

# NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

## PHASE II MS4 - KENT AND SUSSEX COUNTIES

PERMIT NO. DE 00511144

## ANNUAL REPORT FOR 2015

JULY 1, 2016



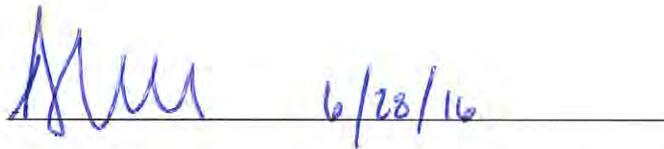
Good Housekeeping Program  
Annual Facility Stormwater Inspections  
Gravel Hill Maintenance Yard  
Sussex County



Illicit Discharge Detection & Elimination Program  
Incident ID No. 2015-1-D  
Non-DeIDOT Connection - Legal Sump Pump  
Sussex County

## CERTIFICATION

I certify under penalty of perjury that this document and all attachments are true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. As to the identified portions of this document for which I cannot personally verify their truth and accuracy, I certify as Delaware Department of Transportation's official having responsibility for the persons who, acting under my direct instruction, made the verification that this information is true, accurate, and complete.

A handwritten signature in blue ink, appearing to be "Brian Urbanek", followed by the date "6/28/16". The signature and date are written above a horizontal line.

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## **PROGRAM SUMMARY AND PROJECTION**

The objective of the Delaware Department of Transportation (DelDOT) NPDES Program is to reduce stormwater pollutants from the MS4 (municipal separate storm sewer system) to the maximum extent practicable. This is accomplished through the implementation of a comprehensive stormwater pollution prevention and management program as contained in the NPDES Permit No. DE 0051144, effective July 1, 2003.

The purpose of this review and update is to summarize activities for 2015 and provide a projection of work for calendar year 2016. Table A summarizes the Minimum Control Measures, BMPs, Measurable Goals, and Status of Implementation for the entire permit term. Work projections for 2016 are provided at the end of this section in Table B.

### **2015 Program Summary**

#### Public Education and Outreach

DelDOT's public education program includes the following accomplishments for calendar year 2015:

- Executed Agreement 1736 with the Delaware Nursery Landscape Association to manage the Delaware Livable Lawns program for the next three years.
- DelDOT is continuing the "Door Hanger Campaign," begun in 2006, as an educational tool to neighborhoods where illicit disposal are reported.
- DelDOT staff participated in the following public outreach events and distributed educational materials including bookmarks, brochures, calendars and promotional giveaways that carry a water quality message:
  - Make-a-Splash – Event for 700 4<sup>th</sup> graders to educate students on the diversity of estuary life and the importance of Delaware's water resources;
  - Delaware State Fair – We worked with the University of Delaware to produce a display demonstrating green, sustainable lawn care practices. .
- DelDOT staff served on the board of directors with the Delaware Association for Environmental Education (DAEE) and helped organize the annual statewide environmental education conference.

## Public Involvement and Participation

DelDOT makes opportunities for members of the public to participate in program development and implementation through:

- Public participation in the DelDOT budget process.
- Adopt-a-Highway program, using volunteers to reduce litter along state roadways.
- DelDOT's annual "Imagine a Litter Free Delaware" cleanup day along roads, highways and community areas.
- DelDOT's Door Hanger Campaign to solicit public participation to report illegal dumping and "neighborhood watch."
- Maintained website as an education tool and public reporting: "Report a Problem" link to report illicit discharges.

## Illicit Discharge Detection and Elimination (IDDE)

DelDOT completed inventory, inspection and dry-weather screening of all parts of the DelDOT owned stormwater conveyance system in the Phase II urbanized area in 2007. These data are incorporated into the existing comprehensive GIS database that enables users to view the entire stormwater system, corresponding inspection data and photographs. KCI Technologies continues to expand the inventory and inspection program to the rest of Kent and Sussex Counties and to update new structures that are added to the system. New outfalls are screened for dry weather flow or evidence of illicit discharges as they are inventoried and inspected.

Inventory and inspection of Kent County has been completed. Emphasis in 2015 was on completion of Sussex County. The MS4 database and map viewer are continually updated as the inspections are completed. A new mobile map viewer application was developed that greatly assists field crews in tracking discharges through the storm sewer system.

DelDOT also continued a public education program to help eliminate improper disposal and dumping into storm drains. Whenever evidence of improper dumping is discovered, either through routine inspections or citizen complaints, the entire community is canvassed with educational door hangers. In addition, we helped publicize Delaware Solid Waste Authority (DSWA)'s Household Hazardous Waste Collection Program and DNREC's "TrashStoppers" Program.

## Construction Site Stormwater Runoff Control

The Department of Natural Resources and Environmental Control (DNREC) has delegated the authority to administer a sediment and stormwater program to DelDOT. Satisfactory performance of the delegated responsibilities will be considered compliance with this component of the SWMP. This delegation was renewed for another three years through June 30, 2018.

## Post-Construction Stormwater Management in Newly Developed Areas and in Redeveloped Areas

DNREC has delegated the authority to administer a sediment and stormwater program to DelDOT. Satisfactory performance of the delegated responsibilities will be considered compliance with this component of the SWMP. This delegation was renewed for another three years through June 30, 2018.

DelDOT continued to inspect all BMPs annually and to perform maintenance as required.

## Pollution Prevention and Good Housekeeping

DelDOT has developed and implemented an operation and maintenance program with a goal of preventing and/or reducing discharges of pollutants associated with our operations through implementation of the following:

- Maintenance of the roadways and stormwater conveyance system.
- Continue to implement a 4:2:1 street sweeping frequency in the Phase II area and to track sweeping wastes for calculation of pollutant load reductions.
- Continue to upgrade the existing snow removal fleet with ground speed spreader controls, plow balance valves and apply the techniques of anti-icing and pre-wetting in an effort to reduce overall salt usage during the winter season. New trucks will be fully equipped with ground speed spreader controls and plow balance valves. To date, all DelDOT trucks are equipped with the latest snow fighting equipment.
- Litter pickup by Department maintenance staff, Department of Corrections crews, and the Adopt-a-Highway Program; and, an annual “Imagine a Litter Free Delaware” cleanup day.
- Continued implementation of the Stormwater Pollution Prevention Program (SWPPP) at all DelDOT maintenance facilities. Quarterly wet and dry weather inspections and comprehensive annual inspections are conducted at each yard.
- Monitoring of stormwater outfalls at our maintenance yards per SWPPP.
- Continue to implement Spill Prevention Control and Countermeasures (SPCC) plans for all maintenance yards.
- Continuation of a pilot study on alternative vegetation management strategies for guardrails to reduce pesticide usage.
- Conducted employee training through: SWPPP training videos; SPCC training videos; CCR training; and Professional enhancement workshops and webinars.

## **2016 Work Projection and Plan:**

Work projections for 2016 are provided at the end of this section in Table B.

**TABLE A.**  
**Minimum Control Measures , BMPs, Measurable Goals, and Status of Implementation for DeIDOT Phase II NPDES.**

<b>MCM #1: Public Education and Outreach Program+A1:C32</b>		
<b>BMP</b>	<b>Measurable Goal</b>	<b>Status of Implementation</b>
<b>A. Citizen Outreach / Educational Materials</b>	Conduct citizen outreach using media and materials:	Ongoing
Educational bookmark	Distribute 11,000 to 7th graders in public and private schools	Completed 2005
Stormwater brochures	Distribute at public events	Annually since 2002
Kid's activity booklet	a. Distribute 9,000 booklets to 4th graders in public/private schools statewide b. Distribute at public events	a. completed 2004, 2005 & 2006 b.continuous through permit at public events
Book cover	Distribute 4,000 at public events and per teacher request	Completed 2006
Restaurant placemat	Distribute 4,000 at public events and per teacher request	Completed 2005
Public Service Announcement	Air twenty 60-second PSA spots in spring on WSTW, 93.7 FM	Completed Spring 2005
Bags-on-Board	Distribute 4,000 units (2006), 7,200 units (2010), tipcards and follow-up surveys to vet clinics, dog groomer, dog trainer, animal rescue	2006 and 2010; annually thereafter at public events
Delaware Livable Lawns materials	Distribute at public events and on DLL website: commercial brochure, residential brochure, Livable Ecosystems booklet, Livable Lawns booklet, grass length ruler, DLL magnetic clip, banners.	All materials developed and printed in 2012 and 2013; banner stands in 2014.
<b>B. Watershed Training Workshop</b>	Present four 2 ½-hour watershed training course on basic watershed education and good-housekeeping measures to DeIDOT and NCC employees	Completed 2002.
<b>C. Stormwater Web Page</b>	Develop a website to educate the public on stormwater issues and good housekeeping measures; update as needed; track web-site visits	Completed 2003 in partnership with NCC; developed DeIDOT hosted stormwater website in 2007-continuous through permit. Site updated in 2014-15.
<b>D. Storm Drain Marking</b>	Install water quality message markers on the estimated 2,166 storm drains	Completed June 2007; continuous with newly accepted subdivisions
<b>E. School Participation</b>	Engage public and private schools statewide in stormwater education	Ongoing
Statewide drawing contest	Coordinate "Clean Water Begins and Ends with You!" drawing contest for K-12 graders	Annually from 2004 - 2008; 1,500 participants in 2008, canceled due to budget cuts
Technology Students Asso.	Judge TSA competition for middle and high school students statewide; students develop restaurant placemat and coloring book cover.	Annually since 2003, continuous through permit
<b>F. Public Event Participation/Display</b>	Develop display and interactive stormwater game for use at public events	Purchased 2002; updated continuous through permit; partnered with U of Del. computer science dept. to develop computer games - continuous since 2011
<b>G. Promotional giveaways</b>	Purchase items that display a water quality message for prizes and giveaways at public events	Annually since 2002, continuous through permit
<b>H. Local Group Interaction</b>	Partner with local non-profit groups in the development of education materials and outreach manuals, pet waste campaign and user surveys	Began 2005, continuous through 2014
<b>I. Stormwater Video</b>	Reprint "Protecting Our Water: Who's Got the Power" video. We will reprint the video into a DVD format and offer it as a teacher package at public events and watershed training for Tributary Action Team participants.	Completed September 2007
<b>J. Newspaper Advertisements</b>	Submit newspaper advertisements to increase public awareness on the importance water quality related to stormwater.	Completed October 2008
<b>K. Storm System Inventory Brochure</b>	Revise and distribute existing brochure for all residents in Phase II area	Completed February 2008
<b>L. Delaware Livable Lawns</b>	Promote program, launch website, develop brochures, certify qualified companies; begin residential component	Continuous since 2010; residential component began in 2014
<b>M. Chesapeake Bay WIP</b>	Contribute to the activities of DNREC's Chesapeake Bay WIP Communications & Outreach Committee	Continuous since 2012. Attend meeting, assist with public events and outreach programs.

