



**National Digital Orthoimager
Program Committee
FGDC Subcommittee Report**

September 22, 2015

Shirley Hall, NDOP 2015 Chair

National Digital Orthoimagery Program Committee

- Established in the mid 1990s and annexed as a FGDC Sub-committee in 2008.
- Responsible for developing, promoting, and executing a national strategy for the acquisition and development of orthoimagery data for Federal agencies while creating and utilizing partnerships with State, local, tribal, and private organizations.
- Members represent 14 Federal Agencies and the National States Geographic Information Council.
- NDOP hold 2 face-to-face steering committee meetings each year and various working group telecons/webinars throughout the year



Chief Accomplishments and Undertakings in 2015

- Response to GAO Directive to Reassess Imagery for the Nation (IFTN)
- NAIP Partnership
- High Resolution Imagery Acquisition
- NOAA Tide Controlled and Oblique Imagery
- Hawaii and the US Pacific Basin Cooperative Acquisition Efforts
- The NDOP Technical Subcommittee activities
- Identification of DoD airspace access issues that impact civilian imagery collection

GAO: Reassess Imagery for the Nation (IFTN)

GAO Report Geospatial Data (15-193 Geospatial Data) recommended that the Secretary of Interior, as the Federal Geographic Data Committee (FGDC) Chair, direct the FGDC Steering Committee to take the following action:

“Direct the National Digital Orthoimagery Program to reassess the feasibility of the “Imagery for the Nation” initiative, with the goal of identifying discrete steps that could be taken to further a national imagery program benefitting governments at all levels.”

Background of IFTN

- In October 2005, the National States Geographic Information Council (NSGIC) proposed IFTN to the FGDC
- FGDC asked the NDOP to review the proposal and develop a business plan and budget strategy for IFTN.
- NDOP worked from November 2005 -2007
 - 2006 Cost Benefit Analysis (CBA) funded by FSA and USGS
 - May 2007, established separate component workgroups (governance, technology, communications, acquisition management, partnerships, data hosting and archiving, and funding) to make recommendations and demonstrate IFTN was feasible and could be implemented if funds were available.
 - FGDC Steering Committee created an Executive Subcommittee (ExCom) to pursue funding options.
 - Federal agencies directed to put line item in their 2008 budget submissions for IFTN, but no funding solutions were offered.
 - ExCom asked to include IFTN in the Geospatial Line of Business (GLOB), but realizing that no new funds would be identified, it was dropped from consideration in GLOB activities.
 - 2007-2008, National economy decline due to the housing and mortgage crisis – no further action was taken on IFTN.

NDOP Assessment of Feasibility of a National Orthoimagery Program

- NDOP members met in Shepherdstown WV in May, 2015 and met again via telephone conferences in June.
- Recognized the importance of a national imagery program that meets needs of widest possible audience of local, State and Federal imagery users.
- Found that most issues and challenges that led to the 2005 IFTN proposal are still relevant 10 years later.
- Much has changed in imagery acquisition industry over the past 10 years.
- Much has changed organizationally at the Federal level.

NDOP Current Assessment of Feasibility

Industry Change

- Advancements in sensors and related technologies and the National Agriculture Imagery Program as a long term, consistent program have worked to:
 - drive down costs
 - streamline vendor processes and turn around times.
- Commercial satellites and Unmanned Aircraft Systems have now achieved a spatial resolution that meets higher resolution needs of some users.

NDOP Assessment of Feasibility

Organizational Changes at the Federal Level

- NGA is transferring responsibility of the Homeland Security Infrastructure Program (HSIP) to the DHS and have stated to NDOP that they will discontinue the 133-Cities Urban Area Imagery component of HSIP.
- USGS funding was cut for urban area imagery activities that fostered high resolution acquisition partnership with State and local governments. This included the USGS liaison role, QC, processing and delivery.

