

SMART WATER

QUARRY WATER DISCHARGE - A PRACTICAL GUIDE

Getting it right is an important aspect of water management design for quarries. This needs to cover not only the technical analysis, but also aspects such as practicality and cost effectiveness. Fundamentally the objective is to enable discharge at a controlled rate with a prescriptive water quality target.

Over the last few years Envireau Water has been working with Marshalls to improve the performance of their water management lagoons. Existing lagoons are always challenging as you have to "start from here" rather than where you might want to. But certain problems are common: problems such as discharge water quality issues for certain rainfall events; pumping regimes disturbing silt; and a lack of formal monitoring. Envireau Water tackle the problems by taking a sensible and pragmatic approach.

First, a technical review of a lagoon system is carried out to identify inappropriate design or sizing followed by a review and refinement

of the operating regime and identification of practical changes to allow effective primary settlement before pumping to settlement lagoons.



Assuming that the lagoon size is right, improved settlement can be achieved by using flocculants, but too often dosing is ineffective because of poor mixing when using blocks or liquid. It is therefore important to introduce flocculant in a turbulent flow regime to ensure mixing and then allow the flow to distribute fully across the lagoon to minimise flow velocity and maximise settlement.

Whilst these modifications are important, the most common reason for treatment failure is poor maintenance, so the next job is desilting. Poor design can mean first of all creating access to allow desilting to take place.

The system should now be operating properly and the discharge within compliance limits. In order to check and to demonstrate to regulators that this is the case, therefore providing defence against potential prosecution, automatic monitoring, connected via mobile phone technology to the Internet, allows the discharge quality to be seen in real time and alarms to be set and sent via SMS or email so that direct intervention can occur if a problem happens.

Ian Pearson, Marshall's Estates Manager, said: "Regularisation and improvement of discharge systems that have been giving us problems reduces our regulatory risks; improves our environmental credentials; and with a practical approach, for less money than might be expected."

WATER MANAGEMENT – GETTING IT RIGHT

Getting discharge arrangements right is just one part of an overall water management system for any industrial process. When considering the total process it is important to consider water from supply to discharge, from cradle to the grave. Where the water is coming from is as important as where it is going to. The quality that it comes in at, what we do to it and the quality that we send it out, should all be understood.

Over the next 5 – 10 years the UK will go through fundamental changes in terms of the regulation of water abstraction and discharge. This, combined with increased environmental protection pressure from the Water Framework Directive and climate, means that there is an increasing need to understand and quantify our industrial water use.

This understanding needs to focus on how much water is being used; how much is consumed and how its quality is changing.

There are various ways of collating and managing the information, some of which are

more suited to different industries. These include Water Footprinting, Water Management Plans and Water Process Flow Charts.

The need for understanding is a need for all industries, although different industries might focus on different aspects.

Envireau Water believes that the starting point for any business in understanding its water in a holistic manner is the setting up of an Internal Water Group. This group should be cross functional (production, engineering, facilities, estates, senior management, quality control, HSE), should meet regularly but infrequently and should initially focus on how water affects and is affected by each function or department. That leads to better integration, focus and direction with respect to water management. Without doubt this will be needed as we negotiate and deal with regulatory change.

If you are interested in discussing any aspect of this article contact James Dodds at Envireau Water.

WHAT'S NEW...

We are currently recruiting for an **Applied Engineer** or **Earth Scientist** to be based at our North Office in Richmond, North Yorks. See our website for more details.

James Dodds has been invited to chair the Water Management session at **The Geological Society's Shale UK 2015**. This is the second year James has chaired this session, which is a real honour.

The raffle at our annual **Borehole Users Conference** raised £310 for the Calvert Trust Exmoor.

PROTECT YOUR RIGHTS WITH INTELLIGENT MONITORING

In 2002, Envireau Water carried out a review of the local hydrogeology for an international pharmaceutical business. Water for the site is sourced from three boreholes which the company is understandably keen to protect.