**TABLE A.**  
**Minimum Control Measures , BMPs, Measurable Goals, and Status of Implementation for DeIDOT Phase II NPDES.**

<b>MCM #2: Public Participation/Involvement</b>		
<b>BMP</b>	<b>Measurable Goal</b>	<b>Status of Implementation</b>
<b>A. Litter control programs</b>		
Adopt-a-Highway	DeIDOT will continue the Adopt-a-Highway program and document all participants and solicit new volunteers through newspaper ads and DeIDOT website.	Continuous program since 2003
"Imagine a Litter Free Delaware" cleanup day.	Statewide public event for clean up along roads, highways and community areas.	Annually since 2005
Anti-litter education program	Education program for elementary students all across Delaware to educate kids about the harmful effects of littering and encourage participation in the Adopt-a-Highway program	2005-2006
<b>B. Public workshop – maintenance organizations</b>		
	Hold two public workshops for Kent and Sussex County maintenance organizations on stormwater pond maintenance and the NPDES program and solicit public comment through a survey and comment form.	Completed May 2007
<b>C. Development of stormwater and watershed presentation/survey for community groups</b>		
	Review and revise current watershed presentation.	Completed May 2008
<b>D. Door hanger campaign</b>		
	Distribute door hangers to all subdivision residents where illegal dumping was reported or discovered. Solicit public participation for future reporting.	Continuous since 2005
<b>E. Tributary Action Teams</b>		
	Participate in TAT meetings of the Murderkill and St. Jones River watersheds to assist in the development of Pollution Control Strategies and to determine the effect of TMDL implementation on DeIDOT projects.	2002-2007; participate as new TATs are formed
<b>F. National Nonpoint Education for Municipal Officials (NEMO)</b>		
	Serve on the Delaware NEMO steering committee and co-author a chapter on stormwater management.	2003-2006; promoted programing 2013 through the DE MS4 consortium.
<b>MCM #3: Illicit Discharge Detection and Elimination</b>		
<b>BMP</b>	<b>Measurable Goal</b>	<b>Status of Implementation</b>
<b>A. Storm Sewer System Map</b>		
	Develop map showing location of all outfalls & names and location of all waters of the US receiving discharges from them	
Database and viewer application	a. Develop storm sewer system system inventory and inspection database application and GIS mapping viewer application for Kent County. b. Improvements to map viewer database	a. Completed 2003; b. new database and map viewer roll-out scheduled for 2017.
Inventory and inspection	Complete initial inventory and inspection of all storm sewer system components in the permitted area, at a rate of 20% each year,	Completed 2007
Database update	Update database at least annually to include inventory and initial inspection of all new system components within and outside the permitted area	Ongoing, annually
Expand inventory to rest of Kent & Sussex Counties	Expanded inspection database and mapping to include all of Kent and Sussex Counties	Kent Co. completed in 2011; currently continuing in Sussex Co.; will inspect new subdivisions as they are added throughout Phase II area
<b>B. Dry Weather Outfall Screening</b>		
	Screen 20% of known DeIDOT outfalls in the permitted area per year	Completed 2007
Ongoing IDDE Program	Inventory and screen new outfalls; screen outfalls as part of MS4 reinspections; investigate reported PIDs	Continuous since 2007
New Outfalls	Conduct screening on new outfalls added to the system since the original inventory.	Ongoing, annually
<b>C. Public Reporting and Education</b>		
	Publicize phone number for reporting illicit discharges or dumping into the storm sewer system through all education and outreach materials and in public workshops.	Ongoing; added to new stormwater website in 2007
	Distribute educational door hangers to homes in all neighborhoods in which illicit dumping activities have been reported, found or suspected.	Completed 2006, and ongoing

**TABLE A.**  
**Minimum Control Measures , BMPs, Measurable Goals, and Status of Implementation for DeIDOT Phase II NPDES.**

<b>MCM #4 &amp; #5: Construction Site Runoff Control/Post Construction Stormwater Management</b>		
<b>BMP</b>	<b>Measurable Goal</b>	<b>Status of Implementation</b>
<b>A. Delegated Agency</b>	DeIDOT is a delegated agency to administer its own Sediment and Storm Water Management Program per Delaware's Sediment and Stormwater Regulations. Review delegation every 3-years.	Annually since 1991; delegation through 2018.
<b>B. Operations and Maintenance of BMPs</b>	Annually inspect stormwater BMPs statewide.	All BMPs inspected annually since 2001
<b>C. BMP maintenance contract</b>	Maintain stormwater ponds in need of major repairs that are functioning below design standard for quantity and quality.	Annually or as required
<b>D. Revise Standard Specification 110</b>	Progressive step-wise approach to gaining compliance with approved plans, regulations, and laws towards enforcement of construction site erosion and sediment controls	Revised 2007; revised again in 2014
<b>E. Third party CCR inspectors</b>	Use third party consultant services to conduct erosion and sediment control inspections on DeIDOT projects	Annually since 2011
<b>F. Use numerical-based E &amp; S form for evaluating projects</b>	Contractors must receive 70 or greater to be eligible for monetary incentive	Implementation begun in 2013
<b>MCM #6: Pollution Prevention/Good Housekeeping for Municipal Operations</b>		
<b>BMP</b>	<b>Measurable Goal</b>	<b>Status of Implementation</b>
<b>A. Litter Control Programs</b>		
Adopt-a-Highway	DeIDOT will continue the Adopt-a-Highway program and document all participants and solicit new volunteers through newspaper ads and DeIDOT website.	Continuous program since 2003
"Imagine a Litter Free Delaware"	DeIDOT will continue the program and solicit new volunteers through newspaper ads and DeIDOT website	Annually since 2005
DOC Crews	DeIDOT will continue to utilize the inmate crew to assist current staff levels to reduce the floatables entering the storm sewer system.	Continuous program since 2002
<b>B. Storm Water Pollution Prevention Plans</b>	a. DeIDOT developed SWPPPs at all maintenance facilities. b. Update as needed.	a. Completed 2004 ; b. Revision of maps and plans completed 2013
Quarterly Inspections	DeIDOT maintenance facility staff will complete a Dry and Wet Weather inspection each quarter.	Quarterly since 2004
Annual Inspections	DeIDOT NPDES staff will conduct annual compliance inspections at each maintenance facility	Annually since 2004
Outfall water quality monitoring	The Pollution Prevention Plans currently require wet weather stormwater monitoring at all maintenance facilities.	Semi-annually since 2003 for 4 facilities; beginning 2013, monitor all facilities
Purchase spill kits	a. The NPDES Section purchased wall mount spill kits for placement in vehicle shop buildings; b. Purchase as necessary	a. Completed 2003; b. Annually as needed following annual inspections
Security Fence	As part of the SWPPPs, DeIDOT enclosed all maintenance facilities with security fences and gates.	Completed 2005
<b>C. Statewide Vehicle Wash Water Practices for DeIDOT Maintenance Yards</b>	Treat all wash water through a treatment train prior to leaving the site.	Vehicle wash plan report completed and approved by DNREC July 2005; Revised and submitted to DNREC for review May 2015.
Dover, Magnolia, Cheswold maintenance facilities	Fully implement vehicle wash plan for three facilities within the Phase II permit area	Completed 2007
<b>D. Statewide Salt Best Management Practices for DeIDOT Maintenance Yards</b>	DeIDOT developed a report that documents operational practices and strategies for salt delivery, stockpiling, and mixing.	Completed 2004
Construct salt barns	DeIDOT constructed 3 salt barns	Completed 2005
Upgrade snow equipment	Ground-speed spreader controls, anti-icing, pre-wetting, plow balanced valves	Began 2004; continuous through permit

