The Chadek Property Community Garden

By: The Soil Genesis and Geomorphology Class
Earth and Environmental Sciences Department
University of Iowa 2014

The University of Iowa
IOWA INITIATIVE
FOR SUSTAINABLE COMMUNITIES

Outline

- Purpose of the project
- Site history
- Lab and field methods
- Soil descriptions
- Final results

Purpose

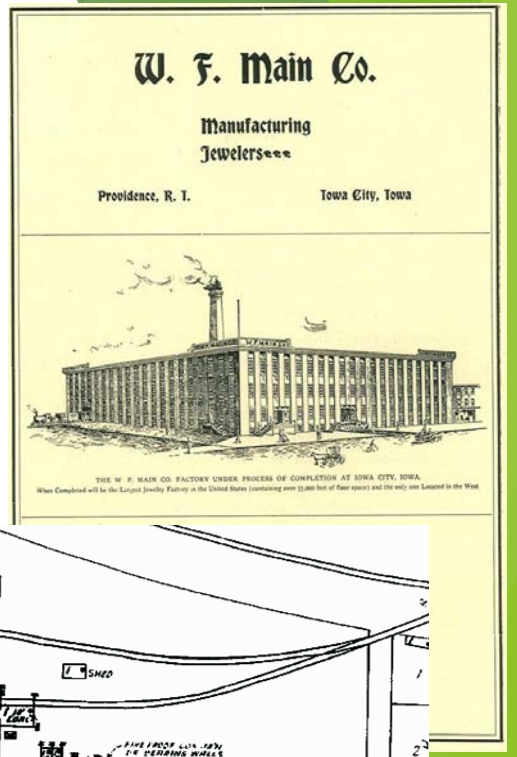
- Provide fresh produce and plants to area residents
- Improve the aesthetics of the neighborhood
- Create a stronger sense of community
- Create a green space for productivity and recreation

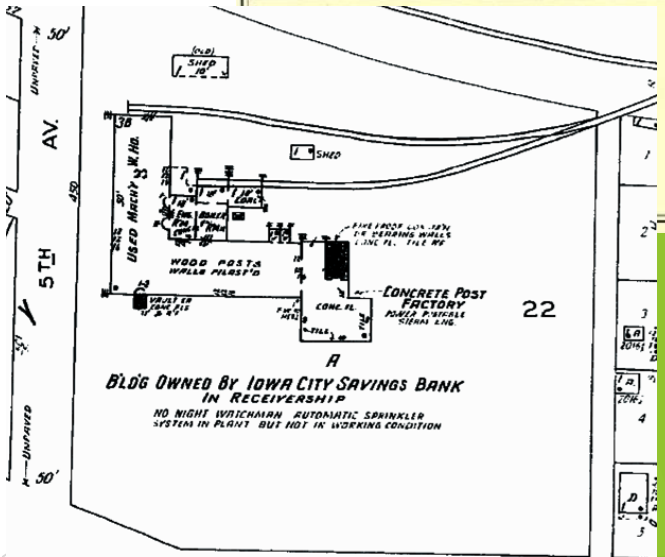
Location

- The Chadek Property is located in the Morningside neighborhood of Iowa City, south of City High and west of 1st Ave.
- The 4.86 acre lot has been proposed to be used as a community garden and green space
- The currently unused lot can be renewed as a productive part of the community

Sanborn Map Site History

- 1895: Land purchased by W.F. Main.
  - Built a four story L-Shaped brick building
  - Originally manufactured costume jewelry
- 1920: Sanborn maps show the Puritan Manufacturing Building
  - Coal burning furnace and engine room
  - Rock Island and Pacific Railroad on north side of building with 2 sets of tracks leading to the building
- 1933: Building owned by Iowa City Savings Bank
  - Wood and concrete pillar manufacturing
  - Manufactured perfume bottles
  - Stored used machinery in building
- 1937: Building burned down
  - Before burning down, building housed the Boerner-Fry Extract Company, Franklin Prince Company, and the National Hybrid Seed Corn Company
- 1938-1941: No building present on Sanborn Maps
  - Railroad tracks still present on property



