Applying Census of Agriculture data “back” to the Farm Scale; An Object Oriented Geomatics Approach

July 26’th 2017. 617 Southam Hall, Carleton University.
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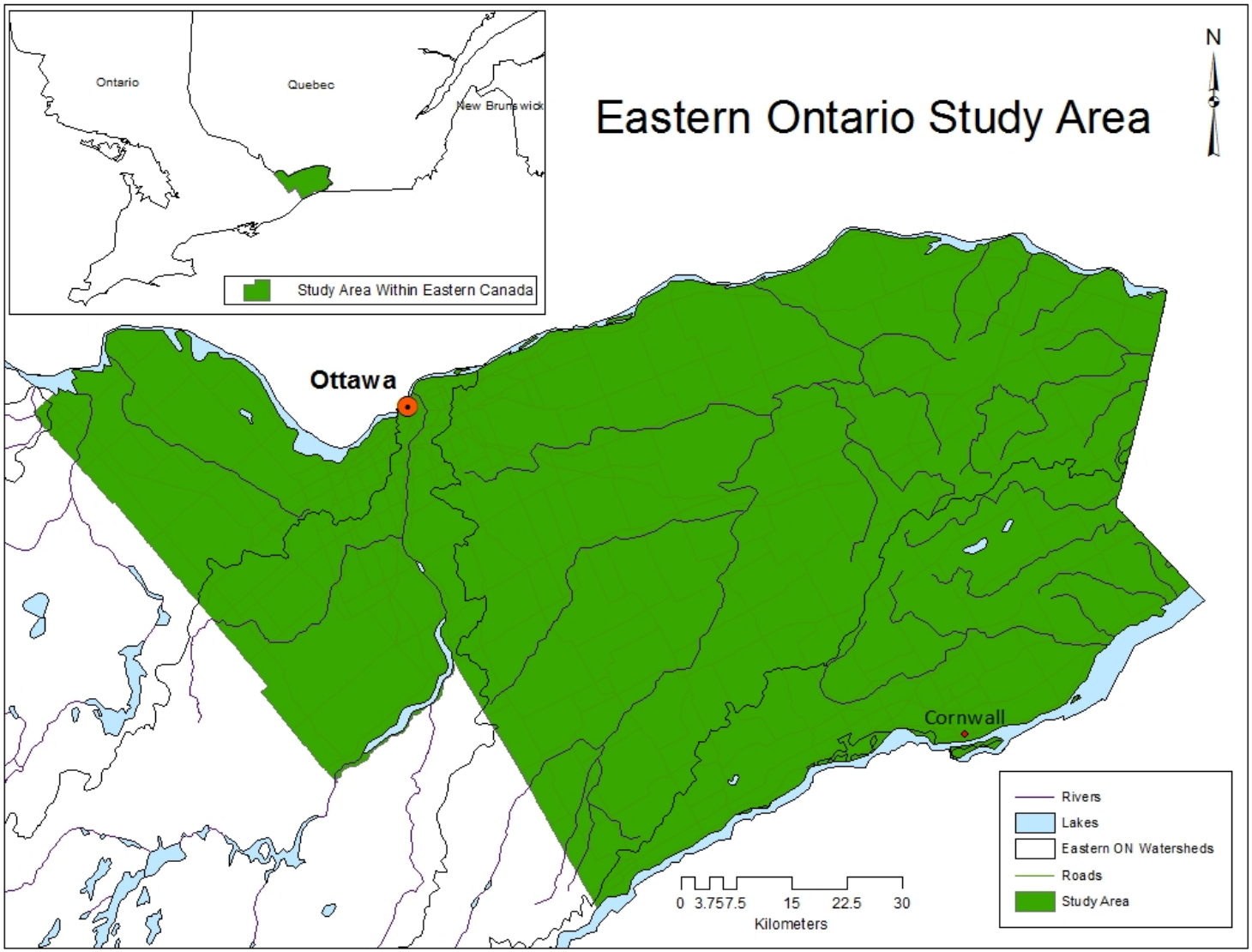
Canada

