

CHAPTER SUMMARIES

Chapter 1. GEODETIC CONTROL: At this time there is a complete and accurate geodetic control layer for the State of Hawai'i. Such a layer is important in the development and maintenance of a seamless parcel layer for the state, and will allow all geospatial data to be brought into a common coordinate system at the time of data capture, reducing locational discrepancies between data sets. The geodetic control layer needs to be maintained and updated following NGS' Federal Base Network guidelines and enhance the vertical control layer using NGS' Height Modernization program

TOTAL COST	FY03 PLANNED INVESTMENT	BUDGET SHORTFALL
\$ 2,000,000	0	2,000,000

Chapter 2. ELEVATION/BATHYMETRY: The development of a high-resolution elevation and bathymetry dataset is a high priority for the Hawai'i Geographic Information Coordinating Council (HIGICC); as such data can provide the foundation for many data themes. In addition, these data can be used for a variety of applications, such as watershed management, viewshed mapping, transportation planning and flood hazard mitigation and prevention, and hydrologic modeling studies. It is estimated that it will take more than **\$2.75 million** to complete this theme. However, the first step should be to develop a coordinated approach by Federal, State, County, local and private partners, and the HIGICC, to identify all entities that will benefit from high-resolution elevation and bathymetry data, and to develop a streamlined funding mechanism for the cost-share contributions.

TOTAL COST	FY03 PLANNED INVESTMENT	BUDGET SHORTFALL
Over \$2,750,000	Undetermined at this time	Undetermined at this time

Chapter 3. IMAGERY: Hawai'i needs statewide coverage of both a consistent, flexible use, and widely available ortho imagery dataset that is high-resolution natural color and a perhaps lower resolution 4 band multispectral data set of similar coverage. This would be the base for developing many other critical data themes, such as parcels, structures, marine and terrestrial layers. Ortho imagery also provides an excellent source for smart growth planning, biomass determination to support fire behavior modeling, plant species identification, habitat mapping, and alien plant control. However, since the spatial data community in Hawai'i makes such broad use of imagery data, it is doubtful that any single imagery dataset will satisfy all possible applications. The Hawai'i IKONOS Consortium, coordinated by the Hawai'i Natural Heritage Program, allows for 1 meter color imagery of the state (by tiles for the main 8 islands) and 4 meter 4-band multispectral imagery for the same area, same configuration, and is perhaps the most viable forum for developing a state wide imagery dataset. As of 5/26/03, it would take **\$1,380,000** to complete the IKONOS coverage. In addition, it is estimated that between

\$400, 000 and **\$1,400,000** would be required to develop a higher resolution imagery dataset to satisfy other needs, such as post disaster damage assessments

TOTAL COST	FY03 PLANNED INVESTMENT	BUDGET SHORTFALL
\$1,780,000 - \$2,780,000	\$367,000 (IKONOS Consortium contributions)	\$1,413,000 - \$2,413,000

Chapter 4. HYDROGRAPHY: It is estimated that **\$330,000** will be needed to fund the completion of an integrated hydrography dataset for the State of Hawai'i. This dataset will integrate surface-water, ground water and water-quality spatial and attribute data in a watershed framework of the integrated hydrography theme. This would include three major tasks. These are; 1) validating and coding additional attributes for stream and ditch segments, 2) updating the National Wetland Inventory mapping for the islands of Niihau, Kauai, Molokai, Maui, Kahoolawe, Lanai and Hawai'i and 3) linking water-quality data to well and stream segments and to watershed attributes.

TOTAL COST	FY03 PLANNED INVESTMENT	BUDGET SHORTFALL
\$467,500	\$137,500	\$330,000

Chapter 5. TRANSPORTATION. Transportation, within the context of spatial data infrastructure, pertains to facilities and assets involved with moving people and goods from one location to another via land, water or air. These facilities include airports, harbors and roads. The initial focus of most transportation framework data projects has been on the creation of a comprehensive road network data sets, beginning with accurate street centerline base maps for all public roads statewide with accuracy within five meters. The Department of Transportation (DOT) will be spending \$700,000 this year to complete the Digital Videolog project that will result in updated highways base maps. If other agencies would piggyback on this project, most of the remaining 2,700 miles of roads can be completed within **\$200,000**, as all mobilization and much of the equipment costs have already been covered. The basic data capturing activities can be completed within a budget of **\$100,000**.

