Boulder County 2011 Coordinated Election Post-Election Audit Report

December 13, 2011

This report summarizes the post-election audit of the 11/1/2011 Boulder County Coordinated Election. The audit comprised a manual tabulation of a statistical sample (roughly 3%) of the votes cast in the election followed by a comparison with the Election Day tally. Any discrepancies were investigated.

The 2011 Coordinated election comprised:

- 83,573 ballots
- 49 contests with an average of 10.76 contests per ballot. 24 contests were multi-county. Ten contests were uncontested.
- Although three contests had close margins, none were within the state-mandated recount threshold (margin < 0.5% of winner).

By statute, the audit was conducted before certification of the election. The audit was based on a snapshot of the election taken November 3rd, three days after Election Day. At that time 82,724 ballots had been verified and counted, representing 99% of the election's final 83,573 ballots. These ballots were grouped in 558 individually tallied batches, also referred to throughout this document as MBB. To ensure voter privacy, an MBB batch which contained only 1 ballot was combined with another MBB, leaving 557 MBBs available for the audit (min 0, avg 149, max 200 ballots per MBB).

Plans for the audit were detailed on November 4th and the public was encouraged to participate and observe. Press Releases were issued to alert the public.

- On November 4th, three days after the election, a press release was issued describing the audit process and inviting the public to attend the audit setup meeting to be held on November 7th at 8:30.
- On November 7th, the results of the setup meeting and contest selection were announced.

Due to a recent court ruling associated with inspection of ballot images, the office chose not to release the audit information at this time. To provide security & confidence that no changes were made after the batches were counted, all setup data was backed up to a non-rewriteable CD and retained for inspection.

Audit Setup Meeting

On November 7th, the Audit Board met to review the audit plan, select contests and select batches of ballots for the manual recount. Each jurisdiction participating in the election was invited to participate in the Canvass and Audit; two participants served as the Canvass and Audit Board.

The Audit Board:

- 1. Reviewed the techniques used for contest and MBB selection. The contest and MBB selection techniques were encapsulated in a parameterized spreadsheet:
 - **Contests**: selected randomly with probability proportional to margin

M = Margin = diff between winner & loser V = ballots voted in contest m = relative margin = M/V

Small relative margin \rightarrow more likely to select contest.

How many contests: select contests as long as there are resources to audit them.

• **MBBs**: selected randomly using the NegExp statistical technique¹. This selection technique promises improved efficiency when auditing multiple contests in a large election.

For each contest:

Which MBBs \rightarrow random with probability proportional to # contest ballots How many MBBs \rightarrow weighted by margin and two NegExp parameters

<u>wpm</u> = a bound on the miscount expected per MBB <u>confidence</u> = a measure of statistical effectiveness of the algorithm

- 2. Fine-tuned the MBB selection parameters. Each contest had tunable MBB selection parameters <u>wpm</u> and <u>confidence</u>, which are defined above.
 - Negexp parameter defaults were set as follows:

Contest	wpm	Confidence
Federal	0.20	99%
State	0.20	99%
County	0.20	99%
Local	0.20	80%

The value of <u>wpm</u> puts a ceiling on the amount of error (or miscount) anticipated in an MBB. This
error bound must be greater than the margin for each contest. When the default value of <u>wpm</u>=0.20
was used in the spreadsheet, the error bound turned out to be less than the contest margin for ten
contests. For these contests the Audit Board approved an increase of <u>wpm</u> until the error bound rose
above the margin. The following contests were impacted:

Contest	wpm
City of Louisville Council Person Ward 1	0.20→0.25
City of Boulder Ballot Issue No. 2A	0.20→0.24
City of Boulder Ballot Question No. 2D	0.20→0.33
City of Boulder Ballot Question No. 2F	0.20→0.34
City of Boulder Ballot Question No. 2G	0.20→0.25
City of Boulder Ballot Question No. 2H	0.20→0.23
City of Lafayette Question No. 2D	0.20→0.36
City of Lafayette Question No. 2E	0.20→0.36
Pine Brook Hills Issue 5A	0.20→0.34
Crestview Estates Issue 5B	0.20→0.38

 To prevent the selection of any one contest from exhausting all audit resources, the Audit Board put a bound on the number of ballot-contests that would be audited per contest. These limits were implemented by artificially reducing the <u>confidence</u> level. The following contests were impacted:

Contest	Confidence
City of Boulder Council Candidates (Vote for 5)	80%→75%

¹ Aslam, Popa, Rivest, <u>http://www.usenix.org/event/evt08/tech/full_papers/aslam/aslam_html</u>

City of Boulder Ballot Issue No. 2B

Note that this was a compromise. One of our goals was to ensure that no contest dominated the audit. For example, prior to adjusting the City of Boulder Council Candidates percentage, the estimated number of ballots to be audited was approximately 13,000, which would have been almost half of the budgeted 3% of the ballot-contests (~26,700). Dropping the confidence level to 75% brought the number down to around 11,000, which was deemed reasonable by the audit board due to the closeness of the contest.

- 3. Selected MBBs to audit. The <u>wpm</u> and <u>confidence</u> parameters selected above combined with the contest margin determined a selection probability for each MBB for each contest. To determine if an MBB is selected in the audit of the contest, its probability is tested against a randomly generated number if the selection probability is greater than the random number then the MBB is tagged as an audit unit for the contest. Because a large number of random numbers were needed for this, the Audit Board used a pseudorandom number algorithm to generate a list of random numbers. The algorithm required a 15-digit seed, which itself was randomly built by combining 3 random digits from each of 5 people. The resulting seed was 246-625-122-642-148.
- 4. Selected contests. The final task during the Audit Setup Meeting was for the Audit Board to select contests. The first 7 selections, resulting in 5 selected contests, were done by rolling of 4 die. Subsequent selections were made using the same pseudorandom numbers generated above against contest probabilities weighted by margin. The random numbers and the contests selected are shown in Attachment 1. Seven total contests were selected, but because the Thompson School District G contest had 0 MBBs selected, and Boulder County did not have enough votes in this multi-county contest to influence the results, it was not audited.

Note: The Audit Board chose not to audit unopposed contests. There were ten in this election and they were excluded from selection by setting their contest probability to zero.

Attachment 2 summarizes the complete set of contests and MBBs that were selected. In total, 26,870 votes were to be manually verified for the 6 selected contests. These votes were contained within 29,741 ballots on 198 MBBs.

Before starting the manual verification process, a check was completed to ensure that the set of selected MBBs represented all hardware paths through the scanning/counting system in use on Election Day, which was confirmed. If all paths had not been included, additional MBBs/contests would have been manually added to ensure all paths were covered.

Manual Verification of Selected Contests on Selected MBBs

The manual verification process was organized by MBB and included: reviewing each ballot by hand to identify voting selections, recording selections on a Manual Verification Worksheet (MVW), tallying the selections recorded, and a comparison to Election Day result reports in order to verify machine count accuracy.

For each MBB selected, all associated ballots/batches were first gathered to create the auditable batch (an MBB may contain cast vote results for one or more scanned batches). Then, for all contests selected on the given MBB, each ballot was reviewed and contest choices manually tallied on the associated MVW. This reduced batch handling and associated wear and tear on ballots, a necessary precaution in the event of a recount. Voter Intent was also a key element of the manual verification and the teams were trained to use the same voter intent guidelines that were used on Election Day.

The manual tally was initially performed in four-person teams. The technique used was similar to that pioneered in several California counties² and used in Boulder County's 2010 General Election audit. Each four-person team consisted of

² See "Improving the Security, Transparency and Efficiency of California's 1% Manual Tally Procedures", J. L. Hall, US Berkeley, <u>http://josephhall.org/papers/jhall_evt08.pdf</u>.

- a Caller who handled the ballots, located the contest and called out the vote selection
- an Observer who watched the Caller and confirmed the accuracy of the spoken vote
- two Talliers who independently recorded what they heard

The teams used prepared tally sheets (MVWs) unique to the given MBB audit batch. Each MVW contained prefilled tally areas for each contest to be counted within the batch and included the ballot styles where each contest would be found. However it did not include either the number of ballots on the MBB or the number of ballots that contained the contest. An example is in Attachment 3.

