DeLorme's XMap PhotoFlight

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Fort Worth, Texas

USDA Imagery Planning Meeting
February 3-4, 2004

XMap PhotoFlight

- Accurately positions flight lines and photo trigger points using a corrected USGS DEM
- Displays photo footprints and neat models of block or corridor flights to ensure coverage and assist in the selection of ground control
- Generates flight plan files containing flight lines for the plane's navigation system and trigger point locations
- Data
  - Seamless, digital topographic maps of the U.S.
  - Corrected USGS Digital Elevation Model

PhotoFlight Benefits

- Save time planning aerial photography missions
- Save money with optimal trigger point layout
- Greater flight plan accuracy using the corrected USGS DEM
- Ensure site coverage at the most efficient cost
- Respond quickly and confidently to project bid requests
- NRCS Use: Plan coverage for Wetland Reserve Easements

DeLorme XMap® 4.0 - Untitled 1

HELP

XMap 4.0

Data Zoom 4-0

0° (N)

Latitude N50° 28'

Longitude W56° 41'

Elevation 0 feet

Interval

0 mi 100

Saskatoon
Yorkton
Pickle Lake
Banff
Calgary
Revelstoke
Kamloops
Kelowna
Moose Jaw
Regina
Medicine Hat
Lethbridge
Brandon
Winnipeg
Kenora
Bellingham
Fort Frances
Minot
Grand Forks
Seattle
Spokane
Great Falls
Tacoma
Missoula
Helena
Bismarck
Fargo
Duluth
Yakima
Richland
Bozeman
Billings
Saint Cloud
Minneapolis
Eau Claire
Pierre
Rapid City
Rochester
Boise
Sioux Falls
La Crosse
Pocatello
Casper
Sioux City
Cedar Falls
Des Moines
Ogden
Cheyenne
North Platte
Omaha
Davenport
Salt Lake City
Redding
Fort Collins
Lincoln
Orem
Chico
Denver
Saint Joseph
Reno
Carson City
Grand Junction
Topeka
Kansas City
Colorado Springs
Sacramento
Lawrence
Saint Louis
Pueblo
San Francisco
Cedar City
Dodge City
Wichita

Map Data | Print | Find | Phone | XData | Info | NetLink | PhotoFlight | Draw | Profile | 3-D | Route | GPS | Voice | Handheld Export

Secondary Map

- XData Datasets
- Draw Files
- Reference Data
- USA Topographic Data Series

Primary Map

- XData Datasets
- Route Files
- Draw Files
- Reference Data

File

Data

Seattle
Montréal
Chicago
San Francisco
New York
Los Angeles

DeLorme XMap® 4.0 - Untitled 1

HELP

Import Draw File

Look in: wrp

- mt_wrp_plans
- vt_wrp_plans
- merge1
- vt_abenaki_lat_lon
- vt_wrp_3
- wrp04_dd83
- wrp04_mt_gcs83
- wrp2004_dd83

File name: wrp2004_dd83

Files of type: Shapefile (*.shp)

Coords: Degrees

Datum: NAD83

Open

Cancel

XMap 4.0

Data Zoom 4-0

0° (N)

Latitude N43° 1'

Longitude W105° 2'

Elevation 4,670 feet

Interval

Saskatoon, Yorkton, Pickle Lake, Brandon, Winnipeg, Kenora, Fort Frances, Minot, Grand Forks, Bismarck, Fargo, Duluth, Saint Cloud, Minneapolis, Eau Claire, Pierre, Rapid City, Rochester, Sioux Falls, La Crosse, Sioux City, Cedar Falls, Des Moines, Omaha, Davenport, Ogden, Salt Lake City, Cheyenne, North Platte, Lincoln, Fort Collins, Orem, Redding, Chico, Reno, Carson City, Denver, Saint Joseph, Grand Junction, Topeka, Kansas City, Sacramento, Colorado Springs, Lawrence, Saint Louis, Pueblo, San Francisco, Cedar City, Dodge City, Wichita, Douglas, WY, 82633

0 mi 100

Map Data | Print | Find | Phone | XData | Info | NetLink | PhotoFlight | Draw | Profile | 3-D | Route | GPS | Voice | Handheld Export

Name	Type	Active	Lock	Date	Directory
wrp2004_dd832	Draw	◉	☐	Monday, January 12, 2004 13:39...	C:\DeLorm...

New | Import... | Save | Export... | Delete | Done

Seattle, Montréal, Chicago, San Francisco, New York, Los Angeles

DeLorme XMap® 4.0 - Untitled 1

HELP

XMap 4.0

Data Zoom 7-0

0° (N)

Latitude
N48° 18.2'
Longitude
W112° 14.4'
Elevation
3,833 feet
Interval
500 feet

0 mi 10

CANADA

UNITED STATES

Porthill
Eastport
Leadpoint
Metaline Falls
Copeland
Yaak
Eureka
CONTINENTAL DIVIDE NATIONAL SCENIC TRAIL
Babb
Fortine
Polebridge
St Mary
Tiger
Bonners Ferry
Tiego
Stryker
Nordman
Lost Creek
Naples
Lake McDonald
Apgar
Ruby
Coolin
Troy
West Glacier
Kalispel Indian Reservation
Colburn
Libby
Whitefish
Coram
Cusick
Columbia Falls
Sandpoint
Essex
Newport
Sagle
Laclede
Clark Fork
Kalispell
Cocolalla
Loon Lake
Heron
Blanchard
Careywood
Bigfork
Noxon
Deer Park
Spirit Lake
Swan Lake
Rollins
Rathdrum
Niarada
Elmo
Hayden
Mead
Post Falls
Lonepine
Polson
Spokane
Coeur d'Alene
Liberty Lake
Airway Heights
Murray
Thompson Falls
Hot Springs
Marshall
Mica Peak Air Force Station
Coeur d'Alene Lake
Cataldo
Kellogg
Ronan
Condon
Cheney
Wallace
Rockford
Harrison
Plains
Flathead Indian Reservation
Spangle
Saltese
Paradise
Fairfield
De Borgia
Perma
Waverly
St Maries
St Regis
Dixon
Calder
Ravalli

Map Data | Print | Find | Phone | XData | Info | NetLink | PhotoFlight | Draw | Profile | 3-D | Route | GPS | Voice | Handheld Export

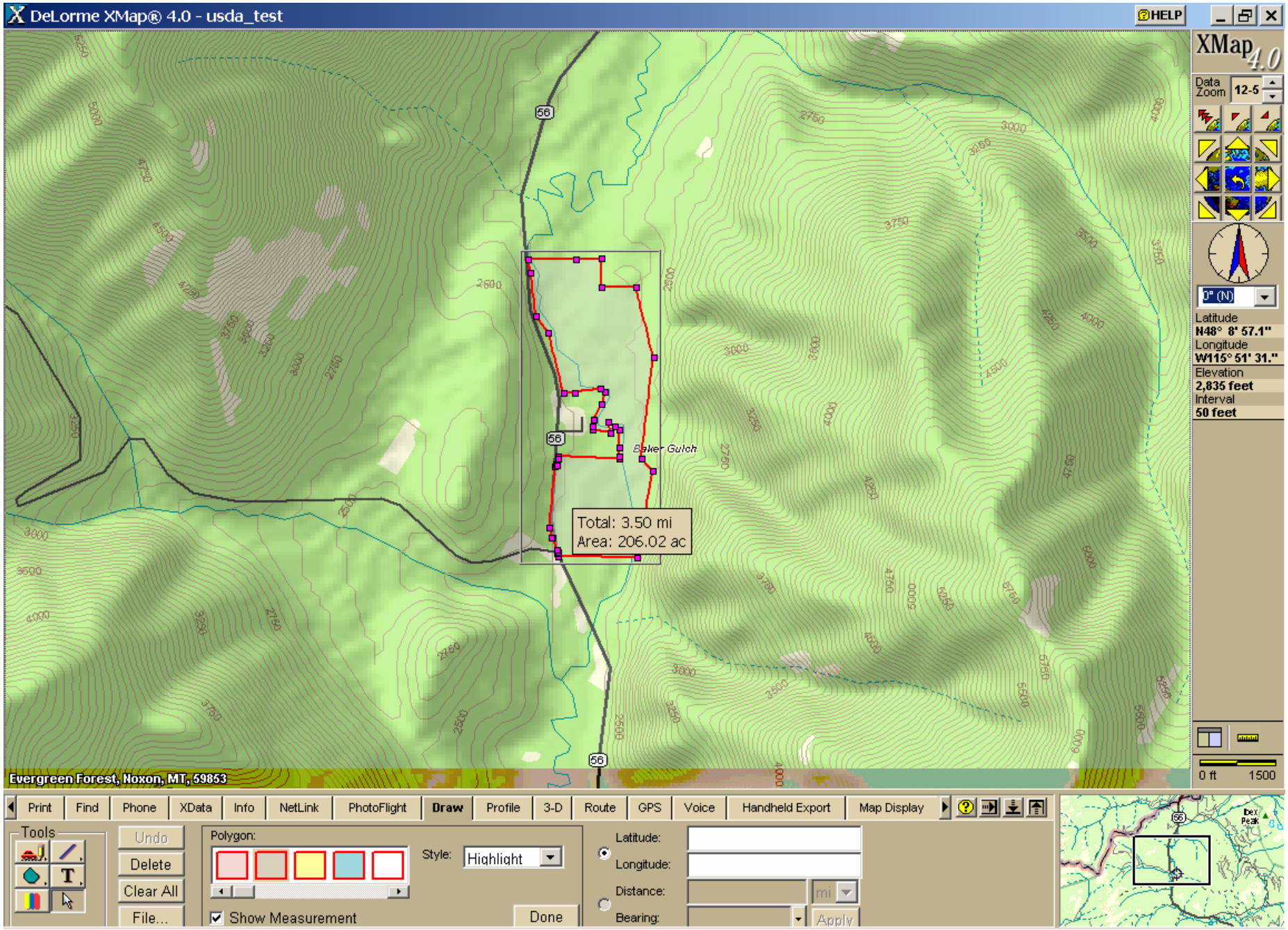
Tools

Undo
Delete
Clear All
File...

