AUDIT REPORT

CITY OF NEW YORK
OFFICE OF THE COMPTROLLER
BUREAU OF FINANCIAL AUDIT
WILLIAM C. THOMPSON, JR., COMPTROLLER

Audit Report on the Reliability and Accuracy of the Notices of Violation Data in the Environmental Control Board Computer Systems

7A08-084

November 19, 2008

THE CITY OF NEW YORK
OFFICE OF THE COMPTROLLER
1 CENTRE STREET
NEW YORK, N.Y. 10007-2341

WILLIAM C. THOMPSON, JR.
COMPTROLLER

To the Citizens of the City of New York City

Ladies and Gentlemen:

In accordance with the responsibilities of the Comptroller contained in Chapter 5, §93, of the New York City Charter, my office has audited the reliability of the Notices of Violation (NOV) data in the Environmental Control Board (ECB) computer systems.

ECB currently uses a computer system to track more than 700,000 NOV cases annually. We audit systems and technology resources of City agencies such as this to ensure that they are efficient, reliable, secure, and operate in the best interest of the public.

The results of our audit, which are presented in this report, have been discussed with officials of ECB, and their comments have been considered in preparing this report. Their complete written response is attached to this report.

I trust that this report contains information that is of interest to you. If you have any questions concerning this report, please e-mail my audit bureau at audit@Comptroller.nyc.gov or telephone my office at 212-669-3747.

Very truly yours,

William C. Thompson, Jr.

WCT/fh

Report: **7A08-084**
Filed: **November 19, 2008**

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The City of New York
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Bureau of Financial Audit
IT Audit Division

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AUDIT REPORT IN BRIEF

We performed an audit of the reliability and accuracy of the Notice of Violation data in the Environmental Control Board (ECB) computer systems. ECB enforces the provisions of the New York City Charter (Chapter 57, Section 1404) and the City's Administrative Code relating to street cleanliness, waste disposal, water supply purity, and the prevention of air, water and noise pollution. ECB functions as an administrative tribunal that provides hearings on notices of violation (NOVs) issued by a number of City agencies. A NOV is a written legal notice that charges the recipient with violating one or more of the City's quality-of-life rules or laws.

Once a notice of violation is issued, the matter may be resolved only through the adjudication process at ECB. Cases are heard by ECB hearing officers who act as impartial decision-makers. ECB issues only monetary penalties or orders to correct violations when it finds individuals or entities in violation of the City's quality-of-life laws.

In the early 1980s, ECB shifted from an entirely manual system to a mostly computerized operation consisting of two applications, a system called Automated Violation Processing System (AVPS) and a more sophisticated system called Bureau of Air Resources Automated Management Information System (BARAMIS). AVPS and BARAMIS were combined into one system in 1999, and the combined system was renamed the Automated Information Management System (AIMS). ECB currently uses AIMS to track more than 700,000 cases annually.

Audit Findings and Conclusions

ECB NOV data exists in a secure environment with restricted access. Data in approximately 98.5 percent of the NOV records complies with specifications for information recorded in mandatory data fields that is used for adjudication as well as for enforcement or collection. However, data in the remaining1.5 percent of the NOV records, representing a total of

$1.4 million in penalties for the period July 1, 2006, through June 30, 2007, does not contain sufficient information, which could impede adjudication and ultimately prevent enforcement and collection.

Audit Recommendations

To address the NOV data accuracy issue, we recommend that ECB should work with the Mayor's Office of Operations and issuing agencies:

- To alleviate the issuance of defective violations by developing additional improvement strategies for NOV data quality, such as coordinating with issuing agencies in their establishment of training programs for NOV-issuing officers to ensure that all required information is included on the violation, and

- Establish a performance measurement tool to measure NOV data quality over time to assist ECB assessing the effectiveness of any implemented improvement initiatives for data quality.

INTRODUCTION

Background

The Environmental Control Board (ECB) enforces the provisions of the New York City Charter[1] and the City's Administrative Code relating to street cleanliness, waste disposal, water supply purity, and the prevention of air, water and noise pollution. It functions as an administrative tribunal that provides hearings on notices of violation (NOVs) issued by a number of City agencies. (See Appendix for a list of issuing agencies.) A notice of violation is a written legal notice that charges the recipient with violating one or more of the City's quality-of-life rules or laws—specifically, the provisions of the City's Administrative Code or the Rules of the City of New York, or provisions of other laws. ECB accommodates the mandates and needs of the various regulatory and issuing agencies by using different case-tracking and adjudicatory processes, depending upon the law and the agency involved.