The two Talliers were asked to independently record the spoken vote in groups of 10 stopping after each group to verify that their tallies matched before proceeding to the next grouping. This check was put in place to help reduce the number of total batch recounts required by catching any recording differences when the group of ballots just tallied is still on hand to verify against for correction. Due to multiple sorts required, once the batch MVWs are complete, there is almost zero ability to go back and verify and correct a mistake without full recount.

Manual Tally Throughput

We initially started the audit with 10 four-person teams but quickly identified that we were not on track to complete the audit in the one-week allotted time, and thus switched to a two-person team configuration. The main factor contributing to a significant reduction in throughput on the counting process was directly linked to the Boulder City Council "Vote for 5" contest. There was significant difficulty in calling and recording votes that spanned such a large number of candidates (rows) and ballots across the page (columns). There was additional struggle in identifying the appropriate number of undervotes to record. This issue had a significant impact on the number of calling and recording errors and resulted in an extremely high number of false mismatches between Election Day machine counts and the manual verification tally. In total, 63 of the 198 batches required recount including 101 contest recounts.

Audit Improvement Trials

The manual verification recording challenges encountered with the Boulder City Council "Vote for 5" contest prompted two audit technique improvements to be trialed, including the two-person team configuration mentioned above. The second technique trialed was a focused sort & stack count which will be described further below.

Two-person team configuration:

The two-person audit team technique, consisting of only a "Caller" and "Tallier", was inspired by the need for efficiency and counting improvements. It took away the role of the observer, requiring active participation by each team member and resulted in the production of a single tally sheet (MVW), increasing team member responsibility in result accuracy. With several adjustments made throughout the trial to accommodate a two-person process with only a single count, in the end this configuration provided improved accuracy and significantly greater efficiency in the counting process.

Sort & Stack Verification:

The sort & stack verification technique ("fourth count") was trialed as an improved method for resolving mismatched results. If the results didn't match up, the first course of action was to have a different team complete a second count (recount). This resolved the mismatch 50% of the time, but in some cases a third or fourth count was required to confirm an accurate recording. To confirm an accurate record/tally before escalating to investigating election night resolution logs, the fourth count was uniquely executed and labeled sort & stack verification count on the audit batch comparison sheet.

Using more experienced teams, all contest ballots were first pulled and accounted for. Then, for each candidate choice reflecting inconsistent and discrepant MVW results, each contest ballot was reviewed and any ballot with a mark in the box for the given candidate was pulled and placed into a unique pile. Finally, the ballots pulled for the given candidate were counted and the total captured, including identifying any ballot that could provide a difference in voter intent. If there was any question in the validity of count, the batch was re-verified separately to confirm. This resolved five out of fourteen differences.

Comparison with Election Day Results

Election Day results were prepared for the MBBs and compared with the hand tally. If there was a discrepancy, the contest in question was recounted (not necessarily by the original tally team). The tally teams were told which contest to recount but were not told what the discrepancy was.

For each batch included in the audit, the manual verification comparison was documented by combining the manual verification worksheet results (i.e., Attachment 3) with the Election Day results into a Comparison Worksheet. Attachment 4 shows the machine count source data, as well as the comparison worksheet.

Discrepancy Investigations

Initial comparisons of Election Day results against manual verification results, resulted in 63 audit batch discrepancies, roughly 32% of the total 198 batches audited. Up to four counts were required in order to get an accurate count, resolving the issue in 43 of the 63 discrepant batches. It is important to note that these discrepancies would be identified in a recount.

In the 20 remaining batches, 23 ballot contest discrepancies were identified; all associated with voter intent and affecting only the City of Boulder Council race. 17 were associated with a strike out of choice, where no overvote was created, and the remaining five were associated with incomplete, hesitant or stray markings. The results of the investigations are documented in the following attachments:

- Attachment 5 Summary of Differences, including sample images of ballots in question
- Attachment 6 Discrepancy Review Details
- Attachment 7 Discrepancy Impact Review, showing what impact the discrepancies had on the election results
- Attachment 8 Outcome Impact Review, showing adjusted recount threshold

In the near 185,000 contest choice boxes that were manually verified, the only audit discrepancies confirmed through the audit were associated with the Boulder City Council "Vote for 5" race and the trend in strike outs highlighted a pattern requiring additional investigation.

Due to the potential trend identified, the audit was then escalated and resulted in a visual inspection of more than 21,000 Boulder City Council contest ballots and included a sample set review of the Lafayette City Council "Vote for 6" race. The subsequent combined discrepancy rate identified and used for impact analysis was .000167569; derived by taking the sum of all discrepancies identified divided by the sum of all contest boxes audited & inspected for the City of Boulder race.

Through this escalation, it has been determined that the outcome of the Boulder City Council contest, as well as the Lafayette City Council contest was not affected by this trend.

Conclusions

No systemic errors were found in the voting equipment, and no trends or differences were identified across the various equipment paths. The audit did however identify a trend in voter intent and the correction of votes associated with the Boulder City Council "Vote for 5" race.

A total of 348,152 contest choice boxes were reviewed in this year's audit. 53 out of the 316,288 Boulder City Council contest choice boxes reviewed highlighted a voter intent trend to be addressed in future election processes. While a few are linked strictly to a difference in judgment on voter intent, the majority of these do not fall under this category and instead represent a true discrepancy rate.

For contests with close margins, the Audit or Canvass board may consider it important to include audit differences in any recount recommendation decisions.

The state mandated recount is required if:

\\/ L < 0.005*\\/	Where W and L are the Winner & Loser vote
W – L < 0.005*W	totals

Incorporating the discrepancy rate, assuming all discrepancies swing to reduce the margin, the worst-case recount decision becomes:

W – L < 0.005*W	Where U is the discrepancy rate and V is the
VV = L < 0.003 VV	number of votes cast in the contest, W + L

For this year's election, we thought it was mandatory to consider and took it further to include evaluating the impact of incorporating the discrepancy rate associated with a single contest into the recount threshold, possible only because of the number of differences solely associated with the Boulder City Council race.

This inclusion reflects the assumption that this same trend could be randomly distributed through other contests and ballots and the worst-case recount decisions would be highlighted. Further research is needed to determine reasonable application in future elections.

This Impact Review was then completed for all contest outcomes and Attachment 8 shows the calculations for all contests. It is verified that no contest is close enough to trigger a recount, even when applying the discrepancy rate associated with the Boulder City Council race.

Based on the results of this year's audit, there are two areas that will be further analyzed for improvement in future elections. The first area will involve the training of the open and separating teams, with special emphasis provided for "vote for n" contests. Secondly, the counting process will be reviewed, both for the MVWs (tally sheets), which are currently too complex for large "vote for n" contests, as well as team structure and the future use of the two-person team.

The audit of the 2011 Coordinated Election was concluded on Nov 14, 2011. Attachment 9 contains the statement from the Audit Board.

Attachment 1: Contest Selection

Random #	Contest	Already Selected?	Contest Ballots	Cumulative Ballots	Num Contests
0.7667	CITY OF BOULDER BALLOT ISSUE NO. 2B		6484	26870	7
0.4661	City of Longmont Mayor		7445		
0.2594	City of Boulder Council Candidates (Vote for 5)		10938		
0.5703	Boulder Valley School District D		1306		
0.6326	Thompson School District G		0		
0.1518	City of Boulder Council Candidates (Vote for 5)	Already Picked			
0.1308	City of Boulder Council Candidates (Vote for 5)	Already Picked			
0.9809	Rocky Mountain Fire Ballot Question 5D		460		
0.7534	CITY OF BOULDER BALLOT ISSUE NO. 2B	Already Picked			
0.7808	CITY OF BOULDER BALLOT ISSUE NO. 2B	Already Picked			
0.1104	City of Boulder Council Candidates (Vote for 5)	Already Picked			
0.7845	CITY OF BOULDER BALLOT ISSUE NO. 2B	Already Picked			
0.8416	CITY OF BOULDER BALLOT ISSUE NO. 2B	Already Picked			
0.3162	City of Boulder Council Candidates (Vote for 5)	Already Picked			
0.2401	City of Boulder Council Candidates (Vote for 5)	Already Picked			
0.6421	Thompson School District G	Already Picked			
0.5485	City of Louisville City Council Person Ward I		237		

