

# Digital Resource Projects

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2008 USDA Planning Meeting

Clear Creek Road,  
Boise NF, ID

December 3, 2008



# 2008 Digital Resource Projects

- Film Based
  - ROCK RIVER WATERSHED, VERMONT
  - HUNGERFORD BROOK WATERSHED, VERMONT
- Direct Digital Projects
  - CHUGACH NATIONAL FOREST, ALASKA
  - BOISE NATIONAL FOREST, IDAHO
  - ARAPAHO-ROOSEVELT NATIONAL FOREST, COLORADO
  - WHITE RIVER NATIONAL FOREST, COLORADO
  - PAWNEE NATIONAL GRASSLANDS, COLORADO
  - BIGHORN NATIONAL FOREST, WYOMING

# CHUGACH NATIONAL FOREST



Contracted in 2 parts:

Part 1 contracted in 2007 – 115 DOQQs, 5,731 sq miles

Part 2 contracted in 2008 – 192 DOQQs, 10,253 sq miles

# Chugach National Forest, Alaska

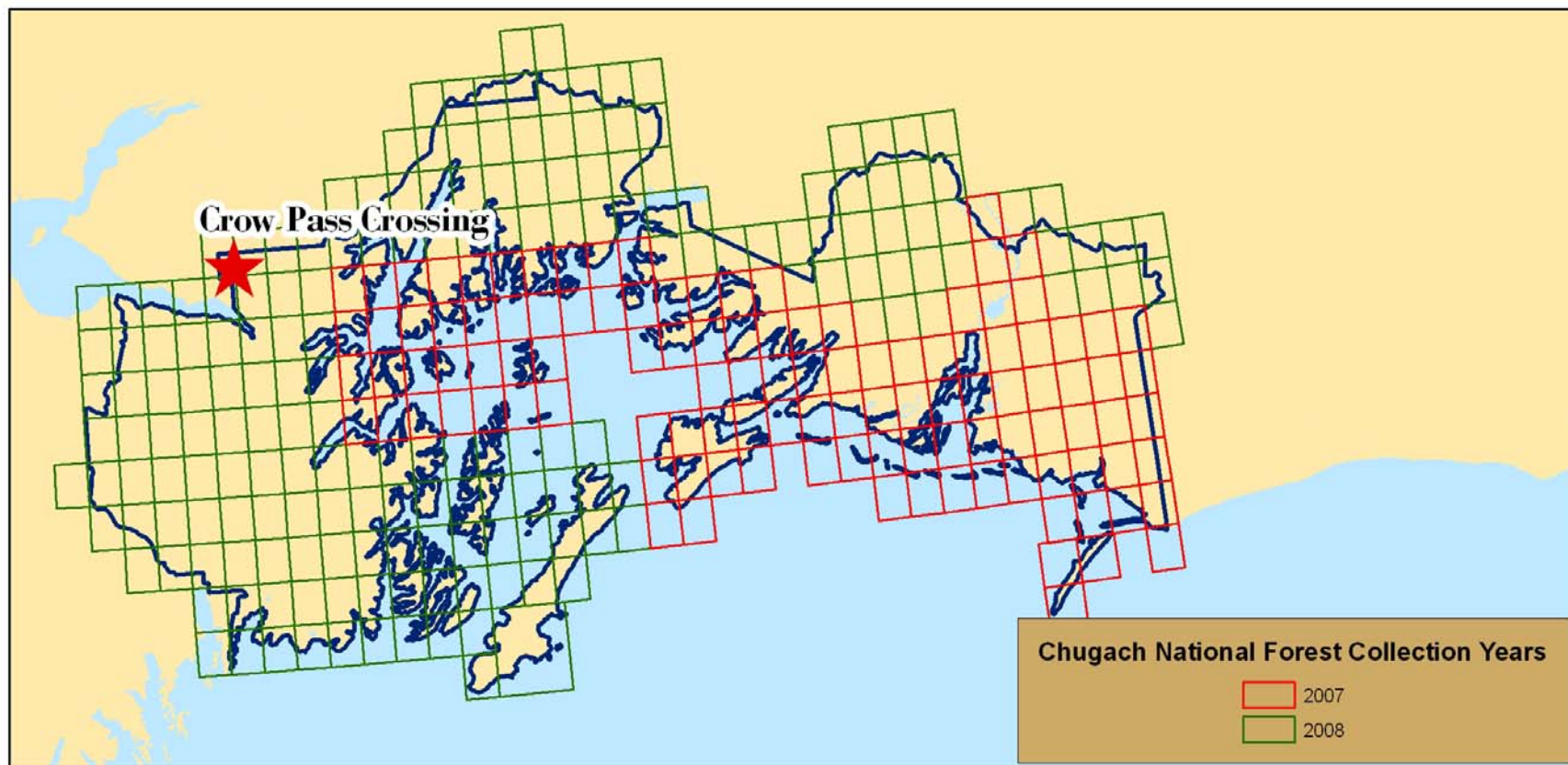
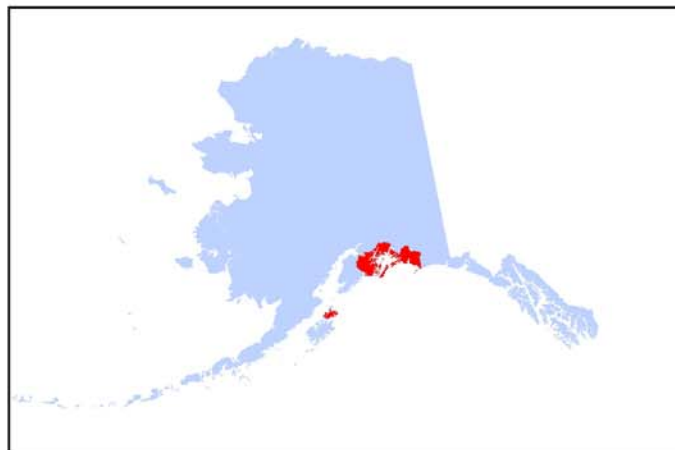
## Requirements:

- 60cm GSD (2ft)
- 12 bit Radiometric Resolution
- 4-Band (B, G,R, NIR)
- Stereo coverage

## Deliverables:

- 4-band unprocessed 16 bit image files
  - non-georeferenced, uncompressed, unstretched
- 4-band DOQQ image tiles
- ABGPS/IMU data
- Metadata