Once a notice of violation is issued, the matter may be resolved only through the adjudication process at ECB. ECB conducts hearings where parties can present evidence to prove or disprove alleged violations of and to resolve quality-of-life violations. Cases are heard by ECB hearing officers[2] who act as impartial decision-makers. Since judges do not preside at the hearings, ECB issues only monetary penalties or orders to correct violations when it finds individuals or entities in violation of the City's quality-of-life laws.

The ECB caseload increased from an annualized rate of 28,000 cases in December 1979 to 400,000 in December 1980. To handle those increases, in the early 1980s, ECB shifted from an entirely manual system to a mostly computerized operation consisting of two applications, a system called Automated Violation Processing System (AVPS) and a more sophisticated system called Bureau of Air Resources Automated Management Information System (BARAMIS). AVPS is used for those NOVs that require payment of penalties only (noncompliance violations). BARAMIS is for NOVs that require payment of penalties and compliance through remediation of the cited violation (compliance violations). AVPS and BARAMIS were combined into one system in 1999, and the combined system was renamed the Automated Information Management System (AIMS). ECB currently uses AIMS to track more than 700,000 cases annually.

Objectives

The objective of the audit was to determine whether ECB NOV data:

- Exists in a secure ECB environment and is readily accessible to all essential users, and

[1] New York City Charter, Chapter 57, Section 1404.

[2] Usually referred to as administrative law judges, a courtesy title that ECB has been authorized to use.

- Is reliable for adjudication purposes and contains information sufficiently pertinent for purposes of enforcement and penalty collection.

Scope and Methodology

Our audit scope focused on NOV records issued within the fiscal year ended June 30, 2007. Fieldwork was conducted between October 2007 and March 2008. To achieve our audit objectives, we interviewed ECB officials to obtain background information on their data-processing environment. In addition:

- To review how the process functions, we conducted a walk-through of ECB's data-processing area to assess its physical security.
- We reviewed and analyzed ECB's user-access procedures.
- We obtained and analyzed ECB user-access lists to determine whether employee-access privileges were appropriate.
- We reviewed and analyzed ECB's operations policy.
- We obtained technical information on the NOV data elements and analyzed the NOV database structure and record-layout format.
- We reviewed and analyzed ECB's disaster-recovery and contingency-planning procedures.
- We obtained NOV electronic records and performed data-integrity tests to determine whether the data recorded in the AIMS database is reliable and accurate. We examined the records from July 1, 2006, through June 30, 2007, for the validity of information in certain crucial fields within those records: respondent's name, violation premise, violation date, and infraction.

As criteria, we used the Department of Information Technology and Telecommunications (DoITT) Citywide Information Security Policies "Security Architecture Standard," the National Institute of Standards and Technology (NIST) *Generally Accepted Principles and Practices for Securing Information Technology System*, and the New York City Comptroller's Internal Control and Accountability Directive #18, "Guidelines for the Management, Protection and Control of Agency Information and Information Processing Systems."

This audit was conducted in accordance with generally accepted government auditing standards (GAGAS) and included tests of the records and other auditing procedures considered necessary. This audit was performed in accordance with the audit responsibilities of the City Comptroller as set forth in Chapter 5, §93, of the New York City Charter.

Discussion of Audit Results

The matters covered in this report were discussed with ECB officials during and at the conclusion of this audit. A preliminary draft report was sent to ECB officials and discussed at an exit conference held on August 19, 2008. On August 28, 2008, we submitted a draft report to ECB officials with a request for comments. We received a written response from ECB officials on September 10, 2008. In their response, ECB officials generally agreed with the audit's findings and recommendations, stating that they will "work with the Mayor's Office of Operations and issuing agencies to identify ways in which data that ECB maintains can best be disseminated to issuing agencies to improve the quality of violations we receive."

The full text of the ECB response is included as an addendum to this report.

