



Drinking Water Audit Report

Local Authority:	Kerry County Council	Date of Audit:	7 th November 2007
Plant(s) visited:	Lough Guitane WTW	Auditors:	BW, MR (DWI), NON, JF
		Our File Ref:	PAE2007/538
Audit Criteria:	<ul style="list-style-type: none">• The European Communities (Drinking Water)(No. 2) Regulations, 2007.• EPA Drinking Water Regulations Guidance Booklet No. 1 – Regulation 9 and 10.• The recommendations specified in the Handbooks on Implementation for Sanitary Authorities in relation to the European Communities (Drinking Water) Regulations 2000.• The recommendations specified in The Quality of Drinking Water in Ireland reports.		

MAIN FINDINGS:

The primary issues of concern identified during the audit were as follows:

1. To urgently review the monitoring programmes in place at the water plant especially the *Cryptosporidium* monitoring programme.
2. The need for treatment at this plant that includes a barrier for the removal of *Cryptosporidium*.
3. The apparent lack of adequate contact time after chlorination.
4. The need for source protection measures for the lake.
5. The control of cattle access around the water works.

1. INTRODUCTION

Under the European Communities (Drinking Water)(No. 2) Regulations 2007 the Environmental Protection Agency is the supervisory authority in relation to the local authorities and their role in the provision of public water supplies. This audit was carried out to assess the performance of the local authority in providing clean and wholesome drinking water.

The opening meeting commenced at 10.00am at the Lough Guitane Water Treatment Works. The scope and purpose of the audit were outlined at the opening meeting. The audit process consisted of interviews with staff, review of records and observations made during an inspection of the treatment plant. The following were in attendance during the audit. The audits observations and recommendations are listed in Section 3 and 4 of this report.

Agency personnel were informed that Lough Guitane supplies half of the households in County Kerry and approximately 80% of the tourists visiting County Kerry.

Kerry County Council are planning to employ Consultants to examine the entire lake, its shoreline and how best cattle access to the lake can be restricted.

Representing Local Authority: (*indicates that person was also present for the closing meeting)

Seamus O'Mahony, Executive Engineer (Killarney); Eamonn Myers, Caretaker Lough Guitane; Helen Welton, Area Technician; Kathleen McSweeney, Area Technician; Freddie Bartlett, Supervisor; Brian Sweeney, Senior Engineer; Des Fitzgerald, Executive Engineer (Killarney); Colm Mangan, Senior Executive Engineer; David Lenihan, Senior Executive Chemist;

Representing the Environmental Protection Agency:

Brendan Wall, Marcus Rink (DWI, UK), John Feehan

2. AUDIT OBSERVATIONS

The audit process is a random sample on a particular day of a facility's operation. Where an observation or recommendation against a particular issue has not been reported, this should not be construed to mean that there is this issue is fully addressed.

a)	<p>Source Protection</p> <ul style="list-style-type: none"> ❑ We were also informed that the intake pipeline was located some 80 meters out in the lake and that the lake is sometimes subject to transient algal blooms. ❑ A Consultants report has recently recommended that: <ul style="list-style-type: none"> • the intake pipeline be extended further out into the lake, • sand filters be installed at the plant and • a ‘dead-zone’ be established around the lake. ❑ We were informed that all farmers along the lake shoreline were written to in relation to the Nitrate Regulations and that there are plans to fence off the entire shoreline of the lake but that the details had yet to be worked out (see Photo 4 below). ❑ Fresh evidence that cattle were recently grazing within the water treatment plant compound (see Photo 2 below) was found and also that they had access to Lough Guitane. ❑ The treatment at the plant does not include any treatment barriers for the removal of <i>Cryptosporidium</i> and if the parasite is found in the raw water then it can enter the drinking water supply.
b)	<p>Chlorination and Disinfection</p> <ul style="list-style-type: none"> ❑ We were informed of plans to install a Chlorine Dioxide treatment unit at the plant in Spring 2008. ❑ There is no contact tank at the water works. The contact time after chlorine dosing at this plant was assessed. It may potentially not meet the WHO Guidance value and may be inadequate to disinfect water especially for the first connections from the distribution system. ❑ The portable Chlorine monitor in the laboratory was found to be out of calibration. An online Chlorine monitor was found to be monitoring the treated water. ❑ The room storing the Chlorine gas cylinders was found not to have a tester alarm on the entrance door.
c)	<p>Monitoring and Sampling Programme for treated water</p> <ul style="list-style-type: none"> ❑ We were informed that monitoring for <i>Cryptosporidium</i> on the supply to the works is undertaken by Southern Scientific for Kerry County Council. The volume sampled was found to be 60 litres which is not deemed sufficient in this case given that the monitoring of <i>Cryptosporidium</i> in the raw water will also be indicative of the treated water. The pipe abstracting the water for the <i>Cryptosporidium</i> was found to be out of the water (see Photo 3 below).
d)	<p>Chemical storage and bunds</p> <ul style="list-style-type: none"> ❑ Fluoride dosing drums were found not to be stored in a bunded area.