The review resulted in the installation of monitoring boreholes, which were designed to better understand the impact of abstraction on the groundwater resource. The monitoring boreholes were equipped with pressure transducers and dataloggers to monitor groundwater levels, which at the time represented best practice in remote data collection. However, after a number of years and a re-organisation at the site; combined with the inconvenience of manually downloading and servicing the dataloggers, the network gradually fell into disrepair.

In 2013, amid the Environment Agency's consultation on abstraction licence reform, the company recognised the merit of reinstating the network to maintain a robust evidence base, in the event that the potential

impact of abstraction and sustainability of the groundwater resource was ever challenged in the future.



Envireau Water was appointed to develop an up-to-date monitoring network. After discussions and a site inspection, it was decided to install new, vented pressure transducers and telemetered data loggers to transmit data via the mobile phone network to the Envireau Data secure internet portal, where it is quality checked, processed and interpreted by Envireau Water's data management specialists. The equipment was installed with carefully positioned solar power

packs to address the previous issues with battery packs and remove the requirement and cost of installing mains power.

The telemetry solution gives the company confidence that good quality data is being collected, in real-time. The Envireau Data portal provides a secure repository for the data, which is available on demand and reported on a monthly basis.

Telemetry solutions for data collection are applicable to most industrial operations, not just those involving water and boreholes. Although the initial capital cost may be higher than stand-alone monitoring solutions, the long term operational benefits and financial savings, not to mention the flexibility to adapt and develop a monitoring network in the future, justify the initial investment.

Envireau Water is expert in the design, installation and management of monitoring networks. If you have a need to collect, process, interpret or report on data, then call us today.

APPROPRIATE MONITORING FOR THE OIL & GAS INDUSTRY

The sensitivity of onshore oil & gas operations has led to much tighter environmental regulation of both conventional and unconventional developments. In particular, greater scrutiny is now being applied to all planning and permit applications, whether they are related to new or existing wellsites.

A common issue that is raised as part of the planning or permitting process is a lack of a water quality baseline to support development concepts and hydrogeological risk assessments. As a result, monitoring conditions might be applied to permissions and permits to provide an evidence base and establish assessment points for regulatory compliance.

The high level of public interest in the onshore industry and the perception that developments carry a high level of environmental risk, means there are benefits for regulators to be seen to regulate and for operators to be seen to be regulated. In doing so, there is a danger that monitoring is seen as an easy 'fallback' position and the bar is set disproportionately high when compared to the actual level of risk – which is typically very low.

It is not always possible to know at the planning stage of a project what the full scope of monitoring will include. By specifying monitoring too early in a project, there is an inherent danger that monitoring schemes are specified and then developed which

are overly complicated, inappropriate and expensive. In conditioning schemes of monitoring, sufficient flexibility should therefore be maintained for the final scheme to be modified or adapted based on actual site conditions.

Envireau Water is currently working with a number of onshore operators to negotiate conditions for planning and permit applications. If you are an onshore oil and gas operator with a water related regulatory problem, then contact us to see how we can help you find an appropriate solution.



OUR CONFERENCE IS OVER FOR ANOTHER YEAR!

We saw a great turnout at our Borehole Users Conference 2014, with all delegates rating the conference either 'Good' or 'Excellent' overall.



As 2014 sees the end of the 5 year period set for statutory compliance to the Private Water Supplies we were aware of the challenges facing Local Authorities and those responsible for private water supplies. Therefore, the aim of the conference was to ensure that anyone who operates, manages or regulates a private water supply would have the tools they need to face these challenges.

Our expert speakers covered a variety of topics including risk assessments, borehole & water microbiology and water treatment. The panel also included representatives from the Drinking Water Inspectorate and Environment Agency as well as a Local Authority representative.

If you were unable to join us, but would like to find out what went on, then you can request a delegate pack from the conference page at our website.

We are already starting to plan next year's conference so if you have a borehole related topic you would like to see covered, please contact us at info@envireauwater.co.uk.

Call us on **01332 871882** Or visit our new website **www.envireauwater.co.uk** to register at Envireau Knowledge for important industry news and updates!

