



# Wicomico County, Maryland

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### Internal Auditor's Report

The County Council and County Executive of Wicomico County, Maryland:

Pursuant to Section 305(D) of the Wicomico County Code and Council Resolution No. 114-2014, the Office of the Internal Auditor (IA) has conducted an Audit of the Wicomico County Fuel Inventory System. A report is submitted herewith. The purpose of the audit was to determine the adequacy of procedures and controls along with the level of compliance with those procedures and controls for the process of accounting for fuel usage in Wicomico County through the established fuel inventory system.

IA conducted the audit with due professional care, and IA planned and performed the audit to obtain reasonable assurance about whether the current fuel inventory system practices are in compliance with applicable policies and procedures and whether those policies and procedures are adequate to obtain an acceptable level of control.

We performed another audit of the Wicomico County Fuel System in FY 2011<sup>1</sup> allowing comparisons between fuel consumption in FY 2011 with usage in FY 2014. Some of the analysis will show reduced fuel consumption in the county. As before, the audit revealed existence of the same electronic fuel system with some checks and balances in place implemented by the administrators of the fuel inventory system.

IA extends appreciation to Management and Staff in Administration and Public Works for their timely assistance, cooperation, and candid assessment of the Fuel Inventory System.

Respectfully submitted,

J. Stephen Roser, CPA  
Internal Auditor

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<sup>1</sup> Please see Audit Report dated June 14, 2011

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## Audit Report

### Background

#### Wicomico County Fuel System Inventory Program

Wicomico County utilizes an automated diesel fuel and unleaded gasoline dispensing system manufactured by Syn-Tech Systems, Inc. called Fuelmaster Plus<sup>2</sup> to account for fuel use. The system consists of two parts. The first is an electronic pumping device. A second electronic device installed directly on vehicles and equipment is known as the AIM2<sup>3</sup> unit. The pumping device wirelessly reads the AIM2 unit for each vehicle, or piece of equipment, and provides computer tracking of fuel use and other information from the vehicle's electronic system. Reports generated from computerized tracking are then available to monitor fuel use, perform billing to various users, track fuel inventory, and provide accountability. Alternatively, the County may provide the user with a "prokey" device<sup>4</sup>. The Fuelmaster electronic pumping system reads the prokey and allows fueling. A prokey is assigned to a vehicle or piece of equipment, but is not physically attached to any particular vehicle or piece of equipment.

#### Audit Objective

The objectives of the audit were to:

1. Assure that internal controls are in place to prevent abuse
2. Assure adherence to controls
3. Assure that fuel is properly charged to users

#### Scope of the Audit

The audit period examined, on a test basis, was from March 1, 2014 to March 31, 2014. All Fuelmaster transactions for the period were reviewed. IA conducted observations, interviews, and inquiries with appropriate personnel, and reviewed month-end inventory records for eleven months ending November 3, 2014. Additionally, IA examined, on a test basis, various documents and electronic system information pertaining to, but not limited to, the following:

- Various data reports from Fuelmaster Plus Program
- Internal financial data
- Inventory records
- Billing records
- Human Resource records
- Selected purchase card transactions

Other than the time period tested, the scope was open ended with concentration on internal control procedures, adherence to those procedures, and examination of the data available for the period.

#### General Statistics and Highlights

The following chart shows March 2011 and 2014 fuel usage by user group. The values are from Fuelmaster data.

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<sup>2</sup> For more information on Fuelmaster Plus see <http://www.myfuelmaster.com/>

<sup>3</sup> The AIM2 units are known locally as "fuel rings". The unit consists of several components one of which is a visible electronic ring installed over the vehicle's fuel intake port

