

# ***40 Years of Counting***

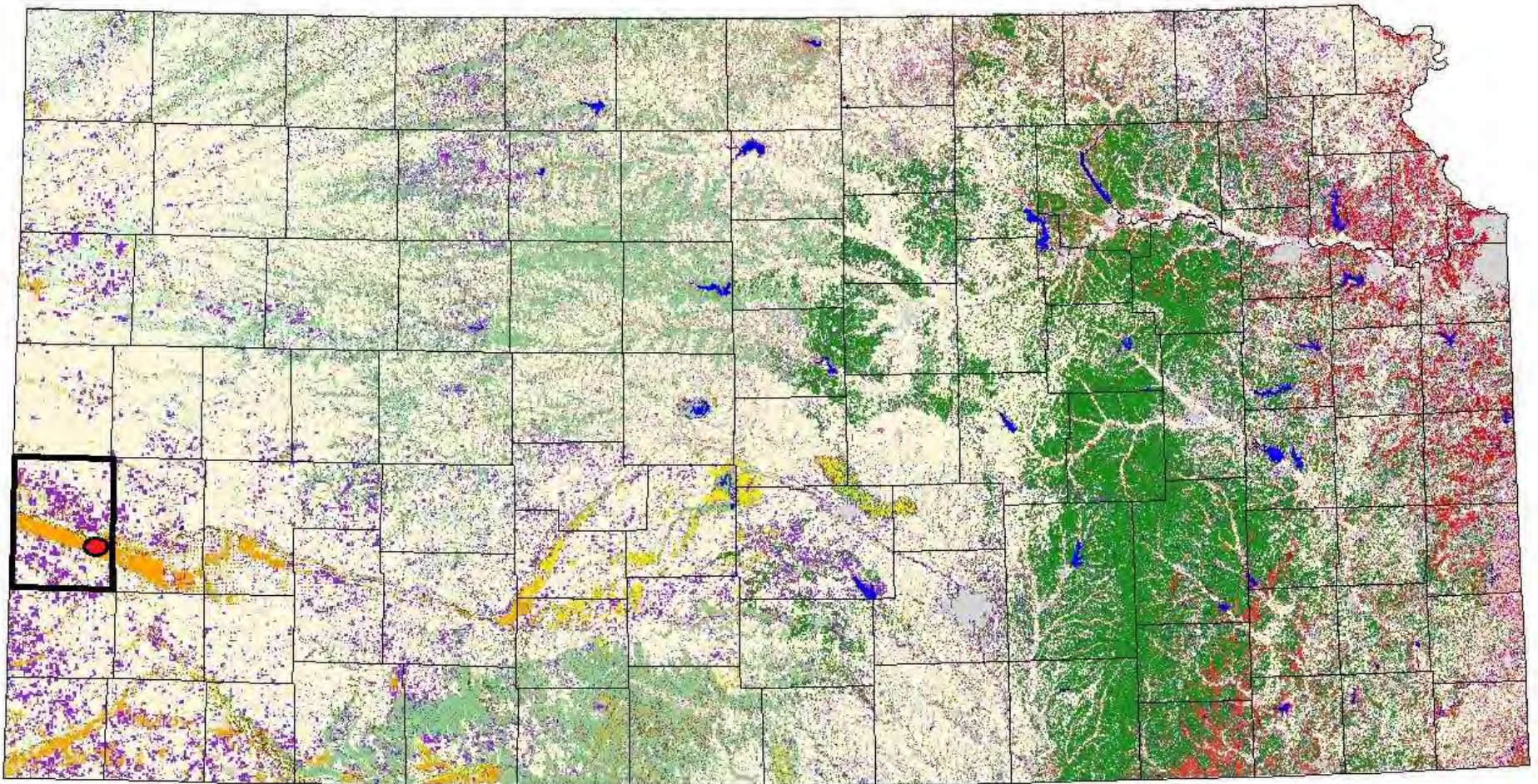
## ***Lesser Prairie-Chickens***

***Lek Surveys on a  
20 Square-Mile Tract  
in Hamilton County  
Kansas***

***Randy Rodgers***







## ***Hamilton County, KS Lesser Prairie-Chicken Survey Area***

***Mean Annual Precipitation = 17.5" Drought Year \*  $\leq 15"$  Wet Year \*  $\geq 20"$***



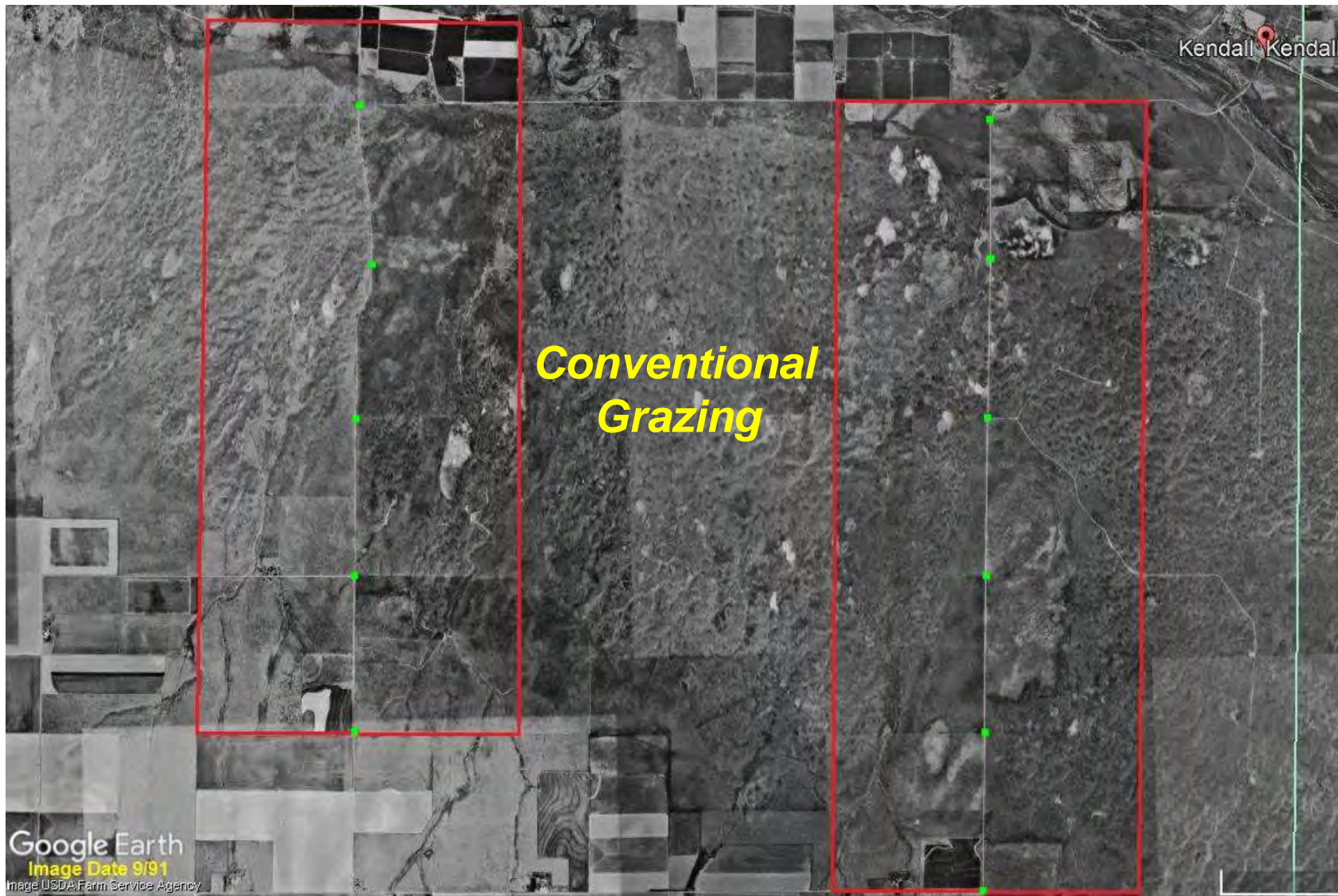
# Land Cover Composition of 15 Kansas Lesser Prairie Chicken Survey Areas

	Percent in Land Cover Type															
														SS	PR	TOTAL
GAP	20 mi <sup>2</sup> Survey Areas													BR	SH	Survey
Land Cover Type	BA	CK	CM	FI	FO	GO	HM	HG	KE	KW	ME	MT	NS	5 m <sup>2</sup>	14 m <sup>2</sup>	Areas
Sandsage Shrubland	6	16		31			73	<1	24	<1	30	80		93	1	20
Sand Prairie		3								13	<1			2	54	4
Western Wheatgrass Prairie		8			6	1		3			2		19			3
Mixed Prairie	69	23	69	26	26	26		6		45	17		24		18	23
Mixed Prairie - Disturbed	<1						12		2			<1		1	2	3
Shortgrass Prairie		10		1		17	2	51			21	15	15	<1		9
Conservation Reserve	<1	12	1	1	21	36	2	5	3	7	16	2	5		4	8
Cropland	8	17	11	36	45	19	5	29	65	32	7	1	35	<1	15	23
Other	16	11	19	5	2	1	6	5	6	3	6	2	2	3	6	7
2001-05 Mean No. LPC / mi <sup>2</sup>	0.9	9.0	2.7	2.5	4.7	9.1	9.6	8.2	1.4	3.4	8.3	5.7	NA	0.9	0.0	

# ***Survey Methods***

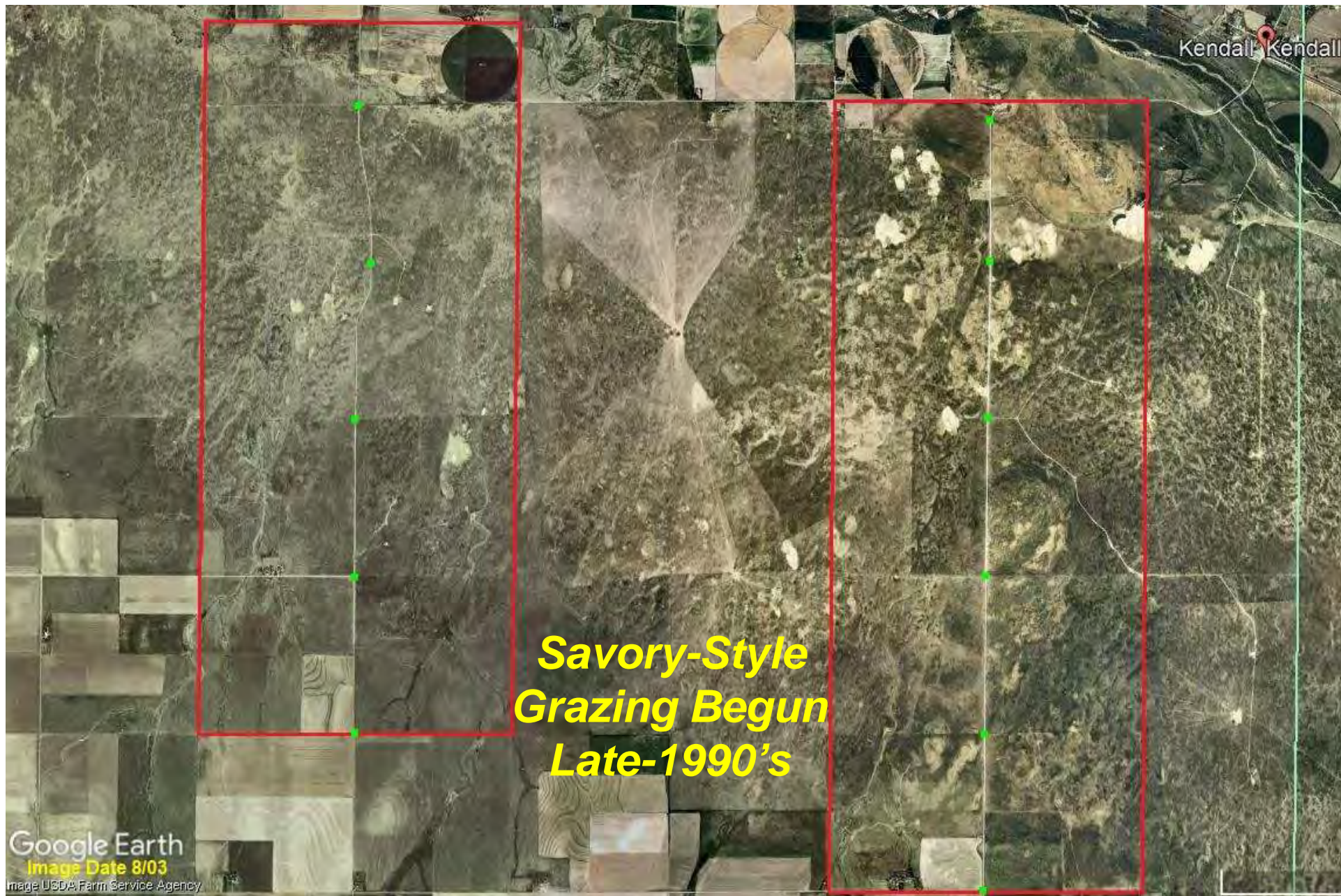
- Survey Occurs from March 20 –April 20***
- Listening Runs (2) Began 40 Minutes Before Sunrise***
- Stations: 1 Mile Apart Along Two 5-Mile Road Segments***
- Leks Within 1 Mile of Road were Located & Flushed on Foot No Later Than 90 Minutes After Sunrise***
- 2 Flush Counts Per Lek Were Typical . . . Sometimes 1 . . . with the Higher Count Used***
- Leks were Defined as Having  $\geq 3$  Displaying Males***