Click a Draw tool to begin drawing or measuring. Some Draw tool buttons have shortcut menus with additional draw tool options. Click and hold these buttons to select a different draw tool.

Latitude:
Longitude:
Distance: mi
Bearing: Apply

Kamloops
Revelstoke
Calgary
Kelowna
Lethbridge
Medicine Hat
Seattle
Spokane
Great Falls
Portland
Billings


DeLorme XMap® 4.0 - usda_test
HELP
XMap 4.0
Data Zoom 12-5
0° (N)
Latitude
N48° 8' 57.1"
Longitude
W115° 51' 31."
Elevation
2,835 feet
Interval
50 feet
Baker Gulch
Total: 3.50 mi
Area: 206.02 ac
Evergreen Forest, Noxon, MT, 59853
0 ft
1500
Print
Find
Phone
XData
Info
NetLink
PhotoFlight
Draw
Profile
3-D
Route
GPS
Voice
Handheld Export
Map Display
Tools
Undo
Delete
Clear All
File...
Polygon:
Style:
Highlight
Show Measurement
Done
Latitude:
Longitude:
Distance:
mi
Bearing:
Apply

DeLorme XMap® 4.0 - usda_test

HELP

XMap 4.0

Data Zoom 12-5

0° (N)

Latitude
N48° 9' 16.8"
Longitude
W115° 52' 14."
Elevation
2,392 feet
Interval
50 feet

0 ft 1500

Baker Gulch

Evergreen Forest, Noxon, MT, 59853

Map Data | Print | Find | Phone | XData | Info | NetLink | PhotoFlight | Draw | Profile | 3-D | Route | GPS | Voice | Handheld Export

Block Flight

Fwd Overlap 60.00 DEM ☑ Break 4000

Side Overlap 30.00 DEM ☑ Align ☑ Extend 50.00

Linear Flight

Fwd Overlap 20.00 DEM ☑ Break 4000

Film Parameters

Focal 0.15300

Photo 0.23000

Photo Scale 7920

Area N/A
Flight N/A
Trigger N/A
Flight Lines N/A

Neat Model ☐ Footprint ☐

Flight Auto

Flight Offset 0

File Name

File Generic

Calculate

Write Files

Add F

Delete

Break

DeLorme XMap® 4.0 - usda_test

HELP

XMap 4.0

Data Zoom 12-5

0° (N)

Latitude
N48° 8' 27.8"
Longitude
W115° 51' 19."
Elevation
3,475 feet
Interval
50 feet

0 ft 1500

Map Data | Print | Find | Phone | XData | Info | NetLink | **PhotoFlight** | Draw | Profile | 3-D | Route | GPS | Voice | Handheld Export

Block Flight

Fwd Overlap 60.00 DEM ☑ Break 4000

Side Overlap 30.00 DEM ☑ Align ☑ Extend 50.00

Linear Flight

Fwd Overlap 20.00 DEM ☑ Break 4000

Film Parameters

Focal 0.15300

Photo 0.23000

Photo Scale 7920

Area 0.834 sq km

Flight 6300 ft

Trigger 4

Flight Lines 1 @ 0°

Neat Model ☐ Footprint ☑

Flight Auto

Flight Offset 0

File Name

File Generic

Calculate

Write Files

Add F

Delete

Break

DeLorme XMap® 4.0 - usda_test

HELP

XMap 4.0

Data Zoom 12-5

0° (N)

Latitude
N48° 8' 28.0"
Longitude
W115° 51' 41."
Elevation
2,832 feet
Interval
50 feet

0 ft 1500

Map Data | Print | Find | Phone | XData | Info | NetLink | **PhotoFlight** | Draw | Profile | 3-D | Route | GPS | Voice | Handheld Export

Block Flight

Fwd Overlap 60.00 DEM ☑ Break 4000

Side Overlap 30.00 DEM ☑ Align ☑ Extend 50.00

Linear Flight

Fwd Overlap 20.00 DEM ☑ Break 4000

Film Parameters

Focal 0.15300

Photo 0.23000

Photo Scale 7920

Area 0.834 sq km

Flight 6300 ft

Trigger 4

Flight Lines 1 @ 0°

Neat Model ☑ Footprint ☑

Flight Auto

Flight Offset 0

File Name test2

File Generic

Calculate

Write Files

Add F

Delete

Break

DeLorme XMap® 4.0 - usda_test

HELP

XMap 4.0

Data Zoom 12-5

0° (N)

Latitude
N48° 8' 28.0"
Longitude
W115° 51' 41."
Elevation
2,832 feet
Interval
50 feet

0 ft 1500

Baker Gulch

Map Data | Print | Find | Phone | XData | Info | NetLink | **PhotoFlight** | Draw | Profile | 3-D | Route | GPS | Voice | Handheld Export

Block Flight

Fwd Overlap 60.00 DEM ☑ Break 4000

Side Overlap 30.00 DEM ☑ Align ☑ Extend 42.00

Linear Flight

Fwd Overlap 20.00 DEM ☑ Break 4000

Film Parameters

Focal 0.15300

Photo 0.23000

Photo Scale 7920

Area 0.834 sq km
Flight 6300 ft
Trigger 3
Flight Lines 1 @ 0°

Neat Model ☐ Footprint ☑

Flight Auto

Flight Offset 0

File Name

File Generic

Calculate

Write Files

Add F

Delete

Break

MapDocs

File Edit View Favorites Tools Help

Back Search Folders

Address C:\Program Files\XMap 4.0\MapDocs Go

MapDocs

Select an item to view its description.

See also:

My Documents

My Network Places

My Computer

Name	Size	Type	Modified
30071_000001W	1 KB	Microsoft Excel Comm...	12/10/2003 8:13 AM
30071_000001W	2 KB	Write Document	12/10/2003 8:13 AM
30085_000001W	1 KB	Microsoft Excel Comm...	12/10/2003 8:53 AM
30085_000001W	2 KB	Write Document	12/10/2003 8:53 AM
30085_000002W	1 KB	Microsoft Excel Comm...	12/10/2003 9:06 AM
30085_000002W	2 KB	Write Document	12/10/2003 9:06 AM
30091_0001_2W	1 KB	Microsoft Excel Comm...	12/10/2003 9:30 AM
30091_0001_2W	2 KB	Write Document	12/10/2003 9:30 AM
30091_0003_7W	1 KB	Microsoft Excel Comm...	12/10/2003 9:19 AM
30091_0003_7W	2 KB	Write Document	12/10/2003 9:19 AM
50007_000001W	1 KB	Microsoft Excel Comm...	12/10/2003 10:25 AM
50007_000001W	2 KB	Write Document	12/10/2003 10:25 AM
50011_Abenaki	1 KB	Microsoft Excel Comm...	12/10/2003 10:37 AM
50011_Abenaki	2 KB	Write Document	12/10/2003 10:37 AM
50023_000001W	1 KB	Microsoft Excel Comm...	12/10/2003 10:29 AM
50023_000001W	2 KB	Write Document	12/10/2003 10:29 AM
50025_000001W	1 KB	Microsoft Excel Comm...	12/10/2003 10:13 AM
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66_0325_0_15	1 KB	Microsoft Excel Comm...	12/10/2003 8:41 AM
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66_0325_00_17	1 KB	Microsoft Excel Comm...	12/10/2003 8:45 AM
66_0325_00_17	2 KB	Write Document	12/10/2003 8:45 AM
66_0325_9_17	3 KB	Microsoft Excel Comm...	12/10/2003 8:25 AM
66_0325_9_17	2 KB	Write Document	12/10/2003 8:25 AM
test1	1 KB	Microsoft Excel Comm...	1/12/2004 1:48 PM
test1	1 KB	Write Document	1/12/2004 1:48 PM

26 object(s) 19.6 KB My Computer

PhotoFlight Statistics File

Original file name C:\Program Files\XMap 4.0\MapDocs\test1.wri

Created on 01/12/2004 at 13:48:36

Companion file is
     Comma seperated variable C:\Program Files\XMap 4.0\MapDocs\test1.csv

FocalLength	0.153000 m
PhotoFormat	0.230000 m
PhotoScale	1:7920

Trigger Points are calculated for a block flight

ForwardOverlap	60.000 %
SideOverlap	30.000 %
BreakDistance	4000.000 km
BlockExtend	50.000 %

Trigger Points are in an aligned grid (Aligned Photos)

FlightHeading	0.000
StartingOffset	0.000 m

Magnetic variation	E17.1
Area of coverage	0.833719 sq km
Distance between flight lines	1275.120 m
Distance Block area extended	637.560 m
Total flight line distance	2.169 km
Shortest flight line distance	2.169 km
Longest flight line distance	2.169 km
Path flight altitude	6300 ft
Trigger point count	4
Model count (Approx)	3
Flight line count	1

1	1	N4809104	W11552053	6300	7920	2343	E17.1	0
1	2	N4809338	W11552053	6300	7920	2354	E17.1	0
1	3	N4809572	W11552053	6300	7920	2327	E17.1	0
1	4	N4810207	W11552053	6300	7920	2345	E17.1	0

