

Dear Mr. Khan,

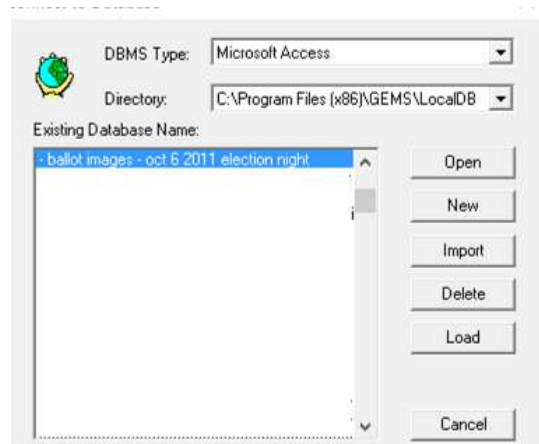
March 31, 2016

With regard to the thousands of write-in votes showing blank candidate selections in your race: I examined a database from Shelby County, Tennessee for the same Diebold TSx system used in DuPage County Illinois. (In fact, sold by the same salesperson at the same time). There were a total of 2,885 write-ins in the database I examined. Not a single one was blank. I believe that if "save" were an issue while executing the write-in, there would be at least one blank write-in out of 2,885 write-ins.

With regard to whether actual write-in data can be recovered, I believe it can be. The GEMS database has three reports which will be helpful. 1) TS Write-in report; 2) Ballot images 3) SOVC report containing breakout of the number of write-in votes per precinct and voting type.

To be clear, no sealed information needs to be accessed. No voting machines need to be accessed. Everything you need is on the GEMS central tabulator at the elections office and it should all be public record. It is a desktop computer in the elections office and they can readily make a copy of these files, and you should absolutely ask for copies under Illinois Freedom of Information law. However, DuPage has a history of obstructing and delaying public records for elections, so litigation is another option in order to force production promptly.

Below are screenshots of what the GEMS program looks like and where the reports referenced above can be found:



### GEMS program

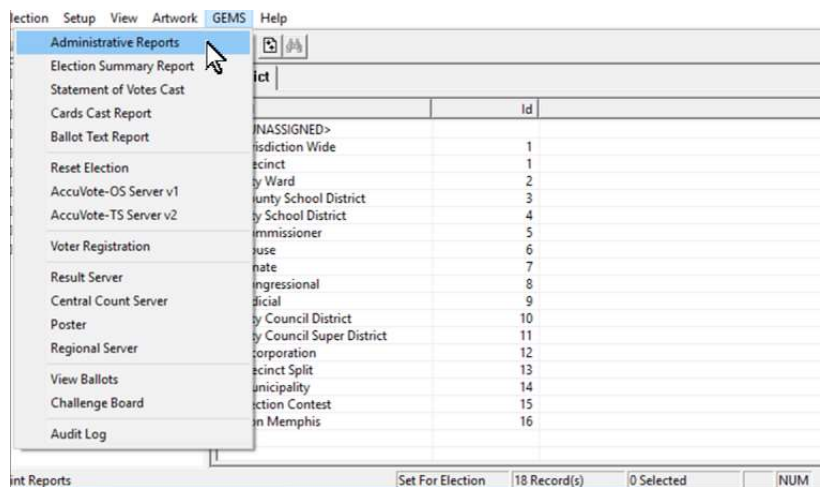
In the Administrative Reports section is a report called **Accuvote TS Write-In Report**, which lists the names of every write-in selection, organized by the race.

See next page.

In this example, I am using a real election database called oct 6 2011 election night. Note that I simply made a copy of the file and named my copy "ballot images - oct 6 2011 election night." This is just for my own examination, so that I don't accidentally alter the original election database.

As you will see below, opening the GEMS program gives the user access to a menu of reports.

All three reports mentioned above can be located in the GEMS menu, as follows.





## Accuvote TS Write-In Report

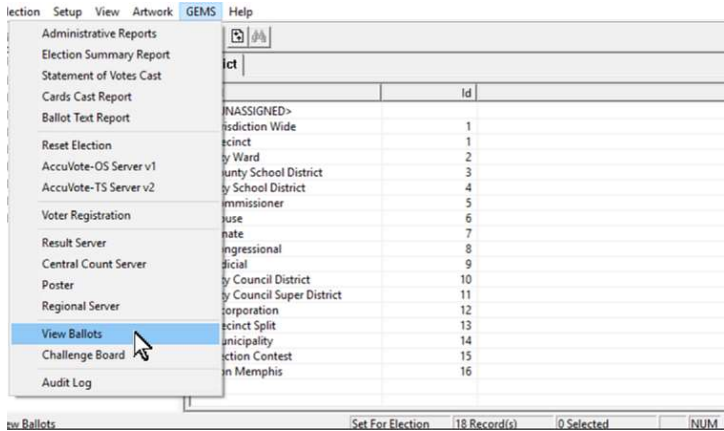
As you can see in the report below, it contains the Race ID, name for each write-in, ballot Serial Number (which does not compromise voter privacy as far as I can tell; the location voted, type of voting (early, absentee, polling place) etc.

