

CWR 6126 – ADVANCED GROUND WATER HYDROLOGY – Spring 2023

Study Material: Parts III and IV

Homework Set No. 6 – Optional - Due on April 13, 2023 (or best earlier)

(Homework is graded on a 0-100-point scale)

General Guideline: *Each student must clearly request to **either** adding the grade as Homework No. 6 **or** adding three (3) bonus points to the total exam grade. The instructor will not add the grade as Homework No. 6 if the grade reduces the total final grade in Homework Nos. 1 to 5. The three (3) bonus points will not be granted if the grade is less than 85 points (over 100).*

Carefully read and analyze the following article (copy may be downloaded from course website):

Newman, B. D., H. R. Fuentes and W. L. Polzer, “An Evaluation of Lithium Sorption Isotherms and Their Application to Ground-Water Transport,” Groundwater, Vol. 29, No. 6, November-December 1991.

Based on the above article and any of its references but also other information that you may identify in a literature search, if needed, answer or discuss (as it may be most appropriate), the following:

1. (25 points). Briefly state the *main research objective* of the article.
2. (25 points). Briefly describe both any benefits and limitations of the laboratory work to estimate the sorption potential of LiCl in the geological materials of the *study site*.
3. (25 points). Briefly describe both any advantages and disadvantages of the mathematical approach used to model the transport of LiCl in the *study site*.
4. (25 points). Discuss the usefulness of studies like those reported in the article, if any, in support of either the characterization, the design, the monitoring of ground water quality, and the general operation of a site to safely store radioactive waste. Please be aware that in the case of nuclear waste, “other contaminants” with different levels of radiation or non-radioactive, may also be stored on site.

Please limit your answers to less than two pages.

Reminder:

Project Written Report: April 21, 2023
Oral Presentation and Defense: April 25, 2023