**Image Date: September 1991**





**Image Date: August 2003**

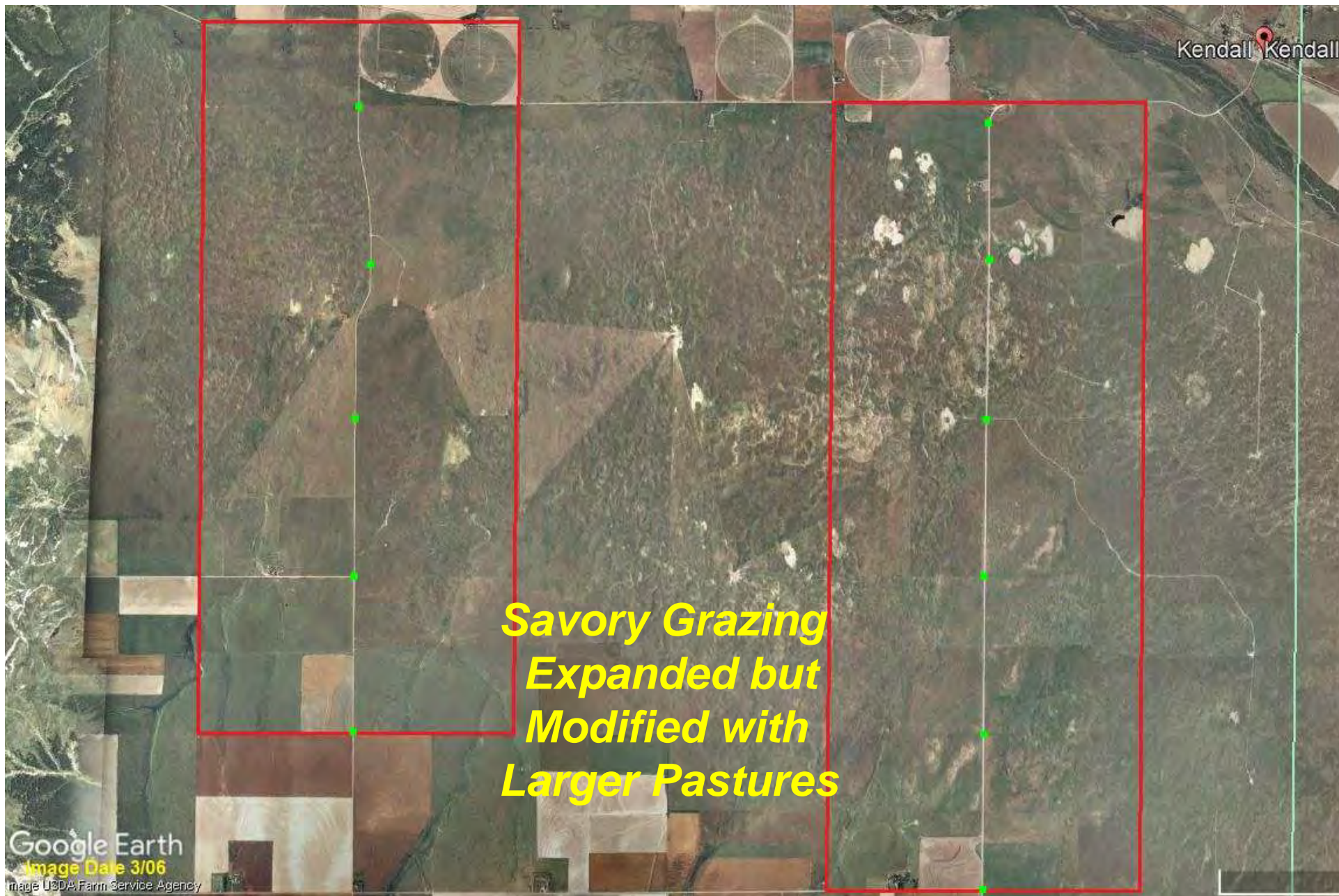






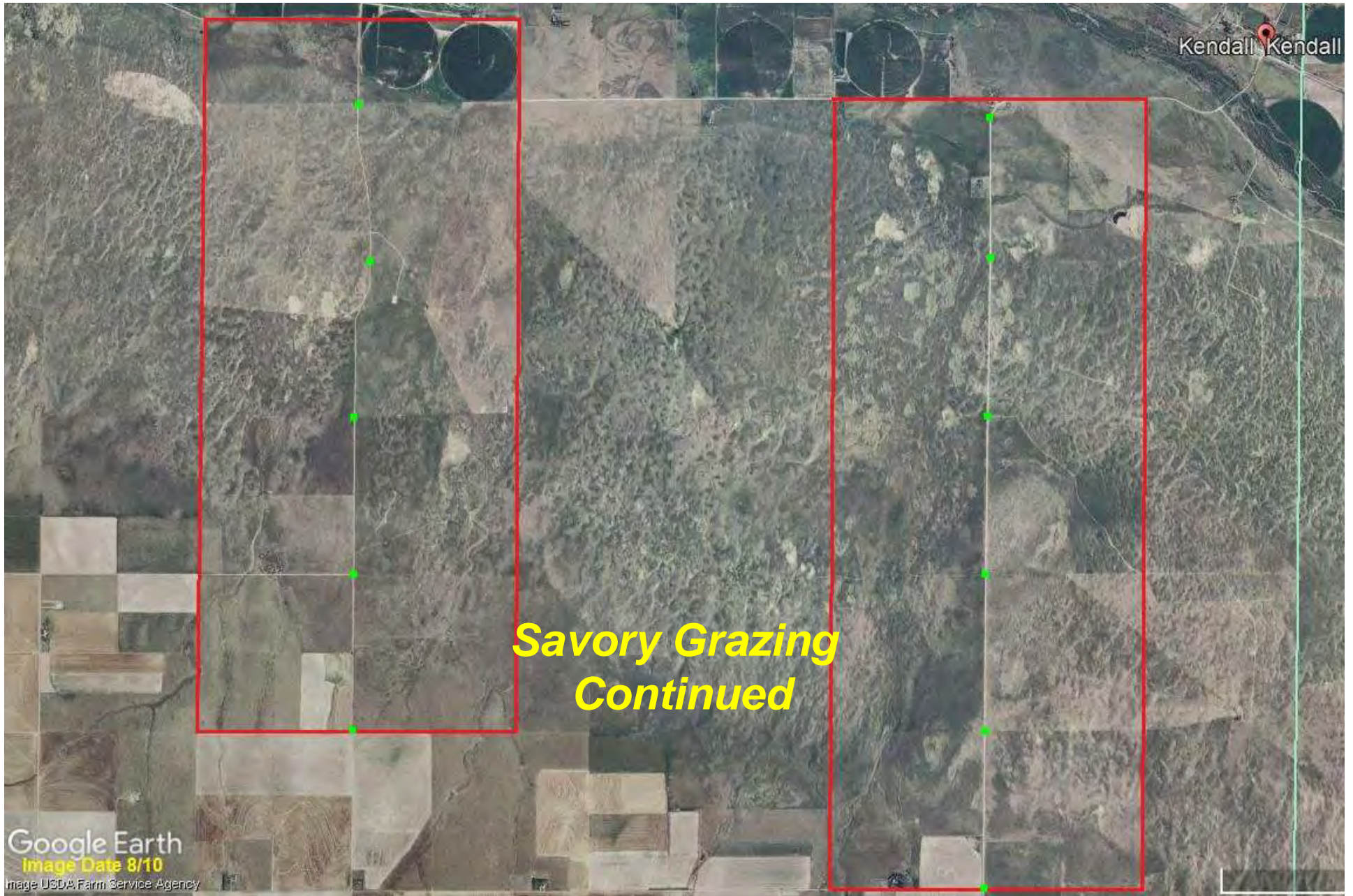






**Image Date: March 2006**





**Image Date: August 2010**





**Image Date: March 2014**



***Vegetation Conditions Have Been Highly Variable  
on These Deep Sandy Soils***

**Average Conditions: Sand Sagebrush, Sand Dropseed, Yucca**





**Above Average Conditions**





**Drought Conditions**



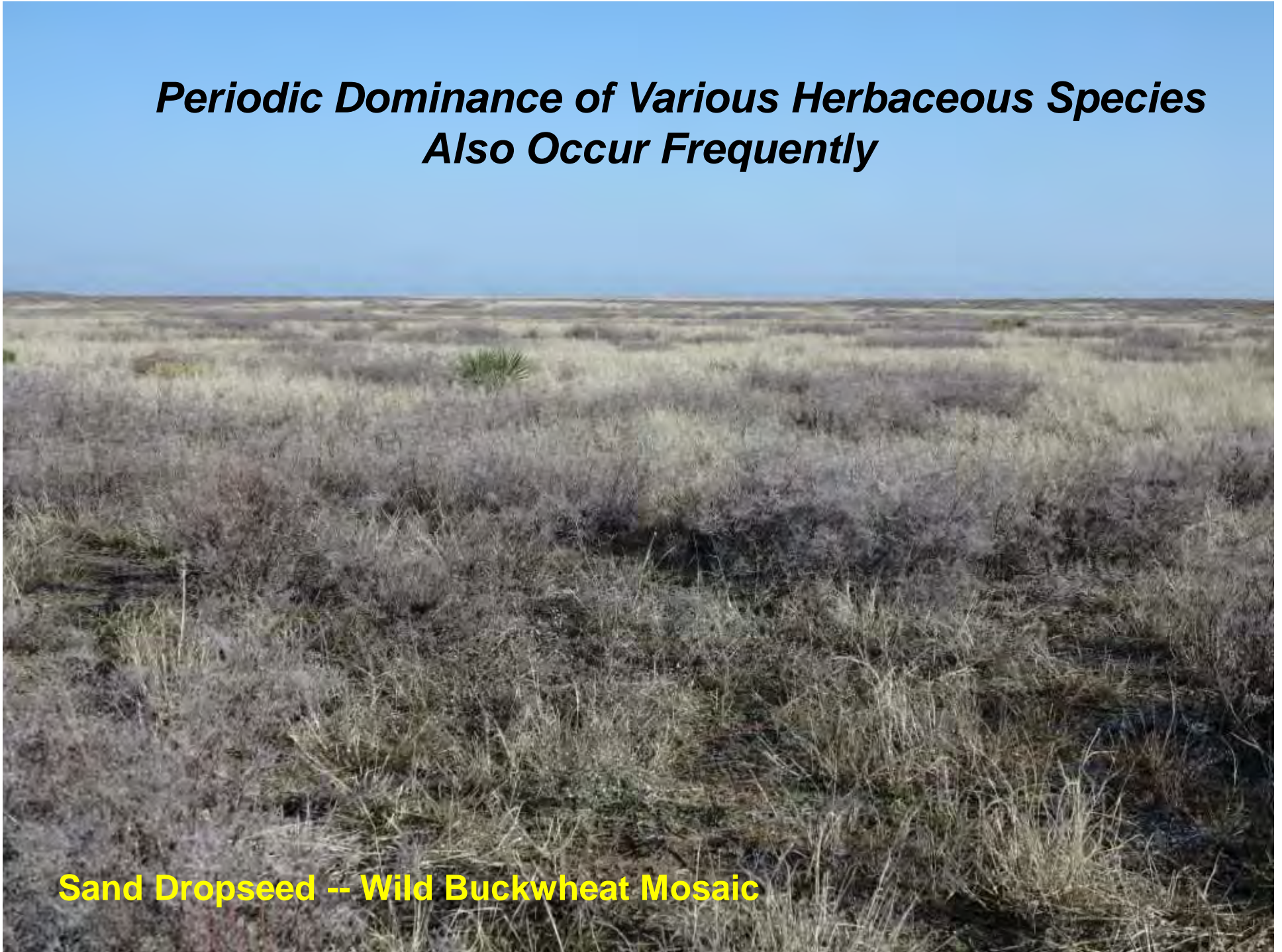


**After Heavy Grazing**



***Periodic Dominance of Various Herbaceous Species  
Also Occur Frequently***

**Sand Dropseed -- Wild Buckwheat Mosaic**







**Wild Buckwheat**





**Prairie Annual Sunflower**





**Sand Bluestem**

**Sand Dropseed**

**After Rest & Rain**





**Sand Bluestem**

**Switchgrass**

**After Rest & Rain**

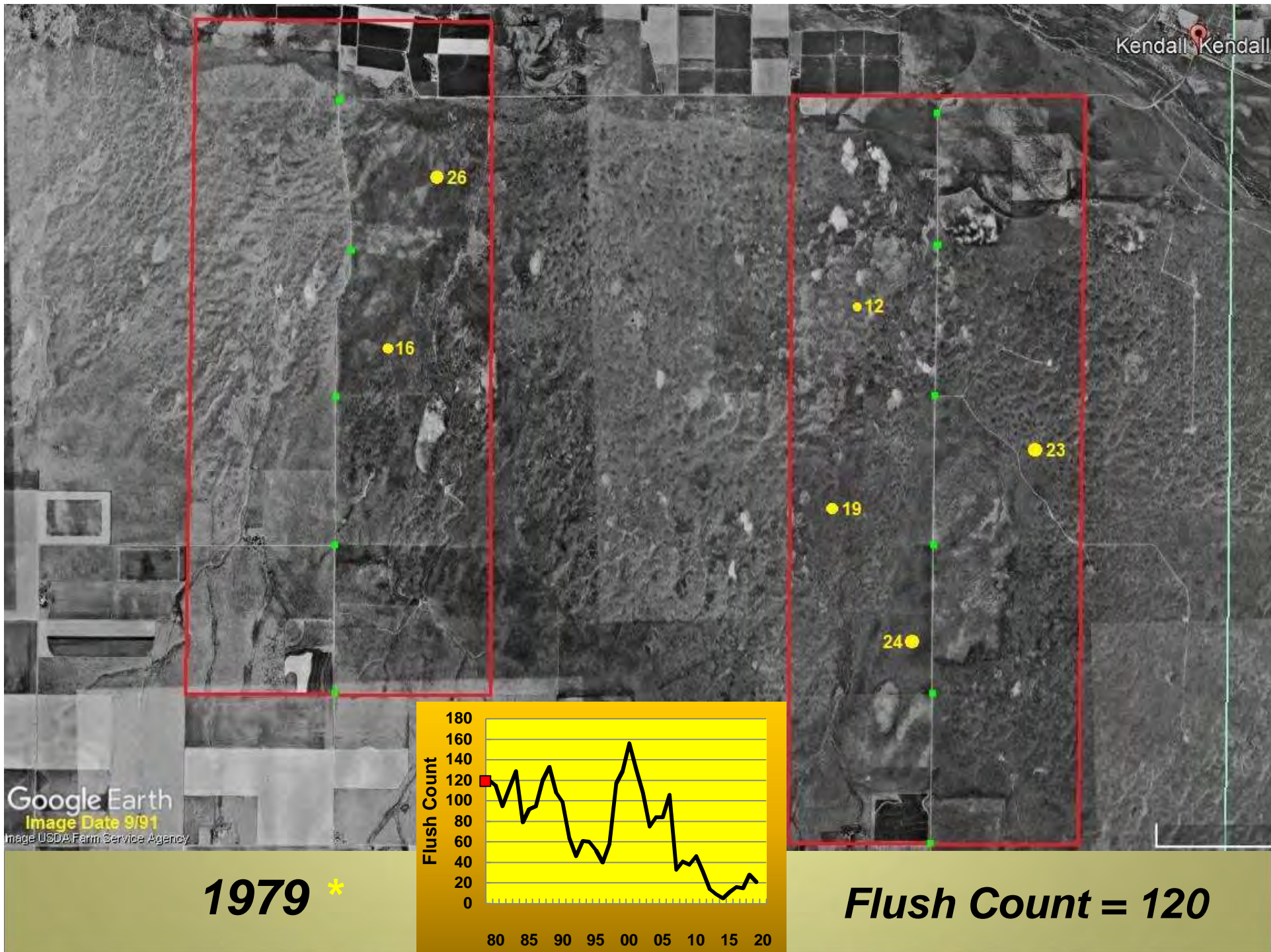
**Sand Dropseed**



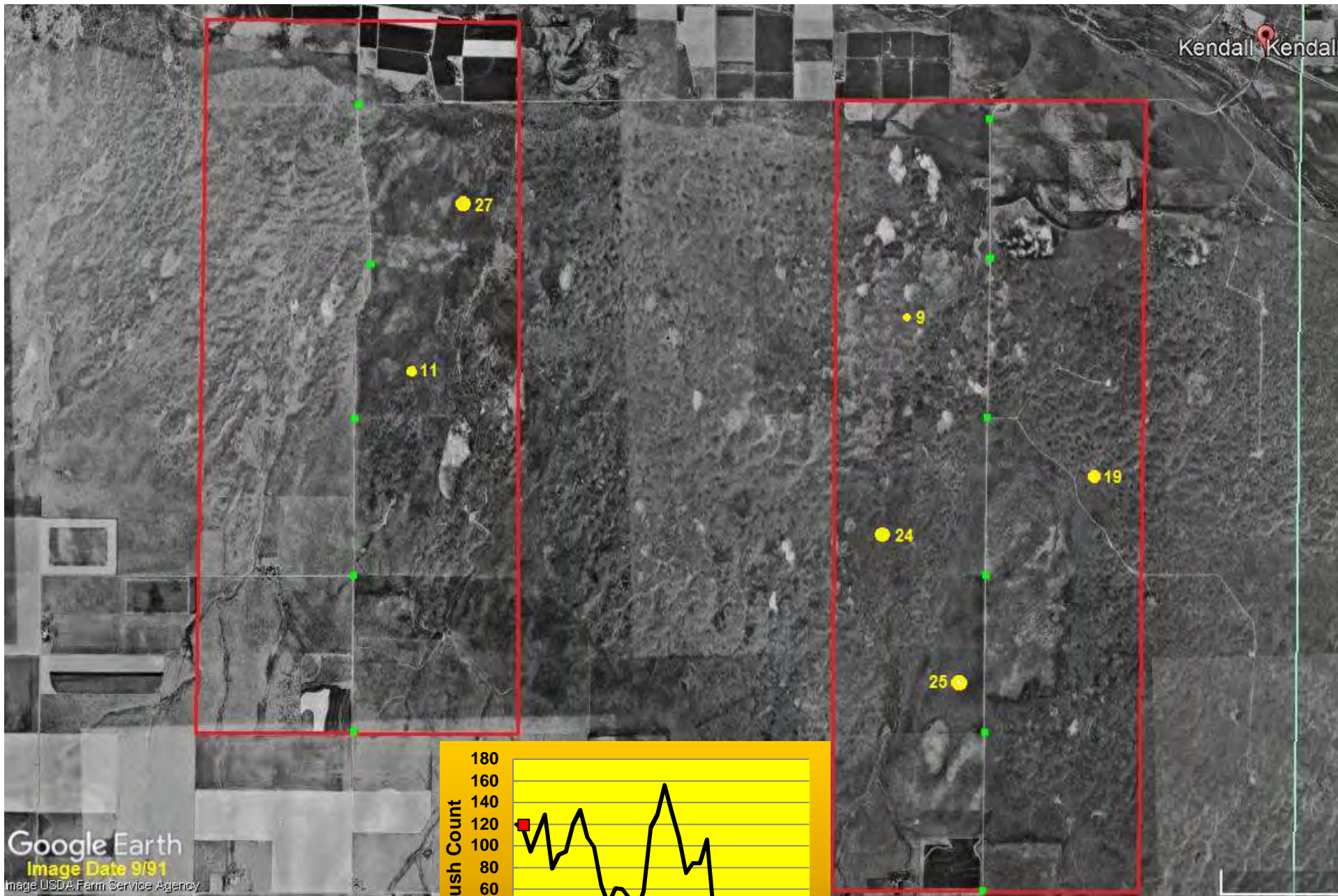