U.S. DEPARTMENT OF AGRICULTURE  
AERIAL SURVEY  
CHUGACH NATIONAL FOREST  
ALASKA  
QUARTER QUADS

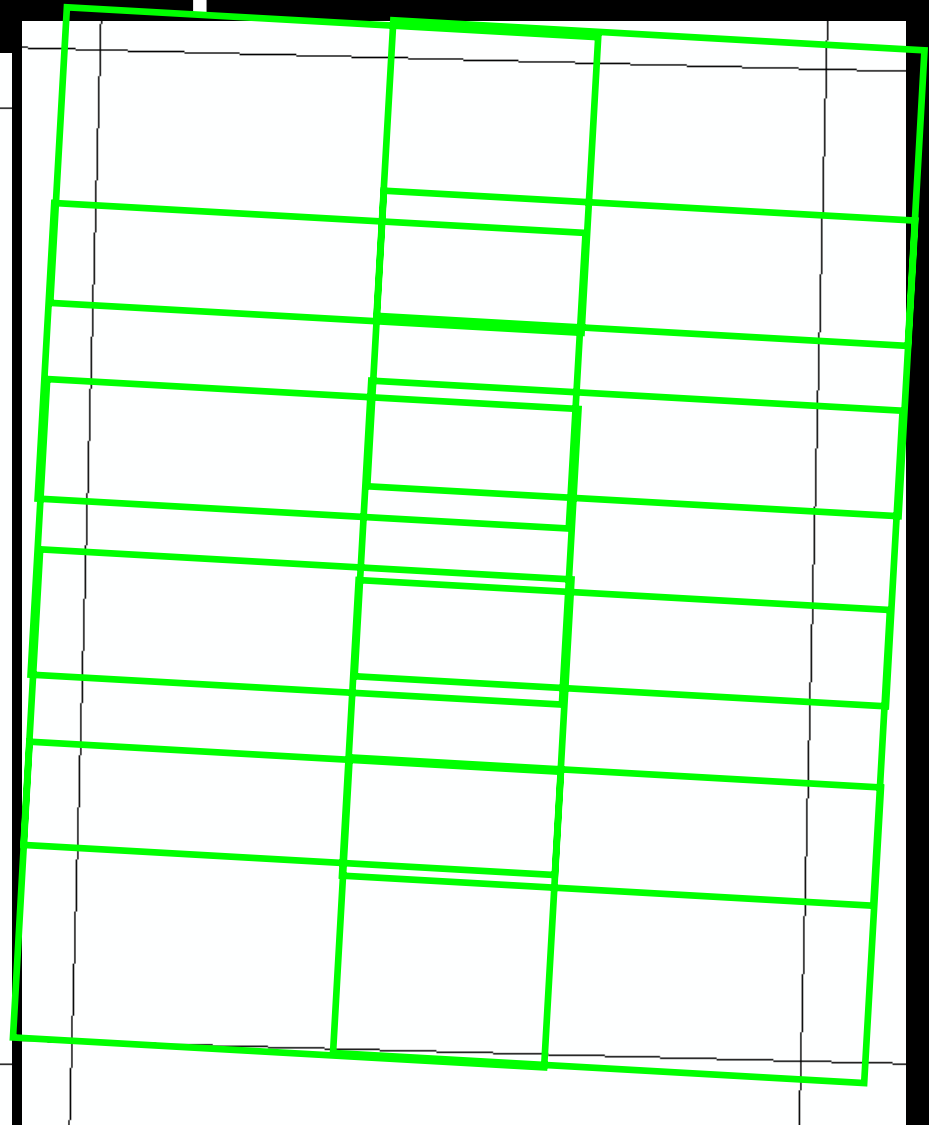
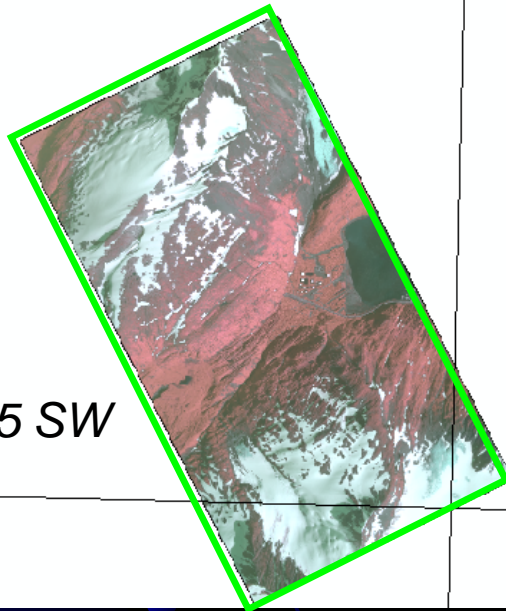


# Crow Pass Crossing Trail



# Camera Footprint

- Relative to 7.5' DOQQ footprint
- ~10 DMC images for one DOQQ with endlap and sidelap
- 3,200 images for full CNF coverage (314 DOQQs for Chugach coverage)