TOTAL COST	FY03 PLANNED INVESTMENT	BUDGET SHORTFALL
\$1,000,000	\$700,000	\$300,000

Chapter 6. CADASTRAL: The parcel layer is probably the most frequently used cadastral dataset in the State of Hawai'i. It is often the foundation on which other layers, such as street centerlines, easements and zoning, is built. In addition, other critical themes, such as Government Units, are derived from the parcel layer. It is estimated that over **\$600,000** will be needed to complete a multi-use parcel layer for the entire State.

The majority of these costs would be associated with creating digital parcel data for areas of the state where no such data currently exists.

TOTAL COST	FY03 PLANNED INVESTMENT	BUDGET SHORTFALL
\$1,000,000	\$400,000	\$600,000

Chapter 7. GOVERNMENTAL UNITS: Several Government Unit and boundary layers for the state already exist as digital files. In certain cases, these government units are or could be subsets of other existing data layers, and therefore, if not already done, could be extracted to create the desired layer. For example, Hawaiian Home Land boundaries were derived from the parcel layer. There is a need for public agencies to acquire the parcel data layers that are not already public information. Most of the Neighbor Island parcels are proprietary data sets. It is a goal to acquire the rights to these data sets so that they are public information. It is estimated that it would take an additional **\$200,000** to acquire and set up management procedures for these datasets.

TOTAL COST	FY03 PLANNED INVESTMENT	BUDGET SHORTFALL
\$250,000	\$50,000	\$200,000

Chapter 8. UTILITIES: Utilities comprise a variety of different layers of infrastructure data managed primarily by local government agencies or private utility corporations, and include water, wastewater, storm drains, telecommunications, electric and gas layers. Much of the information for this chapter has not been received in time for this draft, however, or the local government utilities, priority has been placed on water and wastewater utilities with a high emphasis being placed on the updating of storm drains. It is roughly estimated that it would take an additional **\$1,500,000** to complete this theme.

TOTAL COST	FY03 PLANNED INVESTMENT	BUDGET SHORTFALL
Estimated between \$1,000,000 and \$2,000,000	Estimated at \$500,000	Estimated between \$500,000 and \$1,500,000

Chapter 9. STRUCTURES: An estimated **\$1,900,000** will be required to create a central repository and complete spatial inventory of buildings for the State of Hawai'i. Data about the location and shape of building structures are needed to support many different types of government services, including land use planning, construction permit approvals, tax assessment, utility management, homeland security, and other major programs.

TOTAL COST	FY03 PLANNED INVESTMENT	BUDGET SHORTFALL
\$2,000,000	\$100,000	\$1,900,000

Chapter 10. PHYSICAL ENVIRONMENT AND NATURAL HAZARDS: Within the context of the Hawai'i I-Plan, the Physical Environment and Natural Hazards theme contains subcategories of geology, soils, weather and climate and natural hazards. Digital geologic map data will soon be publicly released for the Island of Hawai'i. But a major data gap exists for the remainder of the State. Soils data exists statewide and is gradually being updated to include conservation lands and changes in agricultural uses. A modest amount of funding is sought for the expert interpretation of soils attributes. For climatic data, piecemeal layers exist from various State sources, and additional layers are created though most will be licensed. An evapotranspiration layer will still be needed. Creation and maintenance of a layer of precise weather station locations that can be linked to archived historical data is a priority.

Within natural hazards, layers need to be maintained of historical events and the models created of areas and severity of potential risk from: coastal erosion/sea level rise, tsunami, inland erosion/landslide/rockslide, wildfire/drought, hurricane/windstorm/storm surge, flood, earthquake, and volcanic eruption/lava flow/emissions. There are several ongoing data projects, such as the revamping of the digital flood insurance rate maps and completion of tsunami inundation mapping. The highest priority un-funded gaps include completion of the high winds models for Maui and the Island of Hawai'i, storm-induced coastal flooding mapping, earthquake liquefaction modeling. Another priority, completion of coastal erosion mapping is tied to the issues of coastline mapping covered in the marine layers theme.

