

Supporting document

Groundwater Draft Classification Methodology: General Chemistry Test 2020/2021



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Groundwater Draft Classification Methodology: General Chemistry Test

Introduction

All groundwater bodies in Northern Ireland were classified in 2020 to establish whether they are at 'good' or 'poor' status utilising monitoring data from the past six years (January 2014 to December 2019). Status is divided into qualitative and quantitative status and a number of tests were carried out for each, see Figure 1.

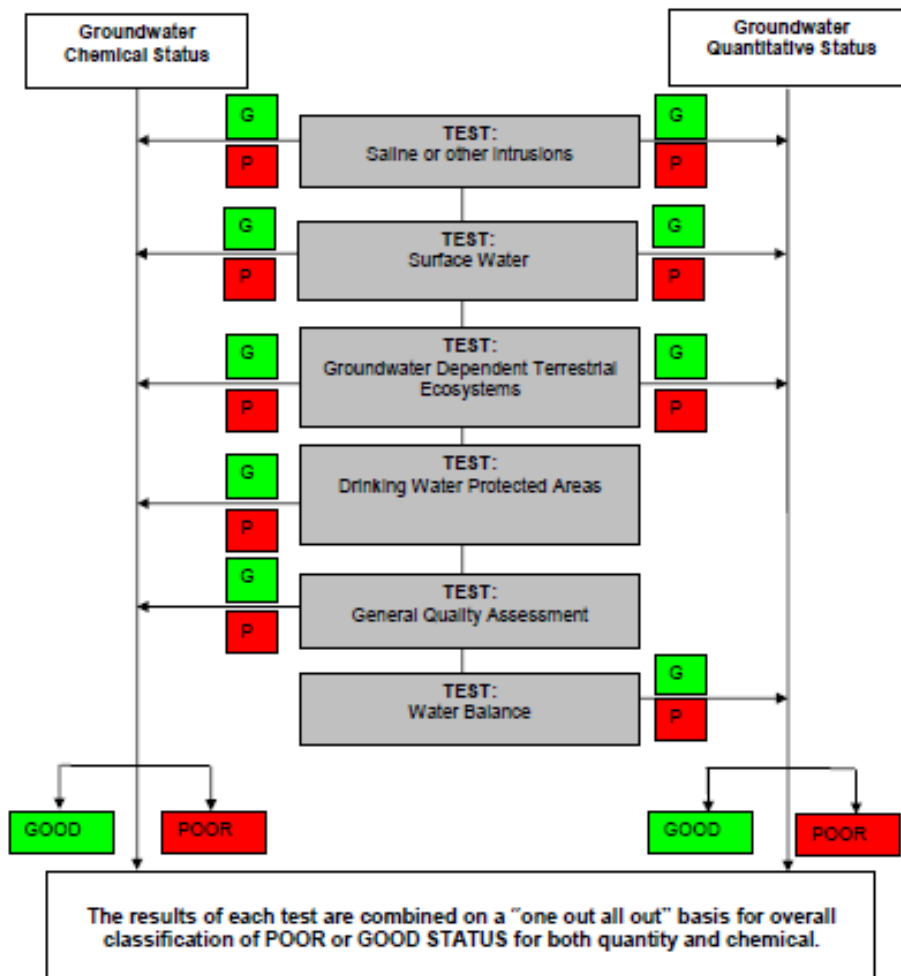
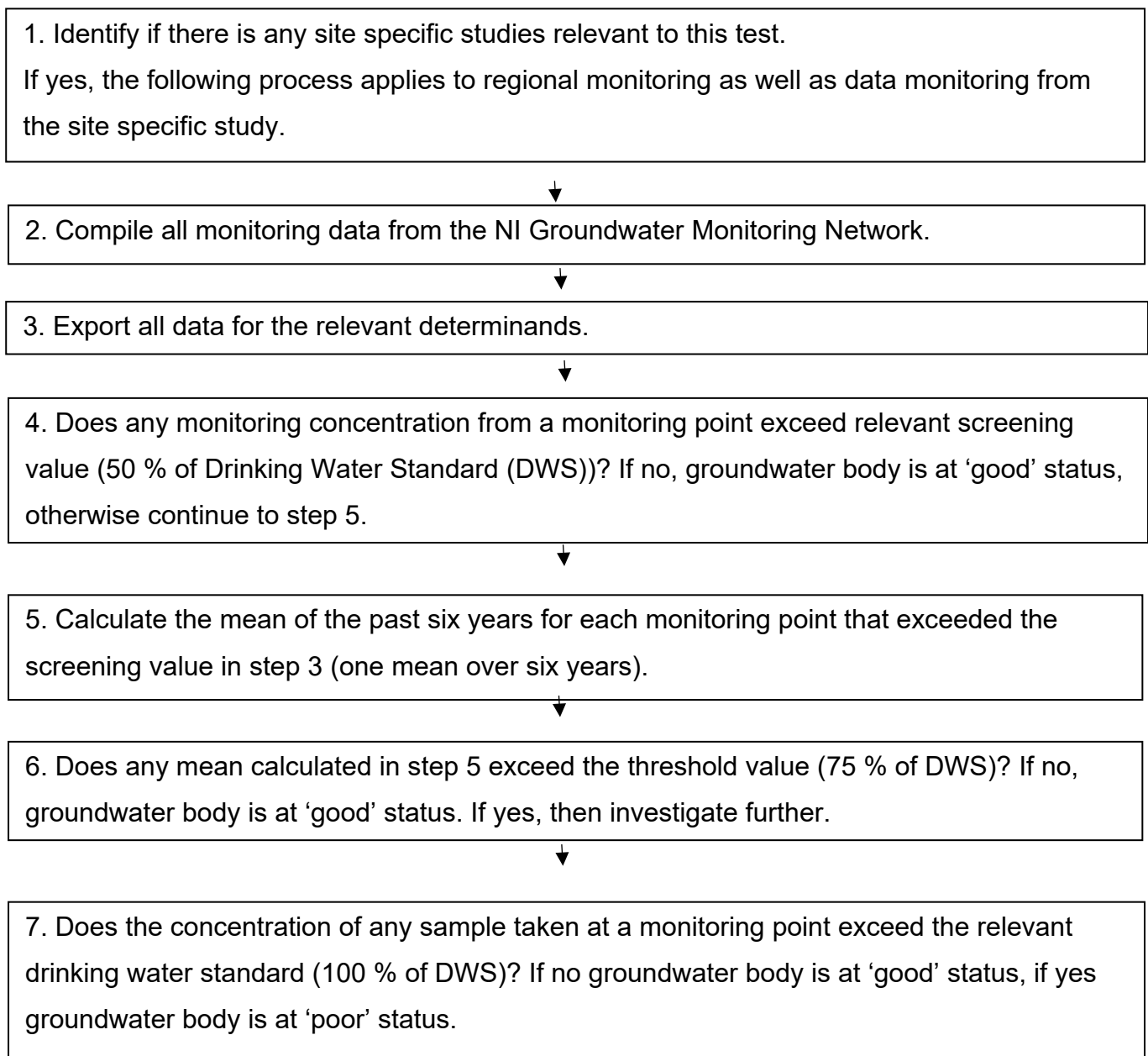


