Oregon Geographic Information Council (OGIC)
Framework Data Development Program
For the 2009-2011 Biennium

Critical Structures and Facilities Data Development (Phase 2)

Background

This project is a collaborative effort between the Oregon Department of Administrative Services' Geospatial Enterprise Office (GEO) and United States Geological Survey (USGS) with technical assistance from Lane Council of Governments (LCOG). It will provide state and local jurisdictions throughout Oregon with an ongoing, comprehensive and authoritative source of critical facility information.

The master list of Oregon Framework Data Elements includes at least 27 specific types of facilities or structures, spread among at least three of the 14 Framework Themes (see *Appendix A*). With very few exceptions (e.g., bridges), no Framework data layer or data exchange standard has been developed to date for any of these types of facilities or structures, and no "willing stewards" have been identified. In contrast, every one of these facilities or structure types can be found among the 278 specific structure types included in the National Structures Dataset (NSD). In concert with other federal agencies, the USGS has developed a complete and robust data model for the NSD.[1] As part of The National Map (TNM), the USGS will act as the permanent data steward for the NSD, and will provide multiple delivery systems for the data, including web mapping services, on-line data viewers, and data download services. In addition, the Geographic Names Information System (GNIS) is being integrated with the NSD and other raster/vector datasets which comprise TNM (e.g., NHD, NED), adding to the authoritativeness and reliability of the information.

Recent work carried out nationally has resulted in major update and improvement of certain key types of facilities in Oregon, including hospitals, fire stations, emergency operations centers, and K-12 schools. These facilities can be found in a number of national commercial data sets that are outside of the public domain. Selected federal agencies (USFS, DOD, DHS, etc.) are being tapped to improve data related to their own facilities. Ongoing work at LCOG, under contract to USGS, is intended to "fill in the gaps" for selected high priority types of facilities not otherwise being captured in the NSD, including county courthouses, city halls, and various kinds of transportation infrastructure, public attractions, energy and water treatment facilities (see *Appendix B* for a complete list). Nearly all of these facility types are included among the Oregon Framework data elements noted above.

Phase 1 of the two-phase project is currently underway for the 13 designated "coastal" counties of Oregon. Additional USGS funding is being sought to continue this work for the 23 remaining

[1] National Structures Database (NSD) Best Practices Data Model for Structures can be viewed here: http://bpgeo.cr.usgs.gov/model/acrodocs/Poster_BPStructures_03_01_2006.pdf.

Oregon counties, but such funding is contingent on securing local match. OGIC funding in the amount of $45,000 is being requested for the 09-11 Biennium. This match funding request represents only 30 percent of the total project budget of $150,000 and is well timed to seamlessly continue Phase 1 work. An added benefit to the State of funding the project in the 09-11 biennium is that it will allow for completion of data collection in all 36 counties in time to support USGS' planned 2011 production of a new generation of digital topographic maps for Oregon.

Proposed Activity

Phase 2 of the Oregon Critical Structures and Facilities Data Development project will continue the structures and facilities data assembly work LCOG has performed under contract to the USGS since August of 2008 for the remaining 23 counties of the state (*Figure 1*). An experienced project team is in place and has developed an efficient work flow and thorough data collection methodology. The Phase 2 work would follow the scheduled completion of Phase 1 in September 2009.

