How Our Votes Are Counted

The League of Women Voters Observes Election Processes in Alameda County In 2005

October 9, 2006

How Our Votes Are Counted:
The League of Women Voters Observes
Election Processes in Alameda County In 2005

Table of Contents

Preface 3
1 Election Day: Opening & Closing the Polls 3
Introduction: Public's Right to Observe 4
Update on Election Process for June and November 2006 5
Security of Election Equipment and Records 5
"Chain of Custody" of Election Records 6
Security of Voting Machines 6
2 Logic and Accuracy Testing 7
The Logic and Accuracy Board
The Logic and Accuracy Test 7
Importance of the Board of Logic and Accuracy 9
Adequacy of the Election Systems Tests 10
3 What Happens to Your Absentee Ballots: Processing and Counting 11
Overcoming Practical Problems
Checking Signatures
Opening Envelopes
Unfolding and Sorting Ballots 12
Reading and Counting Ballots
Counted but not Totaled or Reported 13
Visitors
On the Job Training and Work Environment
4 When the Polls Close 14
At the Polls
Closing and Totaling Each Voting Machine
Counting and Reconciling the Votes
Packing Up Memory Cards, Records and Supplies
To the Return Center and then to the Accumulation Site
Accumulating Votes
Counting and Reporting the Vote in the ROV Computer Center 15
Problems Counting the Vote
Reporting the Vote by "Sneakernet' and Secure Lines 16
Gathering In All Election Materials
5 The Post Election Canvass:
Post Election Counting and Double Checking 16

Reports of Early Results
Are absentee or paper ballots voted at the polls always counted?
The Official Canvass 17
Your Right to Observe the Canvass
Preparing Ballots and Checking Election Documents
Sorting Ballots
Checking and Balancing the Records 18
The Scene at the Start of the Canvass 19
Checking Provisional Ballot Envelopes
Counting Provisional Ballots, Paper Ballots Turned in
at the Polls and Absentee Ballots 20
Counting Write-In Votes
Remaking Damaged Ballots
Updating Vote Totals

6 The 1% Manual Tally 21
California Election Code on the One Percent Tally
How the Election Code Requirement is Carried Out
1% of Precincts Drawn from 805 Polling Places 24
Current Method Described & Discussed in Detail
A Poor Sample 25
Supplemental Precincts Picked
ROV Selects About 1% of Paper Ballots 26
How the Manual Tally is Done
Some Conclusions and Suggestions about the 1% Tally 28

How Our Votes Get Counted:
The League of Women Voters Observes
Election Processes in Alameda County In 2005

Preface

- *The League of Women Voters of the United States believes that voting is a fundamental citizen right that must be guaranteed.*
- *The League of Women Voters believes that voting technologies must be secure, accurate, recountable and accessible.*

In keeping with these central League policies, members of the Alameda County Council of the League of Women Voters took the opportunity provided by the November 2005 Special Election to observe closely how ballots were handled and counted in the County. They knew that, as of January 1, 2006, new federal and state laws would require important changes in the election equipment and processes—in particular, all electronic voting equipment would be required to have a "paper trail" or VVPAT that could be counted if the electronic count was called into question. The Diebold TS touch screen system and machines used by Alameda County in the November 2005 election did not provide for a "paper trail." Thus, the system observed by the League members included one of the major flaws—lack of a paper trail-- that had inspired the new election legislation. In addition, the Diebold company and its systems had been widely criticized as having serious security flaws.

This detailed report describes how the Alameda County Registrar of Voters handled our ballots and protected our vote using its then current equipment and staff, following the then current federal laws and state elections code and regulations from the Secretary of State. It also describes the protocols and practices of the Alameda County Registrar of Voters Office.

Overall, League observers found that the ACROV was conscientious and meticulous in carrying out its work in November 2005. Many careful protocols were in place to ensure that every vote was counted accurately. The ACROV successfully met the challenge of using a temporary system for the June 2006 Primary Election. In that election, nearly all votes were cast on paper ballots—either as absentee ballots or in the polling places—plus touch screen machines equipped with paper records at 8 locations throughout the county.

This report provides useful information about how the ACROV may handle future elections with new equipment. Election equipment and software are only part of an election system. Well trained staff and systematic procedures are key parts of an election system and are essential to carry out a secure and accurate election. Because of its experienced staff and careful protocols, the ACROV has the ability to adapt successfully to the new equipment recently ordered by the County and to develop new protocols that may be needed to compensate for any weaknesses of the new equipment and its software.

Note: The League of Women Voters of the United States has published excellent reports about and testimony advocating for election reform and voting rights, including the need to ensure the development of voting technologies that fully meet these goals through a much more serious R&D commitment, as well as clear performance standards. League publications may be found under these topics on the LWVUS website http://www.lwv.org. The League of Women Voters of California is also active in public information and advocacy in the areas of voting rights, election systems and related topics. Information may be found at http://ca.lwv.org.

How Our Votes Get Counted:
The League of Women Voters Observes
Election Processes in Alameda County In 2005

Election Day: Opening & Closing the Polls
Introduction

Public's Right to Observe The Public has the right to observe many election procedures. Members of the League of Women Voters [LWV] are often the only members of the public observing these procedures, although other citizens and citizen watchdog groups do observe some of these activities. Recently, League members in Alameda County, California, have watched the Alameda County Registrar of Voters Office [ROV Office] carry out the General Election in November 2004 and the Special State Election in November 2005.

We found the Alameda County Registrar of Voters Office conscientious in enabling League members and other members of the public to observe the activities we describe in this report and to answer questions about these activities. However, the physical layout of the offices in the basement of the Alameda County Courthouse is crowded and cramped; many different staffers carry out many different tasks at the same time. Public visitors are escorted through the office by staff and are generally confined by ropes to a small area where they can see but not interfere with the activities. From this area, visitors can look through a large glass window into the computer room that houses the central election computer and other equipment. Visitors can look around the large room where paper ballots are processed and prepared for counting and other tasks are carried out. From the public observation area it is not always possible to see exactly what is happening, what is written on pieces of paper, what is typed into or shown on scanner display screens or computer screens.

In the following reports, we describe what we have seen and understood. For details that we could not observe directly, for example, a description of how election results travel from outlying offices to the ROV's computer and from the ROV to the Secretary of State, we rely on interviews with ROV staff and written materials from their office and other sources. Many of the procedures are mandated by the Secretary of State and/or the state Election Code, so what happens in Alameda County should resemble what happens in many other California counties.

After January 1, 2006, the Alameda County Registrar of Voters planned to purchase new election equipment which would comply with new federal and state laws and regulations.
Of particular note, all voting equipment must have a voter verified paper trail [VVPAT] and disabled voters must be able to vote independently and privately. in addition to counting the ballots, the scanners at the polling places will verify the ballots, and allow for 'second chance' voting. This means that if there is an illegal vote (generally voting for too many candidates in a race), the scanner will give an error message, and allow the voter to correct the error.

Update on Election Process for June and November 2006 as of August 11, 2006:

Although the Alameda County ROV had begun the process of purchasing new equipment in late 2005, they were not able to complete it in time to purchase new equipment that could be used for the June Primary Election. Delaying factors included the failure of the Secretary of State to certify several potential systems until spring.