**TABLE A.  
Minimum Control Measures , BMPs, Measurable Goals, and Status of Implementation for DeIDOT Phase II NPDES.**

<b>E. Spill Prevention and Response</b>		
<b>Spill Kits for Vehicles</b>	DeIDOT to purchase 450 vehicle spill kits for use on the roadway	Completed 2007
Spill Prevention, Control and Countermeasures Plans (SPCC)	a. DeIDOT developed a SPCC plan for each maintenance facility. These plans include proper procedures for spill response; b. Update as necessary.	a. Completed 2007; b. New revision began 2014.
Drainage Maintenance	DeIDOT will maintain the system as issues are discovered through inspections and complaints.	Continuous program since 2001; reinspect on a 5/10 year schedule
Storm System Inventory and Inspection	DeIDOT will perform a detailed inventory and inspection of the MS4 system.	Completed 2007
Inspection and Preventative Maintenance Program	DeIDOT will determine the appropriate re-inspection schedule for the stormwater system	Completed 2007
	Inventory & inspect MS4 in Sussex County	Continuous since 2010
	DeIDOT will begin the re-inspection program	Began 2009, ongoing
<b>H. Sweeping Program</b>	a. DeIDOT upgraded the sweeping program to a full time operation with the addition of new sweepers. b. Install AVL units to track sweepers c. DeIDOT is collecting weigh tickets to track tons of waste collected and pollutant removal for TN and TP as depicted in Table 6-1.	a. Completed 2002, continuing through permit; b. Completed 2011; install on new equipment as needed.; c Continuous Program.
<b>I. Training</b>	Develop a training program for DeIDOT staff to educate staff on ways to prevent and reduce storm water pollution from their daily activities.	
PPP training videos	Develop 3 videos entitled (1) Facility and Vehicle Maintenance, (2) Stormwater Contamination and Spill Prevention, (3) Vegetative Control and Pollution Prevention on Public Roads.	Completed 2003; annual requirement for all maintenance staff
Maintenance Bulletins	Develop informative bulletins for District staff to educate them on stormwater management and pollution prevention BMPs	Continuous program since 2003
CCR Training	Train DeIDOT staff through the DNREC course	Continuous, as needed; 20 CCR and 3 blue card in 2015.
Spill Prevention and Response Videos	DeIDOT to develop and use three training videos on Spill Prevention and response.	Completed 2007, annual requirement for all maintenance staff

## **Table B. Projection of Work to be Performed during Calendar Year 2016.**

### **Public Education and Outreach**

- Participate and distribute education materials at outreach events: DNREC's Make-a-Splash and Delaware State Fair
- Place storm drain markers, carrying a water quality message, on DelDOT owned inlets.
- Routine updates to web site and make available all outreach material and training presentations.
- Network and coordinate educational efforts with other state and local organizations through participation in the Delaware Association for Environmental Education.
- Continue Phase I of the Delaware Livable Lawns project to commercial lawn care companies. Expand the residential outreach and education component of the program.

### **Public Involvement and Participation**

- Solicit public participation for reporting illegal dumping through DelDOT's door hanger campaign.
- Continue Adopt-a-Highway.
- "Imagine a Litter Free Delaware" cleanup day.
- Continue Phase II of the Delaware Livable Lawns project to commercial lawn care companies. Expand the residential outreach and education component of the program.
- Maintain "Report a Problem" web link and phone number for reporting illicit discharges.

### **Illicit Discharge Detection and Elimination**

- Continue inventory and inspection of outfalls and drainage structures in Sussex County, with goal of completion by 2016.
- Reinspection and IDDE evaluation/screening of system in the Dover urbanized area.
- Perform dry weather screening on newly inventoried outfalls and continue to investigate potential illicit discharges as they are discovered or reported.
- Perform wet weather monitoring at all maintenance facilities statewide.
- Continue door hanger campaign to residents where illegal discharges/dumping has occurred.

## **Table B. Projection of Work to be Performed during Calendar Year 2016.**

### **Construction Site Stormwater Runoff Control**

- Delegation of the sediment and stormwater program is granted through the year 2018. DelDOT will comply with all state requirements.
- Use third party consultant services to conduct erosion and sediment control inspections on DelDOT projects.

### **Post-Construction Stormwater Management in Newly Developed Areas and in Redeveloped Areas**

- Delegation of the sediment and stormwater program is granted through the year 2018. DelDOT will comply with all state requirements.
- Inspect all stormwater ponds and BMPs in Kent and Sussex Counties; add collected data to the existing inventory database.
- Perform maintenance of BMPs as needed, and control invasive species.

### **Pollution Prevention and Good Housekeeping**

- Continue requiring maintenance staff to view pollution prevention and spill prevention training videos annually.
- Continue to develop and distribute Stormwater Pollution Prevention Bulletins to each maintenance yard statewide.
- Collect semi-annual wet weather samples from maintenance yard outfalls, quarterly wet and dry weather inspections, and annual comprehensive site inspections, as required by the Pollution Prevention Plans.
- Continue 4:2:1 sweeping frequency.
- Implement DelDOT's "Statewide Vehicle Wash Water Practices for DelDOT Maintenance Yards" developed in May 2015.
- Continue implementation of the Integrated Roadside Vegetation Management (IRVM) manual developed in 2009.
- Continue to update the statewide guardrail inventory, as needed.
- Use data from the guardrail inventory to develop a strategy for continued reduction of pesticide use.
- Continue the guardrail vegetation management study initiated in 2008 through the growing season of 2015 to test new plots of zoysia grass and Flight Turf®.

## **SWPP&MP Assessment**

This section is an annual review of the current SWPP&MP. The Final SWPP&MP was submitted in August 2014. We received comments regarding the SWPP&MP from DNREC May 28, 2016 and provided responses June 28, 2016. We have continued implementing the SWPP&MP program strategies under the assumption that comments will not have a major impact on the permittees programs.

### **Public Education**

#### Partnerships

Over the years, the NPDES Section has contracted with several non-profit organizations to assist with development of education and outreach programs. During the permit term, we have partnered with The Partnership for the Delaware Estuary, the Appoquinimink River Association (ARA), the Delaware Nature Society, and the Delaware Nursery Landscape Association (DNLA). They have specialties in watershed and water quality education. Partnering with these organizations has proven to be an effective means of expanding our limited staff resources in a cost effective manner.

With many watersheds facing TMDLs for nutrients and bacteria, we decided to pilot an outreach effort in a two-phased approach to commercial lawn care companies and property owners. In 2015, we continued an agreement with the DNLA to (1) promote a program called “Delaware Livable Lawns” that certifies commercial lawn care companies for their efforts that reduce fertilizer runoff through educating their clients on best practices, soil testing, and reporting fertilizer quantities while meeting homeowners needs. (2) In Phase II of the program, we began targeting residential homeowners. We have an advisory committee consisting of 9 stakeholder groups from government and state agencies, University staff, private non-profit, plus a member of a commercial lawn care company. This diversity with varying perspectives has proven to be an effective combination to move this program forward quickly capturing a multitude of ideas without the idea of the government trying to regulate the commercial lawn care industry.

Our Phase I NPDES permit requires DelDOT to meet a minimum 250,000 “impressions” about stormwater quality to the general public. We completed an agreement with the University of Delaware in developing a plan to assist the co-permittees in achieving the education requirements of the permit and making these efforts more effective and meaningful. Using that recommendations report, we hired a consultant to develop a targeted approach education campaign in an effort to increase the knowledge of target communities regarding MS4s, impacts of urban runoff on receiving waters, and potential BMP solutions for the target audience; change the behavior of target communities; and decrease the discharge of pollutants to the MS4 by engaging the public.

## Public Events

Part of our public outreach effort is participating in public events. Because we have limited budget and staff, we focus on large, multi-day events where there is substantial foot traffic. The biggest event each year is the Delaware State Fair, where trained professionals from State agencies, including DelDOT, have an exhibit for 10 days serving over 20,000 visitors through our building.

## **Public Participation/Involvement**

### Door Hanger

Our door hanger campaign has brought awareness to the public and allows them to be proactive in reporting illicit discharges in their neighborhood. When illegal substances are found in storm inlets through DelDOT inspections or are reported by the public, we distribute door hangers to the surrounding neighborhood. We have found this to be a very effective program for generating public awareness and public involvement. This typically generates phone calls to our office where we explain the program and direct them to our web site. In 2015, we did not distribute any door hangers in Kent and Sussex County Phase II areas.

## **Illicit Discharge Detection and Elimination**

### Outfall Screening

Following the recommendations of the Center for Watershed Protection's IDDE Guidance Manual (2004), we began last year to revise DelDOT's IDDE protocols. An assessment of the chemical data from our previous dry weather screening activities has suggested that some of the parameters that we have measured, such as phenols and chlorine, are of limited value in detecting illicit discharges in the Phase II area. Therefore, beginning in 2013, we modified our protocols to include a suite of parameters more closely aligned with those recommended by the Center for Watershed Protection.