NDOP Assessment of Feasibility

Barriers to the Implementation of a High-Resolution, Nationwide Program

- No Executive Champion has stepped forward to push for development.
- Without support at highest levels of Federal government to make this program a reality, little progress is expected.
- No Federal Agency has a mandate to develop a high-resolution, comprehensive, national imagery program addressing all major imagery needs.
- The increase in funding required to fully implement the high-resolution component of IFTN may not be realistic in today's Federal fiscal climate.

NDOP Assessment of Feasibility

What Must Continue

- NAIP continues to thrive under USDA-FSA as a 1-meter resolution, leaf-on program.
- Other highly-specialized imagery programs must not be interrupted or incorporated into a full coverage program (e.g., NOAA's shoreline imagery program).

Potential Options

- A state-centric approach to developing high-resolution, leaf-off, nationwide aerial imagery. In this model:
 - States would operate their own imagery program via a shared service contract.
 - Partnership funding would be contributed by Federal government (at a TBD level) based on requirements to offset state and local costs.
 - Will not be operated consistently in all States, leaving some gaps or variations in nation coverage.
- Commercial Procurement of imagery as a service.

Next Steps

- Progress towards a national imagery program will remain stagnant until barriers are addressed.
- Work needs to be done to identify:
 - today's costs
 - commercial options
 - the full range of technical requirement for Federal, State and local government.
- Once compiled, this information will generate suitable alternatives that provide cost-saving, partnership opportunities.

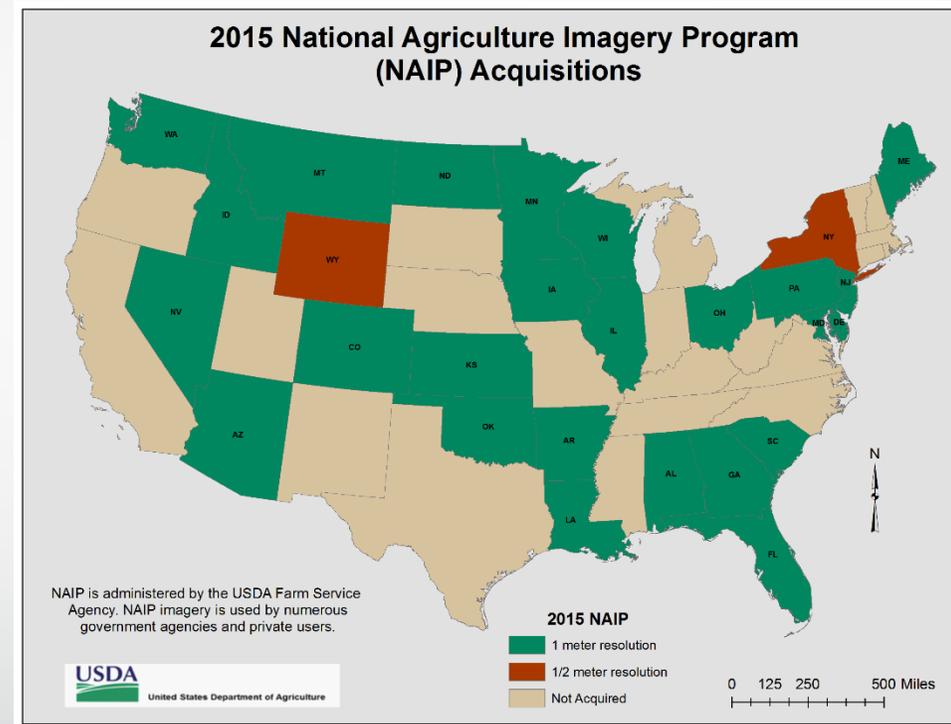
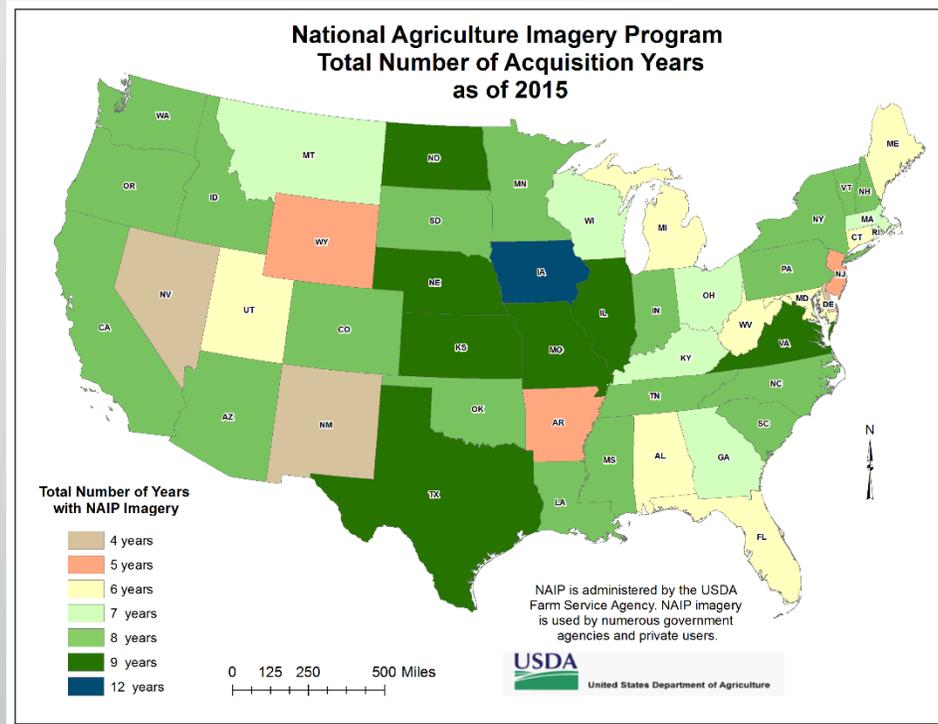
Conclusion