# Chugach Test Flight

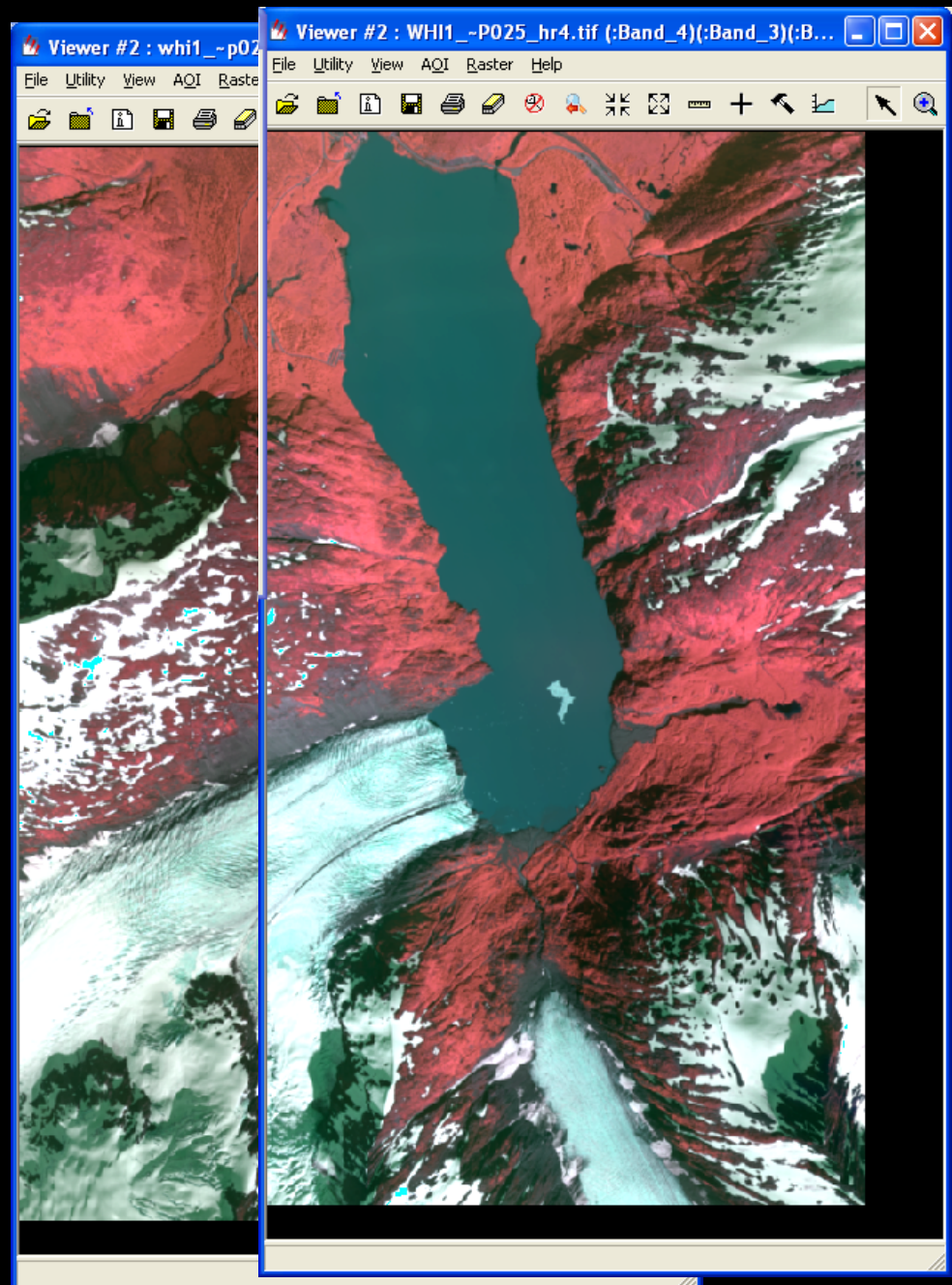


- The 2007 Chugach contract was awarded near the end of the flying season (July 23, 2007).
- This gave very little time for the contractor to reposition the DMC from their lower 48 office to their office in Anchorage.
- Due to the short time frame, no imagery was acquired. However, test flights were conducted before winter.



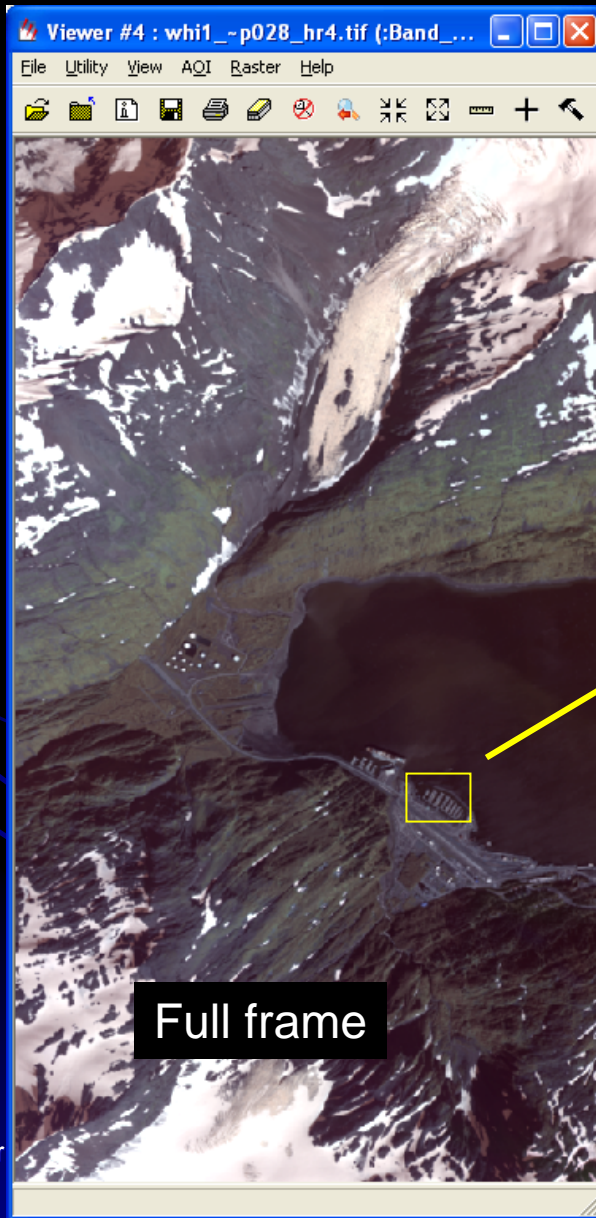
# Imagery from Chugach Test Flight 2007

Example of Stereo-Pairs



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# Chugach Test Flight Sample



