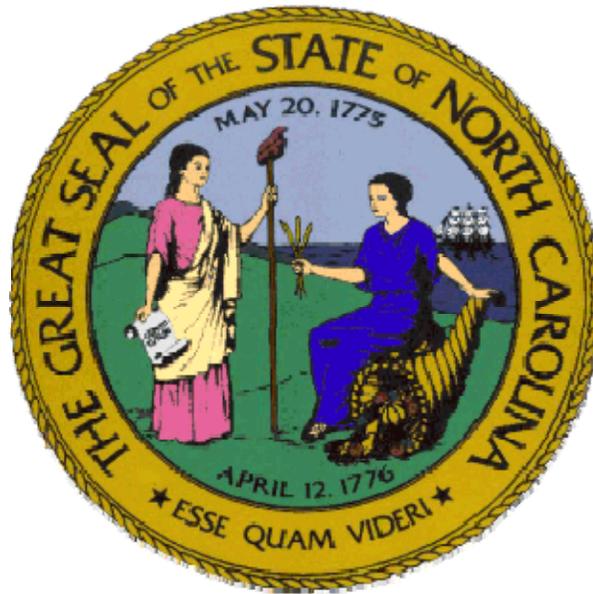


**Inmate Road Squads
And Litter Crews**

As Directed by Session Law 2011-145, Section 28.26

Management Study

March 1, 2012



Prepared By:

Office of State Budget and Management

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INTRODUCTION

Scope of Study

Section 28.26 of Session Law 2011-145 directs the Office of State Budget and Management (OSBM), in consultation with the Department of Public Safety (DPS)¹ and the Department of Transportation (DOT), to conduct a study on performance-based reimbursement as an alternative to the current funding mechanism for inmate litter pickup, which consists of a direct appropriation from the DOT's Highway Fund budget to the DPS. Measures for an alternative funding mechanism may include reimbursements based on total mileage of highways cleaned, per hour reimbursements for non-litter pickup activities, or other factors, as appropriate.

Section 28.26 further states the Office of State Budget and Management shall report to the Joint Legislative Transportation Oversight Committee and to the Joint Legislative Commission on Governmental Operations no later than March 1, 2012. It is intended that the report contain recommendations for reimbursement rates that have been agreed upon by the DPS and the DOT and that the recommended rate structure will be included in the report. The report shall also include any statutory changes to be considered by the General Assembly in relation to this report.

Methodology

To conduct the study, OSBM analysts performed the following tasks:

- Reviewed DPS productivity reports, policies, and procedures
- Reviewed financial data
- Interviewed institutional personnel
- Identified the cost of operating road squads and litter crews
- Observed the litter pickup operations of a private contractor
- Observed the litter pickup operations of DPS inmates
- Researched litter worker productivity
- Analyzed various other data

Definitions

Close custody inmates are those inmates with a sentence of more than 30 years. Inmates may also be demoted to close custody from medium custody if they have exhibited aggressive behavior toward other inmates or staff. Inmates assigned to close custody are kept inside a perimeter fence under armed guard. Close custody inmates are not utilized for litter pickup.

Medium custody inmates, similar to close custody inmates, are under armed guard at all times. Most felons are placed in medium custody upon their arrival in the system and can earn promotion to minimum custody. Those that are in close custody can eventually earn their way to medium custody by positive behavior and time served on their sentence.

Minimum custody is the least restrictive custody level. Inmates at this level are not kept under armed guard. They usually sleep in locked dormitories but no weapons are displayed or carried by staff

¹ The former Department of Correction is currently the Adult Corrections Division within the Department of Public Safety

except in the case of an emergency. All misdemeanants are assigned to this level of custody upon arrival in the system.

Road squads are litter pickup work units which consist of medium custody inmates and are accompanied by two armed guards.

Litter crews are litter pickup work units which consist of minimum custody inmates and are accompanied by one unarmed guard.

BACKGROUND

Inmate road work dates back to an 1887 law requiring judges to sentence less serious offenders to hard labor on the county roads and highways. General Statute 148-26 states “as many minimum custody ... and as many medium custody prisoners as are available, for work and can be adequately guarded during such work without reducing security levels at prison units, shall be employed in the maintenance and construction of public roads of the State.”

The North Carolina General Assembly authorized a transfer of \$9,040,000 from the DOT Highway Fund to DPS to cover the inmate litter program for fiscal year 2011 with no indication of change for fiscal year 2012 or 2013. The DPS inmate litter cleanup program provides a significant component to the DOT Statewide Roadside Litter Cleanup Program. DOT has other means for litter pickup including DOT personnel and equipment, DPS litter squads supervised by DOT personnel, private contractors and volunteers.

The DPS Division of Prisons and DOT work together to organize minimum and medium custody inmates into work units on the North Carolina highways. Minimum security inmates work in “litter crews” and medium security inmates work in “road squads”. Litter crews typically consist of eight inmates supervised by one unarmed correctional officer and are transported in a passenger van. Road squads are typically made up of eight inmates and are supervised by two armed correctional officers. They are transported in a passenger van or small prison bus to their assigned work locations.

As of January 1, 2012, there were 51 litter crews and 74 road squads, totaling 125 work units. This reflects a 24% reduction in total work units from 2010 and a 31% reduction from 2009 (See Exhibit 1).

Exhibit 1

	Work Units					
	FY2007	FY2008	FY2009	FY2010	FY2011	Jan 2012
Litter crews	68	68	78	71	55	51
Road squads	104	110	104	93	74	74
Total	172	178	182	164	129	125

The DPS core mission is to protect the citizens of North Carolina. It has the responsibility to protect the public and ensure the well being of inmates and correctional officers while the inmates are on highway litter duty, in the prison, and anywhere else. The DPS screens minimum and medium security inmates who are considered low risk to serve on road squads. In order to be selected, medium and minimum security litter pickup inmates cannot:

- have a history of escape from armed supervision or more than one escape from minimum custody within the past five years
- have served less than 60 days in minimum or medium custody

In addition, medium security road squad inmates must:

- be within 36 months of minimum custody eligibility
- not have convictions for any serious assaultive crimes against persons unless they are within 12 months of minimum custody eligibility
- not have any pending charges for Class A or B criminal offenses
- not have a history of serious institutional violence within the last year

COSTS

The costs of a road squad and litter crew are based on historical costs, fiscal year 2013 benefit rates, and adjusted for inflation. The costs are \$94,955 and \$48,911 for a road squad and litter crew respectively. These costs are totaled for the 74 road squads and 51 litter crews active as of January 1, 2012, to allocate the costs between the road squads (74%) and litter crews (26%). These percentages are used to allocate the fiscal year 2012 appropriations (\$9,040,000)² to the cost of road squads and litter crews in fiscal year 2013. The costs and allocation percentages are shown in Exhibit 2. In addition, each cost component is described in more detail in Appendix A.

