The Urban & Regional Information Systems Association's Response

to

Geospatial Line of Business Request for Information (RFI) # GSV06PD00089

U.S. Office of Management and Budget (OMB)
U.S. General Services Administration Office of Intergovernmental Policy
U.S. Federal Geographic Data Committee (FGDC)

May 5, 2006

Brief Background about URISA's Response

On March 3, 2006, the OMB launched the Geospatial Line of Business (GLoB) initiative. The purpose is to revamp federal geospatial activities into a single line of business to encourage:

- Productive intergovernmental collaboration for geospatial-related activities and investments across all sectors and levels of government.
- Optimized and standardized common geospatial functions, services, and processes which are responsive to customers.
- Cost efficient acquisition, processing, and access to geospatial data and information.

OMB is the executive sponsor for this initiative. FGDC is the managing partner. OMB has made clear that the line of business will drive federal geospatial investments beginning next October with the FY2007 budget.

On April 6, FGDC requested input from all stakeholders via an RFI due Friday May 5. This was URISA's chance to influence the process and ensure consideration of the fed-local summit themes. Some basics:

1. This is a cost-saving measure: no new money.
2. There has been much talk among federal officials about collaboration with state and local government as a way to increase efficiencies and reduce costs for all.
3. All stakeholders were asked to respond to a Request for Information (RFI) by May 5. After May 5 only the federal agencies will be able to participate.
4. Responses were requested from the perspective of being a geospatial user, provider or consultant. The FGDC wanted to know about strategies, alternatives, and experiences that have increased geospatial effectiveness and efficiency. In particular the FGDC was soliciting lessons learned from enterprises that have overcome similar challenges as those faced by the federal government (e.g., large geographically dispersed work force, decentralization, multi-platform environments, legacy systems, and limited resources)
5. URISA responded to the RFI as an FDGC stakeholder.
6. The RFI questions and URISA responses are given on the following pages. The RFI included 15 general questions about geospatial information and operations, plus 15 more questions about three general scenarios involving cross-agency geospatial operations: disaster response, basic research, and resource management.
7. A leadership group was selected from URISA Board members and persons previously active URISA events. A twiki site was set up to facilitate collaboration by the group.
8. In addition, URISA surveyed the entire membership for additional ideas on nine of the questions. Twenty-seven persons responded.
9. Responses were limited to thirty pages, submitted in Word format.
10. For more information, or to access the RFI directly, visit: http://www.whitehouse.gov/omb/egov/c-6-8-glob.html

URISA Response to Federal Geospatial Line of Business RFI

2.1 RFI Questionnaire Section 1: Respondent Information

Responding Organization Name**:**	Urban and Regional Information Systems Association (URISA)
Responding As:	Both user organization and service/product provider
Type:	Non-profit professional association
Contact:	Wendy Francis, Executive Director Urban and Regional Information Systems Association 1460 Renaissance Dr, Suite 305 Park Ridge, IL 60068 USA 847-824-6300 (voice) wfrancis@urisa.org 847-824-6363 (fax)

2.2 Lifecycle Activities

2.2.1 In which data themes of national importance is there opportunity for increased effectiveness, efficiency, and cost savings potential across the Federal Government, and what is the recommended transition approach? OMB Circular A-16 framework data themes and other data themes of national significance are (1) geodetic control, (2) orthoimagery, (3) elevation and bathymetry, (4) transportation, (5) hydrography, (6) cadastral, and (7) governmental units.

ALL of the themes offer such opportunities. Further, URISA would add an eighth theme: addresses. Any database that contains addresses is a spatial database.

What responsibilities do the federal agencies want to assume? Nationwide data or metadata repositories have not been productive to date, as they are uncoordinated and generally consist of voluntary contributions that do not conform to any standard. We would encourage Federal agencies to name a clear lead agency for each theme, and to be responsible to the other agencies for meeting both its own and their needs. We would also encourage the Federal agencies to determine which data themes they will provide to state, local, regional, and tribal governments, and which themes they would seek first to obtain locally. We suggest:

1. Federal agencies take the lead on imagery, control, hydrography, and elevation / bathymetry, and
2. State, local, regional, and tribal agencies take the lead on transportation, cadastral, government units, and addresses.

We concur with NSGIC that Imagery for the Nation provides an excellent place to start.

2.2.2 What are the critical change management issues and best practices for successful transition to and full implementation of common solutions?

