*** ***++*** ***Yes***	flooding
5/3/2012	9.55am	***No*** ***+*** ***++*** ***Yes***	flooding
8/3/2012	11.25am	***No*** ***+*** ***++*** ***Yes***	
12/3/2012	10.55am	***No*** ***+*** ***++*** ***Yes***	
15/3/2012	9.55am	***No*** ***+*** ***++*** ***Yes***	
18/3/2012	10.10am	***No*** ***+*** ***++*** ***Yes***	
20/3/2012	10.55am	***No*** ***+*** ***++*** ***Yes***	flooding
23/3/2012	11.55am	***No*** ***+*** ***++*** ***Yes***	flooding
26/3/2012	11.25am	***No*** ***+*** ***++*** ***Yes***	flooding
27/3/2012	9.55am	***No*** ***+*** ***++*** ***Yes***	flooding
28/3/2012	8.55am	***No*** ***+*** ***++*** ***Yes***	flooding
29/3/2012	8.55am	***No*** ***+*** ***++*** ***Yes***	flooding
30/3/2012	9.55am	***No*** ***+*** ***++*** ***Yes***	
2/4/2012	8.55am	***No*** ***+*** ***++*** ***Yes***	
5/4/2012	9.55am	***No*** ***+*** ***++*** ***Yes***	
10/4/2012	10.10am	***No*** ***+*** ***++*** ***Yes***	
13/4/2012	10.25am	***No*** ***+*** ***++*** ***Yes***	
16/4/2012	9.55am	***No*** ***+*** ***++*** ***Yes***	
19/4/2012	10.55am	***No*** ***+*** ***++*** ***Yes***	
22/4/2012	10.25am	***No*** ***+*** ***++*** ***Yes***	
26/4/2012	9.55am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing
30/4/2012	8.55am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing
2/5/2012	9.55am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing

QuickTest Sample Log: Site C

Sample site reference #	Site C	**Reference number (from master list/map)**		Rileys Crossing Bridge at McKenzie River on Lurline Road, Comet	
Map ref.		**Other reference**		Within Cotton Catchment	
Tester's Name	Renee Anderson				
Address	"Kerry Downs" Tyson Road, POBox 1288				
Town	Emerald	**State**	QLD	**Postcode**	4720
Mobile	0448 125 156	**Phone**	07 4987 5066		
Email	reneeanderson.cotton@bigpond.com				

Test Log for QuickTest: Atrazine

Date tested	*Time*	*Result*				*Notes/Action /Reference*
27/2/2012	11.15am	***No***	***+***	***++***	***Yes***	flooding
2/3/2012	11.30am	***No***	***+***	***++***	***Yes***	flooding
5/3/2012	11.15am	***No***	***+***	***++***	***Yes***	flooding
8/3/2012	12.45pm	***No***	***+***	***++***	***Yes***	
12/3/2012	12.15am	***No***	***+***	***++***	***Yes***	
15/3/2012	11.15am	***No***	***+***	***++***	***Yes***	
18/3/2012	11.30am	***No***	***+***	***++***	***Yes***	
20/3/2012	12.15am	***No***	***+***	***++***	***Yes***	flooding
23/3/2012	1.15pm	***No***	***+***	***++***	***Yes***	flooding
26/3/2012	12.45pm	***No***	***+***	***++***	***Yes***	flooding
27/3/2012	11.15am	***No***	***+***	***++***	***Yes***	flooding
28/3/2012	1.015am	***No***	***+***	***++***	***Yes***	flooding
29/3/2012	1.015am	***No***	***+***	***++***	***Yes***	flooding
30/3/2012	11.15am	***No***	***+***	***++***	***Yes***	
2/4/2012	1.015am	***No***	***+***	***++***	***Yes***	
5/4/2012	11.15am	***No***	***+***	***++***	***Yes***	
10/4/2012	11.30am	***No***	***+***	***++***	***Yes***	
13/4/2012	11.45am	***No***	***+***	***++***	***Yes***	
16/4/2012	11.15am	***No***	***+***	***++***	***Yes***	
19/4/2012	12.15am	***No***	***+***	***++***	***Yes***	
22/4/2012	11.45am	***No***	***+***	***++***	***Yes***	
26/4/2012	11.15am	***No***	***+***	***++***	***Yes***	Samples sent away for testing
30/4/2012	1.015am	***No***	***+***	***++***	***Yes***	Samples sent away for testing
2/5/2012	11.15am	***No***	***+***	***++***	***Yes***	Samples sent away for testing

QuickTest Sample Log: Site C

Sample site reference #	Site C	**Reference number (from master list/map)**		Rileys Crossing Bridge at McKenzie River on Lurline Road, Comet	
Map ref.		**Other reference**		Within Cotton Catchment	
Tester's Name	Renee Anderson				
Address	"Kerry Downs" Tyson Road, POBox 1288				
Town	Emerald	**State**	QLD	**Postcode**	4720
Mobile	0448 125 156	**Phone**	07 4987 5066		
Email	reneeanderson.cotton@bigpond.com				