3. AUDIT RECOMMENDATIONS

In view of the observations noted during the audit Kerry County Council are recommended to carry out the following:

1. Raw water monitoring should be carried out routinely and should include monitoring for *E.Coli*.
2. The contact time for chlorine disinfection should be reviewed and Kerry County Council should ensure that the correct dose and contact time is being used as recommended by the World Health Organisation and that the first connections are receiving appropriately disinfected drinking water. The calculation of contact time shall be submitted to the Agency.
3. Kerry County Council shall review the programme of continuous monitoring for *Cryptosporidium* in the raw and treated water in consultation with the HSE. It should include a totaliser and flowmeter for the raw and treated water. If any *Cryptosporidium* oocysts are detected during the monitoring programme then the local authority should immediately contact the Health Service Executive.
4. Ensure that the source protection and catchment risk assessment score for the *Cryptosporidium* risk assessment is examined in detail and measures implemented to reduce the risk where possible.
5. Plans must be put in place by the local authority as a priority to upgrade the treatment processes at the plant to include adequate treatment for the removal of *Cryptosporidium* should it be detected in the raw water source.
6. The following automatic monitors should be installed to alert plant operators of any changes in raw water quality: an online turbidity meter and an online ammonia meter.
7. Due to the nature of this supply, Kerry County Council should conduct a risk assessment as to whether one chlorine monitor is adequate on the final supply and whether the risks deem that a second or third online monitor in series may be required.
8. Action should be taken to ensure that the source is made secure and fenced off to prevent livestock (including cattle, sheep and deer) direct access to the lake.
9. Kerry County Council should assess the implications of the European Communities (Good Agricultural Practice for the Protection of Waters) Regulations 2006 (SI No. 378 of 2006) and shall ensure (except where in consultation with the Agency, an alternative distance is agreed) that:
 - Organic fertiliser or soiled water is not applied to land within 200 m of the abstraction point
 - Farmyard manure held in a field prior to landspreading shall not be placed within 250 m of the abstraction point
10. A survey the shoreline of Lough Guitane should be conducted to identify any potential high-risk agricultural sources or septic tanks. This should be extended to include all feeder streams into Lough Guitane. The use of the SSRS methodology could be adopted to assess the risks from feeder streams into Lough Guitane.
11. Trends in raw waster quality should be graphed and used to determine the optimum treatment conditions for the water at the plant and these trend graphs should be used to identify whether rapid variations in raw water quality have resulted in problems with the treatment process.