Exhibit 2

Cost Projections - Fiscal Year 2013			
	Cost components	Road squad	Litter crew
Personnel *			
	Correctional officer	\$29,446	\$29,446
	Lead officer	\$33,139	
	Health benefits	\$10,384	\$5,192
	Social Security tax	\$4,788	\$2,253
	Retirement	\$8,956	\$4,214
	CO sub-total	\$86,713	\$41,105
	Inmate pay	\$591	\$819
	Personnel total	\$87,301	\$41,924
Equipment and training**			
	Officer training	\$295	\$147
	Officer uniform	\$633	\$317
	Weapons	\$217	\$15
	Transportation	\$6,058	\$6,058
	Hand tools	\$15	\$15
	Cellular telephone	\$161	\$161
	Trailers	\$276	\$276
	Equipment/training total	\$7,654	\$6,988
Total annual cost per squad/crew		\$94,958	\$48,911
Number of squads/crews - January 2012		74	51
Total annual cost		\$7,026,873	\$2,494,479
% of total		74%	26%
* Personnel costs reflect January 2012 salaries with fiscal year 2013 benefit rates applied			
**Equipment and training costs reflect actual costs adjusted for inflation			

RATES

OSBM, DOT and DPS agree that an appropriate productivity measure for litter crews is the

² \$9,040,000 is 5% less than the total cost of the work units. However, DPS correctional officers assigned to litter pickup are sometimes redirected to work at the prisons for management decision (3%), security (1%) and other reasons. As a result, the cost attributed to litter pickup is about \$9,040,000.

number of highway shoulder miles³ cleaned since their overriding mission is litter pickup (90.9% of their hours were dedicated to litter pickup in fiscal year 2011). Road squads, on the other hand, are utilized for more diverse highway maintenance activities such as road clearing and weed control, which vary by squad and differ each year. (70.8% of their hours were dedicated to litter pickup in fiscal year 2011). The number of highway shoulder miles cleaned would not accurately reflect their productivity. Consequently, OSBM, DOT and DPS agree an hourly rate is more appropriate for road squads.

After determining a percentage of the total costs for litter crews and road squads (See Exhibit 2), the fiscal year 2012 appropriations is allocated to the two work units. Then, the costs are divided by the projected number of highway shoulder miles for litter crews and hours for road squads. OSBM used the average number of days each litter crew and road squad worked in 2011 to project 2013 crew days.

Litter crew rate

The litter crew rate for fiscal year 2013 is calculated to be \$69.88 per shoulder mile (See Exhibit 3). This rate is based on 26% of the current appropriations allocated to litter crews, \$2,368,428, divided by 33,894, the projected number of shoulder miles cleaned. The steps to obtain the 33,894 projected shoulder miles are as follows:

Exhibit 3

Fiscal Year 2013 Litter Crew Rate Projection		
FY12 appropriations:		\$9,040,000
Litter crew cost portion	26%	\$2,368,428
Crew days spent by litter crews in FY11		9,737
Average # of crews in FY11		63
Average Days each crew - FY11		154.56
Current # of crews		51
Crew-Days projected in 2013		7,882
Average shoulder miles per day per crew - FY11		4.3
Projected shoulder miles - FY13		33,894
Fiscal Year 2013 rate per shoulder mile		\$69.88

(1) DPS productivity reports show 9,737 days worked by litter crews in fiscal year 2011.

(2) 9,737 is divided by 63 which is the average number of crews in fiscal year 2011 (71 crews at the beginning of the year and 55 at the end of the year) resulting in an average 154.56 days each crew worked in fiscal year 2011.

(3) The 2012 projection of 7,882 crew-days is computed by multiplying the 154.56 average crew-days in fiscal year 2011 by the 51 crews on board as of January, 2012.

(4) The 7,882 projected crew-days for fiscal year 2012 are multiplied by 4.3, the average number of shoulder miles each crew cleaned per day in fiscal year 2011, as determined from the DPS productivity reports. This results in 33,894 shoulder miles projected for fiscal year 2013.

NOTE: The shoulder mile rate presented in this report assumes litter crews will continue to work on litter pickup 90.9% of their work time.

³ A highway shoulder mile is the length of highway along its shoulder. A mile of undivided highway equates to two shoulder miles of highway. A mile of divided highway with a high barrier median also equates to two shoulder miles because the inside shoulder is cleaned by DOT with a machine. If the highway is divided with a grassy median, a mile of highway equates to three shoulder miles because the median is also cleaned by inmates.

Road squad rate

The road squad rate for fiscal year 2013 is calculated to be \$105.73 per road squad hour. Exhibit 4 shows this rate is based on the current appropriations allocated to road squads, \$6,671,572, divided by 63,100, the projected number of road squad hours.

Exhibit 4

Fiscal Year 2013 Road Squad Rate Projection		
FY12 appropriations:		\$9,040,000
Road squad cost portion	74%	\$6,671,572
2011 Inmate hours on highway maintenance		545,395
Average # of squads in FY11		83.5
Average inmate hours per squad - FY11		6,532
Current # of squads		74
Inmate hours projected for FY13		483,344
Average # of inmates per squad		7.66
Squad-hours projected for FY13		63,100
Fiscal Year 2013 rate per squad hour		\$105.73

The 63,100 projected squad-hours are derived as follows:

(1) The DPS productivity reports show 545,395 inmate hours worked by road squads in fiscal year 2011.

(2) 545,395 is divided by 83.5 which is the average number of crews during fiscal year 2011 (DPS had 93 road squads at the beginning of the year and ended the year with 74 squads) to result in 6,532 hours each squad worked on average in fiscal year 2011.

(3) The 483,344 hours projected for fiscal year 2013 is computed by multiplying the 6,532 average squad-hours in fiscal year 2011 by the 74 squads on board as of January, 2012.

(4) The 483,344 projected squad-hours for fiscal year 2013 is divided by 7.66, the average number of inmates per squad in fiscal year 2011, to obtain 63,100 squad-hours projected for fiscal year 2013.

NOTE: If DPS hits the target annual productivity rates of 33,894 highway shoulder miles and 63,100 squad hours, and the proposed rates of \$69.88 and \$105.73 are used, the inmate litter program is estimated to cost \$9,040,076, the approximate amount of the fiscal year 2012 appropriation.