DeLorme XMap® 4.0 - Untitled 1

HELP

XMap 4.0

Data Zoom 12-5

0° (N)

Latitude
N48° 8' 1.4"
Longitude
W115° 53' 4.5"
Elevation
2,774 feet
Interval
50 feet

0 ft 2000

Map Data | Print | Find | Phone | XData | Info | NetLink | PhotoFlight | Draw | Profile | 3-D | Route | GPS | Voice | Handheld Export

Map
Route
Profile
XData

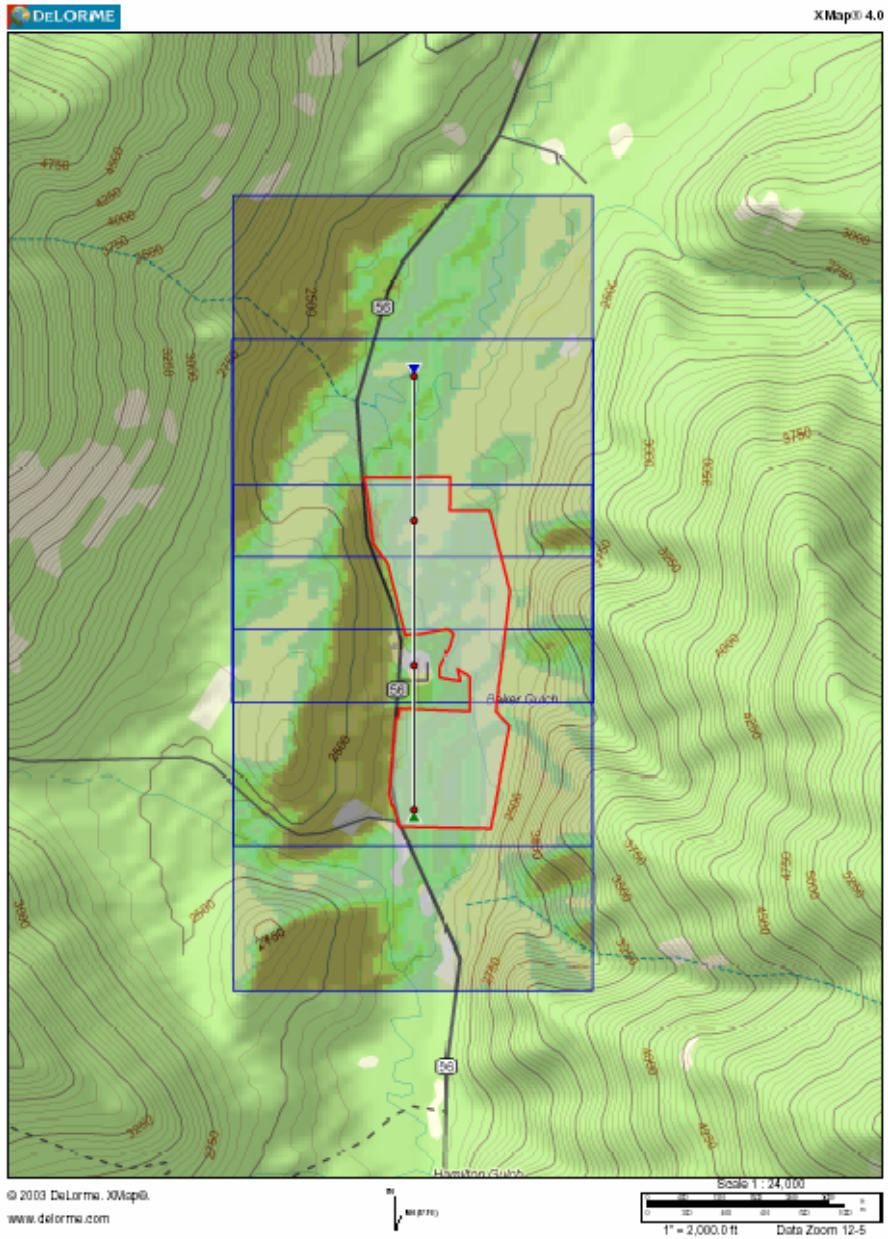
Map
Left
Right

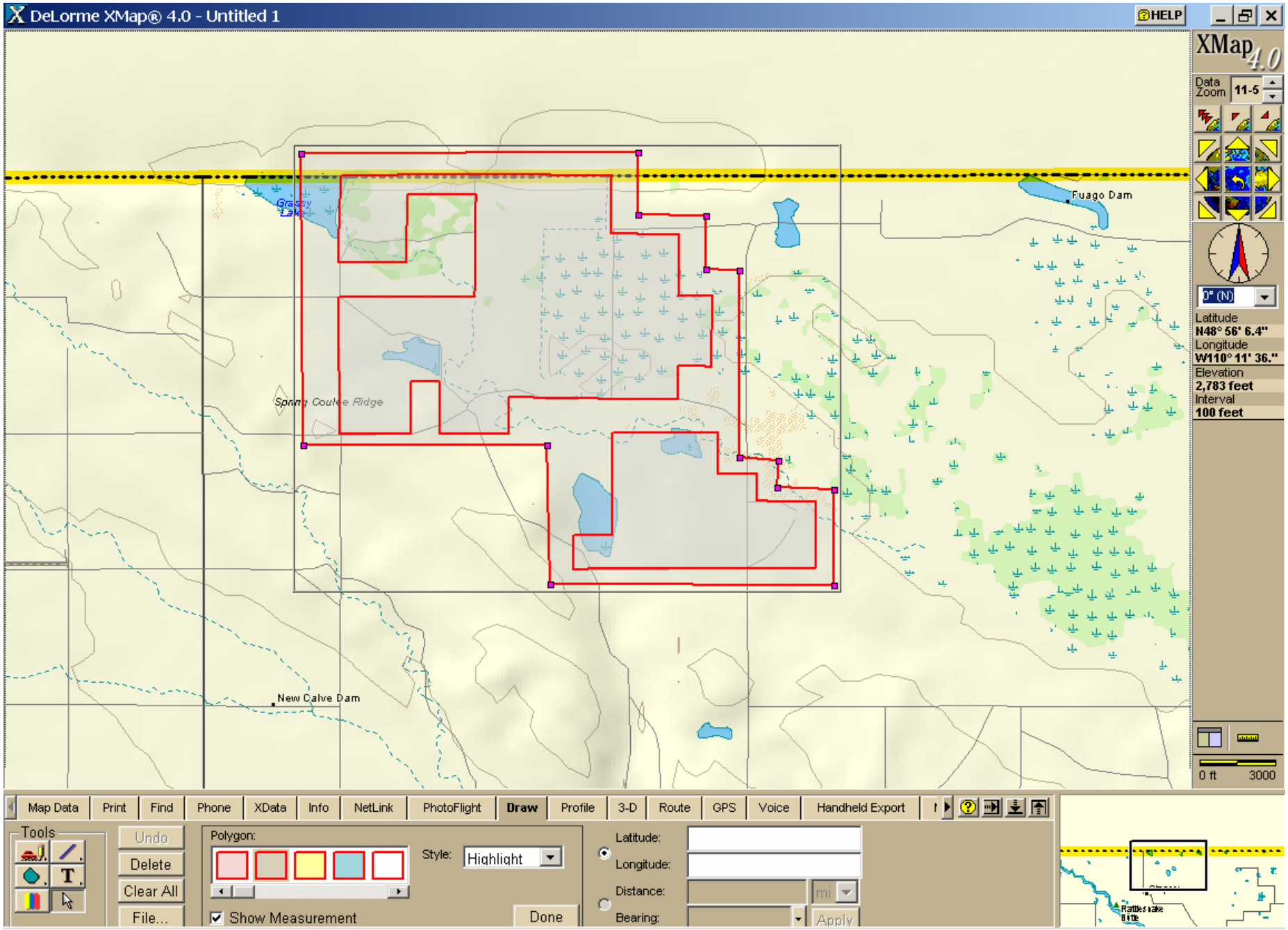
Map Layout
Single
2 X 2
3 X 3
Page
Screen

Print Area
Lock Print Center
Photo Zoom 1 : 24,000
Enlargement - 143%
Print Preview

Layout Tools
Arial
24
Regular

Print
Setup...


