Table 1: Summary of MATLAB Scripts and Functions

Function Name	**Function Description**
Execution_Script	Execute all the functions; generate data and plots [run this script]
Sensitivity_Analysis_Script	Conduct sensitivity analysis; generate Excel outputs (can be used as SigmaPlot input) [run this script]
LCI_anMBR	Generate life cycle inventories for AnMBRs based on various design decisions
Impact_Assessment	Convert life cycle inventories to life cycle environmental impacts
LCI_CON	Generate an array of construction inventories
CSTR_Submerged	Design a CSTR and a separate membrane tank
CSTR_Cross_Flow	Design a CSTR
ANA_Filter	Design an anaerobic filter
AER_Filter	Design an aerobic polishing filter
Multi_Tube	Design multi-tube membrane modules
Flat_Sheet_Xflow	Design flat sheet membrane modules for cross-flow AnMBRs
Flat_Sheet_Submerged	Design flat sheet membrane modules for submerged AnMBRs
Hollow_Fiber	Design hollow fiber membrane modules
Permeate_Pumping_Submerged	Design permeate pumping for submerged AnMBRs
Permeate_Pumping_Cross_Flow	Design permeate pumping for cross-flow AnMBRs
Recirculation_Pumping_Submerged	Design recirculation pumping for submerged AnMBRs
Recirculation_Pumping_Cross_Flow	Design recirculation pumping for cross-flow AnMBRs
Retentate_Pumping_CSTR	Design retentate pumping for CSTR
Retentate_Pumping_AF	Design retentate pumping for anaerobic filter
Lift_Pumping_Cross_Flow	Design lift pumping for cross-flow AnMBRs
Pumping	Generic pumping design (called by different pumping functions, e.g. Permeate_Pumping_Submerged)
Gas_Sparging_Submerged	Design gas sparging for submerged AnMBRs
Sludge_Handling	Design sludge thickening and landfilling
pipe	Size pipes and quantify piping material
Packing_Media	Quantify packing material in anaerobic\aerobic filter
CHP	Design a combined heat and power system for AnMBRs
Chemical_Cleaning	Quantify chemical dosage for AnMBRs
Chemical_Pumping	Design chemical pumping for AnMBRs