Test Log for QuickTest: Diuron

Date tested	*Time*	*Result*	*Notes/Action /Reference*
27/2/2012	11.15am	***No*** ***+*** ***++*** ***Yes***	flooding
2/3/2012	11.30am	***No*** ***+*** ***++*** ***Yes***	flooding
5/3/2012	11.15am	***No*** ***+*** ***++*** ***Yes***	flooding
8/3/2012	12.45pm	***No*** ***+*** ***++*** ***Yes***	
12/3/2012	12.15am	***No*** ***+*** ***++*** ***Yes***	
15/3/2012	11.15am	***No*** ***+*** ***++*** ***Yes***	
18/3/2012	11.30am	***No*** ***+*** ***++*** ***Yes***	
20/3/2012	12.15am	***No*** ***+*** ***++*** ***Yes***	flooding
23/3/2012	1.15pm	***No*** ***+*** ***++*** ***Yes***	flooding
26/3/2012	12.45pm	***No*** ***+*** ***++*** ***Yes***	flooding
27/3/2012	11.15am	***No*** ***+*** ***++*** ***Yes***	flooding
28/3/2012	1.015am	***No*** ***+*** ***++*** ***Yes***	flooding
29/3/2012	1.015am	***No*** ***+*** ***++*** ***Yes***	flooding
30/3/2012	11.15am	***No*** ***+*** ***++*** ***Yes***	
2/4/2012	1.015am	***No*** ***+*** ***++*** ***Yes***	
5/4/2012	11.15am	***No*** ***+*** ***++*** ***Yes***	
10/4/2012	11.30am	***No*** ***+*** ***++*** ***Yes***	
13/4/2012	11.45am	***No*** ***+*** ***++*** ***Yes***	
16/4/2012	11.15am	***No*** ***+*** ***++*** ***Yes***	
19/4/2012	12.15am	***No*** ***+*** ***++*** ***Yes***	
22/4/2012	11.45am	***No*** ***+*** ***++*** ***Yes***	
26/4/2012	11.15am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing
30/4/2012	1.015am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing
2/5/2012	11.15am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing

QuickTest Sample Log: Site D

Sample site reference #	Site D	**Reference number (from master list/map)**		Comet River Bridge on the Comet River off the Capricorn Highway, Comet	
Map ref.		**Other reference**		Within the Cotton Catchment	
Tester's Name	Renee Anderson				
Address	"Kerry Downs" Tyson Road, POBox 1288				
Town	Emerald	**State**	QLD	**Postcode**	4720
Mobile	0448 125 156	**Phone**	07 4987 5066		
Email	reneeanderson.cotton@bigpond.com				

Test Log for QuickTest: Atrazine

Date tested	*Time*	*Result*				*Notes/Action /Reference*
27/2/2012	10.45am	***No***	***+***	***++***	***Yes***	flooding
2/3/2012	11.00am	***No***	***+***	***++***	***Yes***	flooding
5/3/2012	10.45am	***No***	***+***	***++***	***Yes***	flooding
8/3/2012	12.15pm	***No***	***+***	***++***	***Yes***	
12/3/2012	11.45am	***No***	***+***	***++***	***Yes***	
15/3/2012	10.45am	***No***	***+***	***++***	***Yes***	
18/3/2012	11.00am	***No***	***+***	***++***	***Yes***	
20/3/2012	11.45am	***No***	***+***	***++***	***Yes***	flooding
23/3/2012	12.45pm	***No***	***+***	***++***	***Yes***	flooding
26/3/2012	12.15pm	***No***	***+***	***++***	***Yes***	flooding
27/3/2012	10.45am	***No***	***+***	***++***	***Yes***	flooding
28/3/2012	9.45am	***No***	***+***	***++***	***Yes***	flooding
29/3/2012	9.45am	***No***	***+***	***++***	***Yes***	flooding
30/3/2012	10.45am	***No***	***+***	***++***	***Yes***	
2/4/2012	9.45am	***No***	***+***	***++***	***Yes***	
5/4/2012	10.45am	***No***	***+***	***++***	***Yes***	
10/4/2012	11.00am	***No***	***+***	***++***	***Yes***	
13/4/2012	11.15am	***No***	***+***	***++***	***Yes***	
16/4/2012	10.45am	***No***	***+***	***++***	***Yes***	
19/4/2012	11.45am	***No***	***+***	***++***	***Yes***	
22/4/2012	11.15am	***No***	***+***	***++***	***Yes***	
26/4/2012	10.45am	***No***	***+***	***++***	***Yes***	Samples sent away for testing
30/4/2012	9.45am	***No***	***+***	***++***	***Yes***	Samples sent away for testing
2/5/2012	10.45am	***No***	***+***	***++***	***Yes***	Samples sent away for testing

QuickTest Sample Log: Site D

Sample site reference #	Site D	**Reference number (from master list/map)**		Comet River Bridge on the Comet River off the Capricorn Highway, Comet	
Map ref.		**Other reference**		Within the Cotton Catchment	
Tester's Name	Renee Anderson				
Address	"Kerry Downs" Tyson Road, POBox 1288				
Town	Emerald	**State**	QLD	**Postcode**	4720
Mobile	0448 125 156	**Phone**	07 4987 5066		
Email	reneeanderson.cotton@bigpond.com				

