

Example Off-Site Wetland Determination

Steve Eggers

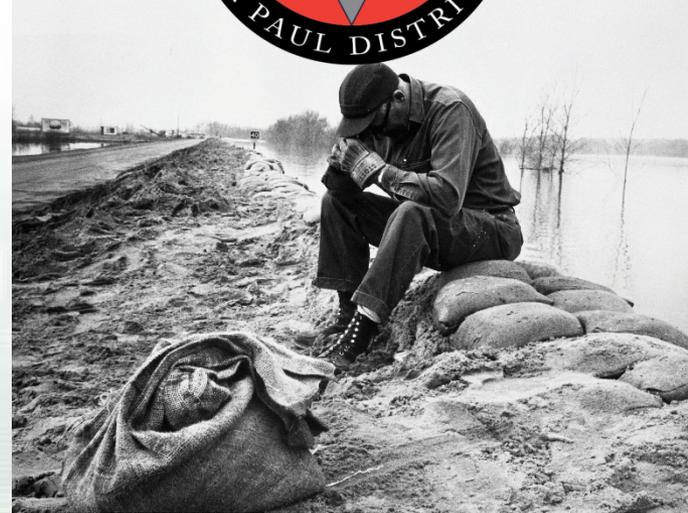
Senior Ecologist

St. Paul District

March 9, 2016



US Army Corps of Engineers
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Wet Signatures

Crop Stress (mottled tones, lime green, etc.)

Standing Water (black)

Drownout (gray)



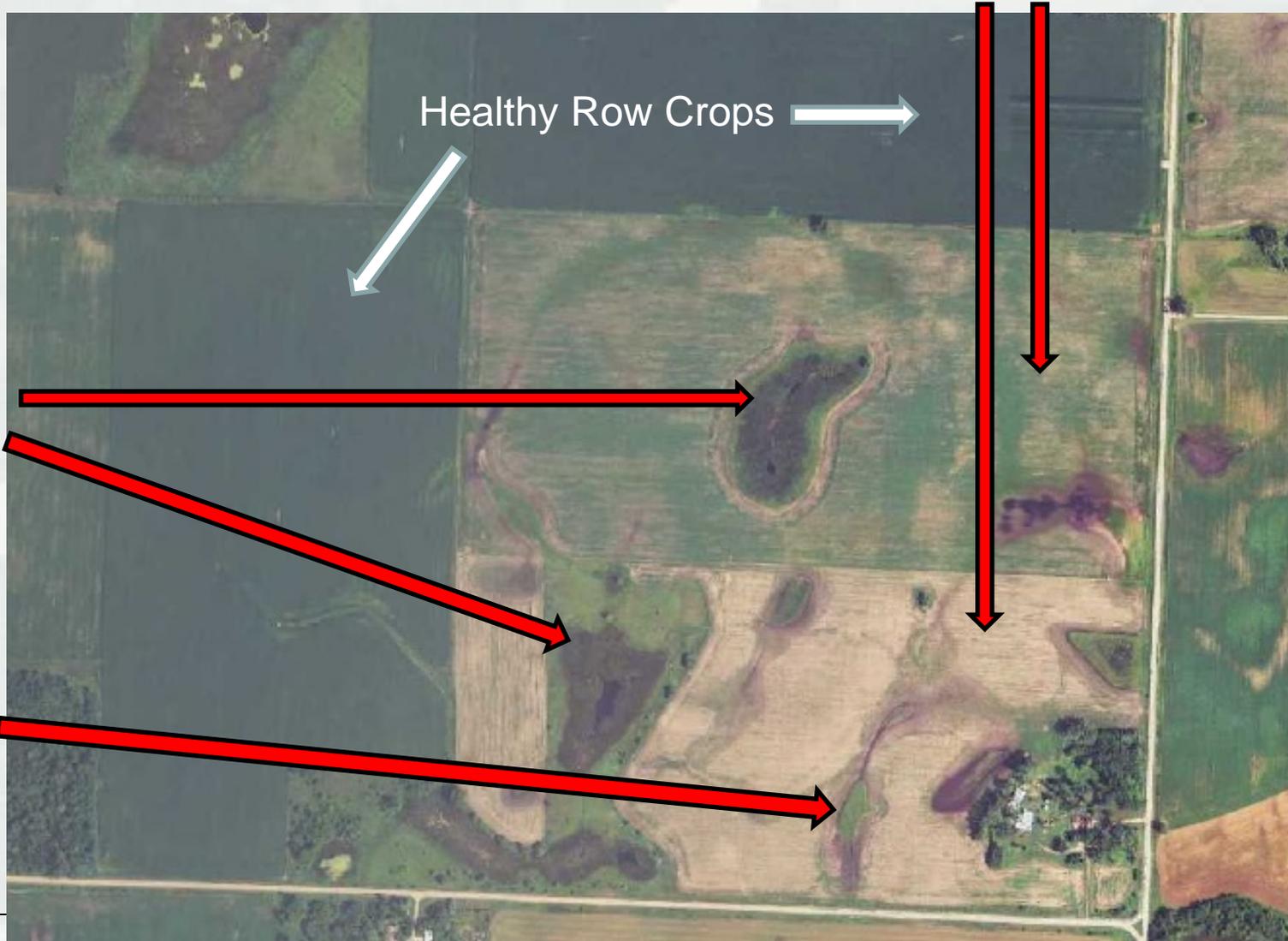
Wet Signatures

Late Planting or Altered
Cropping Pattern

Healthy Row Crops →

Wetland
Signature

Volunteer or
Persistent
Natural
Vegetation



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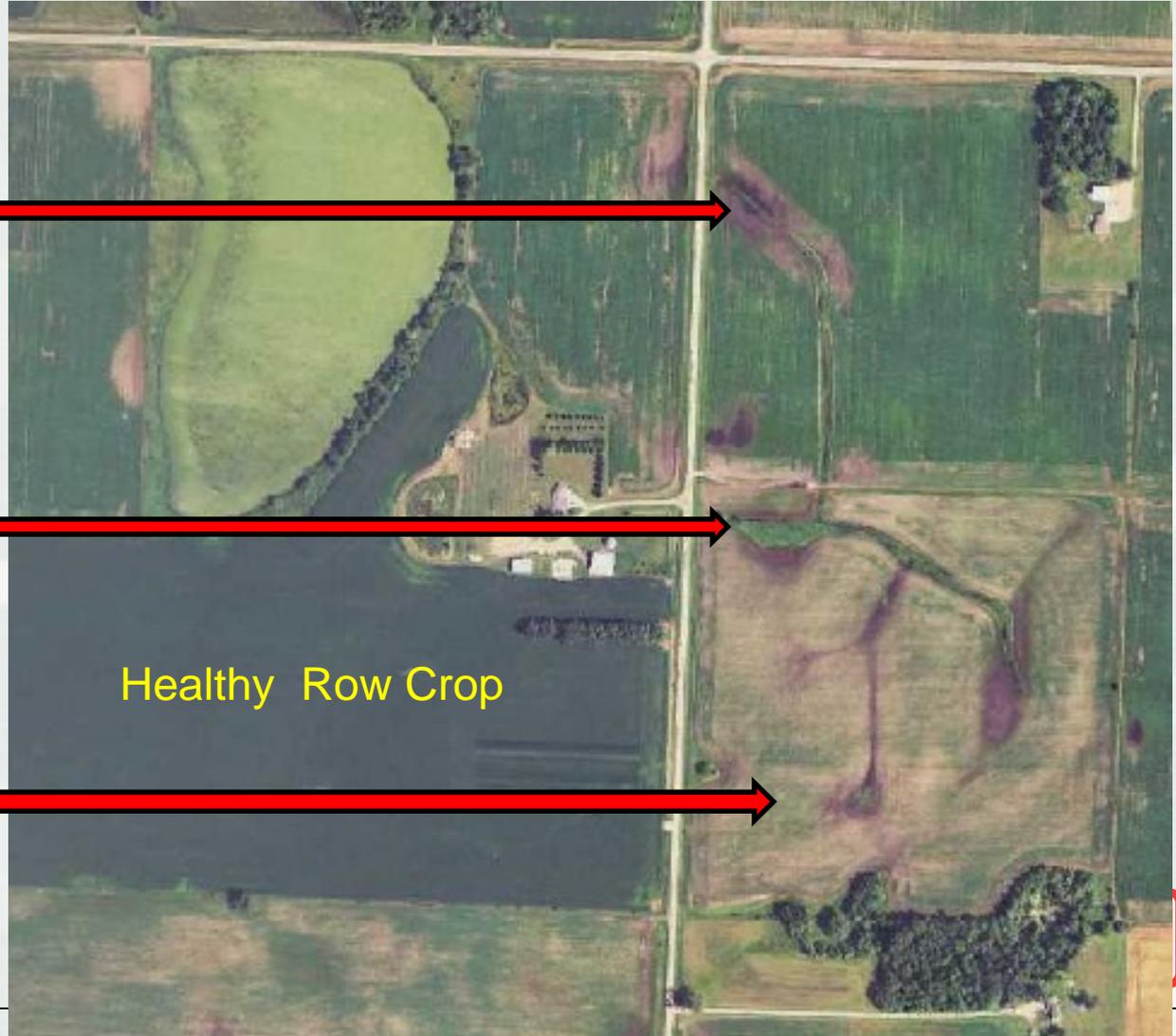
Wet Signatures