June 2006 Primary Election: As a temporary solution, the ACROV adopted a system under which most voters would vote on paper ballots—either as absentee voters or by filling them in at their polling places. Electronic touch screen machines that did include a "paper trail" or VVPAT--Voter Verifiable Paper Audit Trail--were installed at 8 locations in the county—the ROV Office and seven City Clerks' offices. These machines were available for early voting and on Election Day, so that voters who wished to vote on touch screen machines, including disabled voters, could do so. Taxi vouchers were available at precincts to transport such voters. The mechanical scanning and counting of the paper ballots was all done at the ROV Office. Acting ROV Dave Macdonald reported that only about 1500 voters voted electronically. The June election process was lengthy and required additional staff, but was reported as successful.

November 2006 General Election: After the June election, the Board of Supervisors completed selection of new election equipment. The new equipment, from Sequoia Voting Systems, is expected to arrive, be tested and used in time for the November 2006 election. The new equipment will enable voters at each precinct polling place to vote either on paper ballots or on a touch screen machine. Paper ballots will be read and counted by an optical scanner. Votes will be recorded electronically; paper ballots will retained for delivery to the ROV. Touch screen votes will be recorded both electronically and on a paper record which will be stored in the machine. Both types of machines will record their totals on removable memory cards; both types of machines will have paper records.

Security of Election Equipment and Records

The reports that follow show that the Alameda County Registrar of Voters office is very careful to keep election equipment, records and materials secure and accounted for. This is particularly notable when you consider that at the election we describe, in November 2005, voting machinery, paper ballots, poll registers and more were distributed to 805 polling places and then collected again without any significant breaches of security being reported. A large number of temporary Poll Supervisors and workers are trained, sworn in and hired for very modest pay to make the election possible. They make surprisingly few mistakes and, because of the elaborate record keeping and checking system, these mistakes can be identified and corrected.

"Chain of Custody" of Election Records

ACROV record keeping seems to be meticulous; the system provides checks and balances; records are double checked; equipment is locked up.

From the distribution center to polling place: Each Poll Inspector, that is, supervisor, of an individual polling place, picks up and signs for the paper ballots, rosters, electronic memory cards and other materials. The Poll Inspector is responsible for their security from the time he or she picks them up from a distribution center on the Saturday morning before the election. The Inspector brings them **to the polling place** on Election Day. The Inspector and other poll workers sign in and out on Election Day.

From the polling place: The Inspector and a second poll worker deliver the paper ballots, the memory cards that record the vote and other vital election records **to one of the 27 return centers.** They sign in when they deliver the materials. Memory cards are then transported by County workers **to the three accumulation sites and the ROV office**, which serves as the fourth accumulation site.

Electronic Vote Report to ROV from the Accumulation Sites: The votes recorded on the memory cards are transferred to the machines that consolidate the vote records; the results are sent electronically—on secure lines—to the ROV office.

Return to the ROV Office: The memory cards themselves are brought to the ROV office that night or the following day. The paper ballots, registers and other materials from the 27 return centers are also brought in to the **ROV office** the day after the election by ROV staff.

Security of Voting Machines

Touch screen machines are tested and prepared for the election at the ROV warehouse. The machines are delivered from the ROV warehouse to the hundreds of polling places on wheeled carts, locked to the cart with cables with security coded locks and wrapped in strong transparent shrink wrap and with a packing slip identifying the machine ID numbers. They are unwrapped and set up by the poll workers the night before the election. They are plugged in and locked up in their individual cases. At 6 am on Election Day the poll workers unlock the machines and go through the routine that readies them to receive votes. This routine requires the use of keys that have stayed with the Inspector and of a security code. The machines are checked to make sure that no votes have been cast on them. [See **Logic & Accuracy Testing** for a description of the routine.]

At the end of the day, poll workers go through the closing routine to close each machine and total the votes cast. The machines are locked up, put back on the cart and locked to the cart. [See **What Happens When the Polls Are Closed.]** According to the ROV's protocols, the machines are picked up by a trucking company and delivered to the ROV warehouse as soon after the election as possible.

2 **Logic and Accuracy Testing**

The Logic and Accuracy Board At each election the ROV appoints four citizens to a Logic and Accuracy Board —two from the Grand Jury and two from the League of Women Voters. The job of the Board is to observe the election vote count as representatives of the public at large. The Logic and Accuracy Test is the Board's first opportunity to carry out its task. At the November 2005 three Board members served.

The Logic and Accuracy Test The Board members, with ROV staff, run through the voting procedures as a "logic and accuracy test" of the touch screen voting equipment and other procedures and equipment that together make up the voting system. This test familiarizes them with the vote casting and counting process that will be used at that election and enables them to observe that the system is functioning properly. The test prepares Board members for their job when the ballots are counted. On election night, the four Board members are authorized to observe the ballot count closely, to walk around the computer room and processing areas, to ask staff questions and to get answers. Other members of the public may only watch the computer room through a glass window.

Acting Registrar of Voters Elaine Ginnold said she thinks of the Logic and Accuracy Test as a snapshot of the election, a run-through of the basic process of counting votes from the touch screen machines. The Logic and Accuracy Test attended by the Board and open to the public is only a small part of the array of tests of the system carried out by the ROV staff. These tests cover both voting on touch screen machines and on paper ballots. Ginnold reported that even this simple procedure has, in the past, caught a problem which she was then able to have corrected before the election proper.

At 4 pm on Thursday, Oct 27, 2005, Acting Registrar Elaine Ginnold, several staffers, including Thomas York, Manager, Information Technology Division, and Charles Corum, Manager, Registration & Elections, and three members of the Board of Logic and Accuracy met in the central computer room in the ROV's basement offices**.** The Board members were sworn in, vowed to uphold the Constitution, signed the oath.

Picking the Sample Precincts for Testing. Registrar Ginnold told the committee members that, for this special election, there were 7 distinct ballot types or layouts, since some cities and districts were electing council members or school board members and four jurisdictions had ballot measures. Members picked seven precincts from a list of all available precincts, making sure that all seven ballot types would be tested. The tests were carried out on two Diebold touch screen/Direct Recording Equipment or DRE machines. The machines were in test, not election, mode, so that the test votes would not be recorded as real votes in the Special Election.

The Committee members worked in teams to "vote" in each of the selected precincts. The test mode permitted the committee to scroll through the whole list of precinct numbers and pick the pre-selected precinct. After that decision, all the procedures matched those carried out by poll workers at each poll on election day.

Opening the Test Polling Place First, the team unlocked the little door on the top of the machine so they could see the adding machine style roll on which totals are printed. They printed out a report of votes cast in that precinct on that machine--to make sure that no votes on any item were already recorded in the machine. "Zero" votes cast is the desired answer for each item. The paper record was rolled up. The little door was locked.

Voting
The following process was carried out for each of the 7 test precincts of the 7 ballot types that the group had previously selected. The team was given a "voting card" for the specific precinct to insert in the machine. The card identified the voter as entitled to vote on the particular ballot of that precinct. The card clicked in; the machine was ready to receive one vote. One person cast the ballot on the touch screen. Another marked each ballot choice on a paper copy of the appropriate sample ballot to record how his/her partner voted on the item. After one ballot was cast, the voting started over in the same precinct; the next ballot was cast.

The teams "voted" three ballots in each test precinct according to a pre-determined voting pattern: on the first ballot—'yes' on all measures. On the next two ballots—'no' on all items. In the case of candidates, the team cast 1 vote for the first candidate on the list, 2 votes for the second, 3 votes for the third and so on. Where the ballot permitted write in candidates, the team tested each write-in position once. For example, on a mayor's race, testers typed in one name in the appropriate place. Where a city council race allowed for 2 votes, testers typed in 2 names, one for each position on the ballot. As one person selected the items on the screen, the other watched carefully. The "voter" and the observer reviewed the summary screen, then touched "cast ballot" on the touch screen.