Figure 1: Overview of classification tests [from UK Technical Advisory Group paper 11b(i)].

General Quality Risk Assessment

The General Quality test's overall aim is to assess if the impact of groundwater pollution is sufficiently widespread to compromise the use of the groundwater resource either currently or in the future. It is not intended to assess local pollution impacts and is one of the five tests developed for groundwater body chemical classification based on WFD requirements and guidance provided at an EC and UK level. (UKTAG, 2012a). The 7 step process of assessing the status of the General Quality test for a groundwater body, as defined above, is laid out below. This method is derived from the UKTAG guidance for chemical classification, updated for the second River Basin Planning (RBP) cycle (UKTAG, 2012).



Groundwater Monitoring

Groundwater quality in Northern Ireland is measured through the collection of water samples from boreholes and springs that are mostly owned and operated by third parties. Hence NIEA rely on the co-operation of land/ property owners to continue sampling from their groundwater sources for the chemical monitoring. This means that the network can change due to businesses closing or changing their groundwater usage and datasets for trend assessments are often small. The network consists mainly of industrial boreholes where groundwater is utilised for manufacturing or food/ drinks production. A small number of springs or boreholes purpose-installed by NIEA, which are purged prior to sampling, are also monitored. Regional monitoring of groundwater across Northern Ireland began in 2000. The location of the stations can be viewed on the River Basin Plan Map Viewer. The monitoring frequency and selection of determinands follows [UKTAG guidance](#). Due to the limited spatial distribution of groundwater monitoring points within the Northern Ireland groundwater bodies this test was not conducted.

Threshold values

New threshold values for classification were introduced by UK Technical Advisory Group who [consulted](#) on them in 2012. Threshold values used for classification can also be found in [the Groundwater \(Amendment\) Regulations \(Northern Ireland\) 2014](#).

| Deteminand | DWS | TV | Screening Value (50%of DWS) |
|------------------------|-----|-------|--------------------------------|
| Ammonium mg/L | 0.5 | 0.29 | 0.25 |
| Arsenic µg/l | 10 | 7.5 | 5 |
| Atrazine µg/l | 0.1 | 0.075 | 0.05 |
| Cadmium µg/l | 5 | 3.75 | 2.5 |
| Lead µg/l | 25 | 18.8 | 12.5 |
| MCPA µg/l | 0.1 | 0.075 | 0.05 |
| MCPP (Mecoprop) µg/l | 0.1 | 0.075 | 0.05 |
| Mercury µg/l | 1.0 | 0.75 | 0.5 |
| Nitrate mg/l | 50 | 37.5 | 25 |
| Simazine µg/l | 0.1 | 0.075 | 0.05 |
| Sulphate mg/l | 250 | 187.5 | 125 |
| Tetrachloroethene µg/l | 10 | 7.5 | 5 |

| | | | |
|-------------------------------|-----|-------|------|
| Trichloroethene µg/l | 10 | 7.5 | 5 |
| total pesticides µg/ l | 0.5 | 0.375 | 0.25 |

As recommended by the UKTAG (2012b), screening values (risk assessment concentrations) should be 50 % of the relevant DWS. This is so that there is ample time to take action to prevent a future exceedance of the TV which would require further investigation.

References

UKTAG Paper 11b(i), (2012). Groundwater Chemical Classification for the purposes of the Water Framework Directive and the Groundwater Directive. www.wfduk.org



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