In a touchscreen location the absentee paper ballots and any paper provisional ballots are simply identified with a batch and serial number, but all the touchscreen write-in names are clearly identified.

ID	Race	Write-In	Ballot SN	ID	Vote Center	TS	TS	Report Unit	ID	Counter Group
1	Memphis Mayor	AARON LEWIS JR.	258335	240	Raleigh United Methodist	2	158	08600	30	Early Vote
		AARON WYLLOR	943145	140	05400 GAINMAN PAR.	3	73	05400	10	Polling
		AC WHARTON	273405	350	Riverside Baptist	6	39	03300	30	Early Vote
		AC WHARTON SR.	932413	90	07206 WESTWOOD CO	3	123	07206	10	Polling
		AC WHARTON SR.	223871	204	08402 SHILOH BAPTIS	0	157	08402	10	Polling
		ALBERT MCLEAN	738708	253	01601 CENTRAL CHRIS	3	22	01601	10	Polling
		ALETHA CHATMAN	219667	520	Mississippi Blvd Church	1	182	09407	30	Early Vote
		ALEX SAMS	944257	190	05301 ST STEPHEN'S U	2	70	05301	10	Polling
		ALEXANDER GRAYES	716142	141	09102 BERT FERGUSO	8	172	09102	10	Polling
		ALF	622706	34	COR06 CHIMNEYROC	0	222	COR06	10	Polling
		ALISHA NASH	209325	510	Greater Middle Baptist	3	175	09301	30	Early Vote
		ANTHONY CANADA	333383	520	Mississippi Blvd Church	7	104	04502	30	Early Vote
		ANYBODY	221228	420	Agri Center	5	171	09101	30	Early Vote
		ATTIUS CROCKETT	826188	260	SC08	2	22	01601	30	Early Vote
		BOOG E MANN	176372	189	04901 WESTSIDE MIDE	2	106	04901	10	Polling
		BERNICE BANES	502332	182	04801 SHADY GROVE	3	100	04803	10	Polling
		BETTY J. PATRICK TYLER	778867	51	08802 RALEIGH BART	3	162	08802	10	Polling
		BILL BOYD	332439	284	09202 KATE BOND EL	3	185	09202	10	Polling
		BILL MORRISON	299674	450	Bellevue Baptist	8	188	09208	30	Early Vote
		BILL MORRISON	28074	510	Greater Middle Baptist	4	86	04003	30	Early Vote
		BOBBIE RAY HENDERSON	842231	295	07203 NORTH FRAYSE	6	115	07203	10	Polling
		BRUCE BARNETT	386546	450	Bellevue Baptist	4	105	04801	30	Early Vote
		BUGS BUNNY	235033	420	Agri Center	5	191	09601	30	Early Vote
		C E THOMAS JR.	179724	450	Bellevue Baptist	3	167	08902	30	Early Vote
		CARISSA HOUSONG	711283	333	01603 MISSISSIPPI BLV	5	23	01603	10	Polling
		CAROL CHUMBLEY	188798	370	04204 DAVIS COMMUN	5	59	04204	10	Polling
		CAROL CHUMNEY	798245	420	Agri Center	8	190	09208	30	Early Vote
		CAROL CHUMNEY	789421	420	Agri Center	4	190	09208	30	Early Vote
		CAROL CHUMNEY	921601	140	05400 GAINMAN PAR.	1	73	05400	10	Polling
		CAROL CHUMNEY	346633	205	04400 WHITE STATIO	2	98	04400	10	Polling
		CAROLCHUMBLEY	256301	240	Raleigh United Methodist	4	169	09002	30	Early Vote
		CLAY BOUNDS	274926	72	02800 LINDENWOOD C	4	32	02800	10	Polling
		CRAIG BOWIE	983882	143	01200 KANSAS VOC-TI	1	20	01200	10	Polling
		DAFFY DUCK	686383	440	Assisted Temple	3	183	09408	30	Early Vote