	City of Boulder Council Candidates (Vote for 5)	City of Longmont Mayor		Boulder Valley School District D	Thompson School District G	CITY OF BOULDER BALLOT ISSUE NO. 2B	Rocky Mountain Fire Ballot Question 5D			
	Selected	Selected	Selected	Selected	Selected	Selected	Selected	7	Contests	selected
MBBs to Audit	147	84	11	12	0	88	31	198	MBBs sel	ected
Ballot-Contests	10938	7445	237	1306	0	6484	460	26870		of ballot-contests
								94		ounts required
								<u>292</u>		•
								Total	TOLAT COU	ints required
								Ballots on MBB		Num Manual Verification Counts Needed
p001_mb_267	Audited							150	Selected	2
p003_mb_453	Audited							150	Selected	1
p004_mb_452	Audited					Audited		150	Selected	1
p008_mb_293	Audited					Audited	Audited	150	Selected	1
p009_mb_276	Audited	Audited						150	Selected	1
p010_mb_243	Audited					Audited		150	Selected	1
p011_mb_092	Audited		Audited			Audited	Audited	150	Selected	2
p014_mb_247	Audited					Audited		150	Selected	1
p015_mb_298	Audited					Audited		149	Selected	3
p017_mb_297	Audited					Audited		150	Selected	3
p024_mb_029	Audited						Audited	150	Selected	2
p042_mb_150	Audited	Audited	Audited			Audited	Audited	149	Selected	2
p043_mb_081	Audited					Audited		150	Selected	1
p044_mb_304	Audited	Audited		Audited		Audited	Audited	150	Selected	1
p047_mb_193	Audited	Audited				Audited	Audited	150	Selected	1
p051_mb_090	Audited	Audited	Audited	Audited		Audited	Audited	150	Selected	1
p059_mb_075	Audited	Audited				Audited	Audited	150	Selected	3*
p065_mb_155	Audited					Audited		150	Selected	1
p068_mb_195	Audited	Audited				Audited		150	Selected	1
p069_mb_196	Audited					Audited		150	Selected	1
p070_mb_197	Audited	Audited				Audited		150	Selected	3*
p073_mb_300	Audited	Audited		Audited		Audited	Audited	150	Selected	3
p080_mb_175		Audited						150	Selected	1
p085_mb_263	Audited	Audited				Audited		150	Selected	1
p086_mb_125	Audited	Audited				Audited		150	Selected	1
p087_mb_126	Audited	Audited				Audited		150	Selected	1
p090_mb_301	Audited							149	Selected	2
p094_mb_144							Audited	150	Selected	1
p100_mb_254	Audited							150	Selected	1
p102_mb_159	Audited	Audited	Audited	Audited		Audited	Audited	150	Selected	1
p105_mb_157	Audited							200	Selected	1

	City of		City of							
	Boulder		Louisville City			CITY OF	Rocky			
	Council	City of	Council	Boulder Valley	Thompson	BOULDER	Mountain Fire			
	Candidates	Longmont	Person Ward	School District	School District	BALLOT ISSUE	Ballot			
	(Vote for 5)	Mayor	I	D	G	NO. 2B	Question 5D			
	Selected	Selected	Selected	Selected	Selected	Selected	Selected	7	Contests	selected
MBBs to Audit	147	84	11	12	0	88	31	198	MBBs sel	ected
Ballot-Contests	10938	7445	237	1306	0	6484	460	26870	Number	of ballot-contests
								94	Total rec	ounts required
								<u>292</u>	Total cou	ints required
								Total		-
								Ballots on MBB		Num Manual Verification Counts Needed
p106_mb_256		Audited						150	Selected	1
p107_mb_239	Audited							150	Selected	1
p118_mb_235	Audited	Audited						150	Selected	2
p129_mb_043		Audited						150	Selected	1
p130_mb_022	Audited	Audited						150	Selected	1
p133_mb_171	Audited	Audited				Audited		150	Selected	1
p134_mb_274	Audited							150	Selected	1
p138_mb_229	Audited	Audited				Audited	Audited	150	Selected	2
p140_mb_178	Audited							149	Selected	2
p141_mb_059	Audited	Audited						150	Selected	1
p145_mb_029		Audited						150	Selected	1
p149_mb_244	Audited	Audited						150	Selected	1
p153_mb_228	Audited							150	Selected	1
p155_mb_091	Audited					Audited		150	Selected	1
p156_mb_088	Audited					Audited		150	Selected	1
p157_mb_085	Audited	Audited						150	Selected	1
p161_mb_176		Audited						150	Selected	1
p162_mb_058	Audited							150	Selected	1
p163_mb_060		Audited						150	Selected	1
p164_mb_226	Audited					Audited		150	Selected	1
p166_mb_052		Audited						150	Selected	1
p172_mb_224	Audited					Audited		149	Selected	1
p178_mb_050	Audited							150	Selected	3*
p179_mb_051		Audited						150	Selected	1
p183_mb_148		Audited						150	Selected	1
p189_mb_220		Audited						150	Selected	1
p192_mb_121	Audited	Audited		Audited		Audited	Audited	150	Selected	1
p196_mb_163	Audited	Audited				Audited		150	Selected	3*
p197_mb_083	Audited					Audited		150	Selected	1
p198_mb_082	Audited					Audited		150	Selected	2
p199_mb_314	Audited		Audited			Audited	Audited	150	Selected	2

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	+	[94		ounts required
								292		-
		[Total	Total cou	nts required
		ľ						Ballots on		Num Manual Verification
		ľ						MBB		Counts Needed
p201_mb_064	Audited							150	Selected	1
p202_mb_310	Audited							150	Selected	1
p203_mb_149	Audited							150	Selected	1
p204_mb_311	Audited							150	Selected	2
p210_mb_252	Audited	Audited				Audited		150	Selected	3
p214_mb_191		Audited						150	Selected	1
p215_mb_158	Audited					Audited		150	Selected	1
p217_mb_222	Audited							150	Selected	1
p220_mb_162	Audited							150	Selected	1
p224_mb_100	Audited	Audited		Audited		Audited	Audited	150	Selected	2
p227_mb_206		Audited						150	Selected	1
p228_mb_204	Audited					Audited		150	Selected	3
p243_mb_213	Audited	Audited				Audited		150	Selected	1
p249_mb_108	Audited	 						150	Selected	1
p254_mb_236	Audited					Audited		149	Selected	1
p265_mb_140	Audited	Audited				Audited		150	Selected	1
p268_mb_318	Audited	Audited				Audited	Audited	150	Selected	1
p269_mb_134	Audited	Audited				Audited		150	Selected	1
p274_mb_142	Audited							150	Selected	1
p280_mb_232	Audited							150	Selected	1
p282_mb_105		Audited						150	Selected	2
p286_mb_223	Audited	Audited		Audited		Audited	Audited	150	Selected	1
p292_mb_322	Audited							150	Selected	1
p294_mb_319	Audited					Audited		150	Selected	1
p298_mb_420	Audited							150	Selected	1
p306_mb_424		Audited						149	Selected	2
p307_mb_261	Audited					Audited		150	Selected	3*
p309_mb_390		Audited						150	Selected	1
p310_mb_369,	Audited					Audited		150	Selected	2
p308_mb_368	ابر - با: امر ا	<u></u>						150 150	Selected	
p312_mb_389	Audited	<u> </u>						150	Selected	1