- NDOP finds that a national imagery program is technically feasible and cost beneficial.
- However, there is no executive champion, mandate or funding. Without these three features, this initiative cannot succeed.
- On Sept. 3, NDOP recommended the FGDC Steering Committee decide to what extent this initiative should, or should not, be pursued.
- To be successful, we must consider new alternatives, update the existing alternatives and costs, and identify the funds require to facilitate implementation.

National Agriculture Imagery Program

- Primary source of aerial imagery for the USDA, the Farm Service Agency administers the National Agriculture Imagery Program (NAIP) since 2002
- Leverages partnership funds from other Federal, state, and local entities to acquire imagery during the growing season over the Continental US.
- In 2015, FSA acquired nearly 1.8 million square miles of 4-band (natural color and near color infra-red) imagery in 27 states.
- Two states were collected at .5 meter resolution through a partnership “buy-up” option and all the remaining states are at 1 meter resolution.
- An innovative addition to NAIP called the Early Access Web Services (EAWS) provides minimally processed NAIP imagery via web service protocols on average between 2 and 7 business days after acquisition. This allows FSA and partner agencies to perform time sensitive work with the most current imagery available months in advance of receiving production level NAIP imagery.

National Agriculture Imagery Program



High Resolution Imagery Acquisition

- High resolution imagery was collected through multiple funding partnerships with local, States, and Federal agencies.
- By combining the requirements and funding of these entities, 109,788 square miles of 3-inch, 6-inch 1-foot, and 2-foot imagery was efficiently received for the benefit of all.
- The last High Resolution Orthoimagery program data, acquired through the multiple funding partnerships, was received in September, 2015.
- With responsibility for management of the Homeland Security Infrastructure Program (HSIP) transferring from NGA to DHS, and with the USGS/National Geospatial Program's elimination of the "in-kind" services provided to the HSIP 133 Cities Urban Areas imagery acquisitions, there does not currently appear to be a clear methodology to coordinate future high resolution acquisitions. Therefore, NDOP anticipates FY15 to be the last year of coordinated acquisition in this area.

