HIFLD Use Cases – 2018

The Federal Geographic Data Committee (FGDC) Homeland Infrastructure Foundation-Level Data (HIFLD) Subcommittee is responsible for developing, promoting, and executing a coordinated strategy for acquisition and/or enhancement of homeland infrastructure geospatial information for Federal agencies while creating and utilizing partnerships with State, local, tribal, territorial, and non-governmental organizations (NGOs).

HIFLD depends on an engaged community of users and providers from across the Federal, state, local, and NGO continuum to develop and promote a coordinated strategy to address the collecting, processing, and sharing of the HIFLD Open and HIFLD Secure content (formerly HSIP Freedom and HSIP Gold), an aggregation of 550+ layers of foundation infrastructure data from best available data sources. HIFLD Open and Secure datasets have become the most useful, usable, and used foundation infrastructure datasets for hundreds of thousands of supported users.

HIFLD is currently the base map data for multiple government supported geospatial viewers, applications, analytic tools, and other visualization capabilities. The HIFLD partnership model has fostered additional requests to support a more regional focus on State and local priorities, and on issues to strengthen Federal, state, local, and NGO partnerships across the Homeland Defense (HD), Homeland Security (HLS), National Preparedness – Prevention, Protection, Mitigation, Response and Recovery (NP-PPMR&R) mission communities.

The following document provides real-world examples – "use cases" – of how HIFLD Open and Secure datasets are being used to support Federal/state/local officials across the NP-PPMR&R mission communities. Although not exhaustive, these examples represent HIFLD's significant impact to a wide range of uses and essential missions. The use cases were provided in the Spring of 2018 from outreach to the HIFLD data provider and user community through targeted, direct contact and other HIFLD communication methods.

More Resources and Information:

- Additional information on the HIFLD Subcommittee https://www.fgdc.gov/organization/working-groups-subcommittees/hifld/index_html
- Additional information on and access to the HIFLD Open Data https://hifld-geoplatform.opendata.arcgis.com/
- For other questions or information on HIFLD Open or Secure Datasets, send an email to HIFLD@hq.dhs.gov

Use cases provided in this document are organized by each of the Sectors defined by the National Infrastructure Protection Plan (NIPP), the Defense Critical Infrastructure Program (DCIP), or other related categories listed below to demonstrate a wide cross-section of applied uses:

- NIPP Sector: Agriculture and Food
- NIPP Sector: Water and Wastewater Systems
- NIPP Sector: Public Health / DCIP Sector: Health Affairs
- NIPP Sector: Defense Industrial Base / DCIP Sector: Defense Industrial Base
- NIPP Sector: Energy
- NIPP Sector: Banking & Finance / DCIP Sector: Financial Affairs
- NIPP Sector: Emergency Services
- NIPP Sector: Government Facilities / DCIP Sector: Public Works
- NIPP Sector: Communications
- NIPP Sector: Transportation Systems / DCIP Sector: Transportation
- NIPP Sector: Chemical Industry & HAZMAT
- NIPP Sector: Nuclear Reactors, Materials/Waste
- NIPP Sector: Commercial Facilities
- NIPP Sector: Dams
- NIPP Sector: Critical Manufacturing
- NIPP Sector: Information Technology / DCIP Sector: DoD Information Network
- DCIP Sector: Logistics
- DCIP Sector: Personnel
- DCIP Sector: Space
- Other National Defense
- Other Federal Homeland Security
- State Homeland Security
- State Emergency Operation Centers (EOCs)
- Federal / State Emergency Preparedness

NIPP Sector: Agriculture and Food

Department of Health and Human Services (HHS) Centers for Disease Control and Prevention (CDC): CDC integrates HIFLD layers into the System for Enteric Disease Response, Investigation, and Coordination (SEDRIC) so CDC users can overlay map information with foodborne illness outbreak incident analysis and response.

NIPP Sector: Water and Wastewater Systems

Environmental Protection Agency (EPA): EPA uses HIFLD data to locate drinking water intakes which would be impacted by spills from barges or rail lines. EPA then uses the HIFLD datasets to develop spill models to calculate maximum concentration and duration of spills at individual water intakes. This information is very useful to water utility operators.

NIPP Sector: Public Health / DCIP Sector: Health Affairs

Department of Defense (DoD) Navy and Marine Corps Public Health Center (NMCPHC): HIFLD Open and Secure datasets provide the geospatial data resources required to geocode beneficiary and provider locations used by the NMCPHC for health analysis, health promotion and wellness, and disease surveillance missions. Specific datasets that support geocoding and network analysis include address locators, road networks, building footprints, and government boundaries.