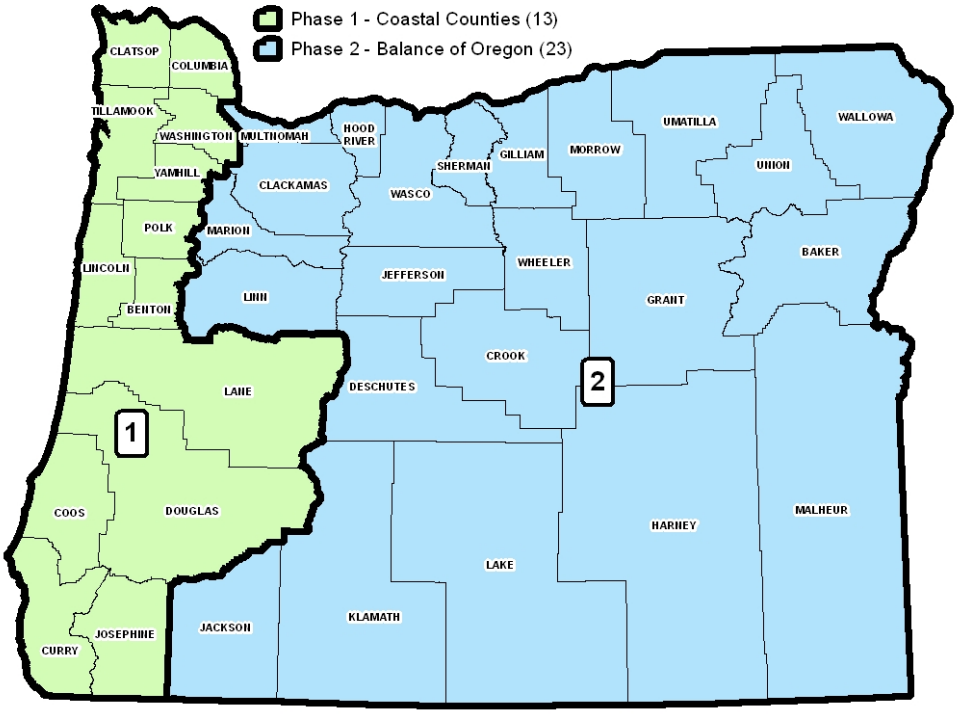

Figure 1 Critical Structures and Facilities Project Phases

LCOG project staff will work with the 23 Phase 2 counties as well as with state, federal, and other local jurisdictions to identify, obtain, and document available data sources for the 33 high-priority structure types (*Appendix B*). Data collection activities include extensive research including the following general steps:

1. Check with local/state/federal sources to see if existing spatial data are available and free of license restrictions.

2. If the data exist, confirm feature locations and attributes with other sources such as orthophotography or authoritative agency databases.
3. When local GIS data are not available, use state or federal databases (e.g., DEQ or EPA), checks of other agencies and authoritative sources to confirm and cross-check feature locations and attributes.
4. Addresses and x, y coordinates are confirmed using air photos and calls to local agencies and business owners.
5. Once the locations are confirmed by at least two sources, the points are entered into an SDE database and standard metadata are updated. (Some categories require more than two sources for verification.)
6. The database is QC'd by sorting and querying for discrepancies/errors within the database.
7. The point locations are QC'd by printing a map of features for visual scanning by staff. Sample datasets are provided to the USGS for review and are made available to local source agencies for review as well.

A map showing the distribution of point data from Phase 1 data collection efforts is provided in *Appendix C.* A closer look at selected point features is provided in *Appendix D*. In addition to showing some of the newly captured features, the ortho image map shows examples of improvements in feature placement and mapping precision. Expanded feature attributes are also captured during the data collection process.

Upon completion of the project, the USGS and State of Oregon will have received updated, consistent, and high priority structures data for all 36 Oregon counties. The data will be ready for inclusion in the NSD database and The National Map. The data will also comply with the Oregon structures and facilities data standard being recommended as part of the stewardship plan in Phase 1 and be ready for inclusion, without licensing restrictions, in appropriate Framework themes.

An immediate benefit of this project is a more complete and up-to-date representation of critical structures and facilities in Oregon Framework, federal and local databases. An additional benefit comes from LCOG's statewide data search and inventory of structures data sources. The inventory will provide useful input to Oregon FIT stewardship planning and supplement the (Phase 1) structures data enhancement and stewardship plan. The inventory will also help focus federal-state partnership efforts around important data sensitivity and maintenance issues associated with sharing and stewardship of these critical data.

Project Deliverables

- ❑ Fully documented and NSD compliant *geodatabase* of up to 34 high priority structure types covering the entire State of Oregon.
- ❑ *Project findings report* including project methodology and tracking records documenting availability, data sources, and collection issues by structure type and county.
- ❑ A structures and facilities data standard and stewardship plan is under development as part of Phase 1 of the project and will be delivered during Phase 2. The stewardship plan will codify federal and state agency roles and responsibilities with respect to the various

categories of landmark and facilities data in the existing federal data schema, and will lay the groundwork for ongoing maintenance of these data within Oregon.

Amount Requested

$45,000

Preliminary Budget Breakdown

The requested OGIC Framework Data Development Program funds will be combined with Oregon GEO, LCOG, and local jurisdictions' in-kind contributions and matched by USGS Western Region Oregon NSDI Partnership Office funds to provide a total project budget of $150,000 for both project phases. *The $45,000 OGIC funding request is only 30% of the total cost of the project and would have a leverage ratio of 1:3.* This represents a good opportunity to combine federal and state funding to accomplish a high priority and timely data development project that will result in a single standardized statewide set of critical structures point data. The data will be accompanied by a GEO approved data stewardship plan that includes a recommended structures and facilities data standard for Oregon as well as guidelines for ongoing data maintenance.

As planned, Phase 2 of the proposed project will be performed from September 2009 through September 2010. Provision of matching NSDI Partnership Office funds for these two project phases is contingent on the successful award of $45,000 OGIC data development funds for the 2009-2011 biennium.

Additional Information

LCOG and the Lane and Douglas County Assessors Offices were awarded Framework funding in the total amount not to exceed $80,000 for a joint Administrative Boundaries Pilot Project and continuing Admin FIT support during the project period of December 2004 through June 2008.