DeLORME
XMap® 4.0
Baker Gulch
Hamilton Gulch
© 2003 DeLorme. XMap®.
www.delorme.com
Scale 1 : 24,000
1" = 2,000.0 ft
Data Zoom 12-5


DeLorme XMap® 4.0 - Untitled 1
HELP
XMap 4.0
Data Zoom 11-5
0° (N)
Latitude
N48° 56' 6.4"
Longitude
W110° 11' 36."
Elevation
2,783 feet
Interval
100 feet
0 ft
3000
Grassy Lake
Fuago Dam
Spring Coulee Ridge
New Calve Dam
Map Data
Print
Find
Phone
XData
Info
NetLink
PhotoFlight
Draw
Profile
3-D
Route
GPS
Voice
Handheld Export
Tools
Undo
Delete
Clear All
File...
Polygon:
Style:
Highlight
Show Measurement
Done
Latitude:
Longitude:
Distance:
mi
Bearing:
Apply

DeLorme XMap® 4.0 - Untitled 1

HELP

XMap 4.0

Data Zoom 11-5

0° (N)

Latitude
N48° 56' 10.7"
Longitude
W110° 9' 48."
Elevation
2,834 feet
Interval
100 feet

0 ft 3000

Fuago Dam

Grassy Lake

Spring Coulee Ridge

New Calve Dam

Map Data | Print | Find | Phone | XData | Info | NetLink | **PhotoFlight** | Draw | Profile | 3-D | Route | GPS | Voice | Handheld Export

Block Flight

Fwd Overlap 60.00 DEM ☑ Break 4000

Side Overlap 30.00 DEM ☑ Align ☑ Extend 50.00

Linear Flight

Fwd Overlap 20.00 DEM ☑ Break 4000

Film Parameters

Focal 0.15300

Photo 0.23000

Photo Scale 7920

Area 21.8 sq km

Flight 6800 ft

Trigger 38

Flight Lines 5 @ 90°

Neat Model ☐ Footprint ☑

Flight Auto

Flight Offset 0

File Name test2

File Generic

Calculate

Write Files

Add F

Delete

Break

Rattlesnake Butte

PhotoFlight Statistics File

Original file name C:\Program Files\XMap 4.0\MapDocs\test2.wri

Created on 01/12/2004 at 14:13:32

Companion file is
     Comma seperated variable C:\Program Files\XMap 4.0\MapDocs\test2.csv

FocalLength	0.153000 m
PhotoFormat	0.230000 m
PhotoScale	1:7920

Trigger Points are calculated for a block flight

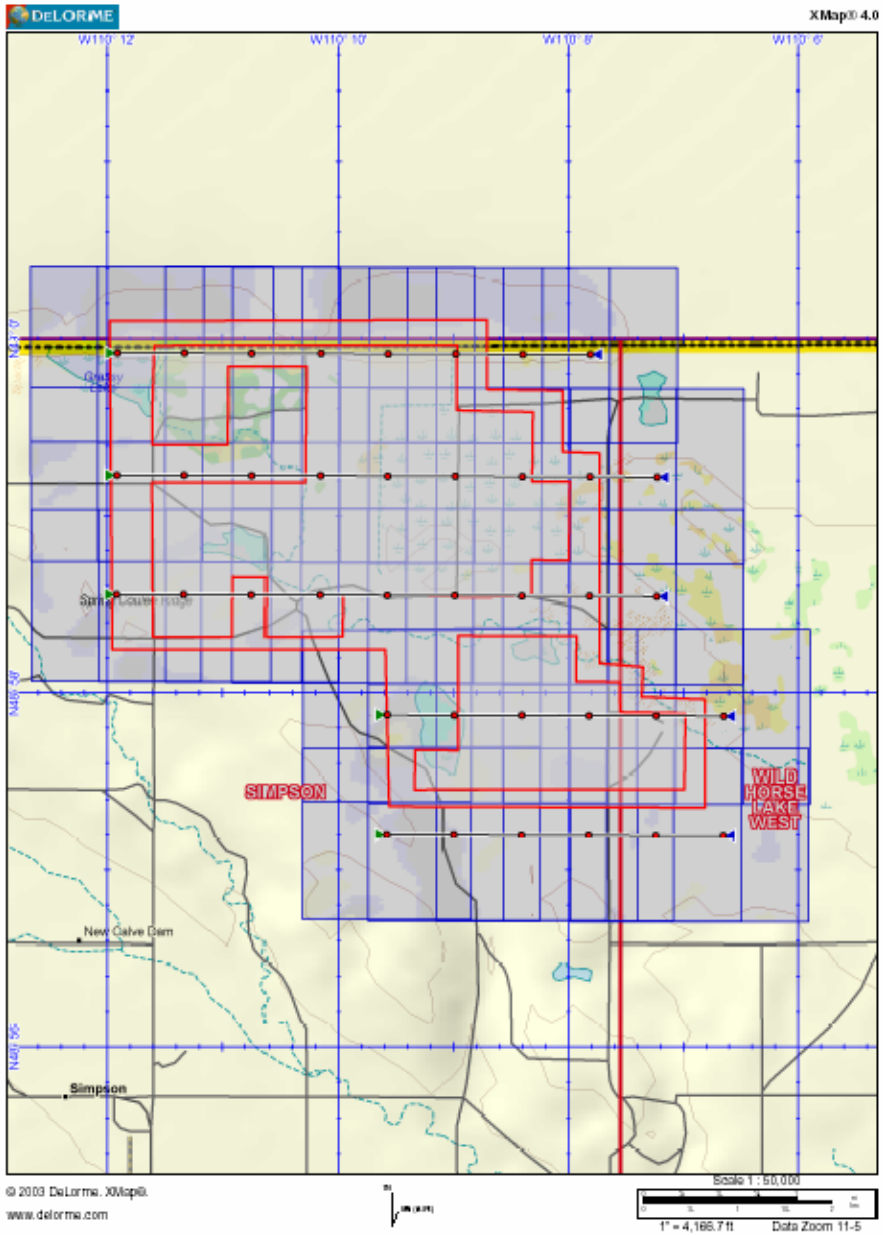
ForwardOverlap	60.000 %
SideOverlap	30.000 %
BreakDistance	4000.000 km
BlockExtend	50.000 %

Trigger Points are in an aligned grid (Aligned Photos)

FlightHeading	90.000
StartingOffset	0.000 m

Magnetic variation	E14.8
Area of coverage	21.773325 sq km
Distance between flight lines	1247.082 m (min) 1275.120 m (max)
Distance Block area extended	637.560 m
Total flight line distance	23.537 km
Shortest flight line distance	3.566 km
Longest flight line distance	5.706 km
Path flight altitude	6800 ft
Trigger point count	38
Model count (Approx)	33
Flight line count	5

1	1	N4859551	W11011548	6800	7920	2797	E14.8	90
1	2	N4859550	W11011196	6800	7920	2783	E14.8	90
1	3	N4859549	W11010444	6800	7920	2793	E14.8	90
1	4	N4859548	W11010093	6800	7920	2796	E14.8	90
1	5	N4859548	W11009341	6800	7920	2794	E14.8	90
1	6	N4859547	W11008589	6800	7920	2793	E14.8	90
1	7	N4859546	W11008237	6800	7920	2789	E14.8	90
1	8	N4859545	W11007485	6800	7920	2788	E14.8	90
2	1	N4859138	W11011550	6800	7920	2829	E14.8	90
2	2	N4859137	W11011199	6800	7920	2815	E14.8	90
2	3	N4859137	W11010447	6800	7920	2808	E14.8	90
2	4	N4859136	W11010095	6800	7920	2805	E14.8	90
2	5	N4859135	W11009343	6800	7920	2802	E14.8	90
2	6	N4859134	W11008591	6800	7920	2799	E14.8	90
2	7	N4859133	W11008240	6800	7920	2799	E14.8	90
2	8	N4859133	W11007488	6800	7920	2799	E14.8	90
2	9	N4859132	W11007136	6800	7920	2795	E14.8	90
3	1	N4858330	W11011552	6800	7920	2880	E14.8	90
3	2	N4858330	W11011201	6800	7920	2865	E14.8	90
3	3	N4858329	W11010449	6800	7920	2846	E14.8	90
3	4	N4858328	W11010097	6800	7920	2802	E14.8	90
3	5	N4858328	W11009346	6800	7920	2811	E14.8	90
3	6	N4858327	W11008594	6800	7920	2799	E14.8	90
3	7	N4858326	W11008242	6800	7920	2799	E14.8	90
3	8	N4858325	W11007490	6800	7920	2799	E14.8	90
3	9	N4858324	W11007139	6800	7920	2797	E14.8	90
4	1	N4857523	W11009347	6800	7920	2893	E14.8	90
4	2	N4857523	W11008595	6800	7920	2802	E14.8	90
4	3	N4857522	W11008244	6800	7920	2832	E14.8	90
4	4	N4857521	W11007492	6800	7920	2811	E14.8	90
4	5	N4857520	W11007140	6800	7920	2799	E14.8	90
4	6	N4857519	W11006389	6800	7920	2799	E14.8	90
5	1	N4857120	W11009349	6800	7920	2895	E14.8	90
5	2	N4857119	W11008597	6800	7920	2819	E14.8	90
5	3	N4857118	W11008246	6800	7920	2877	E14.8	90
5	4	N4857117	W11007494	6800	7920	2868	E14.8	90
5	5	N4857117	W11007143	6800	7920	2836	E14.8	90
5	6	N4857116	W11006391	6800	7920	2839	E14.8	90


DeLORME
XMap® 4.0
W110° 12'
W110° 10'
W110° 8'
W110° 6'
N43° 0'
N40° 58'
N40° 56'
SIMPSON
WILD HORSE LAKE WEST
New Calve Dam
Simpson
© 2003 DeLorme. XMap®.
www.delorme.com
Scale 1 : 50,000
1" = 4,166.7 ft
Data Zoom 11-5

Summary

- PhotoFlight is an effective software for planning aerial photography missions.
- Relatively low cost. $2,500.
- Good detail on the DeLorme topo maps. USGS DRGs available at an added cost.
- Auto mode is good, but results should always be checked.