Department of Health & Human Services (HHS): HHS uses the HIFLD Open and Secure data to plan for, respond to, and recover from man-made and natural events. While HHS has other extensive data related to the healthcare infrastructure for the U.S. and its territories, HIFLD data is needed to better understand the complete picture of dependencies across the entire healthcare system and how the interrelationships work both spatially and tabularly. HHS to integrates the HIFLD web services with desktop and online viewing applications such as GeoHEALTH (https://GeoHealth.hhs.gov) to enable better coordination between HHS field personnel and Emergency Support Function (ESF) partners. This allows multiple agencies and partners to view the same authoritative datasets across multiple platforms and applications.

Department of Health and Human Services (HHS) Centers for Disease Control and Prevention (CDC): The CDC Geospatial Research, Analysis and Services Program (GRASP) Team regularly accesses HIFLD Open data during public health emergencies. HIFLD data was used extensively during the recent 2017 hurricane responses. The Situational Awareness branch in the EOC also accessed and used this data during the hurricanes and other public health and emergency events. Day care center locations inform CDC's public health partners investigating environmental health concerns where there might be sensitive or vulnerable population groups. Also, mapping health infrastructure, such as urgent care facility locations, is another example of information that community members need when seeking health care. HIFLD Open/Secure is a valuable resource in disaster response/recovery as the data and resulting analyses are shared with programs throughout the CDC and its partners.

Department of Health & Human Services (HHS) Regional Offices: HHS Regional Offices use HIFLD Open and Secure to understand the impacts to an area in preparing for and responding to Public Health Emergencies under the National Response Framework (NRF) Emergency Support Function (ESF) 8. The Regional Offices also use HIFLD data to plan for special events such as the United Nations General Assembly so deployed teams staged for the event can better understand their surroundings.

Department of Health and Human Services (HHS) Center for Disease Control and Prevention (CDC) Office of Public Health Preparedness and Response (OPHPR), Situational Awareness Branch: OPHPR uses HIFLD Open and Secure data for situational awareness in CDC emergency operations. The use of the relevant and standardized HIFLD data promotes unity of effort and mutual support with International, Federal, and State, Local, Territorial, and Tribal (SLTT) Partners to identify and characterize public health impacts to vulnerable populations, infrastructure, and the environment. Other uses include integration HIFLD and scientific methods to improve Emergency Operations (EOC) monitoring and reporting of public health impacts; production of decision quality products to improve rapid application of interventions to prevent, protect, or mitigate poor outcomes; improved timeliness and quality of public health analytics, one health risk assessments, and course of action predictive analysis for public health emergency preparedness and response activities. Some of the priority analyses and uses of HIFLD data include critical infrastructure monitoring, transportation routes/hubs for rapid deployment of teams and resources and evacuation of victims, identification of vulnerable populations at risk of exposure to biological, radiological, or chemical environmental exposures, evacuation/sheltering of vulnerable populations during outbreaks/disasters, sources of chemical exposure / waterborne disease / foodborne disease outbreaks, mass gathering surveillance / cross-border surveillance / domestic surveillance, operations planning, first responders situational awareness, and surge capacity during pandemics or disasters.

NIPP Sector: Defense Industrial Base / DCIP Sector: Defense Industrial Base

Department of Defense (DoD) U.S. Special Operations Command (USSOCOM): Johns Hopkins University Applied Physics Lab (JHU/APL) leveraged HSIP lidar-derived building shape files to produce ground truthing datasets of building classifications developed from Vricon commercial imagery and 3D data derived from DigitalGlobe satellite images. JHU/APL developed the public Urban 3D Challenge and helped run it on TopCoder. Results were very good, the top solutions are now open source, and all the data used for the challenge is now public to enable ongoing public research. JHU/APL also informed Vricon about the availability of HSIP lidar and shape files for USSOCOM projects, and Vricon is using HSIP data in their machine learning training for labeling buildings in a similar manner. These processes enhanced using HSIP data will result in improved quality products for the U.S. Government.

Department of Defense (DoD) Defense Logistics Agency (DLA): DLA consumes and uses data extracted from external sources including HIFLD Open and Secure. HIFLD GIS data is used by DLA in planning and in providing support for emergency / recovery operations for both manmade and natural disasters. In

addition, DLA personnel routinely use the FEMA flood plain data to verify elevation when siting new building footprints in new construction projects.

