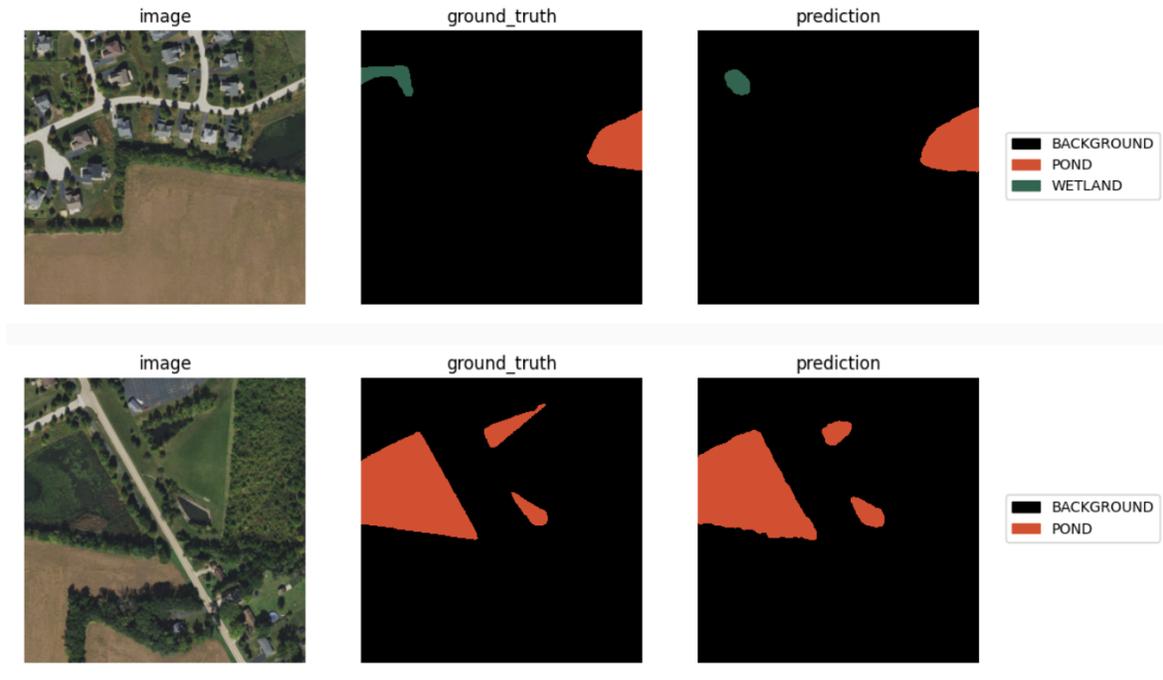


In response to the escalating challenges posed by climate change, the Chicago Metropolitan Agency for Planning (CMAP) partnered with the Data Science Clinic to address the critical need for an inventory of stormwater drainage infrastructure in Northeastern Illinois. The collaborative effort aimed to develop a comprehensive dataset of stormwater infrastructure, essential for strategic planning and resilience-building initiatives.

The team fine-tuned a deep learning model that uses aerial imagery as inputs, enhancing its ability to identify stormwater infrastructure. They optimized the training pipeline and automated the tuning and evaluation of the model. The project concluded with an optimized model that achieved a 68% accuracy score on a limited set of infrastructure labels, a 24% improvement from the existing model.

While the model demonstrated good accuracy in predicting bodies of water such as ponds and wetlands, challenges arose in distinguishing other types of infrastructure, particularly dry bottom detention basins, due to their variable appearances. Opportunities for model improvement included incorporating more training data on rivers and elevation and exploring other label sets to predict.



Example model outputs, from left to right  
(1) Aerial image of the area, (2) Infrastructure shapes from the original dataset, (3) Infrastructure shapes predicted by the model