

GOYDER INSTITUTE FOR WATER RESEARCH MODEL METADATA TEMPLATE

METADATA REQUIRED	DETAILS
Model Name and version	PHREEQC model for MARSUO infrastructure and water quality impact assessment Phreeqcl version 2.18.1 and version 3.0.6
Date of lodgement of Metadata Template. Name of Metadata Provider	March 2015 Dr Joanne Vanderzalm joanne.vanderzalm@csiro.au
Goyder Institute Project Number and Name	GOYDER INSTITUTE FOR WATER RESEARCH Project No. U.2.1 Managed Aquifer Recharge and Stormwater Use Options (MARSUO)
Project Team	Project Leader: Dr Peter Dillon (previously CSIRO, pdillon500@gmail.com) Task Leader (Infrastructure and water quality impacts): Dr Grace Tjandraatmadja (previously CSIRO, gracetjand@gmail.com) Project Team (Infrastructure and water quality impacts): Dr Anna Kaksonen (anna.kaksonen@csiro.au) Mr Dennis Gonzalez (dennis.gonzalez@csiro.au) Ms Karen Barry (karen.barry@csiro.au) Dr Joanne Vanderzalm (joanne.vanderzalm@csiro.au) Dr Geoffrey Puzon (geoffrey.puzon@csiro.au) Dr Jatinder Sidhu (jatinder.sidhu@csiro.au) Mr Jason Wylie (jason.wylie@csiro.au) Mr Nigel Goodman (previously CSIRO)
Creator/Developer	David L. Parkhurst and C.A. J. Appelo (USGS) http://wwwbrr.cr.usgs.gov/projects/GWC_coupled/phreeqc/
Owner/Contact Person and contact details	Dr Joanne Vanderzalm, Liveable, Sustainable and Resilient Cities Program CSIRO Land and Water Flagship joanne.vanderzalm@csiro.au
Model Location	<i>Where is the model archived?</i> CSIRO (2015): Phreeqc model for MARSUO infrastructure and water quality impact assessment. v1. CSIRO. Data Collection. 102.100.100/20878 Contact: Dr Joanne Vanderzalm, CSIRO Land and Water joanne.vanderzalm@csiro.au <i>Is there a version of the model in active further development? Where is this active version located?</i> <i>Provide contact details of individual and unit/group within designated organisation</i> See above

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IP or other permission requirements	<p>***** REFER TO GOYDER INSTITUTE FOR WATER RESEARCH AGREEMENT *****</p> <p><i>Are there any IP issues associated with the model and/or the dependencies that future users need to be aware of?</i></p> <p>Model input and output files available on request; contact Joanne Vanderzalm joanne.vanderzalm@csiro.au.</p> <p>SA Water and City of Salisbury data would need to be obtained from those agencies.</p> <p>SA Water Contact: AWQC Customer Service Unit 1300 653366 City of Salisbury Contact: Mr Bruce Naumann BNaumann@salisbury.sa.gov.au</p>
Licences associated with model and/or dependencies	<p>***** REFER TO GOYDER INSTITUTE FOR WATER RESEARCH AGREEMENT *****</p> <p><i>Are there any licenses associated with the model and/or the dependencies that future users need to be aware of?</i></p> <p>No, PHREEQC is free software available from the USGS. No licence is required. http://wwwbrr.cr.usgs.gov/projects/GWC_coupled/phreeqc/</p>
Confidentiality agreements associated with model and/or dependencies	<p><i>Are there any confidentiality agreements associated with the model and/or the dependencies that future users need to be aware of?</i></p> <p>Input data was obtained from CSIRO, City of Salisbury and SA Water. Future users may need to contact SA Water for potable water quality data and City of Salisbury for ASR recovered water quality data, if not available in the literature.</p> <p>SA Water Contact: AWQC Customer Service Unit 1300 653366 City of Salisbury Contact: Mr Bruce Naumann BNaumann@salisbury.sa.gov.au</p>
Brief outline of model	Model input and output files used in equilibrium modelling to evaluate the potential for pipe scale, corrosion and water quality changes due to interaction between various water sources and pipe materials.
Area/region covered	Not applicable
Platform and language and version	Phreeqcl version 2.18.1 and version 3.0.6. Phreeqcl is a Windows-based graphical user interface to PHREEQC, which uses the C programming language.