WORKER PRODUCTIVITY

OSBM reviewed the DPS productivity reports and observed five litter pickup work units. The work units included four from DPS and one private contractor.

The DPS productivity reports indicate inmates worked 65% of the total (260) weekdays in fiscal year 2011 (76% of the days by litter crews and 56% of the days by road squads). This caused DPS to miss its target of 70% of the days worked. Many of the reasons why litter crews and road squads are not deployed related to the DPS responsibility over the custody and security of inmates since the primary mission of DPS is public safety. Specific reasons for not working are provided in Exhibit 5 and explained on the next page.

Exhibit 5

Reasons For Not Working Fiscal Year 2011		
	% of days recorded	Equivalent 8-hr days
Weather	12%	31
Staff Shortage	11%	29
Holiday	4%	10
Management decision	3%	8
Vehicle repair	2%	5
Training	2%	5
Security	1%	3
Total	35%	91

Weather: DPS’s policy is to stop work if temperatures are above 95 degrees or below 20 degrees. The units also do not work in inclement weather⁴.

Staff shortage: Cases in which a correctional officer is not available to work due to illness, family leave, vacation, or other reason.

Holiday: State holiday

Management decision: Situations in which the facility management determines the correctional officers are needed at the facility

Vehicle repair: Vehicles unavailable due to repairs

Training: Officers generally attend a week of training each year

Security: Situations which require officers to provide security at the facility

Security guard resources must be occasionally redeployed from litter duty to the prisons. The reason for not working is generally recorded as “security” or “staff shortage” in the DPS productivity reports. The institutions typically do not have replacement officers to conduct litter pickup when the primary officer does not work. If either of the two officers on a work squad is not available, then the entire squad will generally not perform litter pickup.

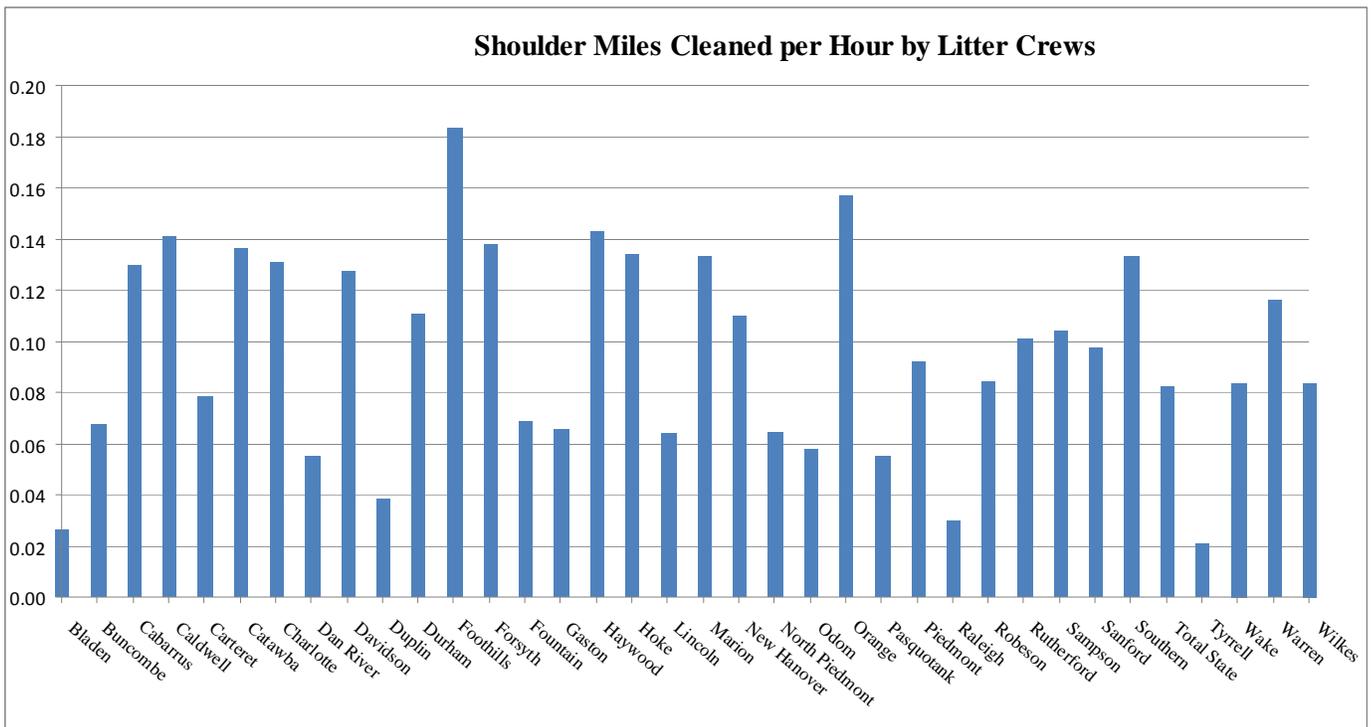
The number of days worked and the reasons for not working for each correctional facility are provided in Appendix B. Almost all of the facilities appear to record all days of the year in the system. OSBM observed an exception at the Raleigh Correctional Center for Women. The correctional officer was not aware of her responsibility to input reason codes into the DPS productivity program for days not worked. In addition, one of the facilities contacted by OSBM indicated officers were not allowed to use the “staff shortage” reason code for not working. Although training has been provided for system use, there are no DPS written policies or procedures regarding the determination of reason codes for not working.

⁴ DPS is responsible for the custody and security of inmates and must take precautions to ensure the health and safety of inmates and correctional officers.

The DPS productivity reports showed a wide range of distance cleaned per litter crew. Exhibit 6 shows an average of .08 miles per inmate per hour, with a low of .02 miles per inmate per hour at Tyrrell Prison Work Farm and a high of .18 miles per inmate per hour at Foothills Correctional Institution. On average, a litter crew can clean 4.3 shoulder miles per day.

NOTE: Miles cleaned per hour are not considered for road squads because they spend a high percentage (29.2%) of their time on highway maintenance activities not related to litter pickup, such as clearing debris after storms. The mileage associated with these other activities is not separately accounted for in the DPS productivity reports.