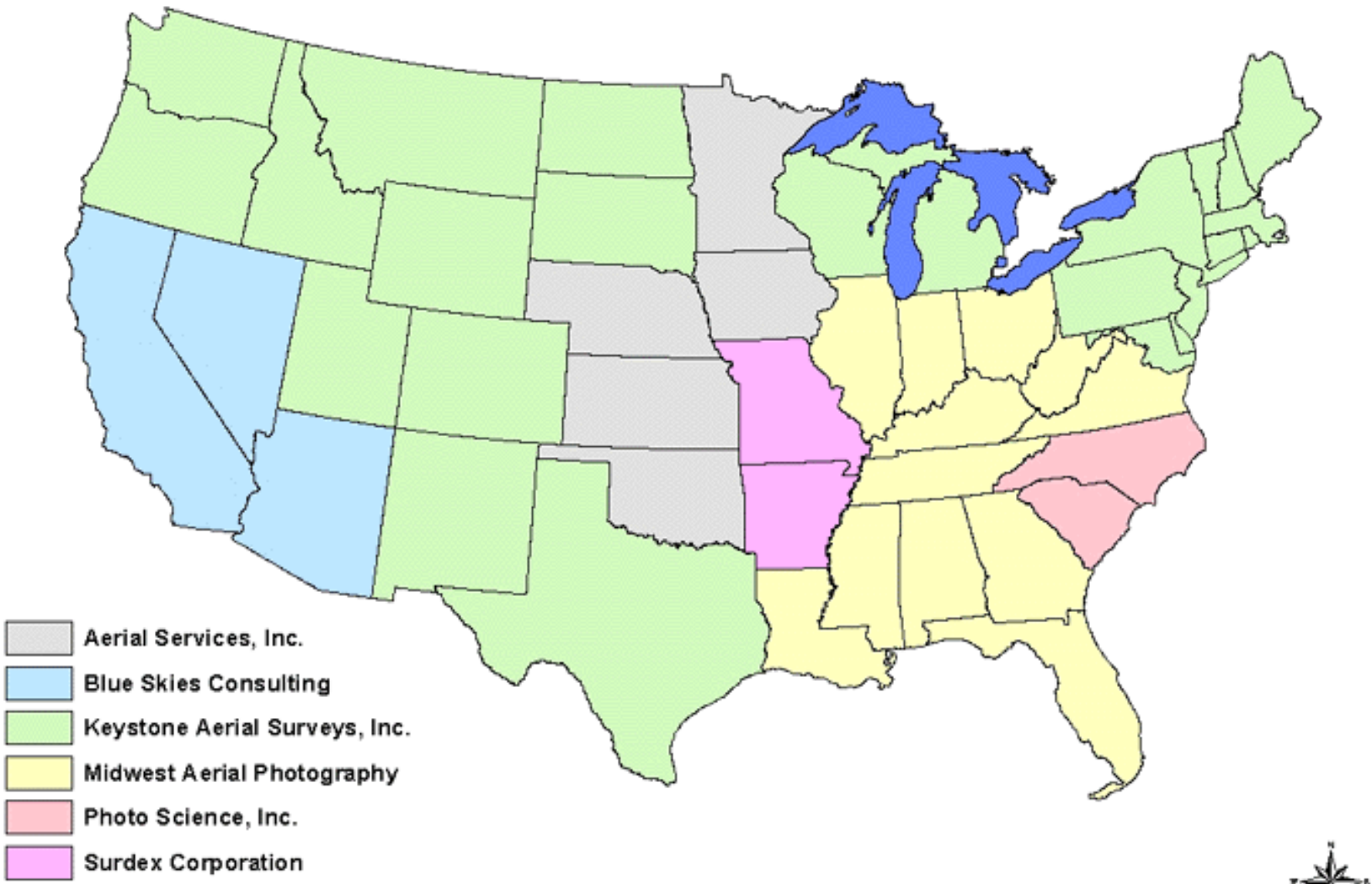
2003 NRI Imagery
and
2004 Imagery Plans

Dorsey Plunk

National Cartography and Geospatial Center

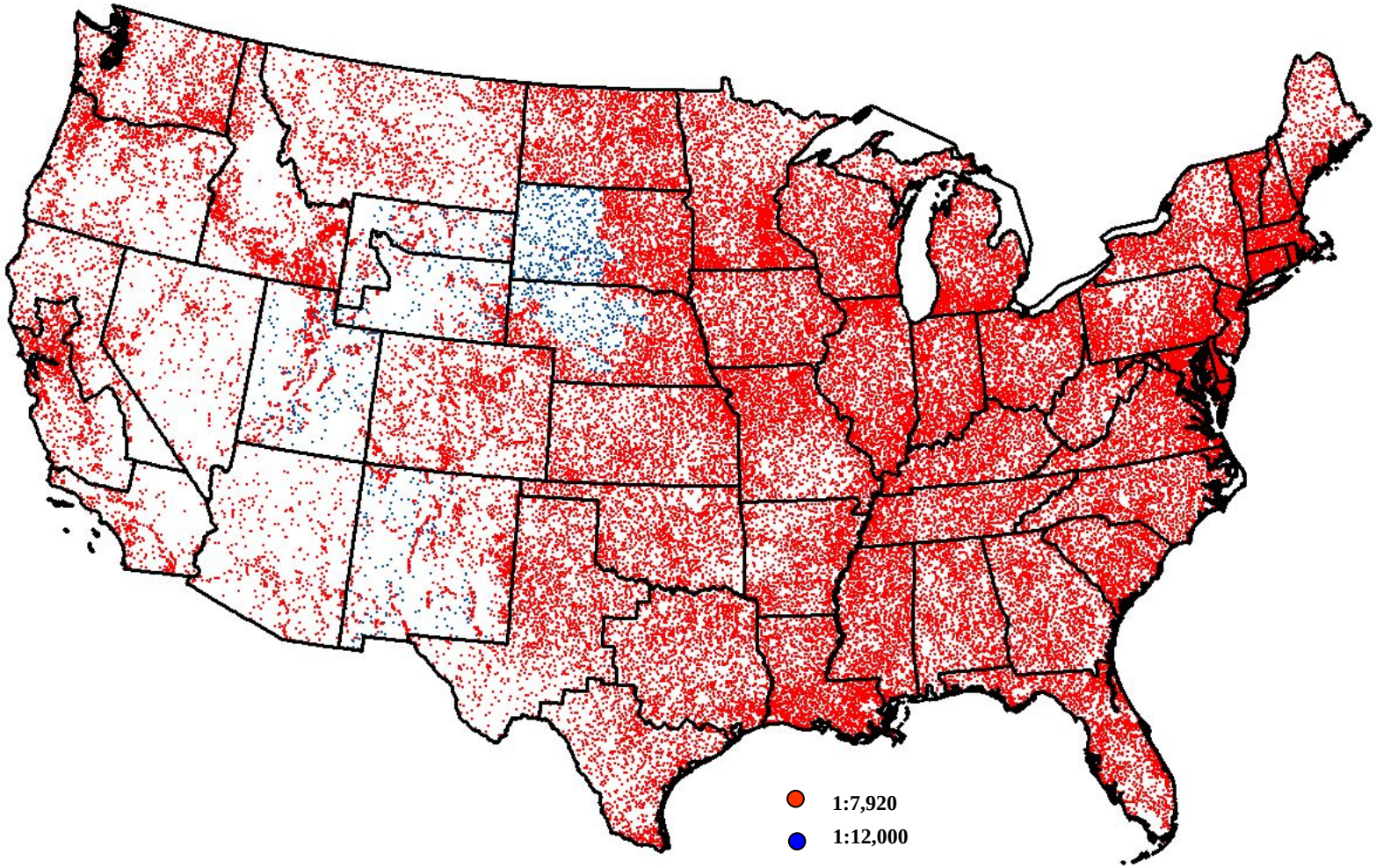
Fort Worth, Texas

2003 NRI PSU Contractors



USDA - Aerial Photography Field Office

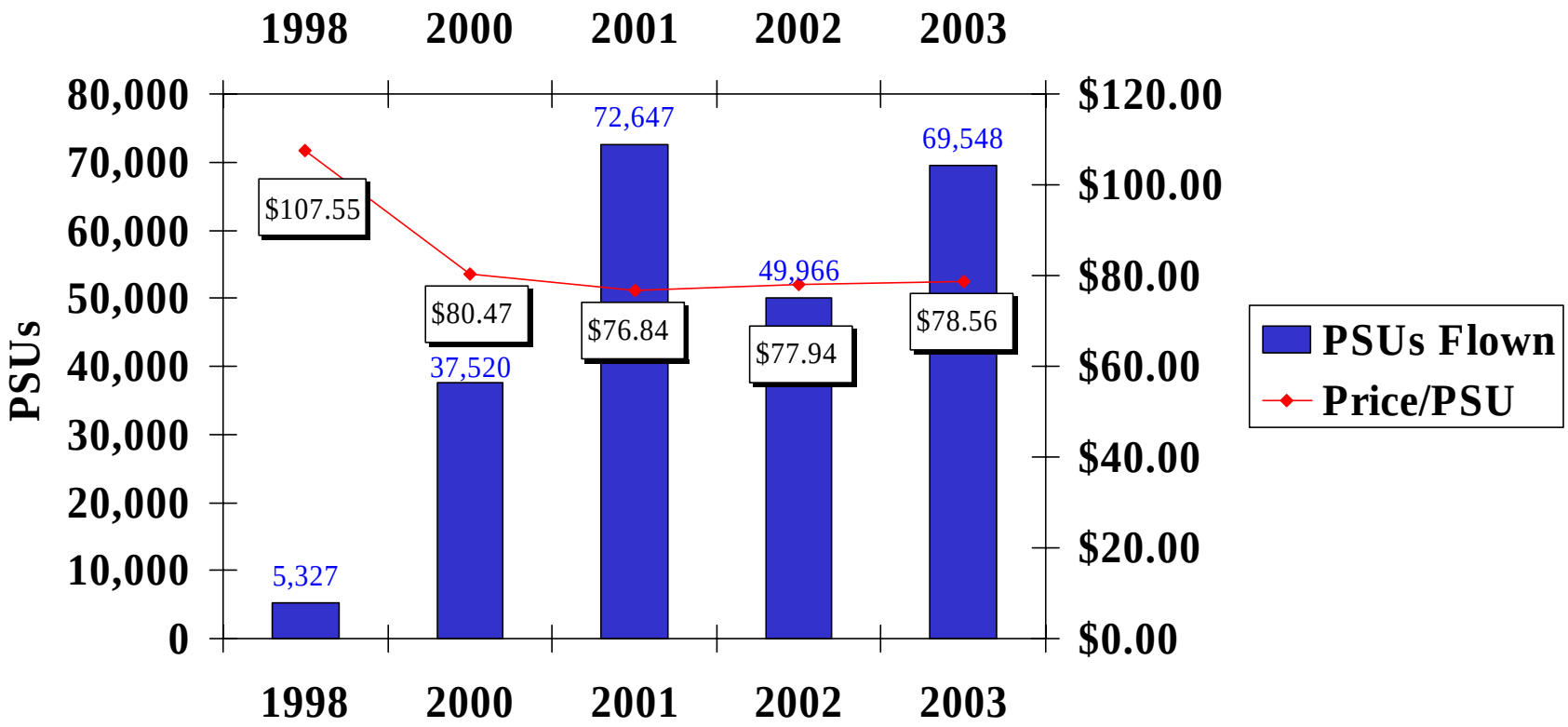
FY 2003 PSU Locations