Collection in the Pacific Basin, Coastal and Oblique Imagery

- NDOP members (USDA-NRCS, USDA-FSA, NOAA and DOD-NGA) have worked together to acquire new Orthoimagery in FY 2015 for the following areas in Hawaii and the US Pacific Basin: Hawaii, Northwestern Hawaiian Islands, Commonwealth of the Northern Mariana Islands, Republic of Palau, and the Federated States of Micronesia.
- NOAA collected tide controlled imagery in 54 coastal areas to support shoreline mapping efforts. In addition, NOAA is collecting an oblique imagery dataset along the Gulf and Atlantic coastline for coastal zone management applications.

Technical Sub Committee

- The NDOP Technical Subcommittee held numerous meetings throughout the year to discuss technical issues that affect our member agencies, with the principal goal to share information and save time and costs.
 - Unmanned Aircraft Systems (Technology and Agency Acquisition Policy)
 - New Digital Camera Systems
 - Satellite Imagery Systems
 - Scanning and Archiving Legacy Aerial Photography
 - High Resolution Imagery Services.

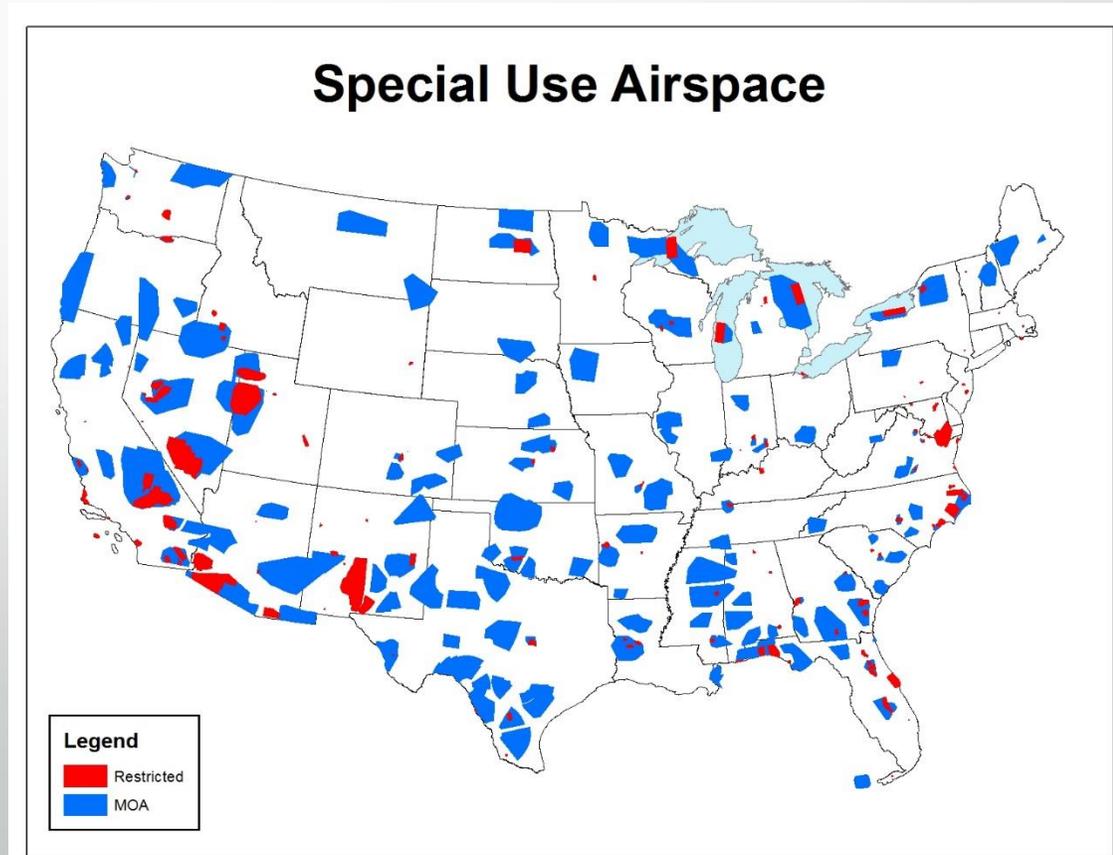
Acquisition Issue - Assistance Needed

Department of Defense Airspace Access Restrictions

- Conflicting needs for airspace access:
 - **DoD** requires sole use of airspace for safety (i.e., realist training or live fire missions) or wants it for operational security concerns (OpSec)
 - **Civilian** agencies need very large blocks of airspace during periods of daylight and cloud free skies to acquire imagery for agency missions
- The majority of the airspace are Military Operations Areas (MOAs) for which access can be coordinated through DoD by flying on weekends or holidays
- However, **a national policy** for coordinating and approving civilian access is needed.

Special Use Airspace

- DoD controls two different types of airspace that can have significant impact civilian agencies imagery collection:
 - Restricted Areas
 - Military Operations Areas (MOAs)
- 664,937 square miles controlled
 - Approximately 22% of CONUS
- Majority of the airspace is over public or private land



OpSec Concerns

- Some military installations have professed OpSec concerns due to post 9/11 environment
 - Decision to prevent imagery collection is made at the base level, not a national policy from the Pentagon
 - Civilian agencies are *not* trying to sway OpSec needs
- There are several bases that have well documented OpSec concerns
 - Example: Aberdeen Proving Grounds or Nevada Test and Training Range
- Preventing civilian imagery collection for OpSec reasons does not eliminate the agencies' needs for current imagery
 - Considerable number of civilian programs deal with DoD managed lands
 - Also prevents USGS from updating the US Topo dataset used by DoD

Airspace vs Military Boundary

- Typically the airspace and military base boundaries are not the same
- The airspace usually incorporates a significantly larger area of public/private land
- Sometimes, such as Nevada Test and Training Range, DoD does not allow the aircraft within an identify buffer from the official airspace border