Drownout

Cropped Around
Wetland

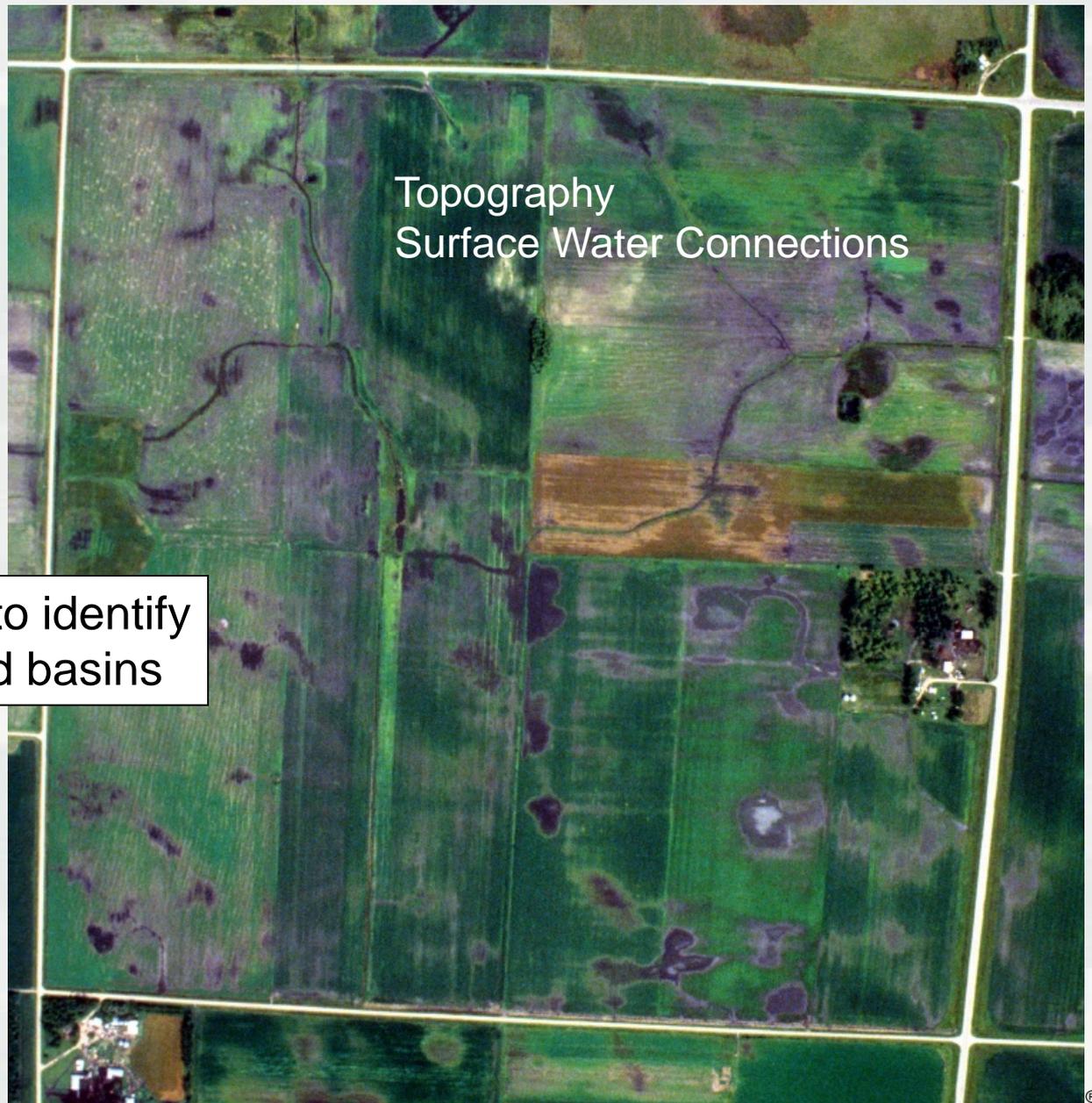
Late Planting
or Mowed for
Hay

Healthy Row Crop



1993 (Wet)

Use a “wet” year to identify
potential wetland basins



Topography
Surface Water Connections



Antecedent Precipitation

		Long-term rainfall records			Rain fall	Condition dry, wet, normal	Condition value	Month weight value	Product of previous two columns
Month	3 yrs. in 10 less than	Normal	3 yrs. in 10 more than						
1st prior month*	May	1.06	1.62	1.94	2.04	W	3	3	9
2nd prior month*	Apr.	1.50	2.15	2.56	1.47	D	1	2	2
3rd prior month*	Mar.	2.67	4.02	4.81	3.47	N	2	1	2
								Sum	13

* Compared to photo date

Note: If sum is

- 6 - 9 then prior period has been drier than normal
- 10 - 14 then prior period has been normal
- 15 - 18 then prior period has been wetter than normal

Condition value:

- Dry =1
- Normal =2
- Wet =3

From "Hydrology Tools for Wetland Determination"

Three months antecedent, weighted





Spring 1992



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Luxemburg Rd

Luxemburg

Poygan (Silty Clay Loam)
 Poorly-Drained
 Landform: Depressional
 Flooding: None
 Ponding: Occasional
 % Hydric Components: 88%



Manawa (Silty Clay Loam)
 Somewhat Poorly-Drained
 Landform: Drainageways, Terraces
 Flooding: Rare
 Ponding: Occasional
 % Hydric Components: 4%

Kewaunee (Silt Loam)
 Well-Drained
 Landform: Moraines
 Flooding: None
 Ponding: None
 % Hydric Components: 3%

MhB

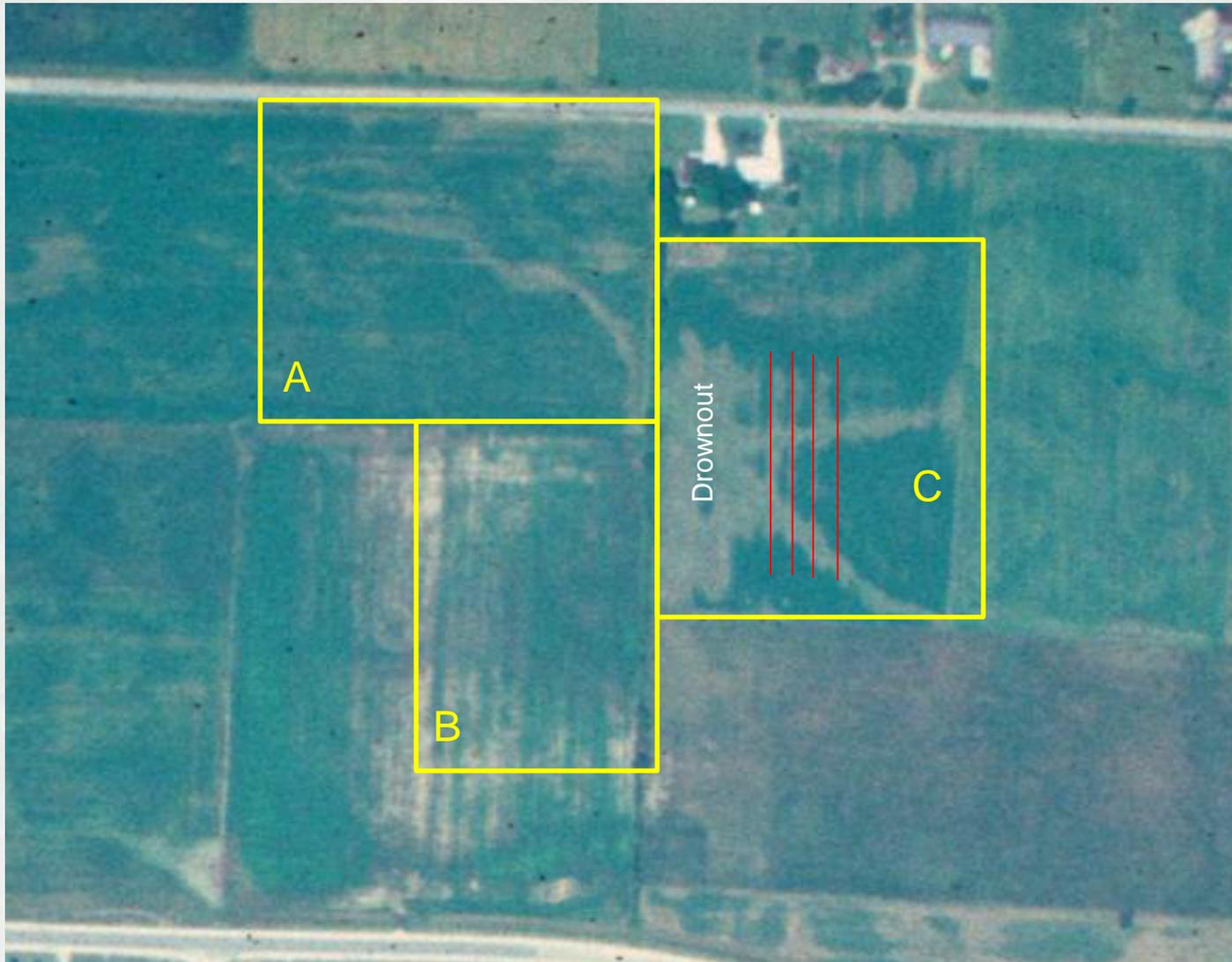
McA

Po

MhB



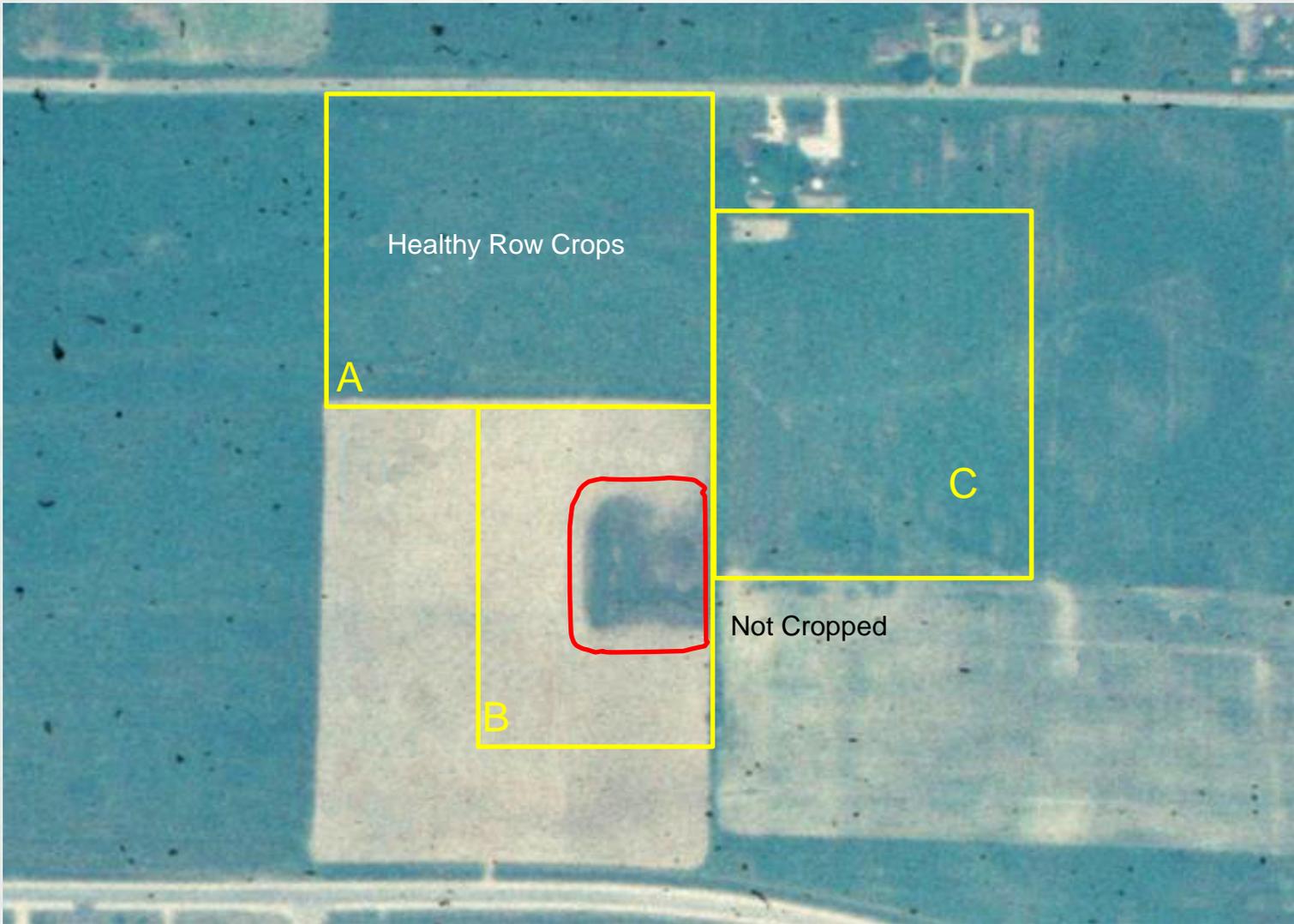
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1982 -- NORMAL