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								Total		
								Ballots on MBB		Num Manual Verification Counts Needed
p313_mb_388	Audited							150	Selected	1
p317_mb_248	Audited					Audited		150	Selected	2
p322_mb_245	Audited					Audited		150	Selected	3*
p323_mb_392		Audited						150	Selected	1
p324_mb_387		Audited						150	Selected	1
p325_mb_417	Audited							150	Selected	3*
p326_mb_411			Audited				Audited	150	Selected	1
p327_mb_412	Audited							150	Selected	3*
p337_mb_451			Audited				Audited	150	Selected	1
p338_mb_434	Audited					Audited		150	Selected	1
p340_mb_447	Audited					Audited		150	Selected	2
p341_mb_419		Audited						150	Selected	1
p343_mb_441		Audited						150	Selected	1
p344_mb_450	Audited							150	Selected	1
p347_mb_251		Audited						150	Selected	2
p348_mb_377		Audited						150	Selected	2
p349_mb_367	Audited					Audited		150	Selected	3*
p351_mb_397		Audited						150	Selected	1
p353_mb_456		Audited						150	Selected	1
p357_mb_260	Audited	Audited		Audited		Audited	Audited	150	Selected	3
p360_mb_399	Audited	A 111 1				A 111 1		150	Selected	1
p362_mb_400	Audited	Audited				Audited	Audited	150	Selected	1
p363_mb_426	Audited	Audited				Audited		150	Selected	2
p364_mb_427	Audited					Audited		150	Selected	1
p366_mb_385	Audited	A						150	Selected	1
p368_mb_386	A	Audited						150	Selected	1
p370_mb_362	Audited					0		148	Selected	1
p377_mb_257	Audited	A				Audited		150	Selected	3
p378_mb_375	A so al ta a st	Audited						150	Selected	1
p382_mb_393	Audited	Audited				0		150	Selected	3*
p385_mb_407	Audited					Audited		149	Selected	3

	City of		City of							
	Boulder		Louisville City			CITY OF	Rocky			
	Council	City of	Council	Boulder Valley	Thompson	BOULDER	Mountain Fire			
	Candidates	Longmont	Person Ward	School District	School District	BALLOT ISSUE	Ballot			
	(Vote for 5)	Mayor	I	D	G	NO. 2B	Question 5D			
	Selected	Selected	Selected	Selected	Selected	Selected	Selected	7	Contests	selected
MBBs to Audit	147	84	11	12	0	88	31	198	MBBs sel	ected
Ballot-Contests	10938	7445	237	1306	0	6484	460	26870	Number	of ballot-contests
								94	Total rec	ounts required
								<u>292</u>	Total cou	ints required
								Total		
								Ballots on MBB		Num Manual Verification Counts Needed
p388_mb_409	Audited							150	Selected	1
p389_mb_446		Audited						150	Selected	1
p390_mb_445	Audited					Audited	Audited	149	Selected	3
p392_mb_268	Audited					Audited		150	Selected	1
p394_mb_352		Audited						150	Selected	1
p401_mb_605	Audited					Audited	Audited	150	Selected	1
p406_mb_327	Audited	Audited				Audited		150	Selected	2
p407_mb_365	Audited					Audited		150	Selected	3*
p409_mb_331	Audited							150	Selected	3*
p410_mb_330	Audited							150	Selected	3*
p413_mb_603		Audited						150	Selected	1
p414_mb_351		Audited						150	Selected	1
p417_mb_376	Audited	A 111 1						150	Selected	1
p419_mb_342		Audited						150	Selected	1
p420_mb_340	Audited							149	Selected	3
p422_mb_380	Audited	A						150	Selected	1
p423_mb_344	Accellated	Audited				0		149	Selected	1
p424_mb_355	Audited Audited					Audited Audited		150 150	Selected Selected	3*
p426_mb_372	Audited					Audited		150	Selected	2
p427_mb_337 p430_mb_596	Audited					Audited	Audited	149	Selected	1
p430_mb_396	Audited					Auditeu	Audited	149	Selected	3*
p435_mb_373	Addited	Audited						150	Selected	1
p435_mb_375		Audited						150	Selected	2
p438_mb_611	Audited							150	Selected	1
p430_mb_011	Audited							150	Selected	1
p442_mb_325	Audited	Audited		Audited		Audited	Audited	150	Selected	1
p446_mb_353	Audited	Audited	Audited	Audited		Audited	Audited	150	Selected	1
p447_mb_358	Audited							150	Selected	1
p448_mb_614	Audited							150	Selected	2
p449_mb_589		Audited						150	Selected	1

	City of Boulder Council Candidates (Vote for 5)	City of Longmont Mayor		Boulder Valley School District D	Thompson School District G	CITY OF BOULDER BALLOT ISSUE NO. 2B	Rocky Mountain Fire Ballot Question 5D			
	Selected	Selected	Selected	Selected	Selected	Selected	Selected	7	Contests	selected
MBBs to Audit	147	84	11	12	0	88	31	198	MBBs sel	ected
Ballot-Contests	10938	7445	237	1306	0	6484	460	26870	Number	of ballot-contests
								94	Total rec	ounts required
								<u>292</u>	Total cou	ints required
								Total Ballots on MBB		Num Manual Verification Counts Needed
p453_mb_598	Audited							150	Selected	1
p454_mb_341			Audited				Audited	150	Selected	1
p457_mb_323		Audited						150	Selected	1
p458_mb_601	Audited					Audited		150	Selected	1
p460_mb_592	Audited							150	Selected	1
p462_mb_616		Audited						150	Selected	1
p463_mb_574	Audited					Audited		150	Selected	1
p464_mb_573		Audited						150	Selected	1
p467_mb_575	Audited		Audited	Audited		Audited	Audited	150	Selected	3
p468_mb_576		Audited						150	Selected	1
p471_mb_600	Audited							150	Selected	1
p472_mb_602	Audited					Audited		150	Selected	1
p476_mb_568		Audited						150	Selected	1
p477_mb_604	Audited					Audited		150	Selected	3
p479_mb_569	Audited					Audited		150	Selected	2
p482_mb_554	Audited					Audited		150	Selected	1
p484_mb_572	Audited					Audited		149	Selected	1
p485_mb_582		Audited						150	Selected	3
p488_mb_556	Audited							150	Selected	1
p489_mb_590	Audited					Audited		150	Selected	1
p490_mb_545	Audited	Audited				Audited		150	Selected	1
p492_mb_579	Audited							150	Selected	3*
p494_mb_577	Audited					Audited		150	Selected	1
p498_mb_551		Audited						150	Selected	1
p502_mb_534	Audited							150	Selected	1
p509_mb_458		Audited						150	Selected	2
p510_mb_555	Audited					Audited		150	Selected	1
p511_mb_538	Audited							149	Selected	1
p512_mb_539		Audited						150	Selected	2
p513_mb_537	Audited	Audited	Audited	Audited		Audited	Audited	150	Selected	2
p515_mb_546	Audited							149	Selected	2*

Contest and MBB Selection - 2011 Coordinated Election Audit

	City of		City of							
	Boulder		Louisville City			CITY OF	Rocky			
	Council	City of	Council	Boulder Valley	Thompson	BOULDER	Mountain Fire			
	Candidates	Longmont	Person Ward	School District	School District	BALLOT ISSUE	Ballot			
	(Vote for 5)	Mayor	I	D	G	NO. 2B	Question 5D			
	Selected	Selected	Selected	Selected	Selected	Selected	Selected	7	Contests	selected
MBBs to Audit	147	84	11	12	0	88	31	198	MBBs se	lected
Ballot-Contests	10938	7445	237	1306	0	6484	460	26870	Number	of ballot-contests
								94	Total rec	counts required
								<u>292</u>	Total co	unts required
								Total		
								Ballots on MBB		Num Manual Verification Counts Needed
p520_mb_524		Audited						150	Selected	1
p522_mb_530	Audited					Audited		148	Selected	3*
p525_mb_514	Audited					Audited		150	Selected	2
p528_mb_547	Audited							149	Selected	2*
p529_mb_516	Audited							150	Selected	2
p532_mb_622	Audited					Audited		150	Selected	1
p533_mb_519	Audited	Audited				Audited		150	Selected	1
p543_mb_494	Audited					Audited		150	Selected	1
p544_mb_493	Audited					Audited		150	Selected	3*
p547_mb_501		Audited						150	Selected	1
p548_mb_525	Audited					Audited		150	Selected	1
p552_mb_518							Audited	150	Selected	1
p553_mb_498							Audited	161	Selected	1

Attachment 3 - Sample Tally Sheet

Contest	City of Boulder Council Candidates
District Styles	DS-17, 18

Audit Batch SYS	Date	Page 1
p178_mb_050		
		SYS

	Print First and Last Name	Affiliation
Caller		
Witness		
Tallier 1		
Tallier 2		

Option	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Total
Ronald M. Chase	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Mark Gelband	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Fenno Hoffman	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Jonathan R. Hondorf	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Kevin Hotaling	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Tom Johnston	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Suzanne Jones	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
George Karakehian	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Stephen F. Keenan	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Dan King	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Lisa Morzel	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Tim Plass	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Ken Wilson	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Daniel Ziskin	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Overvotes	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Undervotes							
Not On Ballot							
Group Total							