FINDINGS AND RECOMMENDATIONS

ECB NOV data exists in a secure environment with restricted access. Access can only be obtained through a pre-approval process. We found that data in approximately 98.5 percent of the NOV records complies with specifications for information recorded in mandatory data fields that is used for adjudication as well as for enforcement or collection. However, data in the remaining 1.5 percent of the NOV records, representing a total of $1.4 million in penalties for the period July 1, 2006, through June 30, 2007, does not contain sufficient information, which could impede adjudication and ultimately prevent enforcement and collection.

NOV Data Accuracy Needs To Be Improved

Based on our test of NOV data, consisting of records of NOVs issued during the fiscal year ended June 30, 2007, we found that 10,546 violations were not valid (defective) and therefore cannot be relied upon for adjudication and enforcement or collection. The defective records and their calculated value[3] are summarized in Table I, which follows.

Table I

Fiscal Year 2007 NOVs Found To Be Defective

Notice of Violation (NOV)	NOV Records - Exceptions & Total ECB	NOV Records Percentage Analysis	Revenue Value	Percentage of Revenue
Defective NOVs Valued	9916	1.4%	$1,413,759	1.6%
Defective NOVs Not Valued	630	0.1%	N/A	
Total Defective NOVs	**10546**	**1.5%**		
Total ECB NOVs Issued FYTD 6/30/07	**719874**	**100.0%**	**$88,283,303**	**100.0%**

A valid violation refers to the completeness of data (data reliability) for the intended purpose. The specific data includes: (1) information entered into a computer system and (2) information resulting from computer processing. Data is considered reliable when it is complete (contains all of the data elements and records needed for the engagement and reflects the data entered at the source or, if available, in the source documents). A subcategory of accuracy is consistency. Consistency refers to the need to obtain and use data that is clear and well-defined enough to yield similar results in similar analyses. For example, if data is entered at multiple sites, inconsistent interpretation of data rules can lead to data that, taken as a whole, is unreliable. Reliability also means that for any computer-processing of the data elements used, the results are reasonably complete and accurate, meet the business organization’s intended purposes, and are not subject to inappropriate alteration.

[3] The calculated value excludes the value of 630 records due to insufficient information (i.e., code violated not cited, no historical revenue information, etc.)

ECB employs hearing officers to determine whether allegations of code violations are supported. An issuing agent must cite the section of law or rule violated by the respondent, the date and time of offense, and the location of the offense. To support the allegation that a violation of the code has been committed, the agent must also properly identify the respondent and give details of what the agent observed. Invalid (random, typographical, unintelligible, or otherwise unusable information) or blank fields within each NOV record for the following fields would impede ECB's adjudication and could result in a defective NOV case and loss of City revenue:

- Designation of a respondent.
- Designation of a date of the violation.
- Designation of a place of occurrence of the violation.
- Designation of the violation (by brief written description and by statutory citation).

If the NOV lacks any of the above items, the NOV is considered to have a fatal defect, and unless the defect can be amended by a motion of the issuing agent at the hearing, it must be dismissed. For example, if the date of the violation is missing, or illegible, the NOV will most likely be dismissed at a hearing unless an issuing agent appears to amend it. The date of the violation is significant since the alleged violation and the time of its occurrence are uniquely time- and observation-sensitive. Similarly, if the owner's name is not entered or is illegible on the NOV, the respondent may be able to have the violation dismissed for defective service. Further, if the NOV does not state when the violation occurred, the respondent should be able to have the violation dismissed for this reason. Finally, the code or the law violated (legal citation) must be clearly stated for the NOV to be enforceable.

Many issuing agencies contribute to City revenue by way of NOVs. Table II, following, shows the major revenue-contributing agencies.

Table II

NOV-Issuing Agencies That Are Major Contributors of City Revenue

Total FYTD 06/30/07 (in millions)	% of Total Revenue	Agency Name (Code)
$31.5	35.7%	Total Dept. of Sanitation
$22.3	25.3%	Dept. of Buildings
$11.3	12.8%	Dept. of Transportation
$7.9	8.9%	Fire Dept.
$7.0	7.9%	Total, Dept. of Environmental Protection
$3.3	3.7%	Total, Police Dept.
$5.0	5.7%	Total, 16 Other NOV-Issuing Agencies[a]
$88.3	100.0%	Total ECB Revenues FYTD 06-30-07

(a) See Appendix

Table III following is a summary of the defective NOVs that were issued by authorized agencies during fiscal year ended June 30, 2007, and our estimate of the revenues attributable to them.