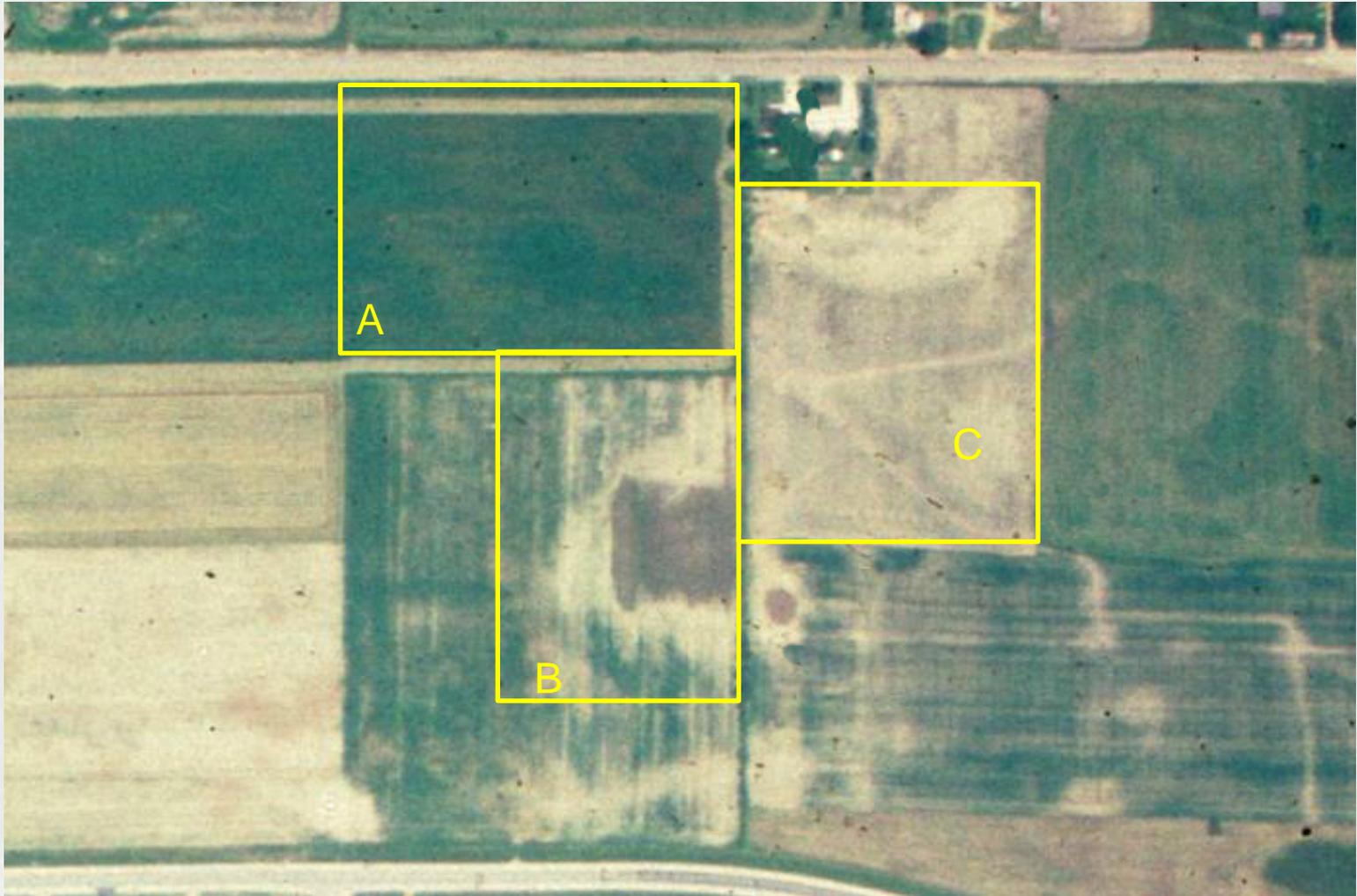
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1983 -- NORMAL



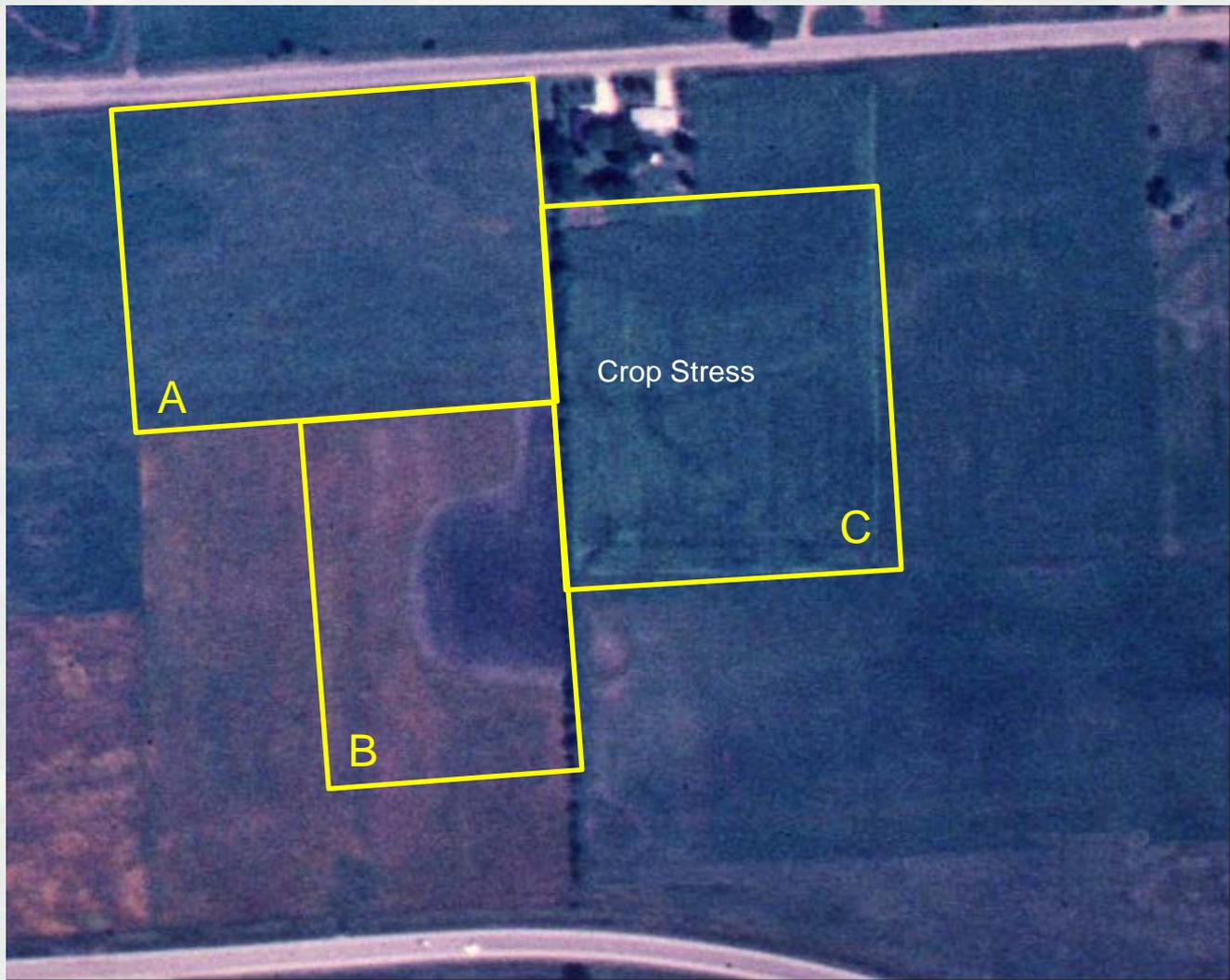
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1984 -- WETTER THAN NORMAL



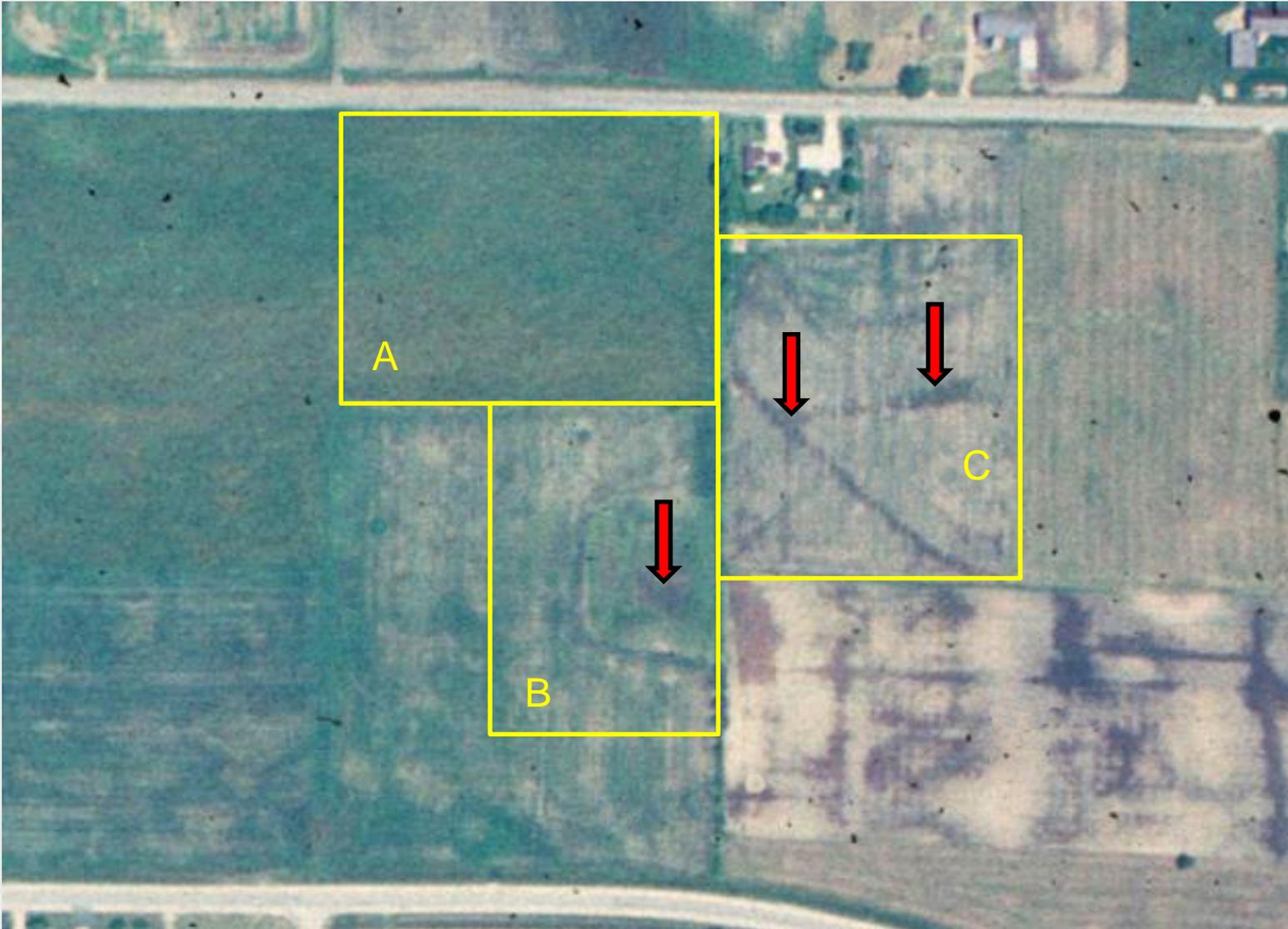
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1985 -- NORMAL