Agenda

- Study Area
- IDU Creation
- Methods and Objectives
  - Census of Agriculture data by County SLC.
  - Downscaling Census of Agriculture Data to Soil Landscape of Canada (SLC) scale.
  - Python Scripting to determine Farm allocation.
  - Randomized Generation of Farm HQ.
- Individual Farm HQ and Extent
- Future Work



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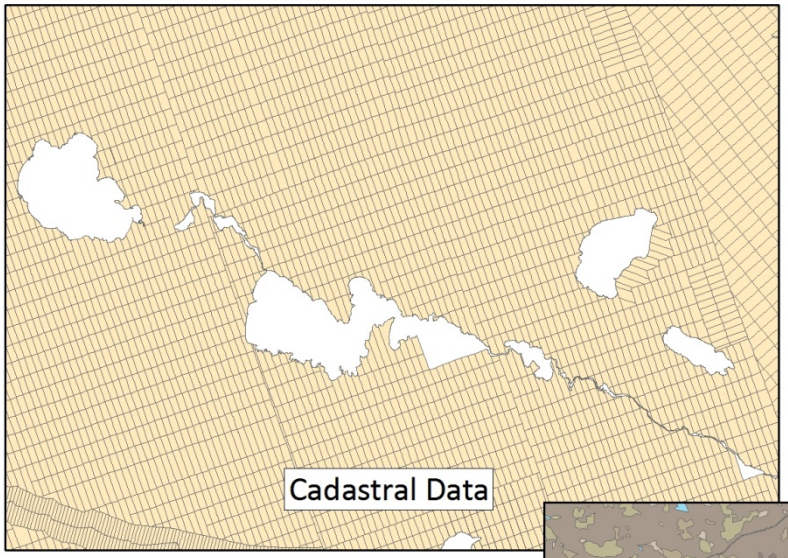
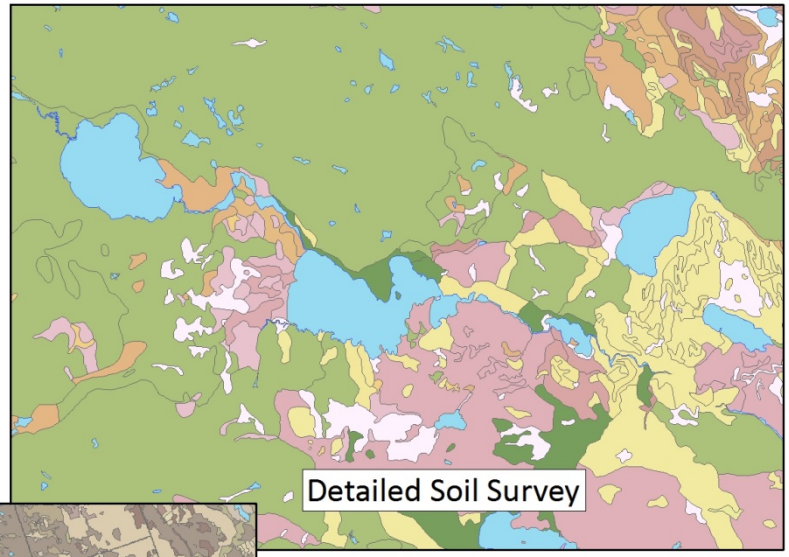
IDU Creation



