

# Appendix G

## GIS Utility Survey Summary

### Background

The Oregon GIS Utility is an effort to develop a system and program to support consistent, efficient statewide geographic information sharing, maintenance, and GIS services supporting the business needs of the government and non-governmental community in Oregon.

The purpose of the GIS Utility survey is to collect information about spatial data, information technology investments, and institutional aspects of GIS use from local jurisdictions. This baseline information will serve as the essential foundation for the design and creation of a GIS utility that maximizes benefits and makes the best use of available resources across all levels of public agencies.

While this survey does not specifically address natural hazards, it does provide insights on the technical capacity of local jurisdictions to deal with geospatial data.

### Methodology

The GIS utility survey was developed by the Oregon Geographic Information Council with input from project partners. The survey was sent to 203 City and County planners and GIS professionals around the State in March and April 2005. The survey was conducted on-line. Respondents were notified via email with a direct link to the survey. A total of 117 city and county representatives responded to the survey (58% response rate).

The survey questions fell into the following categories:

- Organizational information
- GIS technology infrastructure
- Geographic data development, use and maintenance
- GIS applications and users
- GIS organizational structure and staffing
- GIS program collaboration and sharing of GIS data

ONHW conducted a secondary analysis of the survey data provided by PlanGraphic, Inc. As a result, 'n' numbers for certain responses were unavailable.

# Findings

A summary of the findings from the GIS Utility Survey are organized into the following sections:

**Organizational Information:** This section provides information on what type of organization the respondents were representing and information about the jurisdiction's GIS program.

**GIS Technology Infrastructure:** This section provides information on the types of operating systems and GIS platforms and software currently being used by local governments in Oregon.

**Geographic Data Development, Use, and Maintenance:** This section provides information on data sets that respondents indicated were already developed, are being developed, are in the planning stages, or are not planned. This section also includes information on the source and the update frequency of the data.

**GIS Applications and Users:** This section provides information on the types of GIS users and applications currently available, as identified by respondents.

**GIS Organizational Structure and Staffing:** This section provides information on respondents' GIS program's organizational structure and the types of GIS activities that their jurisdiction typically outsources.

**GIS Resources, Costs, and Benefits:** This section provides information on respondents' resources for funding, what respondents' GIS programs cost, and what benefits respondents get from the GIS programs.

**GIS Program Collaboration and Sharing of GIS Data:** This section provides information on what certain data sharing arrangements respondents have planned, in development, currently in place, or do not have in place.

## Organizational Information

Three-quarters of respondents have GIS programs that are currently operational. Only 4% of respondents had no GIS program or plans to begin one. GIS programs were most likely to support the following business areas: land use planning and management (72%), natural resources planning and management (54%), roads and highway maintenance (47%), public safety and emergency preparedness (46%), land development permitting and inspection (44%), and facility/property/asset management (43%). Data and activities supporting all of these business areas also have connections to the risk assessment phases.

## GIS Technology Infrastructure

*Note: Much of the information in this section is problematic because the survey instructions are to "check all that apply". In several cases, this makes it difficult to decide how useful the data is because it is difficult to determine how many respondents checked more than one item.*

This section of the survey focused on the operating systems and GIS platforms and software currently being used by local governments in Oregon.

Respondents were asked to indicate whether or not they had GIS software. Twelve percent of respondents indicated that they did not use server GIS software. Respondents documented a total of 28 different types of desktop GIS software being used by communities around the state. Knowledge of what GIS software is being used by locals is an important component of understanding local capacity to complete risk assessments. This type of GIS software is required to use risk assessment modeling software such as HAZUS. The vast number of software being used also indicates that data sharing between jurisdictions may be problematic.

Respondents also identified available mobile data collection systems and software. Many respondents use a field or mobile computer. Of the respondents who use a field or mobile computer, less than half use field or mobile GIS mapping software. Many respondents use GPS collection systems. The availability of field/mobile data collection devices and software greatly enhances a community's ability to collect primary data.

## Geographic Data Development, Use, and Maintenance

This section of the survey asked respondents to identify whether or not certain data themes commonly found in local GIS systems had been developed, are being developed, are in the planning stages, or are not planned. The individual data themes were categorized into the 13 state framework themes: geodetic control, cadastral, administrative boundaries, cultural features, transportation, digital orthoimagery, elevation, hydrography, utilities, geoscience features, bioscience features, landcover/land use, and climate. Respondents were also asked to indicate the source and the update frequency of the data.

Seventy-seven percent of data themes have a status of "complete", with 19% in "development" and 4% in planning. The only theme to be reported as "complete" and in "development" with equal or near equal frequency is Geodetic Control/survey monument. The themes most commonly "completed" are: census boundaries (96%), election districts (95%), railroads (89%), rain (88%), and zoning boundary (88%). Most of the data sets listed below are important in completing the vulnerability assessment. See Table G-1 below.