Vandenberg AFB, CA

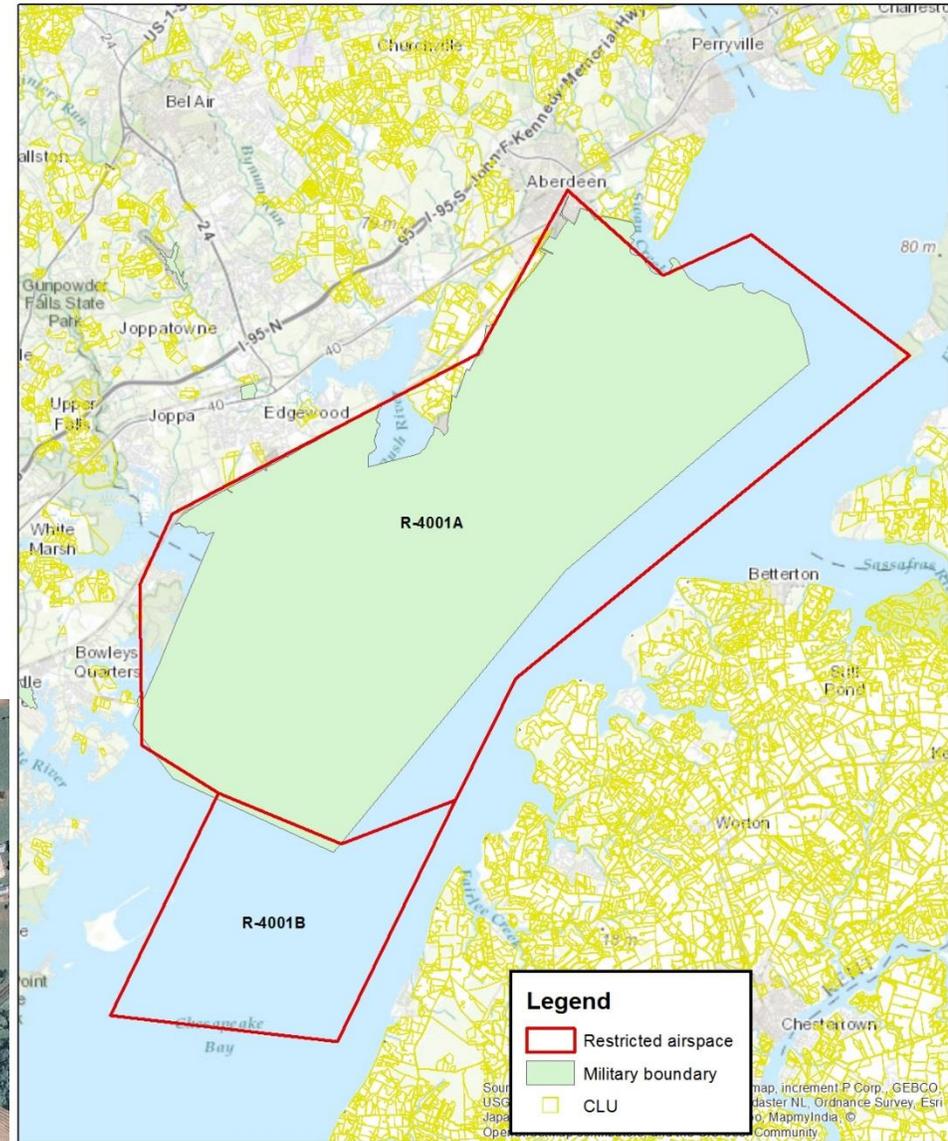


USDA-Farm Service Agency

- Agency mission: administer farm commodity, credit, conservation, and disaster programs as laid out by Congress through a network of Federal, state, and county offices
- Imagery use example: update farm and field boundaries and maintain reported crop data.