***Hamilton County, KS Lesser Prairie-Chicken Survey Trend***

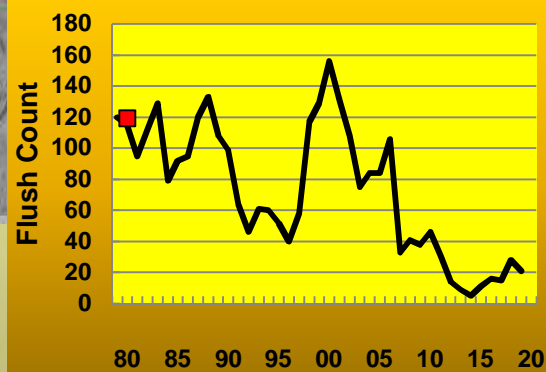






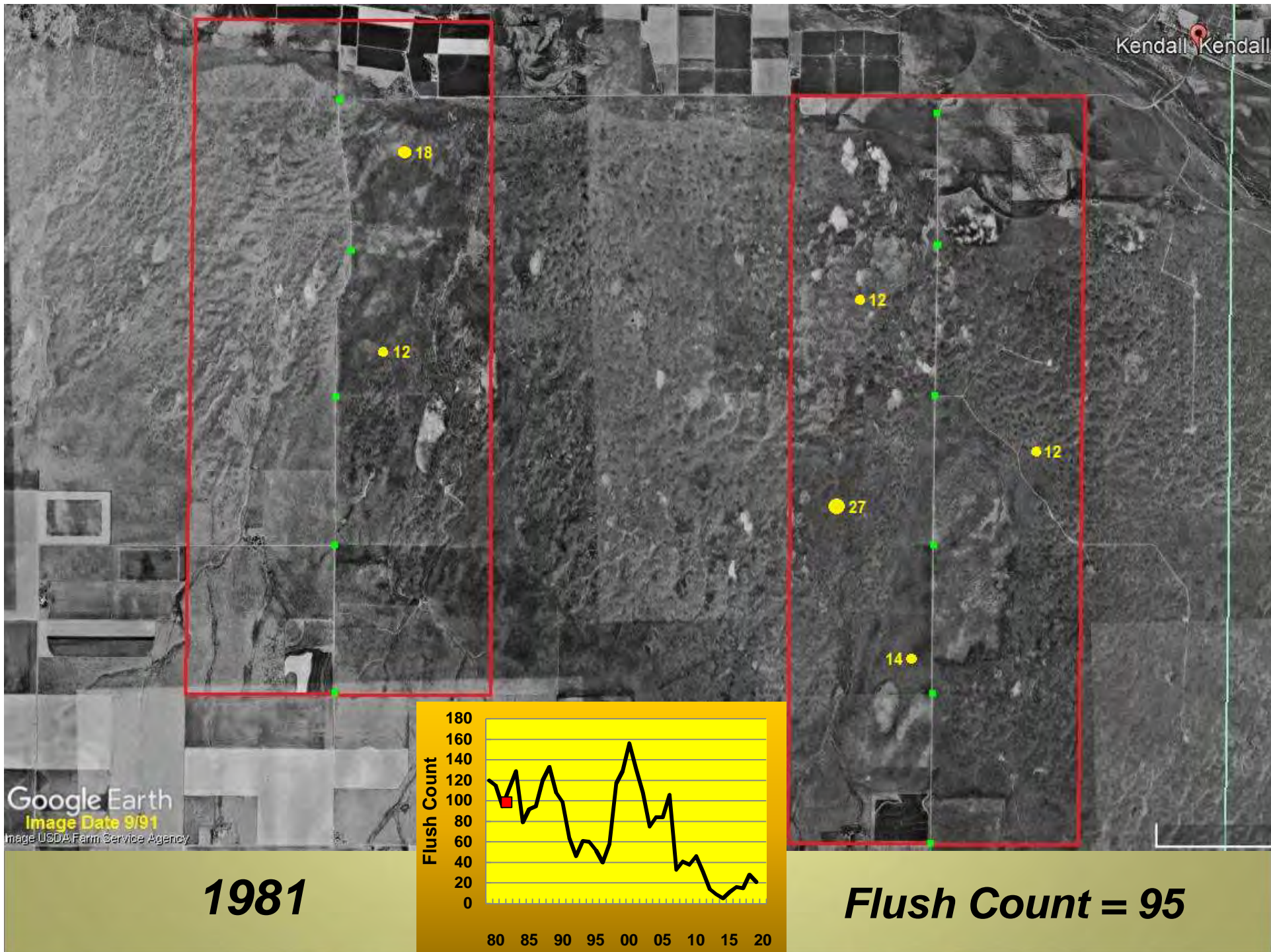


**1980 \***

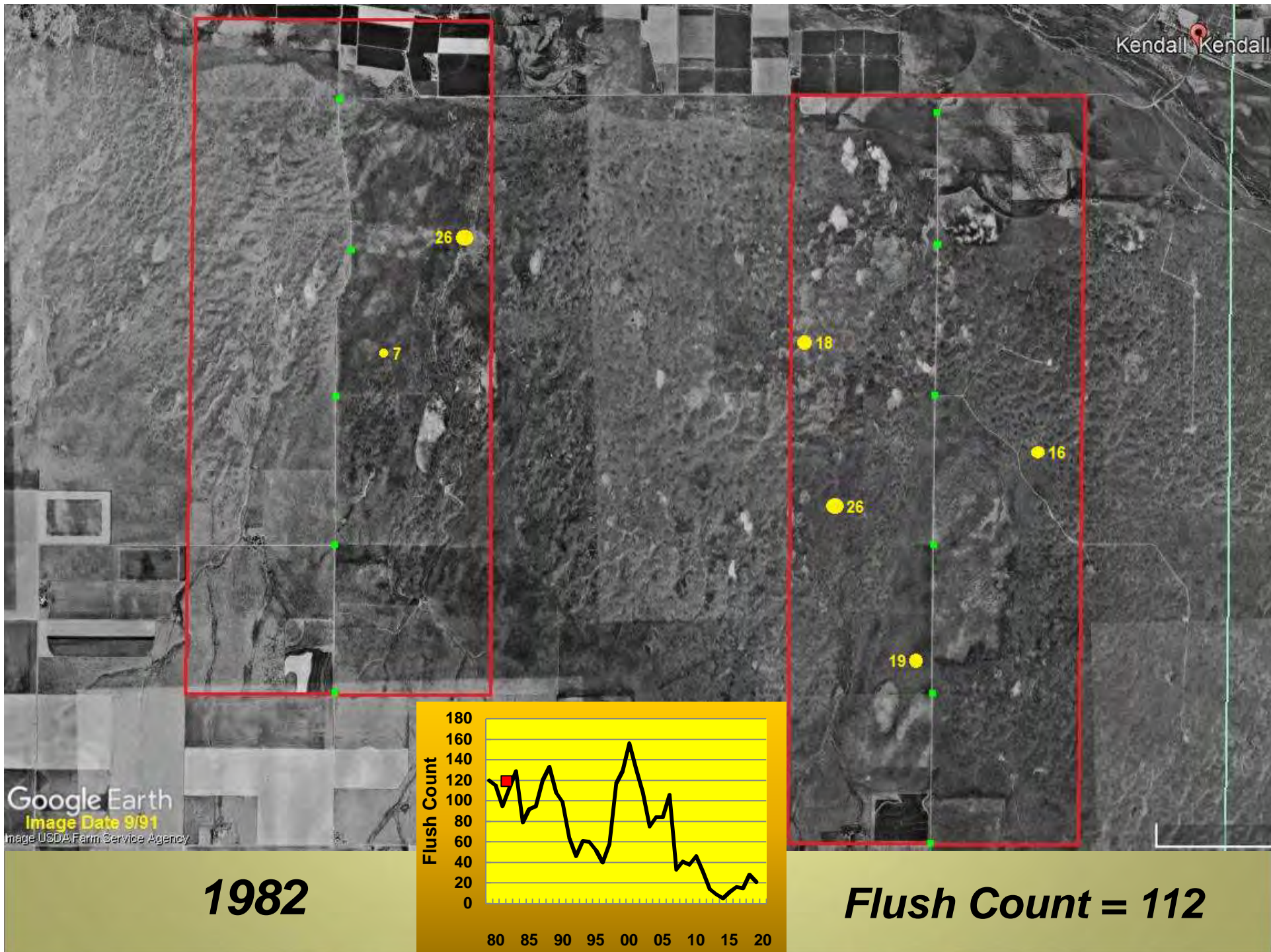


***Flush Count = 115***

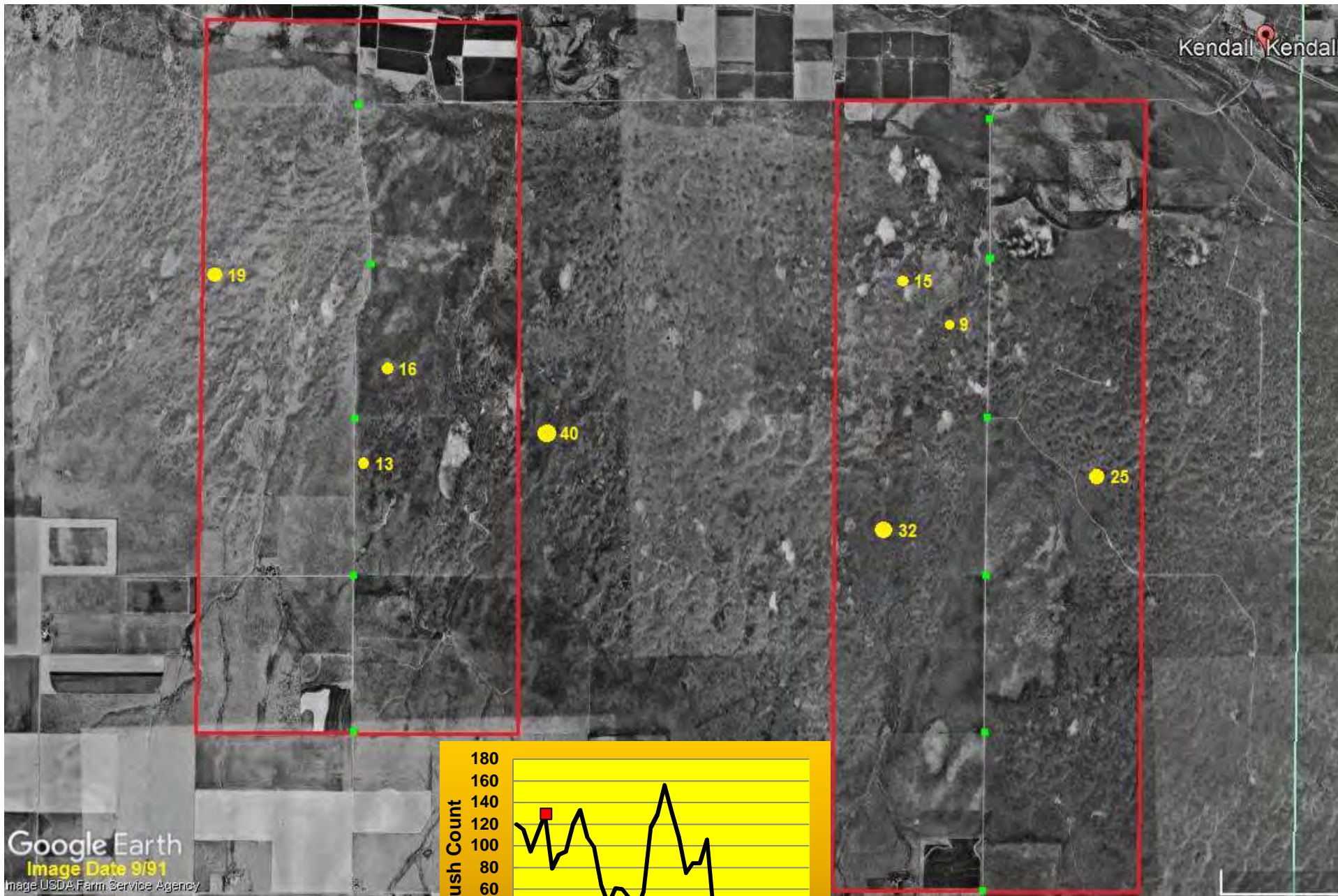




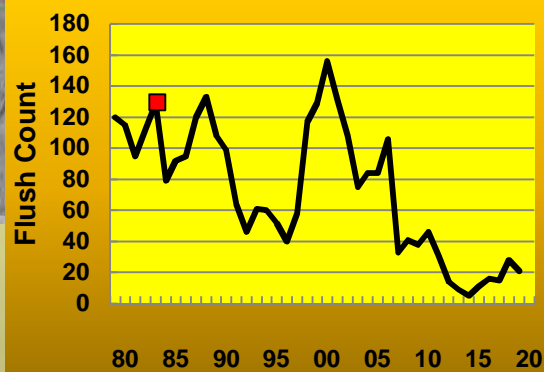






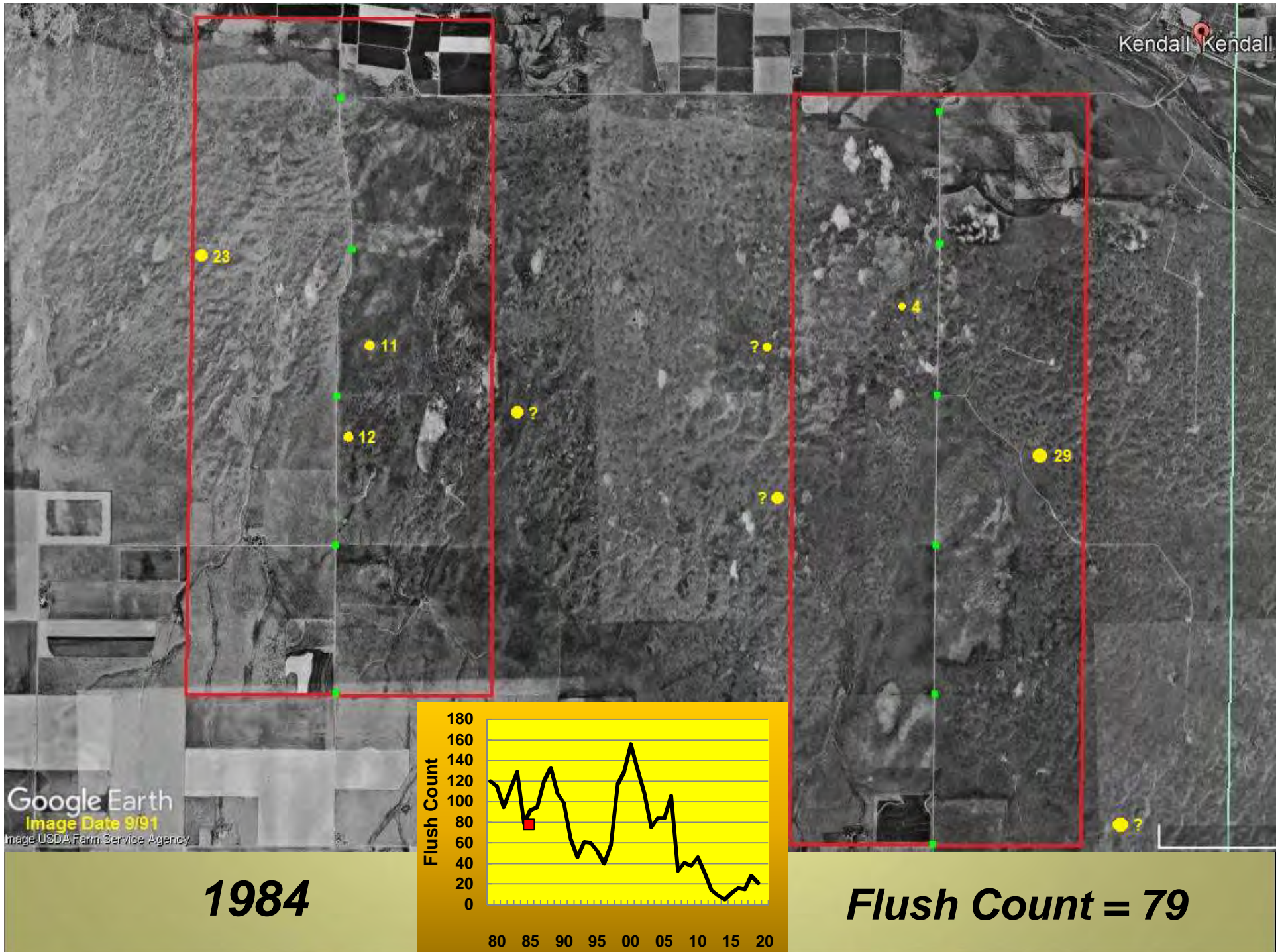


1983 \*

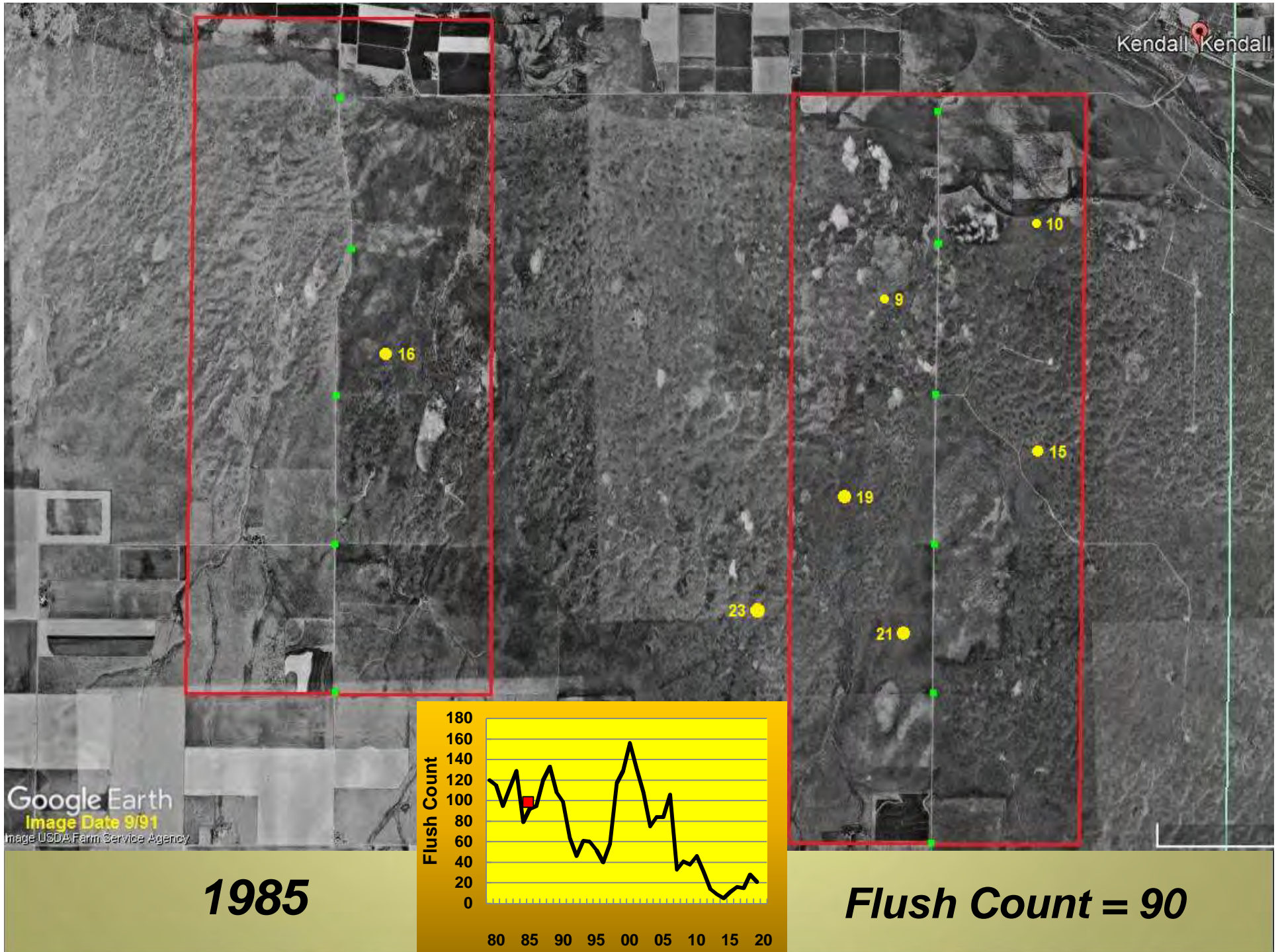


*Flush Count = 129*

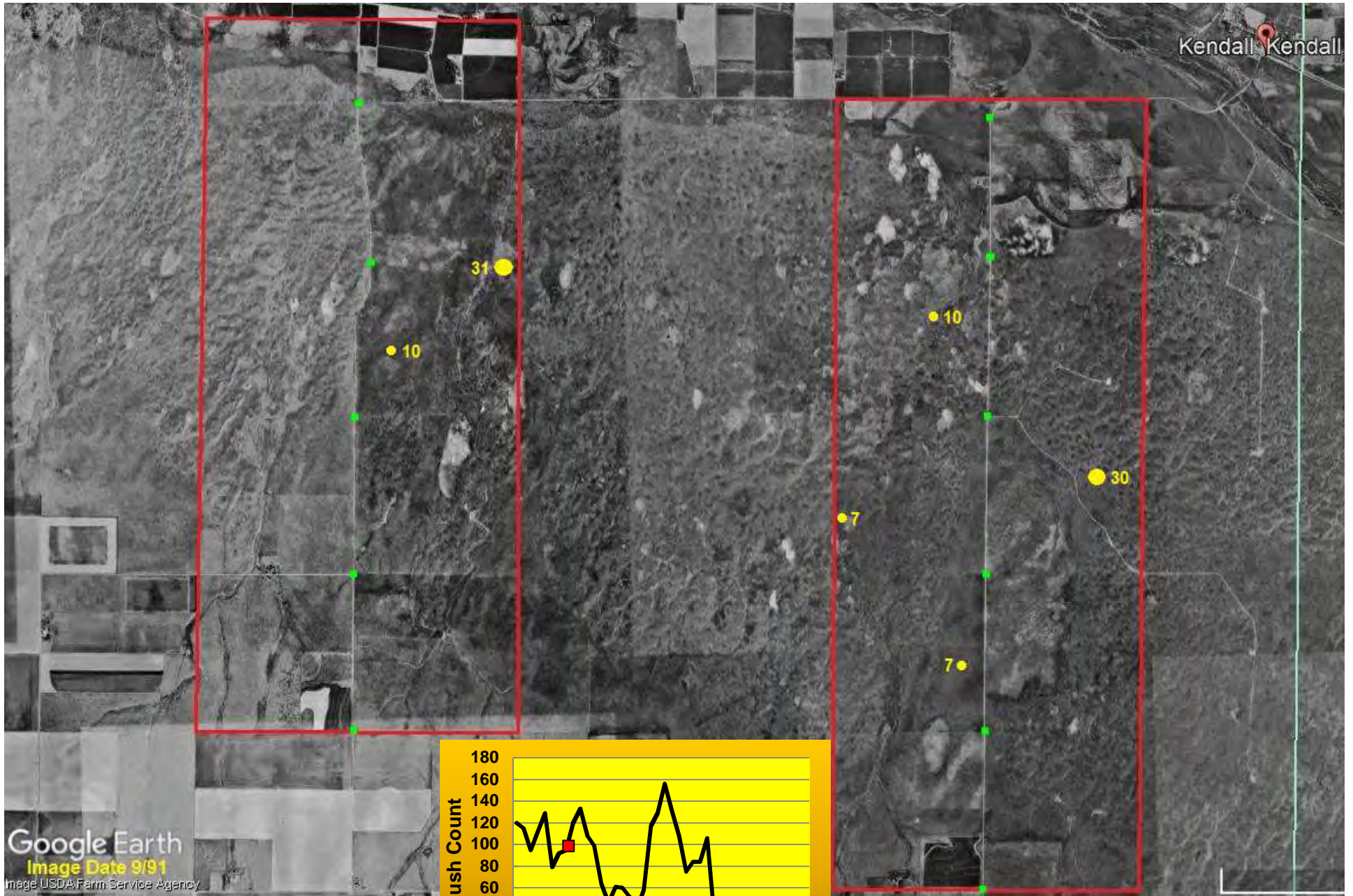




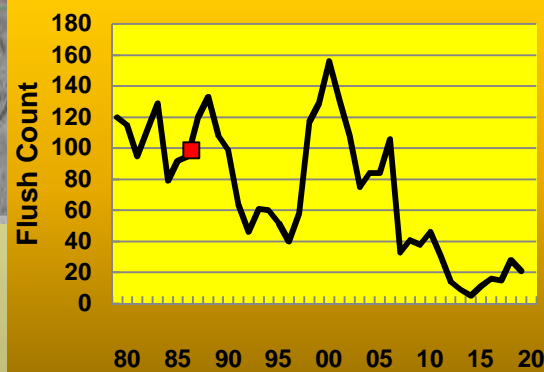






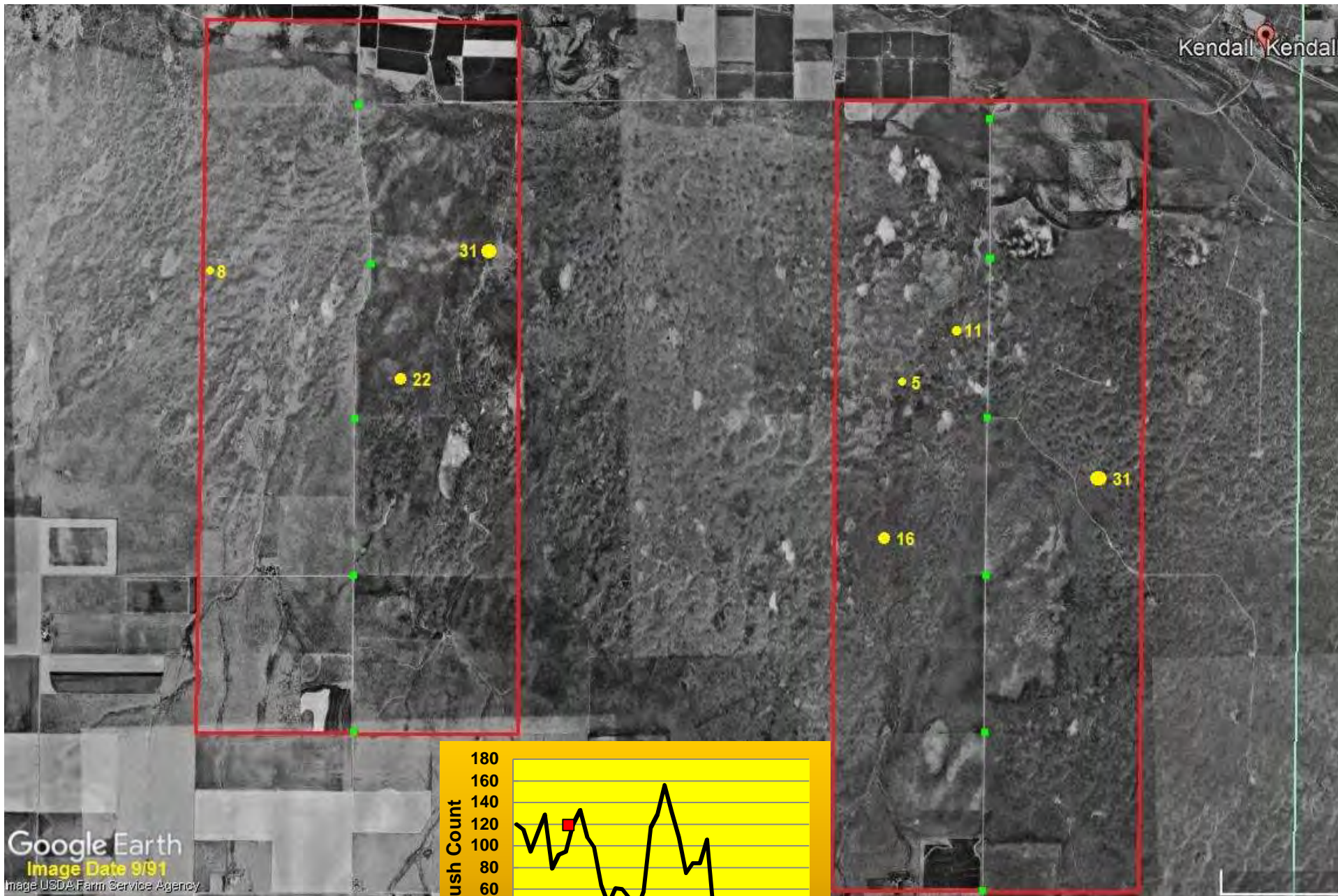


**1986**

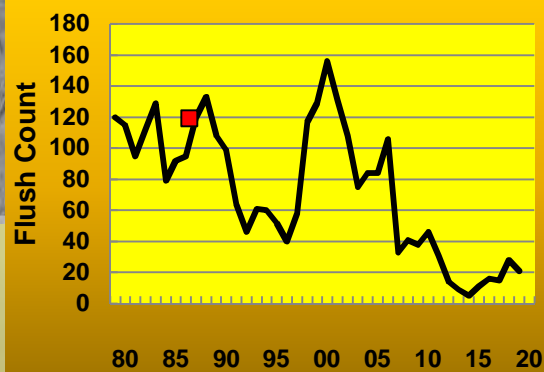


***Flush Count = 95***



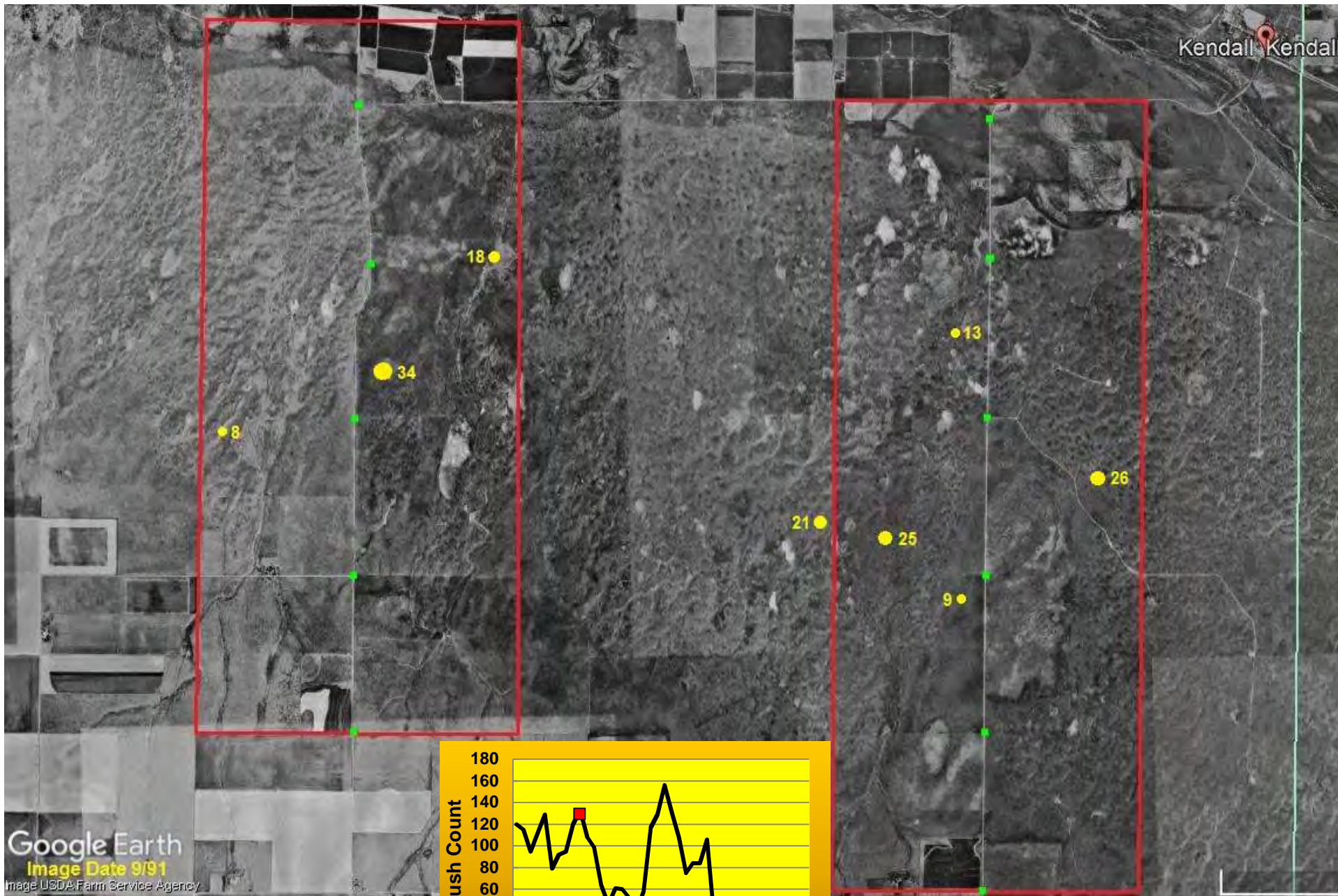


**1987**

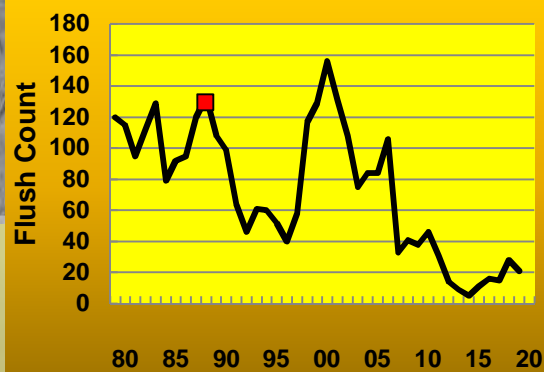


***Flush Count = 119***



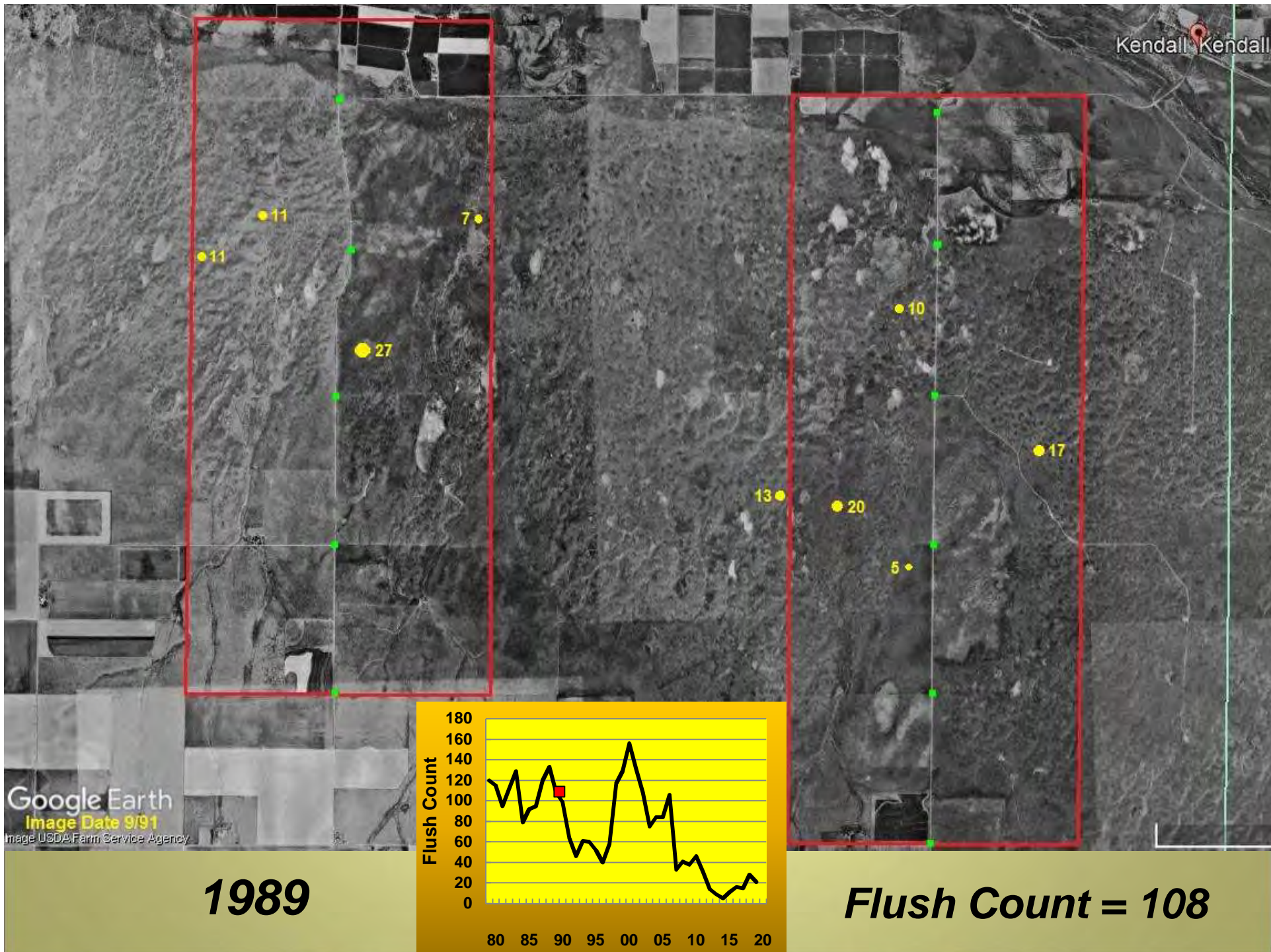


**1988**

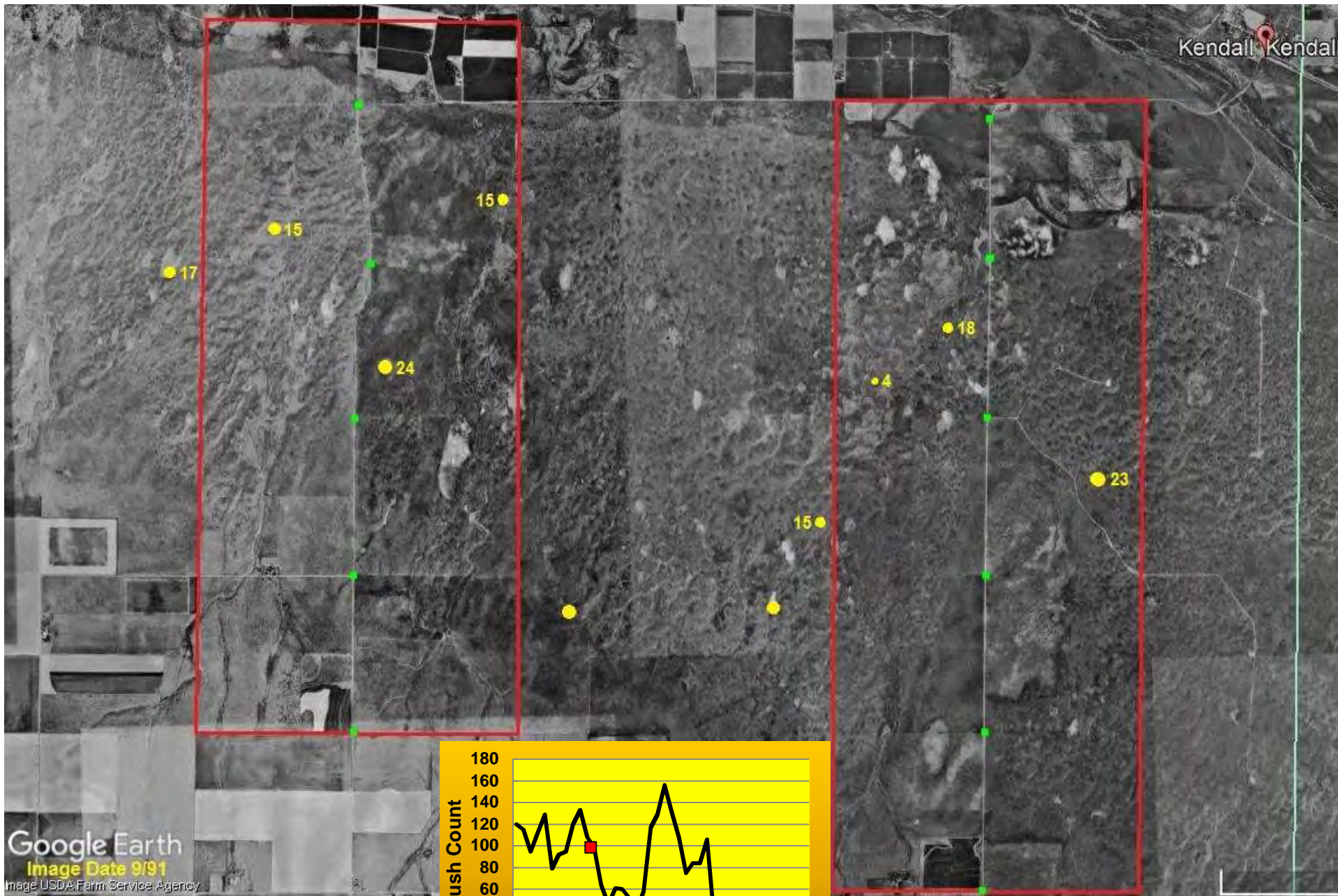


***Flush Count = 133***

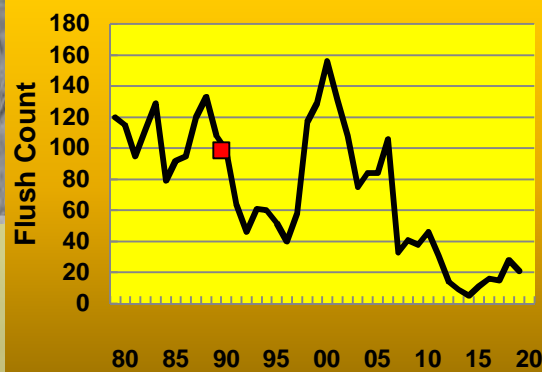






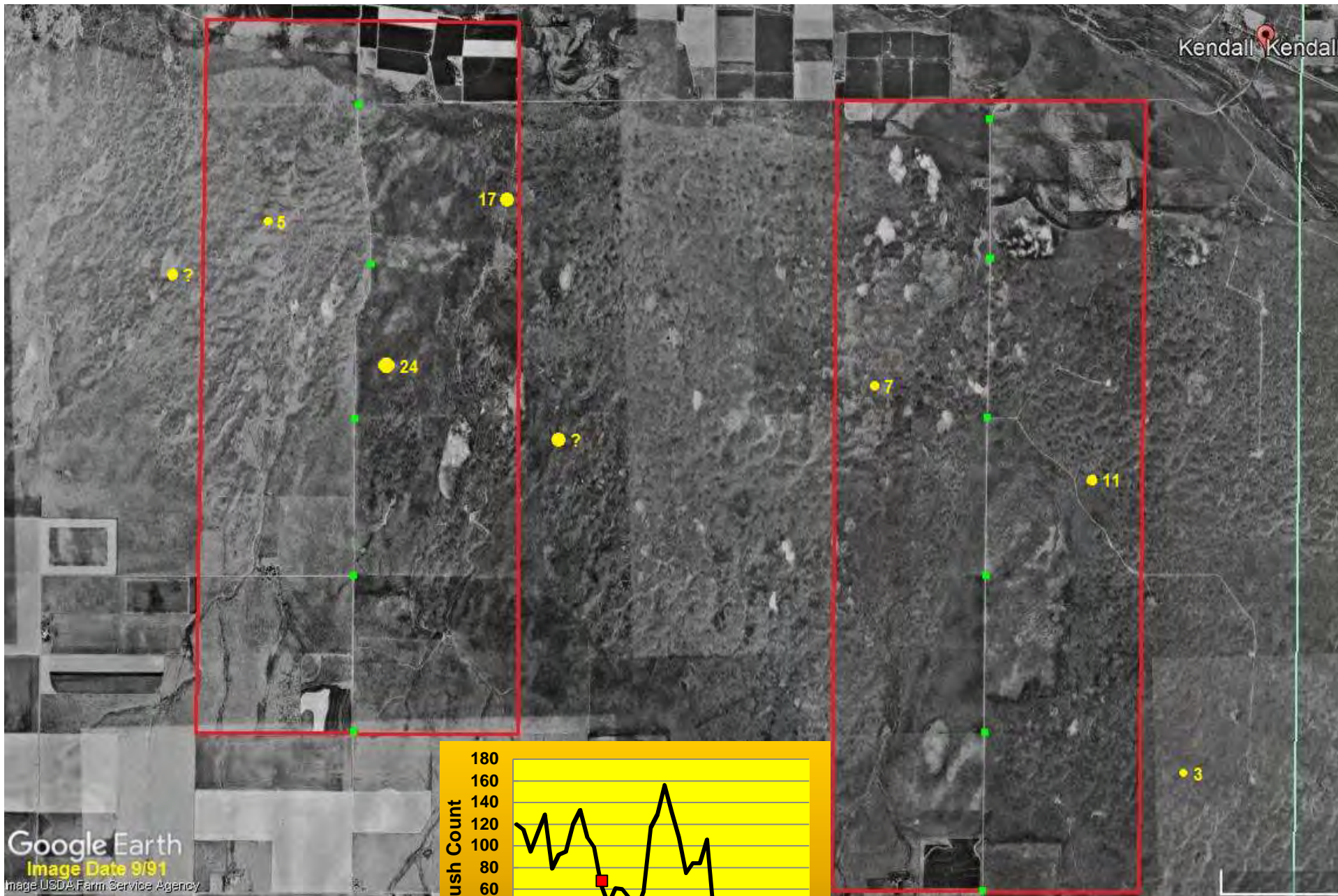