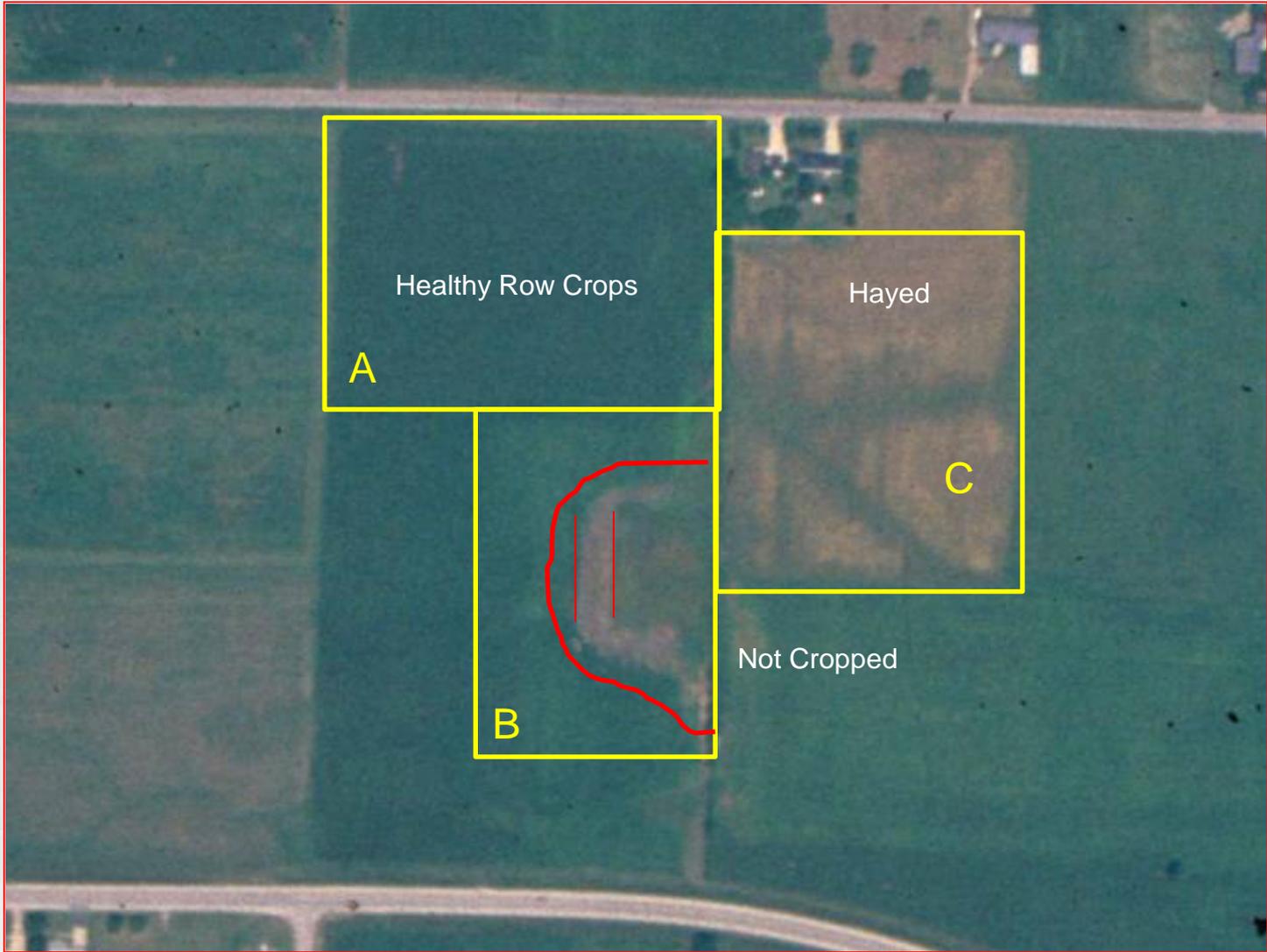
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1986 – NORMAL