In assessing the dry weather data, we also uncovered a need for a database for the inspections that will allow querying on water quality data. In 2013, KCI Technologies developed an IDDE database and website for data entry and queries, and data input continued throughout 2015.

## Pesticide, Herbicide, Fertilizer

DelDOT's Roadside Environmental section manages PHF applications applied by contractors and DelDOT staff. The NPDES Program has the responsibility to develop programs and implement controls through training, policy changes resulting from research, development of SOPs, education, etc. to reduce the pollutants associated with their application and to track trends that can document anomalous spikes in usage or declines in usage due to implementation of programs.

We have implemented several pesticide reduction programs as described below:

1. Guardrail pilot study – DelDOT currently treats approximately 310 miles of guardrail with herbicide. We developed a program in conjunction with the University of Delaware to investigate methods to reduce the use rates of pesticides and carriers used to treat guardrail vegetation without compromising safety and aesthetics. We selected and applied several treatment methods along several guardrail sections to compare the effectiveness, ease of implementation, aesthetics, cost and longevity. Treatments included weed control barriers, low-growing vegetation (low-grow fescue, Flight Turf® and zoysia grass), and hand-cutting existing vegetation. Herbicides will be used on treatment plots as a measure against non-chemical treatments. Zoysia grass has shown promise in contained areas such as medians. We continued our research in 2015 to test additional weed barriers and plots of Flight Turf and zoysia grass.
2. Guardrail inventory – Treating guardrail accounts for a significant percentage of DelDOT's herbicide treatment program. The NPDES Program saw guardrails as a relatively simple way to reduce herbicide usage. Our consultant inventoried all guardrails statewide and collected attribute data that included material under guardrail and surrounding landscape and environmental features. Our objective is to locate areas where alternative treatment measures (e.g. hand control, weed barrier, low-grow fescues) can be used in lieu of herbicides.

We have an agreement with a consultant to maintain and update this statewide guardrail inventory. As we receive notification of new projects and review as-built plans for the addition of new guardrail, a list is compiled and sent to our guardrail consultant on a quarterly basis. This continuous process saves the department money by not having to repeat the entire statewide inventory every several years.

3. Record keeping – We are continuing to keep records of herbicide quantities to establish baseline herbicide usage. By tracking herbicide quantities we hope to be able to identify the cause of spikes or declines in usage and use the data to assess pesticide reduction programs we have implemented.

## **Construction Site Runoff**

### E & S Plan Compliance and BMP Performance

Erosion and sediment control at DeIDOT construction sites falls under the purview of the Division of Transportation Solutions (DOTS). However, the NPDES Program, through its permit and consent decree, is responsible for ensuring E & S control compliance.

1. We are continuing to use consultant services to conduct the daily CCR construction duties in lieu of the contractor. This has improved compliance with the required weekly and rain event reporting. The consultant also has the authority to hire a third party contractor to correct E&S deficiencies if the prime contractor refuses.
2. DeIDOT has developed an objective form for scoring E & S compliance on each construction project. Obtaining a passing score provides a monetary incentive to comply with the State regulations.
3. Sediment and Stormwater Regulations: The Governor's Surface Water Task Force recommended revision of the Sediment and Stormwater Regulations to address volume management, flooding, and plan review process improvement. Federal requirements for water quality improvement (e.g. TMDL) are being addressed as well. As a delegated agency, DeIDOT is required to follow these regulations.

## **Pollution Prevention and Good Housekeeping for Municipal Operations**

### Street Sweeping Program

Under the current NPDES permit, DeIDOT sweeps an annual 4:2:1 frequency on primary, secondary and tertiary roads. In order to assist DeIDOT in quantifying the expected pollutant load reductions from all controls (e.g. sweeping) to meet the TMDL (Total Maximum Daily Load) and Waste Load Allocation goals, DeIDOT tested the feasibility of using the AVLs to verify that the required sweeping frequency has been met, as well as obtain better estimates of pollutant load reductions resulting from sweeping activities. However, the AVL units failed to operate correctly.

In 2015, we continued tracking street sweeping using spreadsheets of streets to be swept and the Maximo work order system. All DeIDOT Maintenance Districts are now delivering sweeper wastes to DSWA landfills and keeping track of the amount of sweeper waste material delivered, which is used in calculating pollutant load reductions for TN and TP.

### Vehicle Wash Plan

The use of the *Statewide Vehicle Wash Water Practices for DelDOT Maintenance Yards* manual, developed in July 2005, has resulted in designated locations for vehicle washing that are treated via a stormwater treatment train series of BMPs. We completed the last retrofit at the Harrington maintenance facility in summer 2010. The *Statewide Vehicle Wash Water Practices for DelDOT Maintenance Yards* plan was updated in May 2015.

### Pollution Prevention Plans

To keep the PPPs current, we will begin doing an annual review of each plan to include new maps of facilities and drainage systems, new BMPs, and new staff responsible for PPP implementation.

### Salt Plan

DelDOT's *Statewide Salt Best Management Practices for DelDOT's Maintenance Yards* has resulted in the purchase of salt structures to comply with storing salt under roof. Quarterly inspections and increased training through SWPP&MP videos and maintenance bulletin posters have also resulted in greater awareness of and compliance with the provisions of the salt plan by maintenance staff.

### Storm Sewer System Inventory and Inspection

Although not a permit requirement, we extended the storm sewer system inventory and inspection program to Kent and Sussex Counties. This program assists the Districts with maintenance and pollutant tracking statewide through the map viewer database.

Kent County storm sewer system inventory and inspection was completed in 2014. In 2015, KCI Technologies field crews focused on completing the initial storm sewer system inventory / inspection of Sussex County. In November 2015, KCI completed the Sussex County MS4 inventory/inspection, except for several roads under construction and/or needed MOT. It is anticipated that the remaining work would be completed using a desktop process.

## 1. Public Education and Outreach

### Requirement:

DelDOT shall implement a public education program to distribute educational materials to the community, or conduct equivalent outreach activities about the impacts of stormwater discharges on local water bodies and the steps that can be taken to reduce stormwater pollution. In addition, DelDOT shall determine the appropriate best management practices (BMPs) and measurable goals for this minimum control measure.

### Performance/Measurable Goals:

- **Door Hanger Campaign:**

We continued our door hanger campaign to residents in subdivisions where an illicit discharge or illegal dumping activity was discovered or reported as part of our outreach program to residents. The front side of the door hanger lists the date and type of pollutant found and what water body was affected. On the back, the door hanger describes stormwater pollution and guidelines to reduce pollution at the home or workplace. In 2015, no door hangers were distributed.

- **Website:**

DelDOT developed a stormwater quality website ([www.deldot.gov/stormwater](http://www.deldot.gov/stormwater)). A “Report a Problem” link allows the public to email or call to report illegal discharges or dumping and stormwater maintenance problems. We continually update the “Hot Topics” section on the home page. In 2015, Google Analytics reported 5,650 page views.

- **Storm Drain Markers:**

As part of the storm drain inventory and inspection in the Dover and Camden/Wyoming area of Kent County, KCI Technologies continues to label each inlet with a storm drain marker that carries a water quality message. An estimated 22,640 storm drain markers have been placed statewide in subdivisions and other locations visible to the public; 2,166 of these markers are in the Phase II area.

- **Activity Booklet Distribution:**

DelDOT distributed several hundred activity booklets to schools and at public events that highlight stormwater pollution, the water cycle and watersheds.

- An estimated 150 booklets were distributed to schools and the Delaware State Fair.
- Educational materials including bookmarks, brochures, calendars and promotional giveaways, which carry a water quality message were provided during the Make a Splash festival held on March 31, 2015. More than 750 fourth grade students from ten elementary schools participated.

- **Delaware Livable Lawns:**

Improper fertilization of lawns and open spaces is a huge problem throughout Delaware. DNREC, DeIDOT NPDES Section and the Delaware Nursery and Landscape Association continued the Delaware Livable Lawns Program in 2015. The program’s goal is to recognize those registered commercial applicators that are environmentally friendly.

Phase I of the Delaware Livable Lawns program targets commercial lawn care companies, recognizing them for environmentally friendly lawn care plans (e.g. soil tests, organic products, low/no nitrogen fertilizers, only fall applications, annual reporting, distribution of educational materials, etc.), while also meeting homeowners’ needs and educating them on best practices. The goal of the program is to reduce fertilizer runoff from residential lawns by changing watershed residents’ lawn care practices. To date, six companies have applied for certification and have been accepted.

Phase II of the campaign is the homeowner education portion, which includes advertising, outreach materials and events. Continuation occurred of the homeowner incentive program to encourage those who apply their own fertilizer to do it the Livable Lawns way. In 2015, 162 people signed up to agree to fertilize their lawns according to the Livable Lawns recommendations and in turn received a free soil test kit. Table 1-1 lists the distribution by basin where the participants reside.

**Table 1-1. Delaware Liveable Lawns – Participants by Location**

<b>Basin</b>	<b>Livable Lawn Participants (No.)</b>
Piedmont	102
Delaware Bay	37
Inland Bays	15
Chesapeake Bay	8
<b>TOTAL</b>	<b>162</b>

Of those 162 people, 16 completed Phase II of the homeowner incentive program in 2015 by providing information on their actual fertilizer applications (Table 1-2). These individuals were awarded a \$50 voucher for free native plants at local nurseries.