NIPP Sector: Energy

U.S. Department of the Interior (DOI), Bureau of Ocean Energy Management (BOEM) Office of Strategic Resources (OSR): OSR plans to use HIFLD energy sector datasets in a MarineCadastre.gov project in the future. In particular, the electric substation data will be used to enhance the analysis.

U.S. Department of Energy (DOE), Energy Information Administration (EIA): The EIA relies upon HIFLD geospatial feature layers for electric transmission line infrastructure and electric retail service areas for the Interactive Energy Mapping tools (https://www.eia.gov/state/maps.php). One of the interactive maps is an Energy Disruption map that combines feature layers with NOAA real-time storm information to give the user a picture of infrastructure in affected areas. EIA continues to research HIFLD datasets for potential additional layers to add to our energy mapping system(s). In addition, EIA uses HIFLD resources to cross-check and corroborate other information EIA incorporates into its mapping applications.

City of New York, NY: HIFLD electric power-related layers, including electric generation plants, large substations, and high capacity transmission conduit were used to anticipate electric outages and cascading effects in Manhattan due to Hurricane Sandy. By combining electric substation data with the FEMA floodplain layer and NOAA storm surge estimates in the days before the hurricane's landfall, it became clear what critical infrastructure was in jeopardy well in advance. This advance analysis was borne out by the actual storm impacts as in the significant damage realized at the East 14th Street substation location.

NIPP Sector: Emergency Services

Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA): FEMA utilized the HIFLD Secure dataset in production of regulatory Flood Insurance Rate Maps for the National Flood Insurance Program. FEMA also developed community engagement outreach for Risk MAP program non-regulatory products, and incorporated HIFLD data into the development of the regional inventory data for use in Hazus within the mitigation division.

Social Security Administration (SSA): The SSA uses HIFLD Open and Secure data for Continuity of Operations (COOP) planning and for operational response during emergencies, particularly for weather-related events such as hurricanes, floods, and tornadoes.

U.S. Department of Agriculture (USDA) Forest Service (FS) Wildland Fire Research, Development, and Application Program (WFM RD&A): The WFM RD&A combines HIFLD Open and Secure datasets with geospatial wildland fire behavior and spread models in the Wildland Fire Decision Support System (WFDSS). WFDSS assists fire managers and analysts in making strategic and tactical decisions for fire incidents to protect public safety and safeguard natural resources.

U.S. Department of Agriculture (USDA) Forest Service (FS): USDA FS uses HIFLD Open and Secure data to prepare and respond to wildfire events. Having such data allows for fire planning operations in real time during incidents. Additionally, the data allows for contingency planning during the non-fire seasons.

Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA) Region VI (RVI) Mitigation office: RVI uses HIFLD Open and Secure datasets in the FEMA Regional and National Response Coordination Centers during disasters to identify impacted critical infrastructure within the disaster area. The FEMA Planning Branches also utilize the HIFLD Open and Secure data during Catastrophic Planning to assess the potential loss of infrastructure and to align the right types and amounts of resources to properly respond to and recover from a catastrophic natural or manmade disaster. The HIFLD Open and Secure data is also used and is useful across divisional boundaries and is a valuable asset for many other functional and programmatic areas.

Georgia Emergency Management and Homeland Security Agency (GEMHSA): GEMHSA primarily uses HIFLD data to identify critical infrastructure located in active hazards or predetermined hazardous areas to aid in disaster planning and response.

DuPage County, Illinois Office of Homeland Security & Emergency Management (OHS&EM): DuPage OHS&EM utilizes HIFLD Open as a baseline dataset for identifying Critical Infrastructure and Key Resources (CIKR) to build out the County's community profile. DuPage OHS&EM confirms the CIKR data with local partners and updates it annually for the 16 critical infrastructure sectors. The information is useful within the County level, but the HIFLD Secure data does not always match data at the local level. It is the job of the locals to provide accurate data to state and federal partners and having access to the HIFLD data is a good starting point for that process.

County of San Diego, California Office of Emergency Services (OES): OES uses HIFLD data and web services in planning and training for various scenarios, including Lifelines. It is used in the Emergency Operations Center as an authoritative data source for ArcGIS Online situational awareness map viewers. OES also strives to ensure HIFLD Open services are easily accessible to SanMAPS, which is a collaboration group of regional partners involved in emergency response and recovery missions.