Test Log for QuickTest: Diuron

Date tested	*Time*	*Result*	*Notes/Action /Reference*
27/2/2012	10.45am	***No*** ***+*** ***++*** ***Yes***	flooding
2/3/2012	11.00am	***No*** ***+*** ***++*** ***Yes***	flooding
5/3/2012	10.45am	***No*** ***+*** ***++*** ***Yes***	flooding
8/3/2012	12.15pm	***No*** ***+*** ***++*** ***Yes***	
12/3/2012	11.45am	***No*** ***+*** ***++*** ***Yes***	
15/3/2012	10.45am	***No*** ***+*** ***++*** ***Yes***	
18/3/2012	11.00am	***No*** ***+*** ***++*** ***Yes***	
20/3/2012	11.45am	***No*** ***+*** ***++*** ***Yes***	flooding
23/3/2012	12.45pm	***No*** ***+*** ***++*** ***Yes***	flooding
26/3/2012	12.15pm	***No*** ***+*** ***++*** ***Yes***	flooding
27/3/2012	10.45am	***No*** ***+*** ***++*** ***Yes***	flooding
28/3/2012	9.45am	***No*** ***+*** ***++*** ***Yes***	flooding
29/3/2012	9.45am	***No*** ***+*** ***++*** ***Yes***	flooding
30/3/2012	10.45am	***No*** ***+*** ***++*** ***Yes***	
2/4/2012	9.45am	***No*** ***+*** ***++*** ***Yes***	
5/4/2012	10.45am	***No*** ***+*** ***++*** ***Yes***	
10/4/2012	11.00am	***No*** ***+*** ***++*** ***Yes***	
13/4/2012	11.15am	***No*** ***+*** ***++*** ***Yes***	
16/4/2012	10.45am	***No*** ***+*** ***++*** ***Yes***	
19/4/2012	11.45am	***No*** ***+*** ***++*** ***Yes***	
22/4/2012	11.15am	***No*** ***+*** ***++*** ***Yes***	
26/4/2012	10.45am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing
30/4/2012	9.45am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing
2/5/2012	10.45am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing

QuickTest Sample Log: Site E

Sample site reference #	Site E	**Reference number (from master list/map)**		Maurie Iddles Farm, Nogoa River, Selma Road, Emerald	
Map ref.		**Other reference**		upstream of cotton region	
Tester's Name	Renee Anderson				
Address	"Kerry Downs" Tyson Road, POBox 1288				
Town	Emerald	**State**	QLD	**Postcode**	4720
Mobile	0448 125 156	**Phone**	07 4987 5066		
Email	reneeanderson.cotton@bigpond.com				

Test Log for QuickTest: Atrazine

Date tested	*Time*	*Result*	*Notes/Action /Reference*
27/2/2012	8.45am	***No*** ***+*** ***++*** ***Yes***	flooding
2/3/2012	9.00am	***No*** ***+*** ***++*** ***Yes***	flooding
5/3/2012	8.45am	***No*** ***+*** ***++*** ***Yes***	flooding
8/3/2012	10.15am	***No*** ***+*** ***++*** ***Yes***	
12/3/2012	9.45am	***No*** ***+*** ***++*** ***Yes***	
15/3/2012	8.45am	***No*** ***+*** ***++*** ***Yes***	
18/3/2012	9.00am	***No*** ***+*** ***++*** ***Yes***	
20/3/2012	9.45am	***No*** ***+*** ***++*** ***Yes***	flooding
23/3/2012	10.45am	***No*** ***+*** ***++*** ***Yes***	flooding
26/3/2012	10.15am	***No*** ***+*** ***++*** ***Yes***	flooding
27/3/2012	8.45am	***No*** ***+*** ***++*** ***Yes***	flooding
28/3/2012	7.45am	***No*** ***+*** ***++*** ***Yes***	flooding
29/3/2012	7.45am	***No*** ***+*** ***++*** ***Yes***	flooding
30/3/2012	8.45am	***No*** ***+*** ***++*** ***Yes***	
2/4/2012	7.45am	***No*** ***+*** ***++*** ***Yes***	
5/4/2012	8.45am	***No*** ***+*** ***++*** ***Yes***	
10/4/2012	9.00am	***No*** ***+*** ***++*** ***Yes***	
13/4/2012	9.15am	***No*** ***+*** ***++*** ***Yes***	
16/4/2012	8.45am	***No*** ***+*** ***++*** ***Yes***	
19/4/2012	9.45am	***No*** ***+*** ***++*** ***Yes***	
22/4/2012	9.15am	***No*** ***+*** ***++*** ***Yes***	
26/4/2012	8.45am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing
30/4/2012	7.45am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing
2/5/2012	8.45am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing

QuickTest Sample Log: Site E

Sample site reference #	Site E	**Reference number (from master list/map)**		Maurie Iddles Farm, Nogoa River, Selma Road, Emerald	
Map ref.		**Other reference**		upstream of cotton region	
Tester's Name	Renee Anderson				
Address	"Kerry Downs" Tyson Road, POBox 1288				
Town	Emerald	**State**	QLD	**Postcode**	4720
Mobile	0448 125 156	**Phone**	07 4987 5066		
Email	reneeanderson.cotton@bigpond.com				