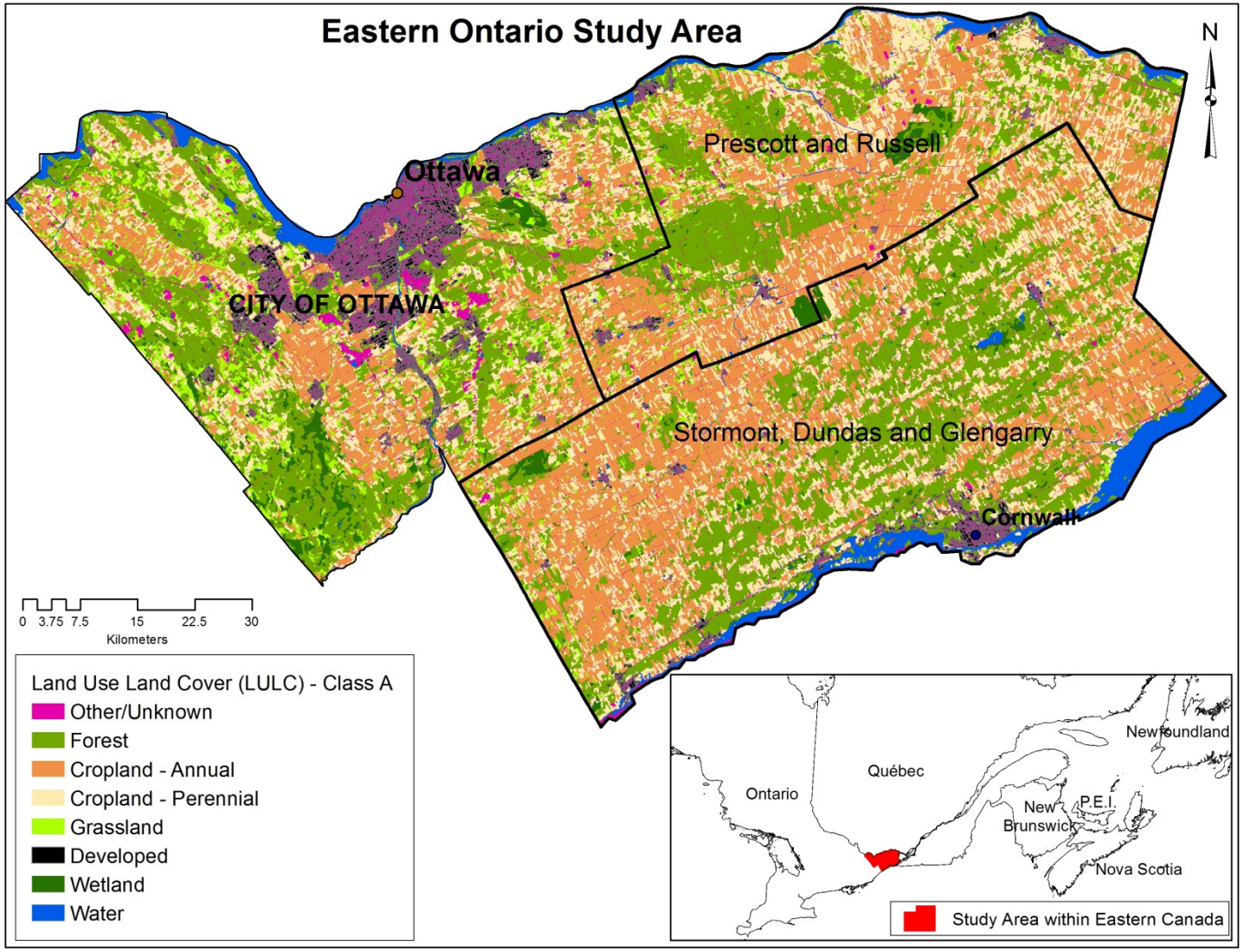
DSS Spatially joined to include Soil attribute information (e.g. CLI)