Deliverable products included: Administrative Boundaries Pilot Project that helped scope the types of boundaries, users of boundaries data, data conversion and maintenance issues, and cross-jurisdictional data integration issues to be addressed by the Admin Boundaries FIT. A final deliverable report was submitted that included the items noted above as well as an examination of Tax Code Area Mapping at Lane County Assessment & Taxation; Administrative Boundary Data Adjustment and ArcGIS Migration Issues and Alternatives; and an inventory of Douglas County administrative boundaries and maintenance processes.

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Appendix A

Oregon Framework Master Theme Elements (Facilities)

Preparedness Theme

commercial key assets	Locations of selected commercial buildings and other facilities.
correctional facilities	Location of all correctional facilities, including work release centers and other "in-community" facilities.
dam facilities	Locations of dams and related facilities.
emergency facilities	Facilities such as Emergency Operation Centers, PSAPs, shelters, supply points, and other sites
emergency reference data stations	Locations of weather stations, flood gauges, lat/long grid for helicopters.
hazardous materials sites	Location of hazardous materials sites
health care facilities	Point locations of all types of health care facilities, including hospitals, medical clinics, nursing homes
military facilities	Location of all military bases, facilities, and operations sites.
monuments/icons	Locations of monuments or iconic structures that may require custom protection measures.
port facilities (air, sea, river)	Detailed port facility areas, regardless of mode.
public bldg footprints	Buildings owned by federal, state, or local government agencies
public safety station locations	Office/station locations for police, sheriff, fire, emergency medical organizations, state police posts.
rail facilities	Detailed rail facilities, including maintenance yards, depots, switching yards, etc.
schools	Locations of public and private schools at all levels.
stadiums	Area delineation or point locations of public or private stadiums.
wildfire-related facilities	Facilities for wildfire monitoring and protection including lookout towers, supply locations, etc.

Transportation Theme

airports	Point locations of airports for representation at small scale.
bridges	Structures for roads crossing over water or other obstacles, or that cross over roads, such as railroads.
heliports	Locations designated for the take-off and landing of helicopters.
lighthouses	Locations of lighthouses.
navigation hazards	Buildings or structures that may present a hazard to airplanes during landing or takeoff.
ports	Point locations of ocean or river ports operated to support the loading and unloading of waterborne cargo.

Utilities Theme

electric generation facilities	The facilities that form the infrastructure supporting the generation and transmission of electrical power.
sanitary sewer treatment facilities	All facilities associated with collection and treatment of wastewater.
solid waste/transfer sites	Sanitary landfills and other waste disposal sites and transfer sites for temporary storage of waste.
telecommunication facilities	All facilities supporting telecommunications, including cellular phone towers
water supply facilities	All facilities related to the supply and treatment of water from wells and reservoirs