Α Batch # 8 Count # 1

Attachment 3 - Sample Tally Sheet

Contest	City of Boulder Council Candidates
District Styles	DS-17, 18

Audit Batch SYS	Date	Page 2	
p178_mb_050			
		SYS	

A Batch # 8 Count # 1

	Print First and Last Name	Affiliation
Caller		
Witness		
Tallier 1		
Tallier 2		

Option	Group 7	Group 8	Group 9	Group 10	Group 11	Group 12	Total
Ronald M. Chase	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Mark Gelband	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Fenno Hoffman	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Jonathan R. Hondorf	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Kevin Hotaling	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Tom Johnston	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Suzanne Jones	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
George Karakehian	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Stephen F. Keenan	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Dan King	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Lisa Morzel	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Tim Plass	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Ken Wilson	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Daniel Ziskin	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Overvotes	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Undervotes							
Not On Ballot							
Group Total							

Attachment 3 - Sample Tally Sheet

Contest	City of Boulder Council Candidates
District Styles	DS-17, 18

	Print First and Last Name	Affiliation
Caller		
Witness		
Tallier 1		
Tallier 2		

Option	Group 13	Group 14	Group 15	Total
Ronald M. Chase	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Mark Gelband	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Fenno Hoffman	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Jonathan R. Hondorf	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Kevin Hotaling	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Tom Johnston	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Suzanne Jones	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
George Karakehian	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Stephen F. Keenan	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Dan King	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Lisa Morzel	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Tim Plass	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Ken Wilson	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Daniel Ziskin	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Overvotes	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	01 02 03 04 05 06 07 08 09 10	
Undervotes				
Not On Ballot				
Group Total				

Audit Batch SYS	Date	Page 3
p178_mb_050		

SYS
А
Batch #
8
Count #
1

Machine Count:

MBB Name	Contest Name	Contest Ballots	Cast Votes	Ronald M. Chase	Mark Gelband	Fenno Hoffman	Jonathan R. Hondorf	Kevin Hotaling	Tom Johnston	Suzanne Jones	George Karakehian	Stephen F. Keenan	Dan King	Lisa Morzel	Tim Plass	Ken Wilson	Daniel Ziskin	Over Votes	Under Votes
p000_mb_000	Boulder Council Candidates Vote For 5	44	153	0	3	9	12	2	4	28	18	1	9	22	19	14	12	0	67

Comparison Worksheet:

Tallier 2

Contest	City of Boulder Council Candidates						
District Styles	DS-17, 18						
	Print First and Last Name	Affiliation					
Caller	Taylor O'Dell						
Witness							
Tallier 1	Will Deoreo						

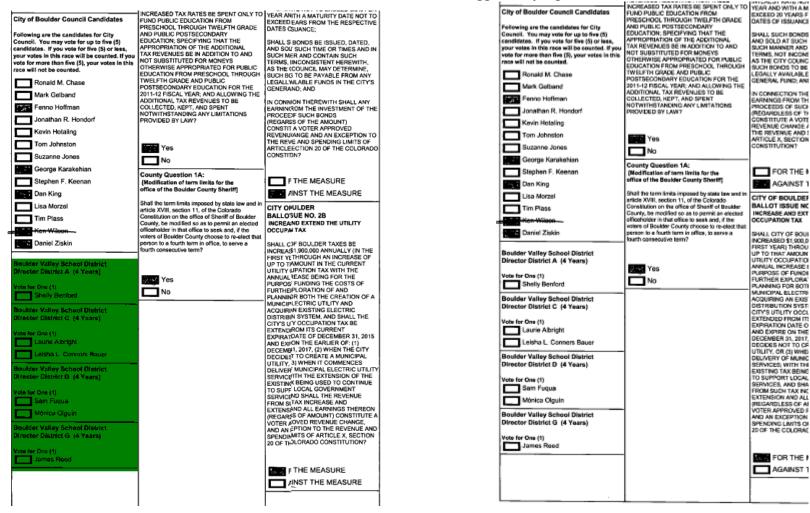
Audit Batch MBB	Date	Page 1
`	11/11/2011	
		SYS
		С
		Batch #
		22,23
		Count #
		1

Option	Count 1	Count2	MVW Count	Machine Count	Diff
Ronald M. Chase	0	0	0	0	0
Mark Gelband	5	3	3	3	0
Fenno Hoffman	10	9	9	9	0
Jonathan R. Hondorf	9	12	12	12	0
Kevin Hotaling	3	2	2	2	0
Tom Johnston	11	4	4	4	0
Suzanne Jones	27	28	28	28	0
George Karakehian	11	18	18	18	0
Stephen F. Keenan	4	1	1	1	0
Dan King	12	9	9	9	0
Lisa Morzel	20	22	22	22	0
Tim Plass	20	19	19	19	0
Ken Wilson	12	14	14	14	0
Daniel Ziskin	8	11	11	12	1
Overvotes	0	0	0	0	0
Undervotes	68	68	68	67	-1
Not On Ballot	96	107			
Group Total	44				

Summary of Differences

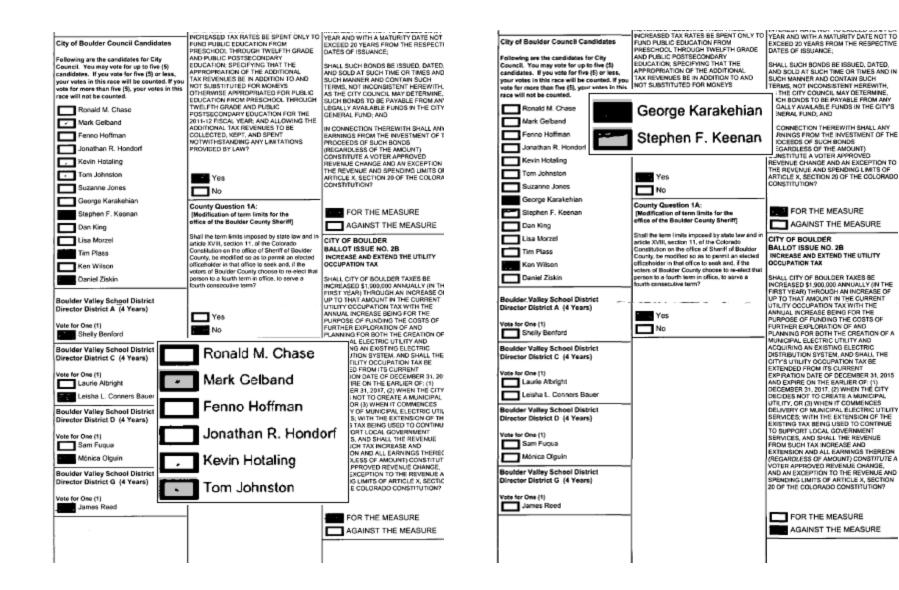
Out of 26,870 ballot contests audited, 23 highlighted differences between the audit team count and machine count. All were associated with voter intent and affected only the City of Boulder Council race. 17 were associated with a strike out of choice, where no overvote was created and the remaining five were associated with incomplete, hesitant or stray markings. Due to number of differences identified, a net of 11,654 additional Boulder City ballots were reviewed in Ballot Now (64,500 total reviewed), identifying 20 additional instances. Below are images reflecting the types of differences.

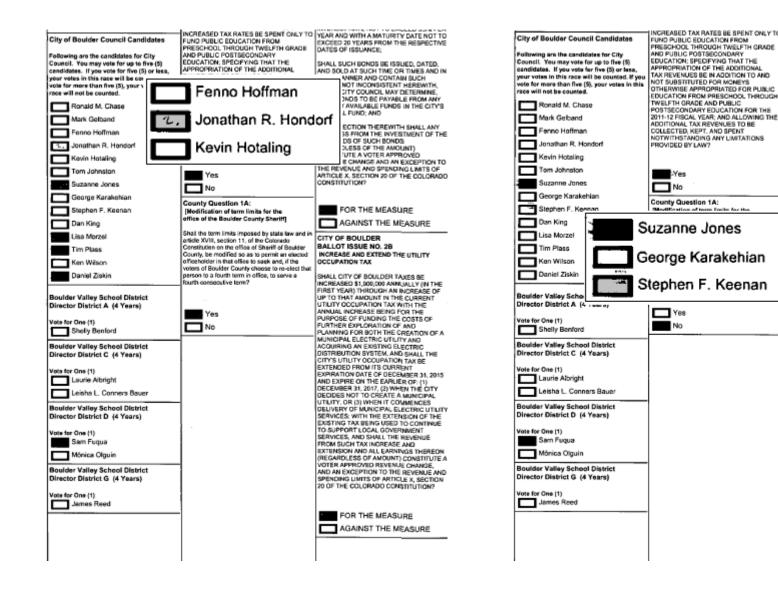
In this example, the candidate (Wilson) was struck out on Boulder City Council and no additional choice was made. Because no more than five boxes were filled in, no overvote was created and the contest was not flagged for judge resolution.