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12. An assessment of the lake should be undertaken to ensure that the intake pipe is located at the most appropriate location. This assessment should include an evaluation of the thermal layers, dissolved oxygen results, settlement patterns within the lake (this is especially important as effectively primary treatment at this plant is settlement in the lake), turnover time for the lake and currents within the lake and characterisation of lake water quality.
 13. A Chlorine tester alarm should be installed at the entrance door to the Chlorine storage room.
 14. Kerry County Council should review chemical storage arrangements at treatment plants. Chemicals must be stored in bunded areas capable of containing at least 110% of the volume of chemicals stored therein. Fill points for storage tanks inside the bunds should be located within the bunded area.
 15. Kerry County Council shall ensure that all chemicals used at the treatment plant are produced in accordance with an appropriate IS:EN or BS:EN standard or are on the List of Approved Products and Processes as published by the Drinking Water Inspectorate of England and Wales (www.dwi.gov.uk).
 16. A Drinking Water Safety Plan approach to the operation of the treatment plant should be developed by Kerry County Council and to provide safe and secure drinking water the water supplier must have in place a management system that has identified all potential risks and implemented reduction measures to manage these risks.
 17. A documented system of regular internal auditing and supervision of the treatment plant by Senior experienced personnel in the local authority should be implemented and copies of quality assurance checks and audits records kept on site for inspection by the Agency.

4. FOLLOW-UP ACTIONS REQUIRED BY THE LOCAL AUTHORITY

During the audit the local authority representatives were advised of the audit findings and that action must be taken as a priority by the local authority to address the issues raised.

The local authority should submit a report to the Agency within one month of the date of this audit report detailing how it has dealt with the issues of concern identified during this audit and implemented the various recommendations.

The actions taken will be verified by the Agency during any future audits.

**Report prepared
by:**

John Feehan

Inspector

Reviewed by:

Brendan Wall

Senior Inspector

Date:

Date:



Photo 1: Lough Guitane Water Plant.



Photo 2: Cowpats within Lough Guitane Water Plant.

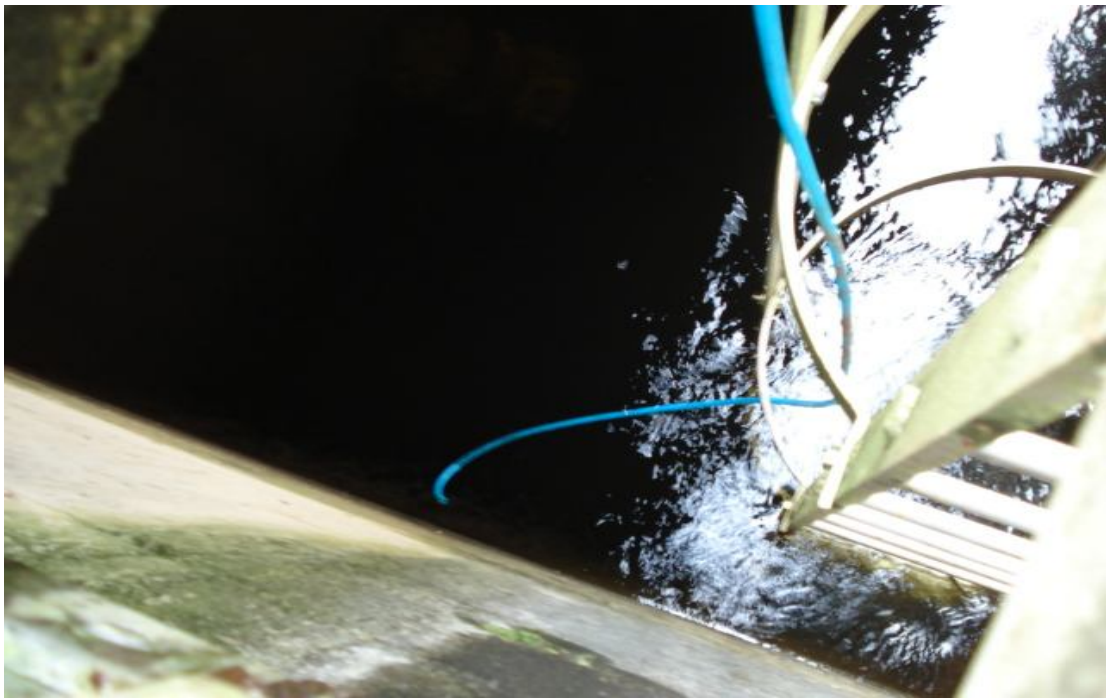


Photo 3: Sampling pipe for Cryptosporidium sampler out of water.



Photo 4: View from Lough Guitane Water Plant (sheep grazing in field along lake shoreline)