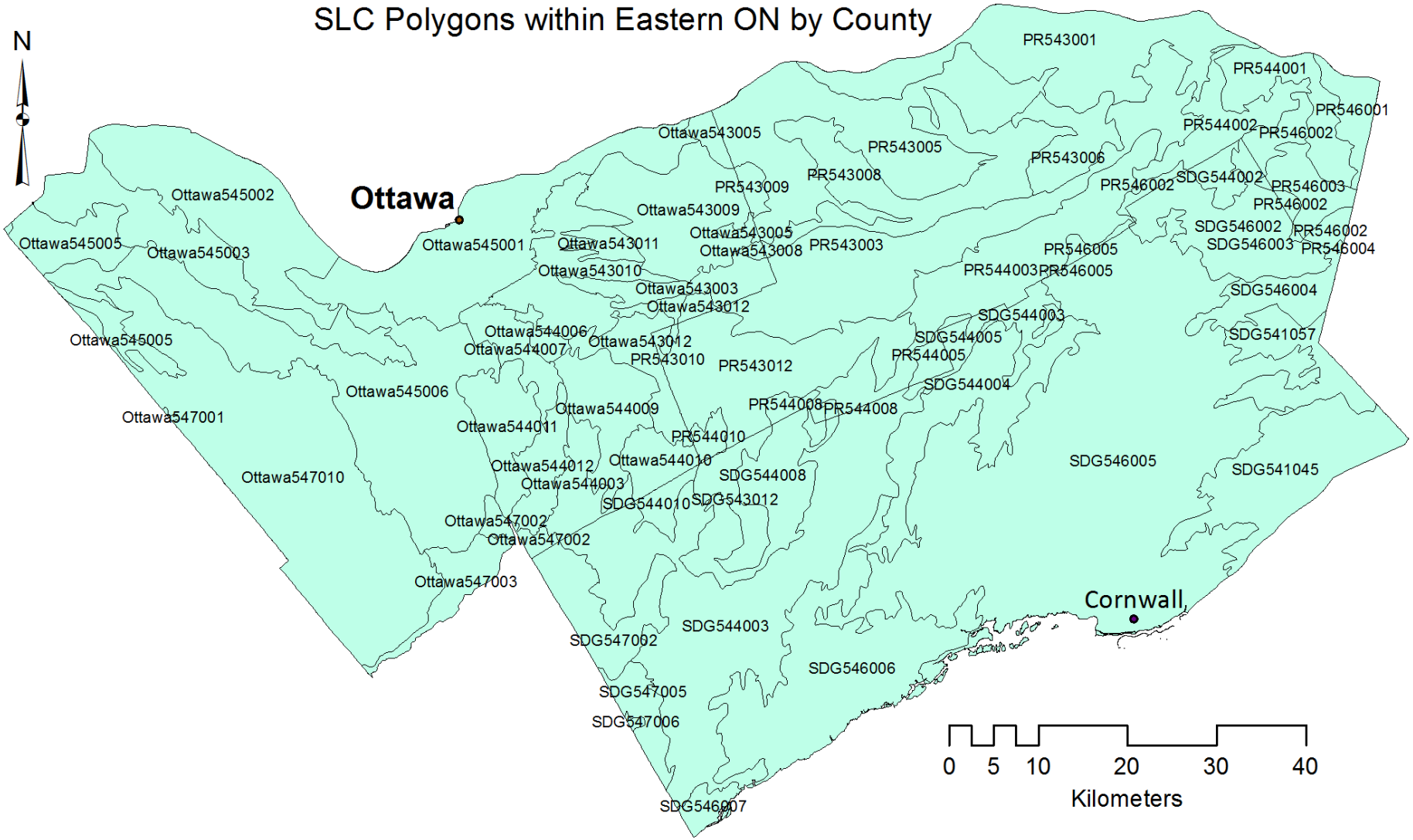
Provincial Cadastral data and AAFC Land Cover Data (2011) - Base for IDU geometry and fundamental attribute data (e.g. Land Cover Class).

*Provincial Land Cover (SOLRIS) and additional Provincial resource Management data included within attribute and spatial geometry.

IDU's Classified by project Land Use Land Cover (LULC) Class A



SLC Polygons within Eastern ON by County



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Downscaling Census of Agriculture Data to Soil Landscape of Canada (SLC) scale.