**1990 \***

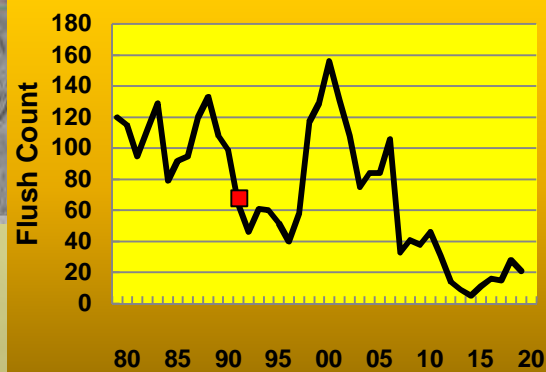


***Flush Count = 99***



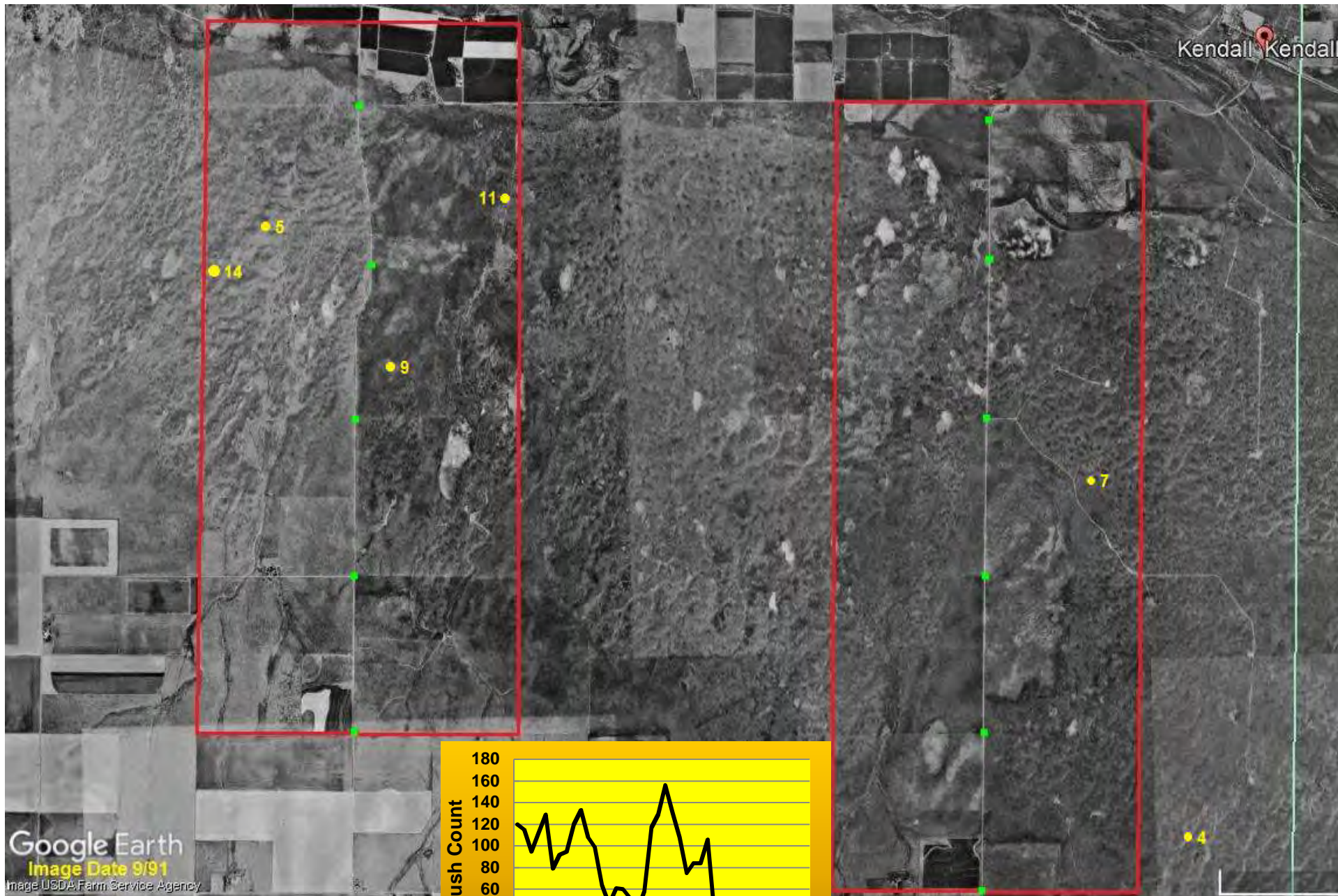


**1991**

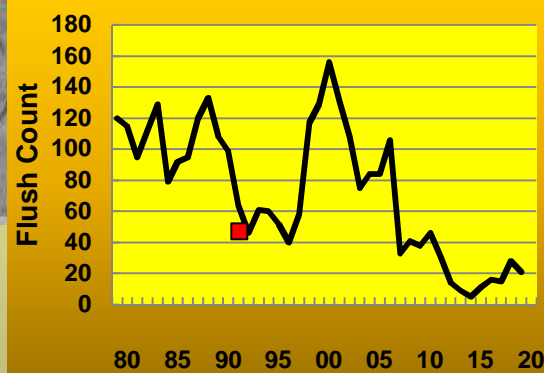


***Flush Count = 64***



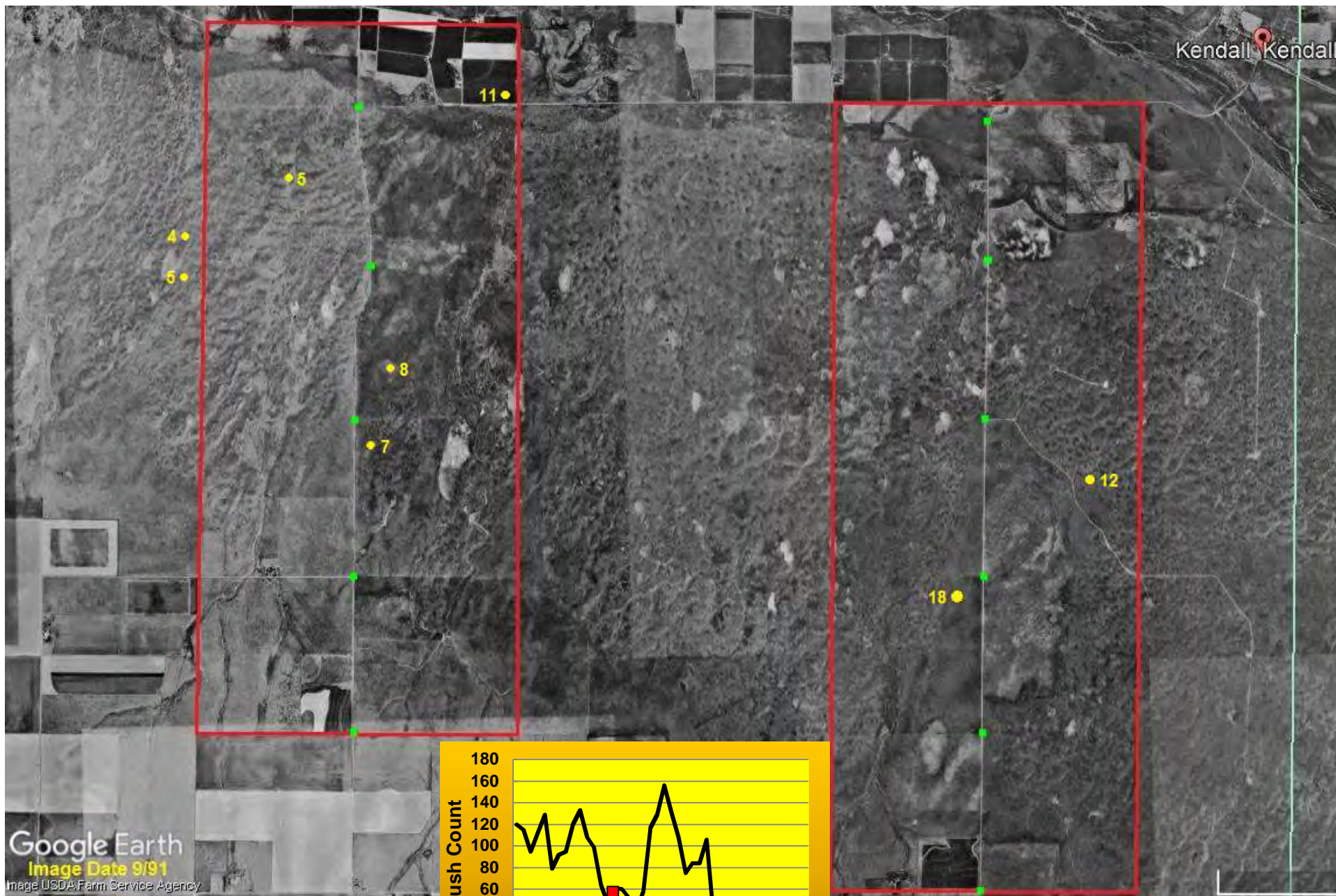


**1992**

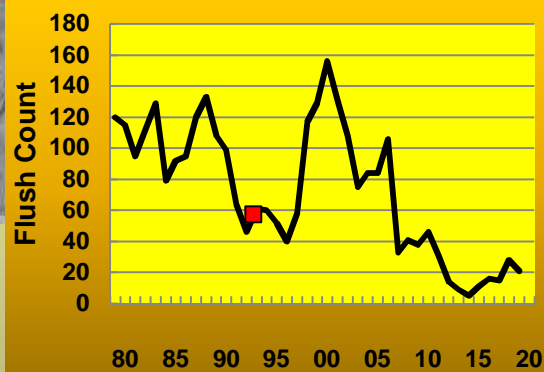


***Flush Count = 46***



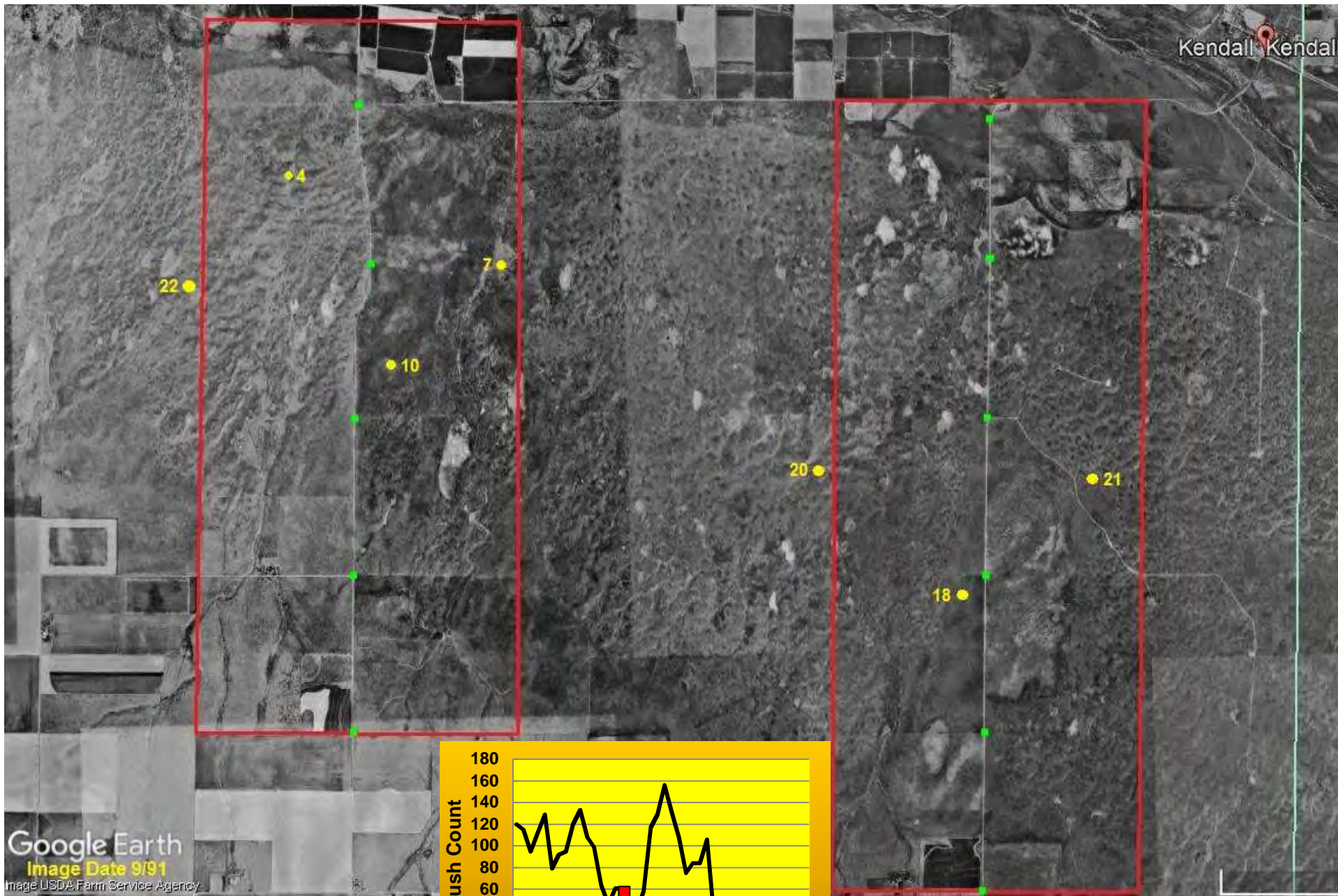


1993 \*

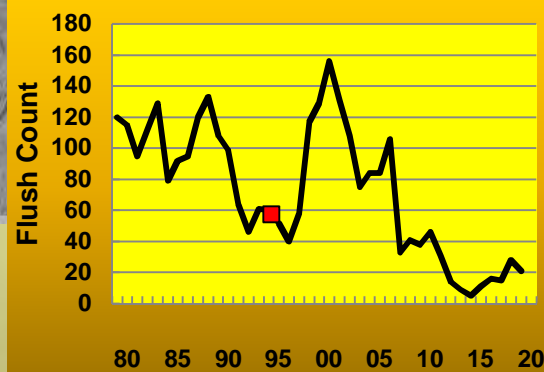


*Flush Count = 61*



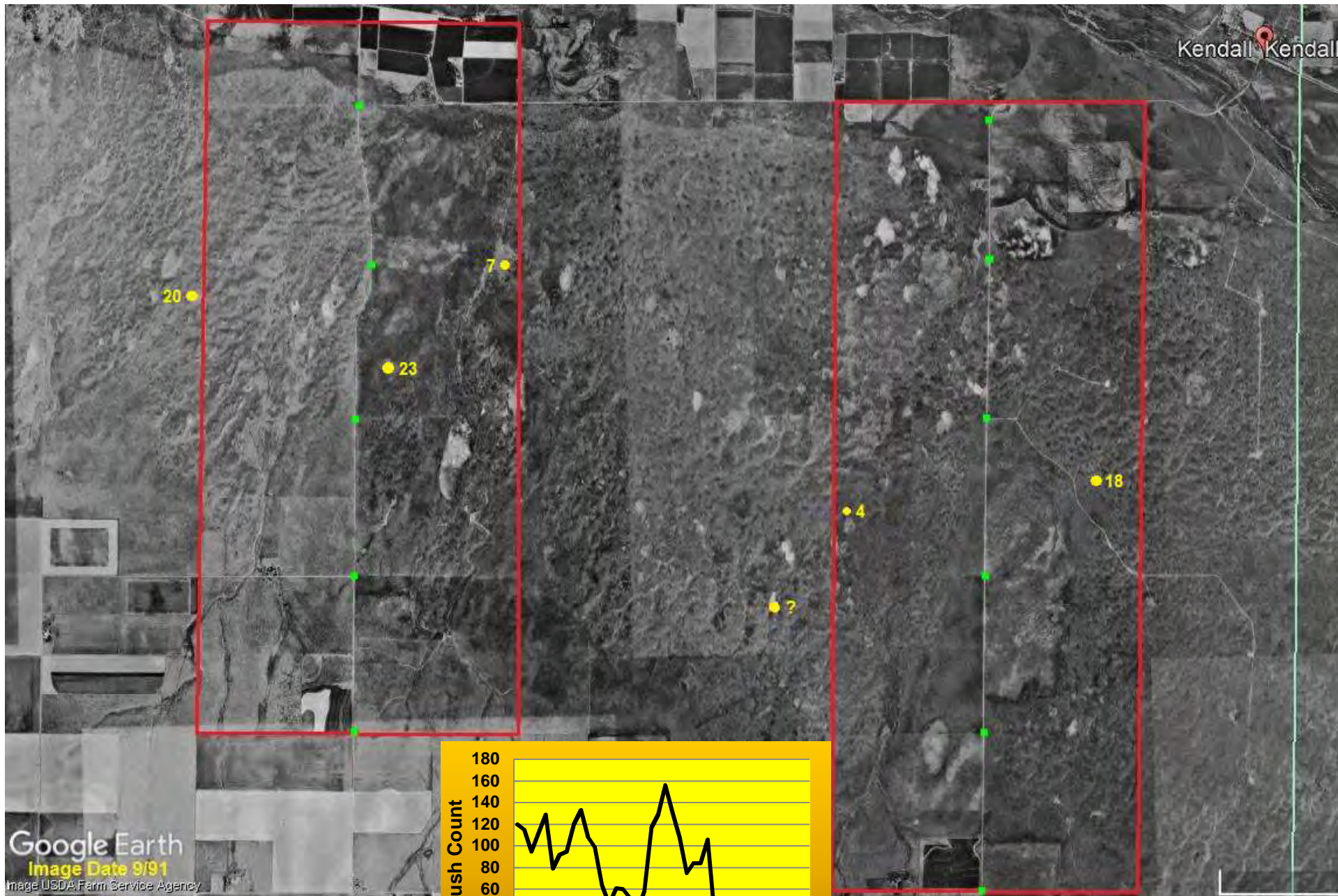


**1994**

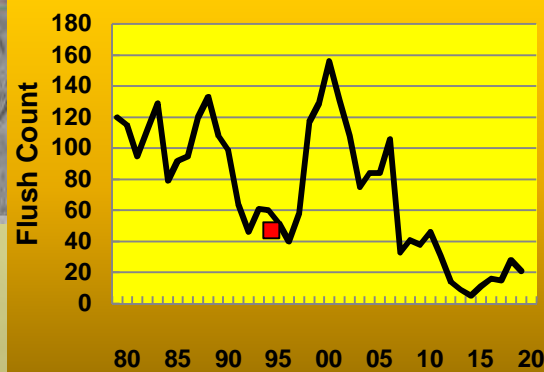


***Flush Count = 60***



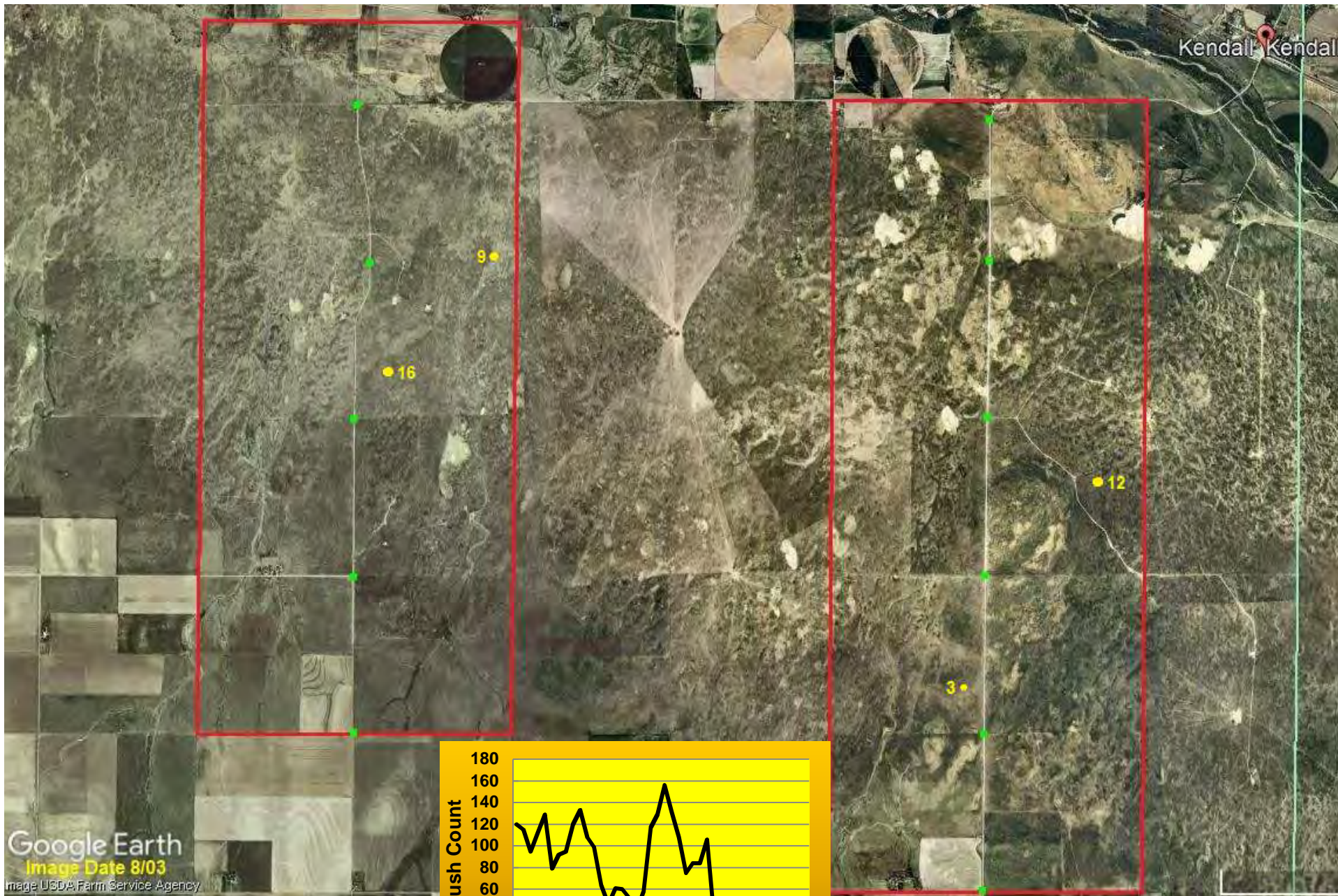


**1995**

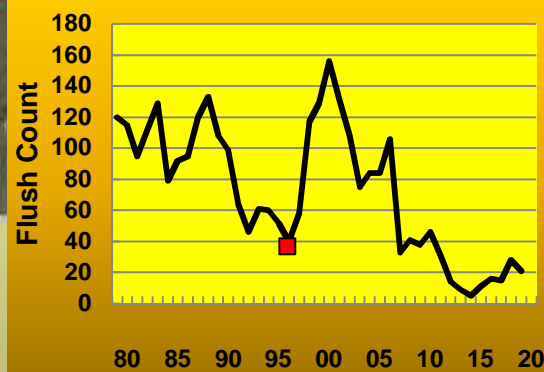


***Flush Count = 52***



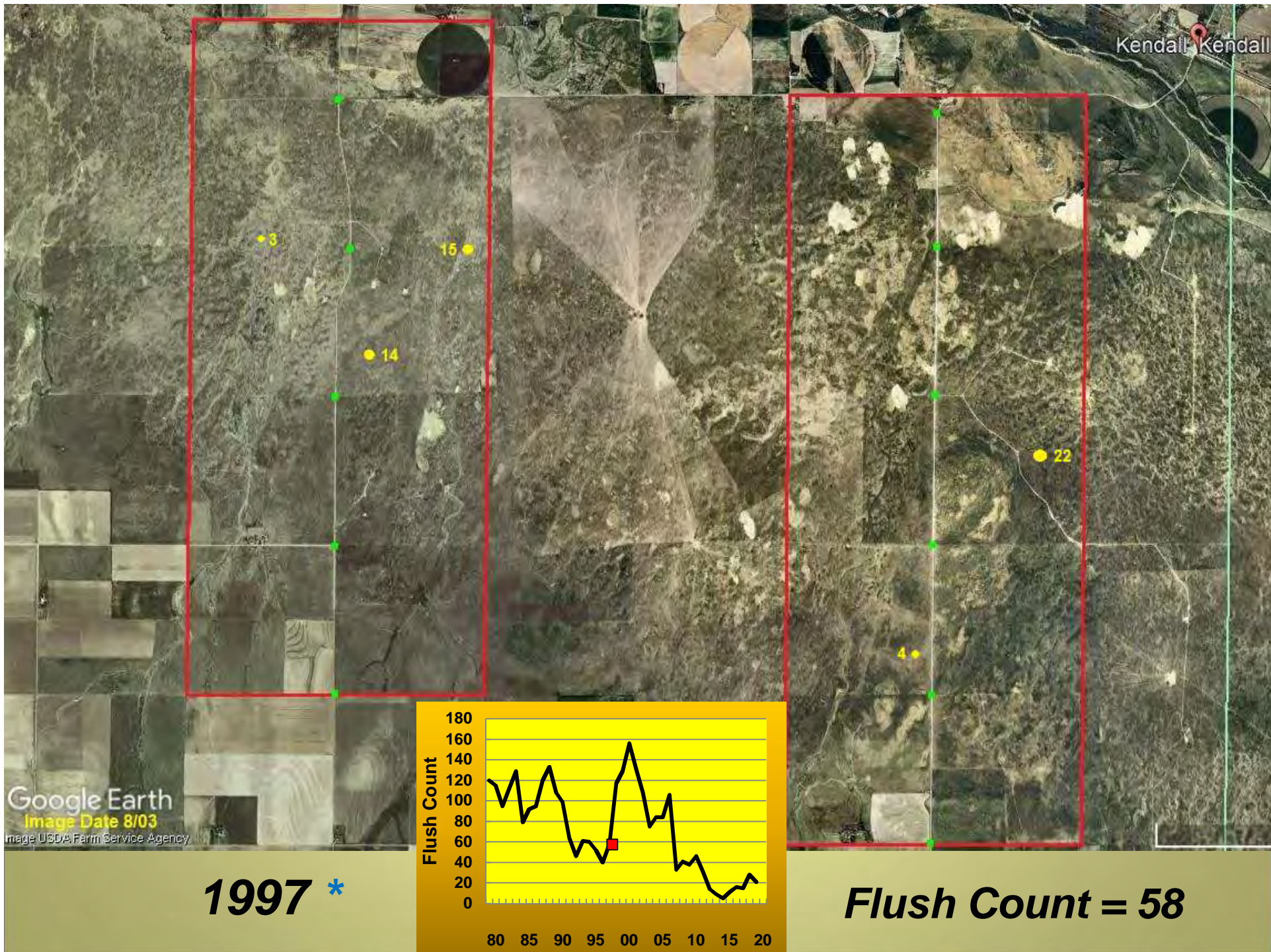


**1996 \***

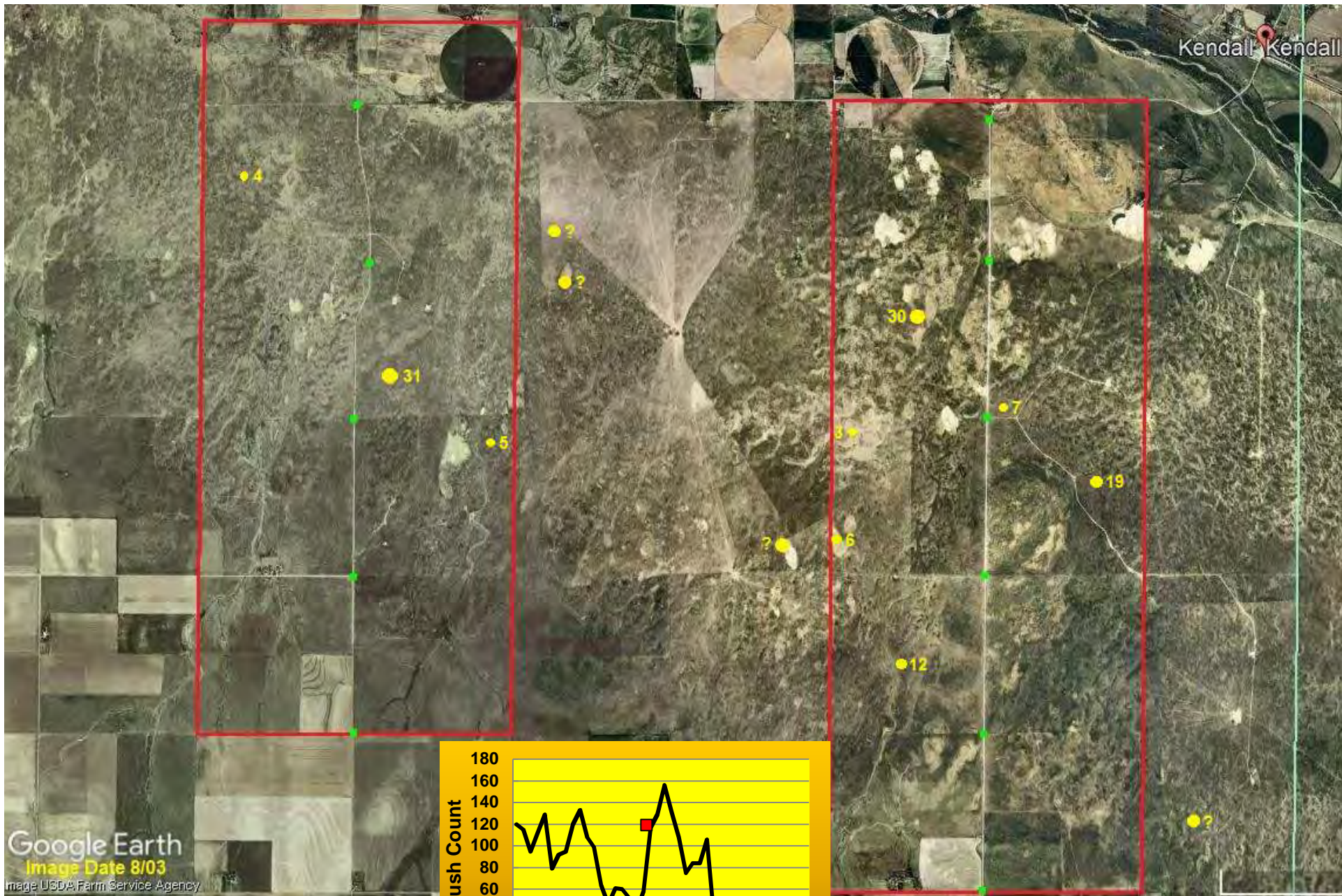


***Flush Count = 40***

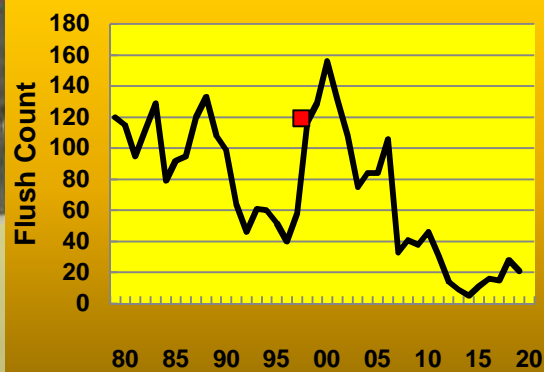






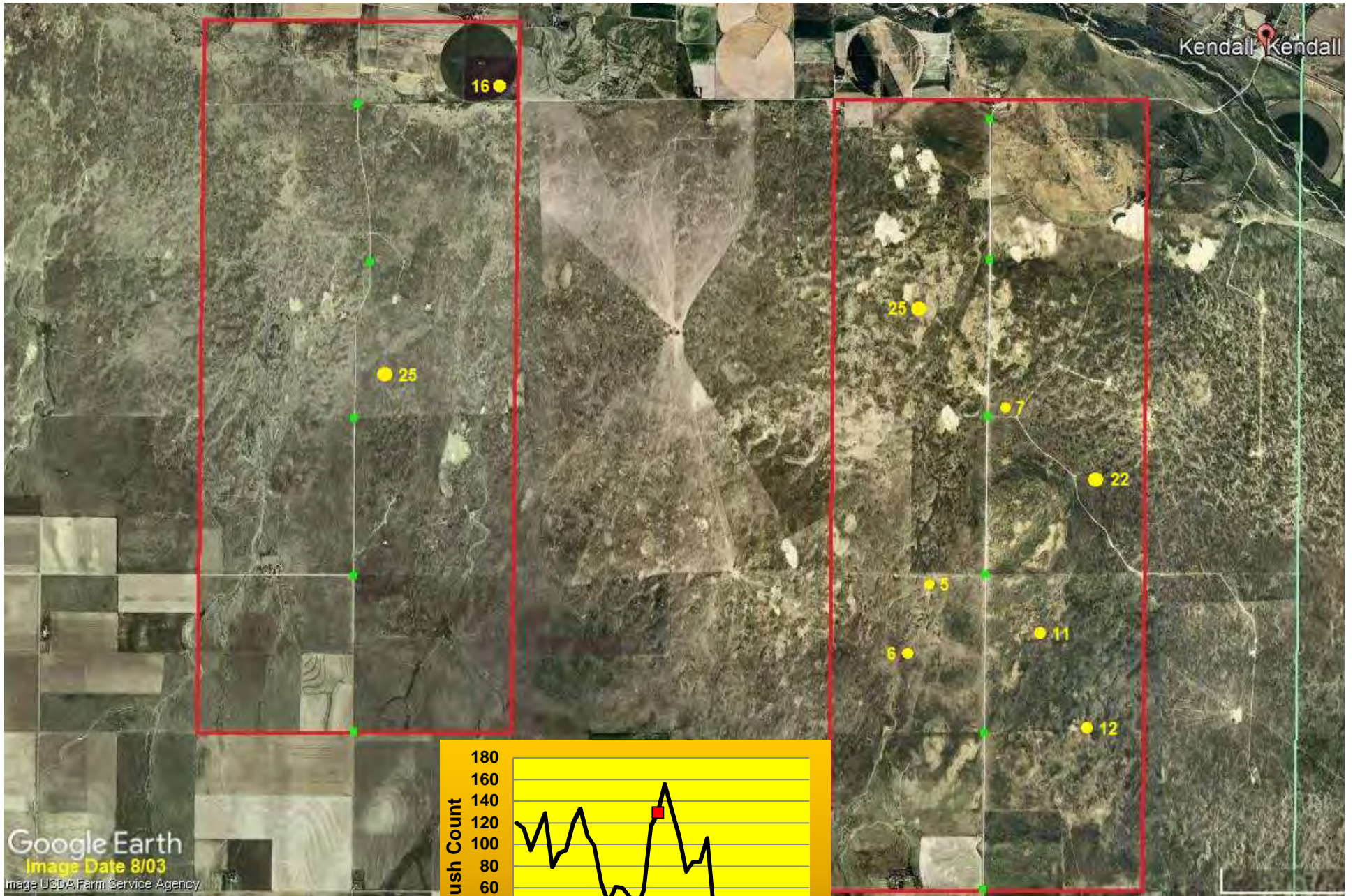


**1998**



***Flush Count = 117***

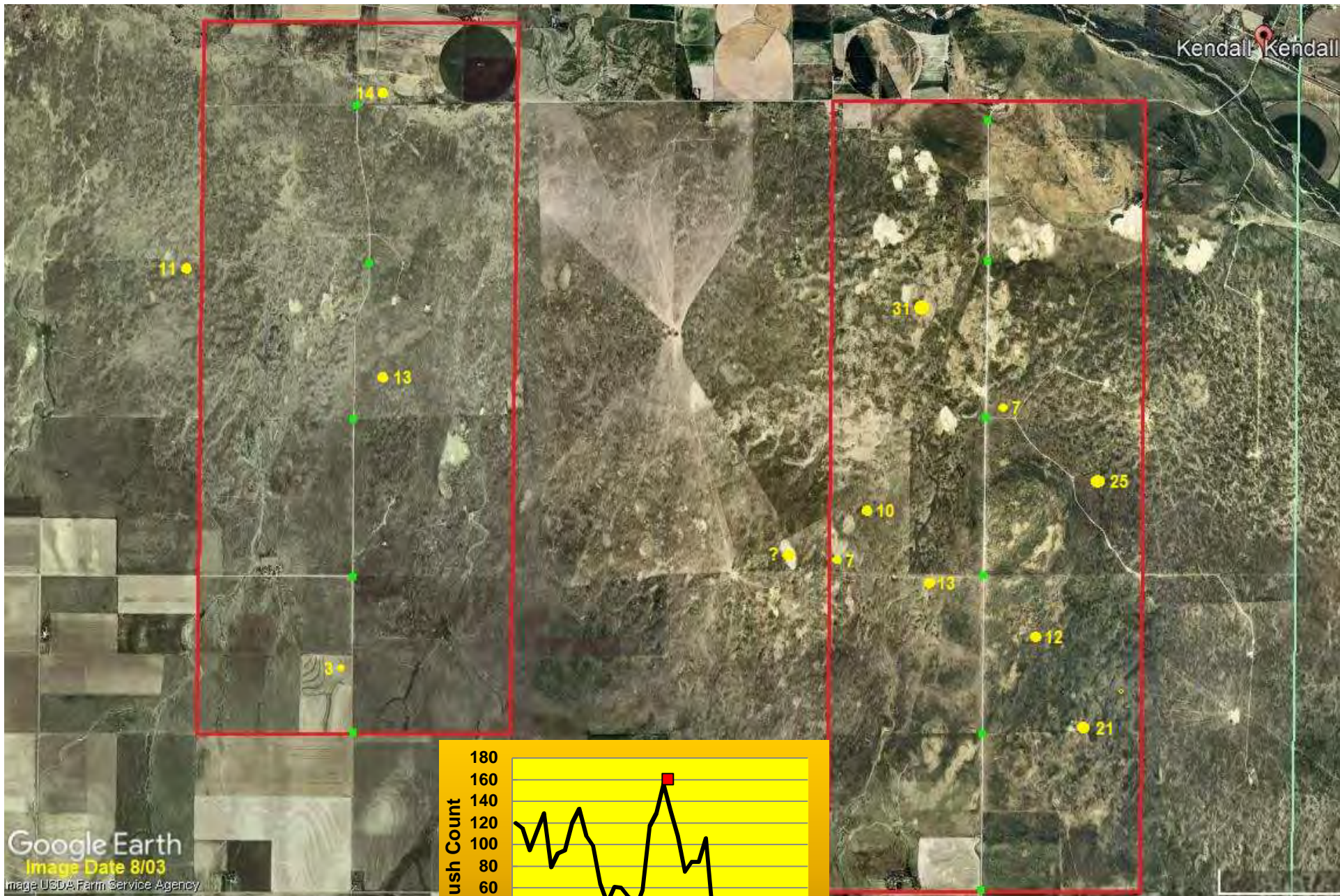