Closing the Test Polling Place After all ballots were voted in each test precinct, the voting machine was closed for that test precinct. The usual closing procedures were followed. A small locked door on the right side of the machine was opened. The team instructed the machine to close the poll and total the votes.

The complete vote record of each individual voter is recorded on the computer memory built into the machine; this record remains in the machine and can be consulted if all other records fail. This complete record is also recorded on the removable memory card, which is the source of the numbers counted to yield the official election report.

In the November 2005 election vote totals for each machine were printed out on the paper roll, not individual ballots. The totals for each machine were consulted later by the ROV Office to check the accuracy of the vote totals. In future elections a printed paper record will be a complete record of the vote as voted by the voter. The voter will have the opportunity to check or verify that the printed record exactly matches his/her electronically cast ballot—before actually casting the electronic ballot. So counting of the paper records will actual mean counting an independent permanent record that reflects the vote intended by the voter.

The next step in closing the polls was to open the small locked door on the top of the voting machine to permit the team to see the paper roll and pull its end out of the enclosure, so it would not jam. The voting totals for the machine were printed. The L&A Board member signed the

tape. Then the memory card was removed from the machine and walked over to the "accumulator."

Accumulating the Votes for Each Precinct Since each actual precinct has more than one voting machine and results are reported by precinct, specially programmed touch screen machines are used as "accumulators." These machines add up the totals for each precinct; they accumulate or compile the totals from all the machines in each precinct.

Transmitting & Reporting the Totals for Each Precinct In the test, the accumulator uploaded,that is, sent the totals by hard wire to the central elections computer. For the test, all the voting machines and computers were in the central elections computer room, where all the test votes were totaled and reported.

Checking the Vote Totals The teams checked the totals from the central computer against the totals tapes toconfirm that the vote totals at each stage were correct.

Saving the Test Materials The paper results and memory cards used for the test were sealed into an envelope and signed by the L&A Board members present. The envelope was put in a secure place. The public logic and accuracy test had been completed. If questions about the test arise, the contents of the envelope can be rechecked. If, during the election, the ROV office suspects problems with memory cards, the cards used in the test can be removed and checked, since the program was known to be functioning correctly at the time of the pre-election L&A test.

Importance of the Board of Logic and Accuracy

The Board of L & A plays a potentially significant role as citizen observers of vote counting on election night. They serve as witnesses of the activities of the staff and could alert the staff or the public if they observe problems. They can also observe whether staff seems to deal with problems appropriately as they come up. Sukey Wilder, a member of the League of Women Voters of Oakland and a computer systems manager, has served on the Board since the days of punch card voting. She reports that every election night is different. Unanticipated problems come up. She has had the opportunity to see how staff handle such problems.

For example, she observed a problem during the counting of the special recall election in 2003 when 135 candidates were running for governor. Then Registrar Brad Clark and then Assistant Registrar Elaine Ginnold noticed that, in precincts that were usually strongly Democratic, Cruz Bustamente, the Democratic front runner, was not getting many votes, but a relatively unknown candidate was getting many votes. This prompted them to check the electronic scanners that were reading the paper ballots and to have some ballots hand counted. The hand count revealed that the vote counting program was not counting the paper ballots correctly. The program was fixed. The count was redone to get an accurate vote.

Wilder finds that experienced ROV staff who are familiar with the probable trends in their county are crucial to running an accurate and secure election. She has also observed that problems that come up at one election have not reoccurred at the following election. The staff has taken action to make sure that problems they know about do not recur.

Adequacy of the Election Systems Tests

Significance of the Logic & Accuracy Test

How meaningful is the Logic and Accuracy Test as a test of the logic and accuracy of current voting methods? This is a modest test created for earlier days and simpler methods. David Wagner, professor of computer science at the University of California and a member of the new national consortium ACCURATE, A Center for Correct, Usable, Reliable, Auditable and Transparent Elections, observes that L&A tests are not very meaningful when it comes to deliberate fraud. However, when it comes to unintentional errors, L&A tests can detect accidental errors pretty effectively. For instance, on optical scan machines, ballot position 17 might be printed on the paper ballot as a vote for candidate A, while the optical scanner's electronic configuration file tells it to count it as a vote for candidate B. L& A tests can detect such errors. Accidental errors are, Wagner suggests, probably more common than deliberate fraud.

Are our election systems tested well enough to insure an accurate and secure election? This is question that all citizens want answered. Election machines and programs are a key part of the election system; their accuracy and security cannot be established by visual observation alone. The League observers compiling this report do not, therefore, attempt to evaluate the testing or the election equipment itself in this report. Acting Registrar of Voter Elaine Ginnold reported that the staff carries out extensive tests on both the absentee and the touch screen voting systems before the election.

Responsibility for the accuracy and security of voting machines, however, rests on the Secretary of State and the federal Election Assistance Commission. The Secretary of State's office has technical experts and has expanded its testing. Testing on the federal level is carried out by independent testing companies paid by the manufacturers of the equipment. Testing is carried out according to advisory standards set by the federal Election Assistance Commission.

The standards and testing of election equipment have been inadequate in the past; they are coming under increasing scrutiny. The work of ACCURATE, the new national consortium of university computer security experts, should provide further scrutiny and safeguards. Watchdog organizations with technical expertise have focused on the accuracy and security of elections. Public criticism of failures of the election system in recent elections has prompted changes. Citizen can keep looking, asking questions and urging improvement so that public officials will continue to be vigilant and to improve the systems.

3 What Happens to Your Absentee Ballots: Processing and Counting

The Registrar had announced Tuesday, Nov.1, 2005, at 8:30 am, a week before the Election Day, as the start of the count of absentee ballots. Absentee Ballots were continuing to pour into the Alameda Registrar of Voters Office. At 9:30 am staff were preparing the ballots to be counted.

Overcoming Practical Problems All the procedures combine hard work by temporary and permanent staff and use of specialized machines. The awkward basement layout of the Registrar's office does not permit an easy logical flow of documents; many spaces have multiple uses. In particular, absentee ballots at all stages of processing are loaded on big carts and wheeled into the computer room each night for security. They are returned to the appropriate work area the next morning. The carts and trays of ballots are moved often—to put them in the right place, to get them out of the way, to do the next step of the process, to bring them back to wait for the next step of the process.

The processing system seems well thought out and carefully carried out, so as to avoid any problems that might be created by the awkward back and forth movement of the ballots. Check lists are provided to workers and supervisors. Trays of envelopes and ballots are labeled to indicate their stage of processing. When problems are spotted, supervisors make adjustments to the procedures and give new instructions. Despite the crowded and awkward basement setting and the rather tedious nature of the work, the work environment seemed friendly and cheerful.

Checking Signatures The big yellow absentee ballot envelopes, signed by each voter on the outside, are delivered to the Registrar's Office. Numbered trays packed with envelopes go to staffers at several scanning machines. Envelopes enter the machine, the image of the signature is scanned and each envelope is stamped with a unique identifying number. Envelopes return to the tray in numerical order. The signature images are stored electronically and called up by staffers at a bank of computers in a different part of the office. A worker reads the name of the voter and pulls up an electronic image of the voter's signature from his or her voter registration form. The staff member compares the two signatures and clicks "accept" or "reject." A supervisor reviews doubtful signatures.