1. Establishing a governance structure that includes all partners and stakeholders, to facilitate common understanding of roles and responsibilities. In line with the principles of NSGIC's 50 States Initiative, participation should reflect investment in and contributions of geospatial resources.
2. Revising Federal budget practices to foster interagency support and cooperation, and specifically to give credit to federal agencies for partnering for common solutions.
3. Empowering Federal agencies to provide grants to state, local, regional, and tribal agencies that are partnering with them to create common solutions. If the grants are less than the savings, everybody wins.
4. Working out common data definitions and standards across agency boundaries; enabling data interoperability.
5. Re-engineering internal processes to eliminate overlapping interests and deadlines, and to increase the overall effectiveness of all the agencies.

2.2.3 What cultural impediments and training issues are paramount at which stages of the transition? What are the solutions to them?

Agencies strive for independence in fulfilling their mission. Independent information systems are usually "stove-piped" information systems. This is a cultural problem, not a technical problem. To overcome this will require strong leadership and direction from the highest level in addition to formal change management processes - tasks that cannot be understated.

Enterprise computing requires agencies to work as partners, not competitors, and that they shift from independence to interdependence. This requires ceding responsibilities for certain peripheral tasks, and simultaneously extending core tasks to provide for the needs of other agencies. Clear lead responsibilities should be assigned for each data theme and the lead agency should be charged with providing data that meets the needs of all who rely on it.

2.2.4 From your experience, please describe the cost/benefit of coordinating the use of geographic information or optimizing NSDI components and related spatial data activities across all sectors and levels of government.

From the experience of URISA's members, the key benefits of coordination are:

1. Data development and maintenance costs that are shared but not duplicated (one address file, not one per department; one parcel layer, not one per jurisdiction).
2. Consistent, more accurate, more richly attributed data are available to all.
3. Through shared expertise departments can focus on their core competencies and rely on others for related data.
4. Economies of scale and specialization, and overall savings by elimination of duplication.
5. A rich, consistent, comprehensive data framework that would simplify and expedite development of new applications and services.
6. Improved inter-governmental coordination; better emergency preparedness.

The key costs are found in:

1. Complex software, data, and system architectures.
2. Complex development, operations, support, and training needs.
3. Time consuming coordination and negotiations can constrain quick action.
4. Risk associated with interdependence and loss of control.

2.2.5 What are the top three critical factors for successfully coordinating the use of geographic information or optimizing related spatial data activities?

1. The commitment to a clear, consistent governance model which fosters inter-governmental cooperation and makes a compelling business case for local participation. Open communications, decentralization of control, and respectful partnership agreements at all levels are key components to success.
2. Clear standards for data exchange, with emphasis on accurate and current metadata.

3. Recognition of the value of locally created and maintained datasets, and recognition of the benefits of providing funding for ongoing maintenance at local and state levels.

2.2.6 What are the top three risks in coordinating the use of geographic information or optimizing related spatial data activities? How do you mitigate these risks?

1. Segregation of the data from the line businesses when in fact spatial data is integral to operations. Data is like a sheep dog - it does best when it has a job to do. Data collected and left laying around will become old and feeble. Data that is being shared is data at work which will remain strong and vital.
2. If clear roles and responsibilities associated with data stewardship and distribution are not defined and recognized, there is a risk of ending up with substandard products and services. If the needs of the participants are not met (accuracy, availability, reliability, currency) then coordination will not be sustained.
3. A major risk is the loss of control over key data sets. Any movement forward to aggregate and share data will require written service level agreements that outline the consequences of not maintaining and providing access to key data. For any data steward, data provisioning to external agencies must be as important as providing data to internal consumers.

2.2.7 What are the key performance indicators related to coordinating the use of geographic information or optimizing related spatial data activities? What metrics can be obtained to measure performance and how?

The impact of effective coordination should be analyzed as to:

1. Reduction in the duplication of data collection responsibilities,
2. Timeliness of data and service delivery,
3. Impact on the volume of requests for data and services, and
4. Increases or decreases to the budget.

These metrics can be obtained, for example, by measuring public website hits and user satisfaction surveys.

2.2.8 How do you retain the advantages of competition while reaping the benefits of geospatial coordination and optimization?

Agency or departmental successes should be rewarded and their best practices publicized. This might include providing guidance on workflows, adding value to data, or determining the best uses for commercial products for common tasks while limiting the development of custom products to mission-specific ones. Finally, because too often an inordinate level of effort is required just to obtain necessary data, competition should be encouraged by providing government data freely to all.