# NRCS Vermont Ortho Projects

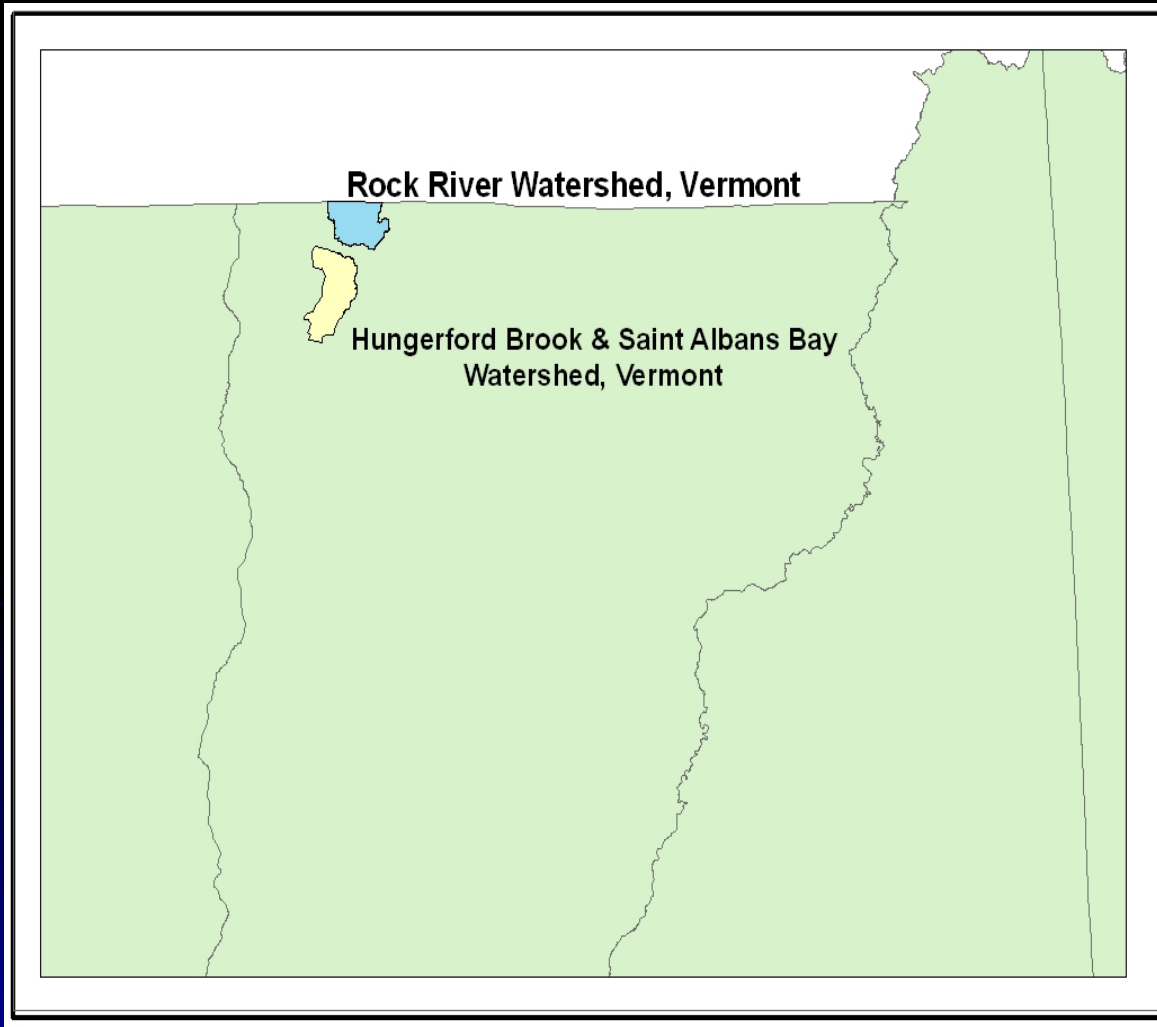


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# Vermont Ortho Projects



Rock River Watershed, VT  
USDA-4-08  
37 sq miles, 94 exposures  
Scale: 1:7,920, 1:6,000, &  
1:4,000

Hungerford Brook & Saint  
Albans  
Bay Watershed, VT  
USDA-10-08  
48 sq miles, 95 exposures  
Scale: 1:7,920

# Requirements

## Rock River Watershed

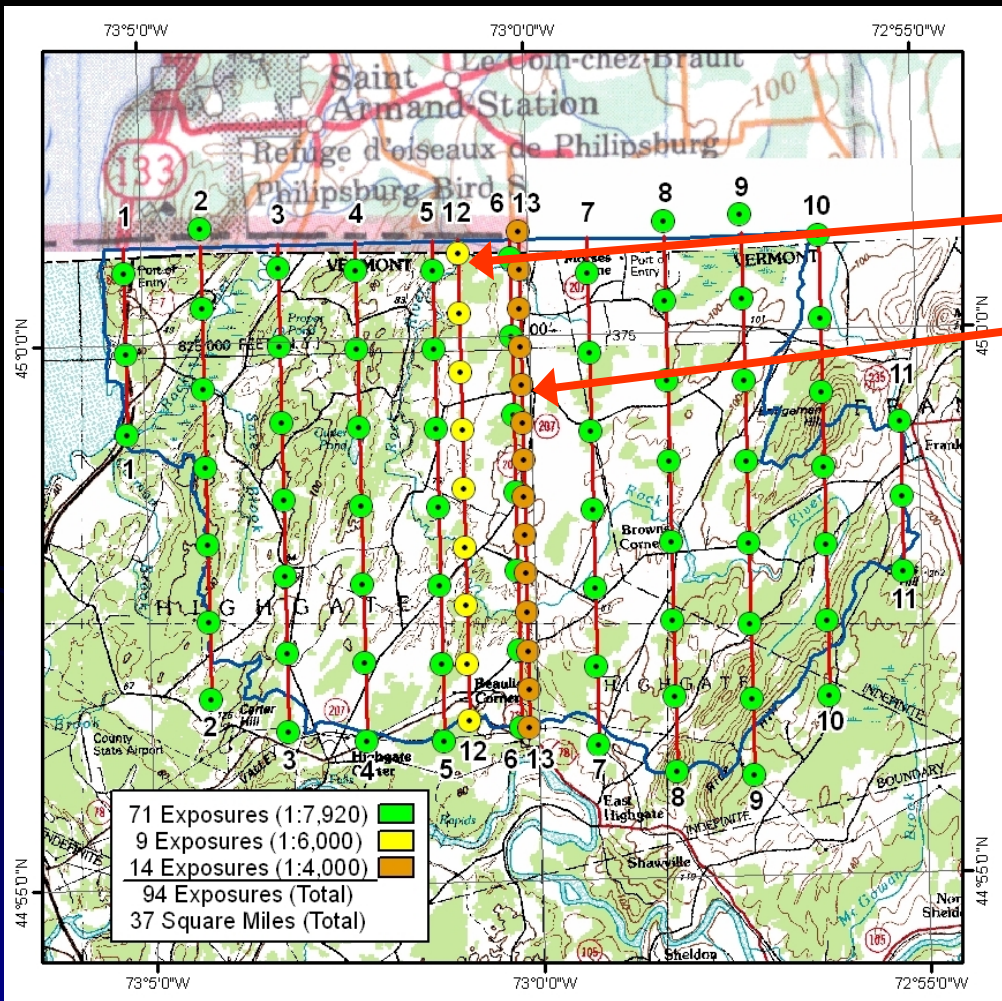
- Film acquisition at a photographic scale of 1:7,920,
- Plus two test flight lines at a scale of 1:6,000 & 1:4,000
- Physical Coverage
- Film was scanned and rectified to produce digital ortho imagery to achieve the following GSD