Acting Registrar Ginnold said that their policy is to count the vote if possible. However, in cases where it is clear that someone else has signed, the appropriate envelope is removed from the tray and the vote is not counted. Ginnold reported that when the signature is rejected or has changed a great deal, the voter is sent a new registration form to get a current signature. The ROV hopes to acquire new machines that would enable up to 60% of signatures to be checked by computer; only about 40% would need to be check by a human worker.

Opening Envelopes Trays of envelopes with approved signatures are labeled and carted to the back office. Batches of envelopes are lifted onto a tray on a machine that vibrates them to shake the ballot down so it won't be damaged when the envelope is opened. Trays of these envelopes go to workers at two machines. They put batches of envelopes in; the machine slits open each envelope and moves it to the worker who reaches in, takes the ballot, discards the envelope,

stacks opened ballots in empty trays. The whole process happens quickly; the workers did not and really would not be able connect the identity of the voter with the content of his or her vote. After this point, the ballot can no longer be identified as belonging to a particular voter.

Unfolding and Sorting Ballots Clerks at five worktables go through the trays; they unfold the stiff four-fold ballots. If voters have failed to remove their stubs, workers remove them and clean the edge. Then they sort them into three trays: "good" [= good or blank], "damaged" [= ripped, cut, timing marks cut off, tape on ballot, voter signed or initialed ballot, red or green pen or pencil used] and "write in" trays.

When "good" trays are filled, staffers carry them to a long table where three workers called "counters" smooth and flatten them and count them into stacks or batches of fifty, then combine the stacks of 50 into trays of 500. Within each tray of 500, colored paper sheets separated each stack of 50 ballots. These trays are put aside, ready for the computer reading and counting.

This, at least, is the system when it is up and going. On the morning Nancy Bickel observed, the "counters" and, from time to time, the computer supervisor and staff, were all pitching in to sort ballots, so that they could accumulate a large enough number of processed ballots so that, once the computer count started it could continue without interruption.

Reading and Counting Ballots

About two in the afternoon, Elaine Ginnold and her staff decided they could began to count votes. Four ballot reading machines—scanners-- were lined up on one side of the computer room, just under large glass windows. Observers could watch through a window as an experienced staffer, assisted by computer staff, began the count. A tray of 500 ballots was placed near the scanner; colored paper separated each stack or batch of 50 ballots.

The operator took the first stack of 50 from the tray and placed it in the feeder at the front of the reader. The scanners resemble flatbed copiers with paper feeders at one end and trays to catch ballots at the other end. The reader can "read" both sides of a ballot presented in any orientation. After a few of the stiff ballots rolled through, the machine stopped. The operator studied a readout on the machine—not visible to observers—talked with the other staff, plucked out the last ballot that was fed through and studied it. Apparently the staff determined that a rough corner had caused the problem. The operator turned the ballot in another direction; it fed through smoothly.

This stop, study, restart process was repeated as little problems were studied and solved; a worker in training watched and then tried it herself. Gradually, the process got smoother. But even at its fastest, it had frequent stops and starts. From time to time, a ballot that "kicks out" is put into a container of "damaged" ballots for later scrutiny and counting. The Registrar explained that, when the ballot reading machines stop, they do not count the last ballot through. The machines keep a correct count of the number of ballots. The report of the votes on the ballot is not sent to the central computer until all individual ballots are in the group are read or put in the "damaged" ballot container. The operator numbers and keeps a record of each batch of 50. The number of counted and damaged ballots in a batch must equal 50 as the batch is recounted.

At the start of the counting, described above, the first batch of 50 counted turned out to be 58; the machine reported and a hand count confirmed this count. Clearly, the workers doing the counting were not counting carefully enough. So supervisors instructed the workers doing the counting to count in batches of 10 to get more accurately counted stacks. LWV observer Nancy Bickel did not stay until the end of the count of the first 500. Empty boxes sat ready to receive each completed batch. Each batch of 500 is put in a box. The box is sealed with tape, signed, dated and put away, so that ballots will not be counted more than once.

Counted but not Totaled or Reported The processing and counting of Absentee Ballots goes on until 8 pm on Election Day. At that time the Registrar will request that absentee ballots be totaled and will report the totals. Any absentee ballots not counted by that time will be counted and reported after Election Day. Electronic ballots cast at the polls will be reported and counted during election night. All other ballots will be counted and reported in the three to four weeks following the election.

Visitors Bruce McPherson, the Secretary of State, visited the Registrar in mid-morning. With an small entourage of Secretary of State, Registrar of Voters and Board of Supervisor staff, Ginnold showed the Secretary the various rooms and activities and introduced some of her staff. Later a reporter and cameraman from KTVU Channel 2 taped a brief interview with Ginnold. Ginnold reported that the absentee ballot count was high; turn out at the polls would probably be low; she couldn't predict the impact of this pattern on the outcome of the election. The reporter said he would do early voting at the ROV Office, as he did every year when he did this story.

On the Job Training and Work Environment Since temporary county workers do many of the ballot handling jobs, training was part of the work day. On each work table, large sheets with instructions in large type described what types of ballot were to go into each of the three sorting trays. From time to time, the supervisor would speak with individual workers or stop all the noisy machines to do additional training, for example, showing a sample "write in ballot," so that workers understood that only ballots that actually had names written in by hand were to go in the "write in" trays.

The work environment seemed pleasant, staff friendly, supervisors polite, patient and clear in their explanations. Workers concentrated on the rather repetitious work, with relatively little chatting; no earphones for musical distraction were visible. Lighting was bright. Workers could use adjustable desk chairs. Groups of workers left and returned regularly for morning, afternoon and lunch breaks. A supervisor discussed with one machine operator that she might be doing too much repetitive work and arranged for another worker to take over. He announced that workers would work overtime during the week and on the weekend. Wednesday and Thursday hours would be 8:30 am to 7 pm; Saturday and Sunday hours 9 am to 3 pm.

4 When the Polls Close

At the Polls

The last voter is gone, the polls are closed and the flags are taken down, but the day is not over for the poll workers. Following careful written instructions and training from the Registrar of Voters Office, the poll workers divide into two teams to carry out all the tasks of closing the poll. The procedures described below are like those carried out for the Logic and Accuracy Testing. [See Logic and Accuracy Testing.]

Closing and Totaling Each Voting Machine

Each polling place has two to six or more touch screen voting machines. One team closes each voting machine and directs the machine to total the votes for the day. Each vote cast on each touch screen machine had been recorded on the memory card and in the computer's own memory. Totals are recorded on the memory cards and printed out on the paper tapes. The total number of voters who voted on each machine is recorded on the "certificate of votes" card and put into the "official returns pouch." Memory cards and tapes are removed. The machines are locked and put away. Everything put out in the morning has to be packed up and taken down. The excitement at the start of Election Day has been replaced by tiredness from the 14 hour day.

Counting and Reconciling the Votes

The number of voters who signed the roster will have to equal the number of voters who used each machine plus the provisional voters and those who chose to use paper ballots at the poll. Unused ballots are counted to make sure that none have disappeared. Voted ballots and spoiled paper ballots are subtracted from the total number of paper ballots present at the polls that morning. Each and every vote must be accounted for. Every poll worker hopes the accounting balances the first time.

Packing Up Memory Cards, Records and Supplies

When everything adds up, poll workers pack and seal all the items in the appropriate box, baggie, envelope or case. Each vote cast on each touch screen machine was recorded on the memory card and in the computer's internal memory.