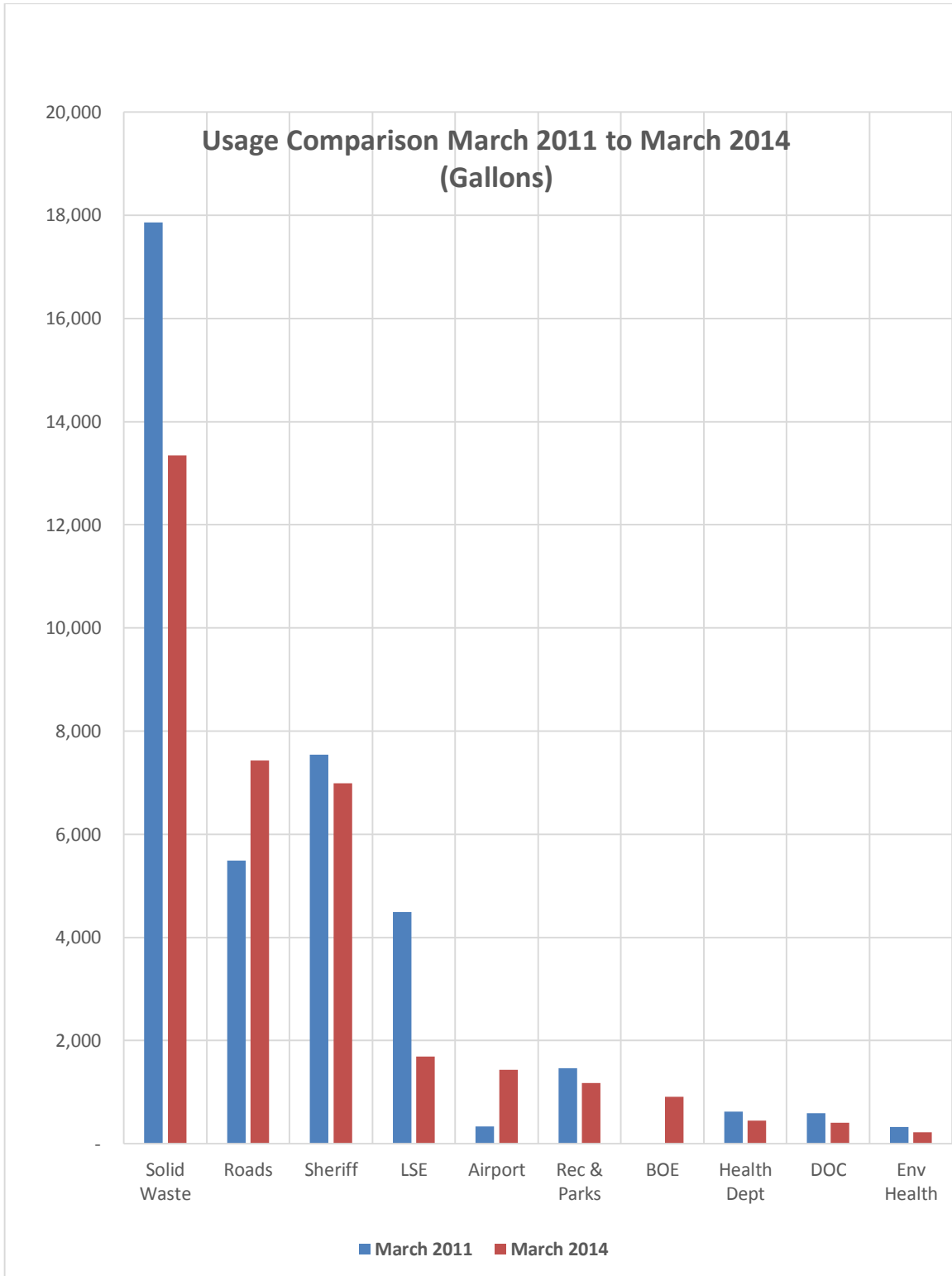
<sup>4</sup> A prokey device is a small plastic wand that fits on a key ring and is programmed by the administrator for a particular vehicle, piece of equipment, or storage can (e.g. "gas can for weed whackers"). It is read electronically by the pumping device and usage is applied in the database according to administrator setup