2.2.9 How do you ensure and manage ongoing innovation in geospatial coordination and optimization?

1. Innovation should be encouraged by providing government data freely to all.
2. Identifying key geospatial scientists in a variety of agencies and bring them together at regularly-scheduled workshops/brain storming summits will lay the foundation for further collaboration and will allow them to take advantage of each other's research ideas and projects.
3. Funding of creative endeavors, such as pilot projects, may yield innovations and limit risk.

2.2.10 What are the incentives and disincentives for participation in geospatial coordination and optimization as a collaboration partner, a customer and as a service provider?

	Incentive	Disincentive
General (may apply to any level of participation)	▪ Ability to shed secondary tasks and focus on core mission ▪ Better access to data ▪ Better quality data ▪ Common source data ▪ Cost savings/shared costs ▪ Economies of scale ▪ Increased accuracy and relevance of new data sets ▪ Quality assurance ▪ Reliable data	▪ Entanglement with other agencies ▪ Higher up-front costs ▪ Increased risk of liability ▪ Inequalities for smaller agencies ▪ Less able to claim ownership ▪ Loss of independence ▪ Loss of revenue ▪ Mixed priorities ▪ Possible misuse of data ▪ Time required to implement
Collaboration Partner	▪ Access to partners' data ▪ Not having to duplicate or create data ▪ Valued added datasets	▪ Collaboration requires effort and real work, which may lead to lack of action ▪ Huge extra effort to restructure production GIS databases and systems to accommodate framework database structures ▪ Large documentation requirements ▪ Loss of control of data distribution and quality ▪ Potentially no value added to datasets ▪ Slows down data development due to having to share GIS expertise with other local governments
Customer	▪ Having data available and knowing where to get it ▪ Standardization of data and methods ▪ True one stop shop where current and accurate data is continuously streamed in	▪ Many entities collaborating may lead to more confusion ▪ Need assurance that data will be updated in a timely manner
Service Provider	▪ Be known as a "player" and innovator ▪ Customers are motivated to cooperate and coordinate so as to lower their costs and speed delivery of their services ▪ Governments tendency to buy from the lowest bidder is often a loss for all but the biggest data providers	▪ Desire to make money off of services ▪ Tends to be exclusionary and offers no clear path to commercial viability for vendors

Comments:

1. The list of disincentives to serve as a collaboration partner is considerably longer than the list of incentives. It is clear that URISA members see this as a significant obstacle to overcome before yet another effort to coordinate geospatial data at the Federal level is to succeed. However, access to big-ticket items like orthoimagery acquisition and funding to support minimal data maintenance standards provides strong incentives for local participation.
2. Higher levels of government, (Federal, state) often reap the greatest benefits from collaboration with local governments which tend to need greater detail and currency.

2.2.11 How do you achieve and sustain senior management involvement and commitment to coordinating the use of geographic information or optimizing related spatial data activities?

Demonstrate improved public service and public benefits without corresponding cost increases. Reward managers who cooperate with other agencies and levels of government.

2.2.12 What governance model do you use or would you recommend for coordinating the use of geographic information or optimizing related spatial data activities?

Federal, state, and local agencies are peers and coordination must be voluntary and based on the self-interest of each agency. This requires a consensus-based, coalition approach, not an authority-based hierarchical governance model. Assisting in this approach would be the required use of non-proprietary products; the development and implementation of standards with broad consensus; and the use of pilot projects to demonstrate that, even with perhaps considerable up-front work, there is long-term payoff through collaboration efforts.

One approach might be a regional consortium, which includes both a governing board and a technical advisory committee. The Federal agencies should be represented, but not play the dominant role. The governing board would be responsible for approving policy and budgetary and financial issues. The technical advisory committee would make recommendations to the governing board regarding how to proceed with technical issues. It may be necessary to pass enabling legislation in order for local government entities to pool their resources to create separate operational entities.

In addition, often overlooked and undervalued for their useful role in coordinating and facilitating spatial data activities are regional governments like Councils of Governments (COGs) or Metropolitan Planning Organizations (MPOs). A primary purpose of these organizations is to bridge inter- and intra-agency gaps. A COG or MPO can often reduce costs and improve success rates because they typically can reduce the effort to assemble and coordinate multiple local agencies such as cities, counties, tribes, and quasi-governmental agencies.

2.2.13 What is the best approach for assembling and using multiple data sets from diverse fields where scale, units of analysis and data types differ?