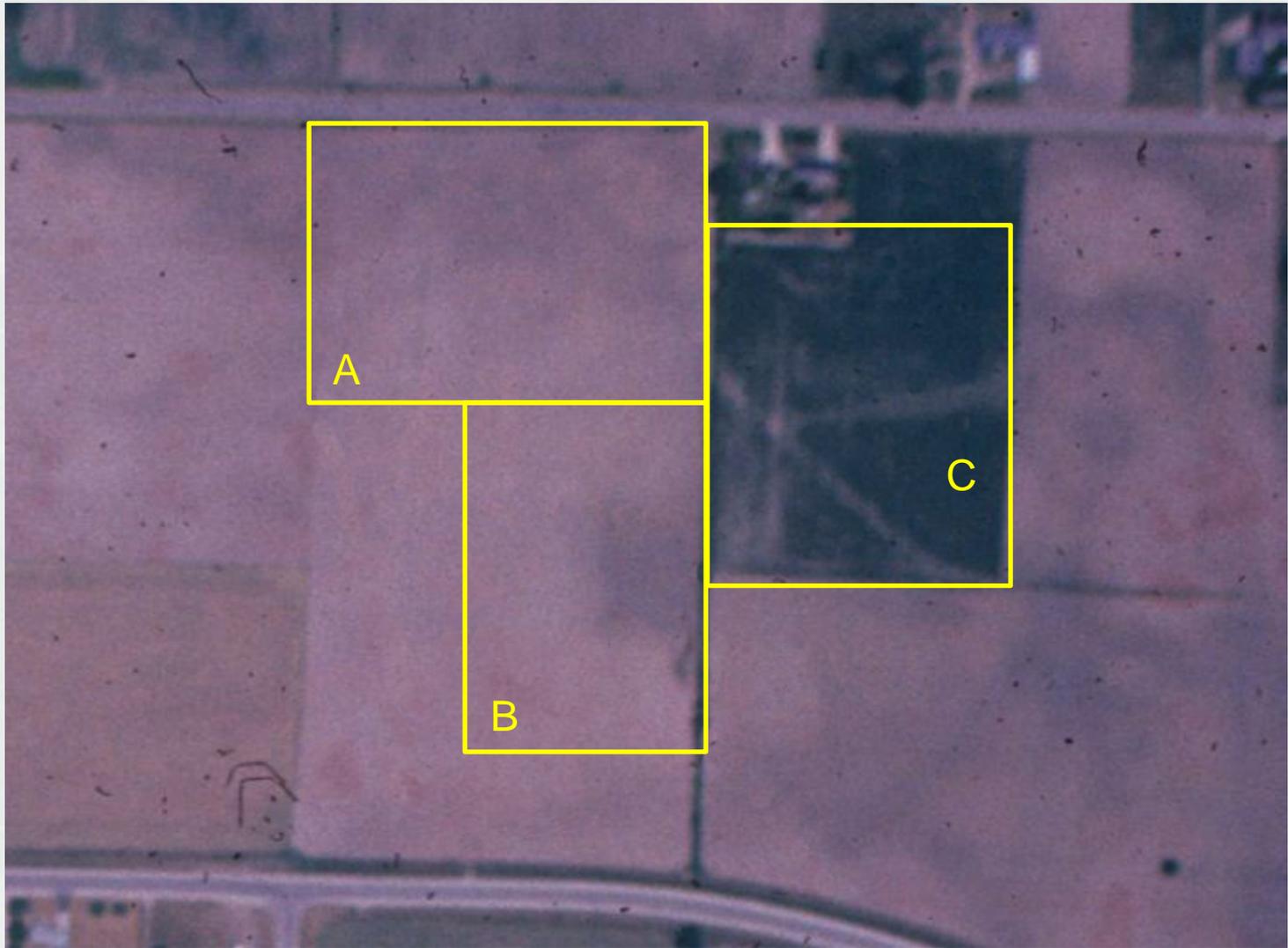


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1987 -- DRIER THAN NORMAL

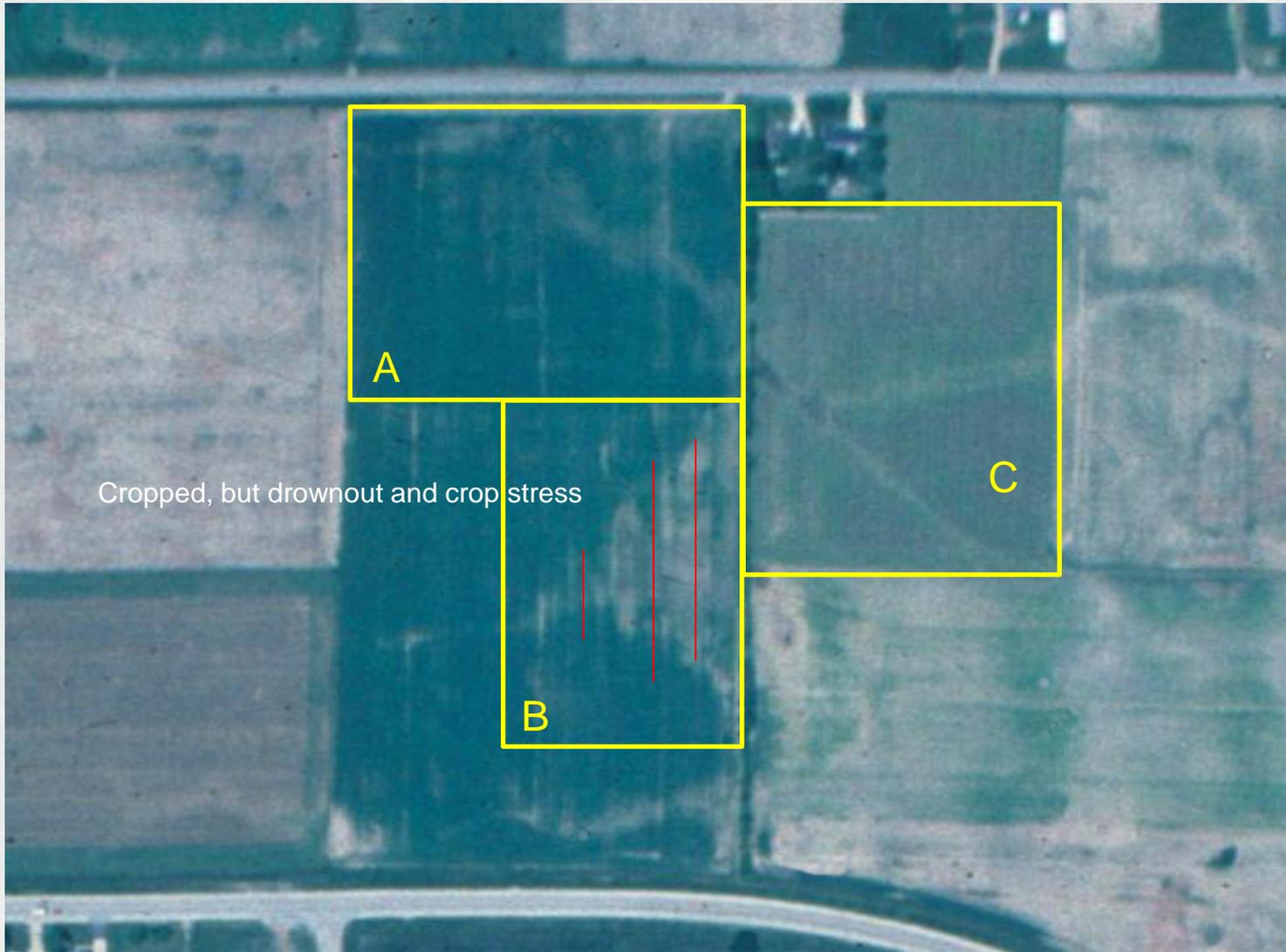




1988 -- DRIER THAN NORMAL



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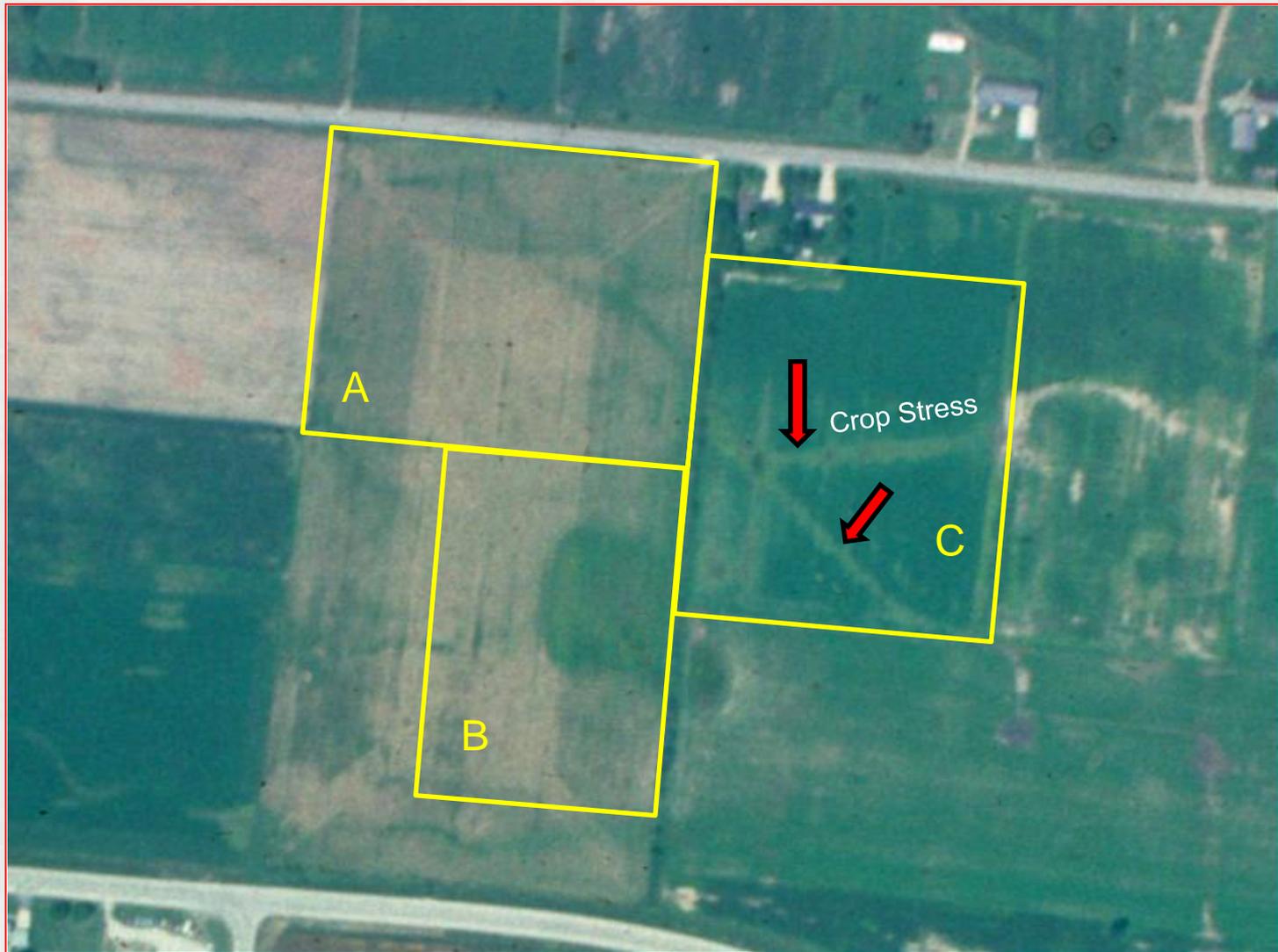


Cropped, but drownout and crop stress

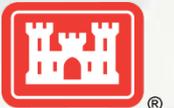
1989 -- NORMAL



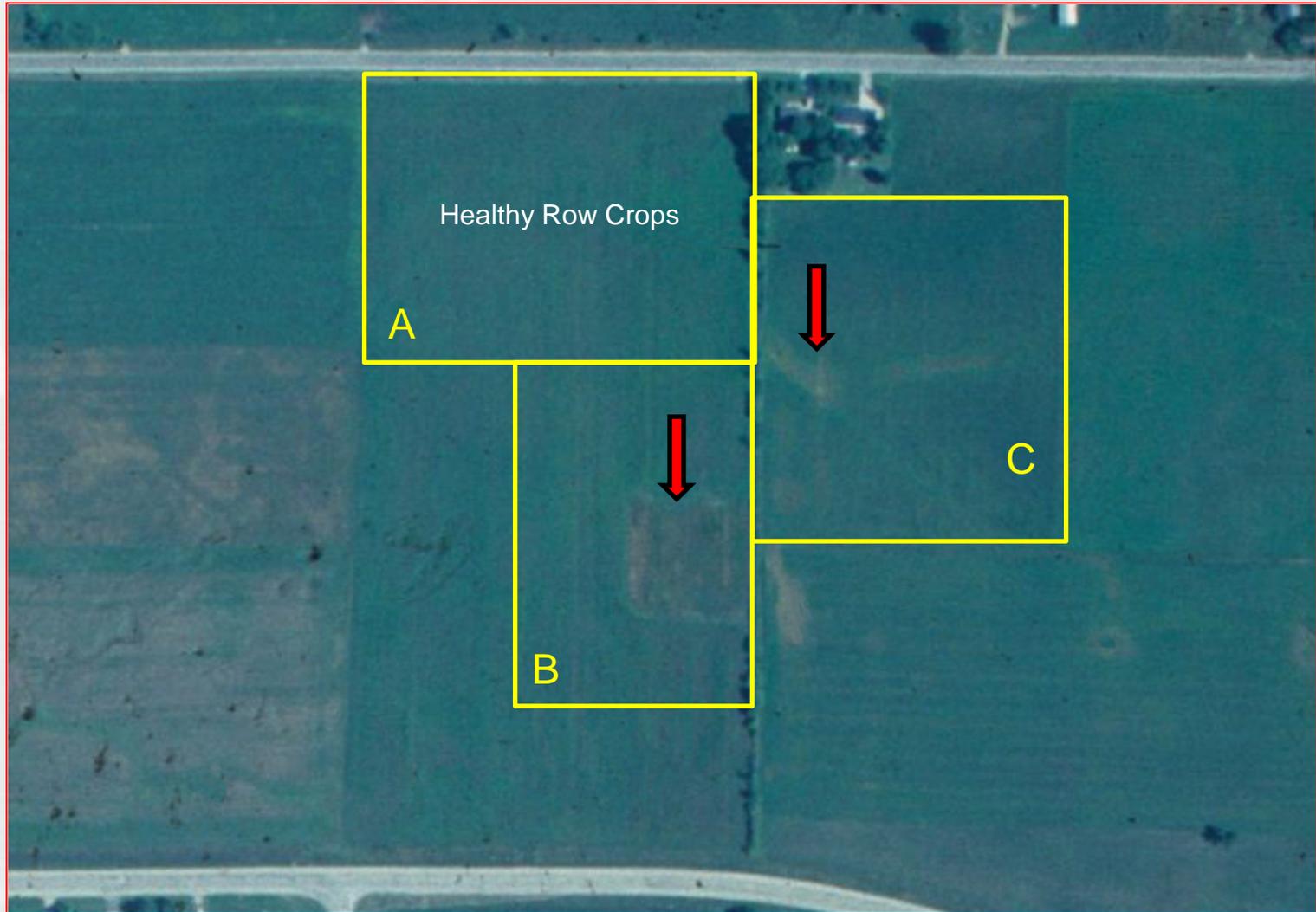
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1990 -- WETTER THAN NORMAL



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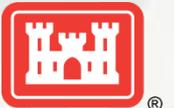
1991 -- DRIER THAN NORMAL