CCS - Farm Types

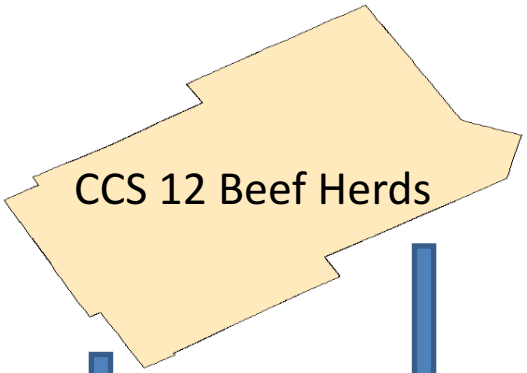
Consolidated Census Subdivision

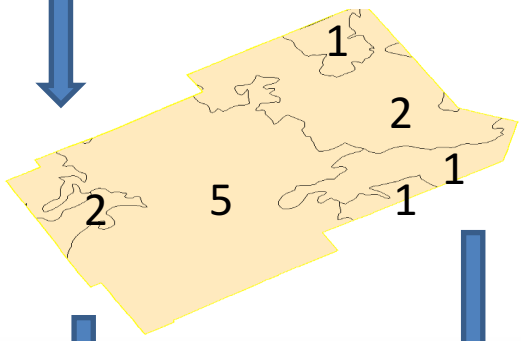
Derived from Soil Landscapes of Canada

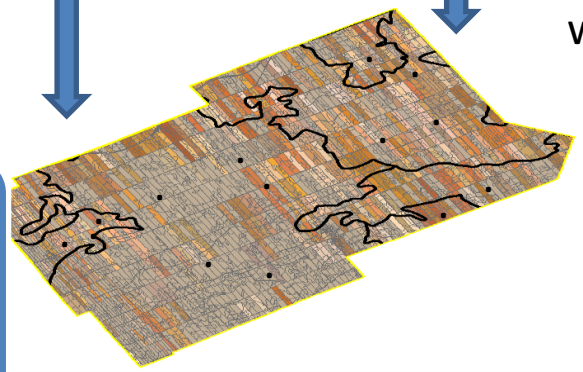
Ag Census SLC Regions

Integrated Decision Unit

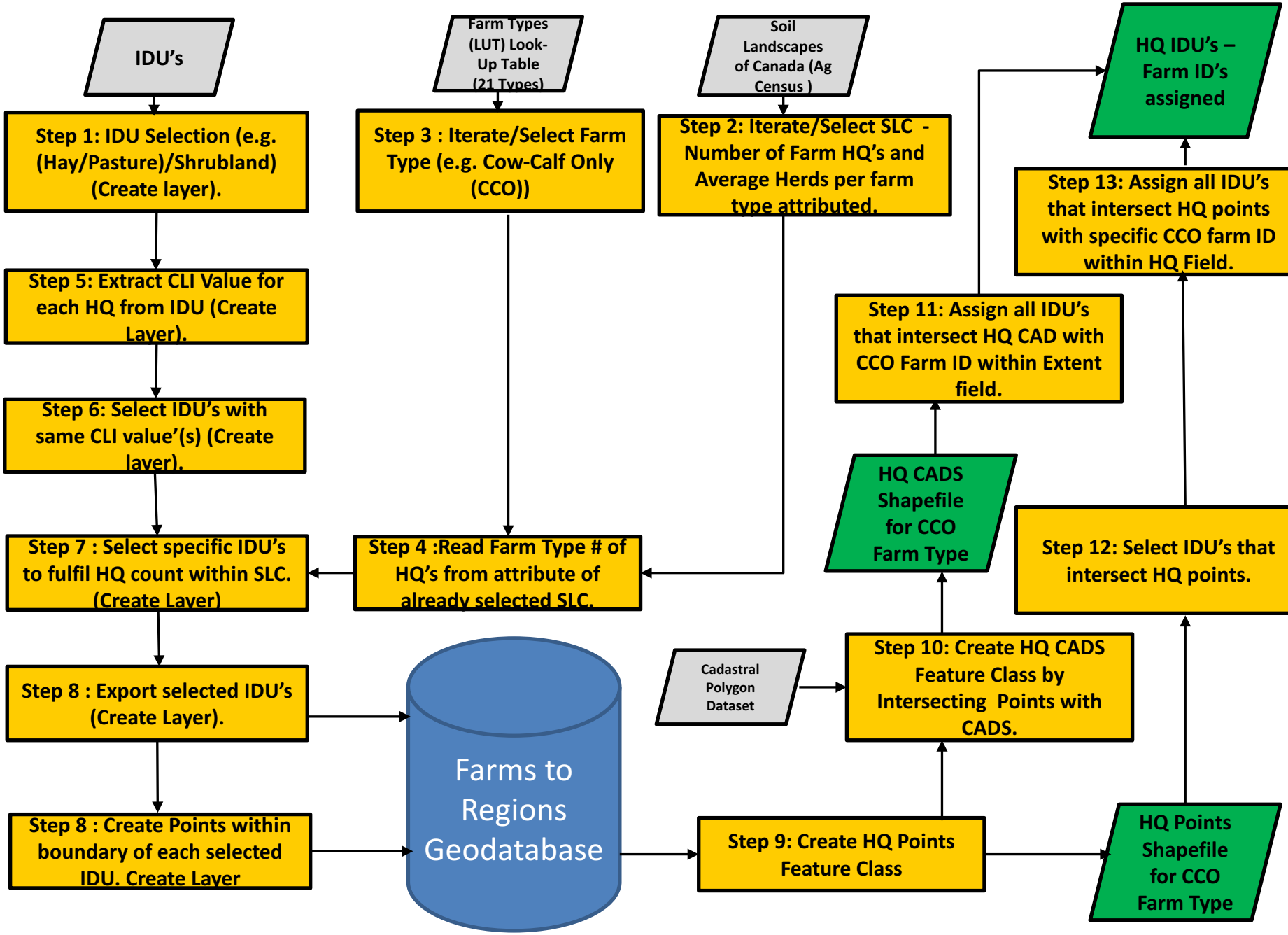