Exhibit 6

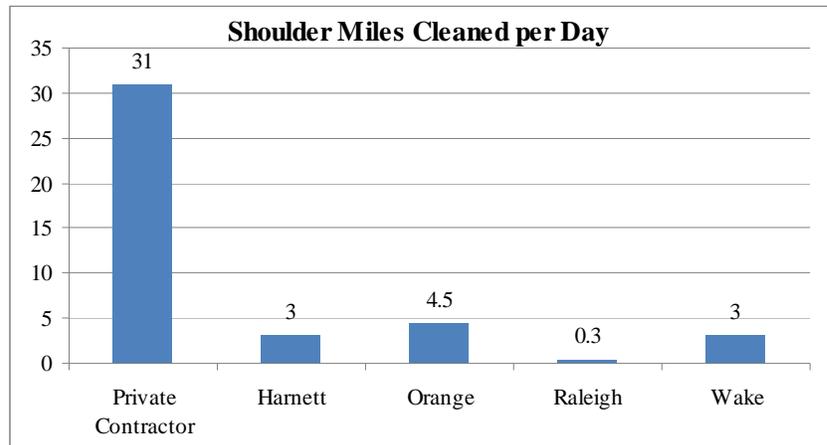


Work observations

OSBM observed four DPS litter pickup work units during four different days in August, 2011. The DPS units observed included litter crews from the Orange Correctional Center, Wake Correctional Center, and Raleigh Correctional Center for Women, and a road squad from the Harnett Correctional Institution. A private contractor was also observed. Both the private contractor and the Orange Correctional Center litter crew cleaned an Interstate highway, while the other three work units cleaned secondary roads.

We observed that both the inmates and the private contractor workers were thorough in their work and took their litter pickup responsibilities seriously. We also noted the private contractor had higher productivity rates in terms of shoulder miles cleaned as shown in Exhibit 7.

A primary difference between the private contractor and the DPS units is the manner in which the work is organized and how the workers are utilized. Each private contractor worker is transported and dropped off about three miles from his nearest co-worker. Each worker works alone until he meets another co-worker. Each worker has responsibility for the entire highway shoulder. In contrast, up to eight DPS inmates work on a highway shoulder at the same time. However this is necessary to ensure public safety since it allows the correctional officer to observe all the inmates which reduces the risk of escape and ensure the safety of the correctional officer.



Another difference noted is time management and hours worked. The private contractor workers picked up litter almost constantly throughout the entire day, from 9:00AM to 3:30PM, taking breaks only for lunch or when transported to another location. We noted several instances in which the DPS units did not work the entire day: (1) a management decision at Wake Correctional Center to stop operations at noon because of the heat⁵, (2) a stop at the DOT maintenance yard by the Harnett Correctional road squad to obtain route instructions and to fill the cooler with water and ice, (3) a stoppage of work by a Raleigh Correctional litter crew due to mechanical problems even though the van had been recently in the garage for repairs, and (4) the Raleigh Correctional Center for Women crew lacked travel route information and drove around Raleigh neighborhoods looking for litter. DPS explained this last situation occurred because of a recent re-organization and turnover of personnel.

The last difference noted is the use of tools and supplies. The private contractor used tools called “grabbers” to pick up litter. The grabbers have two pinchers to pick up the litter, providing workers with the ability to pick up items quickly. When a grabber broke, another grabber was immediately provided as a replacement. The Orange and Wake Correctional inmates used grabbers, while the other DPS units used “pokers” or no tools at all. The pokers required extra effort when removing plastic bottles or picking up smaller pieces of paper or wet paper. The private contractor workers carried their own water bottles so that they did not need to stop for water breaks at the van; whereas the DPS workers stopped at the van’s water coolers for breaks.

⁵ DPS is responsible for the custody and security of inmates and must take precautions to ensure the health and safety of inmates and correctional officers.

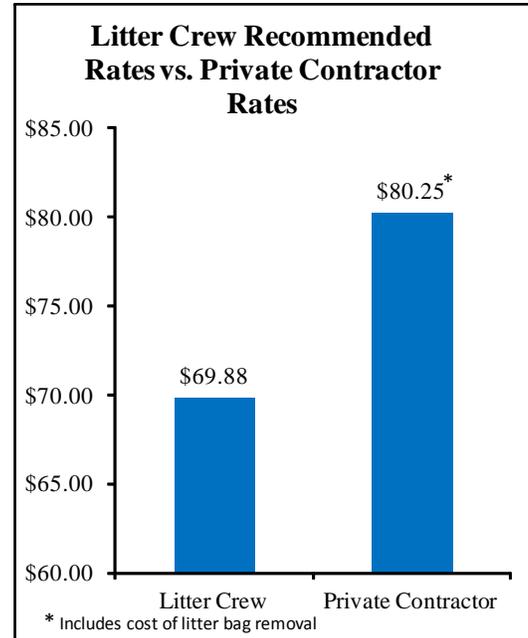
Comparisons

The private contractor uses six to eight individuals for their litter pickup teams. This is similar to the inmate litter crews which use an average of 7.57 inmates. Exhibit 8 shows the private contractor is paid 13% higher⁶ than that recommended for litter crew per shoulder mile reimbursement. However, the private contractor is seven times more productive, cleaning 31 shoulder miles during our observation while inmate litter crews clean 4.3 miles per day on average⁷. The main reason for the difference in productivity is related to the core mission of the DPS which is public safety. The custody and security of inmates that participate in litter pick-up are priorities which affect the efficiency of these litter crews. See page 8 for details on productivity.

A comparison of road squads is not provided since:

- 1) Approximately 29% of a road squads time is spent on activities unrelated to litter pickup; and
- 2) It is recommended to reimburse road squads by the hour worked not shoulder mile cleaned.

Exhibit 8



HIGHWAY LITTER MANAGEMENT

Pursuant to G. S. 136-28.1(l), the North Carolina Department of Transportation has recently initiated a pilot public-private partnership program, Sponsor-A-Highway, to provide a means for businesses, individuals and other organizations to sponsor roadside litter removal. The pilot areas include all of Interstate 95 and Interstate 40 from the Orange-Durham county line to Kings Grant Road in New Hanover County. Two service providers, Adopt-A-Highway Litter Removal Service of America, Inc and Adopt-A-Highway Maintenance Corporation have been selected to provide the litter cleanup duties paid for by the sponsor. As of January 11, 2012, seven shoulder miles have been sponsored and signs placed on the highway, mostly from the Raleigh Durham International airport to the City of Raleigh along Interstate 40. The service providers are currently initiating marketing campaigns to promote the program to potential sponsors.

Other state DOT's employ various options for managing litter removal programs using inmates. In addition to using inmates from state correctional institutions, inmates from county or municipal jails are utilized. For example, the Mississippi Transportation Commission has entered into a Memorandum of Understanding with local law enforcement departments to remove litter from state highways. The Mississippi DOT furnishes equipment and vehicles (when available) and pays the salary (not to exceed \$10.00 per hour) and travel expenses of the local deputy/officer assigned to supervise prisoners under the municipal or county authority. The Ohio DOT employs a similar program and pays a maximum of \$40.00 per hour for the services of a deputy sheriff or supervisor to supervise a work crew provided by the county.