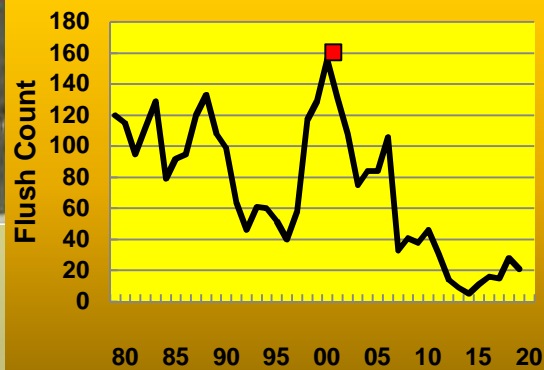
**1999**

***Flush Count = 129***



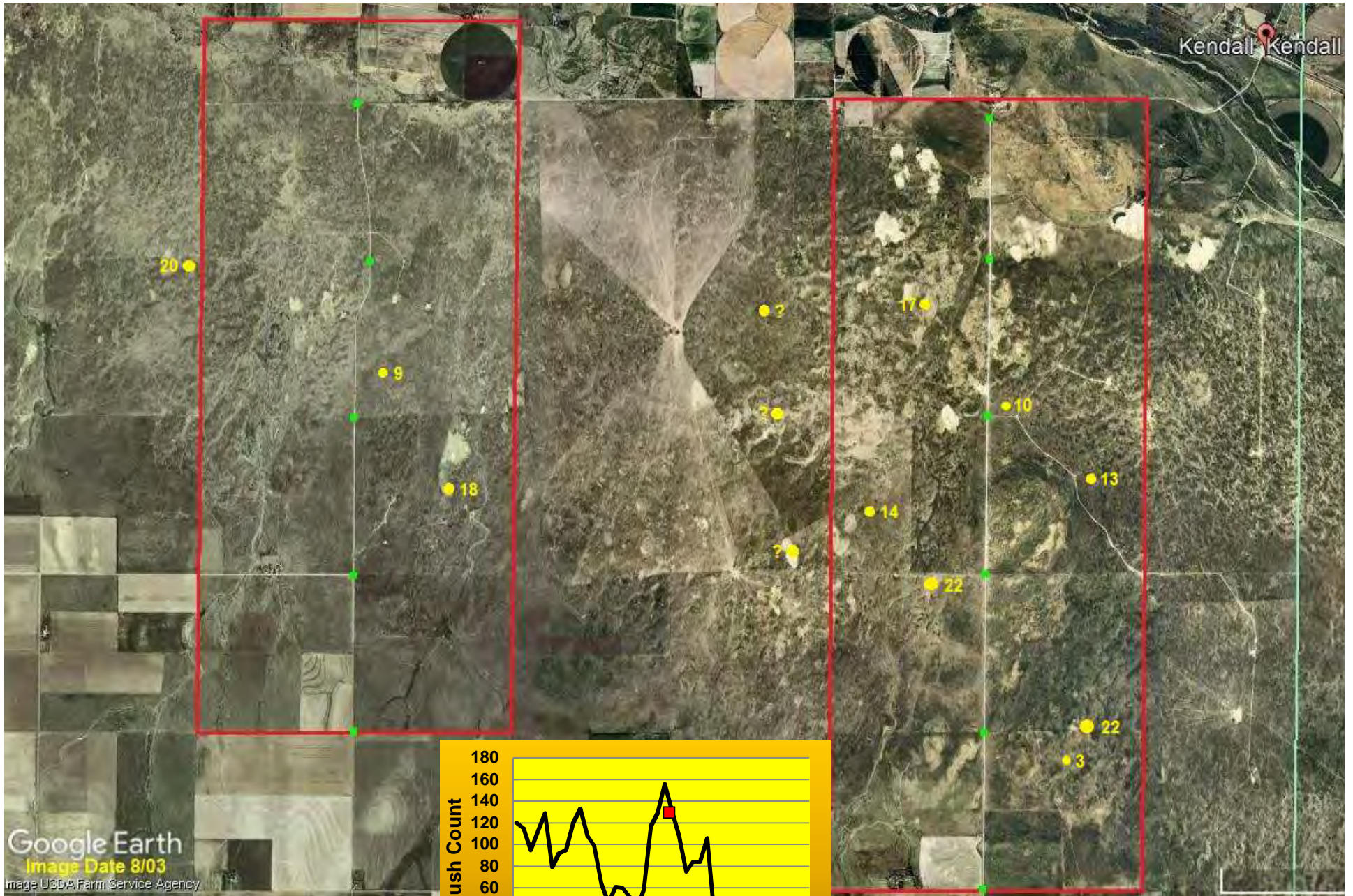


**2000**



***Flush Count = 156***

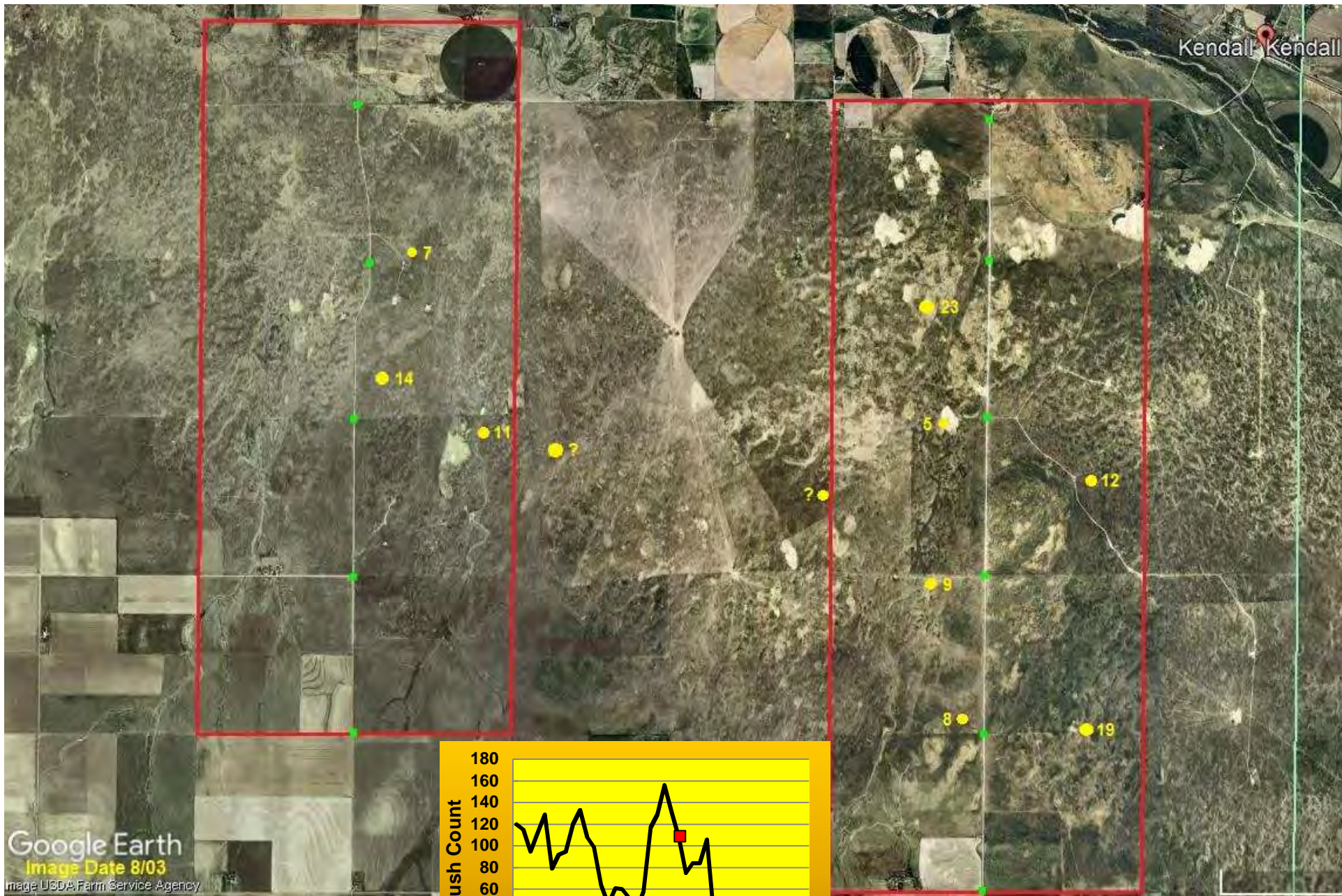




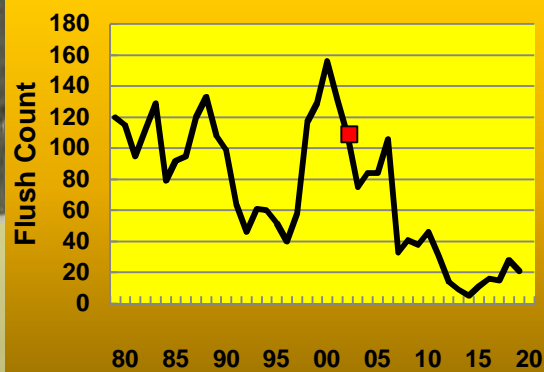
**2001**

***Flush Count = 128***



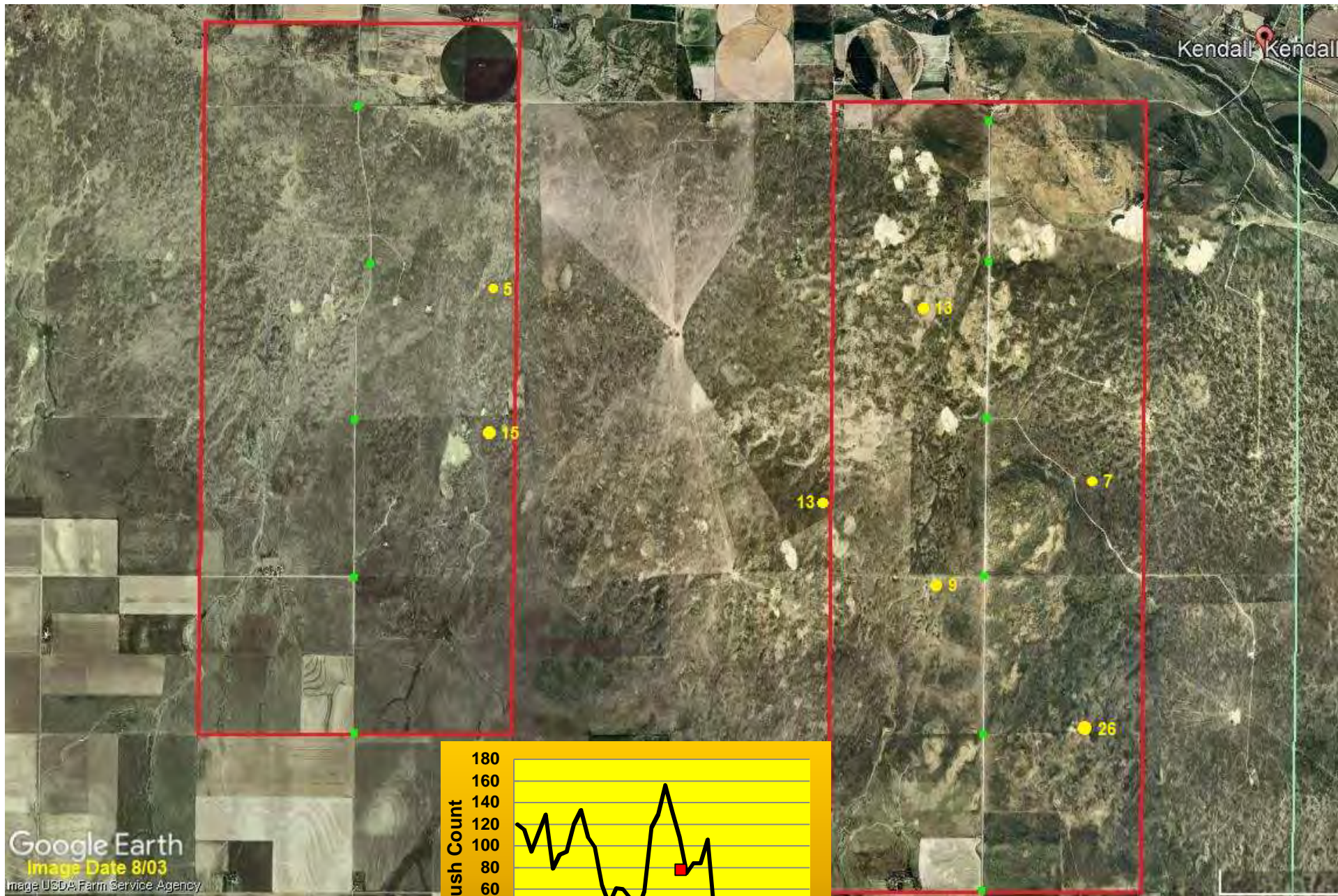


**2002 \***

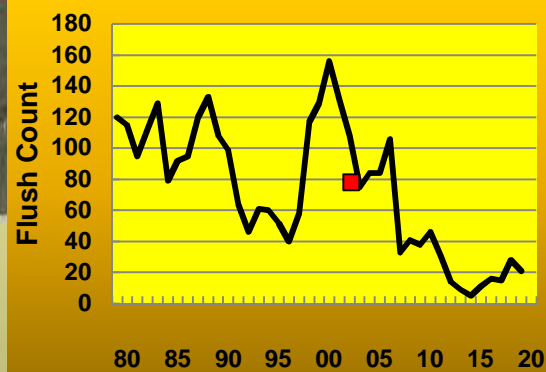


***Flush Count = 108***



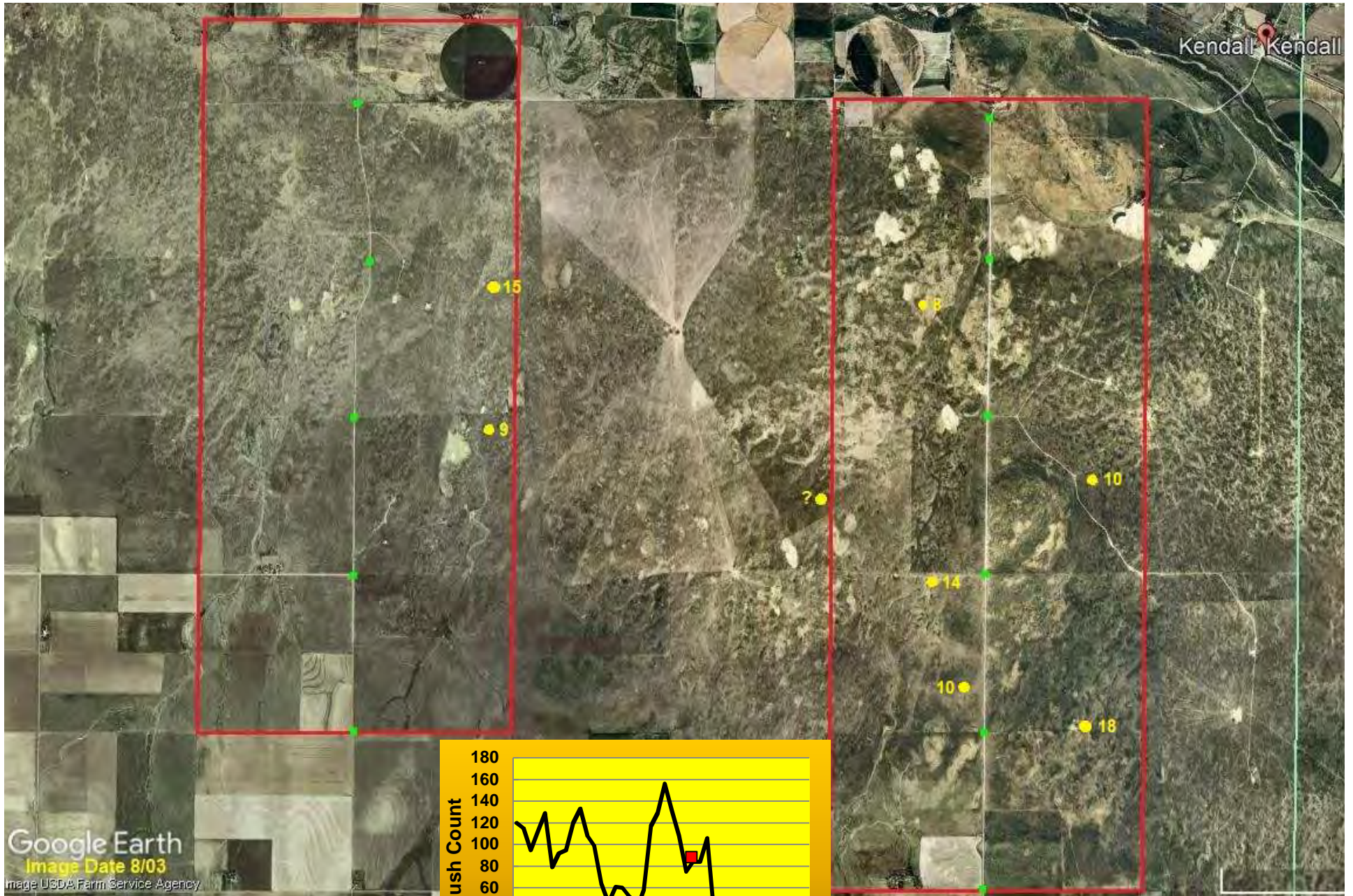


**2003 \***

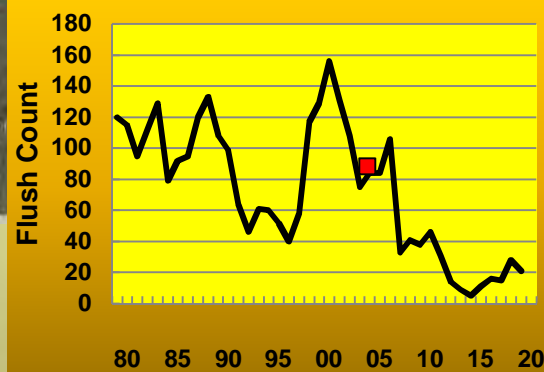


***Flush Count = 75***



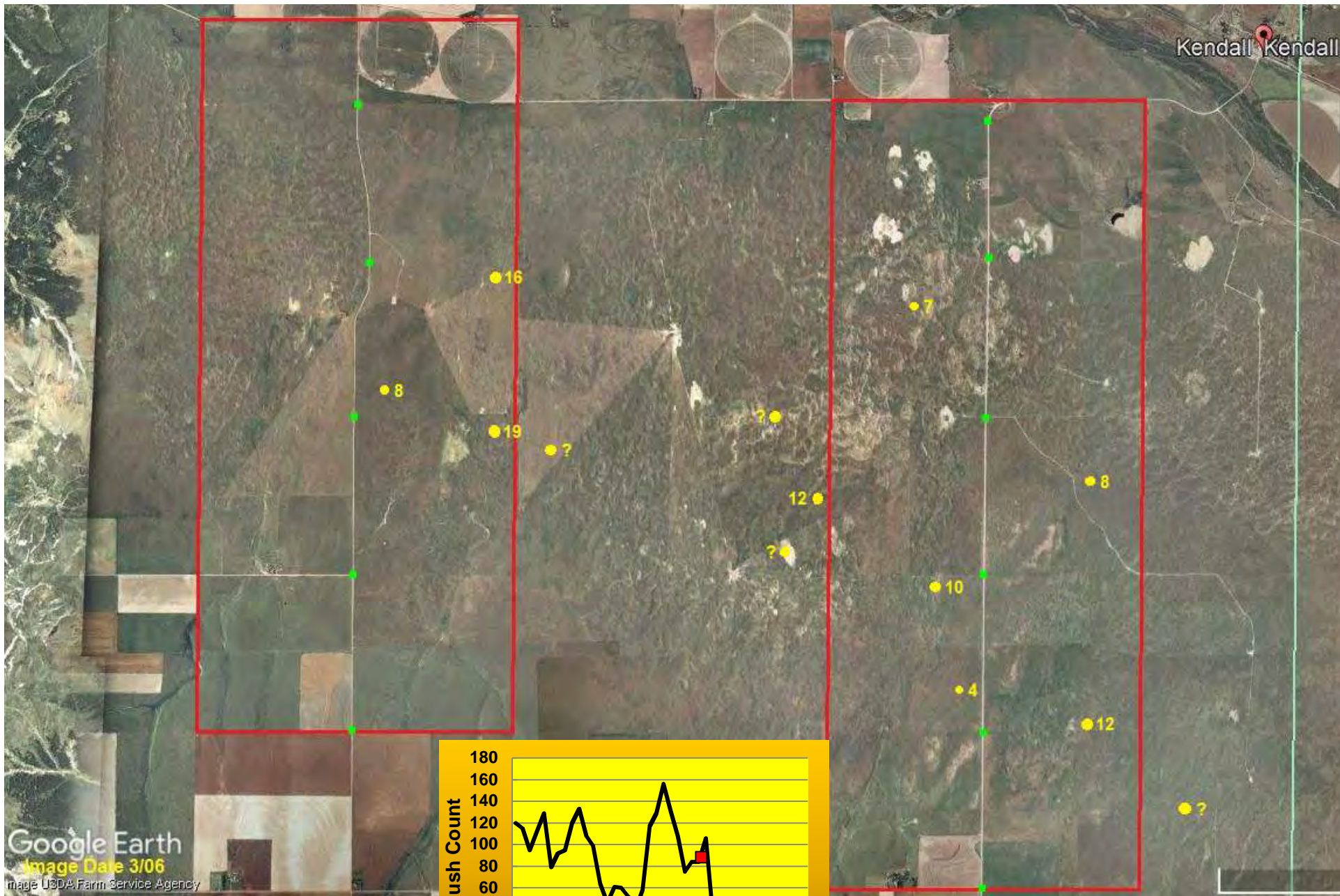


**2004 \***

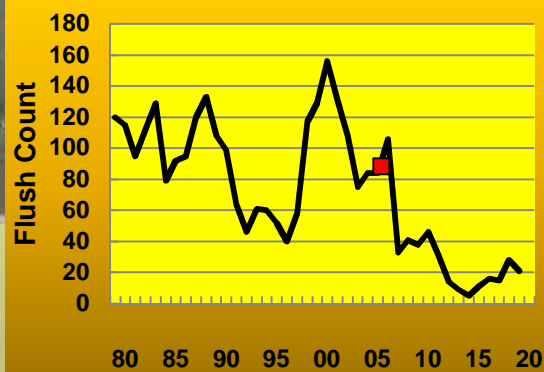


***Flush Count = 84***



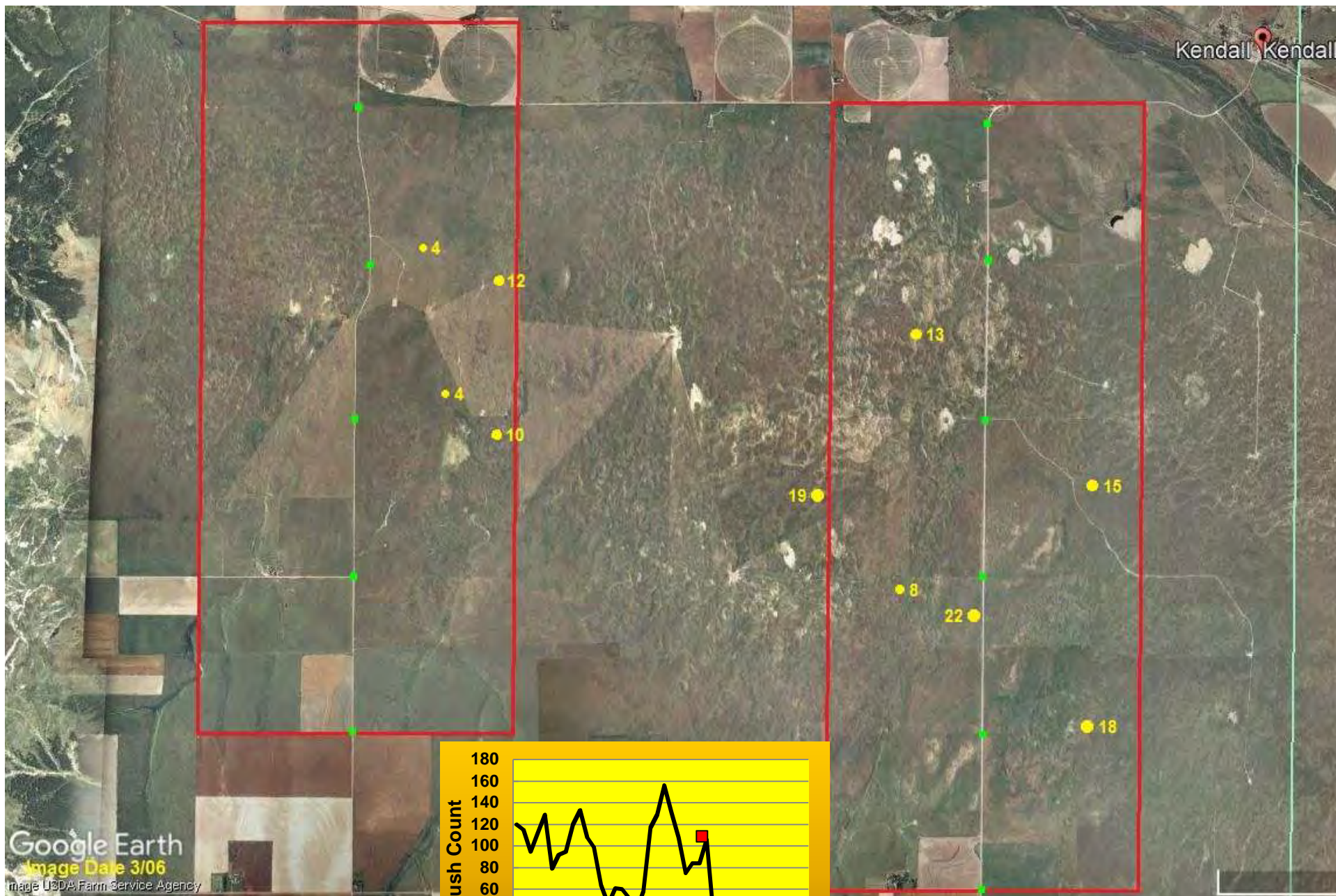


**2005**

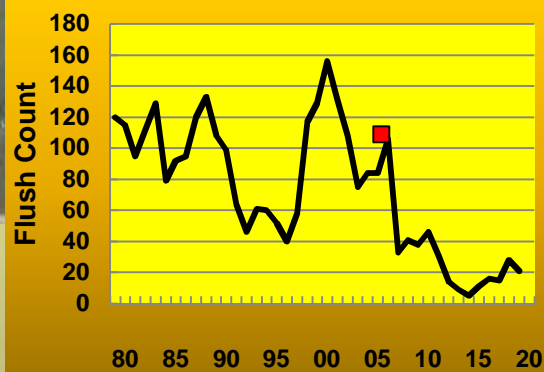


***Flush Count = 84***



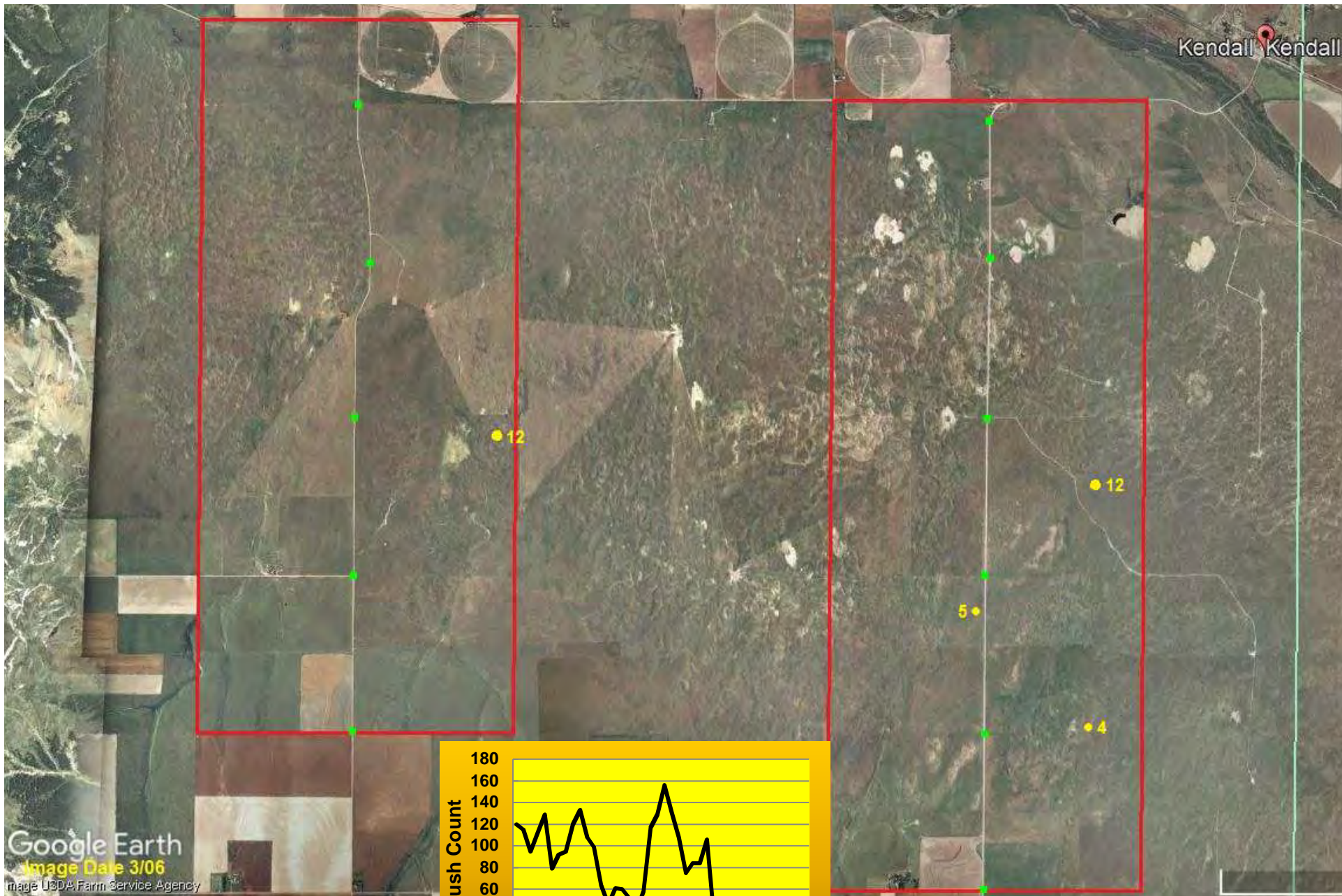


**2006**

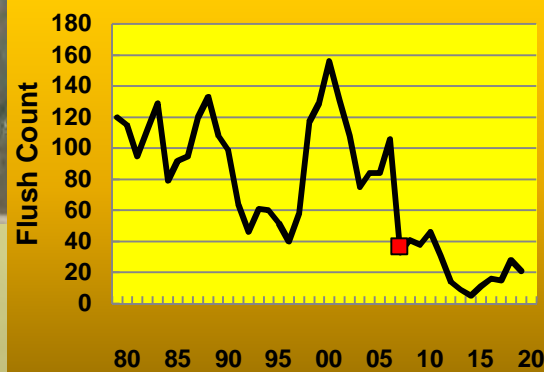


***Flush Count = 106***



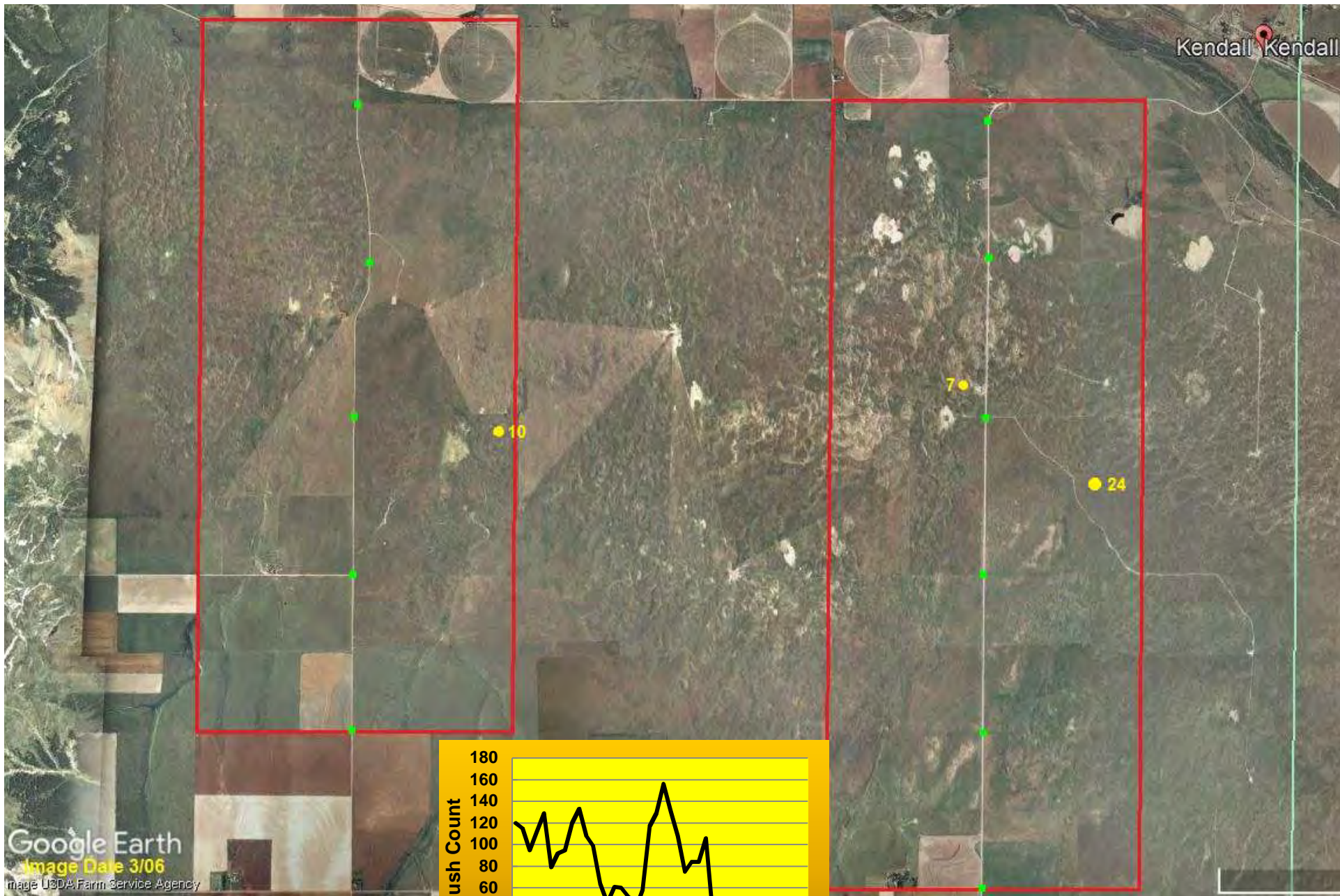