IDU -





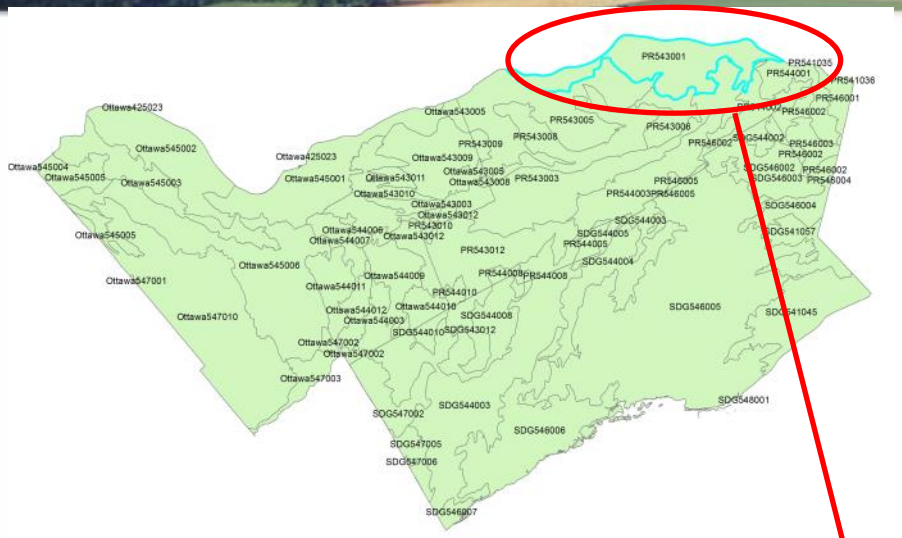


- Area weighting of Farm and Herd data within SLC's.
- Multiple census Formats used to downscale data:
  - Census of Agriculture by Consolidated Census Subdivision (CCS)
  - Soil Landscapes of Canada (SLC's).
- Assigned to IDU'(s) within specific SLC's.



