Awards for Excellence in Government Finance

2009 APPLICATION FORM

This application form must be completed and returned along with your entry in electronic form to awardsforexcellence@gfoa.org by **January 31, 2009**. If any supplemental supporting materials are not in electronic form, please send five (5) copies along with a copy of this application to GFOA, Awards for Excellence Program, 203 North LaSalle Street, Suite 2700, Chicago, IL, 60601.

Title of Entry: **Application of Geographic Information Systems in Tax Auditing**

Category (Select only one):
( ) Accounting, Auditing, and Financial Reporting
( ) Budgeting and Financial Planning
( ) Cash Management and Investing
( ) Capital Financing and Debt Administration
( ) Economic Development
(**X**) **E-Government and Technology**
( ) Management and Service Delivery
( ) Pensions and Benefits

Subcategory (Select only one):
( ) Policies and Procedures
( ) Management and Policy Studies
( ) Communications and Reporting
( ) Training and Technical Guides
(**X**) **Other**

Name of government submitting entry: City of Westminster, Colorado

Population served 109,838 Number of employees 981 FTE

Name of person submitting entry: Tammy Hitchens

Title of person submitting entry: Finance Director

Mailing address: 4800 West 92nd Avenue, Westminster, Colorado 80031

Telephone: (303) 658-2036 Fax: (303) 706-3923

E-mail address: thitchen@cityofwestminster.us

If the person submitting the entry is *not* an active member of GFOA, an active member must sponsor the entry. If applicable, provide sponsor information below.

Name of sponsor: _____ Title: _____

Government: _____ Telephone: _____

Mailing address: _____

Please provide simple and direct answers to each of the questions below. If necessary, use additional pages.

A Local Significance and Value (Background)

1. Please give a brief general description of the project or program being submitted.

   The City of Westminster developed a process for using its ArcGIS geographic information system (GIS) for a variety of tax administration solutions. Primarily, Westminster uses GIS to conduct excise tax audits. Over the past 18 months, the GIS has been employed in a dozen audits automating the review of over 285,000 addresses and saving an estimated 1,500 audit hours. As our knowledge of this tool has evolved, we have created and refined best practices for GIS assisted audits, found ways to integrate GIS into other areas of tax administration, and worked to raise awareness of GIS as a useful tool among our peers.

2. Describe the local events and/or problems that led to the undertaking of this project/program.

   Colorado, like most other states, has a variety of localities – counties, special districts, cities, and towns – for which the state revenue department collects a retail sales tax in addition to its own. Sales and use taxes are due based upon the point of delivery or point of consumption rather than the point of sale or origin. Colorado is one of four states that permits home rule municipalities (such as the City of Westminster) to collect and administer their own taxes under independent tax codes. Currently there are 62 home rule cities in Colorado that self-collect taxes.

   While Colorado's home rule system is unique, the problem of accurately determining to whom tax is due is not. Many types of taxes include a geographic element: *Where* is income earned? *Where* are goods and services sold? *Where* is property located or used? Consequently, validation of tax coding is a key audit procedure, especially when tax events are occurring both within and outside a jurisdiction.

   Sales and use taxes are Westminster's primary source of general fund revenues comprising approximately 64% of the general fund budget. Like many taxing systems, Westminster's excise and occupation taxes rely upon taxpayers to voluntarily assess and properly remit taxes owed.

   Westminster employs professional auditors to determine the correctness of the returns filed ensuring the success of the voluntary compliance system. One aspect of the tax audit is determining whether the taxpayer paid the appropriate tax to the city for goods and services delivered or provided within its limits. This procedure traditionally involved checking taxpayer addresses against a comprehensive city address list. On average, an auditor can verify approximately 250 addresses per hour.

   Auditors use sampling to limit the amount of data they review while still maintaining accuracy. Auditors also request data only for Westminster's 10 zip codes. As businesses grow, and financial transactions are recorded in greater detail, the volume of data available for audit has increased. Despite measures to reduce sample sizes, some audits were difficult to effectively complete. Staff needed a precise, automated tool to aide with address verification. The GIS was identified as a potential solution.

3. Describe the role the finance office/finance officers played in this project/program.

   The GIS assisted audit program involves GIS staff, information technology (IT) staff, and finance tax staff. The city's tax audit supervisor is the finance officer most involved with this project. The idea of using GIS was first raised when brainstorming solutions for completing the audit of a large public utility. The city's GIS coordinator (a member of the city's Engineering Division) and IT staff met with tax staff to learn about the tax audit process and describe available GIS tools that might be useful for completing tax audits. At the conclusion of the meeting, it was clear that GIS could be a viable solution for certain audit needs.