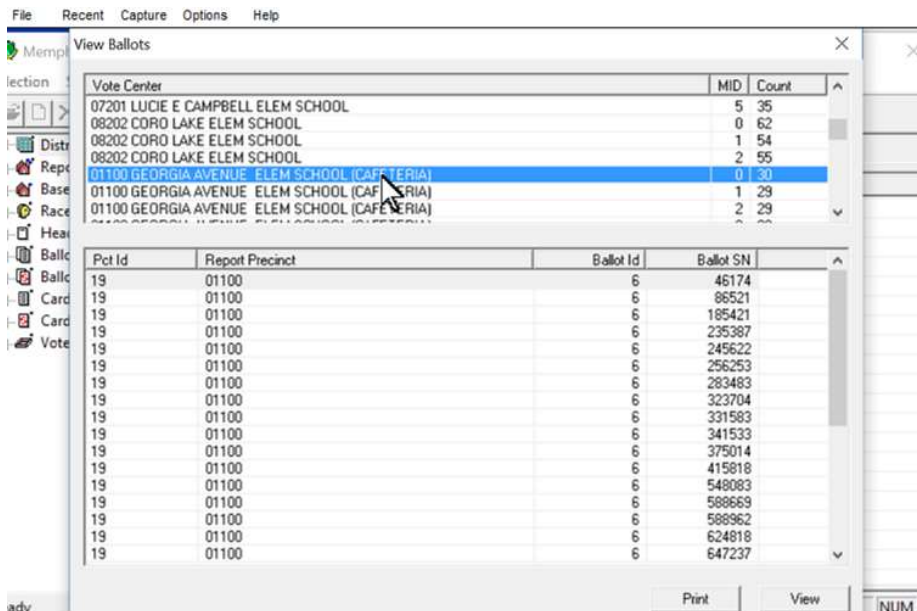
In the above example there are 2,885 write-ins and not a single one is blank. It is this report that I think he is referring to when he says a bipartisan commission, probably the canvassing committee, examined write-ins. I will note that this report generates directly from a Microsoft Access database and it takes no more than 10 seconds to replace the desired number of write-in selections with blanks. It wouldn't matter if the committee examining it is bipartisan, all Democrats, or even your mother, all that will show is the blanks instead of your name.

However, there is a second set of reports in GEMS that cannot be so easily altered. These are the ballot images and they, too, should be a public record.



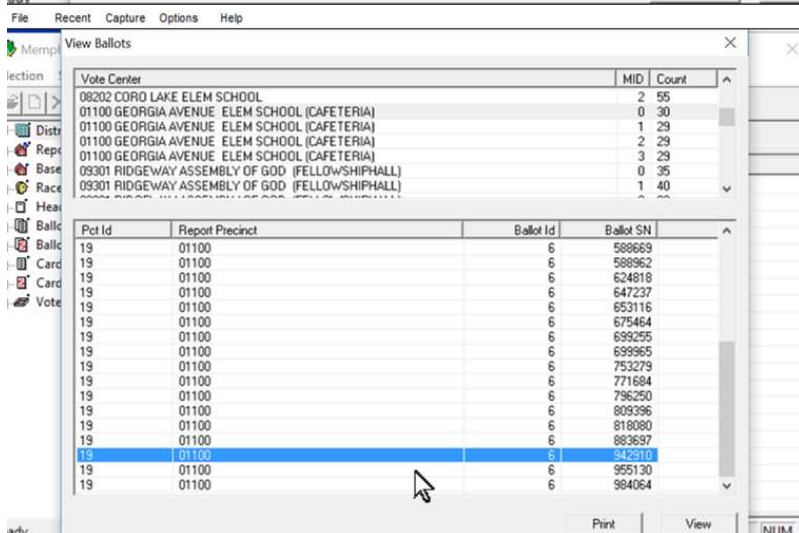
There is no need to go unlocking voting machines or anything of the sort. Ballot images for touchscreens (but not for the older models of paper ballot scanners) are transmitted directly into GEMS along with the data for totaling votes.

When you open the View Ballots menu, you see a list of voting locations. The column at top "MID" stands for Machine ID. Precinct 01100 has four machines with MID 0, 1, 2, and 3.