Group	Gallons Used	
	March 2011	March 2014
Solid Waste Division	17,866	13,348
Roads Division	5,487	7,429
Sheriff's Office	7,547	6,989
Lower Shore Enterprises <sup>5</sup>	4,499	1,695
Airport	336	1,435
Rec & Parks	1,470	1,182
Board Of Education		909
Health Department	624	446
Department of Corrections	597	407
Environmental Health	324	228
Humane Society	85	199
Bookmobile/Library	132	185
Wicomico County Public Works	173	182
Department of Emergency Services	323	179
Office of State's Attorney	160	179
Wicomico County Housing Authority	224	165
Wicomico County Executive	151	156
Wicomico County General Services	98	131
Wicomico Youth & Civic Center	130	102
Liquor Control Board		78
Wicomico County Planning & Zoning	48	49
Wicomico County Tourism	16	27
Wicomico County Council	35	21
IT Department		16
Retired Vehicles	122	
Local Management Board	14	
<b>Total Gallons Consumed</b>	<b>40,461</b>	<b>35,737</b>

A graphical comparison of top users follows:

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<sup>5</sup> User groups are billed separately by Roads Division and groups in red are outside entities



Data reveals that from the period March 1, 2014 to March 31, 2014 Wicomico County used 35,737 gallons of unleaded gasoline and diesel fuel at a cost of \$123,334. Fuel billing analysis<sup>6</sup> for March 2014 showed zero variance. Average inventory variance (stick reading/meter reading/perpetual inventory) for the eleven months ended November 3, 2014 was 82 gallons for gasoline and 64 gallons for diesel fuel. Variances are well within thermal expansion parameters.

Extensive review through data mining comprised a major part of this audit. IA offers comments on many of the procedures in a subsequent section of this report. We performed the following tests and observations with satisfactory<sup>7</sup> results:

- Vehicle fuel usage for reasonableness
- Inventory variance evaluation
- Fueling process
- After hours transactions
- Usage by Department
- High-end users testing for reasonableness
- Storage tank evaluation (fuel in – fuel out)
- Purchase card fuel transactions
- Billing variance evaluation

IA performed the following test with adequate<sup>8</sup> results:

- AIM2 unit usage compliance

## Conclusion

Based on the considerable information gathered in this process:

1. The administrative oversight procedures in place are at a satisfactory level of internal control for the stated purposes.
2. Compliance with the AIM2 systems usage is currently at an adequate level of compliance.
3. The process of charging fuel to departments and users is at a satisfactory level of internal control.

## Schedule of Findings and Recommendations/Management Response

The current review of the Fuel Inventory System for Wicomico County, once again, revealed the makings of a good system of internal control and accountability. Some questions remain regarding implementation and the ability of the Fuelmaster system to deliver functionally without the extensive use of Prokeys. The findings listed below represent some key issues that warrant discussion.

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<sup>6</sup> See Appendix I for details of billing analysis

<sup>7</sup> For the purposes of this audit, IA uses a three-tier grading system recommended by the International Professional Practices Framework (IPPF) as expressed by the IPPF Practice Guide issued March 2009. The three tiers are Inadequate System of Internal Control, Adequate System of Internal Control, and Satisfactory System of Internal Control. Satisfactory findings indicate that overall controls are satisfactory, although some enhancements may be recommended. It is the highest rating on the scale.

<sup>8</sup> According to IPPF Practice Guide issued March 2009: "Adequate system of internal control means that findings are subject to reservations. A number of findings, some of which are significant, have been raised. Where action is in progress to address these findings and other issues known to management, these actions may be at too early a stage to allow a satisfactory audit opinion to be given."

## 1. AIM 2 Unit Usage

One major component of the Fuelmaster system is the electronic AIM2 unit installed in vehicles. The AIM2 unit provides the Fuelmaster system with the ability to recognize the vehicle, allow fueling, and provide information about the vehicle for the Fuelmaster database. Lack of compliance regarding the installation of these units was a concern and a finding brought forth by the FY 2011 audit. Current testing indicated increased compliance with the installation of these units in eligible vehicles. As evidenced by the following:

	March 2011	October 2014
Non-Compliant Vehicles Per Fuelmaster Database	286	170
Less Outside Agencies:	(51)	(35)
Less Readily Identifiable Tanks/Equipment	(77)	(70)
Calculated Net Non-Compliance	158	65

Observations and interviews with management and field personnel revealed some problems remain with Fuelmaster functionality. Mainly:

1. The units do not function well in inclement weather
2. Some of the newer vehicles and equipment do not readily accept the units

Alternative fueling involves the use of prokey devices. The prokeys do not contain the same level of internal control as the AIM2 units. The county used prokeys to dispense 11,597 gallons of fuel (mostly diesel) in March 2014. This figure represents 32.5% of the March 2014 county fuel usage. The county intends to work with the vendor and the vendor's subcontracted repair company to find a remedy to the technical problems. IA, with council's permission, will schedule follow-up to monitor the progress.