TOTAL COST	FY03 PLANNED INVESTMENT	BUDGET SHORTFALL
TBD	TBD	TBD

Chapter 11. CULTURAL RESOURCES: It is essential to note that cultural resources data for the State of Hawai'i cover a variety of agencies, resource types and stewards. While some this data is available from public sources, others of it are proprietary or restricted for security and sensitivity of data reasons. While it is estimated that up to **\$1,000,000** will be needed to complete a compilation of as cultural resources theme and to develop a Metadata to clearinghouses, there is a stronger need to first develop a coordinated effort to identify agencies, organizations, and persons whom currently steward such data. The primary goal should be to strengthen communication, partnerships and data sharing. Cultural resources data is critical for prudent resource management, planning, permitting and consultation processes at both the state and federal levels as well as for education and outreach purposes. Note that the current allocation of funding does not include the value of heritage and legacy data sets already in place by various agencies.

TOTAL COST	FY03 PLANNED INVESTMENT	BUDGET SHORTFALL
\$1,250,000	\$250,000	\$1,000,000

Chapter 12. TERRESTRIAL LAYERS: The summary for this chapter will be completed in Version 1.1.

TOTAL COST	FY03 PLANNED INVESTMENT	BUDGET SHORTFALL
Undetermined at this time	Undetermined at this time	Undetermined at this time

Chapter 13. MARINE LAYERS: Marine data are not considered framework data layers in most spatial data infrastructure plans. However, due to Hawai'i unique geography, coastal and marine data are essential to Hawai'i's spatial data community. Priority data sets representing the near-shore and marine environment are shoreline, marine habitats, marine managed areas, ocean and water quality, and marine uses. The two top priorities for data collection are a digital state shoreline and a common habitat classification for the Hawaiian archipelago. Currently over one-half million has been invested in these data layers, with over two million needed to complete these data sets. Coordination and partnership between all the federal and state agencies on data collection will be needed to meet the goals. As all these layers are very dynamic, constant updates and funding to maintain these data will be require as well.

TOTAL COST	FY03 PLANNED INVESTMENT	BUDGET SHORTFALL
\$2,160,000	\$435,000	\$1,725,000

Chapter 14. SCANNED MAPS: As the effort to convert hard copy maps into raster data is so varied in nature, it is difficult to anticipate a cost. There are methods to estimate certain types and methods of imaging and storage which will begin to define costs. Whether outsourcing or in-house efforts are done, the same time and materials are required. Technology has played a major role in determining the cost and feasibility of scanning maps. There can never be a completion of this theme as maps and other spatial data are produced each day. There maybe a time in some distant future that all data is store digitally, even in vector format, however with the massive amount of existing data already in hard copy format clearly many millions of dollars are required to meet the existing inventory. At this stage, the gathering of interested stakeholders is where the focus should be. A cost for meetings, and bringing in experts to develop a plan constitutes the first budgeting requirements. Some agencies are already doing various projects and are spending money this fiscal year. A long-term goal of digitizing most historic maps in Hawai'i is an ambitious and costly endeavor.

TOTAL COST	FY03 PLANNED INVESTMENT	BUDGET SHORTFALL
NA	NA	NA

Chapter 15. DATA DISTRIBUTION/PUBLISHING: At this time, it is estimated that **\$7,000** and an undetermined amount of additional staff time are required to complete and maintain one metadata clearinghouse for data developed in Hawai'i, to which all data developers/holders would submit their metadata for publication.

TOTAL COST	FY03 PLANNED INVESTMENT	BUDGET SHORTFALL
\$7,000 plus staff time	\$0	\$7,000 +

Chapter 16. CROSS-CUTTING ISSUES: The three primary cross cutting issues are spatial co-registration of features, Hawaiian place names and addresses and geocoding. Geocoding is critical for emergency response and homeland security. Hawaiian place names need to be used consistently to prevent confusion between data layers. Spatial co-registration to framework base maps during the data creation process to create long term benefits to overlay and analysis of datasets.