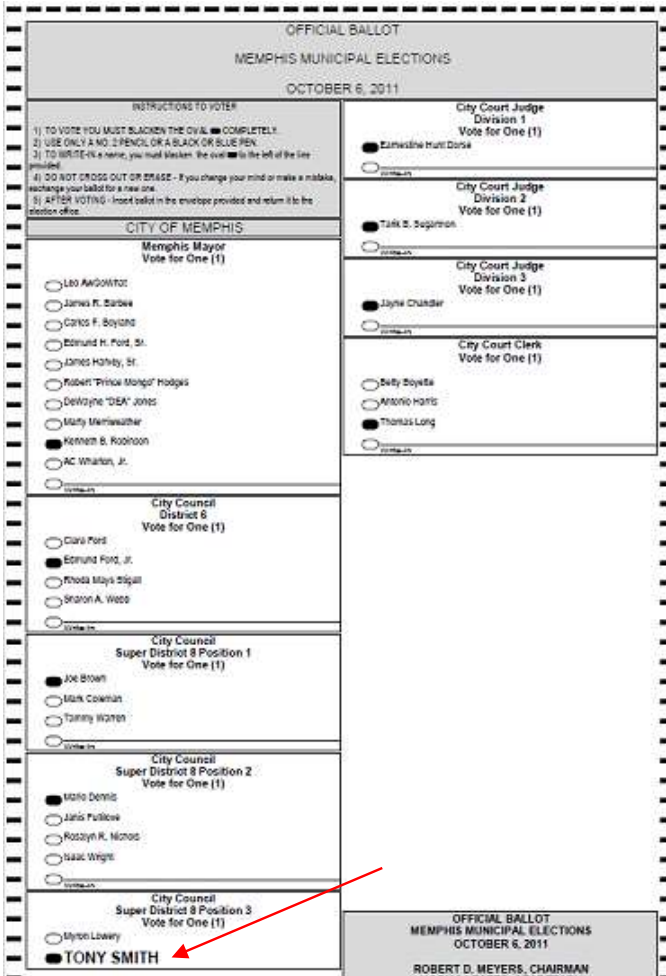
Note that I have chosen machine 0. Below, for machine 0, you see each ballot listed. The last column, Ballot SN, is the ballot serial number.

I chose ballot SN 942910, which I can see in the TS Write-In report mentioned above, should have a write-in for Tony Smith.



When I double click it I see a screen view with this ballot and the voter's choices, plus the name they wrote in, TONY SMITH.

See next page.



If you will look to bottom left, you see City Council Super District 8 Pos 3 race, with its write-in choice.

Now, another version of the Ballot Image is also available. My testing indicates that it, too, is fairly tamper-resistant.

If you go to the View Ballots menu and choose "print" you can select all the ballots for that voting machine and print them to a PDF file. It looks different, but should include the same information as the screen version.

This, too, should be a public record. Although each ballot has a serial number, it does not identify any voter. Shown below.

Precinct (19) 0100 Machine Id 0  
Ballot Id 6 BallotSN 942910

1 - Memphis Mayor  
Vote For 1

<input type="checkbox"/> LeoAndowitz	<input type="checkbox"/> Betty Royette
<input type="checkbox"/> James R Barbee	<input type="checkbox"/> Antonio Harris
<input type="checkbox"/> Carlos F Boyland	<input checked="" type="checkbox"/> Thomas Long
<input type="checkbox"/> Edmund H Ford Sr	<input type="checkbox"/> Write-in
<input type="checkbox"/> James Harvey Sr	
<input type="checkbox"/> Robert Hodges	
<input type="checkbox"/> DeWayne DEA Jones	
<input type="checkbox"/> Marty Merriweather	
<input checked="" type="checkbox"/> Kenneth B Robinson	
<input type="checkbox"/> AC Wharton Jr	
<input type="checkbox"/> Write-in	

19 - City Council District 6  
Vote For 1

<input type="checkbox"/> Clara Ford	
<input checked="" type="checkbox"/> Edmund Ford Jr	
<input type="checkbox"/> Rhoda Mays Stigall	
<input type="checkbox"/> Sharon A Webb	
<input type="checkbox"/> Write-in	

23 - City Council Super District 8 Pos 1  
Vote For 1

<input checked="" type="checkbox"/> Joe Brown	
<input type="checkbox"/> Mark Coleman	
<input type="checkbox"/> Timmy Warren	
<input type="checkbox"/> Write-in	

25 - City Council Super District 8 Pos 2  
Vote For 1

<input checked="" type="checkbox"/> Mario Dennis	
<input type="checkbox"/> Janis Pulllove	
<input type="checkbox"/> Rosalyn R Nichols	
<input type="checkbox"/> Isaac Wright	
<input type="checkbox"/> Write-in	

27 - City Council Super District 8 Pos 3  
Vote For 1

<input type="checkbox"/> Myron Lowery	
<input checked="" type="checkbox"/> Write-in TONY SMITH	