### *Management Response*

Administration: Management fully supports this recommendation and course of action.

Public Works: Management and staff continue to install AIM units on equipment when practical for the application. Some applications, such as equipment used on the working face of the landfill, are subjected to conditions that damage the AIM units preventing continuous operation. As stated above, management will work with the vendor to develop solutions to these problems where practical.

## 2. Missing Information

Data review for March 2014 revealed some missing information. For example, vehicle descriptions and user identification numbers were missing for some transactions. IA provided a list to fuel management and will follow-up. It should be noted that the missing information does not appear to be a widespread problem. Additionally, it appears that a user identification number input is not required in order to dispense fuel. IA is of the opinion that such a requirement would serve to enhance internal control and we recommend consultation with the software vendor to determine if the requirement can be added to the system.

### *Management Response*

Administration: Management fully supports this recommendation.

Public Works: This past spring extensive work was done on the County fuel depot to repair an issue with the gasoline pumps. As a result of the construction activity, the system had to be rebooted causing some of the data for March to be lost. Repairs have since been made to both the diesel and gasoline pump system to prevent future system breakdowns.

### 3. Portable/Ancillary Metered Tanks Evaluation

The county maintains three 1000-gallon metered ancillary diesel tanks to distribute fuel as follows:

1. Stationary tank at the Airport used to fuel equipment
2. Portable truck-mounted tank from Roads Division used primarily to fuel mowers and the Airport tank
3. Portable truck-mounted tank from Solid Waste used primarily to fuel equipment at the landfill

The county measures fuel volume pumped into and out of these tanks, and (within the range of the tank capacity – 1000 gallons) should match. IA tested the March 2014 data with the following results:

	Gallons Out	Gallons In	Differential in-out
1. Airport	1,120	616	(504)
2. Roads	1,592	1,567	(25)
3. Solid Waste	8,071	8,628	557

We can see that differential variance is well within tank capacity. Additionally we tested the same data for April 2014 with similar results. IA strongly recommends frequent and routine recalibration of all fuel pumps to maintain data integrity.

#### *Management Response*

Administration: Management concurs.

Public Works: Management will continue the recalibration practice and look for ways to improve the way these tanks are managed.

### 4. Inventory

IA performed a collaboration exercise with the administrator of the Fuelmaster system during the previous audit to create a tool used to track inventory variances. As mentioned in the General Statistics and Highlights portion of this report, the tool measures variance based on three criteria:

1. Storage tank meter
2. Measuring stick reading
3. Perpetual inventory

IA reviewed the use of the tool and found that the system performs well and that variances were within acceptable limits. Appendix II contains an example of the analysis tool with the actual numbers for the April 1, 2014 inventory.

#### *Management Response*

Public Works: To further improve inventory management and to limit variations caused by temperature or time of month the tank level is measured, Public Works staff will begin checking the tank levels on a weekly basis. Management is also investigating the use of a continuous monitoring system that would give real time telemetry of the tank levels.



## 5. Landfill Projects

IA performed several follow-up projects after the completion of the FY 2011 Fuel Audit to monitor fuel usage at the Landfill<sup>9</sup>. IA recommended the creation of separate Fuelmaster accounts for the ancillary projects (dredge site, collector road, etc.) in order to maintain the integrity of the Landfill usage baseline. There is, to date, no evidence of separate accounts for these ancillary projects. IA recommends the establishment separate accounts to facilitate future projects involving Landfill fuel usage.

### *Management Response*

Administration: Management concurs.

Public Works: Solid Waste Division staff has begun developing an accounting system to improve the tracking of fuel used for special projects. One of the challenges with fuel tracking for work at the dredge management sites is connectivity with the Fuelmaster system at the Roads Division. Several of the dredge sites are in remote locations that prevent the signal from reaching the base station. In those areas, staff has been using Prokeys and written documentation of fueling activities.