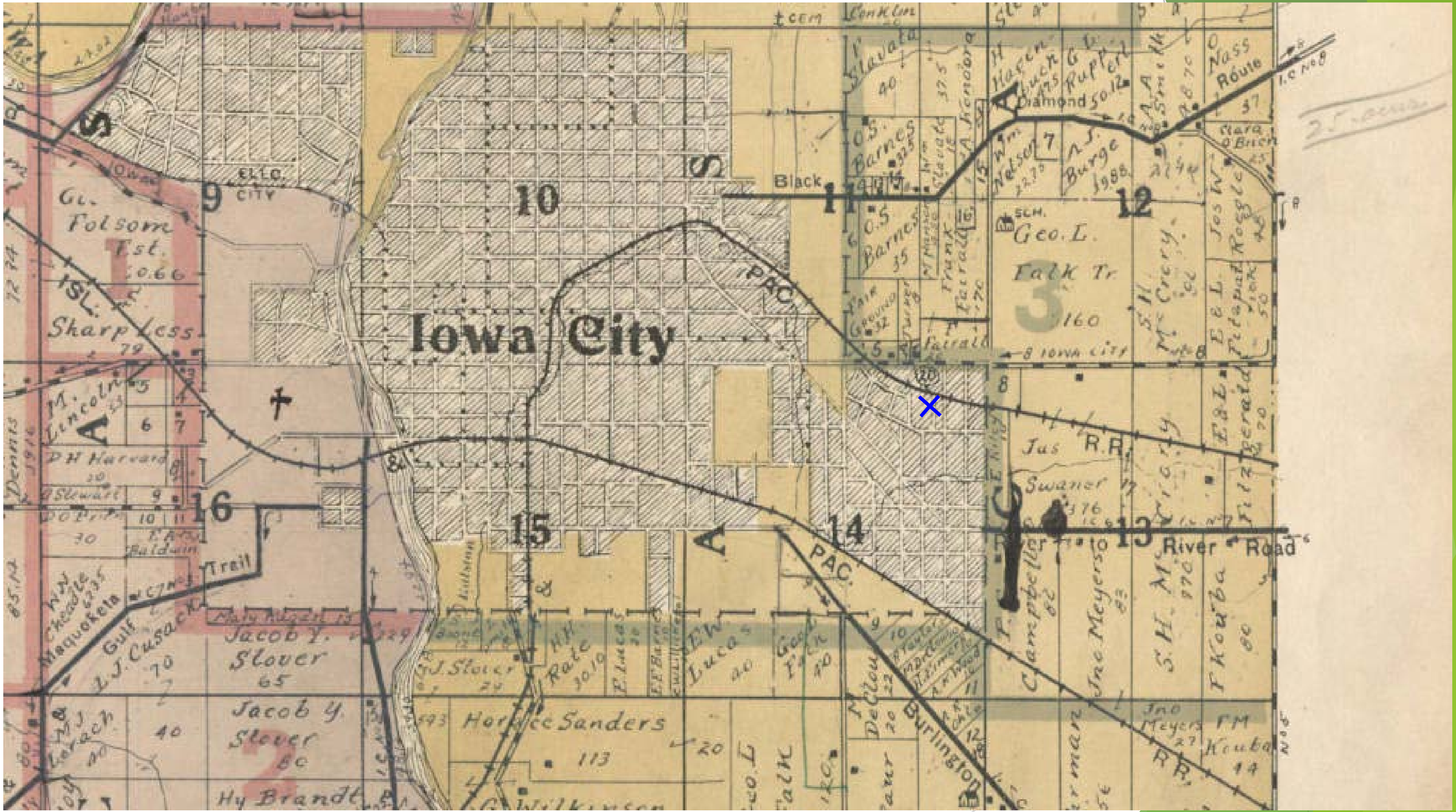


Site History cont'd…

- 1952: Site purchased by Mr. Carl Chadek
  - Utilized as a play area for neighborhood children
  - Mr. Chadek also stored dirt and gravel associated with his trucking business located in the eastern adjoining property
- 2008: Site was purchased by the City of Iowa City
  - Remnant structure remained on northwest corner of the property, and was later removed