**2007 \***

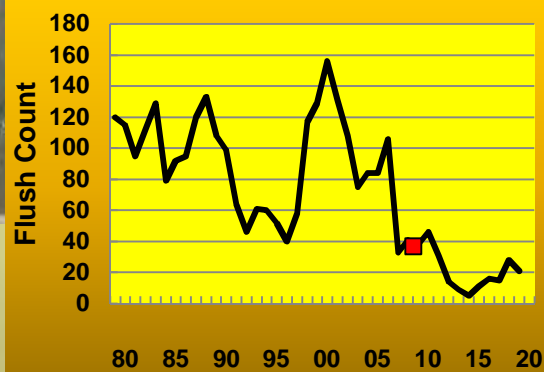


***Flush Count = 33***



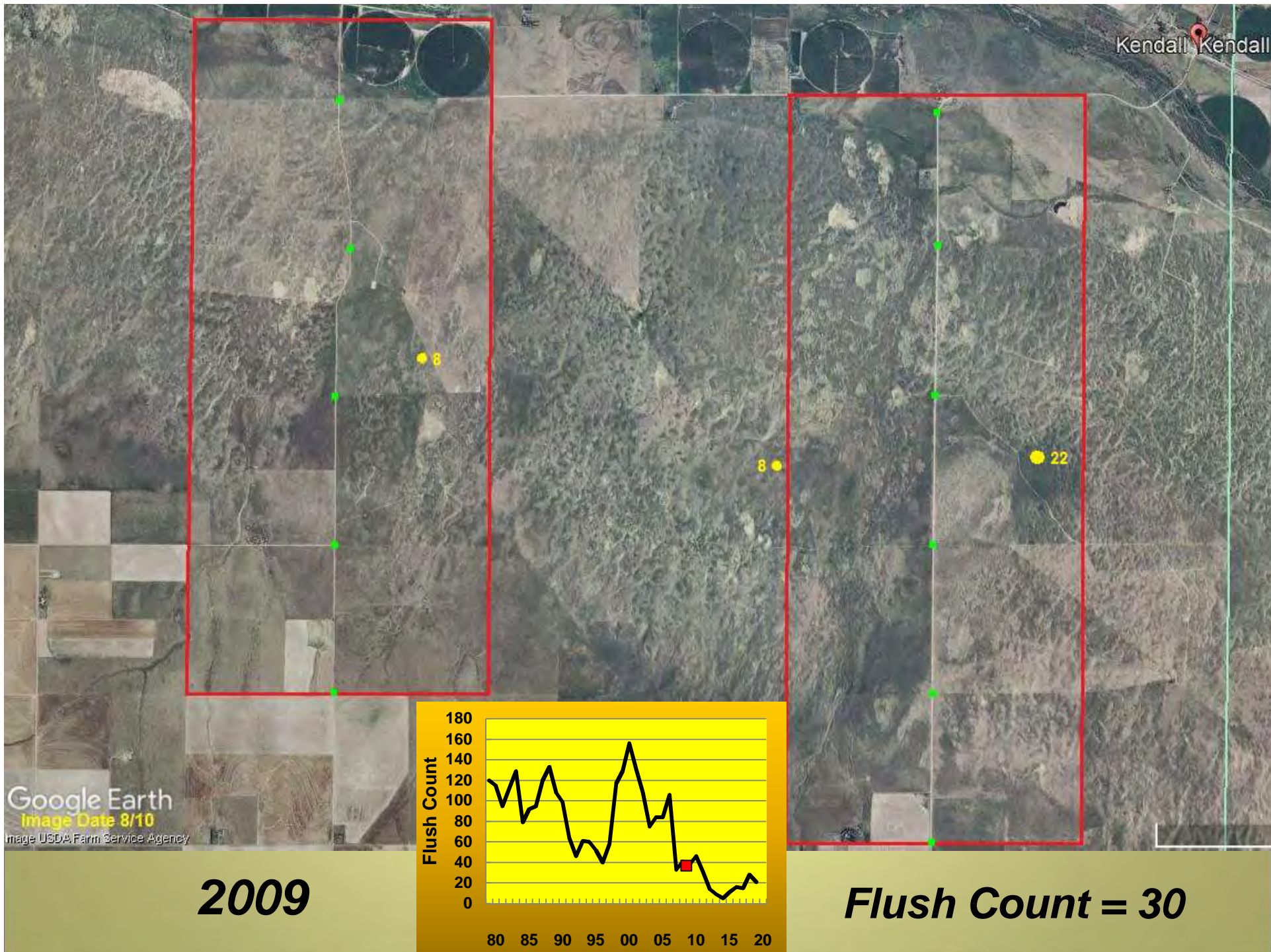


**2008**

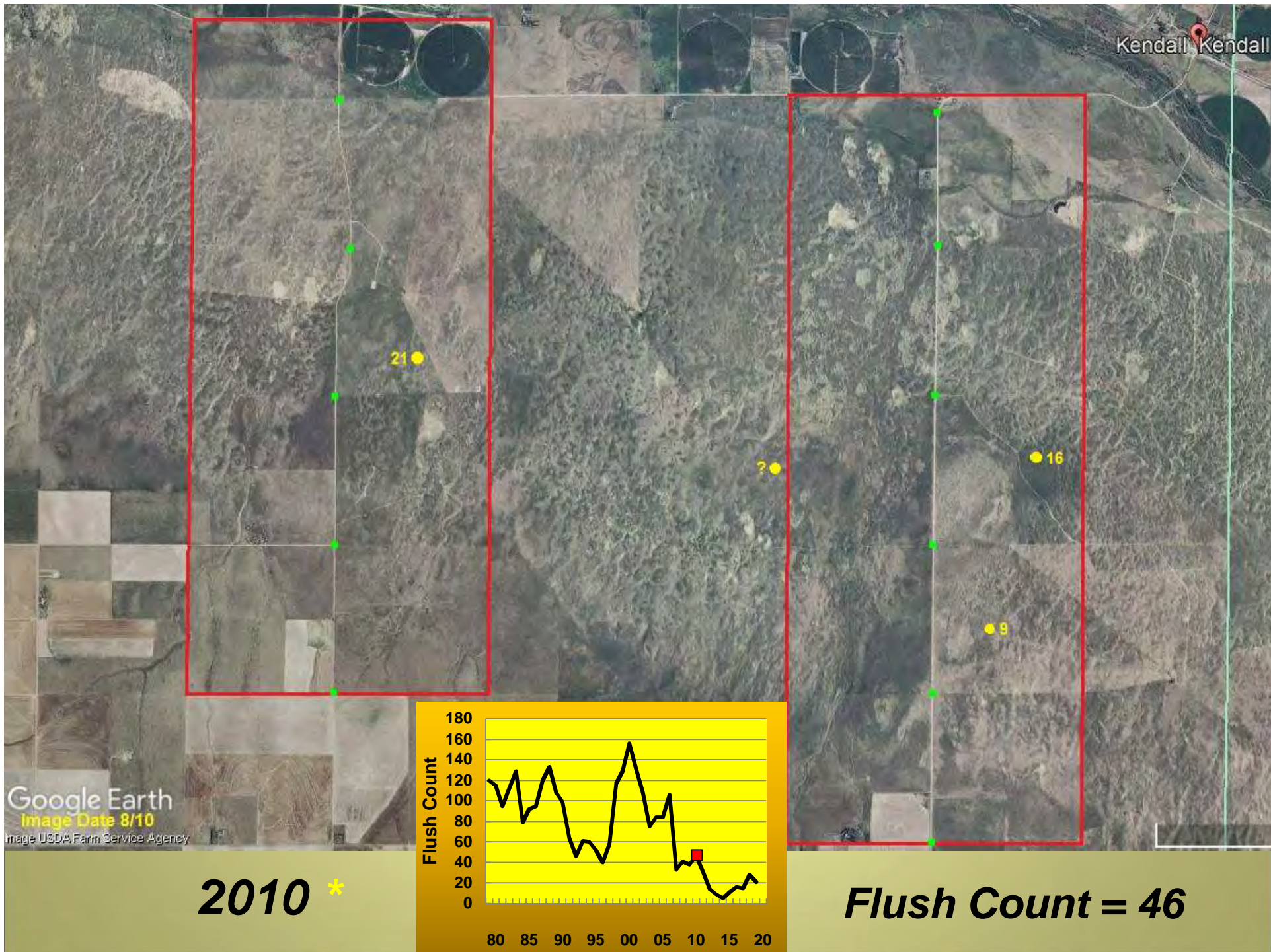


***Flush Count = 41***

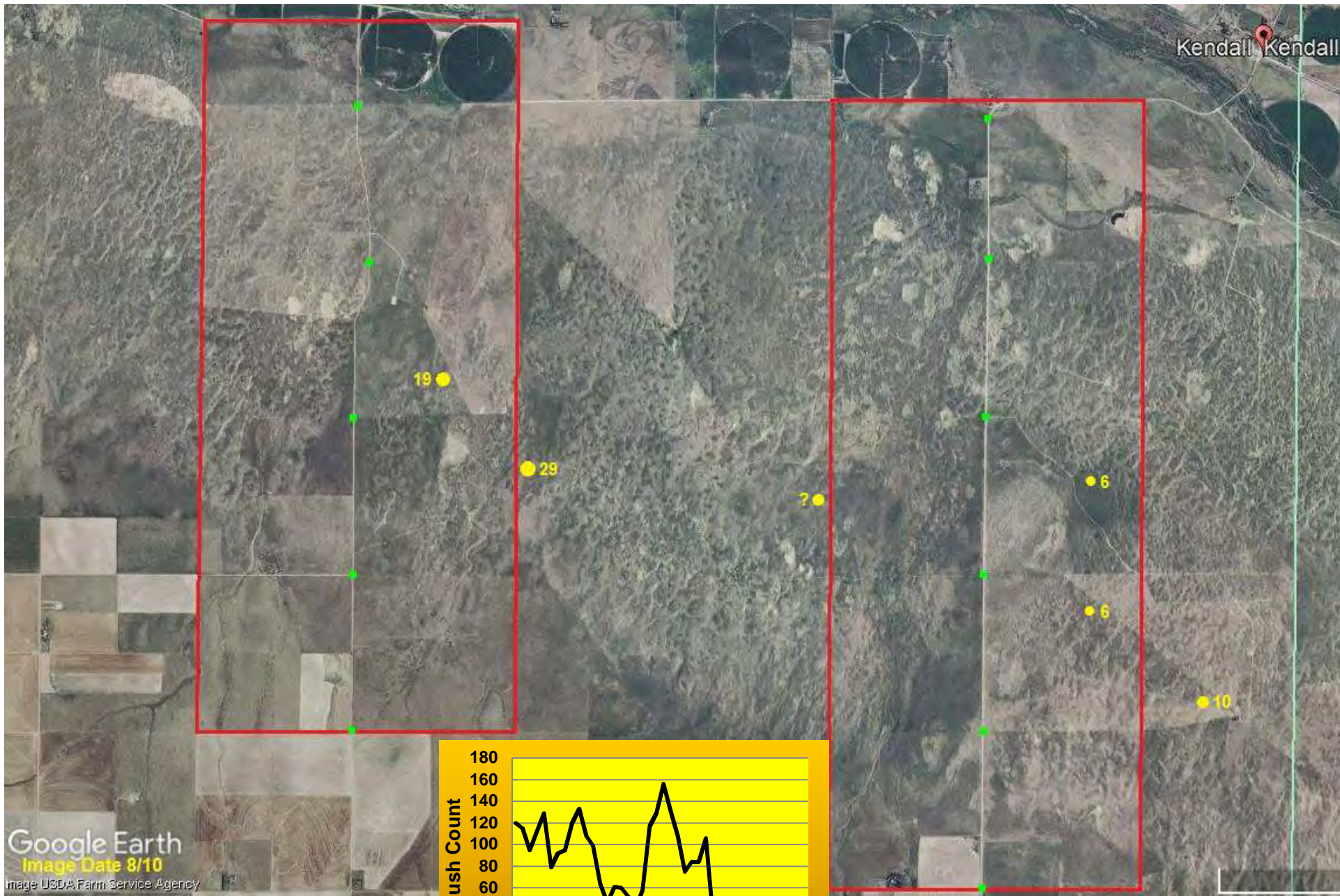




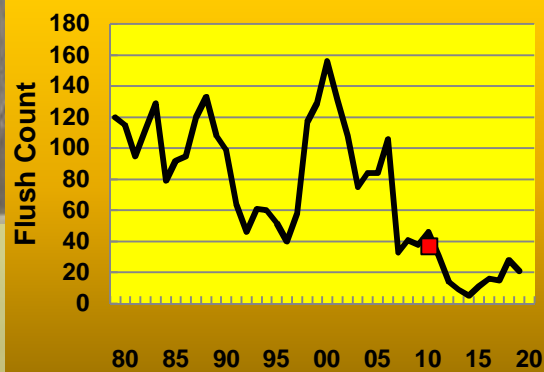






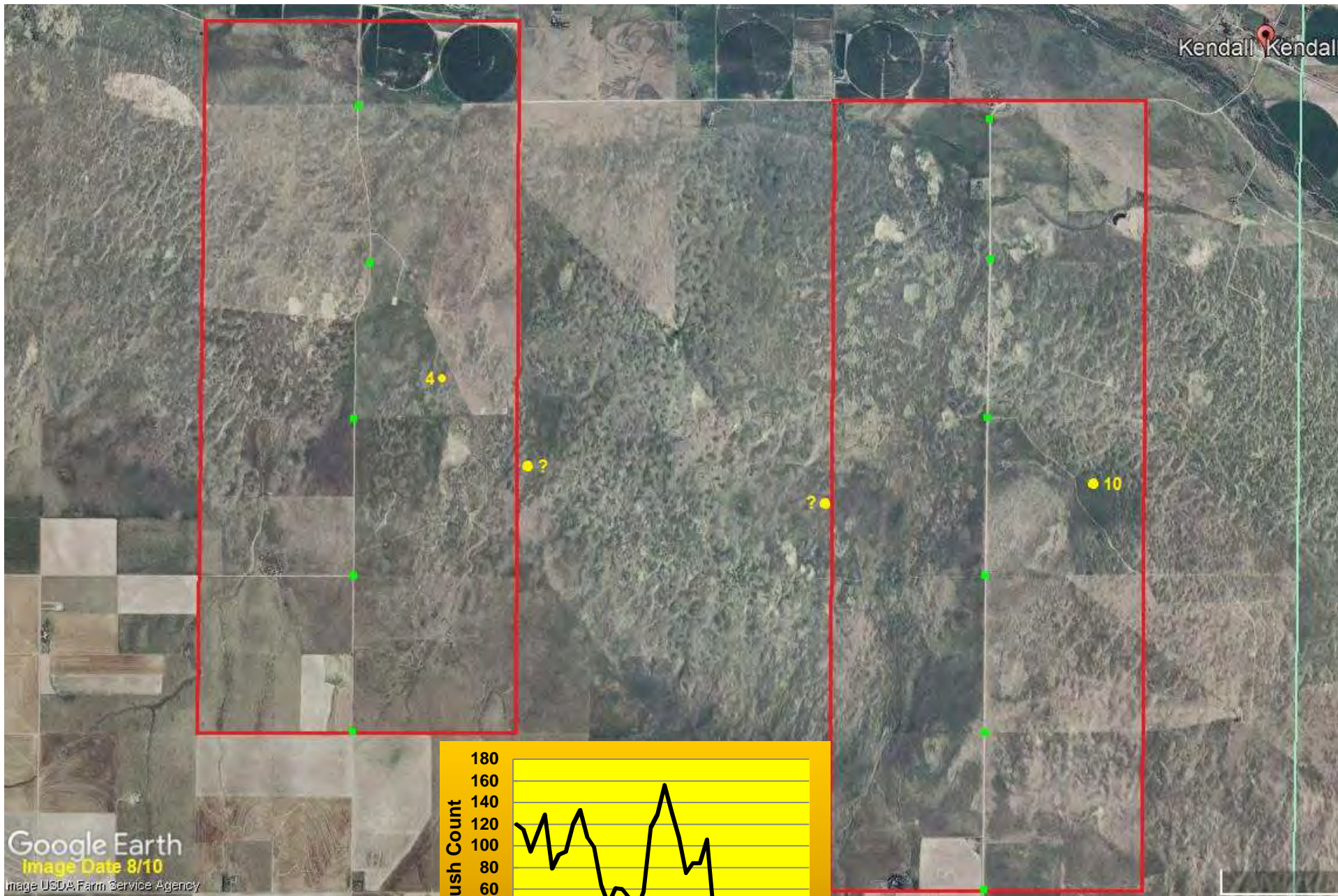


**2011**

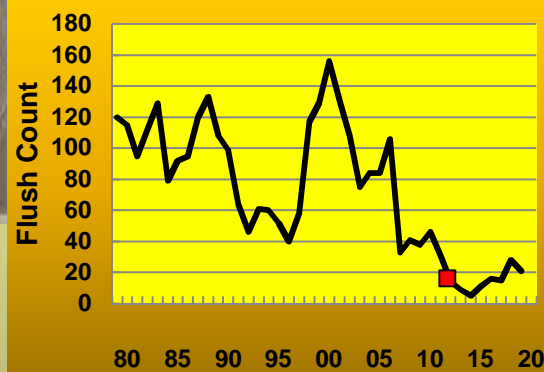


***Flush Count = 31***



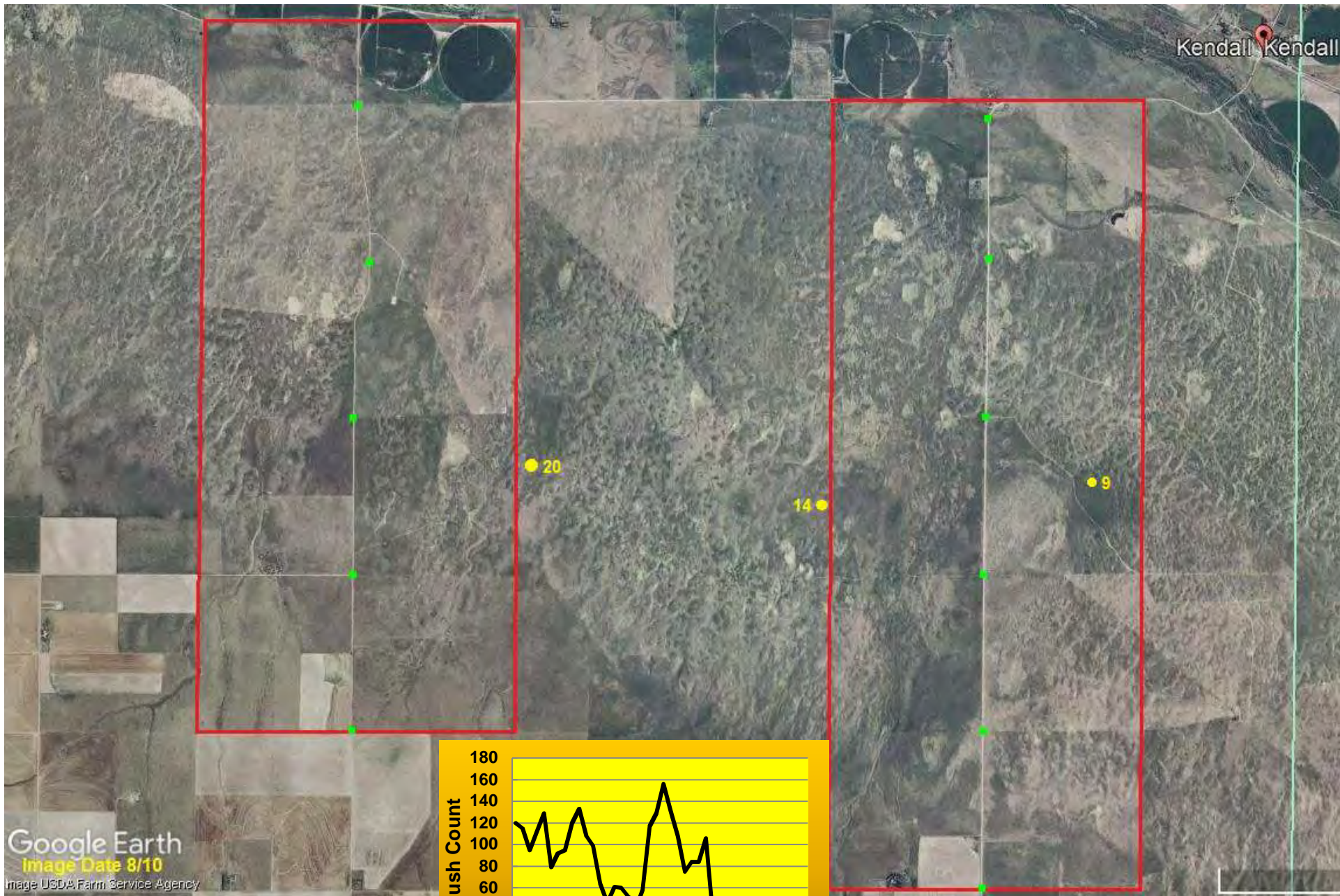


**2012 \***

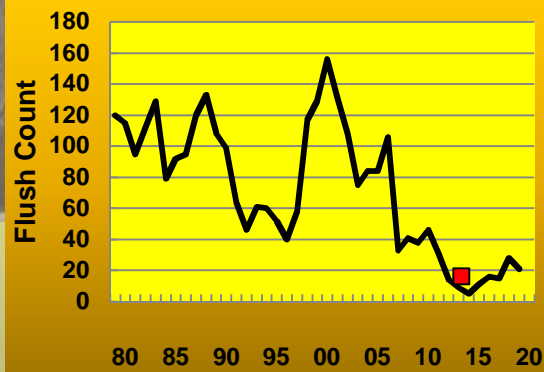


***Flush Count = 14***



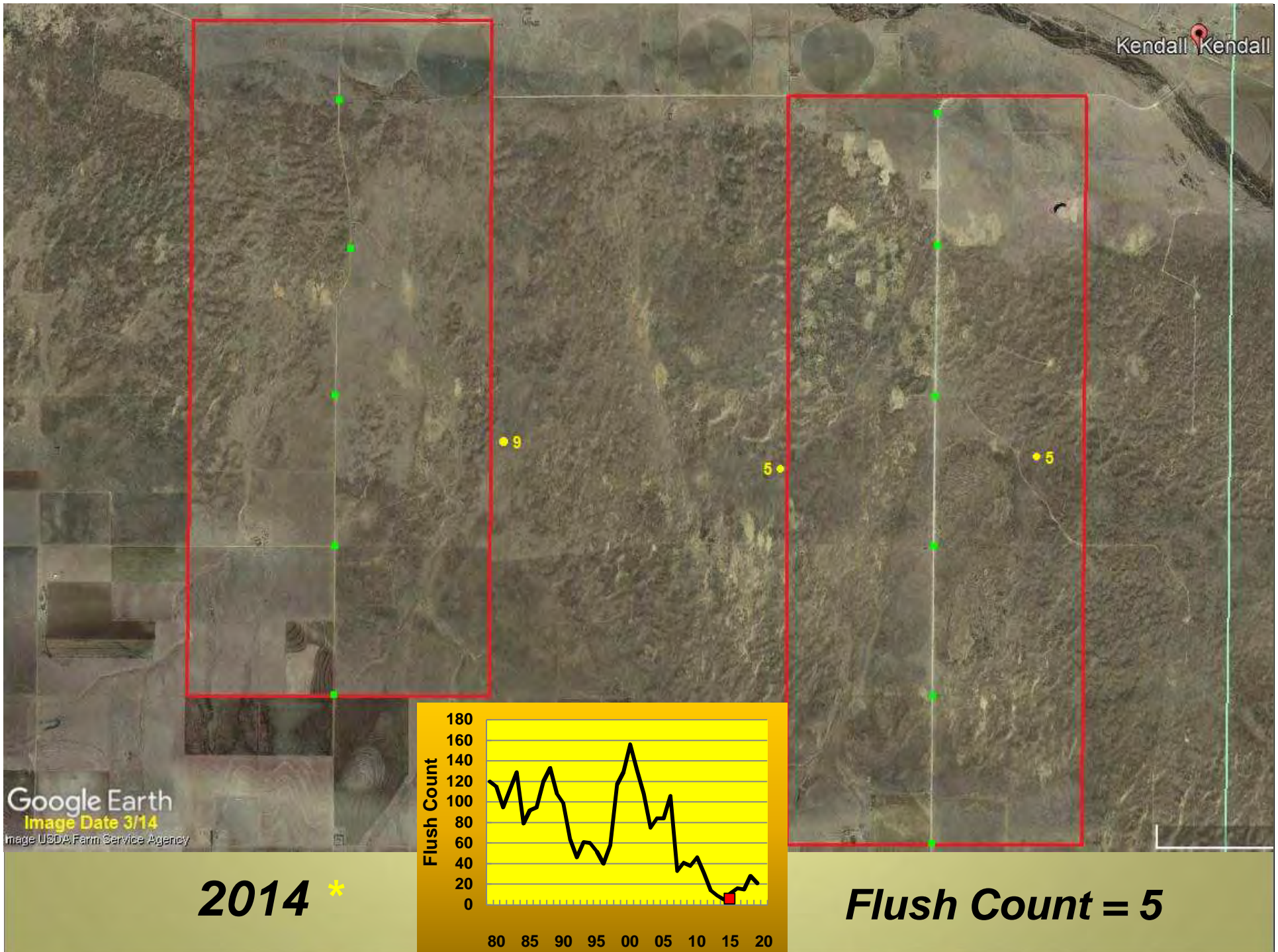


**2013 \***

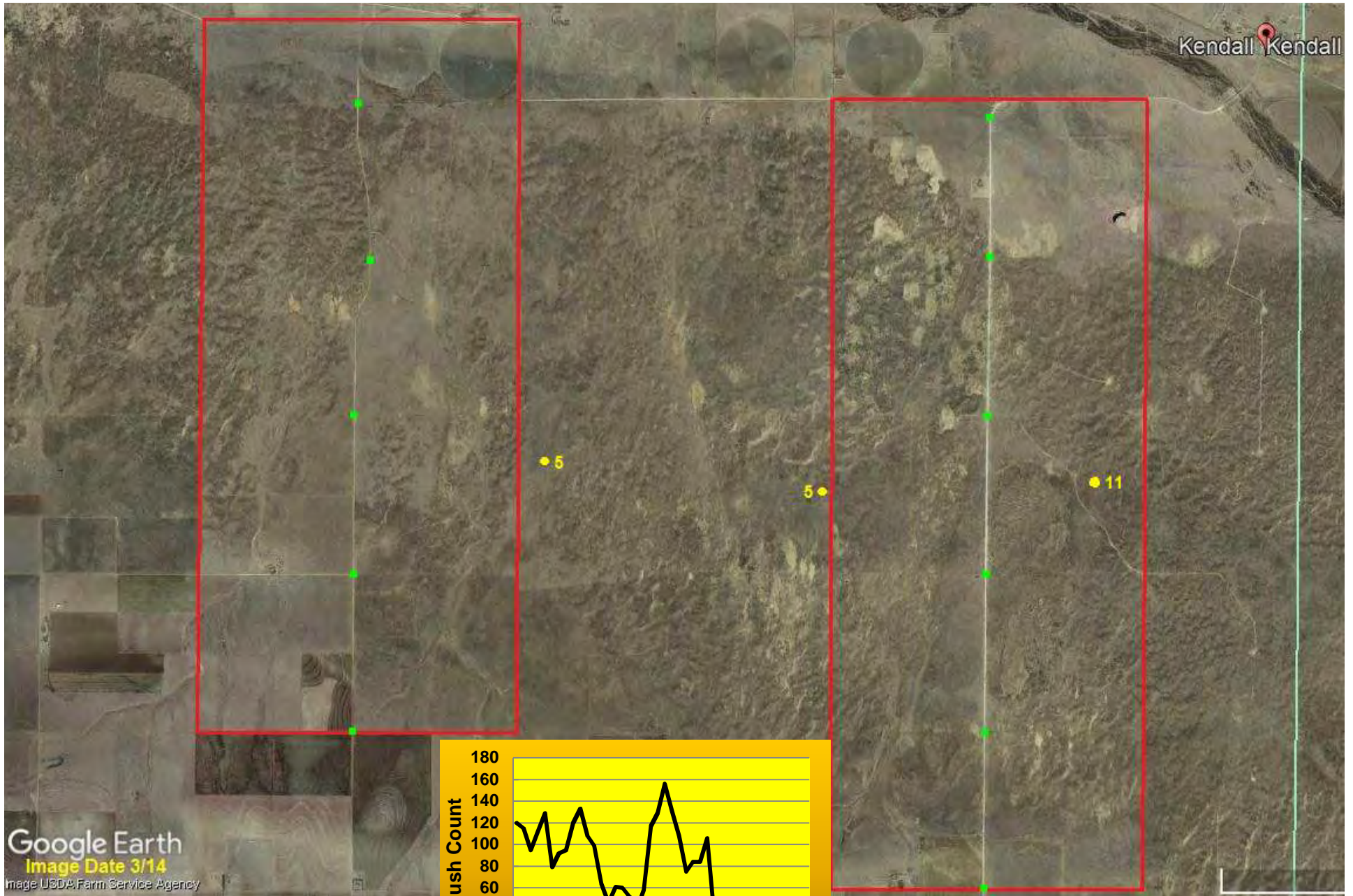


***Flush Count = 9***

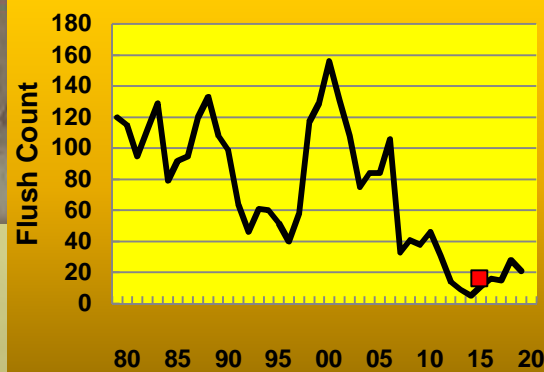






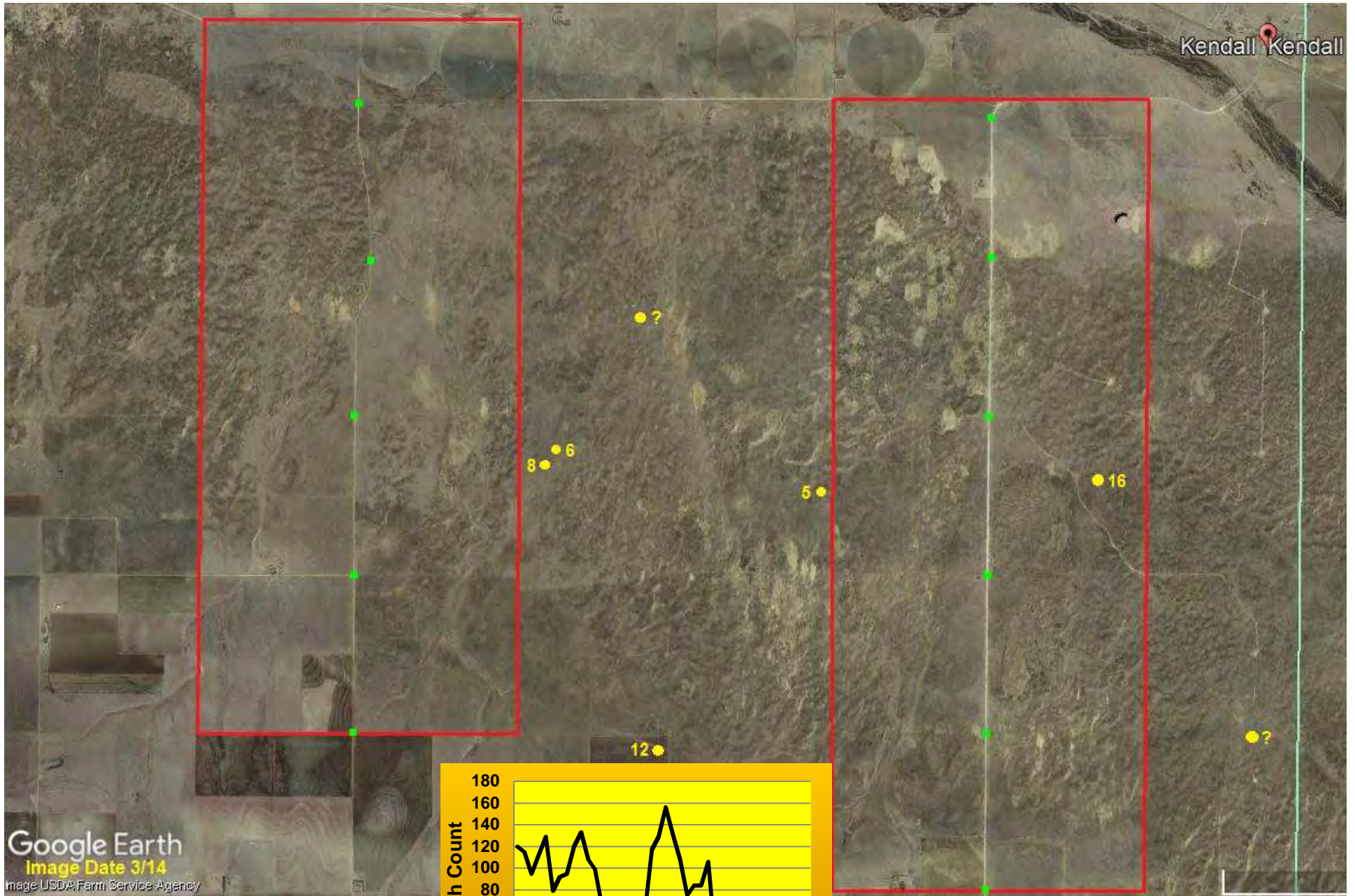


**2015 \***

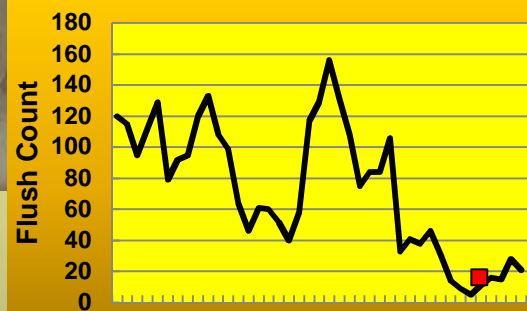


***Flush Count = 11***



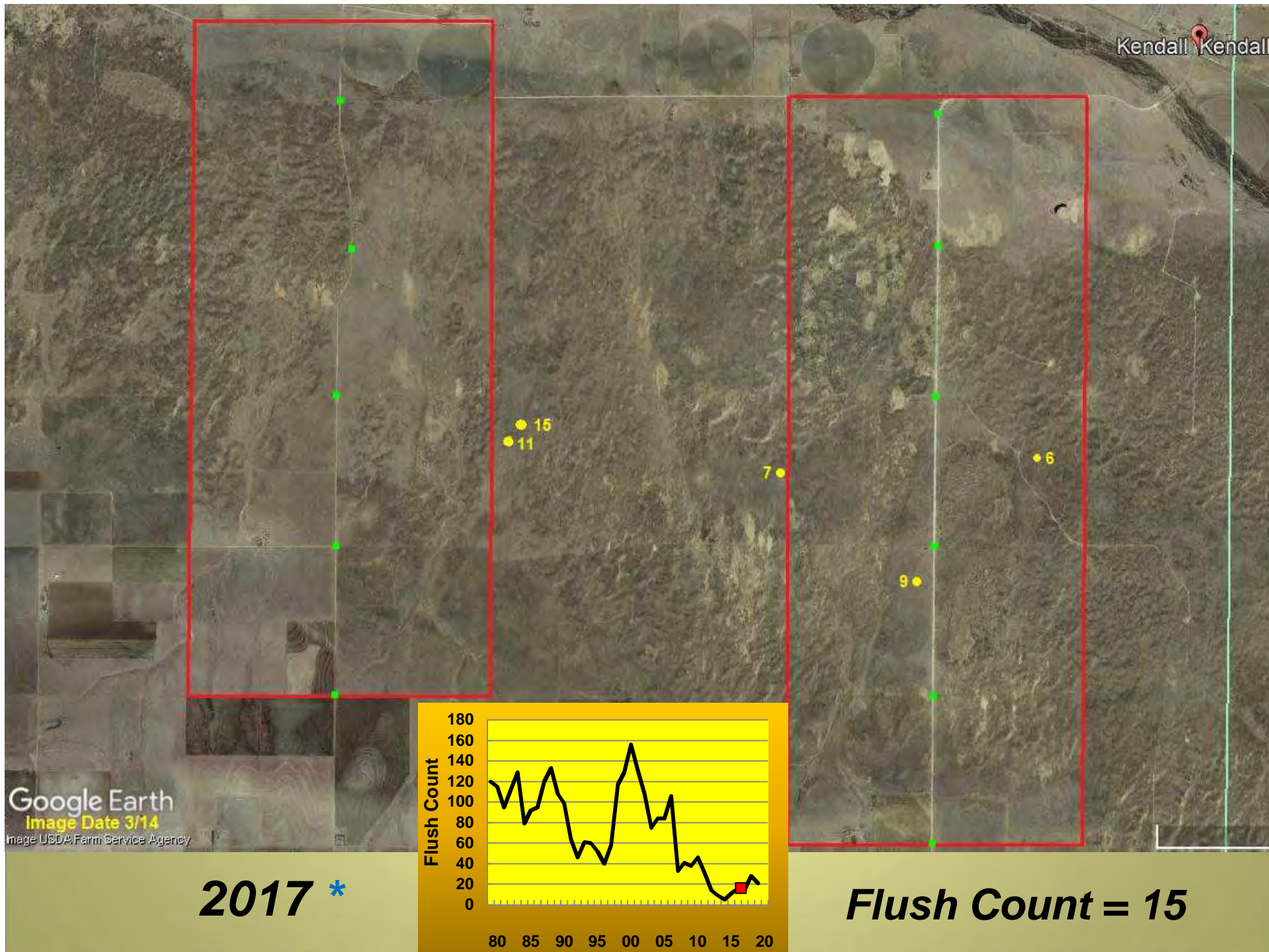


**2016**

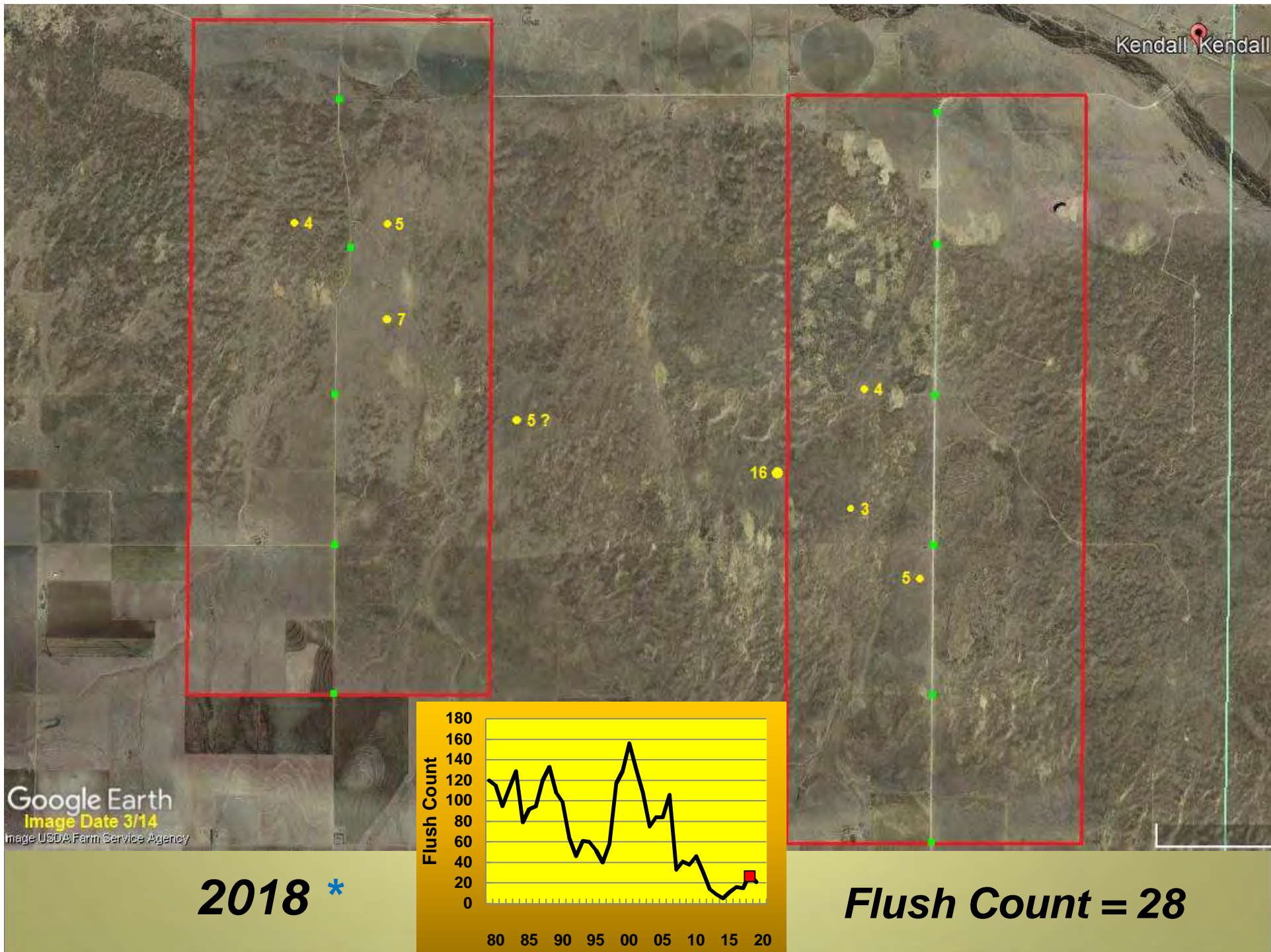


***Flush Count = 16***

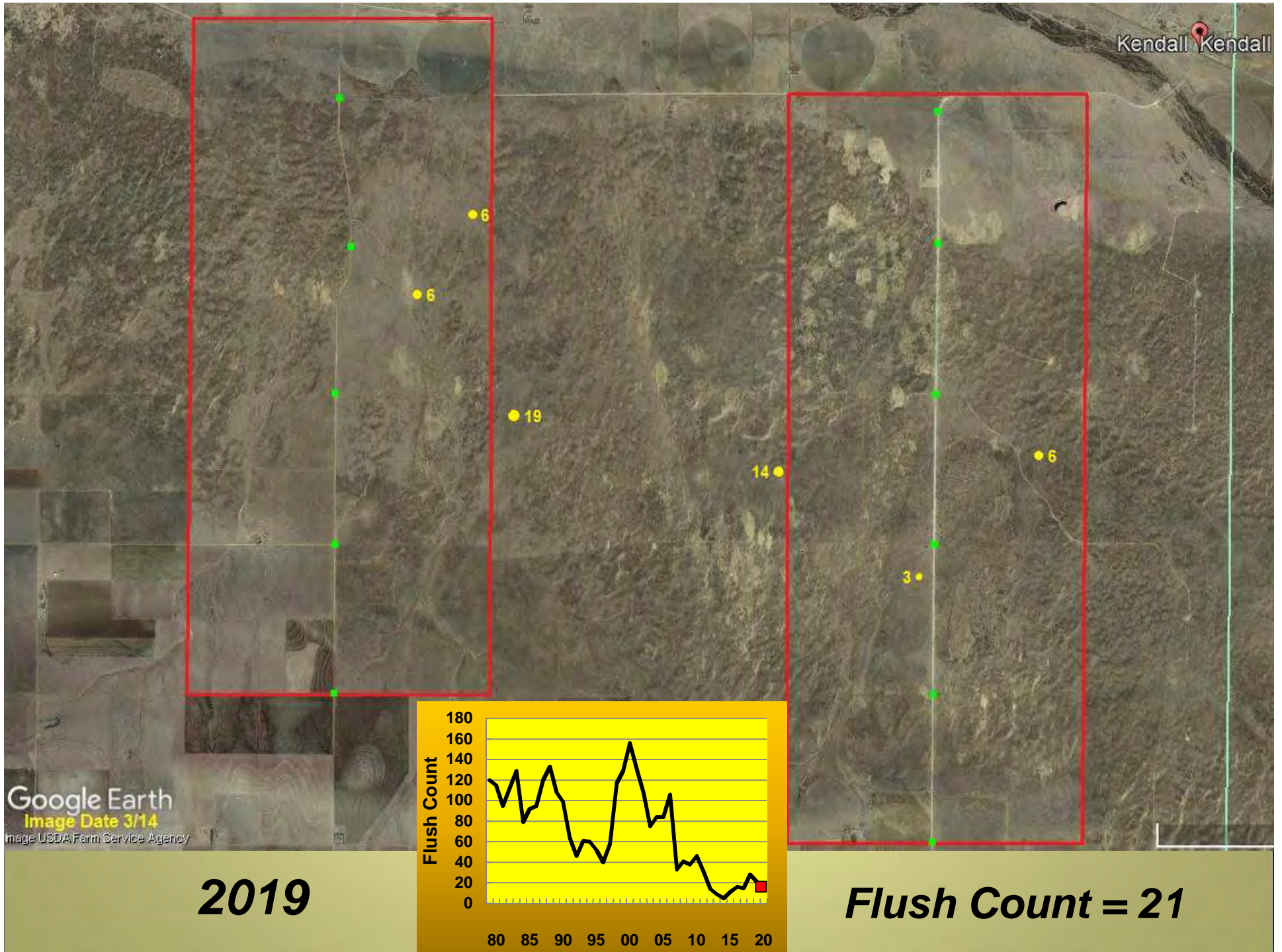