⁶ Includes cost of litter bag removal.

⁷ Based on DPS productivity reports.

RECOMMENDATIONS

- 1) Authorize payments of \$69.88⁸ per shoulder mile for litter crews and \$105.73⁸ per hour for road squads in fiscal year 2013. Payments should be made on a quarterly basis or more often, based on miles and hours logged in the DPS productivity reports. Miles and hours are to be recorded in the DPS system the same week as work occurs and approved by DOT the following week. If a discrepancy occurs, DOT and DPS are to resolve within ten days of the work week.
- 2) Improve route planning and equipment preparation schedules in order to increase the number of hours worked. DOT should communicate in writing, via e-mail or fax, a route plan for the following week to the DPS correctional officer in charge. At the end of each work day, DPS vans drivers should obtain fuel, water and supplies for the next day to avoid spending time in the morning for these activities.
- 3) Provide written DPS policies and procedures regarding the use of the productivity reporting system. This should include an agency-wide definition of reasons for not working on highway maintenance. Ensure all correctional officers are trained on the definition and use of the reason codes.
- 4) Determine reasons for low worker productivity at those DPS institutions with below average productivity. Implement procedures to improve productivity in those facilities. In those sections of the state in which productivity improvements are needed but not feasible, DOT should consider contracting with other public or private institutions residing in those sections of the state.

ACKNOWLEDGEMENTS

OSBM wishes to express its appreciation to the management and the staff of DPS and DOT for their cooperation during the performance of this study.

⁸ The rate should be adjusted each fiscal year for salary and benefit cost changes and price inflation.

APPENDIX A

Costs Related to Litter Crews and Road Squads

1. Personnel Cost in Exhibit 9

There are two components to the personnel expense: 1) DPS correctional officers and 2) inmates. For DPS correctional officers, the projected annual DPS personnel cost of each road squad which includes a lead correctional officer and another correctional officer is \$87,301. The projected annual personnel cost of each litter crew which consists of one correctional officer is \$41,924. The salaries of lead correctional officers and correctional officers are based on the average salaries taken from a State BEACON report dated January 2012. Factors of 7.65% for Social Security tax and 14.31% for retirement benefits represent fiscal year 2013 state rates. \$5,192 represents the estimated average employee's state health benefits for fiscal year 2013. The personnel costs do not include a relief factor since work units generally do not operate when the primary personnel are absent. The inmates receive a pay stipend of \$0.70 per day on days of litter pickup. In fiscal year 2011, a litter crew was paid \$818.99 per year and road squads \$591.49 per year. These figures were determined by multiplying the number of days worked, the average number of inmates per unit, and the 70 cents rate to obtain a total annual cost for each type of work unit. The totals were then divided by the number of work units to obtain the annual cost per unit. No price inflation factor, other than fiscal year 2013 projected benefit rates, is applied.

Exhibit 9

Work Unit	Inmate Personnel Costs					
	Days Worked	Average Inmates/Unit	Rate	Annual Cost	# of Units	Annual Cost per Unit
Minimum security work crew	9737	7.57	\$0.70	\$51,596.36	63	\$818.99
Medium security road squads	9211	7.66	\$0.70	\$49,389.38	83.5	\$591.49

2. Training Cost in Exhibit 10

The projected annual cost of \$147.40 for one correctional officer for a litter crew and \$294.80 for two road squad officers is based on the fiscal year 2012 \$1,288 cost of a four week training for new employees amortized over nine years. OSBM determined nine years is the average number of years a correctional officer and lead officer are employed by the State based on a sample of 169 employees from a July 2011 BEACON report. This report showed 56 (33%) of the subject employees were new by comparing their names to a July 2008 report. This represents a turnover of 33% over three years and equates to a turnover of 11% (1/3 of 33%) per year, or a complete turnover (100%) over nine years (11% is 1/9 of 100%). The four week training costs consist primarily of per diem costs for meals and hotel and are updated to the current rates in the exhibit 10. A 3% factor is applied for one year of inflation. (No cost is applied to the annual one-week correctional officer training since it is funded by the federal government and employees return to their own homes in the evenings).

Exhibit 10

Training Costs		
Item		Cost
Student Per Diem Costs: 20 days @ \$59.45/day		\$1,189.00
Class manual costs		
CO Basic Instructor Manual (\$69.20/12)		\$5.77
CO Intermediate Instructor Manual (\$34.99/12)		\$2.92
Firearms ammo, targets, and backers		
Ammo .40 caliber /150 rds@ .25 per round		\$37.80
Targets /familiarity 4 @ .33 per target		\$1.32
Targets/Qualifying 2@ .58 per target		\$1.16
Backers 1 @1.60 per backer		\$3.20
Classroom Supply Costs		
1 OSDT Student Handbook		\$0.34
1 Student Manual (Basic)		\$36.85
1 3" Binder		\$3.32
1 Name Card		\$0.08
1 First Aid Card		\$3.00
1 CPR Card		\$1.00
1 lung Bag		\$0.29
1 #2 Pencil		\$0.05
1 Highlighter		\$0.39
Other Miscellaneous Costs		
OSDT 3 (student information form		\$0.14
Statement of Agreement & Understanding Form		\$0.14
1 Graduation Certificate		\$0.07
1 Firearms Certificate		\$0.07
1 Student Information Scanning Sheet		\$0.10
1 Test Scoring Scanning Sheet		\$0.09
1 Blank Sheet Scratch Paper		\$0.01
2 #2 Pencils		\$0.90
Total Costs		\$1,288.00
CO/Lead CO complete turnover every 9 years		9
Training cost per employee per year in FY 2012		\$143.11
Price inflation factor		3%
Training cost per employee per year in FY 2013		\$147.40

3. Uniforms Cost in Exhibit 11

The projected annual cost of \$316.59 for a correctional officer's uniform is based on costs from a DPS central warehouse inventory report dated July 2011 and escalated 6% for two years of inflation.

Exhibit 11

Uniform Costs		
Description	Qty	Cost
Shirt	4	\$74.22
Belt	1	\$18.70
Cruiser Coat, Navy	1	\$56.97
Windbreaker jacket	1	\$21.00
Duty hat, baseball style, navy, 24/box	1	\$2.05
Pants	4	\$70.00
Boots	1	\$55.48
Uniform cost per employee in FY 2011		\$298.42
Price inflation factor (2 years)		6%
Uniform cost per employee per year in FY 2013		\$316.59

4. Weapons Cost in Exhibit 12

The annual weapon costs of \$216.62 and \$14.57 for road squads and litter crews, respectively, are based on costs from a DPS central warehouse inventory report dated July 2011 and escalated 6% for two years of inflation.