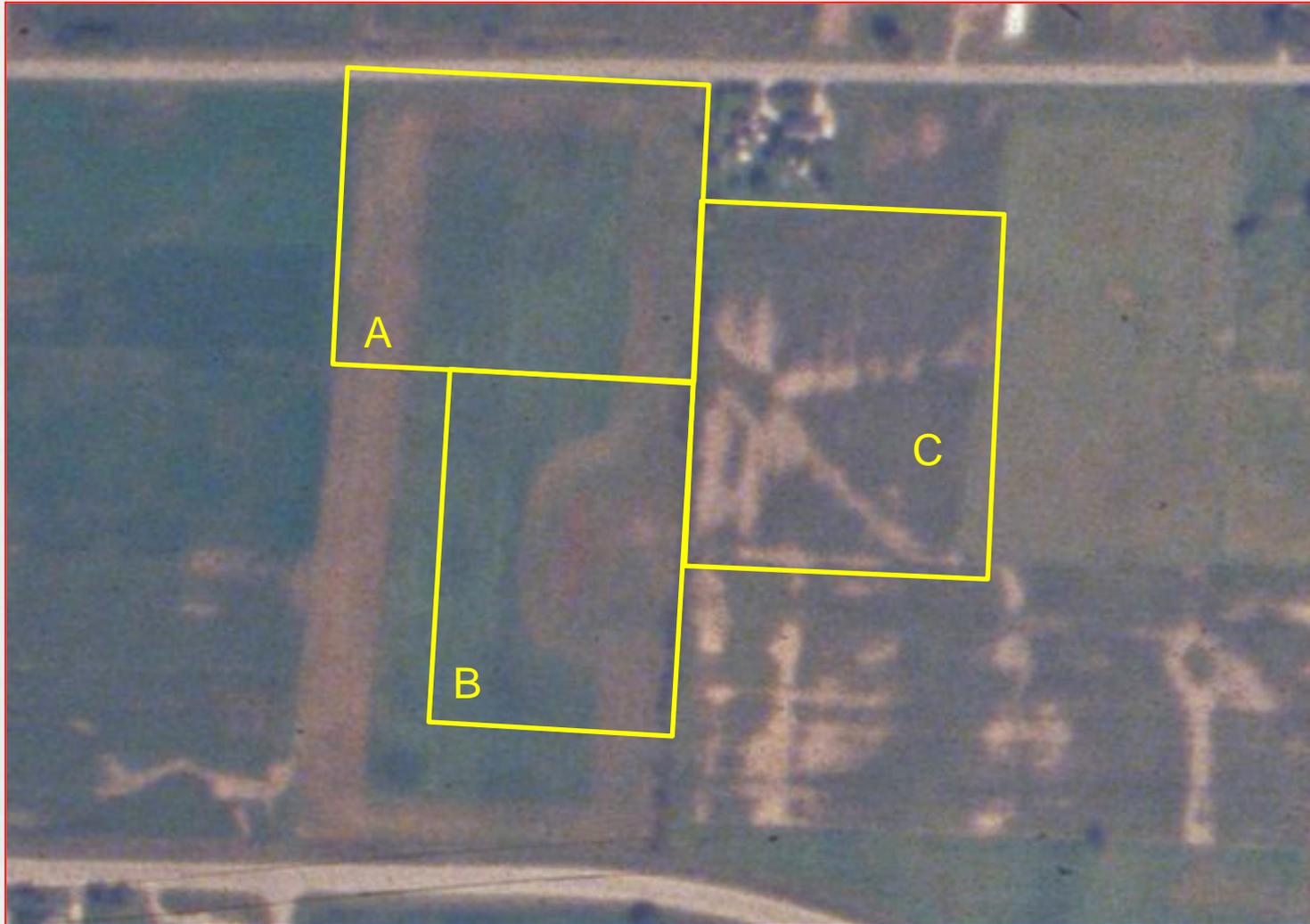
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1992 -- DRIER THAN NORMAL



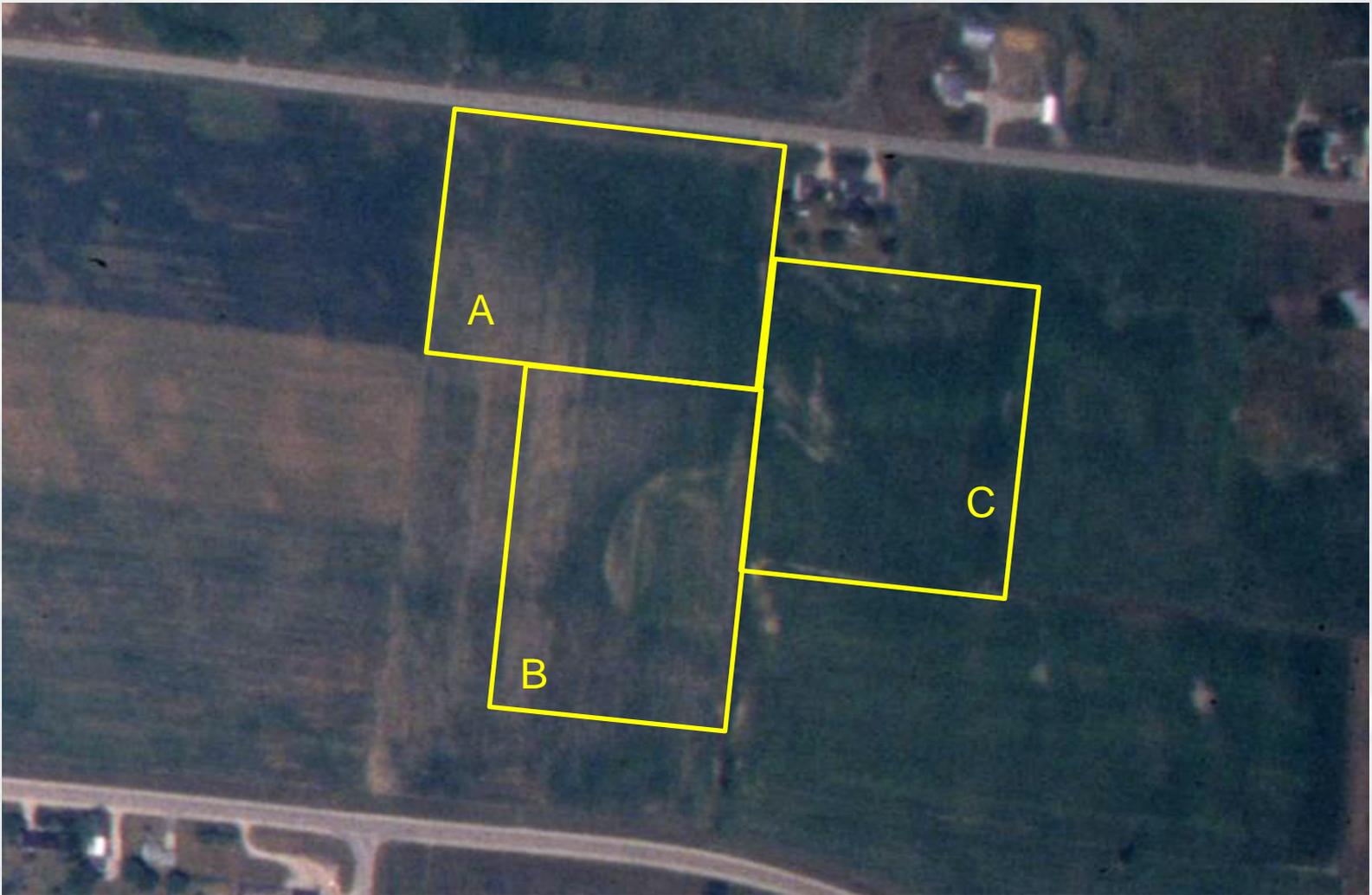
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1993 -- WETTER THAN NORMAL



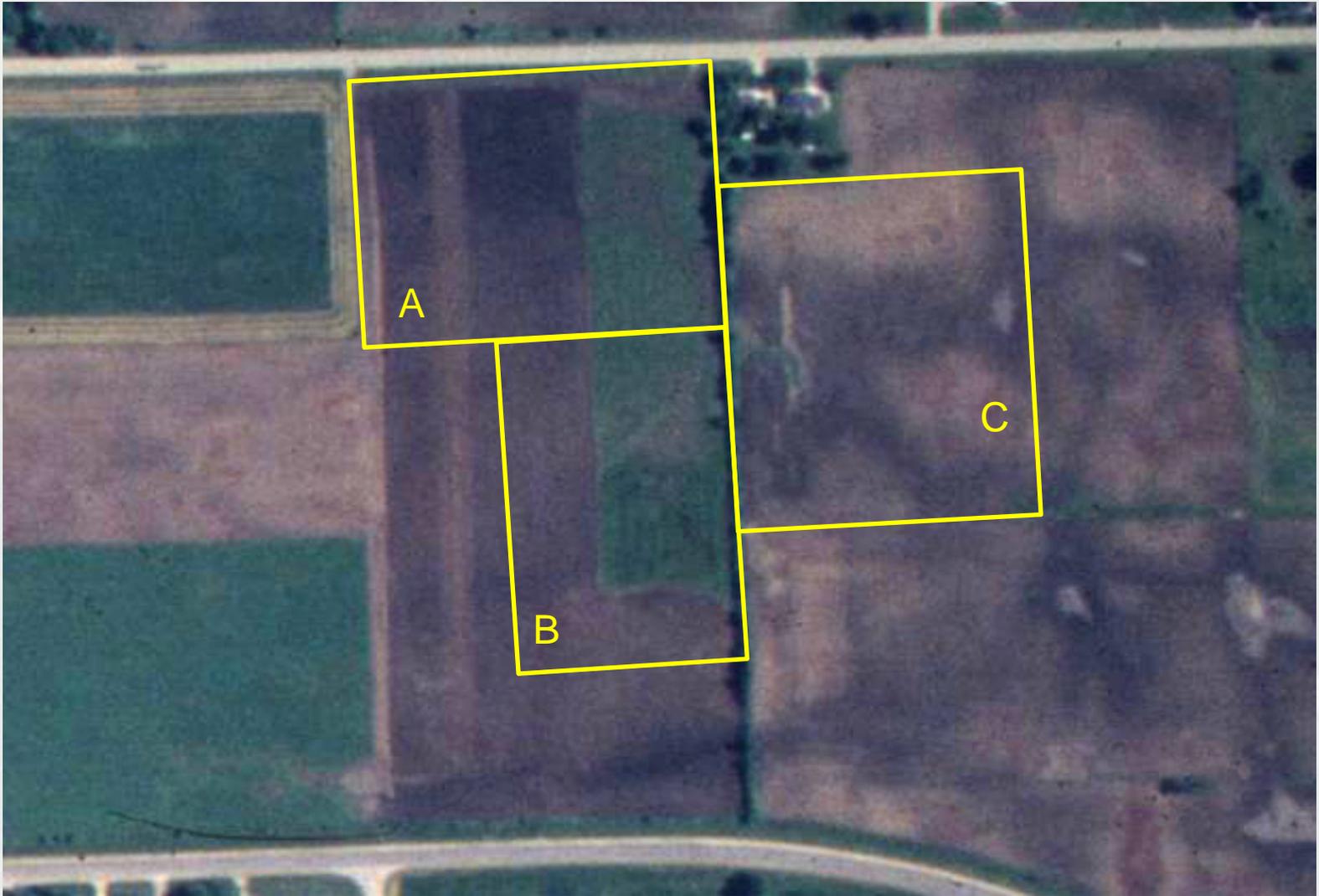
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1995 -- DRIER THAN NORMAL