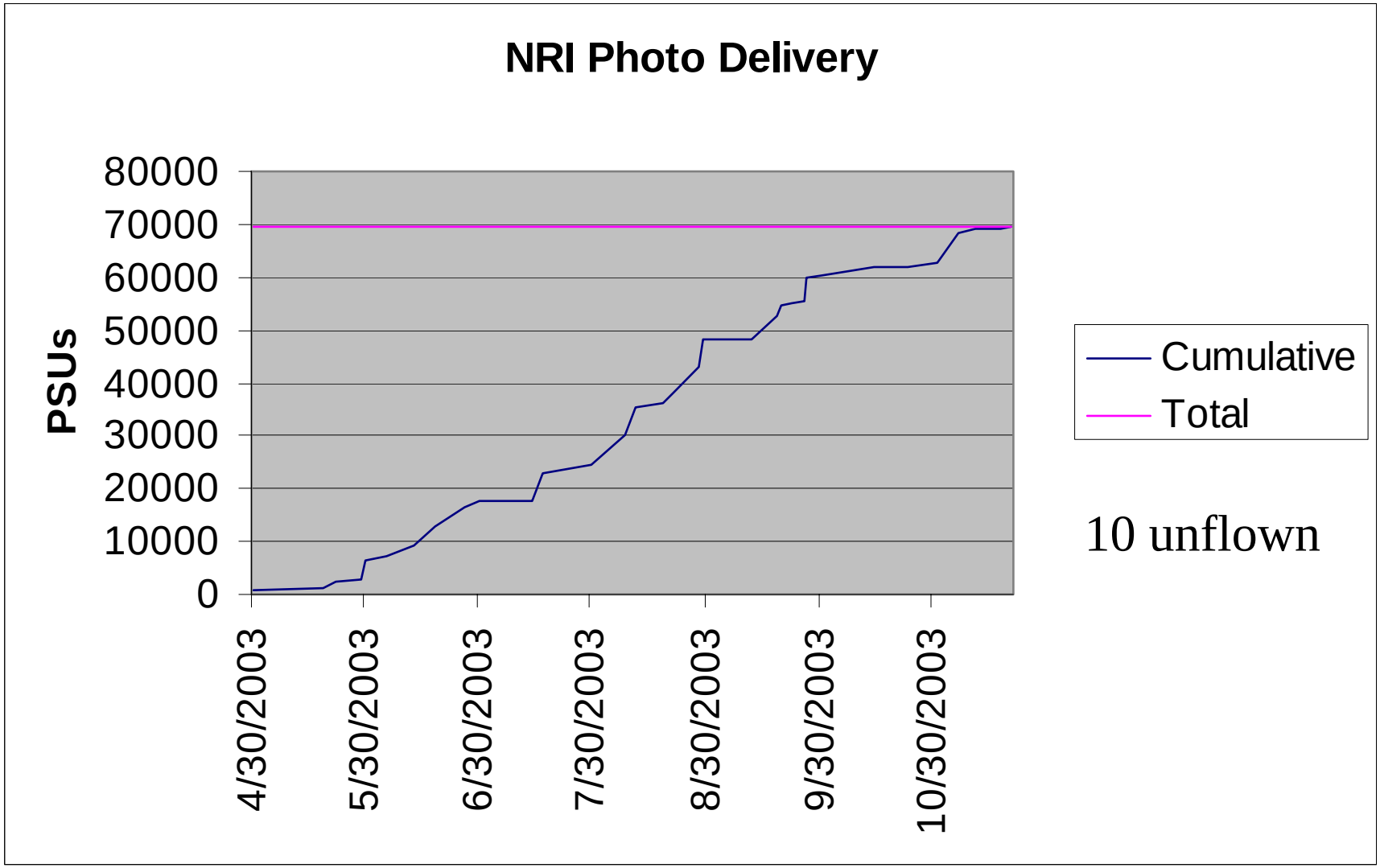


USDA Natural Resources Conservation Service

NCGC Fort Worth, Texas, Jan. 2003

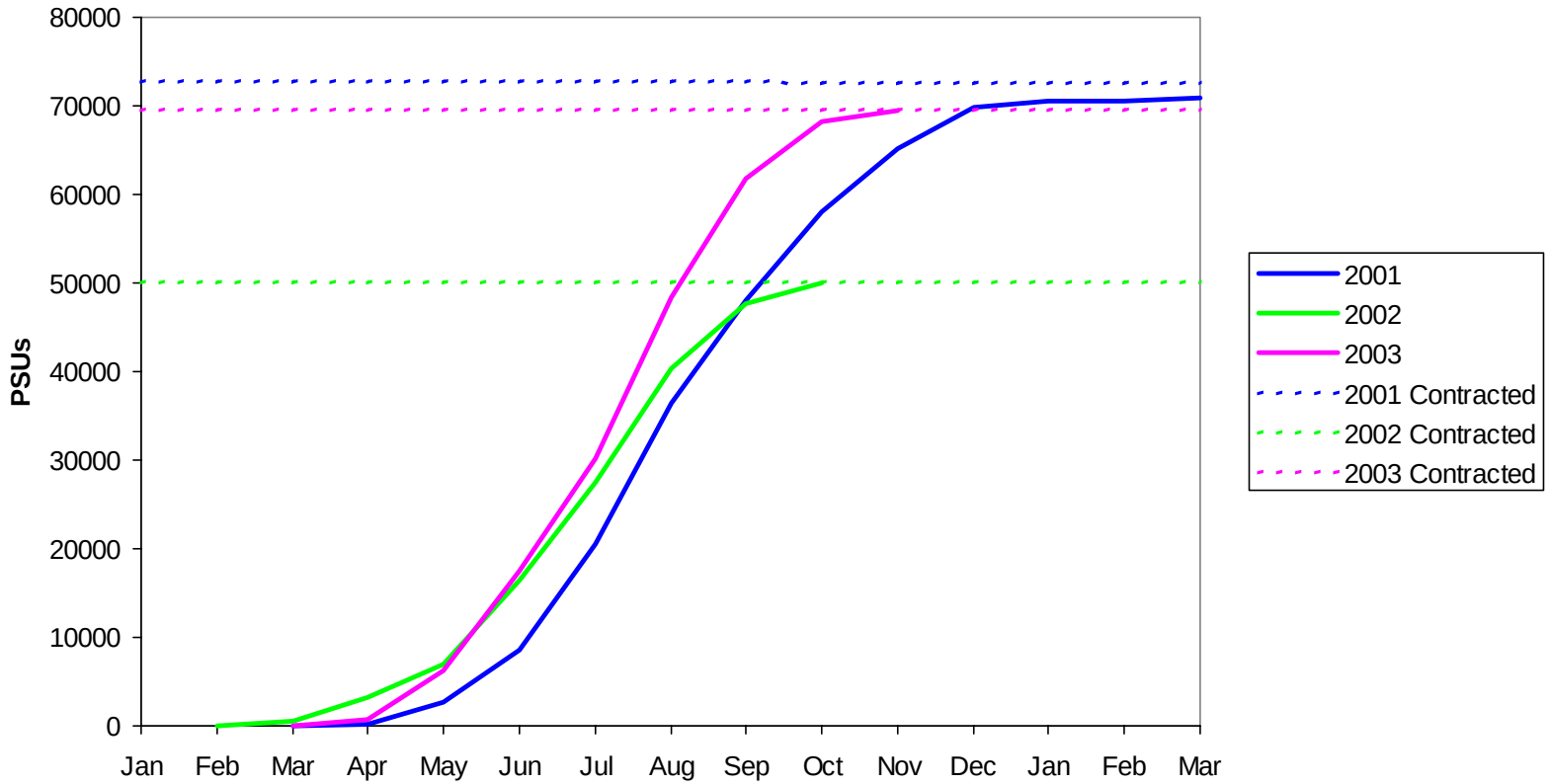
PSUs Flown & Prices 1998-2003




NRI Photo Delivery
PSUs
80000
70000
60000
50000
40000
30000
20000
10000
0
4/30/2003
5/30/2003
6/30/2003
7/30/2003
8/30/2003
9/30/2003
10/30/2003
Cumulative
Total
10 unflown