## Hungerford Brook Watershed

- Film acquisition at a photographic scale of 1:7,920
- Physical Coverage
- Scanned and rectified to achieve a 12GSD

Photographic Scale	GSD
1:7,920	12 inch
1:6,000 Test flight line 12 <i>Rock River Only</i>	9 inch
1:4,000 Test flight line 13 <i>Rock River Only</i>	6 inch

# Rock River Watershed, Vermont



Scale:

1:7,920 – Flight Lines 1 – 11

1:6,000 – Flight Line 12

1:4,000 – Flight Line 13

# Sample from Rock River Watershed



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**30cm (12 inch)**

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# Sample from Rock River Watershed



**15cm (6 inch)**

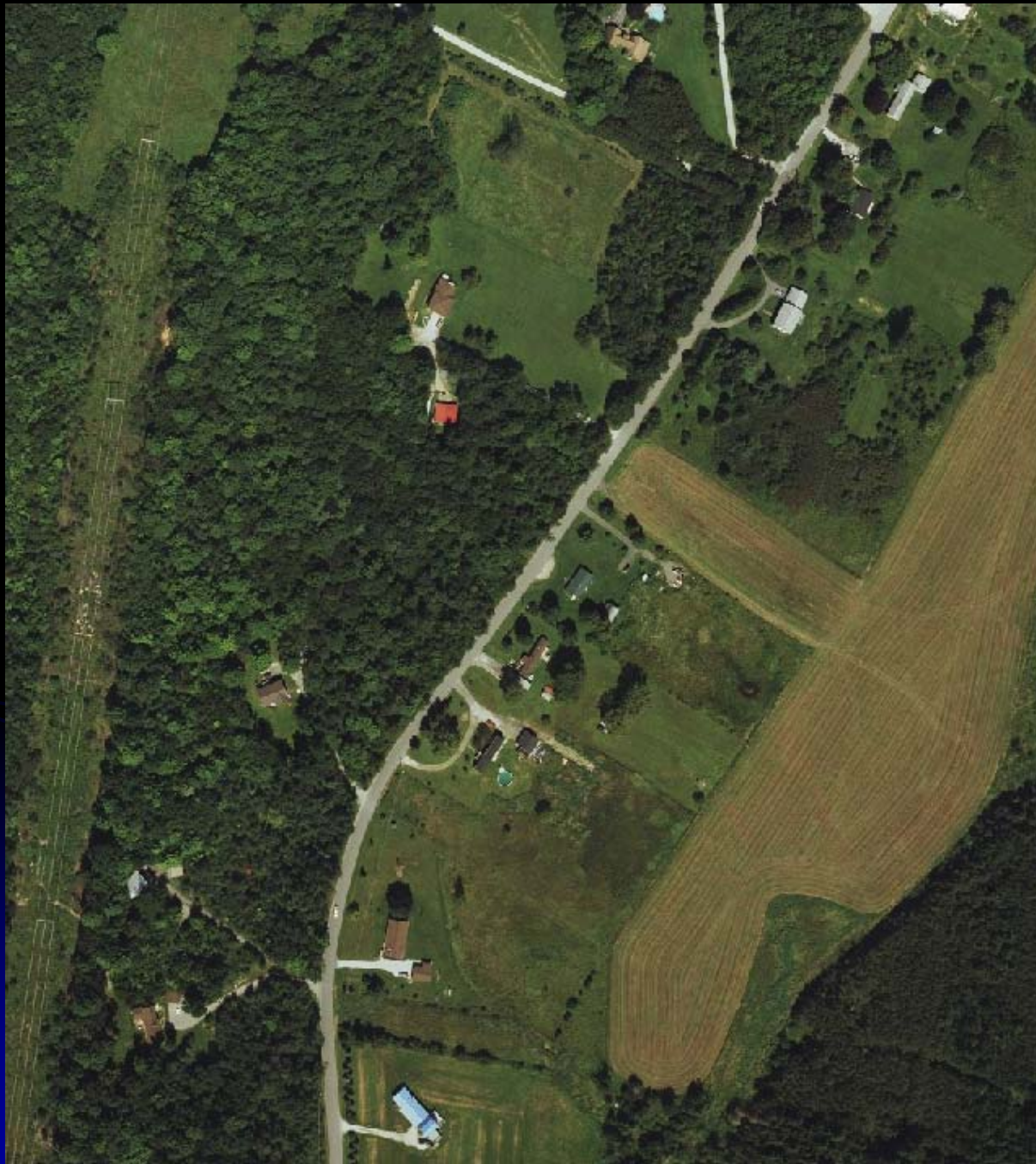


# Sample from Rock River



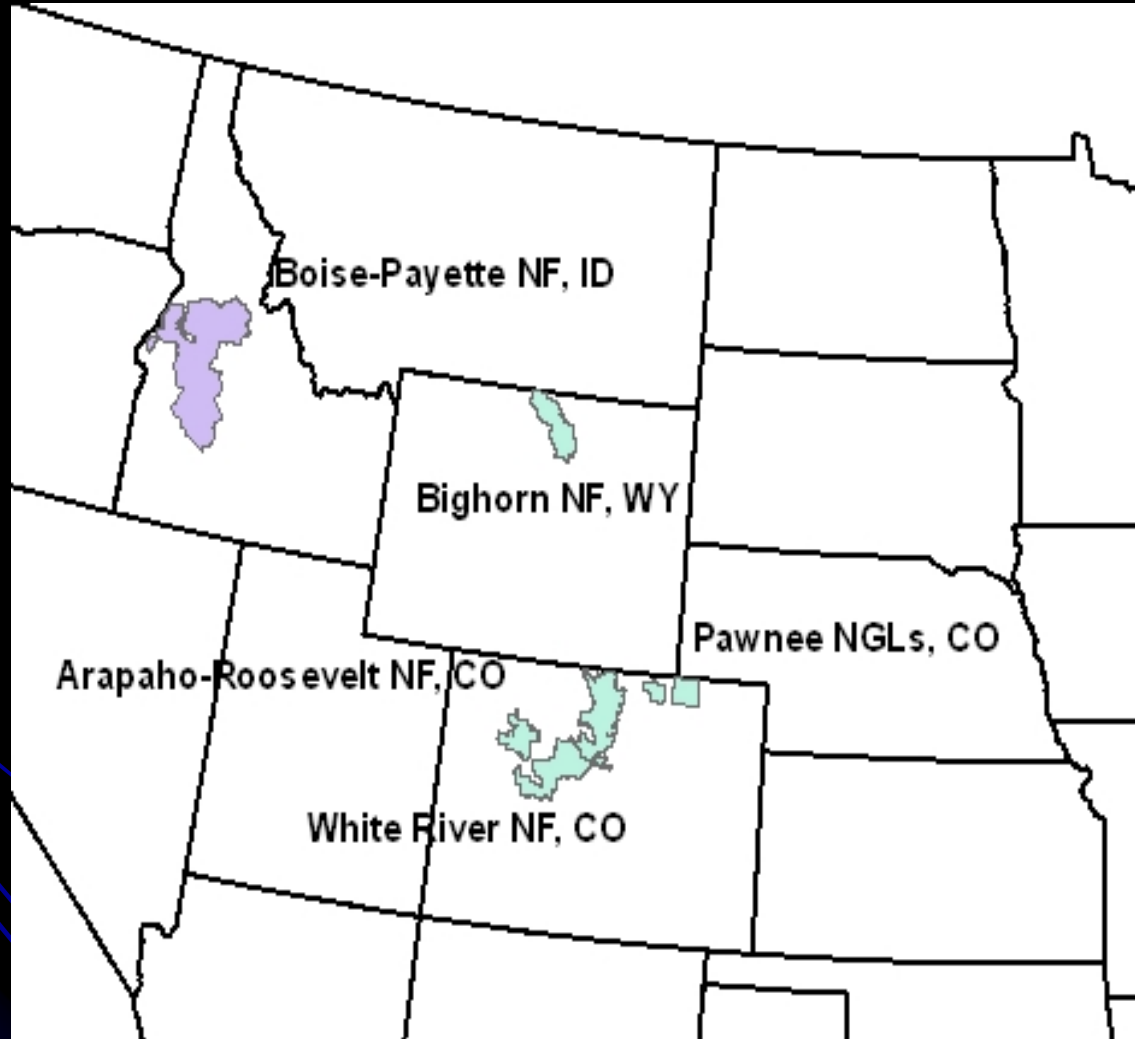


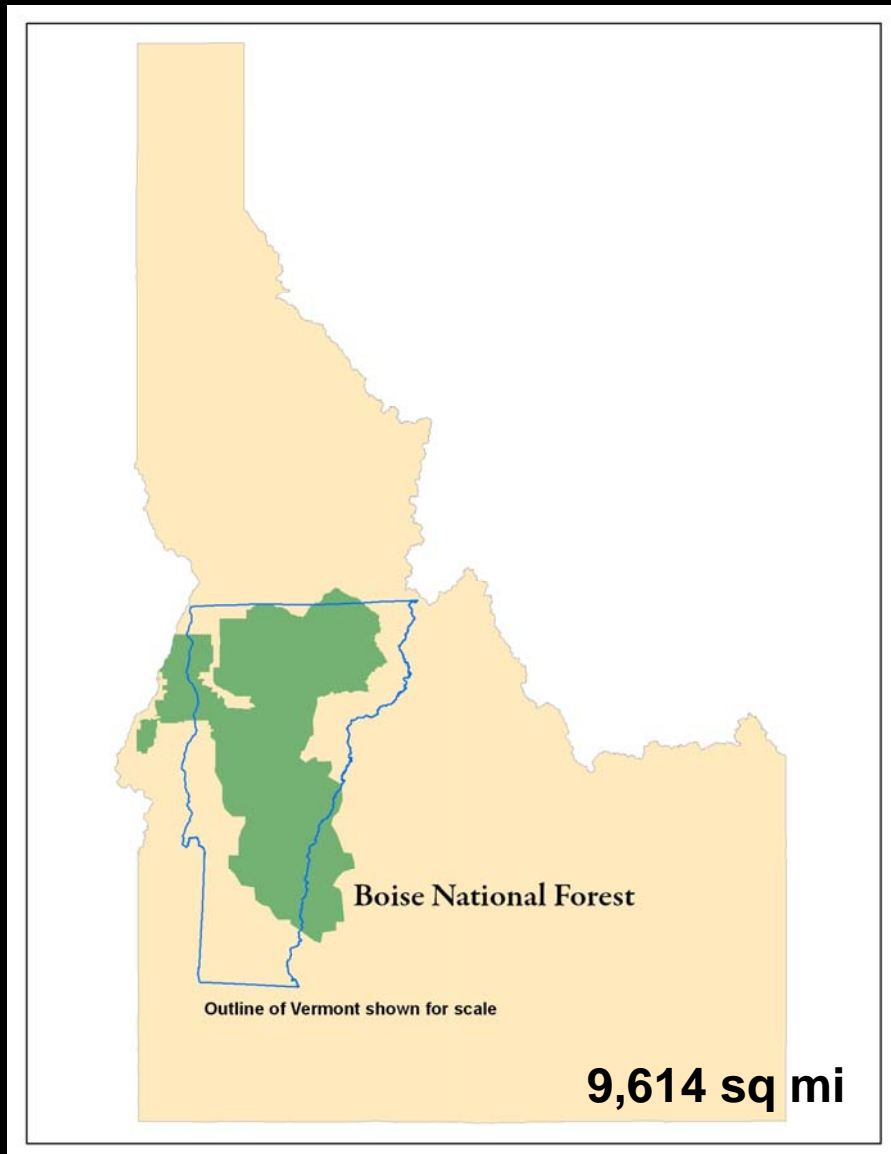
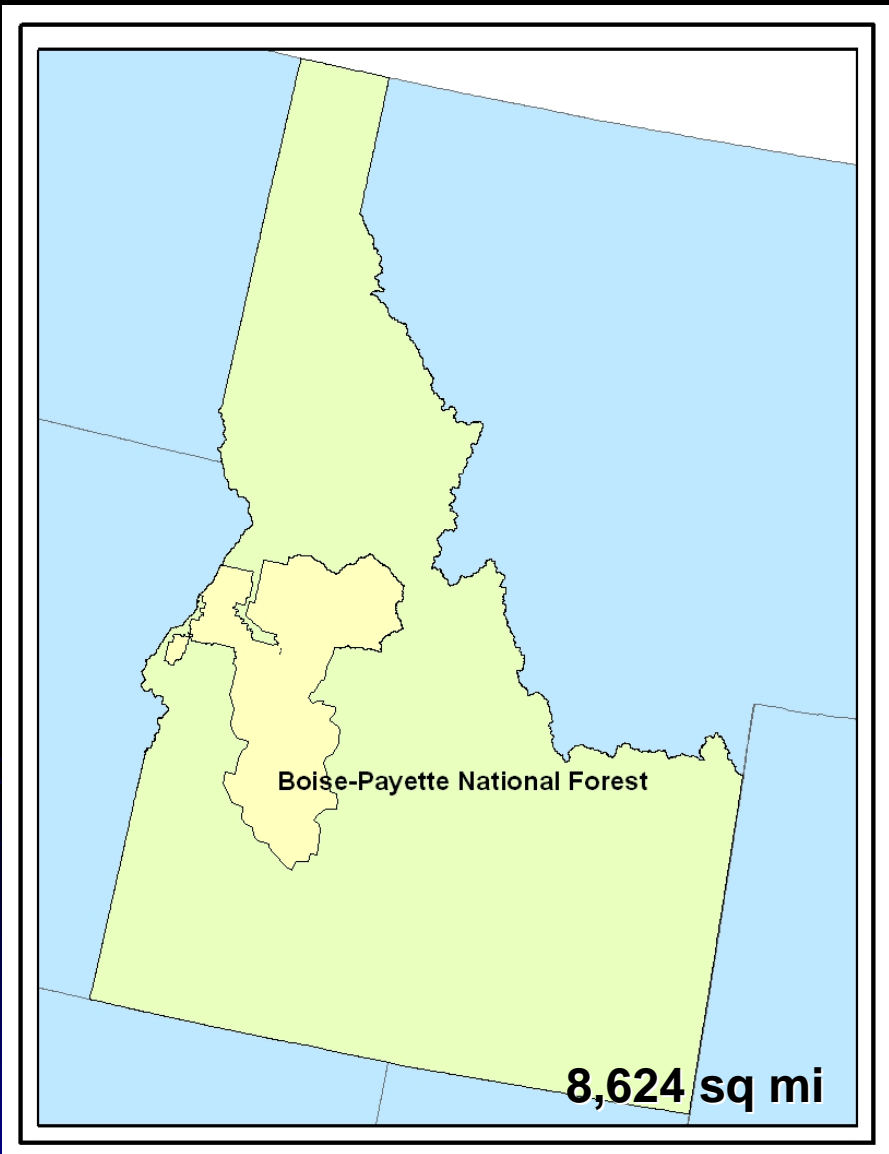
# Hungerford Sample Imagery



