CUYAHOGA COUNTY
BOARD OF ELECTIONS

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Post-Election Audit Summary

November 6, 2012 Presidential General Election
President/Vice-President
Justice of the Supreme Court - FTC 1/1/2013
Judge of the Court of Common Pleas – General Division – FTC 1/12/2013

On December 18 and 19, 2012 we conducted a Risk-Limiting Post-Election Audit for the November General Election. A total of 650,387 ballots were cast for U.S. President/Vice-President between eight responses, 650,387 ballots were cast for Justice of the Supreme Court – FTC 1/1/2013 between two responses, and 640,197 ballots were cast for Judge of the Court of Common Pleas – General Division – FTC 1/12/2013 between two responses.

Our Risk-Limiting Audit was based upon the Kaplan-Markov method as explained by Philip B. Stark and Mark Lindeman. Auditing best practices recommend we split up the total ballots cast by precinct into multiple batch types. We utilized five batch types each consisting of one single ballot type category: Absentee, Election Day, Provisional, Post Absentee, and Post Election Day.

A master spreadsheet was created with statistical formulas to determine the number of batches that must be audited in order to reach a 90% confidence level. This confidence level means the audit has at least a 90% probability of leading to a full recount if the apparent outcome is incorrect.

We used a "Probability Proportional to Error Bound with Replacement" selection method. We assigned six digit numbers ranging from 000000 through 999,999 for each batch within the contest. Unique ranges of numbers were allocated to specific batches based upon their error bound - i.e. the greater the possibility of a miscount within a batch, the more numbers assigned, and the more likely it is to be selected.   To obtain the precinct batch number we rolled six differently colored dice numbered 0 - 9, each one of the colored dice representing one digit of the six digit number. We rolled the dice a total of 79 times in order to select batches to audit for all three contests.

In conclusion, we inspected a total of 23,386 ballots from the three audited races in the November 6, 2012 General Election. There were four total discrepancies.

RACE	TOTAL BALLOTS CAST	REQUIRED BATCHES	TOTAL BALLOTS AUDITED	COST
President/Vice-President	650,387	8	2,658	$847.29
Justice of the Supreme Court FTC 1/1/2013	650,387	14	4,057	$1,412.15
Judge of the Court of Common Pleas General Division – FTC 1/12/2013	640,197	57	16,671	$2,824.30

There was one inconsistency discovered in the audit for President/Vice-President. It was determined that a Cleveland 17-E Election Day ballot with a vote for Mitt Romney was scanned twice at the polling location.

There were zero discrepancies in the Justice of the Supreme Court contest, however we did find five (5) page one's that were in the ballot box that should have been placed in the soiled and defaced envelope. We reviewed the images on the memory sticks and were able to identify which five ballots were actually voided and reissued at the polling locations.

There were three differences revealed in the audit for Judge of the Court of Common Pleas. It was revealed that a Cleveland 4-F Election Day ballot with a vote for Cassandra Collier-Williams was scanned twice at the polling location and two Westlake 4-A Election Day ballots with votes for Joan Synenberg were scanned twice at the polling location. The net difference in this contest is one less vote for Joan Synenberg.

Overall, there were four discrepancies found from 23,386 ballots audited giving us a 99.98% audit accuracy rate for the election. The precinct results for the three precincts mentioned above will be amended at the January 15, 2012 Board Meeting.

	President/Vice-President		
	Official Certification Results*	Final Amended Audit Results*	Difference
Stewart Alexander	220	220	0
Richard Duncan	621	621	0
Virgil Goode	534	534	0
Gary Johnson	3,448	3,448	0
Barack Obama	447,232	447,232	0
Mitt Romney	190,651	190,650	-1
Jill Stein	1,564	1,564	0
Over Votes	1,772	1,772	0
Under Votes	3,403	3,403	0

Justice of the Supreme Court FTC 1/1/2013		
	Official Certification Results*	**Final Amended Audit Results***	**Difference**
Terrence O'Donnell	281,844	281,844	0
Mike Skindell	160,203	160,203	0
Over Votes	318	318	0
Under Votes	208,022	208,022	0

Judge of the Court of Common Pleas General Division – FTC 1/12/2013		
	Official Certification Results*	**Final Amended Audit Results***	**Difference**
Cassandra Collier-Williams	218,556	218,555	-1
Joan Synenberg	191,827	191,825	-2
Over Votes	1,039	1,039	0
Under Votes	228,775	228,775	0

November 6, 2012 Post Election Audit
Cost Breakdown

Audit Totals	
Total Cost of Post-Election Audit (all Races)	$5,083.74
Cost Per Ballot (Ballots Cast in Audited Contest Only)	$0.007
Cost Per Ballot (Ballots Cast in Entire Election)	$0.007
Cost Per Batch (Ballots Cast in Audited Contest Only)	$64.351

President/Vice-President	
Total Cost of Post-Election Audit	$847.29
Cost Per Ballot (Ballots Cast in Audited Contest Only)	$0.001
Cost Per Ballot (Ballots Cast in Entire Election)	$0.001
Cost Per Batch (Ballots Cast in Audited Contest Only)	$105.911

Justice of the Supreme Court FTC 1/1/2013	
Total Cost of Post-Election Audit	$1,412.15
Cost Per Ballot (Ballots Cast in Audited Contest Only)	$0.002
Cost Per Ballot (Ballots Cast in Entire Election)	$0.002
Cost Per Batch (Ballots Cast in Audited Contest Only)	$100.868

Judge of the Court of Common Pleas General Division - FTC 1/12/2013	
Total Cost of Post-Election Audit	$2,824.30
Cost Per Ballot (Ballots Cast in Audited Contest Only)	$0.004
Cost Per Ballot (Ballots Cast in Entire Election)	$0.004
Cost Per Batch (Ballots Cast in Audited Contest Only)	$49.549

Historical Post-Election Audit Accuracy Rate