**Table 1-2. Delaware Liveable Lawns – Phase II Completion**

<b>Calendar Year</b>	<b>Homeowner Sign-ups</b>	<b>Homeowners Submission of Fertilizer Use / Soil Kits</b>	<b>Total Vouchers (\$50 each)</b>
2014	71	9	450
2015	162	16	800

### 2015 Livable Lawn Presentations / Outreach

- 11/18/15 – Hockessin, DE – DNLA Ornamental & Turf Workshop – 228 attendees.
- 01/29/15 – Dover, DE – Horticulture Industry Expo – 354 people.

### Public Outreach:

- 7/29/15 – Harrington, DE – Livable Lawns at UD Extension Booth, State Fair
- 5/22/15 – Wilmington, DE – WHY Y TV segment featuring Bob Finocchiaro & Dr. Susan Barton.
- 4/25/15 – Center for the Inland Bays Native Plant Sale.

### Promotional Materials:

- Lawn marker flags – 06/15.
- Soil test kits purchased (150) – 5/145 & 6/15.
- Signage space on two lifeguard stands at DE Seashore State Park – Summer 2015.
- Livable Lawns business cards developed and printed – 4/15.

### Website:

- Updates and enhancements with additional fields and styling for online healthy lawn submissions, addition of rack cards, homeowner incentive program – 6/15.

### Certified Companies:

- 6 companies re-certified.

- **Nutrient Management Training:**

Historically, Nutrient Management training has been offered in the winter as a six week series. Participants are required to attend all classes to be eligible to take the exam. Some landscapers fail to complete the course due to the necessity to plow snow in inclement weather. The potential for missing a class has impacted enrollment. In addition, the course is gauged to the overall agriculture community. DNLA worked with UD Cooperative Extension to offer nutrient management training in December (before most snow) and tailor it to landscapers. The six week half day segments were condensed into three full day classes. As a result, class size doubled to 40 companies.

Additionally, two certified suppliers were added to the Livable Lawns website. To become certified, suppliers need to have soil tests kits, appropriate products and information available to support the Livable Lawns guidelines.

### **Challenges:**

- Nutrient management classes and exam are challenging. Many participants struggle to pass the exam. Nutrient management certification is a necessary component to be a Livable Lawns certified business. A fee is also associated with the certification.

Although certification is required of any business applying nutrients to 10 or more acres, it is not enforced. Therefore many companies opt to avoid certification and this reduces the number of potential Livable Lawns companies.

- Appropriate product availability can be a challenge for both homeowners and landscapers. Most homeowners purchase their fertilizer at big box stores and educational assistance and information is not always available.

- **Pet Waste Education:**

Alongside DeIDOT, DNREC continued an intensive pet waste education campaign throughout the state. In 2015, the Partnership for the Delaware Estuary provided 522 pet waste collection bag holders to pet owners in the Leatherman’s Run watershed and an additional 500 to local pet stores and shelters throughout the state. DeIDOT provided two boxes of 200 bags to the Firefox development in Newark for their existing Dogi-Pot station.

- **Litter Control Programs:**

*Adopt-a-Highway:* Adopt-a-Highway is a cooperative program between DeIDOT’s Division of Public Relations and volunteers to reduce litter along state roadways and subsequent discharge to waters of the State. This program supplements effort by DeIDOT’s maintenance forces to control litter. The volunteer groups are required to collect litter a minimum of twice per year and submit activity reports following each cleanup for inclusion in the program. Each group maintains approximately two miles of roadway. DeIDOT maintains an Adopt-a-Highway website ([www.deldot.gov](http://www.deldot.gov)) and submits press releases to solicit volunteers. There are 926 volunteer groups statewide (387 groups in New Castle County) maintaining 1,698 lane miles.

*Imagine a Litter Free Delaware Day:* This event is a statewide clean-up day that everyone is invited to clean roads, highways, bike paths and community areas. DeIDOT has coordinated this event every October since 2005.

Table 1-3 lists the total number of trash bags collected by volunteers in litter control programs in each County.

**Table 1-3.** Litter Control Programs – Trash Bags Collected by County

<b>Calendar Year</b>	<b>New Castle County</b>	<b>Kent County</b>	<b>Sussex County</b>
2014	1,261	715	2,530
2015	1,300	999	2,298

- **Delaware Association for Environmental Education (DAEE):**

DelDOT staff were active participants in the founding and development of the Delaware Association for Environmental Education (DAEE). The DelDOT NPDES Environmental Scientist served on the Board of Directors, assisted the group with its communications and outreach, and served on the planning committee for DAEE’s annual statewide conference.

- **University of Delaware Interactive Computer Games**

DelDOT partnered with the University of Delaware computer science lab and the art department in the development of interactive computer games. The computer science semester course consists of students working in teams to develop interactive touch screen games with the ‘Delaware Livable Lawns’ theme for use at the Delaware State Fair. An estimated 20,000 people visit the DNREC building during the 10-day event.

- **Partnership for the Delaware Estuary:**

We also executed an agreement with the Partnership for the Delaware Estuary to conduct several other education outreach programs per our SWPP&MP including: pesticide, fertilizer, and herbicide reduction, pet waste, motor oil, and residential car washing.

In addition to the pet waste educational efforts mentioned above, the PDE produced 6,000 brochures (2,000 for each DE County) regarding the importance of proper vehicle maintenance and local oil recycling/drop off facilities.

- **Impressions:**

The public education/outreach programs generated 10,056,473 impressions as described in Table 1-4.

**Table 1-4.** Impressions for NPDES Public Education / Outreach Programs in 2015.

<b>Public Outreach Effort</b>	<b>Method of Calculation</b>	<b>No. of Impressions</b>
DelDOT NPDES Website	Total page view by year	5,650
Storm Drain Labeling	Data query, map viewer database	22,640
Activity booklets	Box count for Delaware State Fair, school mailing	150
Delaware State Fair Public Event	Clicker counts	20,000
Promotional Items Give-away NCC Workshops: estimated give away items = 100	Purchased amount	1,000
Silent Oil Spills brochures & where to recycle oil in DE	Number of brochures created	6,000
<b>TOTAL</b>		<b>55,440</b>

## 2. Public Participation/Involvement

### Requirement:

DelDOT shall include the public in developing, implementing and reviewing the stormwater program. DelDOT shall make opportunities for members of the public to participate in program development and implementation and will comply with all applicable State, Tribal, and local public notice requirements. DelDOT shall determine the appropriate best management practices (BMPs) and measurable goals for this minimum control measure.

### Performance/Measurable Goals:

#### A. *Budget Process*

As part of the DelDOT budget process the community has the opportunity to suggest projects for the following year.

#### B. *Adopt-a Highway*

Adopt-a-Highway is a cooperative program between DelDOT's Division of Public Relations and volunteers to reduce litter along State roadways and subsequent discharge to waters of the State. This program supplements efforts by DelDOT's maintenance forces to control litter. This has a water quality benefit because it reduces floatable debris entering streams. The volunteer groups are required to collect litter a minimum of twice per year and submit activity reports following each cleanup for inclusion in the program. Each group maintains approximately two miles of roadway. DelDOT maintains an Adopt-a-Highway website ([www.deldot.gov](http://www.deldot.gov)) and submits press releases to solicit volunteers. There are 926 volunteer groups statewide (284 in Kent and 255 in Sussex Counties) maintaining 1,852 lane miles statewide (1,078 in Kent and Sussex).

#### C. *Litter Control Programs*

DelDOT held its annual "Imagine a Litter Free Delaware" cleanup day along roads, highways and community areas in October 2015. Public participation was solicited via newspaper ads and DelDOT's website.

#### *D. Door Hanger Campaign*

We continued our door hanger campaign to residents in subdivisions where an illicit discharge or illegal dumping activity was discovered or reported as part of our outreach program to residents. The front side of the door hanger lists the date and type of pollutant found and what water body affected. On the back, the door hanger describes stormwater pollution and guidelines to reduce pollution at the home or workplace. In 2015, there were no door hangers distributed in Kent or Sussex Counties.

#### *E. Stream Watch*

Delaware Stream Watch is a grassroots volunteer waterway protection program focusing on citizen involvement through monitoring, education, and advocacy. Stream Watch is co-sponsored by the Delaware Nature Society and DNREC, representing a unique partnership of government, environmental interests, and industry.

The Stream Adoption program allows people and groups of all ages to adopt and monitor a local water body of their own choosing. Typical assessments include visual, macroinvertebrate and chemical surveys. Interested participants can download a form from the Delaware Nature Society website.

#### *F. Tributary Action Teams*

The Delaware Department of Natural Resources and Environmental Control coordinate teams of citizens known as Tributary Action Teams (TAT), who develop strategies for reducing water pollution in impaired watersheds. DelDOT staff participated in TAT meetings of the Christina River and Appoquinimink River in New Castle County, St. Jones River and Murderkill River in Kent County, and the Nanticoke River, Broadkill River, and Inland Bays in Sussex County to assist in the development of Pollution Control Strategies (PCS) for those watersheds and to determine the effect of TMDL implementation on DelDOT projects.