   GIS and IT staff installed GIS software and trained the tax audit supervisor on its use. From there, the tax audit supervisor explored the technology using already completed audits to master the relevant processes and benchmark results. Since then, the tax audit supervisor has continued to develop and refine GIS assisted audit procedures.

The GIS assisted audit utilizes a process called geocoding. The geocoding process compares taxpayer addresses with those contained in the GIS. If the addresses match closely, the transaction is placed on the map. When geocoding is complete, the GIS identifies which transactions occurred within the city and which occurred without. Transactions occurring within the city are checked to ensure they were attributed to Westminster and not another jurisdiction. Because the tax division has only one ArcGIS license, the geocoding is performed by the tax audit supervisor. He then works with the auditor in charge of the case to analyze and document the results.

Finally, city staff has been active in promoting GIS as an audit solution. The transferability of this program was evident in the early stages. As such, the tax audit supervisor has presented this program to the Colorado Association of Municipal Tax Auditors as well as the Colorado GFOA. Westminster has also hosted other cities' tax and GIS staff for live demonstrations. As a result, at least two other metro cities have implemented GIS as an audit tool.

4. How much time did each participant devote to this program/project? Were outside consultants engaged?

Initial setup and training was approximately 12 hours for the tax audit supervisor, the GIS coordinator, and a lead software engineer. Ongoing training and development has been another 24 hours for the tax audit supervisor, in addition to time spent on GIS assisted audits. Four tax auditors have also undergone basic GIS training of approximately 2 hours each. This solution utilized the City's existing GIS infrastructure, which did not require additional resources to adapt to this use. To date, Westminster has completed 12 GIS assisted audits with total GIS processing time of 52 hours. Outside consultants were not used.

B Technical Significance

1. What financial concepts, standards, or techniques are displayed or advanced by this entry? Why is this important to the public finance profession?

The GIS assisted audit program embodies and advances several important public finance standards. The program has dramatically improved productivity, maximizing returns on public resources. By reducing examination hours on GIS assisted audits, auditors can complete more audits increasing voluntary compliance and ensuring equity among taxpayers. Faster audit turnover also mitigates disruption for taxpayers under audit and reduces interest costs.

The GIS is very precise. Coupled with the system's ability to process a high volume of data (i.e. larger sample sizes), its precision increases the probability of accurate audit opinions. This, in turn, reduces the risk of litigation regarding audit results, which also saves administrative costs for the city. The GIS has been useful in identifying reporting deficiencies beyond situsing errors, thereby improving future voluntary compliance. In one case, for example, the GIS helped identify an area of the city that was properly coded – the taxpayer was collecting Westminster tax – but was not being reported on monthly returns.

Finally, Westminster's innovative use of the GIS has added value to the system itself. For example, by geocoding licensed taxpayers, we were able to identify several missing address points. This impacts other users who rely on this data, such as public safety dispatch. For a minimal investment, our usage of the GIS has provided great benefit to the city constructively defraying the cost of implementing and maintaining the system.

C Transferability

1. How can this project/program be adapted for use by other organizations? Who else might benefit by its adoption? Would significant modifications be required for implementation?

This program relies on GIS functionality that is common among various GIS software applications. Therefore, any taxing authority with access to a GIS should be able to utilize the system for tax compliance auditing. Jurisdictions could use an approach similar to Westminster's, allocating software licenses, training, and

support for tax auditors to directly test and analyze audit data. Alternatively GIS staff time could be allocated to test data submitted by tax staff and return the results. There would be significant cost for jurisdictions without access to existing GIS infrastructure; however, a GIS could be beneficial for an array of financial and non-financial uses. Similarly, jurisdictions without existing audit programs would require additional resources to implement GIS assisted audits.

The GIS assisted audit program is scalable, making it useful for audits of varying size. Westminster has used GIS to process as few as 60 records and as many as 193,000. Minimum GIS audit time – including data preparation, geocoding, and analysis – averages about one hour. There is, therefore, a point of diminishing returns when processing fewer than 250 records (based upon our estimation of manual examination rates). The efficiency loss is arguably outweighed by the accuracy gains. Moreover, the GIS provides other audit benefits such as visual tests of completeness as discussed above.

D Documentation

1. What documentation describes the entry (e.g., reports, forms, memoranda, software, audio-visual materials, etc.)? All materials must be provided, preferably in electronic format.