Aberdeen Proving Grounds, MD

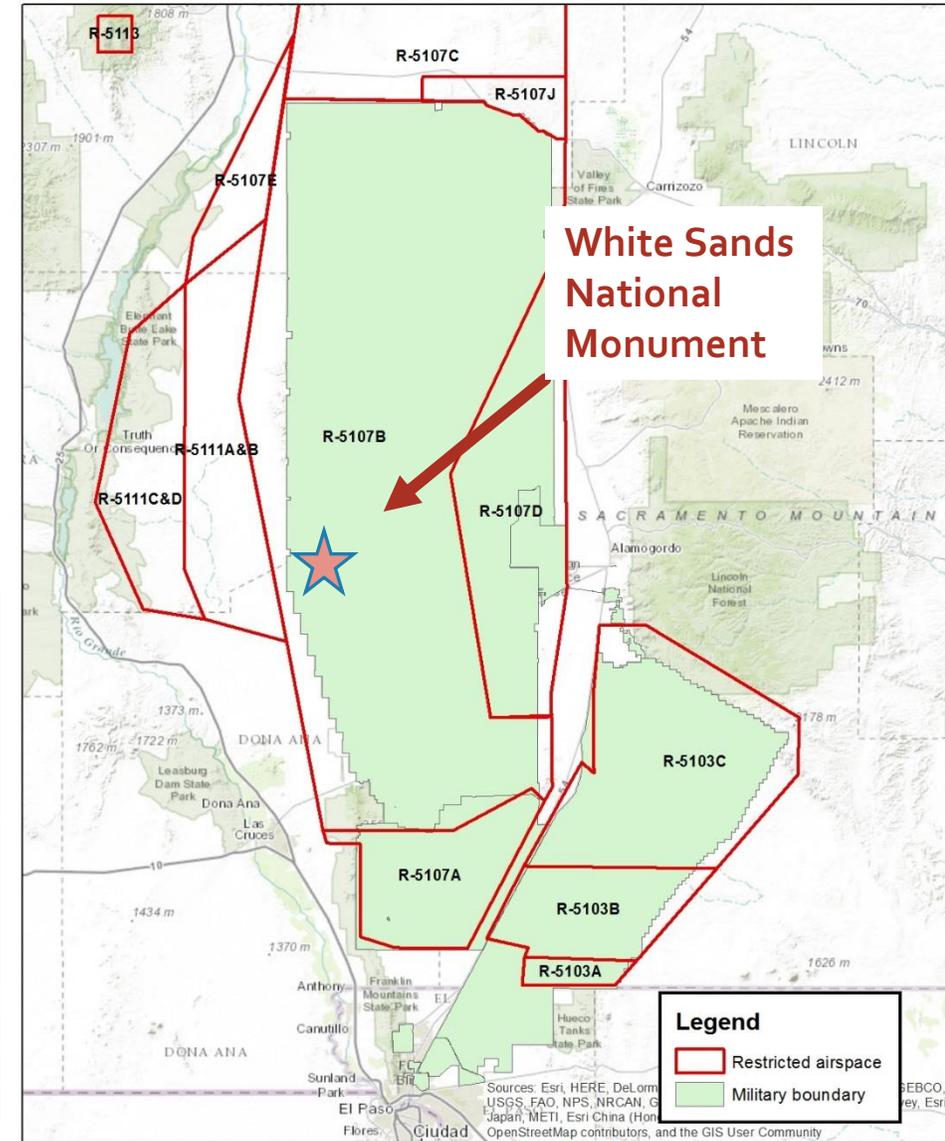


DOI-National Park Service

- Agency Mission: preserve unimpaired natural and cultural resources
- Imagery use example: day-to-day operations of the 275 square mile monument