Below are examples of the incomplete, hesitant & stray marks that occurred. Because no more than five boxes were filled in, no overvote was created and the contest was not flagged for judge resolution.

Following are the candidates for Gig Council. You may vets for sp to f candidates. If you vote for fre (5) peur votes in this race will be ose use for more than five (5), your v can will not be counted. Ronald M. Chase Mark Geband Fonto Hotiman	FUND PUBLIC EDUCATION FROM	YEAR AND WITH A MATURITY DATE NOT TO EXCEED 20 YEARS PROM THE RESPECTIVE DATES OF USUANCE: SHALL SUCH BONDS BE ISSUED, DATED, AND SOLD AT SUCH TIME ON TIMES AND IN SUCH MANNER AND CONTAN SUCH TO THE CONTROL VENT HERMITH, SUCH BONDS TO BE PAYABLE FROM ANY LEGALLY AVALABLE FLOOS IN THE CITY'S GENERAL FLOO, AND IN CONNECTION THERMISTIC THE EARINGS FROM THE INVESTIGENT OF THE EARINGS FROM THE INVESTIGENT OF THE EARINGS FROM THE INVESTIGENT OF THE EARINGS OF SUCH BONDS	Policeving are th Council. You m cendiciatos. H y your vates in th	e counted. I M. Chase Selband	ИСЛЕАНЕР ТАХ ПАТЕВ ВЕ ВРЕНТ ОК.У ТО FUND PUBLIC EDUCATION FROM MPESCHOOL THROUGH THE FUND AND PUBLIC POSTBECONDARY EDUCATION SECEPTING THAT THE APPROPRIATION OF THE ADDITIONAL TAX REVENUES BE IN ADDITION TO AND NOT SUBSTITUTED FOR MONEYS GIFLENVISE BE IN ADDITION TO FUND EDUCATION FROM PRESCHOOL THROUGH THEFT IN GRADE AND PUBLIC SUZZANDE ADDITION OF THE SUZZANDE JONES	EXCEED 20 YEARS FROM THE RESPECTIVE DATES OF INSUMACE; SHALL SUCH BONDS BE ISSUED, DATED. AND SOLD AT SUCH TIME OR TIMES AND IN SUCH WANNER AND CONTAINS SUCH TEIMS, NOT INCOMSSTENT HERREITH, AS THE GITY COUNCE, MAY DETERMINE, SUCH BONDS TO BE INVASUE FROM ANY LEGALLY WAILABLE FUNDS IN THE CITY'S TENERAL FUND, AND V CONNECTION THERREITH SHALL ANY V CONNECTION THE INVESTIGATION TO BE
Jonathan R. Hendorf Kavin Hotaling Tom Johnston Suzarne Jones George Karakehian Suzarne Jones George Karakehian Dan King Lisä Morzel Tim Plaes Ken Wilson Daniel Ziskin Boulder Valley School District Director District A (4 Years) Vate for One (1) Laurie Albright Leicha L. Conners Bauer Boulder Valley School District Director District O (4 Years) Vate for One (1) Sam Fuqua Ménica Olguín Boulder Valley School District Director District O (4 Years) Vate for One (1) Sam Fuqua Ménica Olguín Boulder Valley School District Director District O (4 Years) Vate for One (1) Sam Fuqua Ménica Olguín Boulder Valley School District Director District O (4 Years) Vate for One (1) Sam Fuqua Ménica Olguín Boulder Valley School District Director District O (4 Years) Vate for One (1) James Roed	Yes No County Question 1A: No County Question 1A: No County Question 1A: No County Question 1A: No County County ShertH County County ShertH County County County ShertH County C	PROCEEDS OF BUOLDER INFORMATION INFORMATI	Jonsthe Kevin H Suzann Suzann Sighter Dan kör Lisa Mo Tim Pla Danied J Boulder Valler Director Distri Vets far Gre (1) Boulder Valler Director Distri Vets far Gre (1) Director Distri Vets far Gre (1) Director Distri Vets far Gre (1) Director Distri Director Distri Director Distri Vets far Gre (1) Soulder Valler Director Distri Vets far Gre (1) Soulder Valler Director Distri Vets far Gre (1) Soulder Valler Director Distri	an R. Hondorf Hotaing phraton ne Jones s Karakehian nr F. Koenan rg orzei asa Tasin Ziskin ry School District rict C (4 Years)) Benford ry School District fet C (4 Years))) Ahright L. Corners Bauer ry School District fet C (4 Years))) uqua s Olguin ry School District	George Karakehian Stephen F. Keenan Dan King Lisa Morzel Costiliation on the office of Shertf of Bouder Cost, be modified to as be permit an elected officientider in the office to see and at the voters of Bouder County clocce to re-elect that patho is a low them office. To serve a fourth consecutive term?	PROCEEDS OF THE AND THE ON THE HEADNELDS OF THE AND CANT) CONSTITUTE A VOTER APPROVED INVESSION OF THE AND CANT) CONSTITUTE A VOTER APPROVED INVESSION OF THE ADD. INVESSION OF ADD. INVESSION ADD. INV
		·				





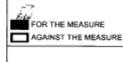
NCREASED TAX RATES BE SPENT ONLY TO FUND PUBLIC EDUCATION FROM Resochool Through Twelf The GRADE DATES OF ISSUANCE:

> SHALL SUCH BONDS BE ISSUED, DATED AND SOLD AT SUCH THE OR TIMES AND SUCH MANNER AND CONTAIN SUCH TERMS, NOT INCONSISTENT HEREWITH, AS THE CITY COUNCIL MAY DETERMINE. SUCH BONDS TO BE PAYABLE FROM AN LEGALLY AVAILABLE FUNDS IN THE CITY GENERAL FUND; AND

IN CONNECTION THEREWITH SHALL AN LARNINGS FROM THE INVESTMENT OF T PROCIEDS OF SUCH BONDS (REGARDLESS OF THE AMOUNT) CONSTITUTE A VOTER APPROVED REVIEW CHANGE AND AN EXCEPTION THE REVENUE AND SHO NO MINTS OF ARTICLE X, SECTION 20 OF THE COLORA CONSTITUTION?

FOR THE MEASURE

AGAINST THE MEASURE CITY OF BOULDER BALLOT ISSUE NO. 2B INCREASE AND EXTEND THE UTILITY OCCUPATION TAX SHALL CITY OF BOULDER TAXES BE INCREASED \$1,900,000 ANNUALLY (IN TH FIRST YEAR! THROUGH AN INCREASE OF UP TO THAT AMOUNT IN THE CURRENT JTILITY OCCUPATION TAX WITH THE ANNUAL INCREASE BEING FOR THE PURPOSE OF FUNDING THE COSTS OF FURTHER EXPLORATION OF AND PLANNING FOR BOTH THE CREATION OF MUNICIPAL ELECTRIC UTIL/ITY AND ACQUIRING AN EXISTING ELECTRIC DISTRIBUTION SYSTEM, AND SHALL THE CITY'S UTILITY OCCUPATION TAX BE EXTENDED FROM ITS CURRENT EXPIRATION DATE OF DECEMBER 31, 201 AND EXPIRE ON THE EARLIER OF: (1) DECEMBER 31, 2017, (2) WHEN THE CITY DECIDES NOT TO CREATE A MUNICIPAL UTILITY, OR (3) WHEN IT COMMENCES. DELIVERY OF MUNICIPAL ELECTRIC UTIL SERVICES: WITH THE EXTENSION OF TH EXISTING TAX BEING USED TO CONTINU TO SUPPORT LOCAL GOVERNMENT SERVICES, AND SHALL THE REVENUE FROM SUCH TAX INCREASE AND EXTENSION AND ALL EARNINGS THEREC (REGARDLESS OF AMOUNT) CONSTITUT VOTER APPROVED REVENUE CHANGE AND AN EXCEPTION TO THE REVENUE A SPENDING LIMITS OF ARTICLE X, SECTIC 20 OF THE COLORADO CONSTITUTION?