Test Log for QuickTest: Diuron

Date tested	*Time*	*Result*				*Notes/Action /Reference*
27/2/2012	8.45am	***No***	***+***	***++***	***Yes***	flooding
2/3/2012	9.00am	***No***	***+***	***++***	***Yes***	flooding
5/3/2012	8.45am	***No***	***+***	***++***	***Yes***	flooding
8/3/2012	10.15am	***No***	***+***	***++***	***Yes***	
12/3/2012	9.45am	***No***	***+***	***++***	***Yes***	
15/3/2012	8.45am	***No***	***+***	***++***	***Yes***	
18/3/2012	9.00am	***No***	***+***	***++***	***Yes***	
20/3/2012	9.45am	***No***	***+***	***++***	***Yes***	flooding
23/3/2012	10.45am	***No***	***+***	***++***	***Yes***	flooding
26/3/2012	10.15am	***No***	***+***	***++***	***Yes***	flooding
27/3/2012	8.45am	***No***	***+***	***++***	***Yes***	flooding
28/3/2012	7.45am	***No***	***+***	***++***	***Yes***	flooding
29/3/2012	7.45am	***No***	***+***	***++***	***Yes***	flooding
30/3/2012	8.45am	***No***	***+***	***++***	***Yes***	
2/4/2012	7.45am	***No***	***+***	***++***	***Yes***	
5/4/2012	8.45am	***No***	***+***	***++***	***Yes***	
10/4/2012	9.00am	***No***	***+***	***++***	***Yes***	
13/4/2012	9.15am	***No***	***+***	***++***	***Yes***	
16/4/2012	8.45am	***No***	***+***	***++***	***Yes***	
19/4/2012	9.45am	***No***	***+***	***++***	***Yes***	
22/4/2012	9.15am	***No***	***+***	***++***	***Yes***	
26/4/2012	8.45am	***No***	***+***	***++***	***Yes***	Samples sent away for testing
30/4/2012	7.45am	***No***	***+***	***++***	***Yes***	Samples sent away for testing
2/5/2012	8.45am	***No***	***+***	***++***	***Yes***	Samples sent away for testing

QuickTest Sample Log: Site F

Sample site reference #	Site F	**Reference number (from master list/map)**		Retreat Creek Bridge over Retreat Creek on Fork Lagoons Road, Fork Lagoons.	
Map ref.		**Other reference**		upstream of cotton region	
Tester's Name	Renee Anderson				
Address	"Kerry Downs" Tyson Road, POBox 1288				
Town	Emerald	**State**	QLD	**Postcode**	4720
Mobile	0448 125 156	**Phone**	07 4987 5066		
Email	reneeanderson.cotton@bigpond.com				

Test Log for QuickTest: Atrazine

Date tested	*Time*	*Result*	*Notes/Action /Reference*
27/2/2012	8.00am	***No*** ***+*** ***++*** ***Yes***	flooding
2/3/2012	8.15am	***No*** ***+*** ***++*** ***Yes***	flooding
5/3/2012	8.00am	***No*** ***+*** ***++*** ***Yes***	flooding
8/3/2012	9.30am	***No*** ***+*** ***++*** ***Yes***	
12/3/2012	9.00am	***No*** ***+*** ***++*** ***Yes***	
15/3/2012	8.00am	***No*** ***+*** ***++*** ***Yes***	
18/3/2012	8.15am	***No*** ***+*** ***++*** ***Yes***	
20/3/2012	9.00am	***No*** ***+*** ***++*** ***Yes***	flooding
23/3/2012	10.am	***No*** ***+*** ***++*** ***Yes***	flooding
26/3/2012	9.30am	***No*** ***+*** ***++*** ***Yes***	flooding
27/3/2012	8.00am	***No*** ***+*** ***++*** ***Yes***	flooding
28/3/2012	7.00am	***No*** ***+*** ***++*** ***Yes***	flooding
29/3/2012	7.00am	***No*** ***+*** ***++*** ***Yes***	flooding
30/3/2012	8.00am	***No*** ***+*** ***++*** ***Yes***	
2/4/2012	7.00am	***No*** ***+*** ***++*** ***Yes***	
5/4/2012	8.00am	***No*** ***+*** ***++*** ***Yes***	
10/4/2012	8.15am	***No*** ***+*** ***++*** ***Yes***	
13/4/2012	8.30am	***No*** ***+*** ***++*** ***Yes***	
16/4/2012	8.00am	***No*** ***+*** ***++*** ***Yes***	
19/4/2012	9.00am	***No*** ***+*** ***++*** ***Yes***	
22/4/2012	8.30am	***No*** ***+*** ***++*** ***Yes***	
26/4/2012	8.00am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing
30/4/2012	7.00am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing
2/5/2012	8.00am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing

QuickTest Sample Log: Site F

Sample site reference #	Site F	**Reference number (from master list/map)**		Retreat Creek Bridge over Retreat Creek on Fork Lagoons Road, Fork Lagoons.	
Map ref.		**Other reference**		upstream of cotton region	
Tester's Name	Renee Anderson				
Address	"Kerry Downs" Tyson Road, POBox 1288				
Town	Emerald	**State**	QLD	**Postcode**	4720
Mobile	0448 125 156	**Phone**	07 4987 5066		
Email	reneeanderson.cotton@bigpond.com				

Test Log for QuickTest: Diuron

Date tested	*Time*	*Result*				*Notes/Action /Reference*
27/2/2012	8.00am	***No***	***+***	***++***	***Yes***	flooding
2/3/2012	8.15am	***No***	***+***	***++***	***Yes***	flooding
5/3/2012	8.00am	***No***	***+***	***++***	***Yes***	flooding
8/3/2012	9.30am	***No***	***+***	***++***	***Yes***	
12/3/2012	9.00am	***No***	***+***	***++***	***Yes***	
15/3/2012	8.00am	***No***	***+***	***++***	***Yes***	
18/3/2012	8.15am	***No***	***+***	***++***	***Yes***	
20/3/2012	9.00am	***No***	***+***	***++***	***Yes***	flooding
23/3/2012	10.am	***No***	***+***	***++***	***Yes***	flooding
26/3/2012	9.30am	***No***	***+***	***++***	***Yes***	flooding
27/3/2012	8.00am	***No***	***+***	***++***	***Yes***	flooding
28/3/2012	7.00am	***No***	***+***	***++***	***Yes***	flooding
29/3/2012	7.00am	***No***	***+***	***++***	***Yes***	flooding
30/3/2012	8.00am	***No***	***+***	***++***	***Yes***	
2/4/2012	7.00am	***No***	***+***	***++***	***Yes***	
5/4/2012	8.00am	***No***	***+***	***++***	***Yes***	
10/4/2012	8.15am	***No***	***+***	***++***	***Yes***	
13/4/2012	8.30am	***No***	***+***	***++***	***Yes***	
16/4/2012	8.00am	***No***	***+***	***++***	***Yes***	
19/4/2012	9.00am	***No***	***+***	***++***	***Yes***	
22/4/2012	8.30am	***No***	***+***	***++***	***Yes***	
26/4/2012	8.00am	***No***	***+***	***++***	***Yes***	Samples sent away for testing
30/4/2012	7.00am	***No***	***+***	***++***	***Yes***	Samples sent away for testing
2/5/2012	8.00am	***No***	***+***	***++***	***Yes***	Samples sent away for testing