## 6. Fuel Price Markup

Beginning in FY 2015, Roads Division added five cents per gallon to the price of gasoline and diesel fuel. According to fuel administrators, the county intends to use funds generated by the markup as a sinking fund for future repairs and upgrades to the main facility at Roads Division. Additionally, according to Finance, the accounting for the detailed transactions (including the markup) takes place at Roads Division. IA reviewed the longhand Roads Division breakout for October 2014. It may be possible to create a more robust system to account for the cost breakout (including taxes and the sinking fund). IA, with Council's permission, can assist in the creation of a more automated tracking system for management consideration.

### *Management Response*

Administration: Management supports this suggestion.

## **Auditor's Closing Remark**

The Wicomico County Office of the Internal Auditor would like to thank management and staff from the various departments for their timely cooperation and assistance during the audit.

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<sup>9</sup> Please see Landfill Fuel Audit Report (dated March 5, 2012) and Landfill Fuel Audit Report (dated May 16, 2014) along with associated memos for more information

## Appendix I – Billing Analysis for March 2014

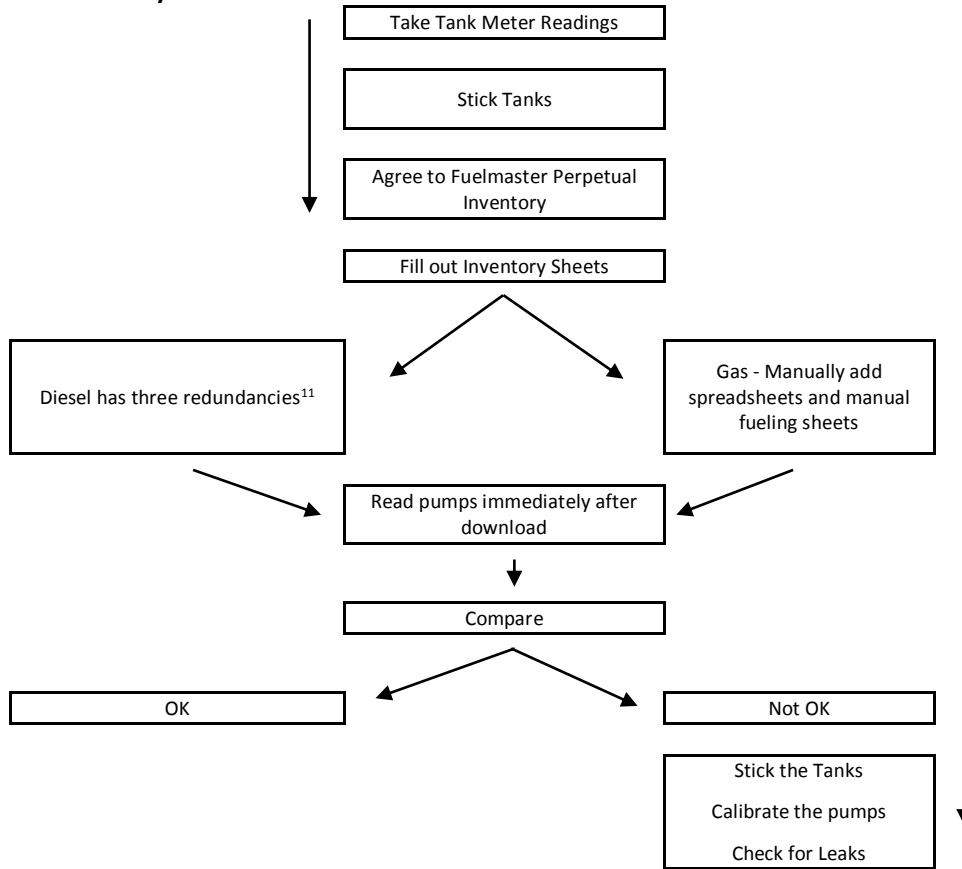
Number	Group Name	Gas	Diesel	Total Fuel	Shop	Total	Billing
50	Roads	\$ 3,944	\$ 24,006	\$ 27,950		\$ 27,950	N/A
60	Executive	\$ 397		\$ 397		\$ 397	\$ 397
70	Plan & Zoning	\$ 391		\$ 391	\$ 202	\$ 593	\$ 593
90	Sheriff	\$ 20,150		\$ 20,150		\$ 20,150	\$ 20,150
100	Solid Waste	\$ 3,790	\$ 39,459	\$ 43,249		\$ 43,249	\$ 43,249
110	Emergency Management	\$ 492	\$ 68	\$ 560	\$ 34	\$ 594	\$ 594
130	General Services	\$ 405		\$ 405		\$ 405	\$ 405
140	DOC	\$ 1,086		\$ 1,086		\$ 1,086	\$ 1,086
150	Civic Center	\$ 338		\$ 338		\$ 338	\$ 338
160	Health Department	\$ 826	\$ 535	\$ 1,360		\$ 1,360	\$ 1,360
170	Environmental Health	\$ 748		\$ 748		\$ 748	\$ 748
180	Bookmobile		\$ 422	\$ 422		\$ 422	\$ 422
200	States Attorney	\$ 488		\$ 488		\$ 488	\$ 488
210	Lower Shore Enterprise	\$ 3,698	\$ 1,880	\$ 5,578		\$ 5,578	\$ 5,578
220	Housing Authority	\$ 510		\$ 510		\$ 510	\$ 510
230	Humane Society	\$ 613		\$ 613		\$ 613	\$ 613
240	Rec & Parks	\$ 2,912	\$ 634	\$ 3,545		\$ 3,545	\$ 3,545
250	IT	\$ 51	\$ -	\$ 51		\$ 51	\$ 51
270	Airport	\$ 464	\$ 3,610	\$ 4,074		\$ 4,074	\$ 4,074
290	Council	\$ 64		\$ 64		\$ 64	\$ 64
300	Tourism	\$ 116		\$ 116		\$ 116	\$ 116
310	Library		\$ 236	\$ 236		\$ 236	\$ 236
320	Liquor Licensing	\$ 201		\$ 201		\$ 201	\$ 201
340	Board of Ed		\$ 3,172	\$ 3,172		\$ 3,172	\$ 3,172
		<b>\$ 41,682</b>	<b>\$ 74,020</b>	<b>\$ 115,702</b>		<b>\$ 115,938</b>	<b>\$ 87,989</b>

