ACKNOWLEDGEMENT

The author would like to take this opportunity to express his profound and sincere gratitude to his thesis supervisor Dr. Bipul Talukdar, Associate Professor, Department of Civil Engineering, Assam Engineering College for his incredible method of executing the supervision of the entire work involved in this dissertation. He provided me with ample freedom to carry out the research work, but at the same time, he kept a close vigil over my work. His humility and inspiring dedication towards the supervisory work made me feel really at home during the entire period of this dissertation.

I am grateful to Professor N.N. Patwari, Dean Faculty of Engineering and Professor, Civil Engineering Department, Assam Engineering College, Guwahati for providing adequate facilities for carrying out my research work. I am also thankful to Dr. P.J.Hazarika, Head of Civil Engineering Department, Assam Engineering College for facilitating the research work involved in the dissertation.

I take this opportunity to express my sincere gratitude to the Director of Employment and Craftsmen Training, Assam and the Senior Principal, ITI Srikona for their help in providing me the necessary permission to carry out my dissertation.

My sincere thanks are due to the officials of the Central Groundwater Board, Govt. of India; the Brahmaputra Board, Govt. of India; the Water resources department, Govt. of Assam and the Regional Meteorological Centre, IMD, Guwahati for supplying me with valuable data, which were necessary to carry out my research work.

I owe a profound intellectual debt to Dr. Rajib Kumar Bhattacharjya, Associate Professor, Department of Civil Engineering, IIT Guwahati for his prolific encouragement and support in learning the techniques of soft computing.
It is my privilege to mention the names of two special people without the constant encouragement of whom, this dissertation would not have been possible. They are my uncle Mr. Muzammil Hussain, BDO, Govt. of Assam and my aunt Dr Sarafima Ahmed, Associate Professor, Department of Physics, Nabajyoti College, Kalgachia, Assam. Their selfless help and support, right from the beginning till the completion of this dissertation, will be cherished forever.

I am thankful to Dr. Dipak Kumar Neog, Head of Electronics Department, Dhemaji College for his valuable suggestions from time to time.

My sincere thanks are due to Mr. Abul Kalam Mazumder, an IT expert for his programming tips and other help related to computer. I would also like to express my gratitude towards Mr. Moful Islam, Block Technology Manager, CSS-ATMA and Mr. Shahbaz Bin Sabir, a student of Silchar Medical College for their tremendous help in the compilation of this thesis report.

I am highly thankful to my colleague Mr. Ashab Uddin Laskar, for the constant support and encouragement he has bestowed on me.

Thanks are due to my cousin Dilwar Hussain, an M.Com student at the Gauhati Commerce College, for his untiring efforts in various matters related to my research work. Also, special thanks are due to another cousin of mine, Sabbah Qamri, a student of the English and Foreign Languages University, Hyderabad for her expert hand in fine tuning this dissertation report.

I am grateful to all my family members- my mother, my siblings and other relatives, who have encouraged me while carrying out my research work. I am especially thankful to my little son, Samin for all the patience and understanding the little soul has exercised during the entire time period. I am also thankful to my in-
laws; especially my brother-in-Law, Mr. Irfan Hussain Bora, for his painstaking efforts at various stages of this research work.

Last but not the least by any means, it is my wife Yasmin, who I would like to thank profusely. It is she who has been the constant source of my inspiration and confidence. Her never-say-die attitude is what has made it possible for me to take up the big challenge of completing this research work.

Dated: 30th May, 2013

(SIRAJUL ISLAM)