Now the poll workers put the memory card and the paper tape reporting the vote totals taken from each machine in the official returns pouch. Absentee ballots, paper ballots cast at the polls, and provisional ballots go into their own envelopes and then into the roster bag along with the index and all the rosters. The miscellaneous items go into the big gray ballot case. Before leaving the site poll workers post returns from that polling place on the outside of the polling place for review by members of the public.

To the Return Center and then to the Accumulation Site

The Poll Inspector and one other poll worker drive to one of the 27 Return Centers. They deliver and sign for the pouch with the memory cards, rosters and the other items. County workers drive the memory cards from all the polling places to one of the four accumulation sites.

Accumulating & Transmitting Totals

The next step goes on until the wee small hours in the morning. Memory cards from polling places in Alameda County arrive at four accumulation sites-- in Dublin, Fremont, Hayward, and the Registrar of Voters Office in downtown Oakland itself. Here the totals on memory cards from each precinct are added or "accumulated" to get results for each precinct. Precinct totals are uploaded—on secure lines-- to the ROV's central computer in the basement of the Courthouse.

At the accumulation site in the ROV Office, as in the other sites, workers sit at touch screen voting machines programmed to "accumulate" or total results from each precinct. Workers insert the memory cards from each precinct and take them out. Cards are kept in boxes labeled by precinct, so they can be recounted or tested if necessary. Information from the accumultors goes directly—on a secure line-- to the central computer in the ROV computer center.

Counting and Reporting the Vote in the ROV Computer Center

Counting of the votes is done on a separate machine using Gems software. Only staff and members of the official observer panel, the Logic and Accuracy Board, are allowed inside the central election computer room. Members of the L&A Board may see everything, ask questions of staff, and require answers. The Board is generally composed of 2 members of the League of Women Voters and 2 members of the Grand Jury.

Members of the public and press can watch through the windows between the computer center and the ROV offices. If many people want to observe, they are escorted into the observation area adjacent to the window in small groups on a rotating basis, so everyone gets a chance to observe.

Problems Counting the Vote

During the November 2005 Special Election, Sukey Wilder, a League member serving on the Logic and Accuracy Board, reported that she observed only small glitches. Some poll workers had forgotten to instruct some electronic voting machines to "close" and "total" the votes. Memory cards from such machines would not report their totals until a staff person electronically "closed" the polls so the votes could be accumulated.

Reporting the Vote by "Sneakernet' and Secure Lines

From time to time, results from the central computer are recorded on a computer disk. The disk is hand carried –that is, taken by " sneakernet"-- to another computer. This computer connects to a secure line to the Secretary of State's office--so results can be posted on the SoS website--and to the media center and public viewing area at the conference center across the street from the courthouse. Public and press watch the returns as they are posted on the Registrar of Voters and Secretary of State websites. ROV staff answer questions from the press.

At two or three in the morning all votes cast electronically that day, as well as all absentee ballots counted before election day, have been reported. Election Day ends.

Provisional and absentee ballots collected on Election Day will be scanned and added to the tally in the days following. The count is completed in about three to four weeks. The deadline for the official report is 28 days after Election Day.

Gathering In All Election Materials

In the next few days, all the materials from the polls, the return centers, and the accumulation sites will be returned to the ROV office or to the warehouse. At these locations equipment will be checked, records reviewed, reconciled, checked and cross checked.

5 The Post Election Canvass: Post Election Counting and Double Checking

Reports of Early Results

On Election Day websites, radio, tv and newspapers rush to announce the winners. News organizations base these predictions on exit polls—results obtained by asking voters how they voted as they come out of a sample of polling places. Later that night, after the polls have closed, the Registrar of Voters and the Secretary of State report actual results as they count electronic votes. The press confidently announces winners and losers, getting the results from the Secretary of State or local ROV websites or offices. Only when results are close does the press generally make clear that these totals are provisional and incomplete, that final results will only be available in some days and that official results will only be announced 28 days after Election Day.

The counts reported on election day include only absentee ballots counted before Election Day and votes cast and counted electronically on or before Election Day.

Are absentee or paper ballots voted at the polls always counted? Yes. They are counted in Alameda County and counted with great care. State law says they must be counted. On Wednesday, the day after the election, ROV staff continue to count absentee ballots received before the election, but not yet counted. By Thursday, all the paper ballots turned in at the polls have been brought into the office. Then the official Canvass begins.

The Official Canvass

The count of these materials begins with the official post-election canvass the Thursday after the Tuesday of the election. For the Special Election the Canvass was set for Thursday, November 10, 2005 at 8:30 am. The Registrar's Office summarizes the canvass activities as: balancing the rosters, duplicating damaged ballots, counting the absentee ballots turned in at the polls, verifying and counting provisional ballots. To this should be added counting the paper ballots voted at the polls by those who didn't wish to vote electronically. In Alameda County, the Registrar had provided a large supply of paper ballots at each polling place for this purpose and as a back up in case voting machines did not work or lines for machines were long and voters want to vote and leave.

In Alameda County, votes cast were distributed as follows:

Electronic ballots		
cast at the polls	**189,617**	
cast in early voting	**1,985**	
Total of all electronic ballots	***191,602***	***50%***
Paper ballots		
Absentee ballots	**177,448**	
Provisional ballots cast at polls	**16,119**	
Total of all paper ballots	***193,567***	***50%***
TOTAL BALLOTS CAST	**385,169**	**100%**

Your Right to Observe the Canvass Observers may arrive to observe during office hours. They enter the door labeled "Registrar of Voters, " sign in at the desk, receive a visitor's name tag and wait to be escorted to the viewing area. After a short wait, observers are escorted through the front offices, across the internal driveway shared with the Sheriff's office and into the back offices adjacent to the central computer room. Observers must remain in a small enclosure defined by black chains. This permits them to look through large windows into the central computer room and to look around them at the various stages of the Canvass. It is not always possible to figure out by just looking exactly what workers are doing. This account also included details from the ROV's detailed written instructions for the Canvass and information from ROV staff.

When League member Nancy Bickel observed the first day of the Canvass, there were other observers--Bev Harris and Jim March of Black Box Voting, Jim Soper of the Open Voting Consortium and Jerry Berkman, Berkeley resident and computer programmer and security expert. The group met that afternoon with the Registrar and her staff to discuss computer security questions.

Preparing Ballots and Checking Election Documents

The purpose of the canvass is to examine the ballots to make sure they are accurate and authentic. This include accounting for every ballot, counting absentee and provisional ballots turned in at the polls, balancing the Roster from each polling place and accounting for discrepancies. As carried out in the crowded basement offices of the Alameda County Registrar of Voters, it involves a painstaking recording, sorting and preparing of the different materials and reports from the polling places. Since the computer memory cards from each polling place had already been read and their results reported on election night, they had been packed in boxes according to precinct number and stored, for security, in the central computer room.

Sorting Ballots

By Thursday, two days after Election Day, all the materials from the polling places have been brought in to the ROV office. Now the paper ballots must be checked. The ultimate goal is to identify and count every valid paper ballot cast at or delivered, as an absentee ballot, to every polling place.