Source: http://gis.oregon.gov/DAS/EISPD/GEO/fit/docs/Theme_Elements_Oct07.rtf

Appendix B

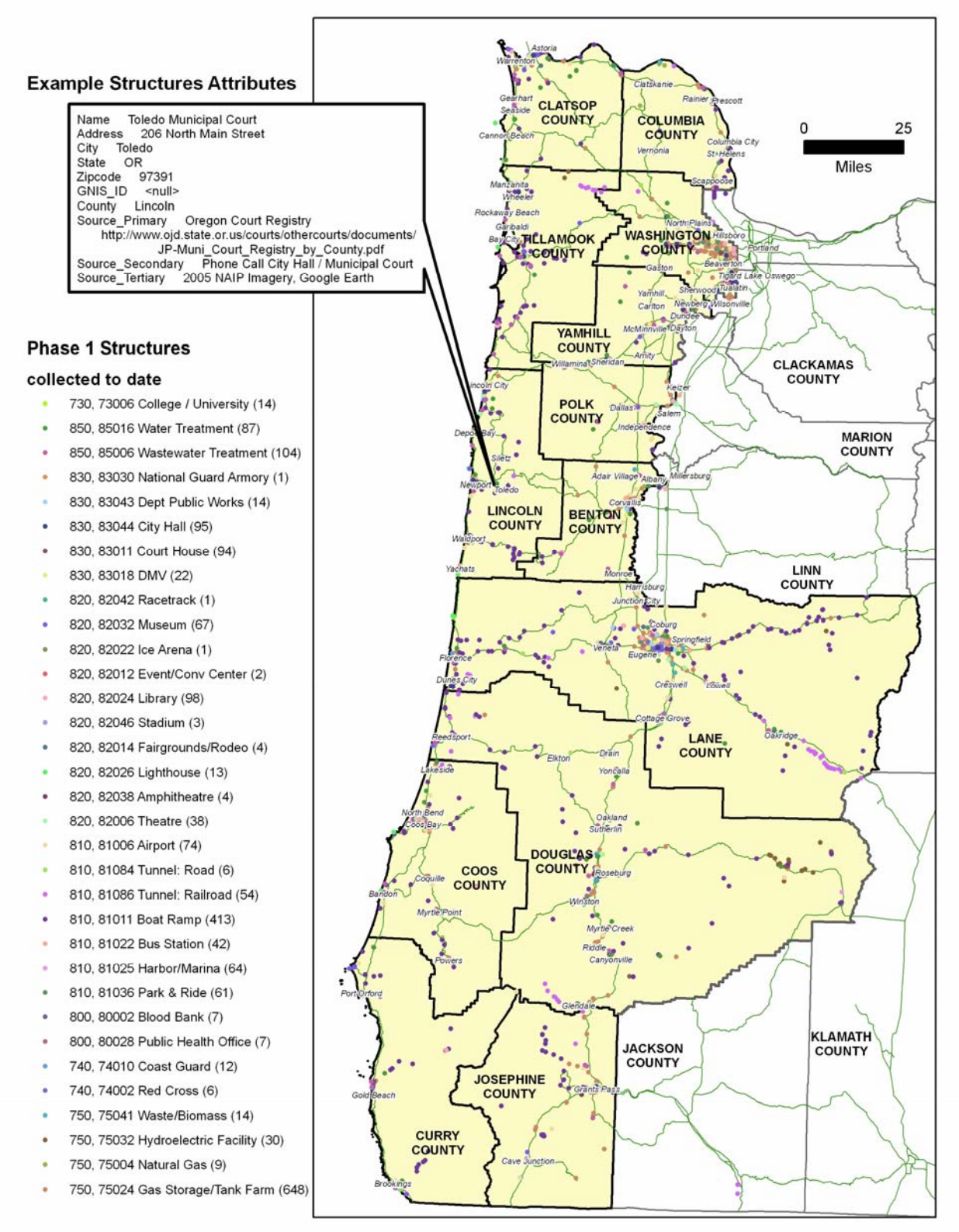
USGS High Priority (1 and 2) Structures Data Collection

#	FCode_Description	FCode	FType	FType_Description	Priority
1	College / University	73006	730	Education	1
2	American Red Cross Facility	74002	740	Emergency Response & Law Enforcement	1
3	Coast Guard	74010	740	Emergency Response & Law Enforcement	1
4	Natural Gas Facility	75004	750	Energy	1
5	Oil / Gas Facility	75012	750	Energy	1
6	Oil / Gas Storage Facility / Tank Farm	75024	750	Energy	1
7	Hydroelectric Facility	75032	750	Energy	1
8	Waste / Biomass Facility	75041	750	Energy	1
9	Airport Terminal	81006	810	Transportation Facilities	1
10	Boat Ramp / Dock	81011	810	Transportation Facilities	1
11	Bus Station / Dispatch Facility	81022	810	Transportation Facilities	1
12	Tunnel: Road	81084	810	Transportation Facilities	1
13	Tunnel: Railroad	81086	810	Transportation Facilities	1
14	Court House	83011	830	Government and Military	1
15	Department of Motor Vehicle Facility	83018	830	Government and Military	1
16	City / Town Hall	83044	830	Government and Military	1
17	Wastewater Treatment Plant	85006	850	Water Supply and Treatment	1
18	Water Treatment Facility	85016	850	Water Supply and Treatment	1
19	Blood Bank	80002	800	Health and Medical	2
20	Public Health Office	80028	800	Health and Medical	2
21	Harbor / Marina	81025	810	Transportation Facilities	2
22	Park and Ride / Commuter Lot	81036	810	Transportation Facilities	2
23	Auditorium / Concert Hall / Theater / Opera	82006	820	Public Attractions & Landmark Structures	2
24	Convention Center	82012	820	Public Attractions & Landmark Structures	2
25	Fair / Exhibition / Rodeo Grounds	82014	820	Public Attractions & Landmark Structures	2
26	Ice Arena	82022	820	Public Attractions & Landmark Structures	2
27	Library	82024	820	Public Attractions & Landmark Structures	2
28	Lighthouse / Light	82026	820	Public Attractions & Landmark Structures	2
29	Museum	82032	820	Public Attractions & Landmark Structures	2
30	Outdoor Theater / Amphitheater	82038	820	Public Attractions & Landmark Structures	2
31	Racetrack / Drag Strip	82042	820	Public Attractions & Landmark Structures	2
32	Sports Arena / Stadium	82046	820	Public Attractions & Landmark Structures	2
33	Department of Public Works	83043	830	Government and Military	2

Appendix C

Phase 1 Data Collection

(as of June 2009)



Appendix D

Phase 1 Data Collection Detail Image