A Summary Regarding Eagle Mine's Groundwater Monitoring Well Locations, Classifications, and Permit Regulations

Groundwater wells at Eagle Mine are regulated under two different permits:

1) Mine Permit Part 632 (MPGW) – Click **here** to view the permit document.

2) Eagle Mine Groundwater Discharge Permit (GWDP) - Click **here** to view the permit document.

Under both permits, wells are categorized as either:

1) Background: hydraulically upgradient monitoring wells used to provide a basis for determining whether changes in water quality at compliance monitoring locations are related to the feature being monitored (the underground mine boundary - UMB, the temporary development rock storage areas and contact water basin – TDRSA/CWB, or the non-contact water infiltration basins - NCWIB) or to an unrelated up- or side-gradient influence.

or

2) Compliance: hydraulically downgradient monitoring wells used to monitor any potential changes in water quality due to the following features: the underground mine boundary (UMB); the temporary development rock storage areas and contact water basin (TDRSA/CWB), or the non-contact water infiltration basins (NCWIB).

To see a list of which wells are covered under each permit, click **here**.

To see a map of well locations, click **here**.

An explanation regarding permit levels and benchmark values, as they apply to each permit:

Mine Permit Groundwater (MPGW)

Levels used to screen MPGW water quality and elevation data are location specific (i.e. they vary for each monitoring site) and are referred to as benchmarks. They are based on baseline data collected at each monitoring location (and in some cases are tied to EPA primary maximum contaminant levels - MCLs). For water quality data, Eagle is required to notify the MDEQ when results for a parameter are greater than the calculated benchmark for two consecutive sampling events. Notification to the MDEQ does not necessarily mean that a threat to the environment exists or that additional action is required.

Two sets of **benchmarks** were calculated for all mine permit groundwater monitoring locations based on the guidance provided by the Mine Permit (MP 01 2007 (Mine) and MP 01 2010 (Mill)), and Part 632. The benchmark that is used for screening monitoring data is the lower of the two values. Due to the required statistical nature of these benchmark values, the accuracy will improve over time as the quantity of data that becomes available increases. If data collected during future monitoring events is deemed to be representative of baseline conditions it may be incorporated into the benchmark calculations. Following is a description of the current calculated benchmarks:

- **Upper prediction limit (UPL) benchmark:** Per reporting requirements under R 426.406(6) and General Conditions of the Mine Permit (MP 01 2007 & MP 01 2010), the UPL has been developed as the upper threshold limit for increased monitoring and is based on a statistical analysis of qualified baseline data. Data outliers are not included in the baseline information. The UPL benchmark represents a value that is two standard deviations above the long-term average. Again, as the data set increases over time, the long term average and standard deviations may need to be adjusted for improved accuracy.

- **Maximum contaminant level (MCL) derived benchmark:** Per reporting requirements under R 426.406(7a), the MCL benchmark was developed as an upper threshold action limit and represents the value ½ way between the long-term average and the drinking water standard (MCL) determined by US EPA. These values may also be reviewed and adjusted as the data set increases over time.

Groundwater Discharge Permit (GWDP)

Permit levels used to screen GWDP groundwater monitoring data are specified by the MDEQ and are referred to as Maximum Daily Limits (MDLs) and Monthly Average Limits (MALs). These permit levels are regulatory program derived rather than calculated values based solely on baseline conditions.

Please click **here** to view or download GWDP permit levels used to evaluate groundwater and effluent water quality data.