Exhibit 12

Weapons Cost				Useful life	Annual
Medium road squads	Quantity	Unit Cost	Total Cost	(in years)	cost
12 gauge shot guns	2	\$245.03	\$490.06	10	\$49.01
S&W 40 caliber semiauto pistol	2	\$370.00	\$740.00	10	\$74.00
shot gun rounds	5	\$0.04	\$9.70	1	\$9.70
40 caliber rounds	60	\$0.35	\$20.82	1	\$20.82
handcuffs	2	\$17.02	\$34.04	10	\$3.40
pepper spray	2	\$10.39	\$20.78	1	\$20.78
shot gun shoulder slings	2	\$19.95	\$39.90	10	\$3.99
pistol magazines	2	\$18.94	\$37.88	10	\$3.79
pistol holsters	2	\$64.23	\$128.46	10	\$12.85
handcuff holsters	2	\$7.94	\$15.88	10	\$1.59
pepper spray holsters	2	\$8.44	\$16.88	10	\$1.69
magazine pouch	2	\$12.87	\$25.74	10	\$2.57
FY 2011 weapons costs			\$1,580.14		\$204.18
Escalation Factor (2 years)					6%
FY 2013 weapons cost					\$216.62
Minimum litter crews					
handcuffs	1	\$17.02	\$17.02	10	\$1.70
pepper spray	1	\$10.39	\$10.39	1	\$10.39
handcuff holsters	1	\$7.94	\$7.94	10	\$0.79
pepper spray holsters	1	\$8.44	\$8.44	10	\$0.84
FY 2011 weapons cost			\$43.79		\$13.73
Price inflation factor (2 years)					6%
FY 2013 weapons cost					\$14.57

5. Transportation Cost in Exhibit 13

All new vehicles purchased for inmate litter pickup are passenger vans. The transportation annual cost is based on a 2011 vehicle invoice of \$24,649 provided by DPS. It is amortized over fifteen years with a salvage value of \$1,000 (useful life and salvage value provided by the Motor Fleet Management Division). Tax and tags costs are calculated at the same rate as was applied in 2011. Total vehicle operating expenses are obtained from a June 2011 NCAS report. The cost per vehicle is calculated by dividing the total expense by the number of DPS vehicles utilized by adult corrections. Of the total number of vans used by DPS for litter pickup, 86% (125.5 of 146.5) of the average number of vans in fiscal year 2011 are funded by DPS (the remaining vans are paid for by DOT). Therefore, 86% is applied to the annual vehicle expense to result in

\$5,641 in fiscal year 2011 annual vehicle expenses⁹. Cost inflation factors applied to the various cost categories brings the fiscal year 2013 annual vehicle expense to \$6,058.

Exhibit 13

Annual Cost per Van					
Item	Total Cost	Annual Cost	Price Inflation*	FY 2013 Cost	
Van (per DPS)	\$24,649				
Salvage value	\$1,000				
Net value	\$23,649				
Annual cost (15 year useful life)		15	\$1,577	3%	\$ 1,624
Tax/tags			\$752	3%	\$ 774
Operating cost (see table below)			\$4,257	10%	\$ 4,673
Total annual costs			<u>\$6,585</u>		<u>\$ 7,071</u>
Average number of vans paid by DOC	125.5				
Average number of vans used	146.5				
% of vans paid by DOC	86%				
Total annual costs to DPS			\$5,641		\$ 6,058

Vehicle Operating Cost June 30, 2011		
Account Description	Amount	Cost per Vehicle
Repairs - Motor Vehicles	926,791.40	858.94
Gasoline	3,397,048.46	3,148.33
Tires & Tubes	159,077.41	147.43
Motor Veh Replacement Part	110,093.09	102.03
Total Operating Cost	<u>4,593,010.36</u>	<u>4,256.73</u>
Number of DPS Adult Corrections Vehicles		1,079

* Price escalation factors use 3% 2011-2012 Consumer Price Index for all categories except gasoline; gasoline is based on 2011-2012 US Energy Information Administration price comparison (11%)

6. Hand Tool Cost in Exhibit 14

A projected \$14.76 in hand tools cost per work unit for fiscal year 2013 is based on calendar year 2009 costs that DOT billed to DPS which are divided by the 173 average number of work units in fiscal year 2010. A price inflation factor of 8% is applied to result in \$14.76 in fiscal year 2013 costs.

⁹ It should be noted that DPS may have to fund the 21 vans currently funded by DOT when they are retired. However, DPS has extra vans from the community work program and from correctional institution closings. Assuming a 15-year life, DPS must locate 8-9 replacement vans per year (1/15th of the total 129 litter vehicles). It could not be determined what portion of the replacements were planned to be purchased versus transferred from another program.