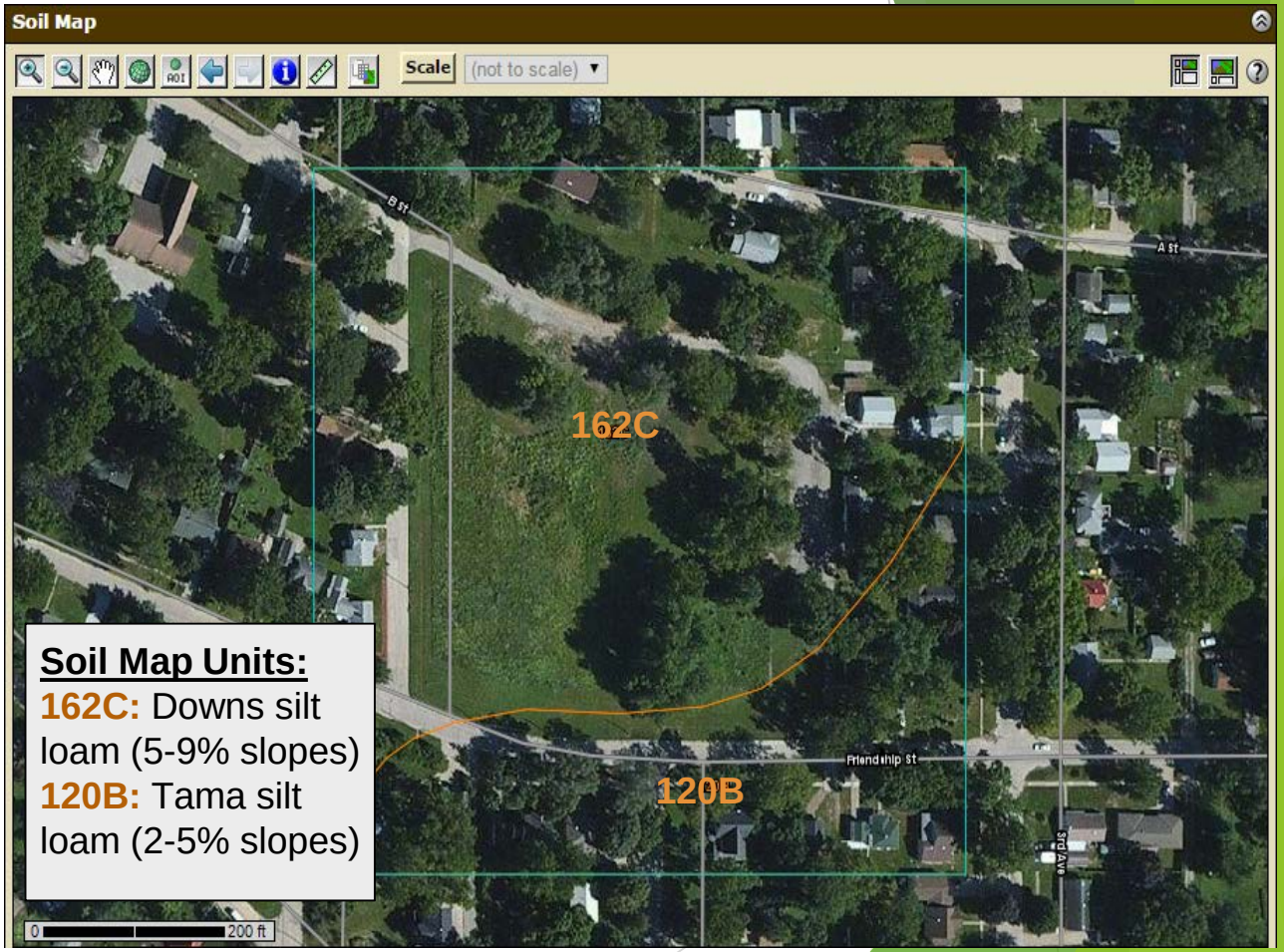
1930

2006


Iowa City
10
11
12
13
14
15
16
9
Black
Geo. L.
Falk Tr.
160
Sharpless
79
Jacob Y.
Slover
65
Horace Sanders
113
River Road
Burlington
PAC.
R.R.
O.S. Barnes
Jas
Swaner
376
Campbell
Jno Meyers
Wm Nelson
A.S. Burge
Diamond
Trail
Gulf
J.J. Cusack
70
D H Harvard
Geo. Falk
Jno Meyers
F M Kouba
14
8 IOWA CITY

Web Soil Survey Information:

- Downs silt loam & Tama silt loam
- Formed in Loess (wind-blown silt)
- Well drained
- High water storage capacity
- Greater than 80 inches to water table and/or any restrictive features
- Both types of soil are considered to be prime farmland (if unaltered)



Limited Site Investigation (LSI)

Table 1: Results of TEH and RCRA Metals Analysis of Soil Samples (mg/kg)

Parameter	B-1 (0-4')	B-1 (10-12')	B-2 (10-12')	SWS for Soil
TEH				
Waste Oil	NA	<9.90	29.2	NA
RCRA Metals				
Barium	184	91.1	NA	15,000
Chromium	20.7	18.2	NA	97,000
Mercury	0.0229	<0.0235	NA	23

mg/kg = milligrams of contaminant per kilogram of soil *(Terracon Inc. 2014)*
NA = not applicable

Table 2: Results of SVOC and RCRA Metals Analysis of Groundwater Samples (mg/L)

Parameter	B-1GW	B-2GW	SWS for a Protected Groundwater Source
SVOCs			
Bis(2-ethylhexyl)phthalate	0.000394	0.000557	0.006
RCRA Metals			
Barium	0.139	NA	2
Selenium	0.00721	NA	0.05

mg/L = milligrams of contaminant per liter of groundwater *(Terracon Inc. 2014)*

(Terracon Inc. 2014)

Methods

Field Methods Used:

- Soil Descriptions
- Cores
- Bulk Density Samples

Lab Methods Used:

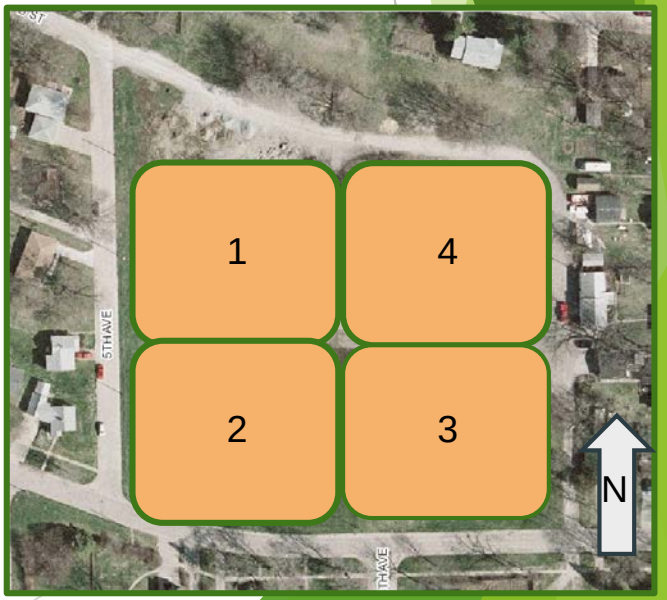
- Bulk Density (g/cm3)
- Electrical Conductivity Test
- pH Test
- Humus
- Potassium
- Nitrate-N (Indicator Test)
- Nitrate (Strip Test)
- Magnesium

Other Methods Used:

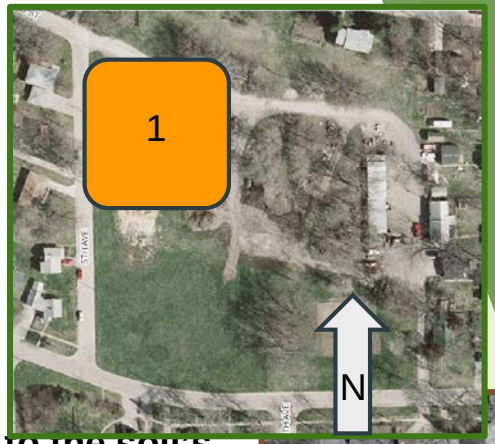
- Historical Photos
- Sanborn Maps
- Web Soil Survey
- Limited Site Investigation

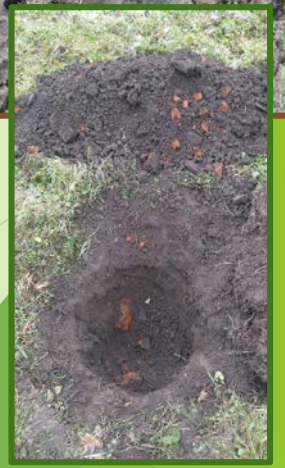
Soil Unit Descriptions

Quadrants 1-4



Quadrant 1



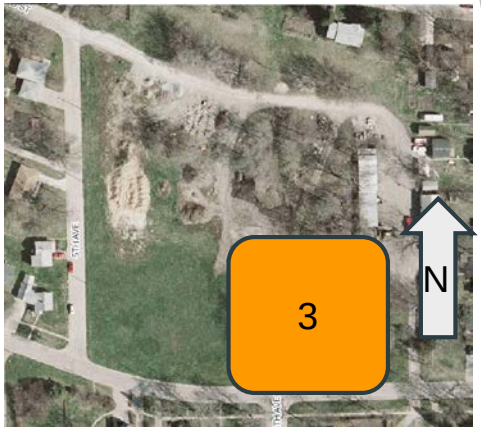


- Soil was heavily compacted
- Large amounts of fill were present throughout, adding to the soil's compaction, and making it difficult to obtain soil profiles in this area.
- Cement or brick fill was found between 5-15 cm in each sample.
- Much of the area contained the cement/limestone pad lying just inches under the surface remaining from the original building, as well as bricks and other artifacts from the production of materials on the site.

Quadrant 2

- Horizons were clearly defined and included thick topsoil horizons
- Clayey subsoil horizon beneath the topsoil layer
- A topsoil horizon much thicker in SE portion of Quadrant 2
- In the SE corner of Quadrant 2 a thin layer of rubble was found
- Soil is more compacted along the roadside to the west

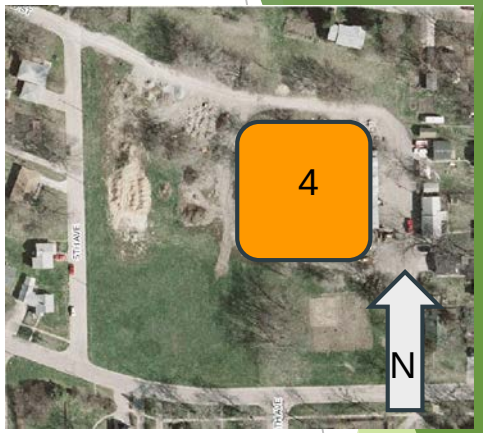
Quadrant 3



- Well-defined soil horizons
- Thick topsoil with clayey subsoil
- Little amounts of rubble found in first 10cm of soil in very E portion
- Soil more compacted along S portion

Quadrant 4

- **Soil compaction is high in the W portion, average compaction in N-central portion. Low compaction in E portion due to gravel in subsurface.**
- **Soil in SW portion is mixed, back-filled soil, with ceramic glass and bricks in subsurface.**
- **Soil in the SE portion has gravel scattered on surface and subsurface.**

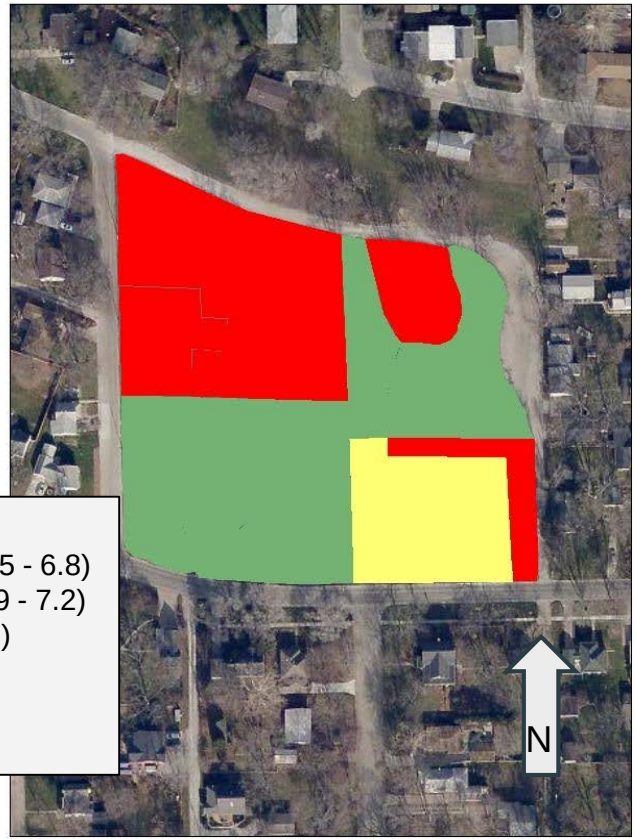


Results & Recommendations

Bulk Density

Bulk Density (g/cm^3):
Green: Ideal (< 1.55)
Red: Too Dense (> 1.55)

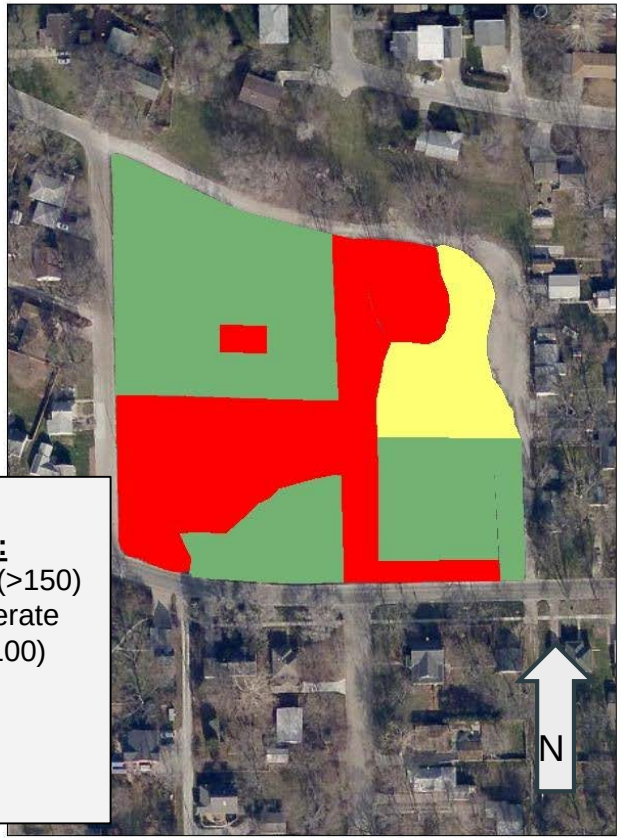
pH



pH:
Green: Good (6.5 - 6.8)
Yellow: Fair (6.9 - 7.2)
Red: Poor (> 7.2)

130 65 0 130 Feet

Potassium



Potassium (lbs/acre):
Green: High (>150)
Yellow: Moderate
Red: Low (<100)

130 65 0 130 Feet


B St
A St
152C
Recommended Area
for Garden
Friendship St
120B
C St
5th Ave
3rd Ave
200 ft

Conclusions & Recommendations

- The property has had a long and varied history:
  - it has been everything from a factory to a hauling center
  - it has lead to variable soils around the property
  - Some areas are not suitable for gardens

- Soils in the most suitable part of the property should be enriched for better gardening
  - Humus, Nitrates, and Magnesium are low on the property, on average
  - Potassium is sufficient, on average, on the property
  - Addition of City of Iowa City compost would remedy these deficiencies

Acknowledgements:

Contributions:

- Instructor: Dr. Art Bettis
- Teaching Assistant: Kayla Schmalle
- Iowa Initiative for Sustainable Communities:
  Program Director: Nick Benson
  Program & Administrative Services Coordinator: Sarah SanGiovanni
  Communications Coordinator: Hailey Courtney

Class Members

- Kellie Brown
- Charlie Cigrand
- Danny Couthard
- Kyle Dirks
- Kayla Dreher
- Katherine Esquibel
- Mac Flack
- Deidre Funk
- Elaine Jordan
- Killy Laughead
- Lindsay McFarland
- Daniel Mettenburg
- Jacob Mirfield
- Peter Schumacher
- James Sevenich
- Michael Simon
- Audrey TeRonde
- Josh Totten
- Alexander von Gries