Assembling and using multiple data sets is not necessarily the goal of data coordination. Data are complied at different scales and we need to preserve the unique characteristics of the data sets and extract the useful data elements of each data set through a web services mechanism.

Rather than a data warehousing approach at the Federal level, look to a dynamic, distributed local-state-tribal-regional set of networks. The solution may take the form of metadata that does not try to get every level of government and every agency to provide all their data, but develops a format by which the data can be tracked in terms of location, content, and status of update. Incorporate the metadata into a common portal and publish it "as is" and in a piecemeal fashion. However, make certain that detailed metadata is included, and that a mechanism is in place to allow for continuous update. To do this, take advantage of the existing and developing technologies that provide these solutions.

2.2.14 What geospatial cross-cutting services, best practices, interoperable technologies, and data standards exist but are not necessarily coordinated or optimized by the Federal government?

There are some working geospatial data sharing structures in use today. Please review the architectures of:

1. Web-based service oriented architectures
2. NC OneMap – www.nconemap.com
3. MetroGIS - www.state.mn.us/intergov/metrogis

2.2.15 What key issues and challenges must be considered when geospatial lifecycle activities occur in a foreign country that may or may not share borders with the US? What solutions do you propose to overcome these issues and challenges?

No comment.

2.3 Scenarios

Scenario 1 - Emergency Response:

2.3.1 Please describe the types of non-Federal geospatial data that are available at the state and local government level, as well as from private utilities and other entities that might improve the effectiveness of the NRP. In your response please address any issues regarding licensing of data, the need for information sharing agreements and similar impediments to other than full and open sharing of geospatial data within the HLS community.

Non federal data available at the state, local, and tribal level vary greatly from one entity to another. They can be listed as:

1. Current parcel data including owner information,
2. Current and richly populated road centerline including private and secondary roads,
3. Large scale orthophotography,
4. Detailed terrain data including Lidar datasets,
5. Master address file/layer,
6. Local hazardous materials/sensitive sites inventory and/or geo datasets,
7. Utility layers (water, sewer, telecommunication assets especially wireless and fiber optic, gas, power lines), and
8. Community service centers and landmarks (publicly owned properties, churches, hospitals, emergency rooms, and etc.).

It is critical to devise a data sharing agreement among stakeholders at all levels to facilitate the flow of standardized, accurate, and current geospatial data. Licensing should not be an issue in an emergency response situation.

2.3.2 What activities need to be undertaken during the Preparedness phase of the emergency lifecycle to assure emergency managements are aware of the potential of geospatial data and assets to support emergency response?

1. Where and when a local GIS exists, local emergency management agencies (EMA, EMS, E-911) and local GIS personnel must collaborate and communicate to:

    - Identify all existing and relevant geospatial datasets for the entity and its neighboring jurisdictions.
    - Develop a geospatial data repository accessible to stakeholders at all levels and include comprehensive metadata for all datasets.
    - Develop enterprise web services (internet and intranet based) to facilitate access to all datasets and applications; plan for loss of Internet connection.
    - Review all the existing emergency plans and operational procedures and incorporate the use of geospatial datasets and models into those plans and procedures.
    - Create backups of all critical datasets and store them both off and on site.

- Assemble turn-key/mobile systems inclusive of hardware, software, data, and personnel.
- Demonstrate effective models for various types of disasters.
- Consistently train and educate ER managers as well as technicians and first responders on the use of GIS models.
- Run drills to test the viability of each model and procedure.
- Establish data sharing agreements with the state emergency agencies (EMA, EMS) as well as the federal agencies (DHS).
- Seek funding/grants from state and federal government to support the above activities.

2. Where and when a local GIS does not exist, reasons must be explored and financial (grants) and technical (free training) assistance provided by the Department of Homeland Security.

2.3.3 What activities need to be undertaken during the Preparedness phase of the emergency lifecycle to assure that geospatial technology subject matter experts and data stewards are aware of the emergency response requirement and standard operating procedures?

If all the steps listed under section 2.3.2 are in place, geospatial experts and data stewards would be aware of the emergency response requirements and standard operating procedures.

2.3.4 During response to an Incident of National Significance, what needs to be done to assure geospatial data and assets are made available to all participants in the NRP? In particular, please identify issues that must be addressed to assure state and local geospatial data and assets can be made readily available to all participants in the response?