QuickTest Sample Log: Site G

Sample site reference #	Site G	**Reference number (from master list/map)**		Vince Lester Bridge on Nogoa River on Capricorn Highway, Emerald, (in town)	
Map ref.		**Other reference**		Within the cotton catchment	
Tester's Name	Renee Anderson				
Address	"Kerry Downs" Tyson Road, POBox 1288				
Town	Emerald	**State**	QLD	**Postcode**	4720
Mobile	0448 125 156	**Phone**	07 4987 5066		
Email	reneeanderson.cotton@bigpond.com				

Test Log for QuickTest: Atrazine

Date tested	*Time*	*Result*	*Notes/Action /Reference*
27/2/2012	9.10am	***No*** ***+*** ***++*** ***Yes***	flooding
2/3/2012	9.25am	***No*** ***+*** ***++*** ***Yes***	flooding
5/3/2012	9.10am	***No*** ***+*** ***++*** ***Yes***	flooding
8/3/2012	10.40am	***No*** ***+*** ***++*** ***Yes***	
12/3/2012	10.10am	***No*** ***+*** ***++*** ***Yes***	
15/3/2012	9.10am	***No*** ***+*** ***++*** ***Yes***	
18/3/2012	9.25am	***No*** ***+*** ***++*** ***Yes***	
20/3/2012	10.10am	***No*** ***+*** ***++*** ***Yes***	flooding
23/3/2012	11.10am	***No*** ***+*** ***++*** ***Yes***	flooding
26/3/2012	10.40am	***No*** ***+*** ***++*** ***Yes***	flooding
27/3/2012	9.10am	***No*** ***+*** ***++*** ***Yes***	flooding
28/3/2012	8.10am	***No*** ***+*** ***++*** ***Yes***	flooding
29/3/2012	8.10am	***No*** ***+*** ***++*** ***Yes***	flooding
30/3/2012	9.10am	***No*** ***+*** ***++*** ***Yes***	
2/4/2012	8.10am	***No*** ***+*** ***++*** ***Yes***	
5/4/2012	9.10am	***No*** ***+*** ***++*** ***Yes***	
10/4/2012	9.25am	***No*** ***+*** ***++*** ***Yes***	
13/4/2012	9.40am	***No*** ***+*** ***++*** ***Yes***	
16/4/2012	9.10am	***No*** ***+*** ***++*** ***Yes***	
19/4/2012	10.10am	***No*** ***+*** ***++*** ***Yes***	
22/4/2012	9.40am	***No*** ***+*** ***++*** ***Yes***	
26/4/2012	9.10am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing
30/4/2012	8.10am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing
2/5/2012	9.10am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing

QuickTest Sample Log: Site G

Sample site reference #	Site G	**Reference number (from master list/map)**		Vince Lester Bridge on Nogoa River on Capricorn Highway, Emerald, (in town)	
Map ref.		**Other reference**		Within the cotton catchment	
Tester's Name	Renee Anderson				
Address	"Kerry Downs" Tyson Road, POBox 1288				
Town	Emerald	**State**	QLD	**Postcode**	4720
Mobile	0448 125 156	**Phone**	07 4987 5066		
Email	reneeanderson.cotton@bigpond.com				

Test Log for QuickTest: Diuron

Date tested	*Time*	*Result*	*Notes/Action /Reference*
27/2/2012	9.10am	***No*** ***+*** ***++*** ***Yes***	flooding
2/3/2012	9.25am	***No*** ***+*** ***++*** ***Yes***	flooding
5/3/2012	9.10am	***No*** ***+*** ***++*** ***Yes***	flooding
8/3/2012	10.40am	***No*** ***+*** ***++*** ***Yes***	
12/3/2012	10.10am	***No*** ***+*** ***++*** ***Yes***	
15/3/2012	9.10am	***No*** ***+*** ***++*** ***Yes***	
18/3/2012	9.25am	***No*** ***+*** ***++*** ***Yes***	
20/3/2012	10.10am	***No*** ***+*** ***++*** ***Yes***	flooding
23/3/2012	11.10am	***No*** ***+*** ***++*** ***Yes***	flooding
26/3/2012	10.40am	***No*** ***+*** ***++*** ***Yes***	flooding
27/3/2012	9.10am	***No*** ***+*** ***++*** ***Yes***	flooding
28/3/2012	8.10am	***No*** ***+*** ***++*** ***Yes***	flooding
29/3/2012	8.10am	***No*** ***+*** ***++*** ***Yes***	flooding
30/3/2012	9.10am	***No*** ***+*** ***++*** ***Yes***	
2/4/2012	8.10am	***No*** ***+*** ***++*** ***Yes***	
5/4/2012	9.10am	***No*** ***+*** ***++*** ***Yes***	
10/4/2012	9.25am	***No*** ***+*** ***++*** ***Yes***	
13/4/2012	9.40am	***No*** ***+*** ***++*** ***Yes***	
16/4/2012	9.10am	***No*** ***+*** ***++*** ***Yes***	
19/4/2012	10.10am	***No*** ***+*** ***++*** ***Yes***	
22/4/2012	9.40am	***No*** ***+*** ***++*** ***Yes***	
26/4/2012	9.10am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing
30/4/2012	8.10am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing
2/5/2012	9.10am	***No*** ***+*** ***++*** ***Yes***	Samples sent away for testing