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1996 -- NORMAL



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1997 -- NORMAL



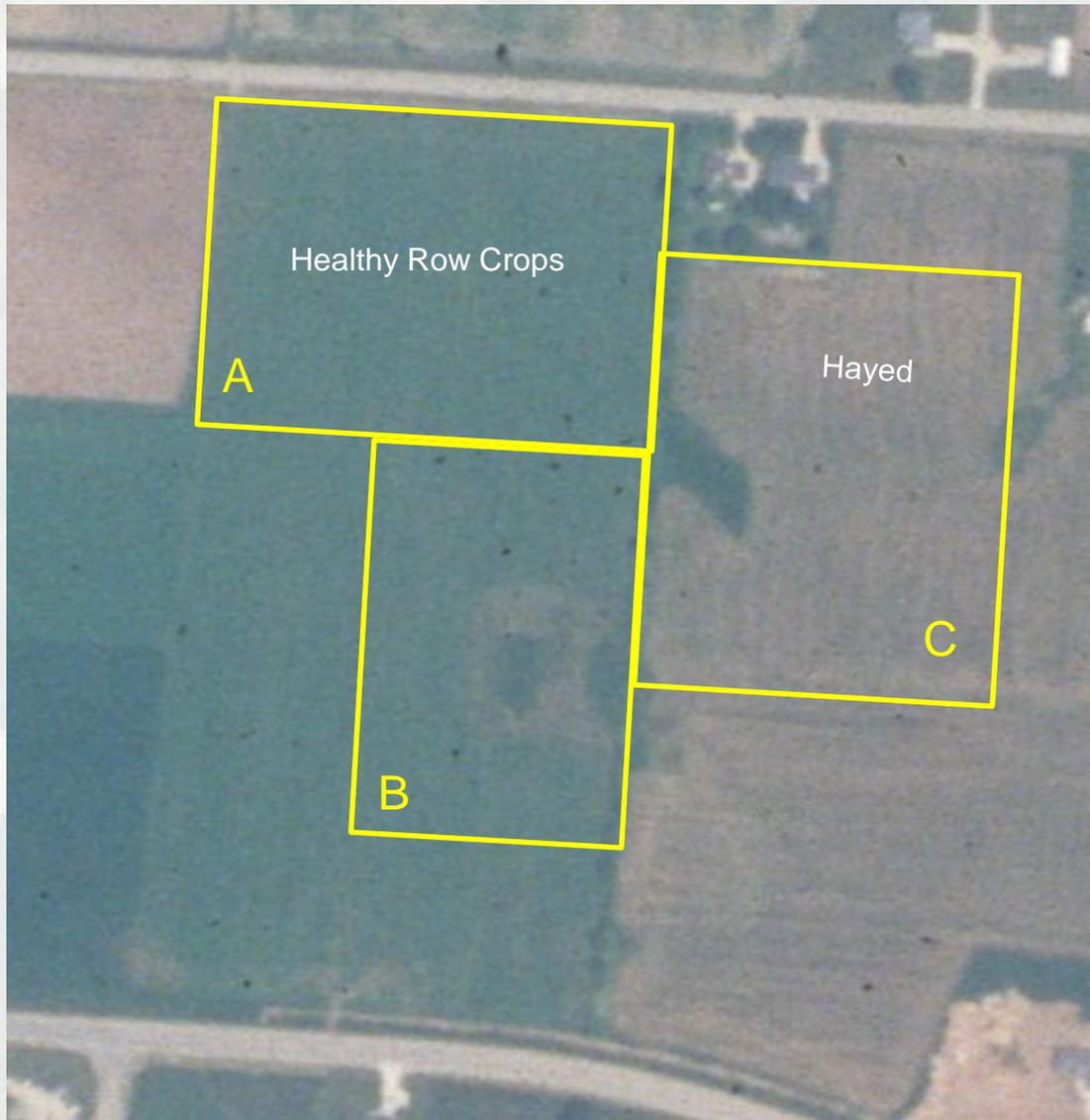
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1998 -- WETTER THAN NORMAL



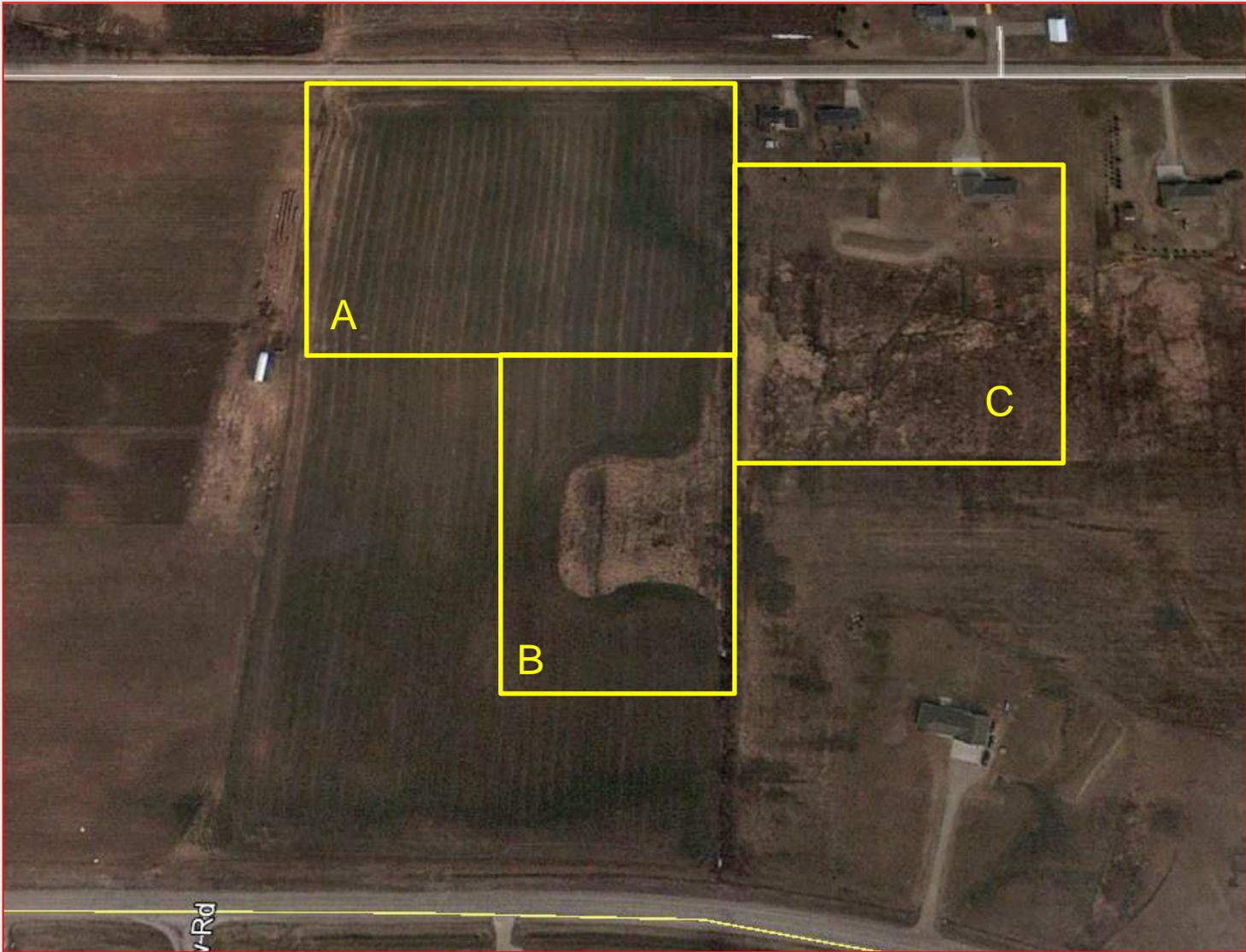
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1999 -- Normal



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2009 -- NORMAL



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Date Image Taken (M-D-Y)	Image Source	Climate Condition (wet, dry, normal) ⁱ	Image Interpretation(s)		
			Area: A	Area: B	Area: C
7-1982	FSA	N	Linear CS/DO	Patchy DO	Large DO
7-1983	“	N	NV	NC	NV (v. faint CS in “V”)
7-1984	“	W	NV	NC, SS	NSS
7-1985	“	N	NV	NC, SS	CS
7-1986	“	N	NV	NC, SS	DO, SS in “V”
7-1987	“	D	NV	NC	AP (in “V”)
7-1988	“	D	NSS	NSS	Inconclusive
7-1989	“	N	Linear CS	CS, DO	CS; DO in “V”
7-1990	“	W	Linear NC	AP or NC	CS; small DO in “V”
7-1991	“	D	NV	AP or NC	Small CS
7-1992	“	D	Linear CS, VV	CS; small DO	CS; VV in “V”
7-1993	“	W	AP	NC	Large DO
7-1995	“	D	NV	NV (hayed)	Small DO
7-1996	“	N	Inconclusive	AP or NC	SS; gray tone (ponded early)
7-1997	“	N	Linear SS	NC, SS, VV	SS
7-1998	“	W	NV	NC, VV	NV (hayed, small NC)
7-1999	“	N	NV	CS	NV (hayed, small NC)
7-2000	“	W			
7-2001	“	W			
7-2002	“	W			
7-2003	“	N			
7-2004	“	W			
7-2005	“	N			
7-2009	“	N	NV	NC	NC
Normal Climate Condition			Area: A	Area: B	Area: C
Number			9	9	9
Number with wet signatures			3	9	7
Percent with wet signatures			33%	100%	78%



Wetland Determination

- Wet signature(s) on $\geq 50\%$ of imagery from “normal” years = **WETLAND**
Area B – Poygan Map Unit and portion of Area C
- Wet signature(s) on 29%-49% of imagery from “normal” years = **Area A**
 - On WWI = No
 - Hydric Soil Map Unit = No