If all steps listed under section 2.3.2 are in place, during an incident of national significance both the state and federal government will be aware of the existence of geospatial datasets and applications at the local government level. All involved parties would also be aware of operational procedures at each level and will have access to a central repository of most detailed and current datasets for that jurisdiction.

2.3.5 What activities to coordinate geospatial data and assets for emergency management applications are you aware of?

We concur with NSGIC's response to this question.

The most significant impact is the inability of state and local governments to be an effective part of the process, because they cannot keep up with the flurry of activities. Coordination efforts for Homeland Security and Emergency Management would greatly benefit from a comprehensive long-term vision and strategy from the White House that could be imposed on all branches of the Federal government, including the military. Even though civilian, intelligence and military

organizations make efforts to coordinate, it is not a comprehensive activity and often results in duplication of effort and wasted funds.

2.3.6 What activities do you suggest be undertaken to coordinate the use of geographic information or optimize related spatial data activities for emergency management?

On the local level, DHS should encourage and support workshops and informational meetings and include participants from emergency related entities at all levels of government (local, state, regional, tribal, and Federal) to:

1. Identify the availability of geospatial data at every agency,
2. Showcase various applications that could assist in different emergency scenarios, and
3. Proof of concept drills.

Participation in these outreach events must be a requirement in DHS grants to local governments. Entities that do not actively and effectively participate should not qualify for and/or lose their grants.

2.3.7 Geospatial data can also play a critical role in performing analyses to support pre-disaster mitigation plan development and implementation as well as support of recovery operations. Please describe key aspects of the use of geospatial data and assets for pre-disaster mitigation and recovery.

Effective use of geospatial data requires that stakeholders at all levels and across jurisdictional boundaries must be made aware of available datasets that could be used for analysis purposes. Appropriate disaster models must be closely examined, cataloged, and tested in various drills to make sure that all parties agree on their usefulness. Effective models can then be made available to all stakeholders and eventually incorporated into emergency plans.

2.3.8 What are the key components – organizational, training, business, and technical (including fixed and mobile technology) – that establish an environment that is ready to respond (preparedness), able to respond (incident management), capable of supporting pre-disaster mitigation and post-disaster recovery analysis, and provides enhancements or lessons learned for future event management?

Improving organizational confidence in the use of geospatial data for emergency preparation and response is the most direct route to establishing an environment capable of supporting an emergency event. Once there is political will to support and use geospatial data, the other components listed will follow.

Incentives can play a large part in changing political will. For example, local governments typically have detailed data that Federal agencies need for response to a particular incident. Federal agencies could encourage geospatial data sharing by offering financial incentives and support in maintaining local data sets. These incentives could be paid through Federal

reimbursement of local emergency expenses that qualify for federal reimbursement during times of emergency response. Also, if some portion of data maintenance costs were reimbursable in times of emergency, it would give the locals an incentive to maintain their data to Federal standards. Effective local to Federal government coordination, data sharing, and adequate incentives are required to create uniform data layers that local, state and Federal agencies can use for their respective purposes.

In order to establish an environment capable of supporting an emergency event, the following organizational aspects must be true:

1. There must be cooperation and effective communication among and between all stakeholders,
2. There must be a thorough knowledge of existing datasets and models at all levels,
3. There must be thorough knowledge of protocols among and between all emergency related agencies at all levels,
4. There must be enough technical and managerial personnel at the appropriate level to implement these plans and to take full advantage of outside help when it becomes necessary.

Scenario 2 - Long Term Research Scenario:

2.3.9 How can we enable the use of geospatial assets, including both structured and unstructured data (e.g. statistical, geographic, imagery, narrative, etc.) and services for the types of research described in scenario 2?

Establish centers of excellence at various agencies and make certain that they share their knowledge and areas of interest and research with one another (through joint meetings and workshops).

Providing research support to universities is critical to ensure continued innovations in geospatial information research and technology, both commercial and non-commercial, and to train geospatial information professions to meet workforce demands. For every investment from the Federal and state government in geospatial information, a portion (5-10 percent) should go to research. Research funds should be open for competition from researchers, not “earmarked” to specific programs.

2.3.10 How can the use of geospatial data, technologies and spatial data analysis be leveraged in this scenario?

All data assets in the Federal, state and local, regional, and tribal agencies should be made freely available for academic research, online where possible. The most difficult and time-consuming task for researchers is to obtain quality data from different sources. To encourage researchers to address practical problems facing Federal, state, regional, tribal and local governments and the business community, funding priority should focus on pre-identified issues of strategic importance. In return, research teams should be encouraged to work closely with federal, state,

local governments and the business community, and public support should entail reduced private control over the dissemination and use of the products.