Honolulu, Hawaii City/County: Honolulu uses HIFLD Open data, and in particular, the Land Scan products in hazard mitigation operational planning. Specifically, it is used to assess the potential impacts of various hazard models including tsunami inundation, storm surge, and dam failures.

Pittsburgh, Pennsylvania Office of Emergency Management and Homeland Security (OEMHS): OEMHS utilizes HILFD Open source data to identify and confirm the location and existence of dependent critical infrastructure during large-scale water outages and boil water advisory events. The HIFLD data was exploited and processed through the City's incident management system, Knowledge Center, to enhance and inform decision making for the events.

Euless, Texas: The City of Euless used HIFLD data in development of a regional Threat and Hazard Identification and Risk Assessment (THIRA) report. Several disaster scenarios were designed and drawn into the GIS, and HIFLD data was used to find features within the disaster zone that would be affected such as miles of road, police/fire stations, courthouses, miles of railroad, list of cities/counties affected, airports, and entertainment venues.

Sumpter, South Carolina (SC) City/County Planning Department: Sumpter SC uses HIFLD Open in the City/County Common Operating Picture (COP). In particular, the data is needed for hurricane preparedness and any post major event clean up and recovery. Sumpter officials also use HIFLD Secure to provide situational awareness of specific utility, transportation, and other major key structures (Federal, DOD, etc.) within the jurisdiction.

NIPP Sector: Government Facilities / DCIP Sector: Public Works

Department of the Interior (DOI) U.S. Fish and Wildlife Service (FWS) Office of Emergency Management & Physical Security (OEMPS): OEMPS uses HIFLD data available through the U.S. Department of the Interior Watch Office/Integrated Operations Center (IOC) for visualization and analysis of FWS facilities and areas of responsibility.

Department of Veterans Affairs (VA): The VA integrates HIFLD data in the Common Operational Picture (COP) in their Operations Center. Watch Officers in the COP monitor events and view impacts to relevant facilities.

National Aeronautics and Space Administration (NASA): NASA facility managers access HIFLD data through a facility management portal used for agency disaster preparedness. Both HIFLD Open and Secure data is integrated into the NASA-wide Institutional GIS Portal to provide access to layers that pertain to agency regions, other government agency locations, and hazards. HIFLD data is also used for regional awareness with respect to “encroachment” upon NASA locations. The GIS support team is in the process of incorporating HIFLD Open services into the applications to pull from the authoritative source to reduce the need for updates.

NIPP Sector: Communications

Department of Homeland Security (DHS) National Protection and Programs Directorate (NPPD) Network Design and Analysis Capability (NDAC): NDAC is comprised of the Infrastructure Mapping Tool (IMT) and Internet Analysis Capabilities. HSIP Gold is the primary data set used for communications infrastructure modeling and to ascertain the possible impacts to the communications infrastructure due to ESF#2 or NS/EP events. The analysis produced using IMT (and HSIP Gold) are the primary means the National Coordination Center (NCC) uses to direct restoration and recovery in event affected areas. Most recently, IMT and HSIP Gold data was used in support of ESF#2 communications response and recovery efforts for Hurricanes Harvey, Irma, and Maria.

Federal Emergency Management Agency (FEMA), Disaster Emergency Communications (DEC): The FEMA DEC utilizes the HSIP Gold dataset for analysis on potential effects natural and manmade disasters may have on communication infrastructure. Emergency Communication Annexes are created for each State, Tribe, and Region to document the communication infrastructure critical to disaster response that may be affected by any disaster the area is vulnerable to. Local Emergency Operation Centers, Non-English Broadcast Stations, Substations, Serving Wire Centers, and Public Safety Answering Points (PSAP) are just a few of the infrastructure datasets utilized through HSIP to help prepare for a disaster.

Campbell County, Wyoming Emergency Management Agency (EMA): Campbell County EMA utilizes HIFLD data to provide GIS locations for Cellular Telephone Tower Sites within their jurisdiction. Because the entire county does not have cellular coverage, the EMA needs HIFLD information for IPAWS/WEA warnings. Specifically, the data is needed to ensure tower sites are captured on the maps to designate where warnings need to be broadcast over those systems. The county also uses HIFLD data for Critical Infrastructure locations for planning purposes. This data has been used in Multi-Jurisdictional Hazard Mitigation Plan, Emergency Operations Plan, and Hazmat/Tier II community vulnerability analysis.