<b>Total Billed (plus Roads use)</b>	<b>\$ 41,682</b>	<b>\$ 74,020</b>	
<b>Total Transactions (per data)</b>	<b>\$ 44,238</b>	<b>\$ 110,268</b>	
<b>Less Storage Transactions</b>		<b>\$ (35,458)</b>	
<b>Total transactions less storage/transport tanks</b>	<b>\$ 44,238</b>	<b>\$ 74,810</b>	<b>\$ 119,048</b>
<b>Difference</b>	<b>\$ (2,556)</b>	<b>\$ (790)</b>	<b>\$ (3,346)</b>
<b>Plus database correction<sup>10</sup> billed in April</b>			<b>\$ 3,346</b>
<b>Net variance</b>			<b>\$ 0</b>

<sup>10</sup> An error in the month-end electronic data download omitted transactions for March 8-10. Roads Division billed these transactions as an addition to the April statements

## Appendix II – Inventory Analysis

### Month-End Inventory Process



### Inventory 4/1/2014

	<i>Storage Tank Meter</i>	<i>Stick Reading</i>	<i>Inventory per Fuelmaster</i>	<i>Variance Stick/Inventory Gallons</i>
Gasoline	32in	31in		
Gasoline	3549 gal	3398 gal	3475 gal	-77
Diesel	51in	48in		
Diesel	6534 gal	6056 gal	6176 gal	-120 <sup>12</sup>

Cumulative average 3-way variances for eleven months ended 11-3-2014 are:

- Gasoline = 82 gallons
- Diesel Fuel = 64 gallons

<sup>11</sup> Maryland Special Fuel Use Report, Special Fuel User Worksheet, and central controller’s printouts

<sup>12</sup> Diesel fuel varies considerably volumetrically with temperature; difference is within IA calculated thermal expansion parameters