Table III

Summary of Defective NOVs Issued During Fiscal Year 2007
And Estimates of Their Value

Agency Name/Function (ECB Code)	Exceptions	Total Value	NOVs without a value
Total Sanitation	**7,857**	**$791,766**	**206**
Enforcement Agents (827)	1522	$151,625	102
Sanitation Police (828)	203	$24,274	12
Sanitation Others (829)	5718	$563,362	68
Sanitation PIU (830)	8	$4,841	2
Sanitation Recycling (831)	406	$47,664	22
Police Department	**759**	**$124,899**	**36**
Parks Department (846)	**431**	**$53,058**	**11**
DOH/Mental Health (816)	**242**	**$50,292**	**4**
Total DEP	**219**	**$98,521**	**52**
Hazardous Materials (803)	5	$3,519	0
Right To Know (804)	2	$1,427	1
IWC (824)	8	$2,162	2
Bureau Of Customer Service (825)	3	$1,251	0
Environmental Protection (826)	68	$8,713	43
Police (989)	6	$787	1
Asbestos Control Program (ASB)	5		5
Bureau of Compliance (BAR)	122	$80,662	0
Dept. Of Building (DOB)	**212**	**$172,608**	**0**
Dept. Of Transportation (841)	**124**	**$92,831**	**1**
Fire Department of NYC (FIR)	**9**	**$4,387**	**315**
Total Others with Exceptions	**63**	**$25,397**	**5**
Business Integrity Comm. (850)	9	$2,472	1
DoITT (858)	13	$17,660	0
Dept. of Consumer Affairs (866)	2	$234	0
Hunts Point Development (980)	1	$309	0
Seagate Police (985)	9	$1,155	0
Miscellaneous Agencies (999)	25	$3,291	2
Agency code error	4	$276	2
Total Exceptions	**9,916**	**$1,413,759**	**630**

We estimated the revenue attributable to the total defective NOVs by applying the average revenue value per violation (times the number of exceptions), where possible, based on the actual average revenues collected according to each ECB violation code.

Error Reporting

We found that ECB creates and distributes monthly NOV error reports for agencies to review for the purpose of improving the accuracy of each agency's NOV data. This allows the agencies to measure the quality of NOV data that originates with their NOV-issuing agents. We also found that ECB has a follow-up process in addition to the monthly error reports in which an internal ECB unit reviews items on the monthly exception reports before the scheduled hearing dates and, in collaboration with issuing agencies, attempts to correct the data. However, despite this process, 1.5 percent of the NOV records, with penalties totaling $1.4 million for the period July 1, 2006 through June 30, 2007, do not contain sufficient information as mentioned previously. We believe that ECB is assuming its responsibility through its advisory, monthly reporting and through working with agencies to alleviate errors, but each respective issuing agency must take responsibility for the inaccuracies noted previously and must take stronger action to improve on the quality of NOV data.

The DoITT Citywide Information Security Policies (a criterion that addresses this issue) requires that each City agency and its units must be responsible for the security of its own information assets and must adequately protect this information in accordance with its value and risk factor. This obligation includes, but is not limited to, maintaining the confidentiality, integrity, and availability of this information, as well as ensuring individual accountability for its use. City agencies are expected to develop procedures to comply with these directives and standards that describe steps tailored to the operation of their specific software, hardware, and network components. Further, all City information is to have a designated owner who is to ensure that appropriate security policies, directives, and standards are implemented with respect to the City information elements that they own, either directly or through appointed custodians, and that the level of security and control applied to the protection of specific City information or processes is commensurate with its sensitivity, value, and critical factor (e.g., confidentiality, integrity, availability, authenticity, accountability, and non-repudiation), according to a defined classification process.

ECB's current opinion is that ECB is not the data owner of NOV data and that the AIMS computer system is not the central repository of NOV information for issuing agencies. Accordingly, ECB cannot be said to "own" data sent over by those agencies. Also, ECB believes it is not the records management system for the City. It only maintains its records as adjudicatory-forum records for its own use. Each issuing agency is responsible for maintaining all of its own records independently of ECB's database. Therefore, the responsibility for the accuracy of the NOV data falls to the respective issuing agencies.