NRI Photo Deliveries

2001, 2002, 2003

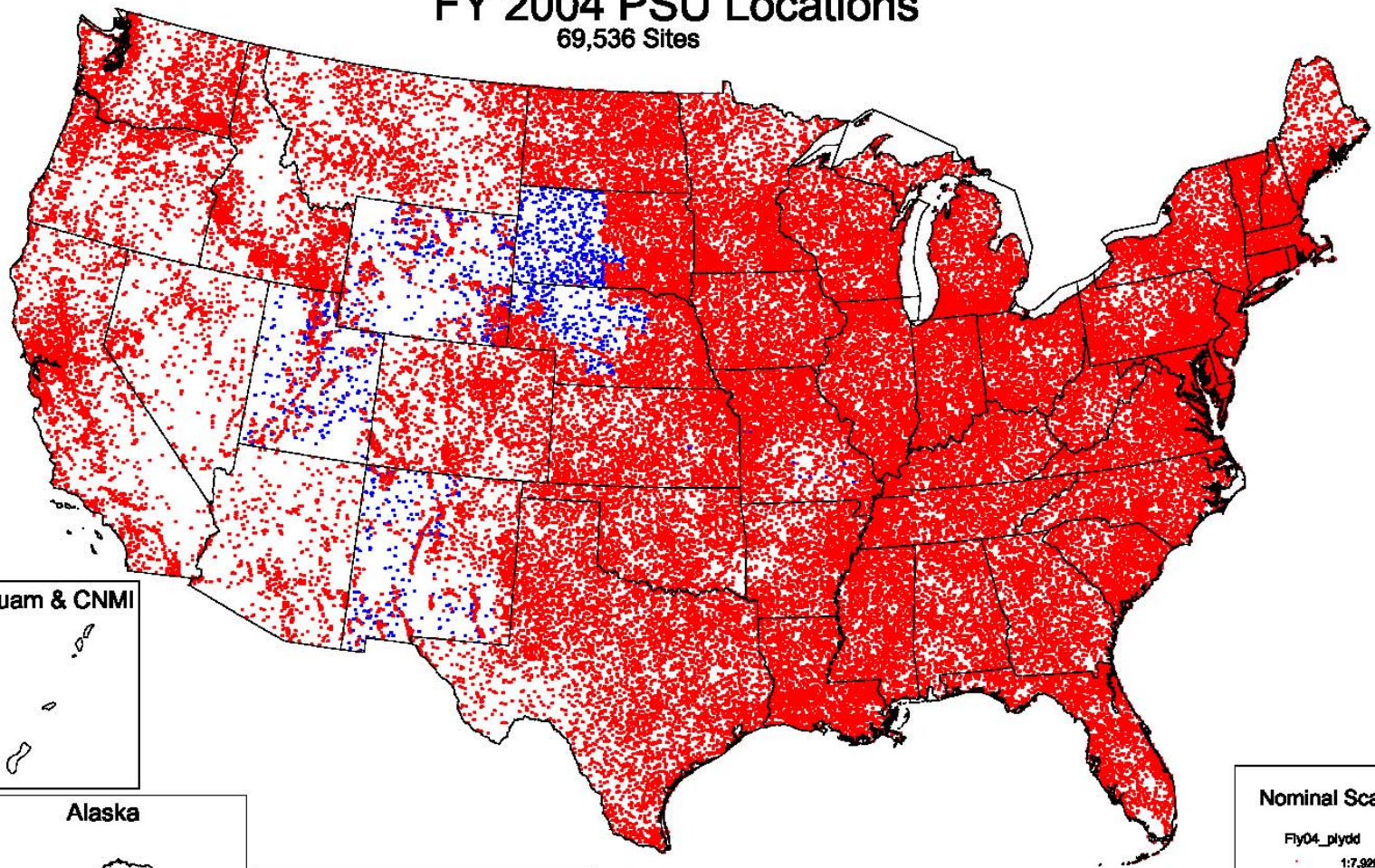


U.S. Department of Agriculture

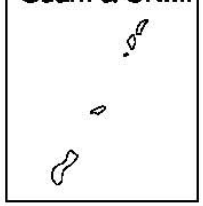
Natural Resources Conservation Service

FY 2004 PSU Locations

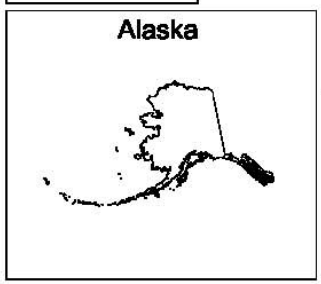
69,536 Sites



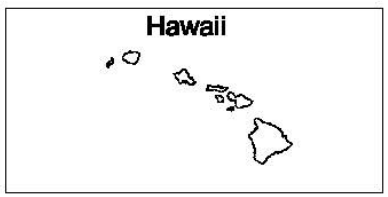
Guam & CNMI



Alaska



Hawaii



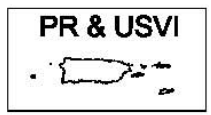
Nominal Scale

Fly04_plydd

1:7,920

1:12,000

PR & USVI



USDA-NRCS-NCGC, Fort Worth, TX, Dec. 2003

2003 ERDAS & Scanner Purchases

ICCS Location	Contact Person	Advantage	OrthoBase	Microtek 9800
Phoenix, AZ	Eric Wolfbrandt	1	0	0
Gainesville, FL	Warren Henderson	1	1	0
Honolulu, HI	Pat Shade	0	1	0
Boise, ID	Hal Swenson	2	2	0
Alexandria, LA	Jerry Daigle	1	1	0
Annapolis, MD	Jim Brown	1	1	0
Beltsville, MD	Marissa Capriotti	1	0	0
East Lansing, MI	William Bowman	2	2	0
Bozeman, MT	Doug Harrison	0	1	0
Albuquerque, NM	Linda Branch	1	1	0
Raleigh, NC	Phil Tant	1	1	1
Beaverton, OR	Mark Tilton	1	2	0
Columbia, SC	Ben Stuckey	1	1	0
Huron, SD	Kevin Wegenke	1	1	0
Spokane, WA	Jim McClinton	1	1	0
Morgantown, WV	Tim Prescott	2	2	0
NCGC	Dorsey Plunk	7	2	0
RID	George Rohaley	5	5	0
APFO	Kent Williams	10	7	0
Total		39	32	1

List prices: Advantage = $4,400
OrthoBase = $5,500

Total list: $364,975 (includes APFO OrthoBase Pro and WA vector module)