Efforts in 2015 focused on the development of a Water Quality Improvement Plans (WQIPs) for the Christina and Dragon Run watersheds utilizing a consultant agreement with Century Engineering. A list of GIS data files, methods for impervious surface calculations and setting up a working committee were key accomplishments.

#### *G. Website*

DelDOT developed a stormwater quality website ([www.deldot.gov/stormwater](http://www.deldot.gov/stormwater)). A “Report a Problem” link allows the public to email or call to report illegal discharges or dumping and stormwater maintenance problems. In 2015, Google Analytics reported a total of 5,650 page views.

### 3. Illicit Discharge Detection and Elimination

#### Requirements:

- A storm sewer system map, showing the location of all outfalls and the names and locations of all waters of the United States that receive discharge from those outfalls.
- Through an ordinance, or other regulatory mechanism, a prohibition (to the extent allowable under State, Tribal or local law) on non-storm water discharges into the MS4, and appropriate enforcement procedures and actions.
- A plan to detect and address non-storm water discharges, including illegal dumping into the MS4.
- The education of public employees, businesses and the general public about the hazards associated with illegal discharges and improper disposal of waste.
- Determine the appropriate best management practices (BMPs) and measurable goals for this minimum control measure.

#### Performance/Measurable Goals:

During 2015, KCI Technologies performed MS4 inventory and inspection tasks for DeIDOT throughout the state to ensure compliance with the NPDES Phase I and Phase II requirements for illicit discharge detection and elimination. This work was conducted under Agreement 1728. In 2015, much of the effort of this agreement was focused on completing system maps for Sussex County, as well as performing inspections of new structures, re-inspections, and screening of the MS4 in both the Phase I and Phase II permitted areas. KCI also performed annual BMP inspections for DeIDOT and conducted IDDE evaluation and dry-weather screening of outfalls. The IDDE screening and investigation work is conducted under Agreement 1749 with KCI Technologies.

Specific progress during calendar year 2015 included the following:

#### *A. Inventory and Mapping*

As reported in previous years, we completed the initial inventory and inspection of all parts of the DeIDOT-owned stormwater conveyance system in the Phase II urbanized area in 2007. Stormwater ponds and other BMPs also have been inventoried and receive annual inspections. During the inspection process, each structure was opened and evaluated for material construction and condition, and physical measurements were made. Digital

photographs of the structure and each associate pipe were taken and connectivity between structures verified. At the completion of the inspection process an “*Only Rain Down the Storm Drain*” marker was placed on each structure to encourage residents to not dispose of waste down the inlet. If a structure was found to have a material deficiency, a Maintenance Work Order (MWO) was generated and forwarded to DeIDOT. All of these data are incorporated into a comprehensive GIS database that enables users to view the entire stormwater system, corresponding inspection data, plans and photographs.

In 2015, the teams inventoried and inspected DeIDOT storm systems along 243.8 miles of non-subdivision roadways, for a total of 6,611 structures in Kent and Sussex Counties (Table 3-1).

**Table 3-1.** 2015 Inventory and Inspection Totals for MS4 in Kent and Sussex Counties.

<b>Month (2015)</b>	<b>Non-Subdivision Roadway Miles</b>	<b>Structures</b>
January	73.5	1,422
February	34.8	634
March	17.0	472
April	8.5	297
May	15.8	636
June	20.5	600
July	8.2	325
August	11.2	395
September	11.9	638
October	18.9	631
November	21.1	467
December	2.4	94
<b>TOTAL</b>	<b>243.8</b>	<b>6,611</b>

In November 2015, KCI completed the Sussex County MS4 inventory/inspection, except for several roads that under construction and/or needed MOT. It is anticipated that the remaining work would be completed using a desktop process. A complete summary of work performed by KCI through the end of calendar year 2015 is included in this report as Appendix A.

The mapping requirements of the Phase II Permit are met through an existing GIS map viewer developed for the storm sewer system inventory statewide. The viewer is available to all DeIDOT employees with access to the intranet. This map viewer satisfies the requirements of 40 CFR Part 122.21(f)(7) or Part 12.34(b)(3)(i). It depicts the location of all

outfalls, the names and location of all waters of the United States that receive discharges from those outfalls, condition assessment data, and photographs.

In 2013, KCI developed a mobile application for the web-based map viewer. The DeIDOT NPDES Mobile Application is compatible with Android/iOS mobile browsers and with Google Chrome on PC's (<http://deldot.kci.com/mobile/>). The mobile application continues to assist DeIDOT maintenance staff by allowing use of the phone's GPS function to see their location in relation to MS4 or BMP structures.

Updated maps of outfalls and BMPs in Kent and Sussex Counties (in Adobe Acrobat format) are included on the DVD with this annual report.

### *B. Outfall Screening in Urbanized Areas of Kent and Sussex Counties*

Dry weather screening of all outfalls in the Phase II permitted area of the state was completed in 2007 (see the 2007 Annual Report). Thus we have fulfilled the permit requirements.

Each new outfall that is inventoried and inspected is screened for dry weather flow. In Sussex County in 2015, a total of 1,174 DeIDOT-owned outfalls were evaluated through inventory, inspection and re-inspection tasks and miscellaneous reports. There were two outfalls with dry weather flow that were further investigated by IDDE field team in Sussex County. Of these two outfalls, one was investigated as a potential illicit discharge (PID) and one had no evidence of illicit discharge. Upon further field investigation, the PID was determined to be a legal sump pump connection (Appendix B).

In Kent County in 2015, a total of 22 DeIDOT-owned outfalls were evaluated through inventory, inspection and re-inspection tasks and miscellaneous reports. There were no outfalls with dry weather flow.

### *C. Prevention of Illicit Discharges and Illegal Dumping*

#### Doorhangers:

Since it is often difficult or impossible to catch someone in the act of improperly disposing of yard waste, oil, paint, etc. into the storm drain, DeIDOT has for several years conducted a door hanger campaign to residents in subdivisions where an illicit discharge or illegal dumping activity was discovered or reported. This campaign is part of our outreach program to residents. It solicits public participation to anonymously report illegal dumping and serves as a "neighborhood watch."

The front side of the door hanger lists the date and type of pollutant found and what water body affected. On the back, the door hanger describes stormwater pollution and guidelines to reduce pollution at the home or workplace. In 2015, there were no door hangers distributed in Kent or Sussex Counties.

Household Hazardous Waste (HHW) Collection Program:

In an effort to encourage Delaware citizens to dispose of hazardous household materials properly, the DelDOT NPDES Section helps publicize Delaware Solid Waste Authority (DSWA)'s Household Hazardous Waste (HHW) Collection Program. A link to the DSWA's HHW collection events is posted on the DelDOT Stormwater website, and information about the dates and locations of collections is distributed at public events.

"TrashStoppers" Program:

Another public outreach program aimed at eliminating illegal dumping of trash and hazardous wastes along the state's highways is the Delaware "TrashStoppers" Program: [www.awm.delaware.gov/Enforcement/Pages/TrashStoppers.aspx](http://www.awm.delaware.gov/Enforcement/Pages/TrashStoppers.aspx). The public is asked to notify DNREC about any roadways or streets used for illegal dumping so the sites can be put under surveillance by digital cameras to aid in identifying trash dumpers. The public is also asked to identify the trash dumpers who are caught in the act in photos posted on the DNREC web site as part of the TrashStoppers campaign. In addition to publicizing the program, DelDOT staff forward reports of illegal dumping along state roads to DNREC.

Hotline:

Hotline numbers for reporting illegal discharges or dumping into the MS4 are posted on our stormwater website, [www.deldot.gov/stormwater/report\\_a\\_problem.shtml](http://www.deldot.gov/stormwater/report_a_problem.shtml), as required by the permit. In addition, these numbers are included in other stormwater educational materials that are distributed.

#### 4. Construction Site Stormwater Runoff Control

Requirement:

The permittee shall continue to implement and enforce a program to reduce, to the maximum extent practicable, the discharge of pollutants from construction sites.

Performance/Measurable Goals:

A. *Delegated Agency*

The Department of Natural Resources and Environmental Control has delegated the authority to administer a sediment and stormwater program to DelDOT. The delegation is reviewed every three years. DelDOT's current delegation from DNREC extends through June 30, 2018. The components of the Delaware Sediment and Stormwater Regulations delegated to DelDOT are: review and approval of construction plans, review of construction sites, and inspection and maintenance of completed stormwater management facilities. Satisfactory performance of the delegated responsibilities will be considered compliance with this component of the SWPP&MP.

Enforcement of construction site erosion and sediment controls is accomplished through each construction contract. DelDOT Standard Specifications lay out a progressive step-wise approach to gaining compliance with approved plans, regulations, and laws. In 2007, this section was significantly rewritten to demonstrate positive movement toward improving the Erosion & Sediment Program. In 2015, we continued to use consultant services under agreements with two (2) firms, relieving the Contractor of Certified Construction Reviewer (CCR) inspection duties.