NIPP Sector: Transportation Systems / DCIP Sector: Transportation

Department of Transportation (DOT) Federal Railroad Administration (FRA): FRA uses HIFLD Open and Secure to perform analyses of rail line incidents and accidents (e.g. grade crossing accidents, trespasser events, etc.). HIFLD Open datasets used in cause and effect analysis support public safety improvements. HIFLD Open and Secure data was also used during Hurricanes Harvey and Irma to track potential storm impacts on infrastructure and to coordinate post-storm regional inspections.

Department of Transportation (DOT) Federal Aviation Administration (FAA) Office of National Security Programs and Incident Response (AXE) Emergency Operations Network (EON): AXE builds and maintains three primary geospatial applications (EON Earth, EON Mapping Portal, and EON Home) that provide collaborative communication, continuity of operations and adaptive situational awareness capabilities to the FAA's Office of Security and Hazardous Materials Safety (ASH) and the FAA at large. These three applications use data from HSIP datasets, allowing users to create, share, and view custom maps and visualizations, supporting a wide variety of both emergency and non-emergency FAA functions.

U.S. Department of Transportation (DOT) Bureau of Transportation Statistics (BTS) Office of Spatial Analysis and Visualization (OSAV): OSAV provides geospatial and mapping support to DOT's Crises Management Center (CMC) and National Response Program (NRP), during times of crises and national disasters, during both real world and exercise scenarios. Many of the geospatial products created are time and data sensitive. HSIP Open and Secure data has been and will continue to be used for such efforts. BTS conducts spatial analysis to understand the social, economic, and environmental conditions and relationships that affect or are affected by the transportation networks. BTS has used HIFLD Open to complement our BTS National Transportation Atlas

Database of 70 authoritative transportation related datasets when conducting these analyses.

Department of Commerce (DOC) National Oceanic and Atmospheric Administration (NOAA) Office of Coast Survey (OCS): OCS has incorporated HIFLD data in the OCS GIS portal. These data are useful to the Navigation Services Division in hurricane planning and response. Much of the information can be helpful in decision making for the Navigation Response Team survey vessels. In addition, the OCS also used some of the HIFLD data for the Hydrographic Health Model. This model is a risk-based analytical tool used to determine Hydrographic Survey priorities.

U.S. Department of Agriculture (USDA) Wildlife Services (WS) National Wildlife Research Center (NWRC): NWRC uses the Solid Waste Landfill Facilities data from HIFLD Open to quantify the effect landfills have on bird-aircraft collisions at airports nationwide. Understanding these dynamics helps us to better protect the flying public and prevent damage to aircraft.

Department of Transportation (DOT) Federal Aviation Administration (FAA): The National Airspace System Integrated Status Insight System (NISIS) is a GIS / database platform built by the Air Traffic Organization (ATO), the operations component of the FAA, as a Common Operating Picture (COP) for emergency operations. HSIP data is used within the NISIS.

NIPP Sector: Chemical Industry & HAZMAT

Department of Defense (DoD) Defense Threat Reduction Agency (DTRA): The DTRA uses HIFLD data in response to Requests for Information (RFI) from agency partners during IMAAC (Interagency Modeling and Atmospheric Assessment Center) activations. The IMAAC provides a single point for the coordination and dissemination of Federal atmospheric dispersion modeling and hazard prediction products that represent the Federal position during actual or potential incidents involving hazardous material releases. DTRA uses ~20 key HSIP 2015 layers to conduct analyses for RFI response. In addition, the DTRA Operations Center also uses HIFLD data for situational awareness and analysis.

Department of Homeland Security (DHS) Science & Technology (S&T) Directorate, Chemical Security Analysis Center (CSAC): The CSAC uses HIFLD Open/Secure data in response to Requests for Information (RFI) from agency partners and as a tool to complement chemical hazard analysis conducted by the CSAC. The CSAC supports the homeland security community by providing a crucial knowledge repository of chemical threat information, design and execution of laboratory and field tests, and a science-based threat and risk analysis capability, among other services.

NIPP Sector: Nuclear Reactors, Materials/Waste

Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA) Region V: FEMA Region V uses HIFLD Secure, HIFLD Open, and HSIP Gold to support the FEMA Radiological Emergency Preparedness (REP) Program. Both HIFLD and HSIP Gold critical infrastructure data is used to help communities plan and prepare for commercial nuclear power plant incidents. HIFLD Secure, HIFLD Open, and HSIP Gold are vital to the team's analyses and FEMA's web applications, which

are critical to the mission. HIFLD Secure and Open are especially valued for their online availability.