# Hungerford Sample Imagery

# Forest Service Digital Projects





# Boise National Forest, Idaho

## 8,624 square miles

### Requirements

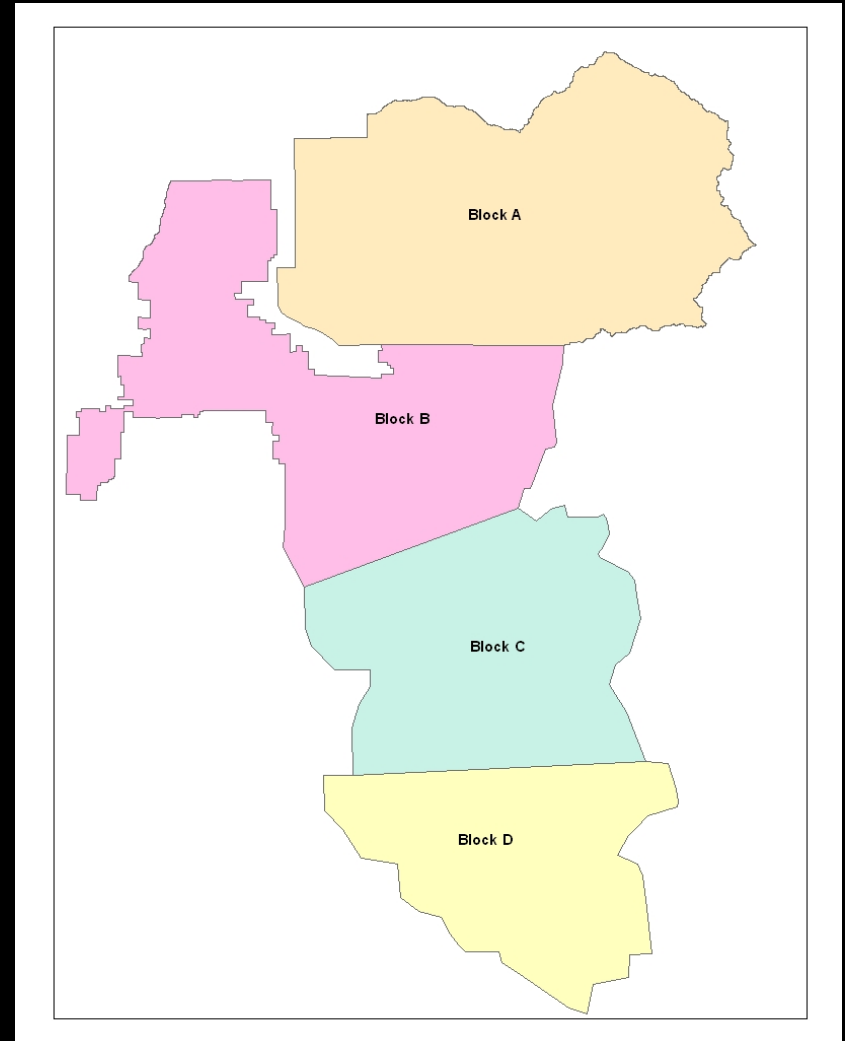
- 30cm GSD (12 inch)
- 4-Band
- 12-bit per band radiometric resolution
- Stereo Coverage