White Sands Missile Range, NM

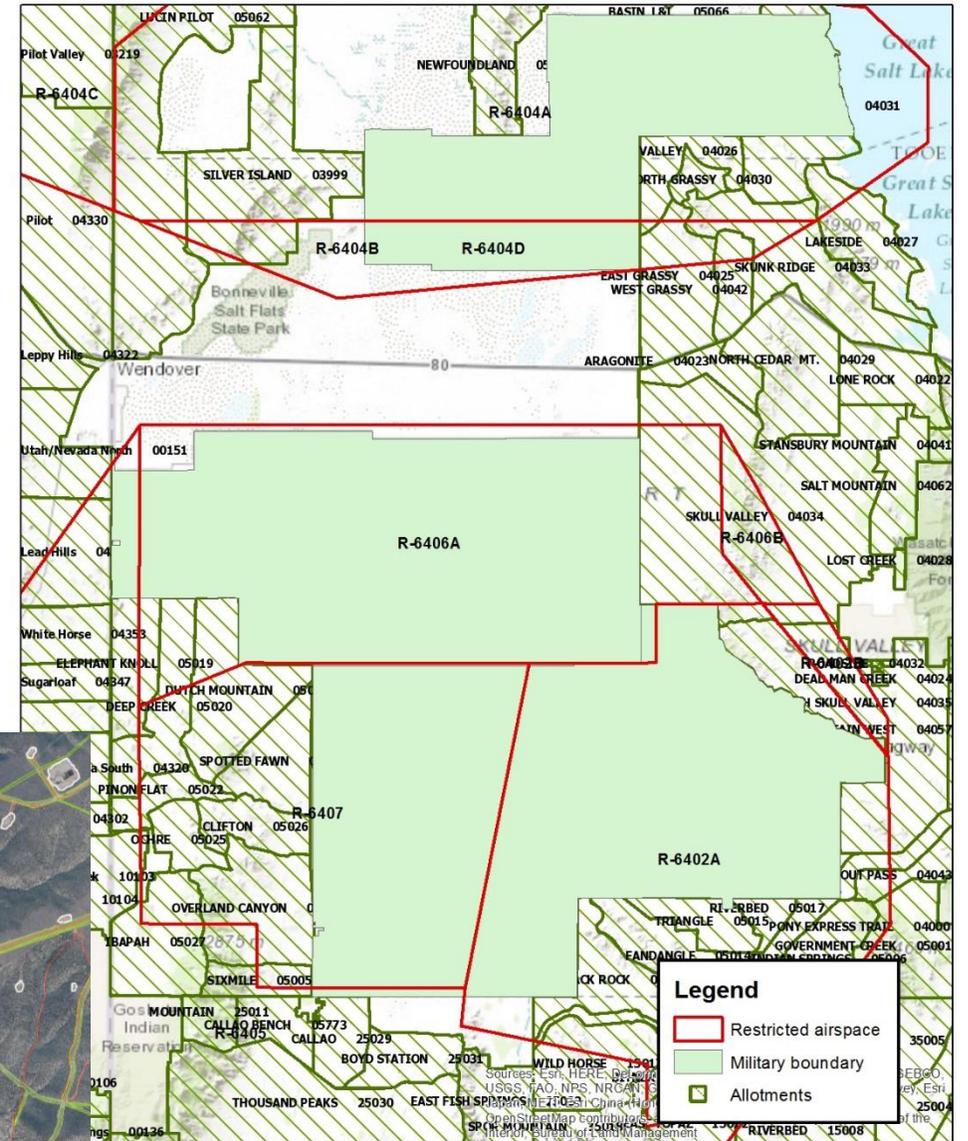


DOI-Bureau of Land Management

- Agency mission: manage and conserve the public lands
- Imagery use example: NAIP is used to assist BLM in conserving vital sage grouse habitat in order to keep the bird from being listed under the Endangered Species Act.



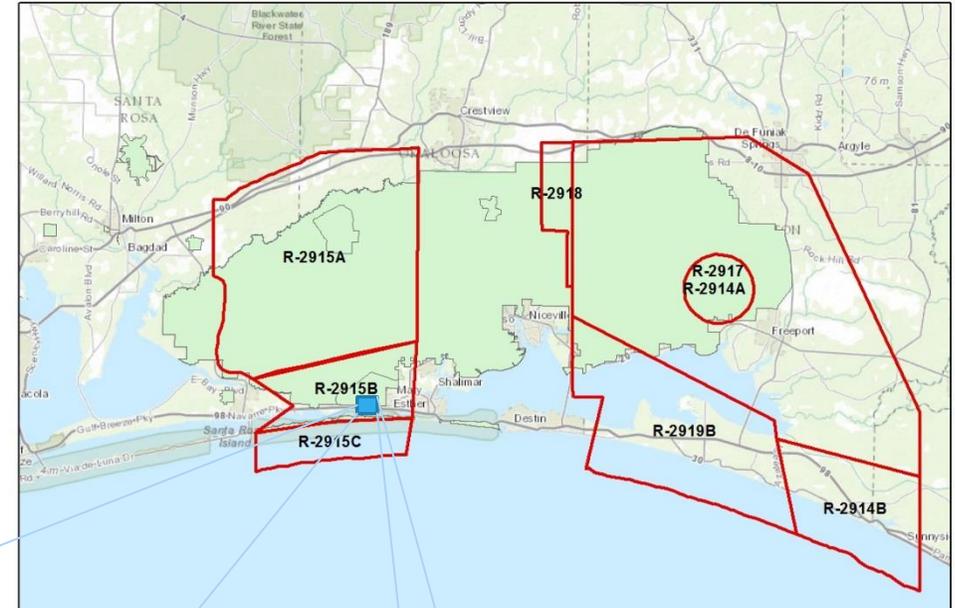
Dugway PG & Hill AFB, UT



DOC-U.S. Census Bureau

- Agency mission: conducts decennial census of population and housing
- Imagery use example : confirming/updating housing units by location

Eglin AFB, FL



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Can FGDC Help Identify/Facilitate the Appropriate DoD Interaction?

- Civilian agencies require current and accurate imagery to support their missions.
- A national coordination process is needed for acquiring large imagery collection (i.e., National Agriculture Imagery Program).
- Determine if it possible to establish a National review/policy for military installations that should appropriately be exempted from collection?



Thank You!

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