35 - City Court Judge Division 1  
Vote For 1

<input checked="" type="checkbox"/> Earnestine H Dorse	
<input type="checkbox"/> Write-in	

38 - City Court Judge Division 2  
Vote For 1

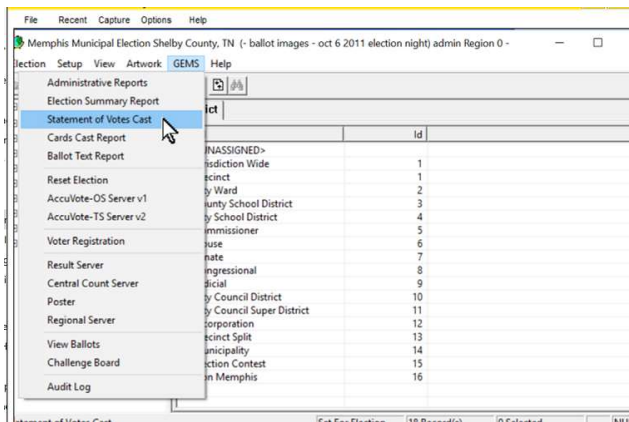
<input checked="" type="checkbox"/> Mark B Sugammon	
<input type="checkbox"/> Write-in	

41 - City Court Judge Division 3  
Vote For 1

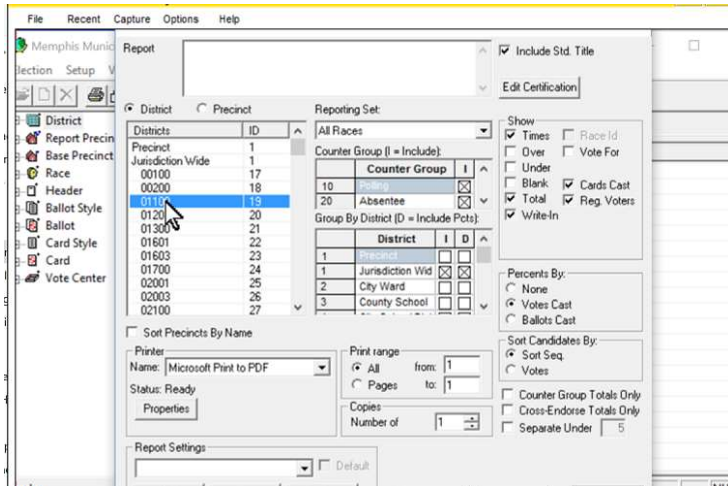
<input checked="" type="checkbox"/> Jayme Chandler	
<input type="checkbox"/> Write-in	

There is a third report, also a public record, called the Statement of Votes Cast (SOVC).

This is also available in the GEMS menu, as follows.



That report is hundreds of pages long, because it is very detailed. Therefore for this example I chose just to print the SOVC for precinct 01100. And as you will see on the next page, everything should match.



Choosing precinct to print for SOVC.

As you can see, for write-in votes on Election Day, at polling places, it shows there are two write-in votes, but it doesn't provide the name written in. It shows none for Early Voting or absentee.

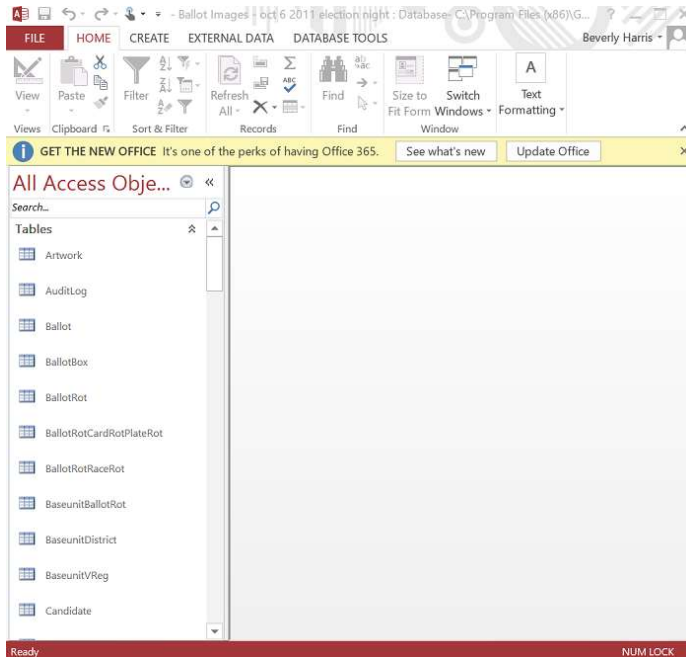
When you look at all the ballot images for polling place Election Day votes in precinct 01100, you also see two write in votes, along with the name written in. When you compare with the Accuvote TS report, you also find two write in votes

in these categories for Race 27, the City Council Super District 8 pos 3 race. All these items should match. But because the Accuvote TS Writeln report is easily alterable, the more tamper-resistant ballot images are quite important.