Appendix 4: Certificates of analysis from instrumental analysis

CERTIFICATE OF ANALYSIS (AMENDED)

Date: 25 September 2012
Client: Attn: Angus Crossan
QuickTest Technologies Pty Ltd
PO Box 6285 NORTH RYDE NSW 2113
Reference No.: 12-0536A
Substrate: Water
Identification: Narrabri NSW, see below
Date Received: 11 July 2012
Date Commenced: 13 September 2012
Analysis: Diuron and Atrazine
Method: AATM-S-150
Results: Sample(s) tested as received

Lab. No.	Client Ref	Date Sampled	Diuron (µg/L)	Atrazine (µg/L)
12-0536-01	Cockburn River	14/03/2012	NT	NT
12-0536-02	Gondgun Creek	05/03/2012	<LOQ	<LOQ
12-0536-03	Gondgun Creek	07/03/2012	NT	NT
12-0536-04	Gunidgera Creek	25/03/2012	NT	NT
12-0536-05	Narrabri	06/04/2012	NT	NT
12-0536-06	Cockburn River	17/04/2012	NT	NT
12-0536-07	Cockburn River	22/03/2012	NT	NT
12-0536-08	Cockburn River	11/04/2012	NT	NT
12-0536-09	Peel River	29/03/2012	NT	NT
12-0536-10	Cockburn River	22/02/2012	<LOQ	<LOQ
12-0536-11	Gunidgera Creek	08/02/2012	<LOQ	<LOQ
12-0536-12	Narrabri	03/04/2012	NT	NT
12-0536-13	Narrabri	09/02/2012	<LOQ	<LOQ
12-0536-14	Gunidgera Creek	13/02/2012	1.6 (1.7)	<LOQ (LOQ)
12-0536-15	Cockburn River	09/03/2012	NT	NT

Reference No.: 12-0536A
Substrate: Water

Lab. No.	Client Ref	Date Sampled	Diuron (µg/L)	Atrazine (µg/L)
12-0536-16	Cockburn River	29/02/2012	<LOQ	<LOQ
12-0536-17	Narrabri	16/02/2012	<LOQ	<LOQ
12-0536-18	Narrabri	30/04/2012	NT	NT
12-0536-19	Narrabri	24/03/2012	NT	NT
12-0536-20	Gunidgera Creek	20/03/2012	NT	NT
12-0536-21	Acri	30/05/2012	<LOQ	<LOQ
12-0536-22	Peel River	22/02/2012	<LOQ	<LOQ
12-0536-23	Cockburn River	03/05/2012	NT	NT
12-0536-24	Gunidgera Creek	21/02/2012	NT	NT
12-0536-25	Narrabri	29/03/2012	NT	NT
12-0536-26	Acri	30/04/2012	<LOQ	<LOQ
12-0536-27	Acri	28/05/2012	NT	NT
12-0536-28	Gunidgera Creek	24/02/2012	1.2	<LOQ
12-0536-29	Narrabri	10/03/2012	NT	NT
12-0536-30	Narrabri	12/04/2012	NT	NT
12-0536-31	Cockburn River	08/05/2012	NT	NT
12-0536-32	Gunidgera Creek	11/03/2012	NT	NT
12-0536-33	Cockburn River	24/04/2012	NT	NT
12-0536-34	Gunidgera Creek	01/04/2012	<LOQ	<LOQ
12-0536-35	Gunidgera Creek	22/02/2012	NT	NT
12-0536-36	Narrabri	13/02/2012	NT	NT
12-0536-37	Acri	08/05/2012	<LOQ	<LOQ
12-0536-38	Narrabri	15/03/2012	NT	NT
12-0536-39	Narrabri	22/02/2012	<LOQ (<LOQ)	<LOQ (<LOQ)
12-0536-40	Cockburn River	29/03/2012	<LOQ (<LOQ)	<LOQ (<LOQ)
12-0536-41	Narrabri	02/03/2012	<LOQ	<LOQ
12-0536-42	Narrabri	07/03/2012	NT	NT
12-0536-43	Narrabri	27/04/2012	NT	NT
12-0536-44	Narrabri	19/03/2012	NT	NT

Reference No.: 12-0536A
Substrate: Water

Lab. No.	Client Ref	Date Sampled	Diuron (µg/L)	Atrazine (µg/L)
12-0536-45	Unknown Sample		NT	NT

NT: Not tested.
LOQ: Limit of Quantitation (Diuron: 1 µg/L and Atrazine: 0.5 µg/L)
Results in parenthesis are duplicate assays