### Deliverables:

- Flight Plan
- 4-band unprocessed 16 bit image files
  - non-georeferenced, uncompressed, unstretched
- ABGPS/IMU & supplemental ground control
- Photo-center File
- Pilot Logs
- Metadata

# Flight Planning

BLOCK	Square Miles	No. of Images	No. of Hard Drives
Block A	2,832	6,246	7
Block B	2,372	4,756	5
Block C	1,910	3,738	4
Block D	1,509	5,610	6



# Boise Imagery



**16 bit, unprocessed**



**16 bit with stretch applied**









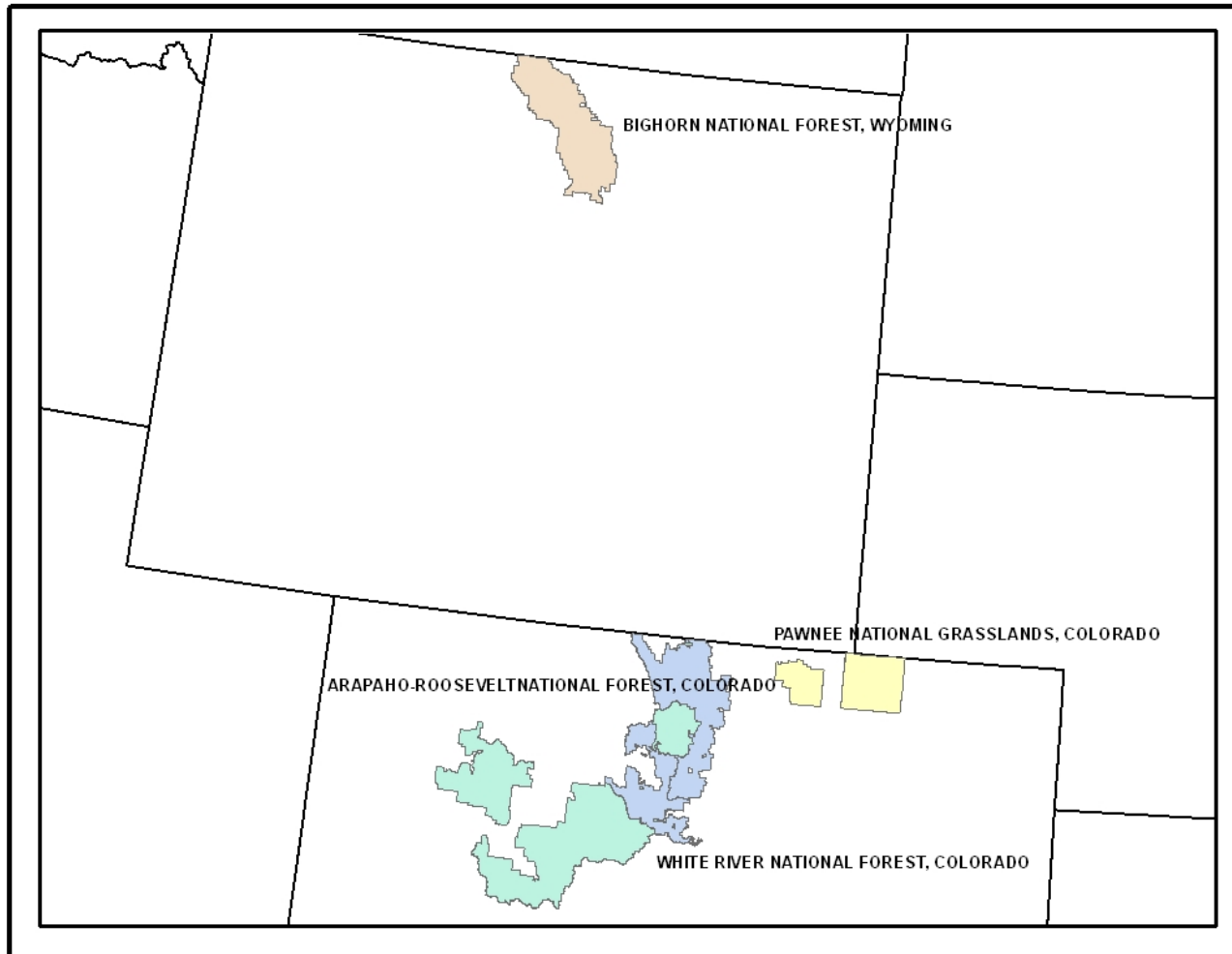








# Region 2 Digital Projects





# Region 2 National Forests

9,771 Total Square Miles

## Requirements

- 30cm GSD (12 inch)
- 4-band
- 12-bit per band radiometric resolution
- Stereo Coverage

## Deliverables:

- Flight Plan
- 4-band georeferenced, uncompressed digital image files
- ABGPS/IMU & supplemental ground control
- Photo-center File
- Pilot Logs
- Metadata

# Region 2 Flight Planning

<b>Forest</b>	<b>Square Miles</b>	<b>No. of Images</b>	<b>No. of Hard Drives</b>
Arapaho-Roosevelt NF, Colorado	3,146	6,735	7
White River NF, Colorado	3,681	7,184	8
Pawnee NGLs, Colorado	1,200	1,373	2
Bighorn NF, Wyoming	1,744	3,548	4

# Status of Region 2 Imagery

- All imagery has been received at APFO and is waiting to be ingested for inspection.

# Request For Information

- APFO RFI drafted and released a Request For Information earlier this year.
- Questions included pricing, quality assurance and impact on small business.
- 8 vendors responded.

# Cost of Digital Resource

- Only have 1yr price history for CONUS
  - Alaska is not a good comparison
- Cost may increase depending on project requirements and end products deliverables

# Cost Factors

- Factors to consider when making the decision of film vs. direct digital
  - Intended use – GIS vs. Remote Sensing
  - Project requirements and end products
  - Costs of prints made from film vs. digital
  - Cost of scanning film
  - Hard Drive Logistics – Storage, Archive, Backup
  - Storage and distribution of the increased file size

# Questions?