Statement of Votes Cast Memphis Municipal Election Shelby County, TN										Date:03/31/16 Time:10:06:55 Page:7 of 9
City Council Super District 8 Pos 3					City Court Judge Division 1					
	Reg. Voters	Times Counted	Total Votes	Myron Lowrey	Write-In Votes	Reg. Voters	Times Counted	Total Votes	Earnestine H Dorse	Write-In Votes
Jurisdiction Wide										
01100										
Polling	1856	117	90	88 97.78%	2 2.22%	1856	117	88	88 100.00%	0 0.00%
Absentee	1856	0	0	0 -	0 -	1856	0	0	0 -	0 -
Early Vote	1856	44	31	31 100.00%	0 0.00%	1856	44	33	33 100.00%	0 0.00%
Provisional	1856	0	0	0 -	0 -	1856	0	0	0 -	0 -
<b>Total</b>	<b>1856</b>	<b>161</b>	<b>121</b>	<b>119 98.35%</b>	<b>2 1.65%</b>	<b>1856</b>	<b>161</b>	<b>121</b>	<b>121 100.00%</b>	<b>0 0.00%</b>
Total										
Polling	1856	117	90	88 97.78%	2 2.22%	1856	117	88	88 100.00%	0 0.00%
Absentee	1856	0	0	0 -	0 -	1856	0	0	0 -	0 -
Early Vote	1856	44	31	31 100.00%	0 0.00%	1856	44	33	33 100.00%	0 0.00%
Provisional	1856	0	0	0 -	0 -	1856	0	0	0 -	0 -
<b>Total</b>	<b>1856</b>	<b>161</b>	<b>121</b>	<b>119 98.35%</b>	<b>2 1.65%</b>	<b>1856</b>	<b>161</b>	<b>121</b>	<b>121 100.00%</b>	<b>0 0.00%</b>

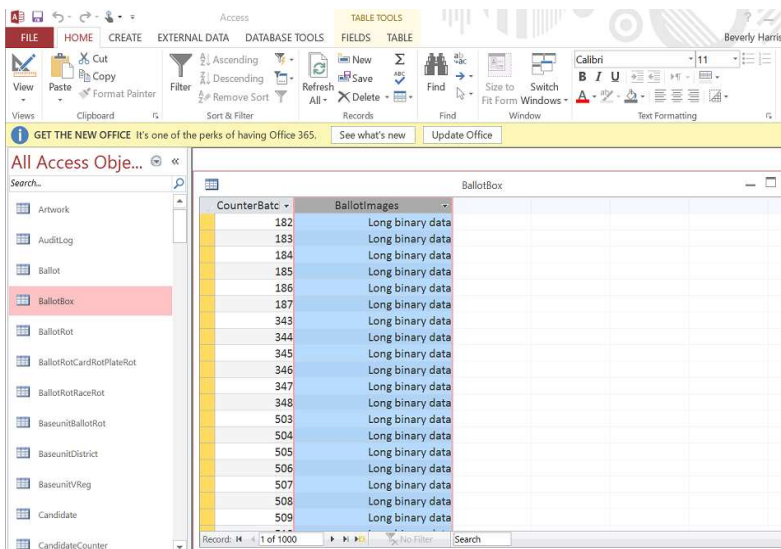
The information shown in both the GEMS SOVC and the AccuVote TS Write-In Report draw directly from a "back end" which is a Microsoft Access database. This program can be accessed without a password and is trivially easy to change. Let me take you on a brief tour with regard to how write-ins are dealt with in the MS Access back end to GEMS, and how even several thousand write-in names could be changed to blank, in less than 10 seconds.

On the next page, I will simply pop open the underlying MS Access database by locating in the GEMS directly. All I have to do is double click it to open it. No authentication is ever asked.



Along the left column you will see a list of tables.

The "BallotBox" table contains the encrypted information for ballot images in binary format. It is not human readable and also is fairly impervious to imports, exports, edits, or replace commands. The BallotBox table contains the votes displayed on Ballot Images for the View Ballot option in GEMS.