U.S. Department of Energy (DOE), Office of Nuclear Energy, Office of Integrated Waste Management (IWM): IWM uses HIFLD data to support communications, analysis, and planning for eventual large-scale transportation of commercial spent nuclear fuel from nuclear power plants to future storage and/or disposal facilities.

Department of Energy (DOE) National Laboratories, Oak Ridge National Laboratory (ORNL): Transportation Routing Analysis Geographic Information System (TRAGIS) is used by DOE, National Labs, and state staff to model the movement of hazardous materials across the Rail, Highway, and Waterway networks. Current capabilities permit the generation of an ambient population distribution within a specified buffer zone along the route. DOE requires use of LandScan Daytime and Nighttime population distribution as well as proximity analysis to selected critical infrastructure along the route. TRAGIS operates as a US DOE system and requires federal sponsorship prior to users gaining access to the system. The TRAGIS system operates under a DOE approved cyber security plan.

NIPP Sector: Commercial Facilities

Office of the Director of National Intelligence (ODNI) Intelligence Advanced Research Projects Activity (IARPA): Under the IARPA Creation of Operationally Realistic 3D Environment (CORE3D) program, Johns Hopkins University Applied Physics Lab (JHU/APL) informed the CORE3D performer teams about the HSIP lidar and shape files, and they are using that data to train and validate machine learning algorithms. The Urban 3D Challenge results were also leveraged to provide a strong public baseline for initial comparisons with CORE3D performers to ensure that they are making good progress in the first year. JHU/APL also publicly released more satellite images that overlap the HSIP 133 Cities to enable public research in semantic 3D reconstruction.

NIPP Sector: Dams

Department of Defense (DoD) US Army Corp of Engineers (USACE): The Modeling Mapping and Consequences Program is a distributed team of modelers, GIS specialists, and economists within the Corps of Engineers that produce Dam Failure Inundation models, atlases and consequence summaries for USACE dams. The maps are included in the Emergency Action Plans required for each USACE dam. HIFLD is used to display facilities potentially affected by inundation due to dam failure.

NIPP Sector: Critical Manufacturing

Department of the Interior (DOI) Office of Surface Mining Reclamation and Enforcement (OSMRE): The OSMRE uses HIFLD Open and Secure for planning, situational awareness, and baseline vector elements needed for change detection and monitoring of active and abandoned mine sites.

NIPP Sector: Information Technology / DCIP Sector: DoD Information Network

Department of Homeland Security (DHS), Geospatial Management Office (GMO): The DHS Common Operating Picture (COP) application integrates HIFLD for use in the viewer. The suite of tools provides Homeland Security Enterprise professionals with enhanced situational awareness and a common operating picture for the entire Federal Government. The DHS COP architecture coupled with HIFLD Secure and other data from Homeland Security partners and Homeland Security Information Network (HSIN), provides actionable information, enhanced contextual understanding, and geospatial awareness. The DHS COP provides users a broad set of capabilities based on best-in-class technologies that deliver a rich end user experience through a web-accessible interface. Users are granted role-based access to the application based on their mission to visualize integrated geographic-enabled information. Users includes DHS Components, DHS Joint Task Forces, Federal Operation Centers, Fusion Centers, and Homeland Security stakeholders.

Department of Homeland Security (DHS), Office of the Chief Readiness Support Officer (CRSO): The CRSO integrates HIFLD data into their DHS Management Cube. The team also has HIFLD data loaded into a variety of online tools, including the GeoExplorer Tool, Hurricane Maria Potentially Impacted Assets Tool, and Fuel Report Tool.

DCIP Sector: Logistics

Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA) Logistics Management Directorate, Logistics Plans and Exercises Division: FEMA uses HIFLD for geospatial product development in support of operational planning and situational awareness for logistics operations.

Department of Defense (DoD) Defense Logistics Agency (DLA): DLA consumes and uses data extracted from external sources including HIFLD Open and Secure. HIFLD GIS data is used by DLA in planning and in providing support for emergency / recovery operations for both manmade and natural disasters. In addition, DLA personnel routinely use the FEMA flood plain data to verify elevation when siting new building footprints in new construction projects.