NON-WETLAND



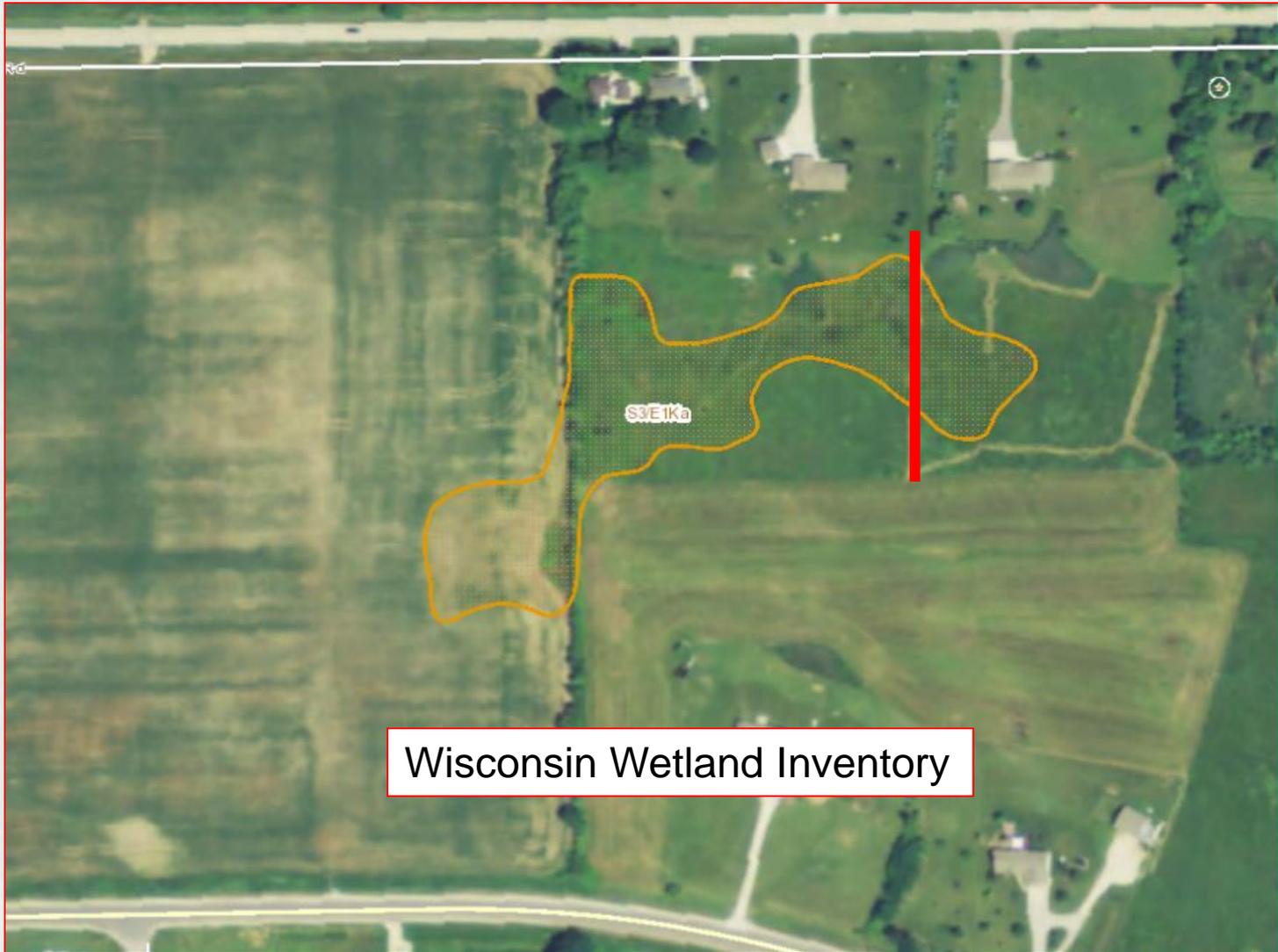
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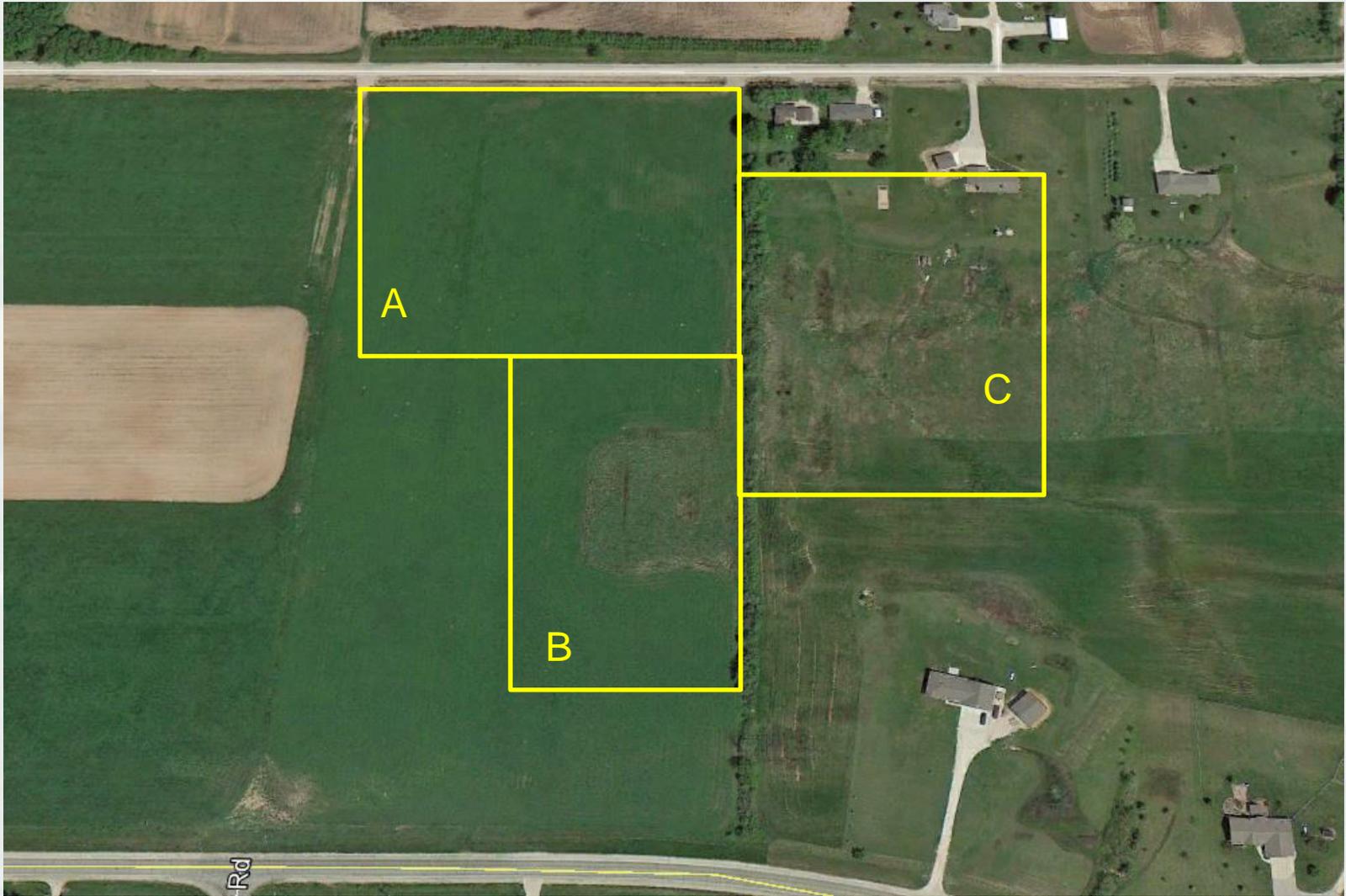
Wetland Determination



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May 31, 2011



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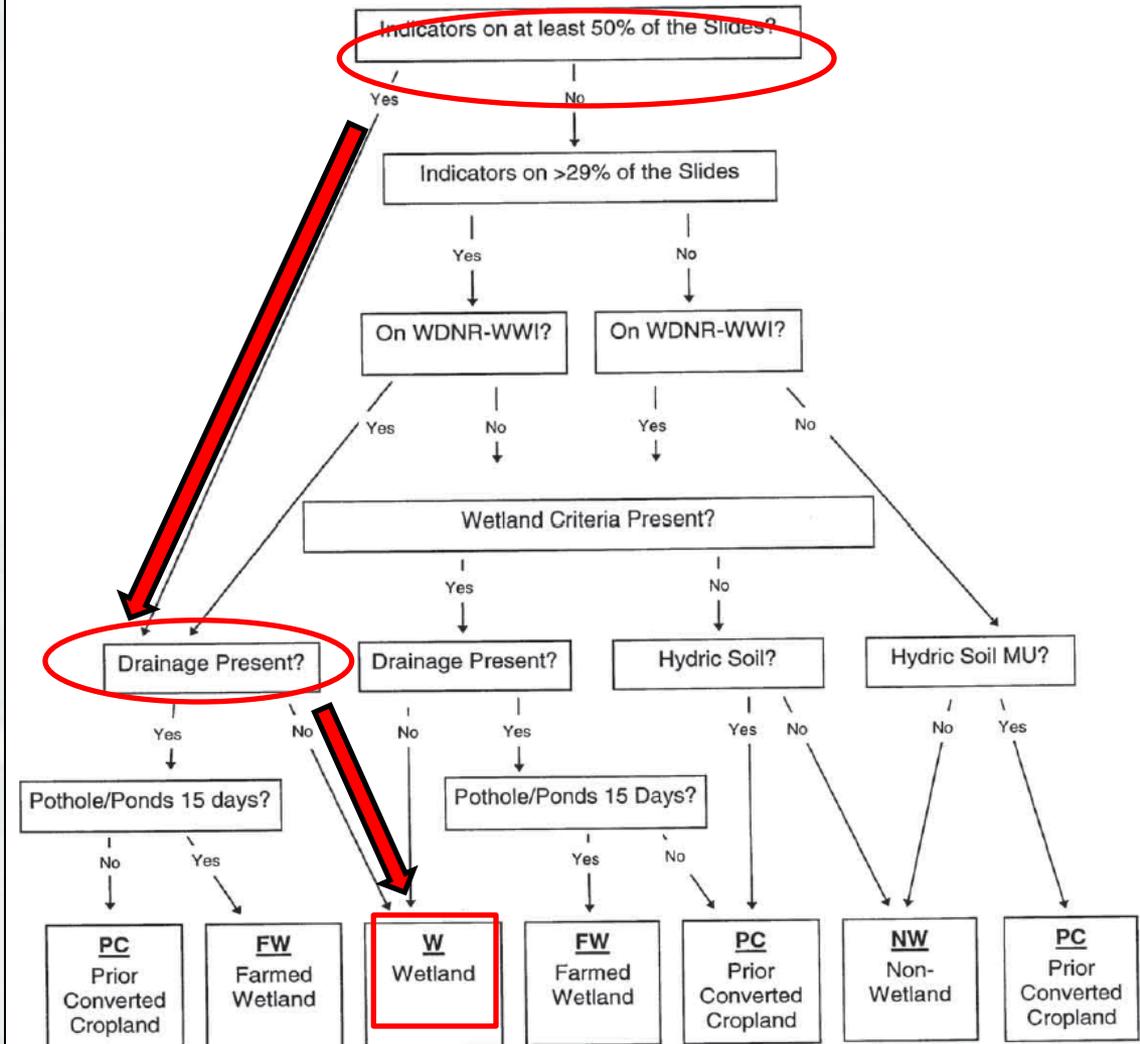


Sept 2005 DRIER THAN NORMAL



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FSA Wetland Determination on Cropland by Aerial Slide Review*



*On-site verification is required for final determination/delineation.

