

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Concluding Remarks

- ◆ Spent foundry sand from both companies is considered as non-hazardous waste because the leachate concentrations of heavy metals from spent foundry sand are lower than the government standard.
- ◆ Moldability correlates well with bentonite content and spent foundry sand can be molded for bentonite content greater than 16%.
- ◆ When the bentonite content is greater than 11%, the hydraulic conductivity is less than 1×10^{-7} cm/s for all samples. The relationship in this study is linear and can be represented by the following equation $y = -1.229x + 38.557$ where y = hydraulic conductivity and x = bentonite content.
- ◆ Spent foundry sand can be reused as hydraulic barrier layers based on permeability and moldability both as-received and as mixture with pure sand given that it has bentonite content of greater than 16%.
- ◆ Each sample that has various bentonite content has different optimum water content.

5.2 Recommendations for future study

This is preliminary study on the reuse of spent foundry sand as hydraulic barrier layer in landfill. Further study can cover some others aspects that relate to hydraulic conductivity. Further study may also cover the properties of leachate which effect the hydraulic conductivity. The recommendations for future studies are listed below.

- ◆ Collect more samples from other factories in a systematic manner in order to conclude that this waste is not considered as non-hazardous statistically

- ◆ Study relationships between hydraulic conductivity, compaction water content, dry unit weight, and compactive efforts

- ◆ Increasing hydraulic conductivity test time to make values within 25% of the mean, inflow equaled outflow ($\pm 5\%$)

- ◆ Using leachate in hydraulic conductivity test to find the effect of actual leachate on hydraulic conductivity

- ◆ Study economic aspect.