Types of Paper Ballots Each polling place should have sent in all its paper ballots. These include **absentee ballots** turned in at the polls and all paper ballots issued to the polling place. **Unused ballots** are returned. **Ballots spoiled by the voter** are labeled as void and retained for return to the ROV. Poll workers do not issue the voter a new ballot until the spoiled ballot is turned in. **Provisional ballots, in signed provisional ballot envelopes,** are returned. Provisional voters are, for example, people who are not listed on the roster or people who had been identified on the roster as absentee voters and did not bring in their absentee ballot and envelope to surrender. Provisional voters are issued paper ballots and provisional ballot envelopes. **Official paper ballots** are ballots filled out by voters who are listed on and sign the precinct roster. These ballots may be used by any voter; in case of long delays, power failures or broken machines, many voters may vote on paper.

Checking and Balancing the Records

The poll rosters signed by voters, **the reports filed by each polling place** identifying the number of voters and types of ballots cast, **the paper tapes of totals voted** on each touch screen machine will also be checked. The rosters must be balanced according to the ROV's instructions. Any discrepancies will be examined until the supervisor understands what caused the discrepancy and finds an adequate explanation. One source of discrepancy for the 2005 special election, for example, was that some poll workers did not understand that, if voters signed the register and then voted a paper ballot, that ballot should be placed directly in the ballot box and later put into the envelope for official paper ballots. Since this was a new procedure, poll workers often had the voter place the ballot in a provisional ballot envelope. The poll worker would then explain on the envelope that the voter requested a paper ballot. This small error would throw off the count of types of ballots cast and the reconciliation with number of voters who cast ballots. A supervisor checking the notation on the provisional envelope would be able

to resolve the discrepancy. Discrepancies and their causes are reported to the ROV so that these problems may checked and avoided in future elections.

Rosters When rosters are reviewed during the Canvass, the time sheets signed by poll workers are removed and sent to the correct staffer, so that poll workers will be paid. The yellow roster sheets reporting deaths and other corrections reported at the polls are removed, so corrections can be entered in ROV records. **Registration Forms** turned in at the polls are also routed to the correct place for entry.

Double Checking All envelopes storing ballots and materials are saved and will be double checked, then stored for the period required by law, which, for this election, was six months. All ballot boxes and containers will be double checked at the ROV offices or warehouse. During these checks, workers will find a few ballots misplaced by poll workers or overlooked by workers emptying ballot boxes and envelopes. These too will be verified and included in the final vote count.

The Scene at the Start of the Canvass The back offices are filled with clerks at long tables, surrounded by white cardboard boxes, each labeled with 10 precinct numbers and filled with materials from those precincts. Paper ballots from precincts in each city with a local election must be kept together and counted together. With an urgent flurry, supervisors search for a missing precinct belonging to a voting district; they find the precinct in a box accidentally set down next to the wrong sorting table in the busy crowded room. Little flurries to keep the process correct happen throughout the day.

Workers fill out a report form for each precinct envelope they open. As the workers open envelopes containing different types of ballots, they count them. All counts of all types of ballots are recorded in at least two places. Absentee ballots are grouped together and taken to have signatures checked. [See **What Happens to Your Absentee Ballots**.]

Checking Provisional Ballot Envelopes Ballots in provisional ballot envelopes are sorted by precinct. Since the ROV office computer has recorded voters whose absentee ballot have been received or who have voted early on touch screen machines, workers will be able to confirm whether the voter has or has not voted. If a voter's vote has not been counted, the provisional ballot is accepted and the ballot will be removed from the envelope, sorted and counted. In the same way, workers will check the signatures on ballot envelopes voted by voters who said they were registered in that precinct, but whose names were not on the roster, and voters who said they were registered at another precinct. Ballots are taken to a different part of the ROV offices for the signature check, so citizens observing the Canvass will not see this process. [See **What Happens to Your Absentee Ballots** for a description.]

Counting Provisional Ballots, Paper Ballots Turned in at the Polls and Absentee Ballots

Official Paper Ballots turned in at the polls do not need signatures checked, since the voters signed the roster and their identity is presumed to have been confirmed at the polls.
Once the ROV office confirms that the registration information on the provisional ballot or absentee ballot envelop is correct, that the signatures on provisional ballot and absentee ballot envelopes are valid, and that the voter has not previously voted, the envelopes are opened and set aside.

The identity of the voter is separated from his vote from this point onward.
The ballots are removed and sorted, counted into batches of 50, combined in groups of 500. Each batch of 50 is run through a scanner, the votes recorded electronically and reported to the central election computer. The groups of 500 are packed up in boxes, signed and sealed. [For a detailed description of this process, see **Opening Envelopes, Unfolding and Sorting Ballots, Ballot Reading and Counting** in **What Happens to Your Absentee Ballots.]**

Counting Write-In Votes
League members did not observe this activity directly because no write-in candidates were written in by voters. Electronically cast ballots allow the voter to type in the name of the candidate, so the computer can read and print the vote. Handwritten write-in ballots are sorted out and two or three workers form a team to read them and record the votes.

Remaking Damaged Ballots
Acting Registrar of Voters Elaine Ginnold described the process. Paper ballots that have been sorted out as damaged—either by workers looking at them or because the scanners that count the ballots reject them—are examined by ROV staff. The "damaged" group includes all ballots that cannot be easily read by the scanner. A team of staffers, in consultation with a supervisor, will try to determine the voter's intention. Often, Ginnold reported, it is very obvious that the voter just marked the ovals of his/her choices too lightly or with a mark like a check or an x that the scanner could not read. The solution is that the staffer blacks in the intended oval completely. In other cases, the voter's intention is less clear. If the staff can not determine, for example, which of two ovals the voter intended to mark, no vote will be recorded for that contest. In cases where the ballot is torn or the "timing marks" that enable the scanner to read it have been damaged, the ballot may be copied by machine or hand and the substitute ballot will be counted.

Updating Vote Totals
The Canvass continues until all materials have been checked and all votes have been counted. The election computer is updated to get new vote totals from time to time. Revised vote totals are reported to the public on the ROV website and to the Secretary of State for posting on the SoS website on Fridays and Tuesdays in the 4 weeks following the elections.

The 1% Manual Tally
At the Alameda County Registrar of Voters

California Election Code on the One Percent Tally

335.5. The "official canvass" is the public process of processing and tallying all ballots received in an election, including, but not limited to, provisional ballots and absentee ballots not included in the semifinal official canvass. The official canvass also includes the process of reconciling ballots, attempting to prohibit duplicate voting by absentee and provisional voters, and performance of the **manual tally** of 1 **percent** of all precincts.
336.5. "One **percent manual tally**" is the public process of manually tallying votes in 1 **percent** of the precincts, selected at random by the **elections** official, and in one precinct for each race not included in the randomly selected precincts. This procedure is conducted during the official canvass to verify the accuracy of the automated count.
[Note: boldface type appears in the Election Code as downloaded from the Secretary of State website]

How the Election Code Requirement is Carried Out

The Election Code requires county registrars "to verify the accuracy of the automated counts" by hand counting votes cast at 1% of the precincts and "in one precinct for each race not included in the randomly selected precincts." Exactly what these Election Code requirements mean in practical terms has changed over time.

To understand the process we will identify the three different groups of ballots sampled by the ROV. The ballots selected for hand counting in 1% of precincts, we will refer to as the **1% precinct sample or 1% sample**. The ballots selected for hand counting" in one precinct for each race not included in the randomly selected precincts" we will refer to as the **supplemental 1% precinct sample or supplemental 1% sample**. The ACROV often refers to this as the sample of each ballot type. The third sample taken by the ACROV is a sample of paper ballots, including absentee ballots and provisional ballots. We will refer to this as the **sample of paper ballots**.