Exhibit 14

Hand Tools and Supplies Cost			
	Description	Quantity	Sub-Total
Jan. 2009	HARD HAT, GREEN, DOC	1	\$ 6.88
Feb. 2009	HANDLE, DITCHBANK, 5" BLADE SLOT	1	\$ 5.77
Mar. 2009	None		
Apr. 2009	CUP, DRINKING 5 OZ. FLATBOTTOM (2500/CS)	1	\$ 74.78
May. 2009	None		
Jun. 2009	HARD HAT, GREEN, DOC	3	\$ 28.66
	HARD HAT, GREEN, DOC	5	\$ 47.76
	CUTTER, WEED, SLING BLADE	2	\$ 27.61
	CUTTER, WEED, SLING BLADE	3	\$ 41.41
	BLADE, DITCH BANK, 16" DOUBLE BLADE	1	\$ 26.41
	BLADE, DITCH BANK WITH FIBERGLASS HANDL	1	\$ 63.42
	BLADE, DITCH BANK WITH FIBERGLASS HANDL	3	\$ 190.26
	WRENCH, ADJUSTABLE 10"	1	\$ 12.41
	WRENCH, 1/2" X 9/16" OPEN END STD LENGTH	2	\$ 10.15
	Rd Signs & Signals	6	\$ 690.00
			\$1,138.09
Jul. 2009	None		
Aug. 2009	Shop Sup & Sm Tools	3	\$ 40.42
	Shop Sup & Sm Tools	2	\$ 11.69
	Maint Mtrls &Sup Oth	1	\$ 19.65
	Shop Sup & Sm Tools	1	\$ 38.80
	Shop Sup & Sm Tools	2	\$ 69.34
	Maint Mtrls &Sup Oth	25	\$ 107.11
			\$ 287.01
Sep. 2009	RAKE, POTATO, 5 TINE	4	\$ 96.45
	PITCHFORK W/ 48" FIBERGLS HANDLE-5 TINE	4	\$ 142.00
	HARD HAT, GREEN, DOC	1	\$ 9.54
	HANDLE, DITCHBANK, 4 HOLE, 36"	4	\$ 19.32
	CUTTER, WEED, SLING BLADE	3	\$ 40.42
	CUTTER, WEED, SLING BLADE	2	\$ 26.95
	HANDLE, DITCHBANK, 5" BLADE SLOT	1	\$ 5.85
	HANDLE, DITCHBANK, 5" BLADE SLOT	2	\$ 11.69
	AXE, SINGLE BIT, WITH HANDLE, 4 LB	1	\$ 22.42
			\$ 374.64
Oct. 2009	None		
Nov. 2009	HARD HAT, GREEN, DOC	1	\$ 9.54
	BLADE, DITCH BANK, 16" DOUBLE BLADE	3	\$ 110.20
	PITCHFORK, W/HANDLE (6 TINES)	1	\$ 22.10
	CUP, DRINKING 5 OZ. FLATBOTTOM (2500/CS)	1	\$ 67.74
	HANDLE, DITCHBANK, 5" BLADE SLOT	14	\$ 83.13
	BIT, HARD DRILL, 1 1/64" DIA.	12	\$ 16.16
	BIT, HARD DRILL, 5/32" DIA.	12	\$ 12.27
	BIT, HARD DRILL, 3/32" DIA	12	\$ 10.13
	BIT, HARD DRILL, 1/8"DIA	12	\$ 9.44
	BIT, HARD DRILL, 1/16" DIA	12	\$ 6.87
	BIT, HARD DRILL, 5/16" DIA	12	\$ 38.71
	BIT, HARD DRILL, 15/64" DIA.	12	\$ 15.48
			\$ 401.77
Dec. 2009	BATTERY, 12V, TOP MOUNT, GROUP SIZE 4DLT	1	\$ 82.27
	Total - CY 2009		\$ 2,371.21
	AVERAGE NUMBER OF WORK UNITS IN FY 2010		173
	ANNUAL COST		\$ 13.71
	PRICE INFLATION FACTOR (3 YEARS)		8%
	ANNUAL COST - FY 2013		\$ 14.76

7. Cell Phone Cost in Exhibit 15

The projected fiscal year 2013 annual cell phone cost of \$161.19 per work unit is based on 2009 calendar year costs as directed by DPS. The DOT costs from calendar year 2009 that were billed to DPS were used and divided by the 174 road squads and litter crews that had cell phones at that time. A price inflation rate of 8% is applied to result in a \$161.19 fiscal year 2013 annual cost for cell phone use per work unit.

Exhibit 15

Description	Cell Phone Costs							
	Initial Start-up Cost	# of phones	Monthly Cost/phone	Tax, Admin Fees/phone	Monthly Cost/phone	Total Annual Cost	Years of service	Annualized cost
1. Alltel Flex 60		113	\$ 13.28	\$ 2.35	\$ 15.63	\$21,194.28	n/a	\$21,194.28
2. Verizon Flat Rate Plan		44	\$ 1.84	\$ 0.33	\$ 2.17	\$1,143.44	n/a	\$1,143.44
3. US Cellular Flex tier 60		17	\$ 15.38	\$ 2.72	\$ 18.10	\$3,692.73	n/a	\$3,692.73
Total		174						
Adapter	\$23.06					\$23.06	2	\$11.53
Universal Carrying Case	\$10.00					\$10.00	2	\$5.00
Total annual cost								\$26,046.98
Fiscal year 2010 cost per work unit								\$149.70
Price inflation factor (3 years)	8%							
Fiscal year 2013 cost per unit								\$161.19

8. Trailer Cost in Exhibit 16

The projected annual trailer cost of \$275.56 per work unit is based on 2009 costs as directed by DPS. DPS's Correction Enterprises' costs are amortized over fifteen years as shown in the next exhibit. A price inflation factor of 8% is applied and results in \$275.56 in fiscal year 2013 costs per work unit.

Exhibit 16

Trailer costs	
Item	Cost
Fender (2)	\$46.28
Tire & Wheel (2)	\$193.06
2" Ball Coupler	\$13.06
Hanger Kit for Axle; Double Eye Springs; U Bolt Kit	\$76.94
6-way round plug	\$8.62
Swivle Jack	\$36.58
Tail Light Kit	\$19.67
Safety Chain	\$13.55
Axle	\$378.02
Port-a-john	\$507.92
Tubing/Flat/Angle	\$2,028.56
Bending	\$76.88
Paint (gal) (4)	\$40.55
Paint supplies (i.e. rollers, brushes, etc.)	\$114.19
Decals (2)	\$39.18
Strobe (1)	\$48.22
NCX Numbers	\$10.00
Trailer Works	\$128.00
Polyportables	\$56.25
Specialty Manufacturing, Inc.	\$3.05
Total	\$3,838.58
Useful life in years	15
Fiscal year 2010 trailer cost	\$255.91
Price inflation factor (3 years)	8%
Fiscal year 2013 trailer cost	\$ 275.56