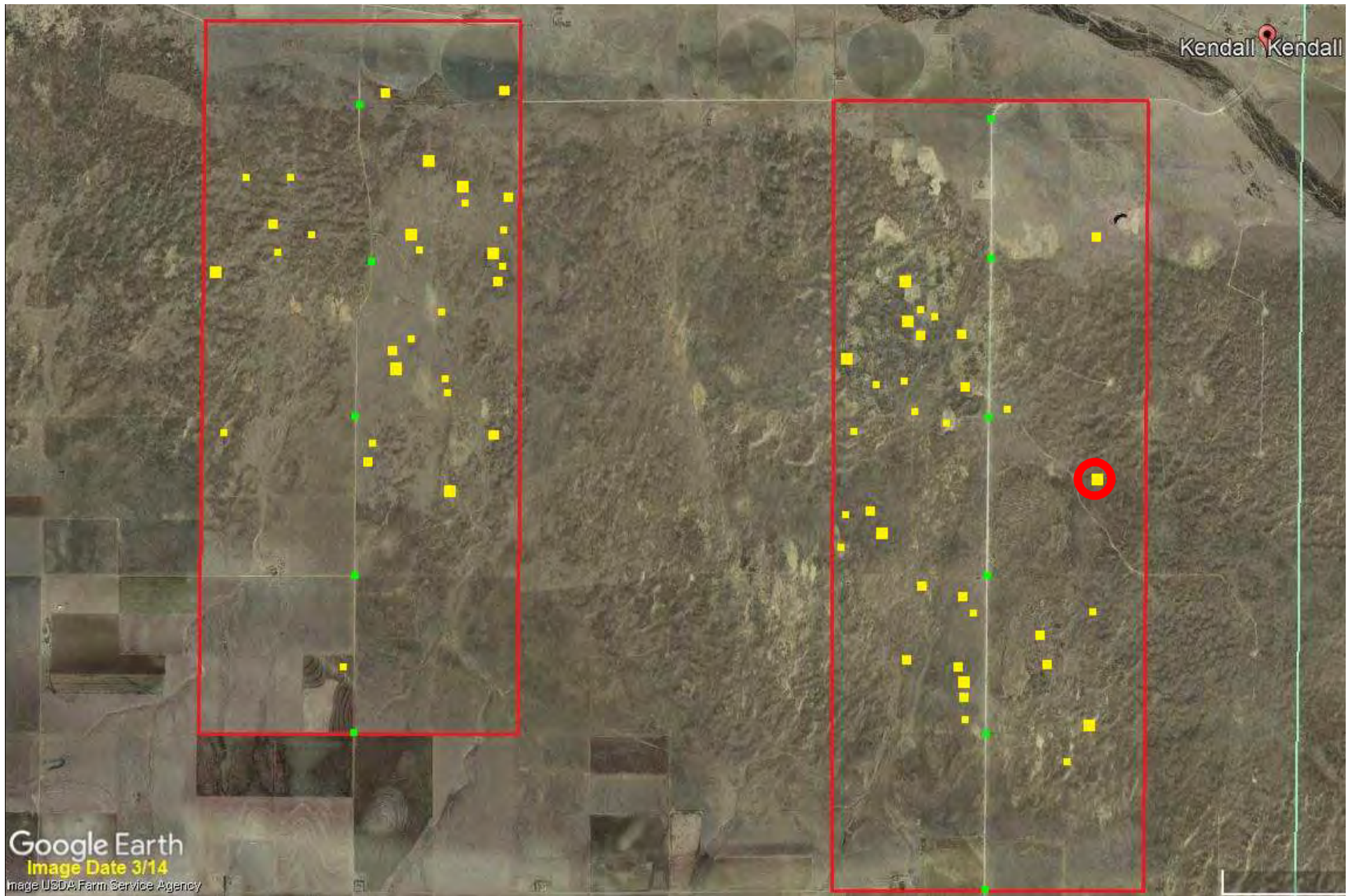






***61 Leks Located Within Survey Area 1979-2019***





***61 Leks Located Within Survey Area 1979-2019***



***After 39 Consecutive Years of Occupancy, This Lek was Abandoned  
in 2018 due to Heavy Vegetation and Low Populations***



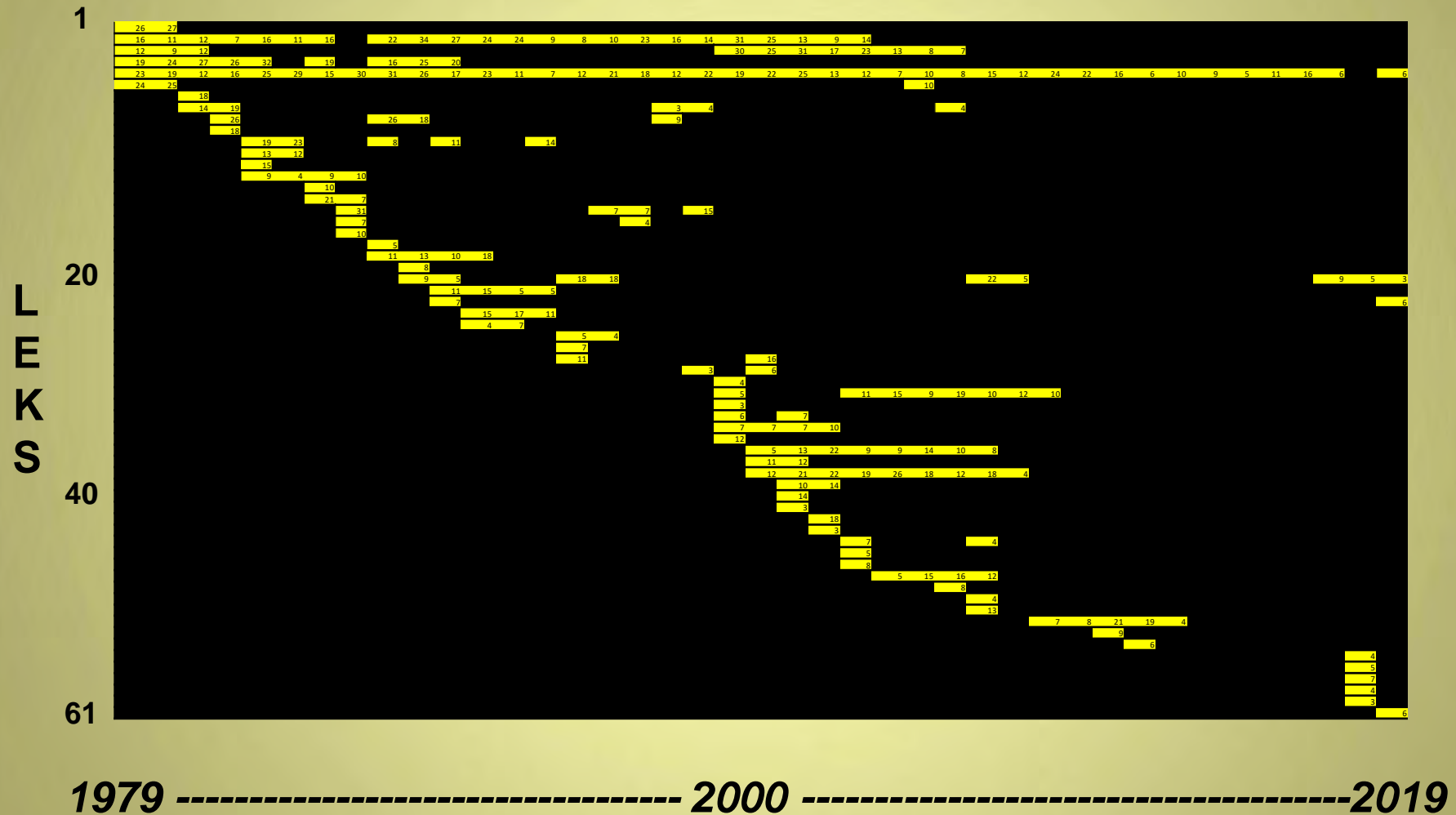


***But . . . It was Reoccupied in 2019 by 6 Males***





# Lek Persistence in Hamilton County, KS



**Mean Lek Duration was 2.6 Years**  
**Maximum Lek Duration was 39 Years**



# ***General Observations***

## ***Over 41 Springs:***

***Mean No. Leks was 5.4 / Year . . . Range of 1 to 11***

***Mean Lek Flush Count was 12.8 / Lek . . . Maximum of 34***

***Mean Survey Flush Count was 72.2 / Year . . . Range of 5 to 156***

***Short Duration of Leks or Lek “Shifting” was Common with  
Approximately 61 Sites Used (excluding shifts < 100 m)***

***-- Mainly due to Annual Changes in Vegetation***

***Driven by Precipitation and Grazing Patterns***

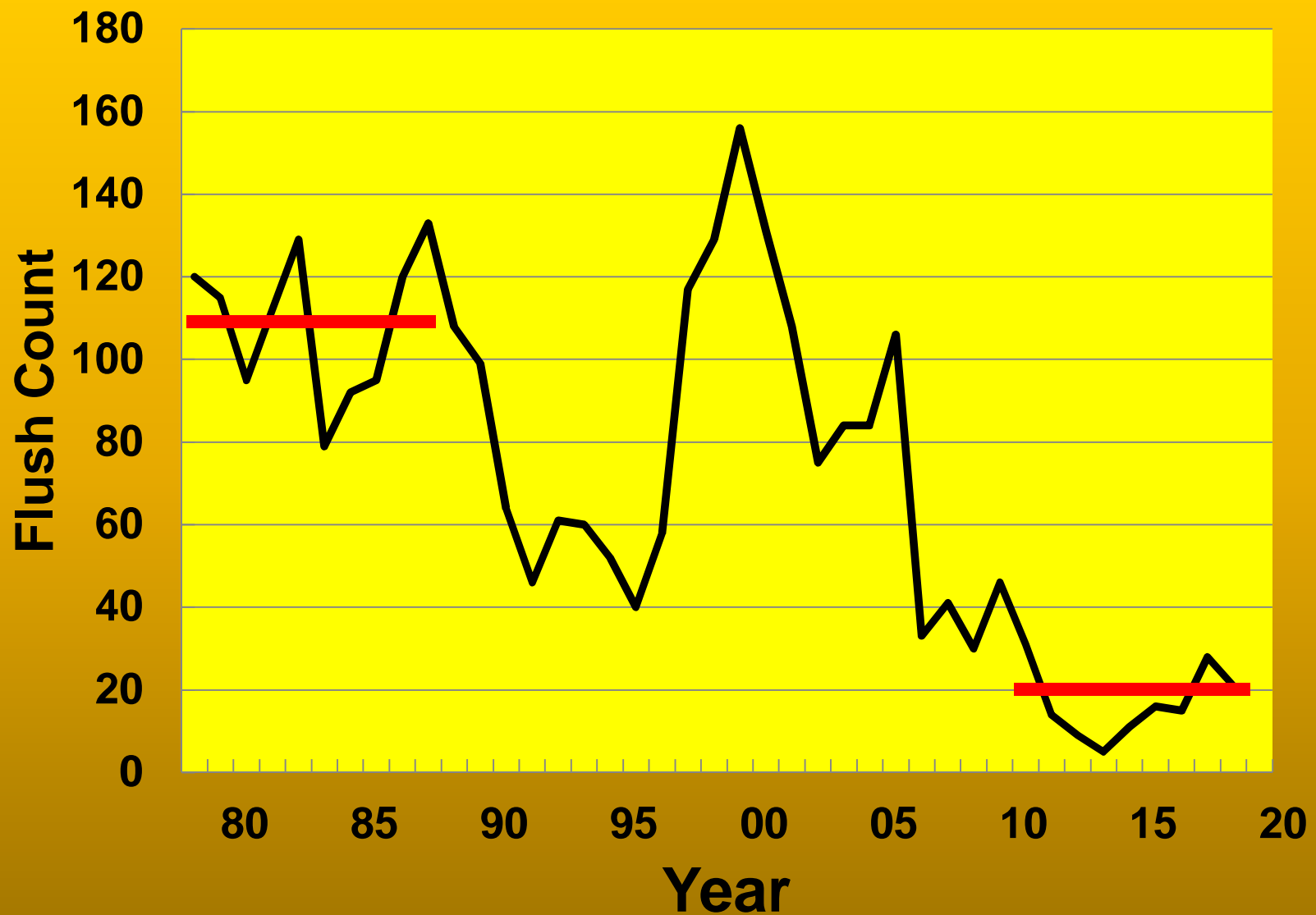