   A GIS map illustrating audit results is attached. Correctly sitused transactions are shown with a green point and erroneously sitused transactions are shown in red. The city is highlighted in blue. Similar maps showing testing results are included in the auditor's final report.

   Also attached is a copy of the material presented to various groups including the Colorado Association of Municipal Tax Auditors and the Colorado GFOA.

E Cost/Benefit

1. Quantify the total resources (money and time) devoted to this project/program and identify the value added (tangible and/or intangible) as a result of its undertaking.

   Currently, the Sales Tax Division has one desktop license for ArcGIS. The cost for a floating license is $2,857 for the first year and $500 for maintenance each year thereafter. Indirect soft costs of staff time are conservatively estimated at $2,800 to get the program started. This estimate does not include costs of GIS hardware, software (beyond the dedicated license) or database development and maintenance by GIS staff.

   To date, the GIS assisted audit program has saved an estimated 1,500 hours of examination time. This savings was computed by dividing the number of records processed by the GIS by the average manual examination rate (250 records per hour) and comparing the result to the actual GIS testing hours. In some cases, the GIS has allowed for the examination of larger samples, generally by testing additional time periods or even conducting actual reviews. While there is no doubt that the GIS has saved significant amounts of time, the time savings estimate will be skewed to the extent that additional records were examined based upon this additional capacity.

   Year to date in 2008, the average case hour has generated $316. Assuming even just half of the estimated audit hour savings were available for and devoted to other audits could mean as much as $237,000 in additional audit revenue over the 18 months that the program has been in place.

F Complexity

1. Describe the complexity of the project/program. How much training and technical skill is required for employees to make use of this solution?

   At its heart, a GIS is a relational database with specialized tools for maintaining and analyzing spatially referenced data. Tax auditors with proficiency in databases and querying should be able to master the basics of geocoding and spatial queries with four to six hours of training. ArcGIS operates in a graphical

interface environment making its functionality very intuitive. It also includes cartographic features allowing users to create graphical maps useful for documenting audit results. A sample audit map showing situsing errors is attached to this application.

Alternatively, GIS staff could process audit data for auditors and report the results. This would require minimal explanation to the auditor of the formatting requirements for submitted data. Also, some time must be invested explaining to GIS staff testing standards such as minimum match scores, spelling sensitivity, and address locator type as well as desired outputs.

In contemplating approaches, consideration should be given to contested matters, whereby staff may need to testify regarding audit results. Giving testimony regarding audit findings is normally part of an auditor's job, but may be unusual for GIS staff. It may be advantageous, in this respect, to have an auditor testing data using the GIS directly. In either case, GIS staff may be needed to testify regarding the system and its functions, but in that testimony would be more limited if the auditor performed the testing themselves.

G Originality, Creativity, and Innovation

1. To your knowledge, is this the first time this type of project/program has been implemented by a government entity? If not, identify previous work in this area and explain the uniqueness of your approach.

Westminster's approach is the marriage of two existing, highly-related disciplines. Based upon our presentations to the Colorado Association of Municipal Tax Auditors and the Colorado GFOA, we are not aware that other cities were using GIS in this fashion. The City & County of Denver developed an automated way of testing addresses against its voter precinct locator. Our approach is unique from this process because the GIS offers the ability to test addresses located outside our city limits, view the results on an area map, and query the data based upon other map features such as zoning, business licenses, zip code boundaries, county boundaries, and city limit lines.

H Other Distinguishing Features (Optional)

1. Highlight any other noteworthy features about your project/program.

In addition to using GIS as an audit tool, Westminster has implemented GIS for other areas of tax administration. The state revenue department provides a semi-annual listing of licensed taxpayers within the city. The GIS has enabled the comparison of that listing with Westminster license data, identifying locations operating according to the state without the required city licenses. The city manages 13 special taxing districts. The tax revenues generated in these districts require special accounting. The districts' boundaries have been incorporated in the GIS to aid with the tracking and coding of tax revenues.

In 2007, Westminster adopted an ordinance to provide retailers a safe harbor when collecting taxes based upon certified statewide address locator databases. This ordinance was the result of a multi-year tax simplification effort involving home rule cities, the state revenue department, and the business community. The GIS was instrumental in supporting this effort in that we were able to comprehensively test the databases and correct errors for our city. Using examples from previous audits, GIS helped illustrate for policymakers the potential gains in voluntary compliance that could result from adoption. Address data from the GIS is routinely forwarded to certified providers to ensure that new addresses are incorporated into their databases.

Finally, the GIS assisted audit program was recognized with the award for Significant Contributions to Government Finance by the Colorado GFOA at its annual conference in November 2008.