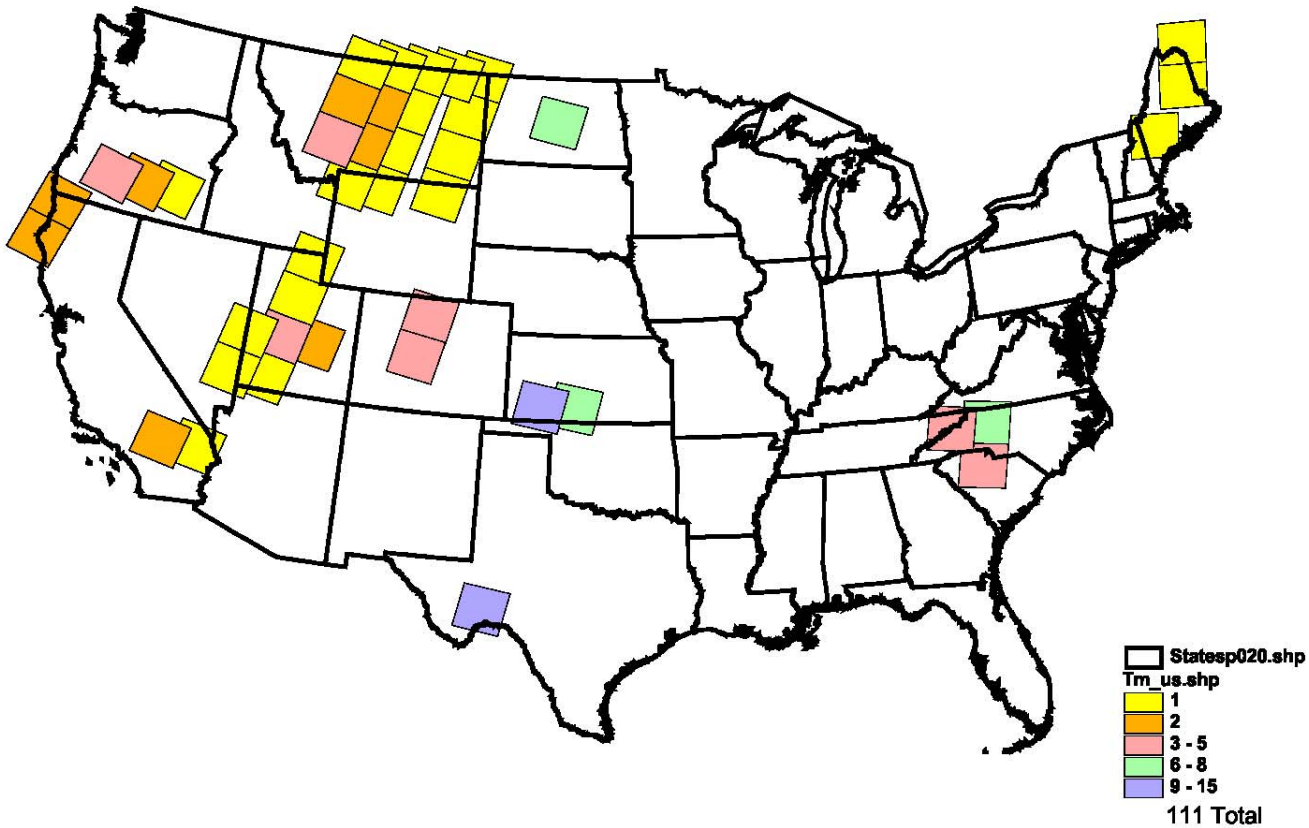
Discounted cost: **$187,582.75**

Black = RID, Green = State

ERDAS OrthoBASE Training

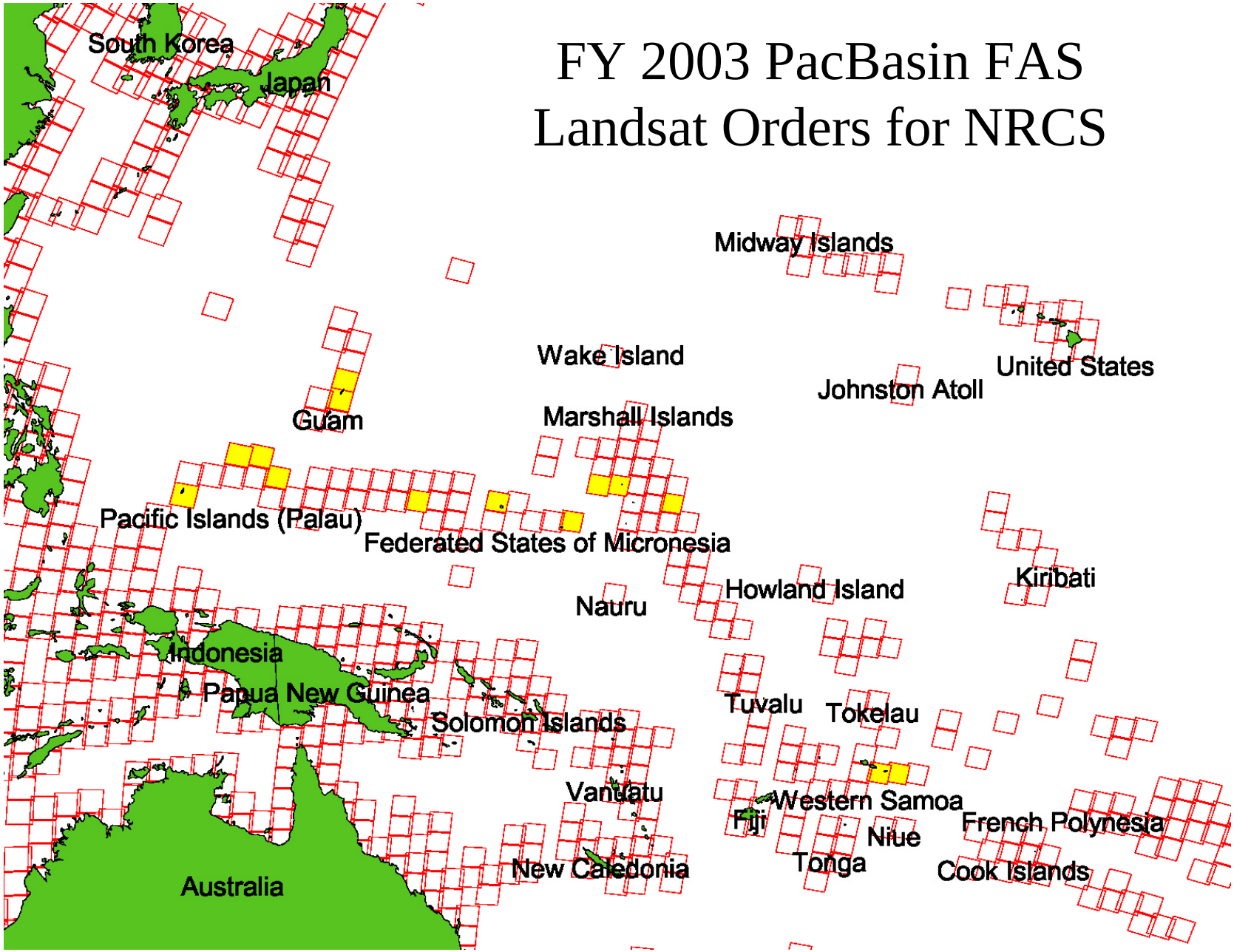
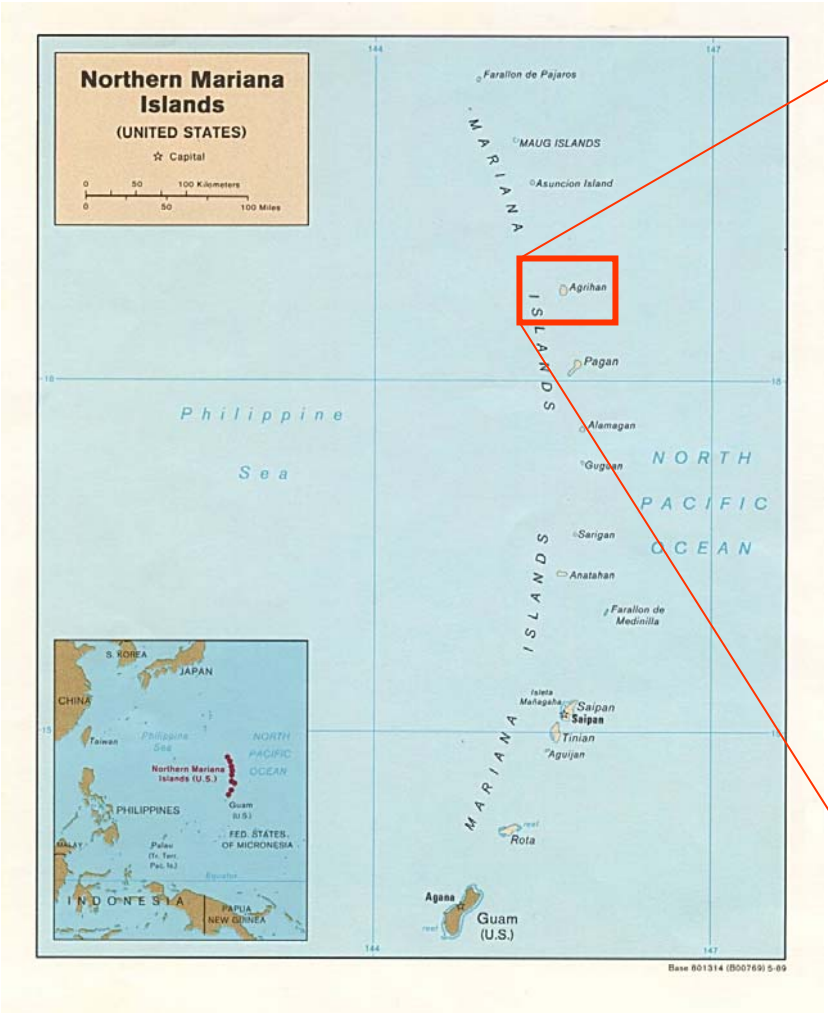
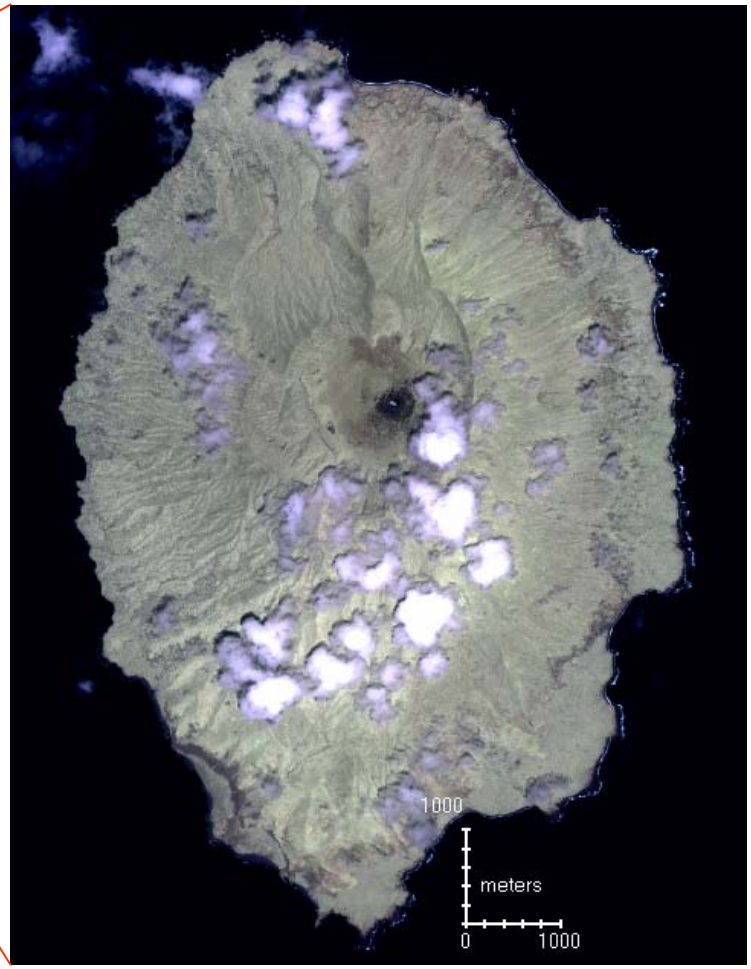
- Partnered with Forest Service RSAC for 3 customized ERDAS/OrthoBASE classes.
- 4 day class customized for NRI scanning and orthorectification.
- 12 students per class @ $200 per student.
- Nov. 3-7, 2003, Dec. 8-12, 2003, & Mar. 1-5, 2004.
- ERDAS quote: $24,800 for 16 students.

FY 2003 FAS Orders for NRCS



Total for FY03 = 111

FY 2003 PacBasin FAS Landsat Orders for NRCS



CNMI Ikonos Imagery