**BallotBox table**

CounterBate	ReportUnitId	CounterGro	BallotRotId	CandVGroup	Label
1008	88	0	147182	81	TOM TOOMEY
1008	88	0	147182	66	TOM TOOMEY
613	182	2	18226	74	TOM WALSH
1438	170	0	837999	74	TOMEK
607	122	2	872850	64	TOMMIE L TAYLOR JR
514	94	2	627553	71	TOMMY PRUITT
1466	176	0	216127	75	TOMMY SCARBROUGH
646	17	0	654133	71	TONI STRONG
648	17	0	51842	71	TONI STRONG
605	124	2	850719	64	TONK GATRS
524	115	2	446469	71	TONY COWAN
588	21	2	398171	69	TONY E JONES
588	21	2	398171	71	TONY E JONES
884	60	0	589189	58	TONY MARTIN
885	60	0	745603	58	TONY MARTIN
667	6	0	942910	71	TONY SMITH
1262	135	0	232849	69	TONY WILLIAMS
758	28	0	67181	74	TOPPER
555	12	2	53449	75	TRENT HALL
555	10	2	544099	70	TRENO THOMAS
606	133	1	833661	76	TREY EARLE

**WriteInCounter table**

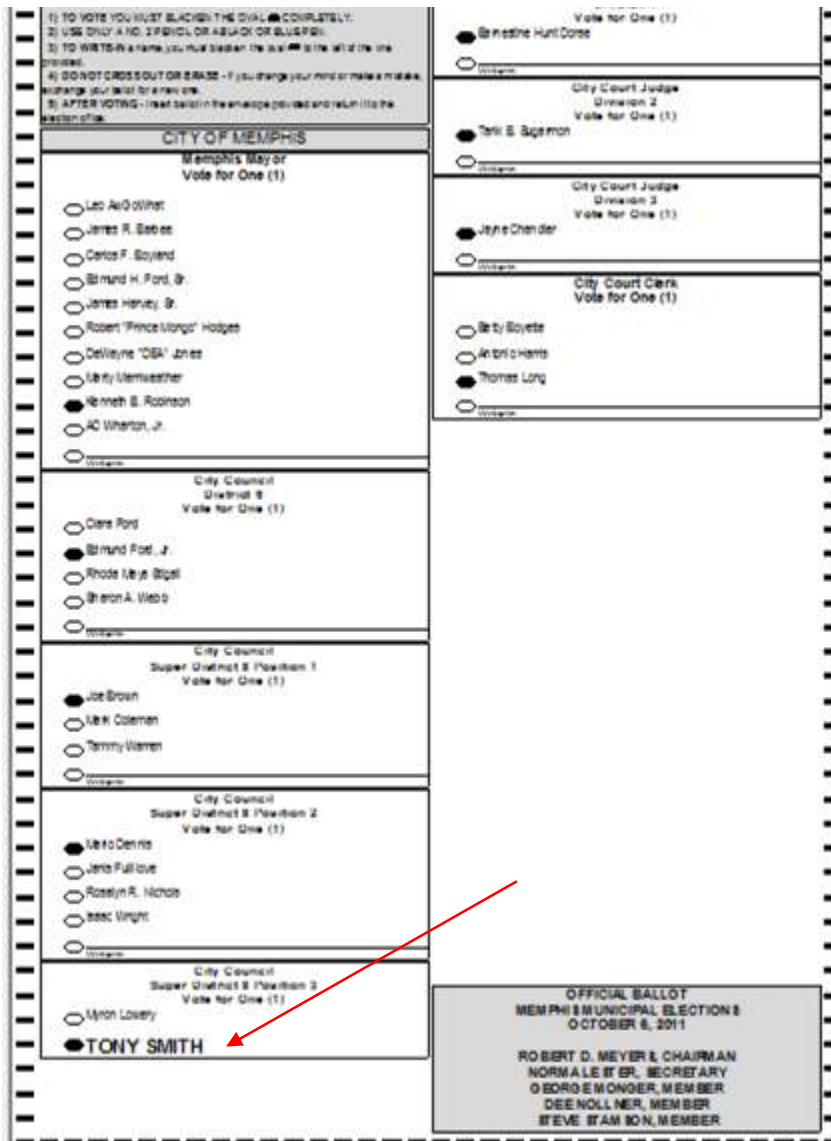
The WriteInCounter table is the one that's trivial to alter. It contains the names of each write-in, with identifiers that specify which voting type (early, absentee, election day), race, and voting machine. In this case I simply sorted it alphabetically to find any write-ins for Tony Smith. There was only one. Note that he is written on ballot serial number 942910.