This report replaces previous report issued on 21 September 2012

Brendan Cook
Authorised Analyst

Agrisearch Analytical Pty Ltd
Level 1, 48 Victoria Rd, Rozelle, NSW 2039, **Australia** **P** +61 2 98103666 **F** +61 2 98103866 **W** http://www.agrisearchanalytical.com.au
50 Leewood Drive, Orange, NSW 2800, **Australia** **P** +61 2 63613577 **F** +61 2 63613588
12-14 Pukete Rd., PO Box 3241, Te Rapa, Hamilton, **New Zealand** **P** +64 7 8495109 **F** +64 7 8496871

ABN 25 094 752 959

CERTIFICATE OF ANALYSIS (AMENDED)

Date: 25 September 2012
Client: Attn: Angus Crossan
QuickTest Technologies Pty Ltd
PO Box 6285 NORTH RYDE NSW 2113
Reference No.: 12-0518A
Substrate: Water
Identification: Emerald Queensland, see below
Date Received: 29 June 2012
Date Commenced: 13 September 2012
Analysis: Diuron and Atrazine
Method: AATM-S-150
Results: Sample(s) tested as received

Lab. No.	Client Ref	Date Sampled	Diuron (µg/L)	Atrazine (µg/L)
12-0518-01	Site A	27/02/2012	<LOQ	<LOQ
12-0518-02	Site A	27/03/2012	<LOQ	<LOQ
12-0518-03	Site A	30/04/2012	NT	NT
12-0518-04	Site A	02/05/2012	NT	NT
12-0518-05	Site A	03/05/2012	<LOQ	<LOQ
12-0518-06	Site B	24/02/2012	NT	NT
12-0518-07	Site B	05/03/2012	NT	NT
12-0518-08	Site B	26/03/2012	<LOQ (<LOQ)	<LOQ (<LOQ)
12-0518-09	Site B	28/03/2012	NT	NT
12-0518-10	Site B	05/04/2012	<LOQ	<LOQ
12-0518-11	Site B	16/04/2012	NT	NT
12-0518-12	Site B	30/04/2012	NT	NT
12-0518-13	Site B	02/05/2012	NT	NT
12-0518-14	Site B	03/05/2012	NT	NT
12-0518-15	Site C	01/03/2012	NT	NT

Reference No.: 12-0518A
Substrate: Water

Lab. No.	Client Ref	Date Sampled	Diuron (µg/L)	Atrazine (µg/L)
12-0518-16	Site C	23/03/2012	<LOQ	<LOQ
12-0518-17	Site C	29/03/2012	NT	NT
12-0518-18	Site C	02/04/2012	<LOQ	<LOQ
12-0518-19	Site C	30/04/2012	NT	NT
12-0518-20	Site C	02/05/2012	NT	NT
12-0518-21	Site C	03/05/2012	NT	NT
12-0518-22	Site D	08/03/2012	<LOQ	<LOQ
12-0518-23	Site D	12/03/2012	<LOQ	<LOQ
12-0518-24	Site D	20/03/2012	<LOQ (<LOQ)	<LOQ (<LOQ)
12-0518-25	Site D	10/04/2012	NT	NT
12-0518-26	Site D	30/04/2012	NT	NT
12-0518-27	Site D	02/05/2012	NT	NT
12-0518-28	Site D	03/05/2012	NT	NT
12-0518-29	Site E	23/03/2012	NT	NT
12-0518-30	Site E	13/04/2012	NT	NT
12-0518-31	Site E	19/04/2012	<LOQ	<LOQ
12-0518-32	Site E	30/04/2012	<LOQ	<LOQ
12-0518-33	Site E	02/05/2012	NT	NT
12-0518-34	Site E	03/05/2012	NT	NT
12-0518-35	Site F	15/03/2012	<LOQ	<LOQ
12-0518-36	Site F	23/03/2012	<LOQ	<LOQ
12-0518-37	Site F	02/04/2012	<LOQ (<LOQ)	<LOQ (<LOQ)
12-0518-38	Site F	30/04/2012	NT	NT
12-0518-39	Site F	02/05/2012	NT	NT
12-0518-40	Site F	03/05/2012	NT	NT
12-0518-41	Site G	28/03/2012	NT	NT
12-0518-42	Site G	29/03/2012	<LOQ	<LOQ
12-0518-43	Site G	30/04/2012	NT	NT
12-0518-44	Site G	02/05/2012	NT	NT

Reference No.: 12-0518A
Substrate: Water

Lab. No.	Client Ref	Date Sampled	Diuron (µg/L)	Atrazine (µg/L)
12-0518-45	Site G	03/05/2012	NT	NT

NT: Not tested.
LOQ: Limit of Quantitation (Diuron: 1 µg/L and Atrazine: 0.5 µg/L)
Results in parenthesis are duplicate assays

This report replaces previous report issued on 21 September 2012

Brendan Cook
Authorised Analyst

Agrisearch Analytical Pty Ltd
Level 1, 48 Victoria Rd, Rozelle, NSW 2039, **Australia** **P** +61 2 98103666 **F** +61 2 98103866 **W** http://www.agrisearchanalytical.com.au
50 Leewood Drive, Orange, NSW 2800, **Australia** **P** +61 2 63613577 **F** +61 2 63613588
12-14 Pukete Rd., PO Box 3241, Te Rapa, Hamilton, **New Zealand** **P** +64 7 8495109 **F** +64 7 8496871