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<p>Dependencies upon:</p> <ul style="list-style-type: none"> i) other models and/or platforms (including version) and location ii) essential data and data sources and location 	<p>No model dependences to be noted.</p> <p>Model input was obtained from a combination of publically accessible sources and the SA Water database.</p> <p>Data sources detailed in: Tjandraatmadja, G, Kaksonen, A.H., Gonzalez, D., Barry, K., Vanderzalm, J.V., Puzon, G., Sidhu, J., Wylie, J., and Goodman, N. 2014, <i>Managed Aquifer Recharge and Stormwater Use Options: Investigation of stormwater impact on water quality and distribution infrastructure</i>. Goyder Institute for Water Research Technical Report Series No. 14/8 Available for download at http://goyderinstitute.org/index.php?id=8</p> <p>Future users would need to contact SA Water for potable water quality data and City of Salisbury for ASR recovered water quality data, if not available in the literature. Contacts listed above.</p>
<p>How was model used</p>	<p>The model was used to evaluate the potential for pipe scale, corrosion and water quality changes due to interaction between various water sources and three pipe materials, namely cement lined, copper or plastic (PE or PVC).</p> <p>SOLUTION, MIX, PHASES, and EQUILIBRIUM PHASES keyword data blocks used.</p> <ul style="list-style-type: none"> ○ <i>Parameterisation/Validation (if applicable; provide a brief summary and include time period of calibration/simulation)</i> Further details are provided in Goyder Institute for Water Research Technical Report Series No. 14/8 ○ <i>Scenarios and outputs from various runs (provide a brief summary and indicate where these are stored)</i> Further details are provided in Goyder Institute for Water Research Technical Report Series No. 14/8 ○ <i>Assumptions behind model (provide a brief summary and indicate where these are stored)</i> Further details are provided in Goyder Institute for Water Research Technical Report Series No. 14/8 ○ <i>Limitations of model(provide a brief summary)</i> Reliable physiochemical data is essential for the evaluation. Further details are provided in Goyder Institute for Water Research Technical Report Series No. 14/8 ○ <i>Peer review process (if applicable)</i> The report was reviewed by 2 external reviewers. ○ <i>Extensibility of model (can it be run for different time periods)</i> The model is applicability to a range of water sources and pipe materials over a range of time scales. <p>Goyder Institute Technical Reports available at http://goyderinstitute.org/index.php?id=8</p>

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Specificity of data	<i>Was data sourced from local field sites or literature</i> Model input data was obtained from a combination of publically accessible sources (literature) and CSIRO database (local field sites).
Datasets/data products produced	Phreeql input (.pqi) and output (.pqi) files housed in the CSIRO Data Access Portal CSIRO (2015): Phreeqc model for MARSUO infrastructure and water quality impact assessment. v1. CSIRO. Data Collection. 102.100.100/20878 Contact: Dr Joanne Vanderzalm, CSIRO Land and Water joanne.vanderzalm@csiro.au
Other Information	
Publications (papers and technical reports)	Please follow the format: Goyder Institute for Water Research Technical Reports: Tjandraatmadja, G, Kaksonen, A.H., Gonzalez, D., Barry, K., Vanderzalm, J.V., Puzon, G., Sidhu, J., Wylie, J., and Goodman, N. 2014, <i>Managed Aquifer Recharge and Stormwater Use Options: Investigation of stormwater impact on water quality and distribution infrastructure</i> . Goyder Institute for Water Research Technical Report Series No. 14/8 Dillon P., Page, D., Dandy, G., Leonard, R., Tjandraatmadja, G., Vanderzalm, J., Rouse, K., Barry, K., Gonzalez, D. and Myers, B. (2014). <i>Managed Aquifer Recharge Stormwater Use Options: Summary of Research Findings</i> , Goyder Institute for Water Research, Technical Report 14/13. Goyder Institute Technical Reports are available for download at http://goyderinstitute.org/index.php?id=8
Collaborations and acknowledgements	Managed Aquifer Recharge and Stormwater Use Options (MARSUO) research project was supported under the Raising National Water Standards Program through the National Water Commission, and by the Goyder Institute for Water Research, CSIRO Water for a Healthy Country Flagship Research Program, City of Salisbury, Adelaide and Mount Lofty Ranges Natural Resources Management Board and the former United Water International.
Keywords	Managed aquifer recharge, Phreeqc, Phreeql, stormwater, infrastructure, water quality

MARSUO project partners:

