

# PROJECT

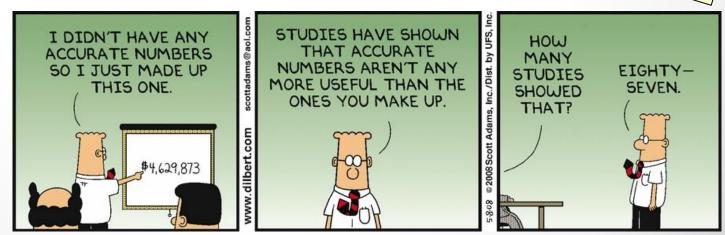


BACK

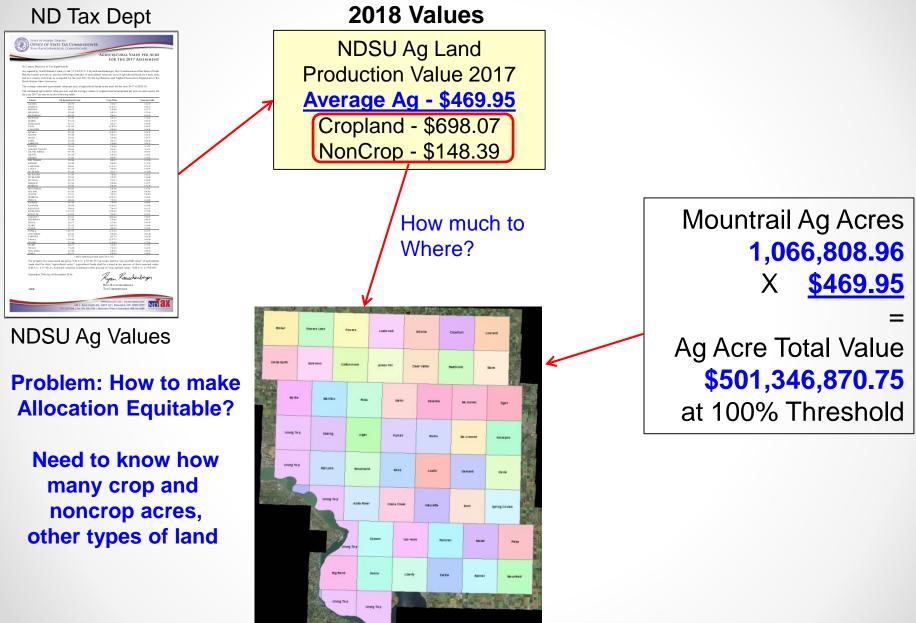
## **AG LAND ACTUAL USE TOWNSHIP REVIEW**

#### AGENDA

- **Overriding Education / bringing TWPs 'up to speed'** •
- **Review of your Township Sections of Actual Use** •
- Summary of Land Valuation in North Dakota
- Overview of Actual Use
- GIS Geographic Information System Data Precision Is Important!
- Sidwell GIS Drawing Process
- Online Sample Section Reviews
- **Review of your Township Sections** •



### ND LAND VALUATION DVERVIEW



## **JUST DVER DNE YEAR AGD**

- Tax Dept used ND State approved "Breakpoint method" in setting values – did not use actual use
- A "Delightful" June Equalization Meeting
- Lots of Discussion
- June 2017 County Board of Equalization voted to utilize actual land use for Ag Land valuation

#### • WENT BACK TO 2016 LAND VALUES FOR THE FUTURE OF ACTUAL LAND USE

- Hence Project "BACK TO THE FUTURE" was born!
  - Question....?

"How do we do this....?"

#### SUMMARY OF LAND VALUATION IN MDUNTRAIL

- Implementation of NDSU Soils values by NRCS soil OFFICE OF STATE TAX COMMISSI type for Agricultural land valuation
  - State Tax Dept. <u>Ag Land valuation guide & Certification guide</u>
- **Fairly complex process** 3 main systems used
  - Sidwell GIS & FARMS system (tracks Ag acres by soil type)
  - NRCS Web Soil Survey (WSS) soil types and acres ~ 150 in Mountrail 0
  - Mountrail County CPUi (Tax) system "system of record"  $\bigcirc$
  - (not a system) NDSU Soils valuation for county

#### State aid funds withheld

57-02-27.2.10 - For any county that has not fully implemented use of soil type and soil classification...... the tax commissioner shall direct the state treasurer to withhold five percent of that county's allocation each quarter from the state aid distribution fund under section 57-39.2-26.1....

Soils Data Imple	ementation Dollars		ann an guilean tha an
Row Labels 耳 Sum	n of Ag Land Valuation		
2010	\$0.00		
2011	\$0.00		
2012	\$0.00		
2013	\$36,948.11	Г	
2014	\$82,474.10		
2015	\$93,959.23		To date:
2016	\$76,519.57		\$429,709.11
2017	\$68,751.73		$\psi$ +20,700.1
2018	\$71,056.37		-
2019	\$66,374.94	~	Forecast
2020	\$16,029.46		Amounts
Grand Total	\$512,113.51		Amounts

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Assessing Agricultural Land in orth Dakot

**NDACo** 

IndTax

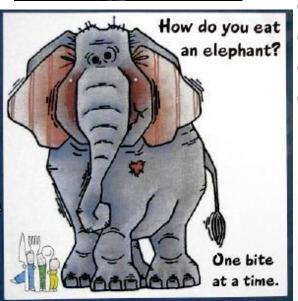
#### **ACTUAL LAND USE** – **BOUNDING THE PROBLEM** Lots to keep track of

#### Mountrail County Comprised of:

- 55 Townships 7 cities
- 1,803 Sections
- Perimeter 1,073,353 ft
- 1,241,398 Total Acres
- 1,066,808.96 Ag related acres
- 8,942 Ag related parcels
- 2,200 Ag related parcel owners
- 147 Soils Codes
  - \$ values applied



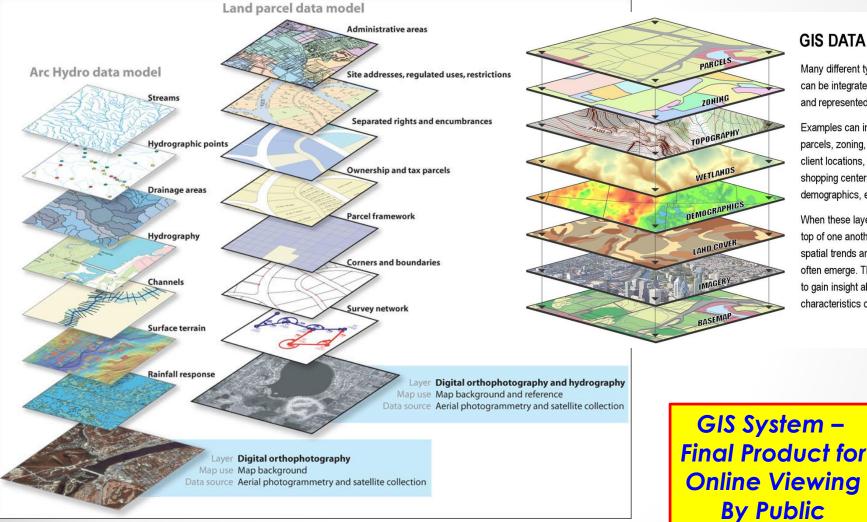




#### <u>How is each</u> parcel being used?

- o Cropland
- Non-Cropland
- o Farmstead
- o Commercial
- o Gravel Pit
- o Roads
- Oilwell Sites
- Saltwater disposal

#### G*IS* -**GEDGRAPHIC INFORMATION SYSTEM**



#### **GIS DATA LAYERS**

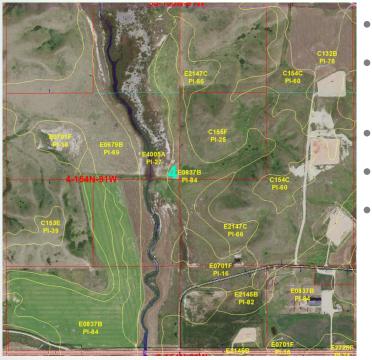
Many different types of data can be integrated into a GIS and represented as a map layer.

Examples can include: streets, parcels, zoning, flood zones, client locations, competition, shopping centers, office parks, demographics, etc.

When these layers are drawn on top of one another, undetected spatial trends and relationships often emerge. This allows us to gain insight about relevant characteristics of a location.

## **LAND VALUATION-IN GENERAL**

#### **Example Section**



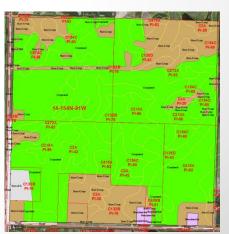
- Each parcel has various soil types within it
- Each soil type has a "Productivity index" associated
- Higher PI's = better soil
- Higher PI's have higher \$ value applied
- Lower PI's have a lower \$ value applied

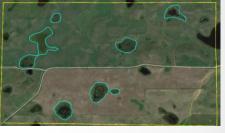
- GIS Software in House ArcMAP
- Soils Committee Formed Mike Hynek, Charlie Sorenson, Dustin Roise, Luke Lahtinen, Keith Deutsch
- Drawing Ruleset Defined and Approved
- Valuation Ruleset & Method Approved
- 3 'pre-pilot' Test Sections Drawn by Sidwell GIS vendor
- Review of various areas within County for potential 'challenges' in drawing of sections
   i.e. Non-cropland areas within cropland what size to draw down to?
  - 1.e. Non-cropiana areas within cropiana what size to araw down to
- Pilot Township Drawn In and Reviewed Rat Lake
- County draw in by 'Tier' Completed

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• Township Review

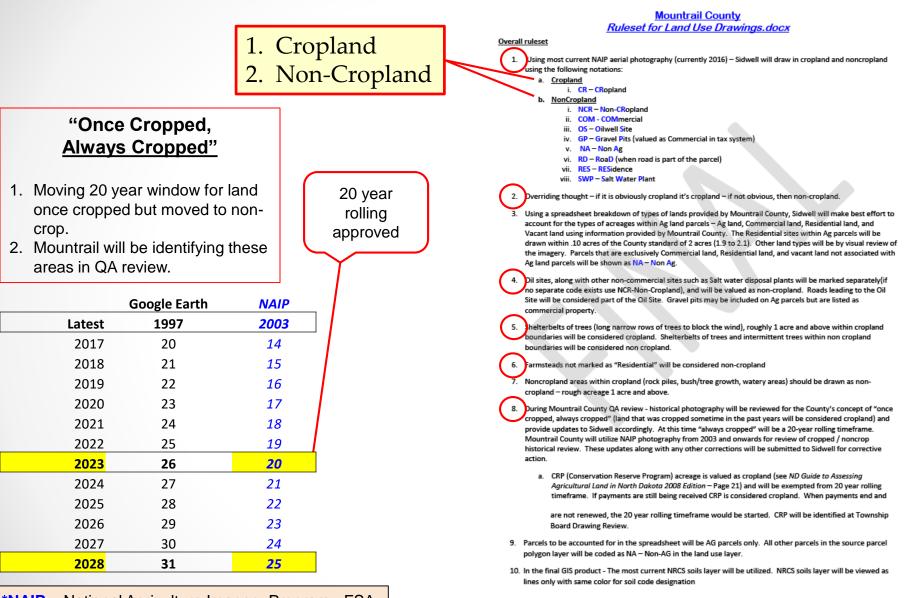








### GIS DRAWING RULESET



\*NAIP – National Agriculture Imagery Program - FSA

Township Review

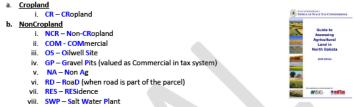
## **LAND VALUATION RULESET**

- Valuation ruleset & methodology reviewed –
  - <u>Approved at August 7, 2018 Commissioner</u> <u>Meeting</u>
- Defines how types of lands are valued
  - <u>Cropland</u> by NRCS Productivity Index (PI) values
  - **Noncropland** by NRCS lbs of forage by soil code Animal Unit Month (AUM) calculation
    - AUM = (lbs of forage production x .25)
      - ÷ 913 lbs forage for cow/calf pair
    - Some low PI soils become high AUM values
- "Once Cropped, Always Cropped"
  - 20 years rolling NAIP Photography (National Agriculture Imagery Program)
  - o 2003 Earliest NAIP
  - 20 years would be 2023 for crop/noncrop review

#### Mountrail County Ruleset Land Valuation for Land Use Drawings.docx

Overall ruleset

 Using most current NAIP aerial photography (currently 2016) – Sidwell will draw in cropland and noncropland using the following notations:



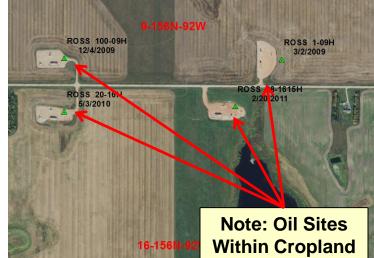
- Valuation methods will be utilized from the ND State Tax Department document "Guide to Assessing Agricultural Land in North Dakota – 2008 Edition"
- 3. Mountrail County will utilize NRCS detailed soils data for establishing the foundation for valuation of both cropland and non-cropland.
  - a. Cropland-the soil Productivity Index (PI) for each soil type will be used to derive a value for each soil type. The Average Cropland acre value provided by the State of ND Tax Department will be used within the soil valuation spreadsheet to derive values based off the individual PI of each soil type.
  - b. Non-Cropland a value for each soil type will be developed based off of "animal unit months" (AUM) which is the correct measure of grazing land soil productivity. NRCS soil survey provides the pounds of forage material for each soil type. The AUM calculation comprises of Pounds of air dry annual production times .25 / 913 lbs (cow/calf pair) per month. Example 2000 lbs of forage production x .25 = 500 lbs / 913 = .55 AUM per acre. (see Page 23 "Guide to Assessing Agricultural Land in North Dakota 2008 Edition")
    - The Average Non-Cropland acre value provided by the State of ND Tax Department will be used within the soil valuation spreadsheet to derive values based off the individual AUM of each soil type of non-cropland.
- 4. Overriding thought if it is obviously cropland it's cropland if not obvious, then non-cropland.
  - a. "once cropped, always cropped" historically, assessors consider any land that was once cropped is always cropland no matter the current use. A problem arises that historically many lands were cropped only once or twice, found to be non-productive, and not cropped since. It would not be considered fair and impartial to value those lands as cropland. Mountrail County will utilize a 20-year rolling concept of "once cropped, always cropped". If land was cropped once within a current 20 year period, it will be considered cropland. Once the 21<sup>st</sup> year occurs of no cropping, the land will be considered non-cropland.

G:\2018\Project Back to the Future\Sidwell\Ruleset Land Valuation for Land Use Drawings.docx Printed: 8/27/2018 8:29:56 AM

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## **WL SITES**

- ND Century Code "Ag property used for oil, natural gas, or subsurface minerals must continue to be assessed as Ag property for the remainder...."
- <u>Challenge:</u> Was it cropland or noncropland before?
- Some parcels found oil sites partially on crop land, partially on non-cropland
  - Very difficult to manage acres



 Simplified Approved Decision – <u>all oil site acreage</u> will be valued as <u>non-cropland</u> based off soil types underneath oil site (includes road leading to oil site)

#### Land Used for Extraction of Oil, Natural Gas, or Subsurface Minerals

Land that was assessed as agricultural property at the time the land was put to use for extraction of oil, natural gas, or subsurface minerals as defined in N.D.C.C. § 38-12-01 must continue to be assessed as agricultural property if the remainder of the surface owner's parcel of property on which the subsurface mineral activity is occurring continues to qualify for assessment as agricultural property under subsection 1 of N.D.C.C. § 57-02-01.

#### FARMSTEADS

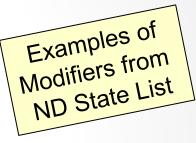
- Farmsteads are considered '<u>non-crop</u>' and are valued at noncropland value based off soils under farmstead
- Taxable Rural Residences are valued separately
  - o 2 acres @ \$2,000 per acre



## MDDIFIERS ?

- With Actual Land use <u>modifiers are not necessary</u> and will not be used
  - With breakpoint method, modifiers could be <u>considered</u> and are used for <u>cropland</u> areas only
  - Salinity is already factored in to the Soil Code PI and AUM

Rocky*	Very Rocky*	Salinity*
Non-Productive	Obstacles	Multiple Factors
Irregular Field	Trees	Inaccessibility
Electrical Transmission Lines	Public Road	Brush & Ponding
Abandoned Railroad	Oil Well Site	Non-Tilled
Pasture	Non-Cropland	Drain Ditch
Marsh	Land Use (?)	Easements



\*Items handled By NRCS Soil Survey

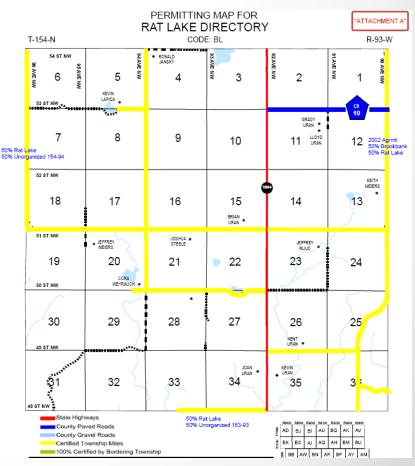
#### Inundated Land is separate and can be used

- Forms filed by March 31 each year
- 10 contiguous acres or more, Inundated for two seasons or more
- Some other information needed

• Township Review



- Maps received from Mountrail Road and Bridge dept.
- "Roads" for drawing purposes are the colored lines
  - County Roads
  - o Township Certified Roads
  - Highways
- Copies of TWP Maps provided to Sidwell drawing team
- <u>'Roads' are valued at \$0 per acre</u>
- Other dirt trails and gravel roads are marked and valued at non-crop
- Roads were Biggest 'problem' found in Pilot Township exercise
  - Alleviated by providing Sidwell the PDFs will only draw colored lines and highways



## **LAND VALUATION RULESET**

GIS Item	Valuation Method	
Cropland	Cropland values - Productivity Index (PI)	
Non Cropland	Noncrop values – based off AUM (Animal Unit Month) calculation	
Farmsteads	Noncrop values	
Oilwell Sites	Noncrop values	
Salt Water Wells	<ol> <li>Commercial wells @ Commercial Values (Tax Dept)</li> <li>Private Wells @ <i>Noncrop values</i></li> </ol>	
Taxable Rural Residence	2 Acres at \$2,000 / acre	
Roads	\$0 for Right-of-Way acreage of TWP Certified Roads, County Roads, State Highways	
Commercial Land / Structures	Commercial Values (Tax Dept)	
Gravel Pits	Commercial Values (Tax Dept)	
Non-Ag (vacant land)	Vacant Land Values (Tax Dept)	

#### \*<u>Note</u>\* – <u>CRP lands and Hay land</u> are considered cropland

### SOILS VALUATION TEST -EXAMPLE OF 2018 VALUES

	Productivity Index (PI)	Cropla Valuati		Non-( (AU	
tter oils	95	\$988/a	acre	\$362/	′acre
	90				
	80				
	70				
	60				
	50	\$69	8	\$14	48
	40				
	30				
	20				
	10				
orer oils	0	\$29	)	\$1	5

AUM – Animal Unit Month -by soil code-AUM = lbs forage production X . 25 ÷ 913 lbs forage [cow/calf pair]

#### 2018 Values

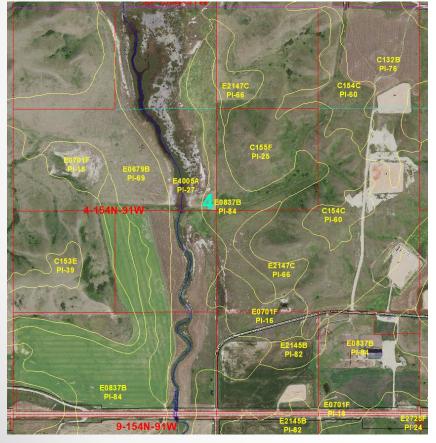
NDSU Ag Land Production Value 2017 Average Ag - \$469.95 Cropland - \$698.07 NonCrop - \$148.39

• Township Review

\*rough representation only

### WHAT HAS HAPPENED SD FAR

- Left Section with NRCS Soil Layer
- Right Same section with Actual Use drawn in
- Types Cropland, non-cropland, Residential, Roads, Oil Sites, others





Township Review

## FARMS PROGRAM

Toolbar

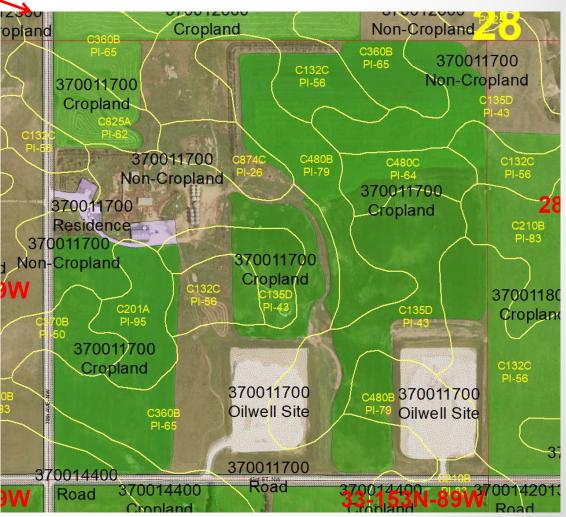
🚮 | 💑 | Area Distribution Land Value Debasement Options 🕶

 Cropland, noncrop, Residence, Oil Site, Roads

Sample Parcel – SW ¼ Section

- Utilizes Soil Types within Actual Land use
- "Slices" Actual Land use and Soil Type layers into acres – <u>used for valuation</u>
- Accurate to .01 acre

   435 Sq Ft approx. 20x20 ft
- <u>\*LOTS\* of data provided</u>
  - This one parcel is 32 rows of data



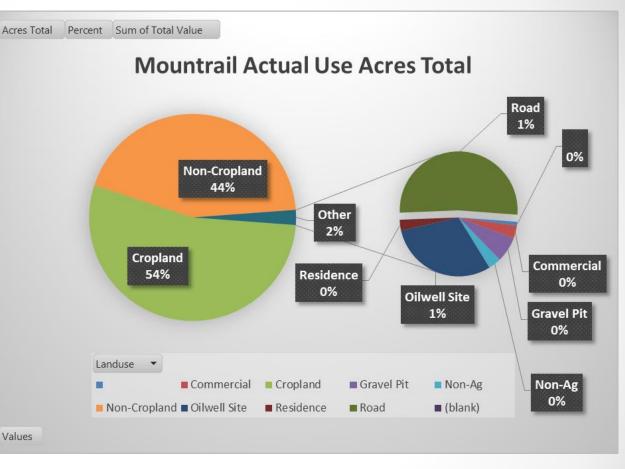
Township Review

#### FARMS PROCESSED FARMS \*LOTS\* of data provided 💑 Area Distribution Land Value Debasement Options -Toolbar County Produced 107,671 370012000 Cropland rows of data This one parcel is 32 rows of data 0 ParcelN J Soil Cod Distributed Acr PI 👻 Wght Pl 🔻 AUM vPI - Recorded Ac - Landuse Co Soil Name Landuse 🚽 370011700 C201A Bowbells loam, 0 to 3 percent 6.3 **95** 100.00 55.94 158 AG Cropland 370011700 C210B 158 AG Williams-Bowbells loams, 3 to 3.26 83 87.37 48.43 Cropland 370011700 C480B Shambo loam, 2 to 6 percent sl 12.06 79 83.16 42.57 158 AG Cropland 370011800 Cropland 370011700 C360B Livona fine sandy loam, 0 to 6 24.08 65 68.42 42.31 158 AG Cropland 370011700 C480C 5.09 63 66.32 39.82 158 AG Cropland Shambo loam, 6 to 9 percent sl 370011700 C825A 60.45 158 AG Divide loam, 0 to 2 percent sl 4.28 62 65.26 Cropland 370011700 370011700 370011700 C132C 40.97 Cropland Williams-Zahl-Zahill complex, 11.47 61 64.21 158 AG Cropland **Oilwell Site Oilwell Site** 370011700 C370B Krem-Lihen loamy fine sands, 0 3.42 50 52.63 42.63 158 AG Cropland 370011700 C135D 158 AG Cropland Zahl-Williams loams, 9 to 15 p 21.11 43 45.26 39.64 370011700 C874C Wabek-Appam complex, 6 to 9 pe 0.46 26 27.37 28.89 158 AG Cropland 370011700 C201A Bowbells loam, 0 to 3 percent 55.94 Non-Cropland 1 0.03 *9*5 100.00 158 NCR 370014400 370011700 C210B Williams-Bowbells loams, 3 to 1.48 83 87.37 48.43 158 NCR Non-Cropland 370014400 370011700 C480B Shambo loam, 2 to 6 percent sl Non-Cropland 2.57 79 83.16 42.57 158 NCR The "magic sauce" of actual land use 370011700 C360B Non-Cropland 10.0000 Livona fine sandy loam, 0 to 6 20.72 65 68.42 42.31 158 NCR 370011700 C825A Divide loam, 0 to 2 percent sl 0.69 62 65.26 60.45 158 NCR Non-Cropland 10.0000 370011700 C132C 10.88 61 64.21 40.97 158 NCR Non-Cropland 10.0000 Williams-Zahl-Zahill complex, 370011700 C135D Non-Cropland 10.000 Zahl-Williams loams, 9 to 15 p 6.05 43 45.26 39.64 158 NCR Non-Cropland 10.000 370011700 C874C Wabek-Appam complex, 6 to 9 pe 4.55 26 27.37 28.89 158 NCR 370011700 C210B Williams-Bowbells loams, 3 to 0.17 83 87.37 48.43 158 OS Oilwell Site 10.0000 370011700 C480B 10.0000 Shambo loam, 2 to 6 percent sl 4.28 79 83.16 42.57 158 OS Oilwell Site Productivity Cropland Non-Crop 370011700 C360B Livona fine sandy loam, 0 to 6 4.8 65 68.42 42.31 158 OS Oilwell Site 10.0000 Index (PI Valuation (AUM)' 10.0000 370011700 C132C 1.21 61 64.21 40.97 158 OS Oilwell Site Williams-Zahl-Zahill complex, Better 95 \$988/acre \$362/acre 10.0000 370011700 C135D Zahl-Williams loams, 9 to 15 p 3.11 43 45.26 39.64 158 OS Oilwell Site Soils 370011700 C201A 95 158 RES 2000.0000 Bowbells loam, 0 to 3 percent 0.11 100.00 55.94 Residence 90 370011700 02100 100 DEC Docidonco 2000 0000 00 07 27 10 13 80 37( Soil Code PI **Crop Value** AUM NonCrop 37( 70 370 370 60 Value 50 \$698 \$148 370 40 370 30 C201A \$988 55.94 370 95 \$203 20 10 C135D 43 39.64 \$145 \$15 \$445 Poorer Λ \$**2**9 Soils