2.3.11 What are the key components – organizational, training, business, and technical – that establish an environment that is capable of leveraging geospatial data and assets to achieve research objectives?

A National Geospatial Research Institute should be established to coordinate geospatial research activities, choose research priorities, and review and fund grant proposals. It should have a status and function similar to the National Institute of Health. The current research funding for geospatial information and technology is scattered across multiple federal programs, and it is ill-coordinated and marginalized. Geospatial assets should be added to this reporting requirement.

Scenario 3 - Administration and Resources Management:

Federal agencies and other organizations, both individually and collectively, manage billions of dollars of resources that traditionally have not exploited geospatial assets. This encompasses human resources, facilities, supplies, and finance (including grants, contracts, and intramural resources). In the grants management arena, Federal agencies are often required by OMB and Congress to assess and report on the efficiency, effectiveness and return on investment of multiple grant programs and other expenditures made annually to meet mission goals and provide service to citizens.

2.3.12 How can we establish the effective and efficient use of geo-referenced or geo-enabled data and assets across organizations, for the types of activities described in scenario 3?

Data with a useful life of more than one year, including all base map data, should be treated as a capital asset in the full accounting sense. It should be given a dollar value, a depreciation schedule, and a maintenance schedule, with funding based on depreciation, in accordance with GASB34 standards. This is done with roads and bridges, and it should be done with geospatial data.

Provide maintenance funding commensurate with the value and useful life of the asset.

Based on cost-accounting principles, agency missions, and the priorities established under Scenario 2, create a business plan for maintaining and expanding the NSDI. Then fund and implement the plan.

2.3.13 How can the use of geospatial data, assets and spatial data analysis be leveraged in scenario 3?

Use the asset value of data to provide a basis for evaluating the net costs of maintaining and sharing data, and to determine when data sharing is cost-effective and what financial incentives are justified to offset the costs and repay some of the benefits of the shared data.

2.3.14 What are the key components – organizational, training, business, and technical – that establish an environment that is capable of leveraging geospatial assets to achieve operational administrative and resource management objectives?

All components are essential, but the ones stressed now are the organizational and business components.

2.4 Additional Information

"No New Funds": Not Realistic.
It was stated at the outset: "No new funds." In the opinion of the URISA Board of Directors, this is not an acceptable premise for success. It arises from consistent policies over the past six years to shift funding out of the public side of government and into the classified side (military, intelligence, and police/security). This has steadily weakened the agencies—Interior, Commerce, Agriculture, FEMA, EPA—most important to public federal geospatial data investments and to federal-local partnerships.

The resulting imbalance has weakened the NSDI, it has weakened civic emergency preparedness, and it has weakened the foundations of interagency and intergovernmental cooperation. OMB's efforts to impose more cost-effective geospatial management are important and constructive, but the efforts will make little difference if they simply provide a justification to further cut crucial investments that are already under-funded.

Spatial data is not a highly specialized add-on to other Federal products and services. Spatial data is integral to everything. It is 80% of the information Federal agencies keep in their databases and over 90% of all local, regional, tribal, and state databases. Datasets like Social Security and IRS files are spatial data assets (addresses), the air traffic control system being developed by the FAA is a significant GIS project, and geospatial data is as critical to homeland security as it is to military security. A coordinated, adequately-funded long-term investment strategy will yield returns beyond what we pay as taxpayers and professionals. The old adage is "you get what you pay for" but continued under-funding will not yield even that much. Federal funding priorities must be changed.

Contributors

Eric Bohard, GISP, Oregon City, OR
Ingrid Bruce, Rancho Cucamonga, CA
Al Butler, GISP, Orlando, FL
Kathrine Cargo, New Orleans, LA
Cindy Domenico, Cindy Braddock, Trish Dunbar, Jerry Roberts, Boulder, CO
Shoreh Elhami, GISP, Delaware, OH
Dianne Haley, GISP, Calgary, AB
Bruce Joffe, GISP, Oakland, CA
Susan Johnson, Charlotte, NC
Martha Lombard, GISP, Birmingham, AL
Zhong-ren Peng, Milwaukee, WI
Hilary Perkins, GISP, St. Louis, MO
Nancy von Meyer, GISP, Pendleton, SC
Ed Wells, GISP, Washington, DC

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