When most voting systems in California used punch cards or optically scanned paper ballots or other methods with a paper or card stock ballot, the Election Code provision cited above could be carried out in a straightforward way. The ballots were first read and tallied by machine, then a sample of precincts was selected and counted by hand. The hand recount of the 1% sample could test whether the computers and machines that counted and reported the votes cast in the precincts had made systematic errors in counting the vote.

In the past, testing 1% of precincts was essentially equivalent to testing about 1% of votes. Absentee ballots were only available to invalids or people who would be out of town on Election

Day; nearly everyone actually voted in a precinct polling place. In recent years, changes in the Election Code have permitted anyone to sign up as an temporary or permanent absentee voter; the numbers of such voters has grown to approximately half of all voters in Alameda County. Other innovations have included early electronic voting at the Registrar's Office or other locations.

Application of the 1% of Precincts Provision In the Special Election of November 2005 and other recent elections, the ACROV Office has understood the "**1% of precincts**" requirement to be a test of the accuracy of DRE or electronic voting machines set up in polling places, so when selecting 1% of precincts for hand counting, it has only selected and hand counted votes cast electronically in polling places on Election Day.

It has not included paper ballots cast by voters in mail-in precincts, paper ballots voted at or absentee ballots delivered to polling places nor absentee ballots sent to the ROV before Election Day. Although it has not included such ballots in the 1% sample of precincts, it has separately sampled nearly 1% of many of these ballots as part of the **sample of paper ballots** mentioned above.

The introduction of electronic voting machines or DREs in the past few elections posed a problem for Registrars of Voters. Since the "ballots" cast in polling places on such machines were only recorded electronically, no paper ballots existed to enable ROVs to comply with the Election Code provision. During the Special Election in November 2005 and earlier elections with these machines, The ACROV created substitute or simulated paper ballots.

Here's how it worked. When a voter records her vote on a touch screen machine, an image of the whole "ballot" is recorded on the machine's internal memory and on its memory card. When the memory cards are removed, downloaded, added up and results delivered to the central election computer, the image of each individual ballot is transferred to the central election computer. When the ROV Office selected the precincts for the 1% sample, it printed out substitute paper ballots, individual sheets of 8 ½" x 11" paper, each with an image of an individual ballot as it had been recorded on the electronic voting machine or DRE. This process created paper "ballots" that could be hand counted and enabled the ROV to comply, or go through the motions of complying, with the Election Code requirement for a hand count.

Citizen concern about the lack of a "paper trail" of their votes on electronic voting machines has led to new laws. These laws came into force on January 1, 2006. State law now requires electronic election equipment to have a voter verifiable paper audit trail [VVPAT] and requires that these VVPAT paper records be counted in the 1% sample of precincts. Machines used in future elections will include Voter Verifiable Paper Audit Trails [VVPAT], so the hand count will be done using separate paper records which have been created at the time the vote is cast and confirmed by the voter as accurate at the time of voting.

As soon after January 1, 2006 as the ROV buys and begins to use new election machines that meet new federal and state standards, the hand count will again become a count of paper records of individual votes created when the voter casts her ballot. The 1% sample will also again be a test of the accuracy of the election machinery.

For the November 2005 Special Election, the 1% of precincts was selected as described in the section "Current Sampling Method Described & Discussed in Detail" below. Then the images of the ballots cast in those precincts were printed out on 8 1/2 x 11 sheets of paper and counted by hand. Counting the paper images of the electronic ballots is just another way of recounting the electronic records, so in 2005, the hand tally was not an independent check on the accuracy of the electronic and computerized ballot count. The same method of printing and counting was used for the **supplemental precincts** selected as required in the Election Code.

ROV Samples About 1% of Paper Ballots

Since more and more voters in the County are voting by absentee paper ballot, the ROV Office also samples absentee ballots. Although the ROV does not interpret the Election Code provision cited above as requiring this sampling of absentee or paper ballots, such sampling is in keeping with the stated intent of the provision- "to verify the accuracy of the automated count." Paper ballots—whether absentee ballots, provisional ballots or other types—were all counted at the ACROV Office by the same group of automated scanners. The data from these machines were then transferred to the central election computer through a secure telephone line into a router. This process is also an"automated count" as mentioned in the Election Code provision. It uses different machines and possibly different aspects of the central computer or computer program. This automated system also should be sampled and tested by a hand count.

The sampling method used by the ROV during the November 2005 Special Election selected three boxes of 500 paper ballots. The sample of three boxes of 500 each or 1500 paper ballots recounted by hand did represent nearly 1% percent of all absentee ballots and nearly 1% of all paper ballots. The ROV Office did not attempt to sample every type of paper ballot although several different categories of paper ballots were included.

It is useful to take a look at the methods used by the Alameda County Registrar of Voters to sample votes, since the ROV may use the same or similar methods in future.

BALLOTS CAST IN ALAMEDA COUNTY IN THE NOVEMBER 2005 ELECTION BY TYPE

	Number	% of total
Electronic ballots		
cast at the polls	**189,617**	
cast in early voting	**1,985**	
Total of all electronic ballots	***191,602***	***50%***
Paper ballots		
Absentee ballots	**177,448**	
Provisional ballots cast at polls	**16,119**	
Total of all paper ballots	***193,567***	***50%***
TOTAL BALLOTS CAST	**385,169**	**100%**

Note: Absentee ballot category includes

Mail-in ballots from mail-in precincts
Official ballots cast at polls
Absentee ballots received before Election Day
Absentee ballots delivered to polling places
Absentee ballots from military personnel
Damaged ballots are found in all categories

1% of Precincts Drawn from 805 Polling Places

The California Election Code cited above is understood by the ROV to mean that the one percent for the manual tally—hand recount--should be taken only from electronic votes cast in precincts with polling places. In addition, the provision requires that, if the 1% sample drawn does not include every race run at that election, the ROV select one precinct for each race or ballot type that was not included in the original sample for a hand recount. In the 2005 Special Election, the Alameda County Registrar of Voters Office interpreted these provisions to mean that it would select 1%, that is 8, of the 805 precincts in which polling places were set up with electronic touch screen machines. An additional 335 precincts had too few voters to merit polling places; voters in these precincts were sent paper absentee ballots and voted by mail. These precincts were not included in the 1% precinct sample nor the supplemental 1% precinct sample; they were, presumably, included in the sample of paper ballots.

Current Sampling Method Described & Discussed in Detail

In the Special Election of November 2005, the Registrar‘s Office used a random number generator that is part of the Diebold DIMS software package to pick the 1%. The DIMS software is widely used by the ACROV and many other Registrars to do many different election related tasks.

After the November 2005 election, three citizen members of the ROV’s Election Advisory Committee watched a staff supervisor go through the routine required to generate a random 1% sample of 805 precincts. This produced eight numbers:

4, 42, 48, 59, 75, 182, 458, 709

The supervisor then took a list of all polling places arranged in numerical order by precinct and found the corresponding poll in the list. In other words, she counted down the list to the 4th precinct, the 42nd precinct and so on until she had marked all eight.

The ROV’s list of precincts is organized in numerical order by precinct number. Precinct numbers have been assigned roughly geographically starting with Berkeley in the north and continuing roughly south. On closer observation, we observed that the first five precincts picked are all in Berkeley, the next in Piedmont, the next in Hayward and the last in Fremont.