Headquarters - Python and GIS Workflow

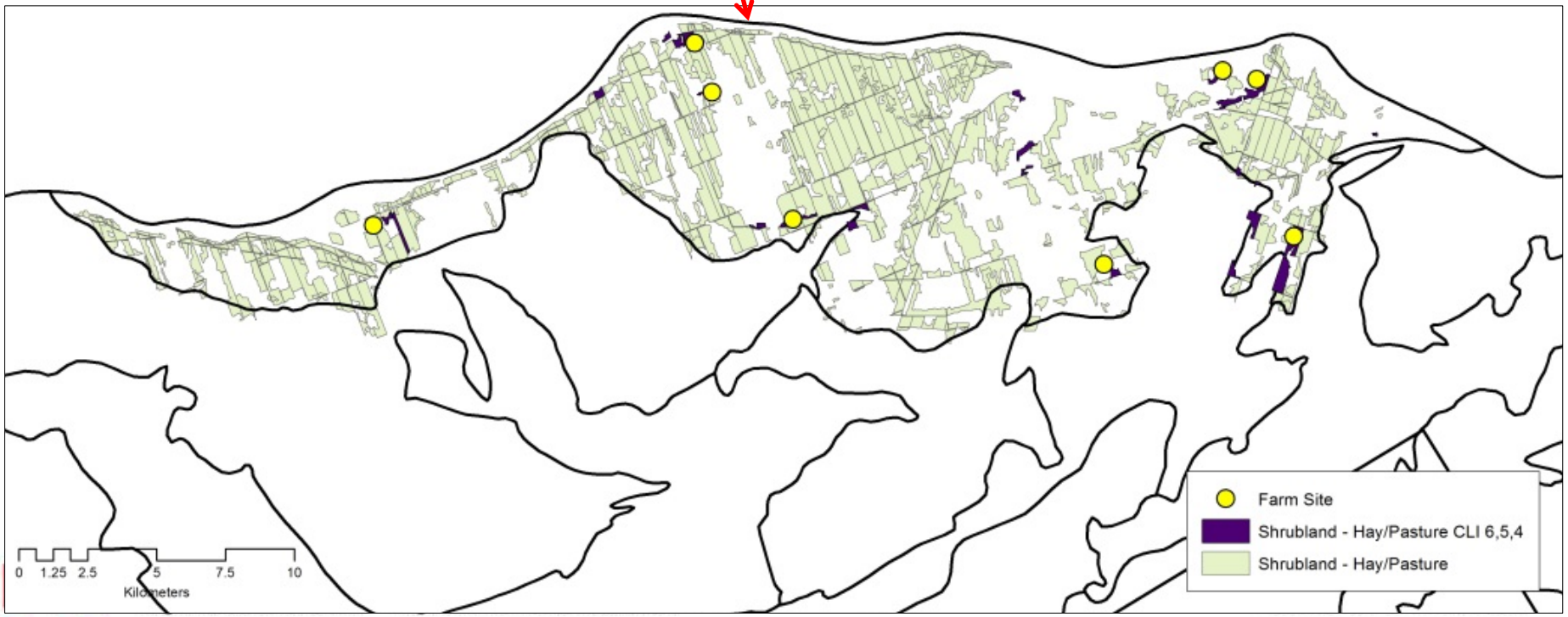
Randomized Generation of Headquarters (HQ) for Specific Farm Types