## SOME INITIAL ACREAGE DATA

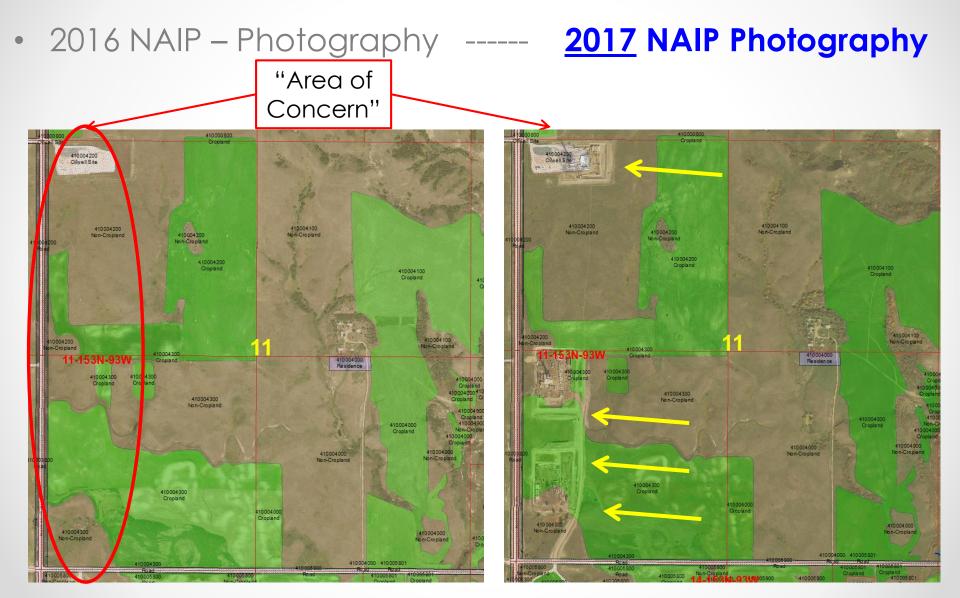
<b>Row Labels</b>	Acres Total	Percent		
	274.36	0.03%		
Commercial	885.34	0.08%		
Cropland	574,732.07	53.87%		
Gravel Pit	1,731.02	0.16%		
Non-Ag	879.80	0.08%		
Non-Cropland	467,063.77	43.78%		
Oilwell Site	7,582.82	0.71%		
Residence	741.82	0.07%		
Road	13,001.05	1.22%		
(blank)		0.00%		
Grand Total	1,066,892.05	100.00%		