***Accurate Listening-Based Surveys of Low Populations are  
Probably More Challenging than Surveys of High Populations***

***-- When Populations are Low . . .***

***-- Less Acoustic Synergy - Among Males on the Lek  
- Between Leks***

***-- Results in Proportionally Less Vocalization  
& Shorter Duration of Vocalization / Morning***





***LPCH Populations Averaged 82% Lower in the Last Decade Than in the First Decade of the Survey***

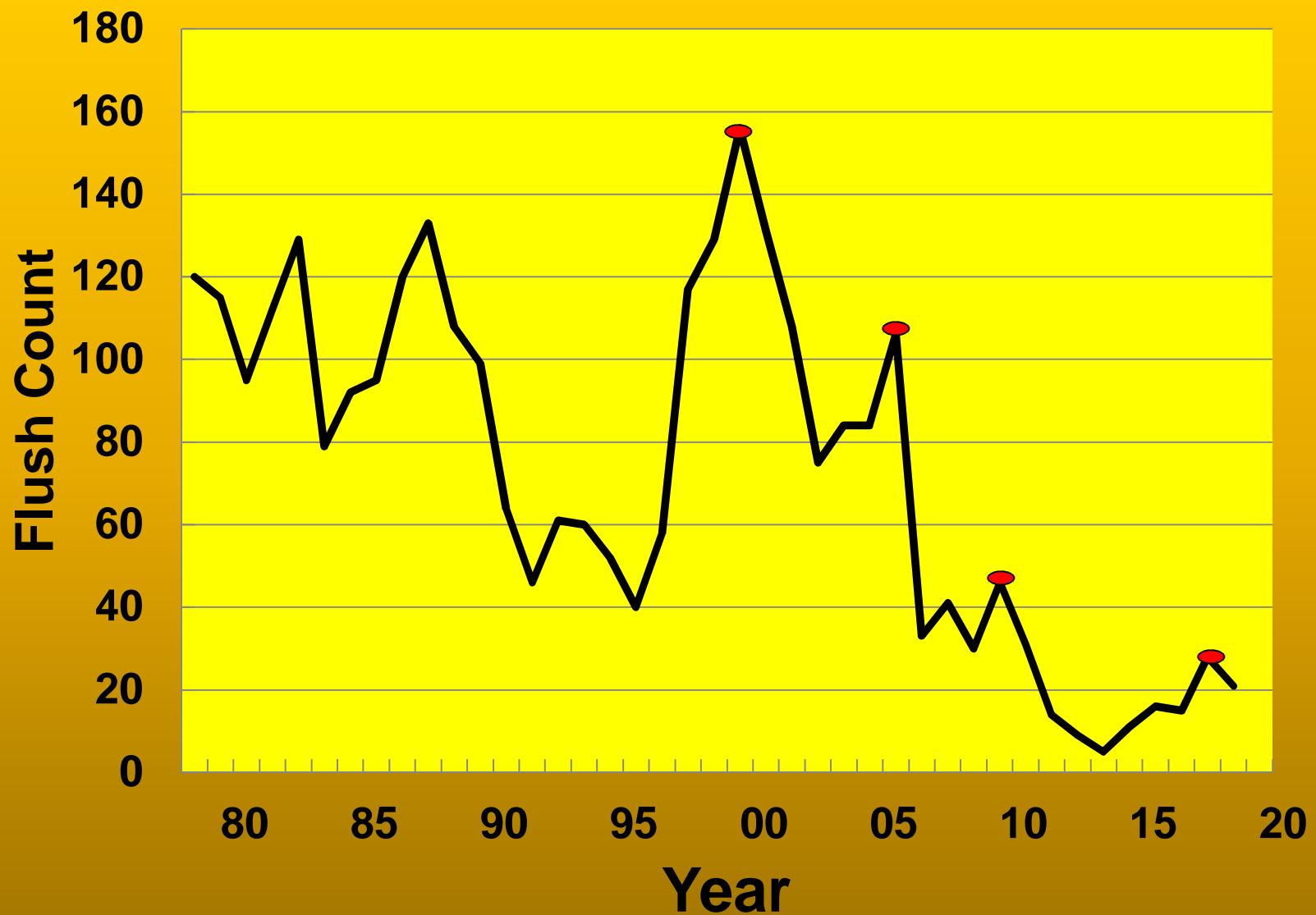


# ***LPCH Population Decline***

***on the  
Hamilton County, Kansas Survey Area***

- Driven Mainly by Droughts (Particularly 2010-14)  
and Other Extreme Weather Events***
- Intensified Grazing Associated with Implementation  
of a Savory-Type Grazing System in the Late 90's  
Probably also Contributed to This Decline***





***Each Successive LPCH Population Peak Since 2000  
Has Been Lower Than the Prior Peak***