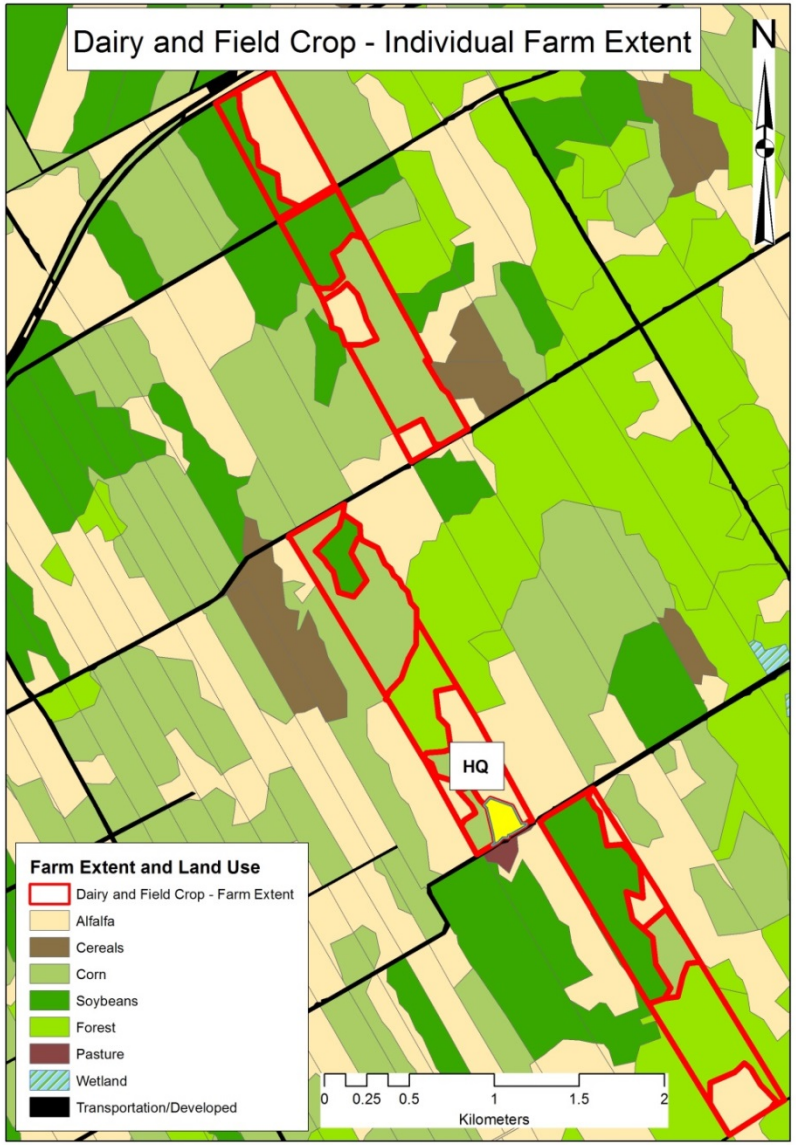
Cow Calf Only Farms in PR543001

Shrubland and Hay/Pasture

On CLI Class 6, 5, or 4



Individual Farm Extent




```
#================================
#===== Get total HQ points =====
#================================
#----- Get / extract FarmTypes from LUT -----
cursor_FT = arcpy.SearchCursor(strFT_LUT)

intTotal_HQs = 0
lstFarmTypes = []

#----- Loop through FT Rows -----
for rowFT in cursor_FT:

    #----- Get "field name" from row -----
    strFT_Field = rowFT.getValue("Census_FT")

    #----- Get total "random points" per field -----
    intTotal_HQs = intTotal_HQs + int(rowSLC.getValue(strFT_Field))

    lstFarmTypes.append([strFT_Field, int(rowSLC.getValue(strFT_Field))])

del rowFT
del cursor_FT

print("\t\tTotal Required HQs: " + str(intTotal_HQs) + "...")

#================================================
#===== Extract IDU CLI value for each point =====
#================================================
print("\t\tExtracting IDU \'Field Crop\' CLI values...")

#----- Selects IDUs with iterating SLC -----
strCurrent_IDUs = "IDU_Corn_" + strSLC_ID
lyrCurrent_IDUs = arcpy.MakeFeatureLayer_management(lyrIDUs,
                                                    strCurrent_IDUs,
                                                    "\"LC_CLASS\" = 'Corn'")

arcpy.SelectLayerByLocation_management(lyrCurrent_IDUs,
                                       "HAVE_THEIR_CENTER_IN",
                                       lyrCurrent_SLC,
                                       "",
                                       "NEW_SELECTION")

intCLI_Count = 1
lstCLI_Values = []
bCLI_Values = False
intAll_IDUs = 0
```

Future Work

- IDU Farm Allocation update with undifferentiated lands removed using Provincial SOLRIS Land Cover
- Update to Envision C++ Farm Model code to include additional indicators (e.g. trafficability).
- Potential WebMapping of Project Data

Questions?

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Thank you!