Discrepancy Review Details - 2011 Coordinated Election Audit

Source	SYS	Batch	Candidate	Issue	Total
Review	F	43	JONES	INCOMPLETE MARK (" ")	4
Audit	А	41	JONES	INCOMPLETE MARK (@ Partially filled in)	
Review	D	17	JONES	STRIKE OUT	
Review	D	44	JONES	STRIKE OUT	
Audit	А	41	MORZEL	INCOMPLETE MARK (@ Partially filled in)	10
Audit	A	49	MORZEL	STRIKE OUT	
Review	D	21	MORZEL	STRIKE OUT	
Review	D	44	MORZEL	STRIKE OUT	
Review	E	48	MORZEL	STRIKE OUT	
Audit	G	51	MORZEL	STRIKE OUT	
Audit	G	51	MORZEL	STRIKE OUT	
Review	G	59	MORZEL	STRIKE OUT	
Review	Н	2	MORZEL	STRIKE OUT	
Audit	Н	64	MORZEL	STRIKE OUT	
Audit	А	8	PLASS	STRAY MARK (X strayed into Plass target area)	4
Audit	D	43	PLASS	STRIKE OUT	
Review	D	54	PLASS	STRIKE OUT	
Audit	С	44	PLASS	STRIKE OUT (Only through box, not through choice)	
Audit	А	41	KARAKEHIAN	INCOMPLETE MARK (@ Partially filled in)	e
Review	С	58	KARAKEHIAN	HESITANT MARK (Pen rest)	
Review	А	44	KARAKEHIAN	STRIKE OUT	
Review	D	16	KARAKEHIAN	STRIKE OUT	
Audit	G	62	KARAKEHIAN	STRIKE OUT	
Review	Н	35	KARAKEHIAN	STRIKE OUT	
Review	С	58	WILSON	HESITANT MARK (Pen rest)	3
Review	С	30	WILSON	STRAY MARK	
Audit	А	57	WILSON	STRIKE OUT	
Review	А	12	KING	AMBIGUOUS POSSIBLE X OUT	4
Audit	А	41	KING	INCOMPLETE MARK (@ Partially filled in)	
Review	С	58	KING	HESITANT MARK (Pen rest)	
Review	G	41	KING	STRIKE OUT	
Audit	С	22, 23	ZISKIN	STRIKE OUT	3
Audit	G	16	ZISKIN	STRIKE OUT	
Audit	G	51	ZISKIN	STRIKE OUT	
Audit	G	72	HONDORF	HESITANT MARK ("?" in target area; other choices filled in)	4
Review	F	43	HONDORF	INCOMPLETE MARK (" ")	
Audit	D	43	HONDORF	STRIKE OUT	
Review	D	50	HONDORF	STRIKE OUT	
Audit	Е	55	HOFFMAN	STRIKE OUT	3
Audit	Н	8	HOFFMAN	STRIKE OUT	
Audit	Н	67	HOFFMAN	STRIKE OUT	
Audit	D	38	JOHNSTON	HESITANT MARK (Pen rest)	2
Review	F	4	JOHNSTON	STRIKE OUT	
Audit	D	38	GELBAND	HESITANT MARK (Pen rest)	3
Review	D	22	GELBAND	STRIKE OUT	
Audit	G	75	GELBAND	STRIKE OUT	
Review	Е	48	HOTALING	STRIKE OUT	2
Review	G	33	HOTALING	STRIKE OUT	
Audit	D	42	KEENAN	HESITANT MARK (Started to fill in)	4
Audit	G	78	KEENAN	STRAY MARK (Marker smudge in target area for Keenan)	
Audit	А	47	KEENAN	STRIKE OUT	
Review	D	47	KEENAN	STRIKE OUT	
Review	D	13	CHASE	STRIKE OUT	1

Batches	Ballots	Boulder	Already	Net
Reviewed	Reviewed	City	Audited	Reviewed
A: 72-1	10,646	3,028	1,197	1,831
B: 69-51	2,847	852	461	391
C:68-27	6,298	2,377	1,121	1,256
D: 58-1	8,247	2,920	1,331	1,589
E: 79-32	6,350	1,875	836	1,039
F: 75-1	11,101	3,352	1,321	2,031
G: 83-28	8,717	3,062	1,652	1,410
H: 76-1	10,328	3,844	1,737	2,107
	64,534	21,310	9,656	

Net additional ballots reviewed in Ballot Now 11,654

* Resolution discrepancy was attributed to a difference in opinion of voter intent

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Total Discrepancies Identified

2011 Coordinated Election Audit Discrepancy Review

Sorted winners	Candidate	Votes	Margin	Take away .005 from winner	Mandatory recount	What would margin need to be?	Net Change required	Resolution discrepancies	Discrepancy Rate	Adjusted Margin	Does it trigger recount?
1	Jones	12,993		12,928.04				4	0.000307858		
2	Morzel	12,410	583	12,347.95	No	64.965	518.035	10	0.000805802	589	No
3	Plass	10,552	1858	10,499.24	No	62.05	1795.95	4	0.000379075	1852	No
4	Karakehian	10,066	486	10,015.67	No	52.76	433.24	6	0.000596066	488	No
5	Wilson	9,990	76	9,940.05	No	50.33	25.67	3	0.000300300	73	No
6	King	8,654	1336	8,610.73	No	49.95	1286.05	4	0.000462214	1337	No
7	Ziskin	7,129	1525	7,093.36	No	43.27	1481.73	3	0.000420816	1524	No
8	Hondorf	6,657	472	6,623.72	No	35.645	436.355	4	0.000600871	473	No
9	Hoffman	6,616	41	6,582.92	No	33.285	7.715	3	0.000453446	40	No
10	Johnston	3,778	2838	3,759.11	No	33.08	2804.92	2	0.000529381	2837	No
11	Gelband	3,551	227	3,533.25	No	18.89	208.11	3	0.000844832	228	No
12	Hotaling	1,897	1654	1,887.52	No	17.755	1636.245	2	0.001054296	1653	No
13	Keenan	640	1257	636.80	No	9.485	1247.515	4	0.006250000	1259	No
		94,933									
								Discrepancy	Discrepancy		
							Counts	Count	Rate		
						Ballots Audited	26,870	27	0.001004838		
					Boulder (City Ballots Audited	10,938	27	0.002468459		
				Boulde	r City Option	n Boxes Audited	153,132	27	0.000176318		
				Ballots	Visually Inspe	cted in Ballot Now	64,534	26	0.000402888		
				Boulder Cit	y Ballots Inspe	ected in Ballot Now	21,310	26	0.001220084		
			I	Boulder City Option	on Boxes Insp	ected in Ballot Now	298,340	26	0.000087149		

Boulder City Option Boxes inspected in Ballot Now	290,340	20	0.000007 149
Net Boulder City Ballots Inspected w/ audited ballots excluded	11,654	26	0.002230994
Net Boulder City Option Boxes Inspected w/ audited ballots excluded	163,156	26	0.000159357
Totals:	316,288	53	0.000167569 Boulder City Combined Error Rate
All Other Contests Audited	15,932	0	0.00000000
All Other Option Boxes Audited	31864	0	0.00000000
Totals:	348,152	53	0.000152232 Combined Error Rate