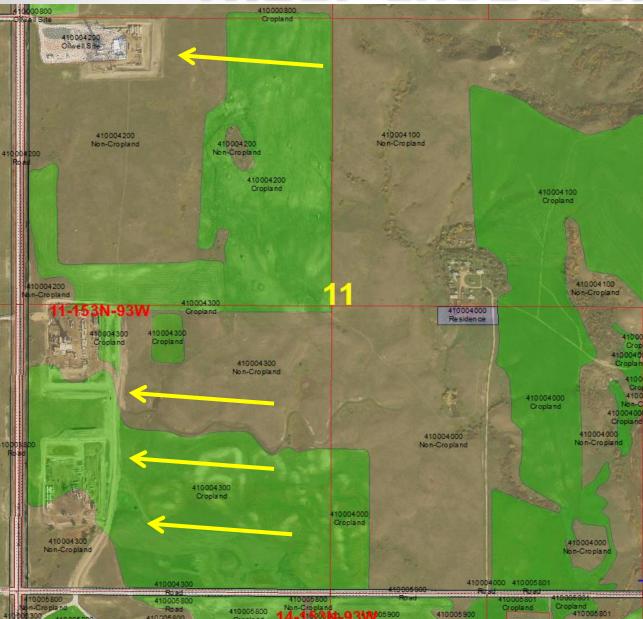


Township Review

### PRODF CASE FOR GIS



### PRODF CASE FOR GIS

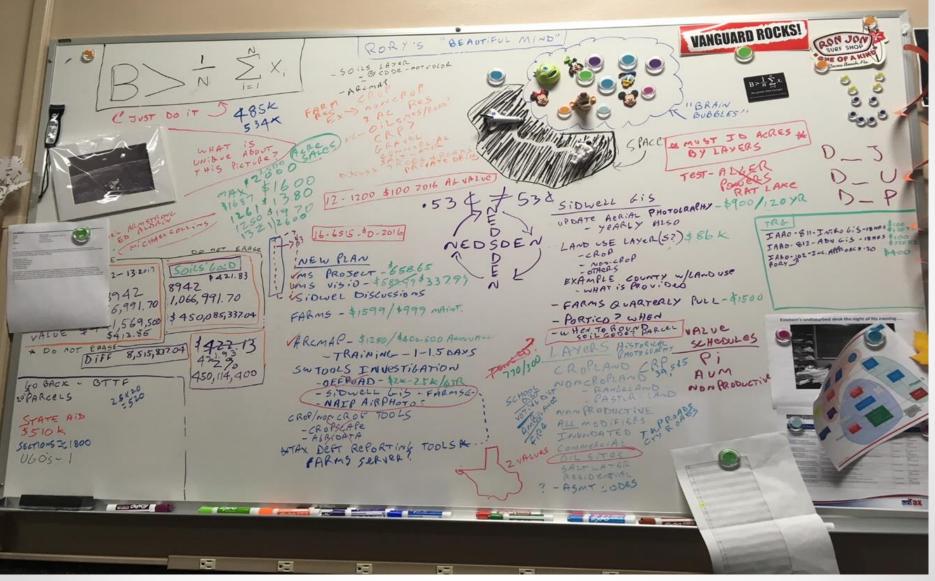


- <u>2017</u> NAIP
   Photography
- <u>2016</u> Actual use layer

 Changes in use can be seen visually

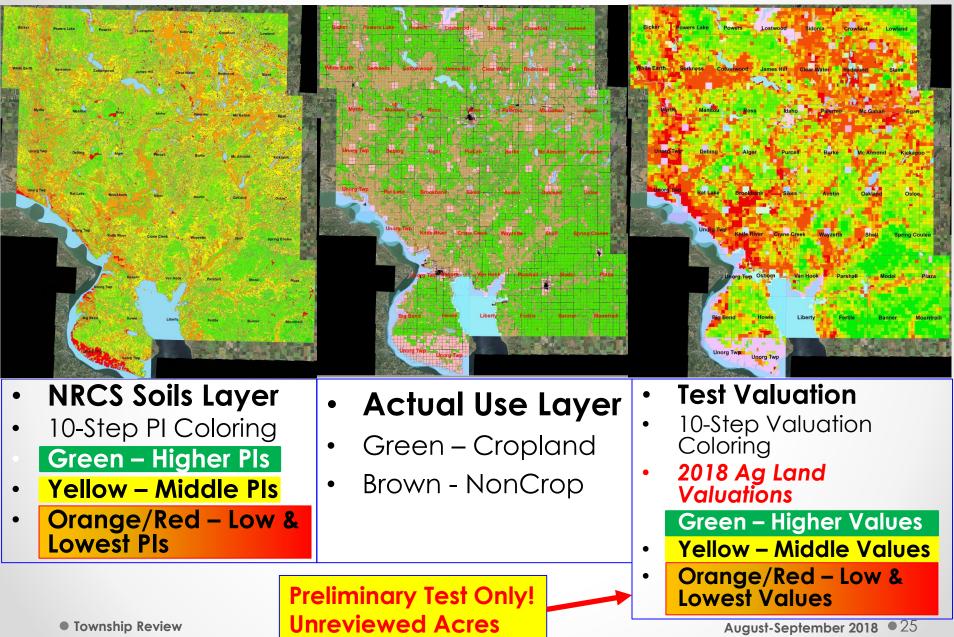
## **JUST DVER A YEAR AGD...**

#### "How do we do this...."



Township Review

### GIS - ANSWERS THE CALL!

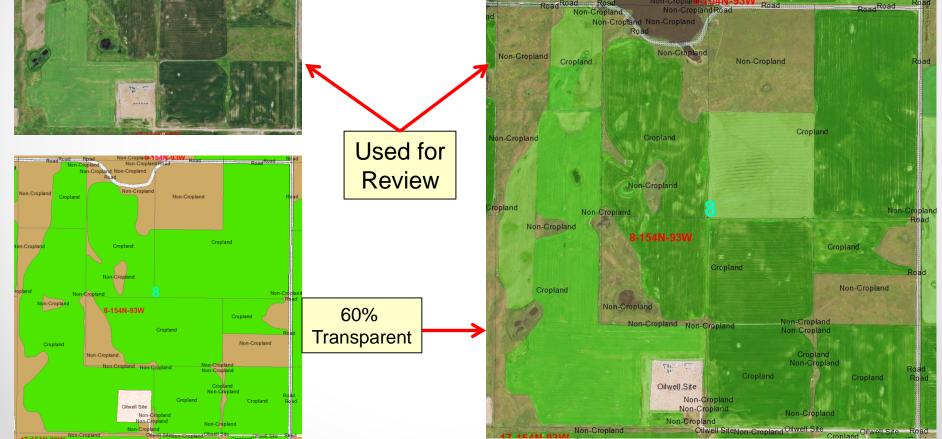


#### TWP REVIEW - WHAT IT LOOKS LIKE



#### By Section: Original, "Cartoon", and <u>Transparency – 60%</u>

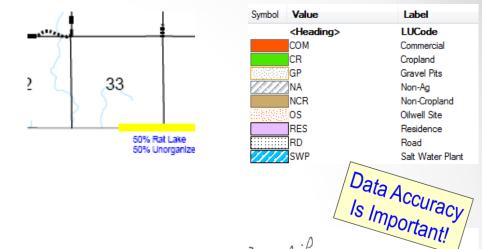
- Ability to 'see' through the actual use layer
- Sec-TWP-Range on each for easy identification
- Will be using Original and Transparent for reviews
- Soils layer <u>NOT</u> shown but have it in the office