Appendix B Productivity Report

Work Attendance - FY11

	Litter Crews / Road Squads	Days Reported	Days Worked	% worked	Days Not Worked	% not worked	Reasons for not working															
							Weather		Holiday		Training		Staff Shortage		Mgmt Decision		Vehicle Repair		Security		No DOT Pickup	
							Days	%	Days	%	Days	%	Days	%	Days	%	Days	%	Days	%	Days	%
Western																						
Avery Mitchell	8	1,650	970	59%	680	41%	116	17%	88	13%	41	6%	374	55%	41	6%	20	3%	0	0%	0	0%
Buncombe	1	217	162	75%	55	25%	40	73%	11	20%	0	0%	4	7%	0	0%	0	0%	0	0%	0	0%
Caldwell	2	382	275	72%	107	28%	27	25%	13	12%	3	3%	45	42%	19	18%	0	0%	0	0%	0	0%
Catawba	2	405	349	86%	56	14%	35	62%	21	37%	0	0%	0	0%	0	0%	1	1%	0	0%	0	0%
Charlotte	1	250	216	86%	34	14%	10	29%	11	32%	0	0%	7	21%	6	18%	0	0%	0	0%	0	0%
Craggy	4	826	500	61%	326	39%	104	32%	33	10%	20	6%	170	52%	0	0%	0	0%	0	0%	0	0%
Foothills	1	260	179	69%	81	31%	40	49%	10	12%	4	5%	21	26%	1	1%	5	6%	0	0%	0	0%
Gaston	1	220	212	96%	8	4%	7	88%	0	0%	0	0%	0	0%	0	0%	1	12%	0	0%	0	0%
Haywood	2	306	216	71%	90	29%	39	43%	13	14%	0	0%	38	42%	0	0%	0	0%	0	0%	1	1%
Lincoln	4	828	722	87%	106	13%	61	58%	35	33%	4	4%	0	0%	1	1%	0	0%	4	4%	0	0%
Marion	1	259	226	87%	33	13%	7	21%	11	33%	0	0%	15	45%	0	0%	0	0%	0	0%	0	0%
Rutherford	2	369	248	67%	121	33%	47	39%	13	11%	5	4%	53	44%	0	0%	0	0%	0	0%	2	2%
Wilkes	3	619	479	77%	140	23%	52	37%	18	13%	6	4%	28	20%	35	25%	0	0%	0	0%	0	0%
Piedmont																						
Albemarle	6	1,241	693	56%	548	44%	170	31%	60	11%	11	2%	274	50%	16	3%	16	3%	0	0%	0	0%
Brown Creek	6	1,214	540	44%	674	56%	256	38%	20	3%	20	3%	357	53%	20	3%	0	0%	0	0%	0	0%
Cabarrus	2	272	264	97%	8	3%	0	0%	1	10%	0	0%	6	73%	0	0%	0	0%	0	0%	1	17%
Caswell	7	1,357	845	62%	512	38%	174	34%	72	14%	51	10%	189	37%	26	5%	0	0%	0	0%	0	0%
Dan River	3	579	432	75%	147	25%	47	32%	22	15%	12	8%	49	33%	16	11%	0	0%	0	0%	0	0%
Davidson	1	241	207	86%	34	14%	1	3%	1	3%	0	0%	1	3%	0	0%	0	0%	0	0%	31	91%
Durham	2	242	242	100%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Forsyth	1	192	173	90%	19	10%	9	47%	3	16%	1	5%	0	0%	0	0%	5	26%	0	0%	1	5%
Harnett	2	419	231	55%	188	45%	58	31%	21	11%	6	3%	0	0%	45	24%	47	25%	0	0%	11	6%
Orange	1	216	145	67%	71	33%	22	31%	5	7%	6	8%	17	24%	1	1%	14	20%	0	0%	6	8%
Piedmont	1	155	140	90%	15	10%	5	33%	5	33%	0	0%	4	27%	1	7%	0	0%	0	0%	0	0%
Randolph	1	5	5	100%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Sanford	2	384	346	90%	38	10%	24	62%	7	19%	7	19%	0	0%	0	0%	0	0%	0	0%	0	0%
Central																						
Franklin	4	739	460	62%	279	38%	98	35%	11	4%	31	11%	56	20%	53	19%	25	9%	0	0%	0	0%
Johnston	4	790	429	54%	361	46%	72	20%	40	11%	0	0%	90	25%	14	4%	141	39%	0	0%	0	0%
Odom	2	517	199	38%	318	62%	105	33%	22	7%	10	3%	156	49%	16	5%	13	4%	0	0%	0	0%
Wake	2	345	201	58%	144	42%	76	53%	10	7%	0	0%	45	31%	13	9%	0	0%	0	0%	0	0%
Warren	11	2,297	1,213	53%	1,084	47%	390	36%	130	12%	98	9%	271	25%	108	10%	87	8%	0	0%	0	0%
Wayne	5	808	493	61%	315	39%	107	34%	44	14%	41	13%	76	24%	19	6%	28	9%	0	0%	0	0%
South Central																						
Columbus	6	1,204	630	52%	574	48%	138	24%	34	6%	23	4%	0	0%	63	11%	34	6%	287	50%	0	0%
Hoke	2	412	226	55%	186	45%	60	32%	15	8%	0	0%	50	27%	41	22%	19	10%	0	0%	2	1%
Lumberton	8	1,461	719	49%	742	51%	275	37%	74	10%	111	15%	0	0%	208	28%	74	10%	0	0%	0	0%
New Hanover	2	415	227	55%	188	45%	62	33%	21	11%	4	2%	94	50%	0	0%	2	1%	0	0%	6	3%
Pender	6	1,232	762	62%	470	38%	132	28%	33	7%	47	10%	254	54%	0	0%	9	2%	0	0%	0	0%
Robeson	1	259	171	66%	88	34%	38	43%	10	11%	5	6%	30	34%	0	0%	4	5%	0	0%	1	1%
Sampson	2	520	411	79%	109	21%	48	44%	20	18%	0	0%	17	16%	22	20%	1	1%	0	0%	0	0%
Eastern																						
Carteret	3	580	456	79%	124	21%	26	21%	4	3%	7	6%	33	27%	35	28%	19	15%	0	0%	0	0%
Duplin	2	411	308	75%	103	25%	58	56%	14	14%	10	10%	16	16%	4	4%	1	1%	0	0%	0	0%
Eastern	3	626	444	71%	182	29%	35	19%	35	19%	22	12%	55	30%	4	2%	35	19%	0	0%	0	0%
Hyde	4	659	198	30%	461	70%	143	31%	28	6%	23	5%	217	47%	46	10%	5	1%	0	0%	0	0%
Pasquotank	4	847	694	82%	153	18%	21	14%	15	10%	26	17%	61	40%	29	19%	2	1%	0	0%	0	0%
Tyrrell	4	870	707	81%	163	19%	104	64%	41	25%	0	0%	0	0%	18	11%	0	0%	0	0%	0	0%
Female																						
Fountain	2	461	297	64%	164	36%	43	26%	11	7%	5	3%	93	57%	3	2%	0	0%	0	0%	8	5%
N. Piedmont	1	229	202	88%	27	12%	13	48%	1	4%	1	4%	10	37%	0	0%	2	7%	0	0%	0	0%
Raleigh	1	128	128	100%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Southern	2	433	356	82%	77	18%	59	77%	0	0%	1	1%	3	4%	9	12%	4	5%	0	0%	0	0%
Total	148	29351	18948	65%	10,403	35%	3,452	33%	1,106	11%	660	6%	3,279	32%	934	9%	613	6%	291	3%	70	1%