1. Instead of the contractor providing the CCR, we executed agreements to hire two consulting firms to perform the weekly CCR inspections. This has improved compliance with the required weekly and rain event reporting. The consultant also has the authority to hire a third party contractor to correct E&S deficiencies if the prime contractor refuses.
2. Required pre-construction meeting specifically designed to address E&S compliance.
3. Better defined division of responsibilities among site reviewers, contractor engineer, project engineer, stormwater engineer.
4. Strengthened available actions to gain compliance.
5. Environmental Compliance Supervisor – This position at DelDOT has the responsibility to regularly track and review the construction site reviews submitted

on a weekly basis from Notice of Intent (NOI) to Notice of Termination (NOT) and annually assess CCR's performance. The purpose of the Performance Evaluation Program is to better assure that CCRs considered for contract either possess, or will likely possess at the time contract performance is set to begin, all qualifications necessary to successfully complete the project on time. Getting the contractor CCRs to submit timely reports to DelDOT had been inconsistent. We therefore determined that annual reviews may increase reporting compliance. The implementation of a mandatory, standardized system of evaluating CCR's performance is expected to yield consistency, objectivity, fairness, and accountability.

We continued our agreement with two consulting firms to perform the weekly CCR inspections in lieu of contractor provided CCRs as described in number 1 above. This has improved compliance with the required weekly and rain event reporting. The consultants also have the authority to hire a third party contractor to correct E&S deficiencies if the prime contractor refuses.

The CCR reporting form was changed as a result of our delegation review with DNREC. Added were slots for the plan expiration date, rain event box, and a page dedicated to Pollution Prevention. All uncorrected deficiencies must show a reason for remaining incomplete. A monetary incentive is offered to contractors who score a 70 or greater on the CCR reporting form.

DelDOT staff involved with erosion and sediment issues (E & S inspections, designing stormwater systems or review of stormwater plans) are required to complete DNREC's 3-day CCR course.

#### *B. Design and Construction of BMPs*

DNREC delegates to DelDOT the initial plan review and approval of proposed designs for land disturbances greater than 5,000 square feet.

381 plan reviews of 239 design plans were completed by the Stormwater Section for their adherence to the Delaware Sediment and Stormwater Regulations. About a third of those projects are residential subdivision and commercial plans. DelDOT's subdivision manual regulates development in Delaware that will be turned over for State Maintenance. Before a subdivision street is accepted, DelDOT conducts a final inspection to ensure the structural integrity of the stormwater system. A pipe video inspection using Closed Circuit Television (CCTV) is performed.

## **5. Post-Construction Stormwater Management in Newly Developed Areas and in Redeveloped Areas**

### Requirement:

The permittee shall continue to implement and enforce a program to address stormwater runoff from new development and redevelopment projects that disturb areas greater than or equal to one acre, including projects that disturb less than one acre that are part of a larger common plan of development, and that discharge to the storm sewer system.

### Performance/Measurable Goals:

#### *A. Delegated Agency*

The Department of Natural Resources and Environmental Control has delegated the authority to administer a sediment and stormwater program to DelDOT. Satisfactory performance of the delegated responsibilities, through triennial reviews, will be considered compliance with this component of the SWMP.

#### *B. Inspection and Maintenance of BMPs*

DelDOT has an annual requirement to inspect its constructed best management practice (BMP) devices, structures and stormwater management facilities (Appendix C). In 2015, 123 BMP inspections were completed in Kent and Sussex Counties.

The purpose of this BMP program is to:

- inventory, inspect, measure water quality performance and maintain functionality of DelDOT's stormwater management facilities;
- identify and treat noxious and/or invasive species;
- maintain a comprehensive database;
- coordinate with the Districts on the submittal of work orders as needed; and
- provide technical assistance and guidance to the Department regarding appropriate maintenance strategies for stormwater BMPs.

A field inspection manual and forms were developed to allow staff to perform effective field inspections, to evaluate BMP performance, and to identify maintenance requirements. The procedures outlined in this manual assist DeIDOT with decisions on inspection, maintenance, repair and retrofit of BMP facilities. In calendar year 2015, 478 BMPs were inspected statewide. Please refer to Appendix C for a list of all DeIDOT constructed facilities. 123 of these BMPs were in the Phase II permitted area.

Overall performance and functionality are graded A-D (Table 5-1). Table 5-2 describes the 2015 rating summary by each maintenance district. 74% of the BMPs inspected in 2015 have an A or B rating, which is the rating that reflects that there are no issues that affect performance, and that maintenance above and beyond the routine mowing and trash removal is not necessary. We have also noticed that each year we have up to 10% of our BMPs fall from Good or Fair status to a status of contracted work needs.

BMPs are evaluated and placed on contract for maintenance as needed and as annual funding permits. Maintenance is performed either by DeIDOT District staff or through contractors (general contractors, contractors specializing in noxious and invasive species control, or in maintenance of specific manufactured BMP types). Noxious and invasive species are managed either through DeIDOT Roadside Environmental or District staff, or placed under contract.

In addition to the BMPs identified for noxious and invasive species, DeIDOT identified stormwater BMPs in need of maintenance. These BMPs were added to the log of BMPs that will be maintained by a Contractor and completed as funding is available. BMP maintenance is prioritized based on potential water quality impacts.

For the BMPs in the Phase II Area, a maintenance contract is in development to return the facilities to their original design condition. Many of the facilities have vegetation that has been unmanaged and needs to be cleared to improve access.

A total of 17 BMPs were maintained in 2015, as listed below.

- Area 2 – Seaford
  - BMPs 305, 306, 407, 408, 409, 410
- Area 7 – Magnolia
  - BMPs 204, 206, 208, 209
- Area 8 – Magnolia
  - BMPs 5, 10, 17, 18, 77, 211, 212

**Table 5-1.** DeIDOT’s Stormwater BMP Rating System.

<b>Rating</b>	<b>Description</b>
A	<b>NO PERFORMANCE ISSUES</b> BMP with No Issues Affecting Performance. ≤2 Scoring Criteria
B	<b>MINOR MAINTENANCE</b> BMP with Minor Maintenance Required; Needs to be repaired by DeIDOT Maintenance District or third party invasive spray contractor. ≤3 Scoring Criteria
C	<b>MAJOR MAINTENANCE</b> BMP with Major Maintenance required; needs repaired by third party contractor. ≤4 Scoring Criteria
D	<b>RETROFIT</b> BMP with Retrofit requirements; BMP is failing; needs to be redesigned or re-built with input from DeIDOT Stormwater Quality Program. ≤ 5 Scoring Criteria

**Table 5-2.** 2015 BMP Inspection Ratings Summary – Kent and Sussex Counties <sup>1</sup>.

<b>Maintenance Area</b>	<b>District</b>	<b>BMP Performance Rating</b>				<b>2015 Total</b>
		<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	
2 Seaford	South	12	2	0	0	<b>14</b>
3 Ellendale	South	16	3	0	0	<b>19</b>
4 Gravel Hill	South	13	0	1	0	<b>14</b>
5 Dagsboro	South	23	5	6	0	<b>34</b>
6 Harrington	Central	11	1	0	0	<b>12</b>
7 Magnolia	Central	7	4	0	0	<b>11</b>
8 Cheswold	Central	12	4	3	0	<b>19</b>
<b>2015 Phase II Total</b>		<b>94</b>	<b>19</b>	<b>10</b>	<b>0</b>	<b>123</b>

<sup>1</sup> Table reflects annual inspections by KCI Technologies in 2015. BMPs with existing work orders or on contract for maintenance were inspected by DeIDOT staff prior to contracted work.

## 6. Pollution Prevention and Good Housekeeping

### Requirement:

DelDOT shall develop and implement an operation and maintenance program with a goal of preventing and/or reducing discharges of pollutants associated with our operations as described in the Application page 13, Permit page 10, Part II.A.6.

### Performance:

The following sections describe ways the Department practices source control at our facilities, and how we manage and minimize transport of pollutants associated with road repair and maintenance activities.

#### *A. Road Repair and Maintenance*

There are various ways in which the Department maintains roadways that help reduce the discharge of pollutants. Routine maintenance and improvements reduce pollutants coming from the roadway in several ways. The patching of potholes and sealing of cracks reduces the amount of pavement that will break away and be transported into the nearest waterway. Repairing potholes also decreases the wear and tear on vehicles, thus reducing the fluids, miscellaneous sediments, and tire particles that could be dislodged from vehicles. Money for roadway maintenance activities is programmed into the District's Maintenance funds.

All road projects are required to follow the Delaware Sediment and Stormwater Regulations. Projects designated as minor, medium or major must have an approved sediment and stormwater management plan. Medium and major projects must also have a site reviewer who is a Certified Construction Reviewer (CCR).

DelDOT staff and contractors continue to implement the practices set forth in Section 110 of the Standard Specifications for Erosion, Sediment Control and Water Pollution, modified in 2007. This Section addresses practices to control stormwater runoff from soil disturbance activities, spill prevention, material management and good housekeeping practices. Details may be found in Section 4 of this report (Construction Site Stormwater Runoff Control).

DelDOT follows the manual of Standard Operating Procedures developed for responding to and managing spills on the roadways classified as **Category E, Type E-1** incidents (Traffic Hazards, Fuel, Oil or other HAZMAT spills on or near the roadway). Most DelDOT vehicles have been equipped with spill kits in the event of an accidental spill or as a first responder to a vehicle accident, and maintenance employees are trained annually on spill response and protection of water quality.