Township Review

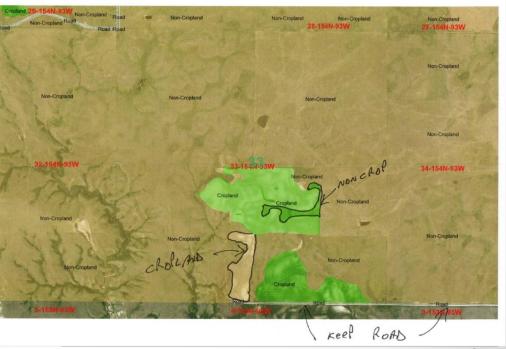
### **REVIEW STEPS-EXAMPLE 1**



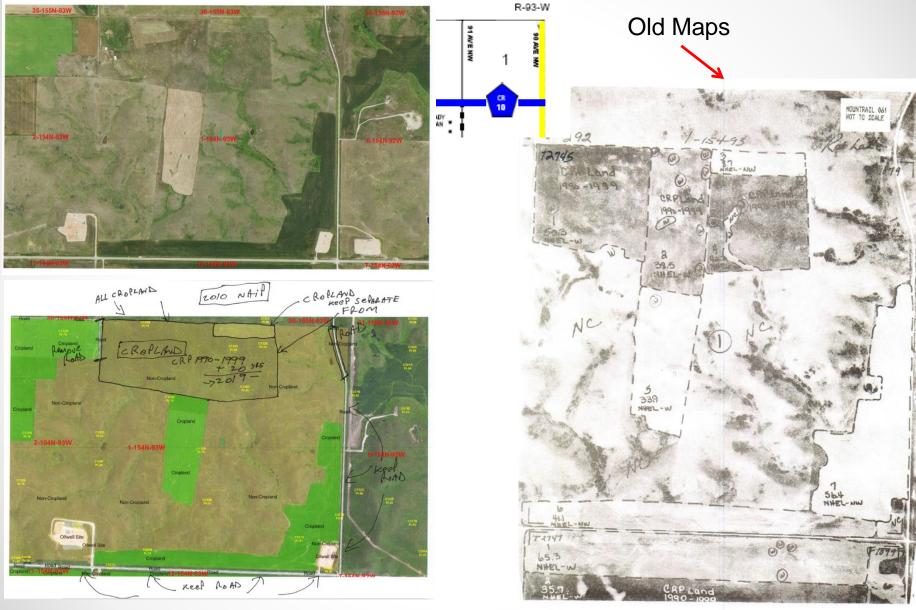


2003 NAiP

- Original Copy 2016 Aerial Photography
- Landuse Layer
  - o 60% Transparency
- Annotations
- \*IF NEEDED\* other year Aerial Photography for comparisons and/or other data



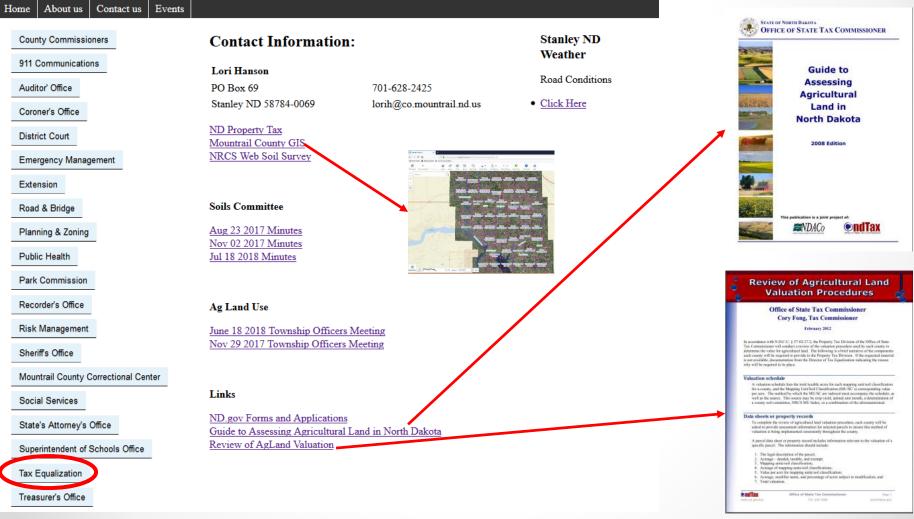
#### **REVIEW STEPS-EXAMPLE 2**





Soil Survey Updates - ...

#### **Mountrail County North Dakota**



### **REVIEW PRDCESS**

- Land Use Drawings on Tables in TWP Section Order
- Maybe start with any sections you are personally familiar with
- Focus on <u>accurate</u> cropland / non-cropland areas need to ID any <u>CRP acres</u> (considered cropland)
- Please <u>\*DO NOT MARK\*</u> on drawings, talk with one of us – mark on sticky note on drawing