Further, regarding accuracy of data maintained on ECB computer records, ECB contends that the fact that a NOV might have a "serious" error from a legal point of view does not make that data "inaccurate" from a record-maintenance point of view. If, for example, the Department of Sanitation sends ECB a NOV that has blanks for the section of law violated and for place of occurrence, and just a dash or a blank or such in the respondent name box, that is not "inaccurate" data—rather it is an electronic way of capturing the information that was included in the NOV served upon the respondent. Such violation served on the respondent is a legal document, and the Department of Sanitation is legally obligated to file a copy of that NOV (whatever it looks like and however flawed) with ECB if it intends to prosecute that NOV. This information must then be captured in ECB's database—ECB cannot, in the interest of "accuracy," block or prevent the information from coming to AIMS. The relevant accuracy involved is simply that the data accurately reflect the legal document that was served on respondent despite its being flawed.

Insofar as ECB's arguments are valid, we believe an opportunity exists for NOV-issuing agencies to improve the quality of their NOVs with some oversight support and guidance from ECB. More accurately executed NOVs would also improve ECB's adjudication process as well as NOV enforcement and penalty collection.

Recommendations

ECB should work with the Mayor's Office of Operations and issuing agencies:

1. To alleviate the issuance of defective violations by developing additional improvement strategies for NOV data quality, such as coordinating with issuing agencies in their establishment of training programs for NOV-issuing officers to ensure that all required information is included on the violation, and

2. Establish a performance measurement tool to measure NOV data quality over time to assist ECB assessing the effectiveness of any implemented improvement initiatives for data quality.

ECB Response: "ECB will work with the Mayor's Office of Operations and issuing agencies to identify ways in which data that ECB maintains can best be disseminated to issuing agencies to improve the quality of violations we receive. . . . Together with the Mayor's Office of Operations we will also establish benchmarks to assure that data quality improvements as it relates to violation issuance data can be tracked and improvements measured."

AGENCIES ISSUING NOTICES OF VIOLATION

1.	Business Integrity Commission
2.	ConRail Police
3.	Co-op City Public Safety Department
4.	Department of Buildings
5.	Department of Consumer Affairs
6.	Department of Environmental Protection
7.	Department of Health and Mental Hygiene
8.	Department of Housing Preservation and Development
9.	Department of Parks and Recreation
10.	Department of Sanitation
11.	Department of Transportation
12.	Fire Department
13.	Health & Hospitals Corporation
14.	Housing Authority
15.	Landmarks Preservation Commission
16.	Long Island Railroad Police
17.	Police Department
18.	Parkchester South Security
19.	Port Authority of New York and New Jersey
20.	Roosevelt Island Police
21.	Seagate Police
22.	Starrett City Police
23.	Staten Island Rapid Transit Operating Authority

The City of New York
ENVIRONMENTAL CONTROL BOARD
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September 10, 2008

John Graham
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Audits, Accountancy and Contracts
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Re: Audit Report on the Reliability and Accuracy of the Notices of Violation Data in the Environmental Control Board Computer Systems – 7A08-084

Dear Deputy Comptroller Graham:

I am responding to your letter of August 28, 2008 to Commissioner Lloyd regarding the above referenced audit. First let me take the opportunity to thank you and your staff for the professional work they performed during this audit.

I was pleased by the conclusion in the report that our violation data is maintained in a secure environment, with appropriate safeguards in place to regulate access to data. I also appreciated your two recommendations relating to improving the quality of violations returnable to ECB. Our response to these two recommendations is provided below.

Recommendation 1. To alleviate the issuance of defective violations by developing additional improvement strategies for NOV data quality, such as coordinating with issuing agencies in their establishment of training programs for NOV-issuing officers to ensure that all required information is included on the violation; and (Recommendation 2) establish a performance measurement tool to measure NOV data quality over time to assist ECB assessing the effectiveness of any implemented improvement initiatives for data quality.

ECB Response: ECB will work with the Mayor's Office of Operations and issuing agencies to identify ways in which data that ECB maintains can best be disseminated to issuing agencies to improve the quality of violations we receive. We will look to the Office of Operations to coordinate this effort. Together with the Mayor's Office of Operations we will also establish benchmarks to assure that data quality improvement as it related to violation issuance data can be tracked and improvements measured.

Thank you for the opportunity to provide comments on the audit

c: Emily Lloyd, Commissioner
Steve Lawitts, First Deputy Commissioner
Roberto Velez,. Chief Administrative Law Judge, OATH

Very truly yours,

Suzanne Beddoe
Executive Director