Table Comparing Cities Drawn in 1% Sample
[Note: populations are from websites; data may not be from same year or same source]

	Population	Registered Voters	Cards [Ballots] Cast
Alameda County	**1,444,656**	**704,036**	**385,169**
Berkeley	102,743 est.		
Piedmont	10,952, est.		
Hayward	146,027 est.		
Fremont	84,575 est.		

A Poor Sample

The distribution of the sample described above does not look very fair in the everyday non-technical sense. Six of the eight sample precincts are in the north county. The biggest city in the county, Oakland, is not in the sample at all. We consulted a statistician about whether this sample looked like a fair sample. Peter Bickel, professor of statistics at the University of California at Berkeley, observed that the sample was an unlikely, but not impossible, random sample.

Computers do not generate "real" random samples; they are machines programmed to simulate random samples, Bickel pointed out. Some programs do a better job; some do a worse job. Studies have shown that many random number generators are poorly programmed and do not pick good or fair random samples. He suggested using either a better random number generator or some other fair method of picking the sample.

Supplemental Precincts Picked

In the 2005 Special Election, the ROV staff noted that the random sample turned out to include only two of the seven ballot types, or groups of election races, voted on in the county, since, in this election, Berkeley, Piedmont and Fremont voted only on the state ballot propositions. Hayward had school district elections. To comply with the Election Code provisions cited above, the Registar's staff picked one supplemental precinct from each of the ballot types in the following five cities: Albany, Castro Valley, Emeryville, Livermore, Newark. Each of these races or ballot types was voted on in very few precincts, ranging from five precincts in Emeryville to 50 precincts in Livermore. The DIMS software was not able to select random 1% samples from groups smaller than 100, so ROV staff drew paper slips from a container to pick an supplemental sample precinct from each ballot type or race.

Picking the supplemental samples for each race or ballot type, as required by the Election Code, seems, in an informal sense, to compensate somewhat for the unevenness of the geographical and population distribution of the original sample of eight precincts. In primary and general elections, many more community and special districts elect local and regional offices and vote on local ballot measures. With many more local elections and many more different ballot types, the

selection of supplemental samples for each type of race or ballot would be likely to spread the samples picked more evenly geographically across the county.

It should be noted, that, in the supplemental precincts, the ROV protocol only requires a count of the as- yet-unsampled races, not all the races on the entire ballot. In other words, only the local offices are usually counted on the ballots drawn in supplemental sample.

ROV Selects About 1% of Paper Ballots

As mentioned above, The ROV Office already does a hand count of absentee and paper ballots. In the most recent election, the ROV did a hand count of 1500 absentee and other ballots. One percent of the 193,567 paper ballots would have been 1936 paper ballots. So the ROV sampled close to 1% of the paper ballots. However, not all types of paper ballots had an equal chance of being included in the sample.

The ROV selected three boxes each containing roughly 500 paper ballots for a hand count. Athough we did not observe the selection, we understand that the boxes were selected after Election Day, taken off the long shelves where signed and sealed boxes of paper ballots are stored after counting. The selection and counting took place during the period when some categories of paper ballots were still been processed—being checked for signatures or sorted—and some still awaited processing. Damaged ballots, for example, are often the last to be processed and counted. So some categories of ballots had not yet been scanned, counted and packed up into boxes of 500 and were not available for sampling.

How the Manual Tally Was Done

After the precincts for the 1% sample have been picked, the ROV staff printed out images of every single ballot cast in each precinct, a timeconsuming process. Then the ROV was ready to do the manual count. League of Women Voters member Nancy Bickel observed the process. The ACROV's protocol specifies that each precinct is counted by a group of staff members forming a three member recount board. One member read the vote on each ballot and the other two marked two separate tally sheets which listed the names of the candidates and measures being recounted. Recount board members sorted the ballots into stacks as follows: in a Vote for One contest, one stack for each candidate or for the yes and the no on a measure and one stack for undervotes, where no vote is indicated. [The voting machine software did not permit the voter to "overvote," to vote for more than one candidate in a one member race.]

The Registrar's protocol specifies how the board members mark the tally sheet. When the board finished counting the contest, the supervisor of the recount compared the recount results with the actual election night results for that contest. If the results were the same, the supervisor initialed the recount results on the tally sheet. If the numbers were different, ballots were resorted and recounted in groups of 10. If the results were the same

after the second recount, the supervisor initials the results and shows the + or – difference. Recounts were repeated until the totals agree.

In a vote for two, the board counted all of the votes for the first candidate in the list of candidates, then counted all the votes for the second name in the list and so on until all votes counted.

The protocol requires that three staffers stay with the ballots during breaks and lunches. At the end of the work day, ballots and tally sheets are secured in the vote count room, which is locked. When the recount of the precinct is completed, the tally sheets and ballots are stored in boxes in the Vote Count Room.

The protocols for counting the actual paper ballots—absentee, provisional etc.- are the same the protocols for the manual tally described above.

Some Conclusions and Suggestions about the 1% Hand Tally

The Election Code states that the purpose of the hand tally of 1% of precincts is"to verify the accuracy of the automated count." An automated count can fail to be accurate for two reasons—because of accidental errors by election workers, machines or software carrying out the count or because of deliberate cheating by election workers, machines or software. The 1% hand count is only one of many different kinds of checks and tests that Registrars of Voters, the Secretary of State and the federal Election Assistance Commission and other bodies do carry out and should carry out to ensure that every vote is counted and counted correctly.

The ROV has convened a Citizens Advisory Committee that is making recommendations to improve the 1% sample. Their draft report, *Proposed Criteria for the Post-Election One Percent Manual Tally in Alameda County*, was in in its final stages in February 2006. The report includes and expands on the following recommendations.

The public should believe that every vote cast should have an equal chance of being drawn and hand counted in the sample. This would give the public confidence that their votes will be counted correctly The percentage of every category or type of vote hand counted should be about the same. The goal is that every voter, voting by any method, should feel that their vote has an equal chance of being picked in the 1% sample to be counted by hand.

Drawing an equal percentage of every type of ballot would do a better job of fulfilling the underlying purpose of the hand count. Each type of ballot, each type of election equipment and each method of counting ballots could introduce errors. These errors could be accidental or done on purpose. The types of error or cheating could be very different in different places, with different equipment, for example, different voting machines could have different kinds of programming errors; different scanners for paper ballots could have different mechanical problems. Different staffers can also make different kinds of errors.

In future elections the goal could be better served if both electronic and official paper ballots voted at the polls were included in the 1% sample of precincts. In future elections ACROV expects to be using new equipment which will make this expansion of the hand count practical.

The nearly one percent sample of the paper ballots, already carried out by the ROV should be expanded to a full 1% and should include all the various types of paper ballots not cast at the polling places nor counted electronically at the polls, including Provisional ballots cast at polls, Mail-in ballots from mail-in precincts, Absentee ballots received before Election Day, Absentee ballots delivered to polling places, Absentee ballots from military personnel. Damaged ballots are found in all categories.

The Report will also recommend that the current method of selecting the 1% sample be fair, open to public observation and inspection and easy to understand and verify and random. The Alameda County Registrar of Voters will be testing the specific recommendations of the draft report during several elections in Spring 2006. Thereafter, the Report would be corrected and finalized, its methods would be adopted in whole or in part by the ACROV and the Report will available to the public.

Note: Various portions of this report have been reported or updated by Nancy Bickel, LWV Berkeley, Albany, Emeryville, Gen Katz, LWV Oakland, and Sukey Wilder, LWV Oakland. The report has been reviewed by members of the Alameda County Council of the League of Women Voters.