Most data was generated in-house (65%) or by the Federal government (12%). Data was least likely to be generated by a university or nonprofit organization (1%). The most common update frequency for

themes is "as needed" (85%), followed by "daily or as changes occur" (6%).

**Table G-1: Completed GIS Data Themes by Percent of All Themes**

Theme	Complete		Total All Responses
	Number	Percent of Total	
Census Boundaries	43	96%	45
Election Districts	41	95%	43
Railroads	54	89%	61
Rain	22	88%	25
Zoning Boundary	42	88%	48
Temperature Ranges	20	87%	23
Digital Orthophotography	56	86%	65
Snow	18	86%	21
Administrative Boundaries	71	85%	84
Elevation	48	81%	59
Riparian Areas	33	80%	41
Soils	37	79%	47
Land Cover	29	78%	37
Historical Sites	25	78%	32
Telecommunications	21	78%	27
Wastewater Collection	27	77%	35
Gas or Oil Transmission/Distribution	19	76%	25
Transportation	52	75%	69
Geology	26	74%	35
Wetlands	38	73%	52
Electric Transmission/Distribution	24	73%	33
Land Use	34	72%	47
Water Distribution	28	72%	39
Hydrography	43	72%	60
Fish Habitat	25	71%	35
Site Address	35	71%	49
Cultural Features	24	71%	34
Archaeological Sites	16	70%	23
Bridges and Culverts	31	67%	46
Cadastral	37	67%	55
Vegetation Species	22	65%	34
Wildlife Habitat	22	65%	34
Geodetic Control/Survey Monument	27	47%	58
<b>Total</b>	<b>1090</b>	<b>77%</b>	<b>1421</b>

Source: GIS Utility Survey, 2005

## GIS Applications and Users

This section asked respondents to identify the types of GIS users and applications currently available.

The most commonly used GIS applications are: map production/plotting (90%), basic geographic query, map display, reporting (85%), map or database update (71%), custom thematic mapping (68%), and map-

based query and access to digital document (68%). The least commonly used GIS applications are: call center support (29%), network flow analysis (29%), and vehicle location and tracking (19%). All of these applications are important steps in completing a natural hazard risk assessment. These results indicate that communities do have the technical capacity to develop risk assessments.

## **GIS Organizational Structure and Staffing**

Survey respondents were asked to describe the GIS program's organizational structure and identify the types of GIS activities that the jurisdiction typically outsources.

Respondents were asked to indicate the number of staff devoted to the following GIS activities: management/coordination, system/database administration, GIS database or application development, GIS analyst or technician, data compilation/update, training/user support, and other GIS staff. Most organizations indicated that they have 10 or fewer staff doing each category of GIS work listed above. Activities that were outsourced most frequently were: ortho or satellite image acquisition (17%), GIS application design/development (12%), GIS training (12%), and GIS mapping or data conversion (11%). Activities that were outsourced least frequently were: GIS needs assessment or planning (5%), technical design, specifications, vendor procurement support (4%), and GIS program management support (2%).

## **GIS Program Collaboration and Sharing of GIS Data**

Respondents were asked to indicate whether or not they had certain data sharing arrangements planned, in development, currently in place, or not in place.

In general, collaboration and sharing of GIS data across all respondents is divided by those that have agreements currently in place and those that have no agreements in place or planned. Formal collaboration with other organizations is currently in place for 62% of respondents, in development for 13% of respondents or planned for 5% of respondents. For the remaining respondents, the status is unknown or they have none in place or planned. Due to limited local resources dedicated to hazard data development, data sharing is an important means of data access for jurisdictions. This is also important because the nature of hazards not respecting political boundaries.

License agreements for use or distribution of GIS data are currently in place for 32% of respondents and none in place or planned for 38%. Clearinghouse for GIS data is held by or for the organization is currently in place for 32% of respondents and none in place or planned for 41%. Distribution of GIS data or products is currently in place for 46% of respondents and none in place or planned for 27%. Sale of GIS data or products is not in place or planned for 59% of respondents and currently in place for 27%. Information on the provision and

distribution of hazard data is critical to understanding how easily communities can access and utilize data.

## Conclusions

While the GIS utility survey did not directly address natural hazards, it did provide insight on the technical capability of local communities to complete risk assessments. The following are key conclusions from this survey.

- Current GIS activities address land use planning, natural resources planning, and roads and highways, which all have direct connections to the risk assessment process.
- The majority of responding communities do have the technical capabilities required to complete GIS based activities related to the risk assessment process.
- Without realizing it, many communities have already developed or are developing local data sets required for completing risk assessments through other department plans, programs and policies.
- Majority of communities have data sharing agreements in place.