DCIP Sector: Personnel

Department of Defense (DoD) U.S. Marine Corps (USMC) Installation Geospatial Information and Services (IGI&S) GEOFidelis Program: HIFLD data is used throughout the Marine Corps for encroachment monitoring, exercise planning and execution, infrastructure planning, routing, energy management, and emergency management. Marine Corps installation missions within the energy, installations, and environments domains require access to geospatial data both inside and outside of the installation real estate boundaries. HIFLD is a key data source in supporting the Readiness and Environmental Protection Integration (REPI) program to protect the military training and operations missions by removing or avoiding land-use conflicts near installations and addressing regulatory

restrictions that inhibit military activities. HIFLD data is also a key data source used in attribute conflation to support the development of topographic map attributes when developing Military Installation Maps and other simulated war fighter products. HIFLD data also is utilized to support emergency operations and cross-agency planning and coordination through use of datasets such as location, capabilities, and capacity data across entities such as hospitals, schools, and shelter locations.

DCIP Sector: Space

Federal Aviation Administration (FAA) Office of Commercial Space Transportation (OCST): OCST uses the HIFLD LandScan 90-meter population database to support Flight Safety Analysis for public ground risks and Maximum Probable Loss for insurance determinations. Other HIFLD data like property assets may also be useful for these analyses in the future.

Other National Defense

Department of Defense (DoD) Navy Expeditionary Combat Command (NECC): HSIP data is used in support of real world events (hurricanes, floods) in NECC role in Defense Support of Civil Authorities (DSCA). Recent examples include uses of HSIP to provide situational awareness to the Commander and units responding to hurricanes which impacted Puerto Rico and the Gulf Coast in 2017. HSIP data is also used as exercise data for CONUS-based scenarios. HSIP 2015 data is loaded on many of the Intelligence Carry-On Program (ICOP) for use with GIS software. Preloading the data is of benefit to the force due to operating in bandwidth constrained environments. Web-based HIFLD data has also been used through NORTHCOM's SAGE viewer.

Department of Defense (DoD) US Army Corp of Engineers (USACE): The Army Climate Change Vulnerability Assessment Guidance Program provides immediate knowledge transfer to related USACE activities that addresses different classes of projects, additional classes of change (e.g., demographic, social values, land use, political values), and climate change mitigation. The Responses to Climate Change Program (RCC) also identifies knowledge and technology gaps to guide research and development activities, and transfers knowledge and technology to other USACE Programs. HIFLD is used by Army installations to conduct climate change vulnerability assessments and incorporate findings as adaptation strategies in existing planning processes.

Department of Defense (DoD) Air Force (AF), 21st Space Wing, Peterson AFB, CO: The 21st Space Wing uses HIFLD for local, regional, and national situational awareness mapping. Examples include the 2012 Waldo Canyon Fire (Public Safety, Infrastructure, Transportation datasets); the 2013 Manitou Springs Flooding (Public Safety, Infrastructure, Transportation, Elevation datasets and basemaps); the 2013 Black Forest Fire (Demographics, Public Safety, Infrastructure, Transportation, and Zip Codes datasets); Vicinity and Regional Emergency Response map products (Administrative Boundaries, Public Safety, Government, Infrastructure, and Transportation datasets); Direct support to NORAD/ NORTHCOM Response mapping 2017-2018, Hurricane Harvey, Hurricane Irma; and U.S./Mexico Border Support (Demographics, Government, Public Safety, Infrastructure, Transportation, and Zip

Codes datasets). Additionally, HIFLD Open Data and HSIP media are used in support of global installation space surveillance missions. HIFLD has been a long-standing component of the AF geospatial visualization mapping capability and situational awareness support activities.

Department of Defense (DoD) U.S. Army Corps of Engineers (USACE): USACE utilizes HSIP Gold data to create various site maps, including base maps during incident response for flooding, drilling, landslides, and other events. USACE also uses HSIP Gold when preparing presentations and visualizations of engineering analyses. USACE uses HSIP to provide context and support analysis of modeling products, including dam failure, river flooding, and ESF3 Hurricane Mission Modeling.

Other Federal Homeland Security

Department of Homeland Security, U.S. Customs and Border Protection (CBP), New Orleans Sector Border Patrol: CBP incorporates HIFLD data into their Common Operational Picture (COP) to obtain a clearer picture of vulnerabilities and friendly forces within the region, and to plan for multi-agency integrated operational response to threats and natural hazards.

Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA): HIFLD data is used by FEMA in support of numerous regional planning efforts. In accordance with the Regional Planning Guide and other documents, a Six Step Planning Process was developed to establish a common framework for preparedness. This process has been used by multiple FEMA Regions in both All Hazards Plans and Hazard Specific Plans. In each of these cases, HIFLD data was used to establish the foundation for critical infrastructure data. As scenarios were developed, HIFLD data was incorporated into GIS tools and potential events were then modeled. Using additional data for demographics, storm tracks, flood surge and other hazards, potential impacts were modeled and analyzed. Data was then gathered and incorporated into the Information Analysis Brief to show physical effects and impacts to critical infrastructure.

State Homeland Security

San Diego Law Enforcement Coordination Center (SD-LECC): The Fusion Center for the San Diego, California region, SD-LECC utilizes HIFLD Open and Secure as authorized for analytical support to multiple mission areas including critical infrastructure protection, counter-terrorism, border security, emergency management, and investigation support to advance public safety. This includes capabilities such as helping to identify and prioritize the most critical substations across SD-LECC's Area of Responsibility to determine consequences of interruptions in service individually and as part of systems as well as ensuring common operational data between federal, state, and local government partners involved in area-based deployment and constructions operations for southwest border security.

State Emergency Operation Centers (EOCs)

Missouri (MO) State Emergency Management Agency (SEMA): MO SEMA incorporates HIFLD Open

data into its new Missouri Watch Center dashboard. The State's Executive Branch uses HIFLD to view statewide assets, resources, and infrastructure in the context of ongoing and upcoming events or incidents of interest to public health or safety.

State of Montana and regional/local partners: The State of Montana integrates HIFLD Open data into the State's Common Operational Picture (COP) for regional, state, and local emergency response agencies use. Incorporating HIFLD into the COP enables the agencies to understand the situation, values at risk, and safety concerns, to better prioritize response, and acquisition and assignment of resources.

Oregon Office of Emergency Management/Oregon Military Department: Oregon utilizes both HIFLD Secure and Open in the State's common operating picture platform, RAPTOR (Real-Time Assessment and Planning Tool for Oregon). HIFLD data is used to better understand and display what resources are in the areas of interest. The State integrates HIFLD using the “add data” widget within Web Appbuilder and queries are in place to access and update the information. Additionally, Oregon utilizes the HIFLD Open datasets for a jurisdiction profile project, which organizes reference data by emergency support functions.

Texas Department of Public Safety (TXDPS): TXDPS integrates HIFLD data in TXMAP, a Common Operating Picture (COP) that supports law enforcement and emergency management in daily operations, events, preparedness activities and operational response.

Federal / State Emergency Preparedness

Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA): FEMA utilizes HIFLD data during incident response and preparedness training and exercises when local data is not available. HIFLD Secure provides infrastructure such as levees, airports, seaports, schools, hospitals, and fuel depots necessary for decision making and continuous training.

Department of Defense, Army (DoD) United States Army Corps of Engineers (USACE): The USACE Operations Center uses HSIP Gold data to form the basis of the infrastructure datasets for the Army Corps online map viewer - CorpsMap. The agency requires use of HSIP Gold on discs to increase performance and to load to portable hard drives for deployment situations where there is no internet access such as Puerto Rico after the hurricanes.

Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA): FEMA utilizes HIFLD data to support Incident Management Assistance Teams (IMATs) during rapid deployment operations to facilitate management of the national response to catastrophic incidents. Likewise, FEMA uses HIFLD data to index multiple data repositories, create a catalog of the data, and allow users to perform spatial and text searches to locate specific data to meet mission requirements.

Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA): HIFLD is used to enhance the aggregated totals by census block/census tract that FEMA’s Hazus software uses

for estimating and reporting losses resulting from disasters. This enhances FEMA's aggregated numbers, analytical products/analyses, and overall totals for an impact area. Analysis using HIFLD data also includes the County Impact Analysis/Risk Index types of products such as those created for Hurricane's Harvey, Irma, and Maria; which reported county by county totals of critical facilities impacted by surge and flooding. Results are visualized on the FEMA GeoPlatform.

Technosylva: As a consultant to various government agencies, Technosylva uses LandScan data as an ideal source for assessing Wildland Urban Interface risk as part of wildfire risk assessments. LandScan has become a de facto standard for risk assessment in the U.S. with government agencies. LandScan is particularly useful in delineating rural wildland communities, where no other GIS-related data, including Census data, provides an adequate source of information. This allows for better protection and incident response planning.