Outcome Impact Review - 2011 Coordinated Election Audit

Contest	w	L	Margin W - L	V = W + L	Recount Threshold 0.005*W	Discrepancy Adjustment (1.995*U*V)	Recount Threshold with Discrepancy Adjustment Included	How close is margin to new threshold? M/threshold
Boulder Council Candidates (Vote for 5)	9,961	9,883	78	19,844	49.805	6.6338	56.4388	1.3820
Lafayette Council Candidates (Vote for 6)	2,564	2,202	362	4,766	12.82	1.5933	14.4133	25,115
Longmont Mayor	10,559	10,393	166	20,952	52.795	7.0042	59.7992	2.776
Longmont Council Member At-Large	7,307	5,431	1,876	12.738	36.535	4.2583	40.7933	45.987
Longmont Council Member Ward 1	2,585	1,706	879	4,291	12.925	1.4345	14.3595	61.213
Longmont Council Member Ward 3	3,644	2,123	1,521	5,767	18.22	1.9279	20.1479	75.491
Louisville Mayor At-Large	3,015	2,806	209	5,821	15.075	1.9460	17.0210	12.279
Louisville City Council Person Ward I	1,059	863	196	1,922	5.295	0.6425	5.9375	33.010
Louisville City Council Person Ward II	1,452	419	1,033	1,871	7.26	0.6255	7.8855	131.000
Louisville City Council Person Ward III UNOPPOSED	1,416	0	1,416	1,416	7.08	0.4734	7.5534	187.466
Boulder Valley School District A UNOPPOSED	25,235	0	25,235	25,235	126.175	8.4361	134.6111	187.466
Boulder Valley School District C	21,199	8,362	12,837	29,561	105.995	9.8822	115.8772	110.781
Boulder Valley School District D	17,262	13,472	3,790	30,734	86.31	10.2744	96.5844	39.240
Boulder Valley School District G UNOPPOSED	24,953	0	24,953	24,953	124.765	8.3418	133.1068	187.466
Park School At Large (Vote for 3) UNOPPOSED	92	89	3	181	0.46	0.0605	0.5205	5.7630
St. Vrain Valley School District A	13,332	6,459	6,873	19,791	66.66	6.6161	73.2761	93.795
St. Vrain Valley School District C UNOPPOSED	16,325	0	16,325	16,325	81.625	5.4574	87.0824	187.466
St. Vrain Valley School District E UNOPPOSED	16,769	0	16,769	16,769	83.845	5.6059	89.4509	187.466
St. Vrain Valley School District G UNOPPOSED	16,166	0	16,166	16,166	80.83	5.4043	86.2343	187.466
Fhompson School District A	31	15	16	46	0.155	0.0154	0.1704	93.909
Fhompson School District B UNOPPOSED	37	0	37	37	0.185	0.0124	0.1974	187.466
Fhompson School District C UNOPPOSED	36	0	36	36	0.18	0.0120	0.1920	187.466
Fhompson School District D UNOPPOSED	36	0	36	36	0.18	0.0120	0.1920	187.466
Fhompson School District G	30	19	11	49	0.15	0.0164	0.1664	66.113
Proposition 103 (STATUTORY)	43,910	36,501	7,409	80,411	219.55	26.8814	246.4314	30.065
County Question 1A:	46,193	30,363	15,830	76,556	230.965	25.5927	256.5577	61.701
BOULDER BALLOT ISSUE NO. 2A	19,114	6,402	12,712	25,516	95.57	8.5300	104.1000	122.1134
BOULDER BALLOT ISSUE NO. 2B	13,143	12,997	146	26,140	65.715	8.7386	74.4536	1.9610
Boulder Ballot Question No. 2C	13,560	12,624	936	26,184	67.8	8.7533	76.5533	12.226
Boulder Ballot Question No. 2D	20,088	2,596	17,492	22,684	100.44	7.5833	108.0233	161.928
Boulder Ballot Question No. 2E	15,223	6,428	8,795	21,651	76.115	7.2379	83.3529	105.5152
Boulder Ballot Question No. 2F	20,235	2,164	18,071	22,399	101.175	7.4880	108.6630	166.303
Boulder Ballot Question No. 2G	17,490	4,703	12,787	22,193	87.45	7.4191	94.8691	134.785
Boulder Ballot Question No. 2H	18,397	6,557	11,840	24,954	91.985	8.3421	100.3271	118.014
afayette Question No. 2A	3,275	1,961	1,314	5,236	16.375	1.7504	18.1254	72.4950
afayette Question No. 2B	3,348	2,019	1,329	5,367	16.74	1.7942	18.5342	71.7053
afayette Question No. 2C	3,064	2,160	904	5,224	15.32	1.7464	17.0664	52.969
afayette Question No. 2D	4,596	602	3,994	5,198	22.98	1.7377	24.7177	161.584
_afayette Question No. 2E	4,676	574	4,102	5,250	23.38	1.7551	25.1351	163.198
ongmont Ballot Question 2A	13,239	8,531	4,708	21,770	66.195	7.2777	73.4727	64.078
ongmont Ballot Question 2B	12,168	6,282	5,886	18,450	60.84	6.1678	67.0078	87.840
THOMPSON SCHOOL BALLOT ISSUE 3A	51	20	31	71	0.255	0.0237	0.2787	111.216
PARK SCHOOL BALLOT ISSUE 3B	136	92	44	228	0.68	0.0762	0.7562	58.184
COAL CREEK ISSUE NO. 4A	188	152	36	340	0.94	0.1137	1.0537	34.166
COAL CREEK ISSUE NO. 4B	187	151	36	338	0.935	0.1130	1.0480	34.351
PINE BROOK HILLS ISSUE 5A:	420	84	336	504	2.1	0.1685	2.2685	148.116
CRESTVIEW ESTATES ISSUE 5B:	139	21	118	160	0.695	0.0535	0.7485	157.651
Mountains Forest Question 5C:	3,272	2,285	987	5,557	16.36	1.8577	18.2177	54.178
Rocky Mountain Fire Ballot Question 5D	2,107	2,009	98	4,116	10.535	1.3760	11.9110	8.227

U = Combined Discrepancy Rate Derived from City of Boulder Council Race 0.000167569

U=uncertainty as a % of V Assume worse-case and that all U is such to reduce M

Without uncertainty, the recount equation is M <= 0.005WWith worse-case uncertainty the ecount equation becomes (W-UV)-(L+UV) <= 0.005(W-UV) or W-UV-L-UV <= 0.005W - 0.005UV or M <= 0.005W + 1.995UV

For this year's audit we have chosen to apply the combined error rate derived from the Boulder City Council Race.



Office of the Clerk & Recorder

1750 33rd Street · Boulder, CO 80301 · www.BoulderCounty.org

Hillary Hall, Boulder County Clerk & Recorder

November 14, 2011

The 2011 Coordinated Election audit reviewed six races/issues. A total of 26,870 individual contests were audited. No issues were identified that impacted the outcome of any contest.

The only audit discrepancies identified were associated with the Boulder City Council race. In the Boulder City Council race, a few voters crossed out one or more candidates' names but undervoted the contest and therefore the system did not automatically detect and flag these ballots for resolution. This issue is applicable only in contests where voters can vote for more than one choice. In addition, there were unintentional and ambiguous marks that caused discrepancies. The error rate for the 10,938 Boulder City Council ballots audited was .000189. It is important to note that all discrepancies identified in the audit would be identified in a recount.

The information was presented to the audit board and it was decided that a minimum of 5,000 additional Boulder City Council ballots would be reviewed for the strikeout/undervote issue to verify the error rate. An additional 63,242 ballot images were reviewed and the audit board concluded that the discrepancies identified did not impact the outcome of the City of Boulder contest.

The only other contest in Boulder County that allowed voters to vote for more than one choice was the Lafayette City Council race. While this race was not initially selected as part of the audit, staff reviewed this race after discovering the Boulder City Council strike-out/undervote discrepancies. In reviewing the impact to the Lafayette City Council race, staff applied the error rate from the Boulder City Council race in conjunction with the wide margin and a sample set review of ballots. This issue had no impact on the outcome for the Lafayette City Council race and no additional audit was necessary.

The audit board concludes that the 2011 Coordinated Election Audit verifies no change in the election outcome and therefore does not recommend any recounts for the 2011 Coordinated Election.

The 2011 Coordinated Election audit board accepts the results of the audit, as presented by the Boulder County Clerk and Recorder's office.

1

	12	11/14/2011
Alisa Lewis	Canvass Board Representative	Date
	2)	
		11-14-2011
Valeria Skitt	Canvass Board Representative	Date
Hillowy Hell	98) 	11-14-2011
Hillary Hall	Boulder County Clerk & Recorder	Date
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