In the MS Access WriteInCounter table I simply replaced the name Tony Smith by typing blank spaces. I then reopened GEMS and looked at the AccuVote TS Write-In report. As you will see on the next page,

ballot serial number 942910 now shows a write in with a blank space, though there were no blank write-ins at all before.

27 City Council Super Distr	942910	116 01100 GEORGIA AVEN	0	19 01100	10 Polling
'ANN FORBIS	268309	333 01603 MISSISSIPPI BLV	3	23 01603	10 Polling
'ME	553643	333 01603 MISSISSIPPI BLV	2	23 01603	10 Polling
'PRINCE MONGO	733979	44 07703 CUMMINGS STR	0	136 07703	10 Polling
HODGES					
'VICTOR REISS	685336	510 Greater Middle Baptist	1	123 07405	30 Early V
'WANDA HALBERT	916590	470 Bishop Byrne	2	90 06007	30 Early V

Now let's view the ballot image for 942910 after changing Tony Smith's name to blanks in MS Access:



The write-in vote for Tony Smith can still be seen. This is because the earlier report is drawn from the WriteInCounter table, which is easily edited, but the votes on the Ballot Image are drawn from the BallotBox table, which is not easily altered.

Of course you will ask, how about that other ballot image report? The "print to PDF" version which has Xs on it instead of ovals?

That, too, retains the Tony Smith write-in because it draws from the hard-to-alter BallotBox table.

Therefore, I think a fairly definitive answer will come from getting the PDF ballot images, which are easily produced and should be a public record. I recommend getting the Accuvote TS WriteIn Report, identifying all the locations and serial numbers with blank votes,

then asking for the ballot images for those. You could even ask to inspect, having them display a few onscreen while you watch. If they deny either of these options, this is certainly a public policy issue which would benefit from litigation. See next page for the ballot image report.

Precinct (19) 0100 Machine Id 0  
Ballot Id 6 BallotSN 942910

1 - Memphis Mayor  
Vote For 1  
 LeoAwGoWhat  
 James R Barbee  
 Carlos F Boyland  
 Edmund H Ford Sr  
 James Harvey Sr  
 Robert Hodges  
 DeWayne DEA Jones  
 Marty Merriweather  
 Kenneth B Robinson  
 AC Wharton Jr  
 Write-in

19 - City Council District 6  
Vote For 1  
 Clara Ford  
 Edmund Ford Jr  
 Rhoda Mays Stigall  
 Sharon A Webb  
 Write-in

23 - City Council Super District 8 Pos 1  
Vote For 1  
 Joe Brown  
 Mark Coleman  
 Timmy Warren  
 Write-in

25 - City Council Super District 8 Pos 2  
Vote For 1  
 Mario Dennis  
 Janis Fulllove  
 Rosalyn R Nichols  
 Isaac Wright  
 Write-in

27 - City Council Super District 8 Pos 3  
Vote For 1  
 Myron Lowery  
 Write-in TONY SMITH

35 - City Court Judge Division 1  
Vote For 1  
 Earnestine H Dorse  
 Write-in

38 - City Court Judge Division 2  
Vote For 1  
 Ink B Sugarmon  
 Write-in

41 - City Court Judge Division 3  
Vote For 1  
 Ina Chandler

43 - City Court Clerk  
Vote For 1  
 Betty Boyette  
 Antonio Harris  
 Thomas Long  
 Write-in

Do the print-to-pdf ("x" version) ballot image reports ALWAYS match the onscreen ballot image (oval version)?

Not always. I have located two databases which do not. For example, one of them attributes primary votes for governor to a judicial retention question on the oval version, but not on the x version. However, it is complicated to change them and the examples I found also had many viewing errors and some garbled ballot images.

Can you easily change ballot images at all?

Yes. You can flip a race on the ballot images by altering a candidate ID in the Access database, attributing all of John's votes to Mary and vice versa. But that doesn't apply in your race because there was no one in the same race to flip them to.

You can also change the name of a race and that will successfully change the race label on the ballot image. Therefore, the ballot image is not an actual "image" but it draws its identifiers of races and candidates from the easily edited MS Access tables. You can't change write-in data on the images but the race label could be changed.

Best to you, Mr. Khan. Please let me know if you have any further questions. Please feel free to print and share this information if you like. I have cc'd it to some people who may be interested.

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bev@blackboxvoting.org

Always text me if you need a quicker response.

Cc: Brad Friedman

Gary Gibula

Robert Sanchez

Bennie Smith

Laura Pressley