ABN 25 094 752 959

Appendix 5: Species sensitivity distribution for Diuron

Copied with permission from M. Burns PhD Thesis 2012 The University of Sydney

"Diuron aquatic species toxicity obtained from the ECOTOX database is summarised in Appendix 2. The most sensitive organism was a species of Blue-green algae *Synechococcus sp.*, (EC_{50} = 0.55 µg L^{-1}). The most tolerant was *Ctenopharyngodon idella* (Grass carp) (LC_{50} = 31,000 µg L^{-1}). The data was arranged in to taxonomic groups of algae, macrophytes, fish, amphibians and invertebrates. To confirm the different levels of taxonomic group, and salt and freshwater species group sensitivities, non-parametric one-way ANOVA Dunn's test on ranks determined significantly different levels of sensitivity between the taxonomic groups ($P < 0.01$; Appendix 2). Specifically, the algae and macrophyte taxonomic groups were confirmed to be significantly more sensitive to diuron exposure than fish, amphibian and invertebrate taxonomic groups ($P < 0.05$; Appendix 2). Algae and macrophytes taxonomic groups were not significantly different, as were fish, amphibians and invertebrates ($P > 0.05$; Appendix 2). Salt and freshwater groups were found to not be significantly different ($P>0.05$; Appendix 2), and therefore combined in the analysis.

Due to the different levels of species sensitivity to diuron, it was necessary to construct three SSDs representing the sensitivities of algae and macrophytes; fish, amphibians and invertebrates; and all taxonomic groups (Figure 2.7). Their regression outputs and HC_5 and HC_{10} toxicity thresholds are given in Table 2.7. In all cases, the linear regression explained the variability reasonably well (r^2 = 0.93-0.98). The SSD consisting of all taxonomic groups confirms a clear separation in sensitivity that is subsequently represented in the two SSDs of fish, amphibians and invertebrates; and algae and macrophytes taxonomic groups (Figure 2.7). The estimated HC_5s and HC_{10}s for each SSD were, respectively, 1.0 and 1.7 µg L^{-1} for algae and macrophytes; 697 and 1151 µg L^{-1} for fish, amphibians and invertebrates; and 0.8 and 3.4 µg L^{-1} for all taxonomic groups (Table 2.7)."

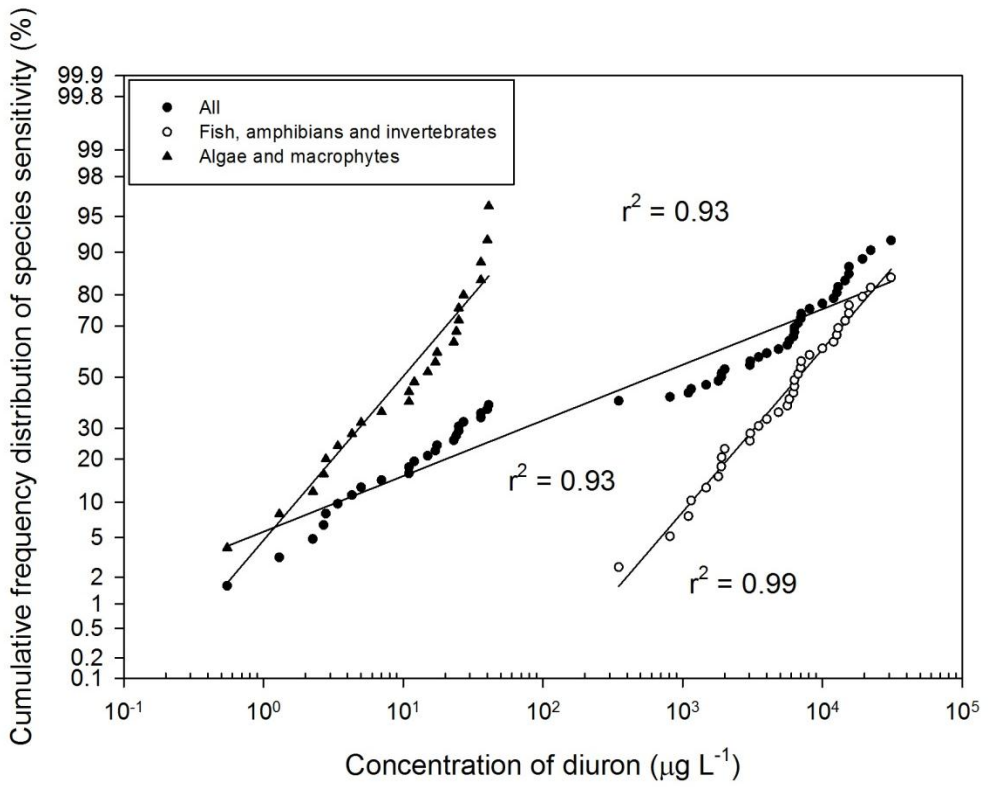

Figure 2.7 Diuron species sensitivity distributions for all; fish, amphibians and invertebrate; and algae and macrophyte taxonomic groups.

Table 2.7 Diuron species sensitivity linear regression parameters (shown here untransformed) and estimated HC_5 and HC_{10} for each taxonomic group.

Taxonomic group	n[a]	b_{tox}	m_{tox}	r^2	HC_5 (µg L^{-1})	HC_{10} (µg L^{-1})
Algae and macrophytes	24 (24)	-1.67	1.68	0.93	1.0	1.7
Fish, amphibians and invertebrates	37 (33)	-6.39	1.67	0.99	697	1151
All taxonomic groups	61 (57)	-1.59	0.57	0.93	0.8	3.4

[a] n represents the total count of studies used to develop the SSD, including geometric means of the same species; and numbers in brackets represent the number of points used in the regression estimate.