*B. Sweeping Program*

DelDOT’s sweeping program reduces pollutants by maintaining the cleanliness of the roadway. The street sweeping program includes the roadways, shoulder, intersections, and toll plaza lanes on primary, secondary and tertiary roads. The roadways are swept on the following cycle: roads with Average Daily Traffic (ADT) greater than 20,000 are swept 4 times a year, roads with ADT between 5,000 and 20,000 are swept 2 times a year and roads with ADT less than 5,000 are swept once a year.

DelDOT has installed automatic vehicle location (AVL) devices on all sweeper vehicles. This will assist the Department in verifying that the required sweeping frequency has been met. In addition, each Maintenance Area is required to document streets swept in 2014 through spreadsheet check lists and/or the Maximo work order system.

To calculate pollutant removal rates from roadways, DelDOT weighs sweeping material. 219 tons of street sweeping residuals were collected from Kent and Sussex Counties roadways in 2015. Using the formulas recommended by the Chesapeake Urban Stormwater Group memo, *Street Sweeping/BMP Era Recommendations* (03/01/11), the estimated pounds of nutrients removed from runoff in 2015 by DelDOT’s street sweeping program was calculated and presented in Table 6-1. The weights reflect tons of material delivered to the DSWA landfill. A factor of 0.7 was used to calculate dry weight.

**Table 6-1.** Estimates of Nitrogen and Phosphorus Removed from Central District (Kent County) and South District (Sussex County) Roadways by Street Sweeping in 2015.

<b>Area</b>	<b>Tons of Waste Collected</b>	<b>TN Removed (lbs.)</b>	<b>TP Removed (lbs.)</b>
Central District	145	508	203
South District	74	258	103
<b>Total</b>	<b>219</b>	<b>766</b>	<b>306</b>

The Delaware Solid Waste Authority (DSWA) considers street sweeping residuals a Special Solid Waste and requires that chemical analyses of the material be submitted before approval is granted to deliver the wastes to DSWA landfills. DelDOT collects and analyzes representative samples of sweeper waste stockpiles on an annual basis and submits the data to DSWA. The 2015 data and the DSWA approval letter are provided in Appendix D. The chemical data, along with records of tons of material collected from County Roadways will allow us in future years to estimate pollutant load reductions achieved by roadway sweeping and to better assess the effectiveness of DelDOT’s street sweeping program.

### *C. Litter Program*

DelDOT's Litter Program reduces the discharge of floatables to the MS4.

#### DelDOT Maintenance Staff and Department of Corrections crews:

DelDOT's maintenance staff and Department of Corrections crews help reduce the discharge of floatables to the MS4 through routine pick up of trash and debris from the roadways, medians and right-of-way. DelDOT staff is also responsible for removal of dead animals and clean up of illegal dump sites from the roadside.

#### Adopt-a-Highway

Adopt-a-Highway is a cooperative program between DelDOT's Division of Public Relations and volunteers to reduce litter along State roadways and subsequent discharge to waters of the State. This program supplements effort by DelDOT's maintenance forces to control litter. The volunteer groups are required to collect litter a minimum of twice per year and submit activity reports following each cleanup for inclusion in the program. Each group maintains approximately two miles of roadway. DelDOT maintains an Adopt-a-Highway website ([www.deldot.gov](http://www.deldot.gov)) and submits press releases to solicit volunteers. There are currently 926 volunteer groups statewide maintaining 1,852 lane miles.

#### Roadside Clean-up

DelDOT held its eighth annual "Imagine a Litter Free Delaware" cleanup day along roads, highways and community areas in October 2015.

#### TrashStoppers

DNREC's campaign is an outward appeal to the public for help in stopping illegal trash dumping along Delaware roadways to stop illegal dumping of garbage, debris, and hazardous wastes. The "TrashStoppers" program relies upon the placement of numerous surveillance cameras.

### *D. Snow and Ice Program*

Effective salt management practices can help reduce the amount of road salt that enters the environment. This translates into savings for DelDOT, and minimization of impacts of salt on our environment. DelDOT has many practices in place, both for the roadway and all maintenance facilities.

DelDOT has developed and instituted advanced snow fighting practices that began during the 2004-2005 winter season to include ground speed spreader controls, anti-icing, pre-wetting, and plow balance valves. These advanced techniques in snow and ice removal help DelDOT meet its goal of improved service to customers, reduce the impact to the infrastructure, and conserve salt which helps meet the goals of the NPDES Program by reducing the impact on the environment:

- Ground speed spreader controls provide accurate control of material usage.
- Anti-icing is the application of liquid deicers (Salt Brine) to road surfaces prior to a precipitation event to prevent the formation or development of bonded snow and ice. The Department uses 6000 gallon tanker trucks and 1300- and 1800-gallon capacity units that slide into the bed of a dump truck.
- Pre-wetting adds moisture to salt to “jump start” the melting action of the salt and causes the salt to stick to the road and prevent scatter or bouncing.
- Plow balance valves decreases the amount of weight that the plow cutting edge bears on the road surface decreasing damage to the road surface.

Salt application rates can vary depending on storm conditions, but the goal is 100 - 400 pounds of salt per lane mile as recommended by AASHTO. The rate is achieved by calibrating the equipment annually. Maintenance staff received training by Certified Power on proper use of the ground speed spreader equipment.

All salt stored at the maintenance facilities is under roof. Only during loading and unloading does the potential exist for salt to enter the stormwater system. DelDOT is following the salt management practices established by the “Statewide Salt Best Management Practices for DelDOT Maintenance Yards” plan developed for area maintenance facilities.

#### *E. Stormwater Conveyance Systems*

Maintenance of the stormwater conveyance system ensures proper functioning of the stormwater system and BMPs and thereby reduces the pollutants that are carried to nearby waterways. Money for this is programmed into the Districts’ Maintenance funds. The MS4 and BMP inspections performed for DelDOT by KCI Technologies continually generate and prioritize maintenance work orders.

This maintenance work includes three components:

- *Open system drainage* – General work to control erosion, as well as cleaning and reshaping of ditches. Stabilization of ditches reduces the amount of sediment that enters the local stream and waterways.
- *Closed system drainage* - Work performed on the components themselves, including general maintenance or replacement. This includes tasks such as drainage pipe repair and cleaning, catch basin/manhole repair and maintenance, and general maintenance on stormwater detention ponds.
- *Ponding problems* - Draining water off the roadways. This is usually the result of calls from citizens after a rain event.

#### *F. Roadside Vegetation Management*

All herbicide applications that are applied to DelDOT rights-of-way by contract applicators are reviewed prior to the award to the lowest bidder to insure that selected herbicides are labeled for the intended use, and when feasible, an herbicide is selected that can be applied at a low-use rate. This review frequently reduces the total load of herbicide applied to DelDOT's rights-of-way.

DelDOT does not routinely fertilize its roadsides. The only nutrients applied to DelDOT's rights-of-way come as a result of leaving grass clippings on the ground after mowing. Degradation of this vegetative material results in the slow release of organic constituents, which are mineralized to plant nutrients by microorganisms and made available to turf grasses. This natural process results in minimal leaching of nutrients. Also this practice results in minimal surface runoff of nutrients from ground with a slope of 3 horizontal to 1 vertical or less.

Fertilizers are used in establishing turf grasses from seed on freshly prepared bare ground. This is generally done under contract with a firm using a hydroseeder. DelDOT's specifications require that 50% of the nitrogen product be a slow release form of ureaformaldehyde. The amount of nitrogen applied is 70 lb/ac. Phosphorous pentoxide is applied at 42 lb/ac of available P that is the sum of water soluble and citrate-soluble phosphate. Potassium oxide is applied at 28 lb/ac of water soluble potash. In all cases areas that are seeded are covered with recommended mulch.

Pesticides applied on DelDOT's rights-of-way are done according to label recommendations that are on the product and filed with EPA at the time of product registration. Pesticides applied on DelDOT's rights-of-way are done by contractors that are certified Delaware pesticide applicators. DelDOT employees that apply pesticides to DelDOT's rights-of-way are certified

Delaware pesticide applicators or work under the supervision of a DelDOT employee that is a certified Delaware pesticide applicator. Typically, the only pesticides applied by DelDOT fall under the category of herbicides. DelDOT, however, may use other pesticides such as insecticides under certain circumstances.

DelDOT employees take required training courses that serve as credit toward renewal of their Delaware pesticide applicators license. Roadside Environmental Specialists attend conferences and working sessions on pest control technologies that are open to all DOT employees. Opportunities to use reduced amount of pesticides by using new low rate pesticides, adjuvants or surfactants that can enhance efficacy of pesticides and thus reduce rate, or alternatives to chemicals that are cost effective and efficacious are often topics of various sessions these specialists attend.

We are implementing several programmatic initiatives as part of the NPDES pesticide reduction strategy:

1. Guardrail Inventory – DelDOT has the responsibility of maintaining a 4' clear zone around the guardrail for both public safety and structural integrity via mowing, hand trimming and herbicides. We executed an agreement with Wallace Montgomery & Associates, LLP in May 2008 to inventory all guardrails statewide. The project was completed in June 2009 and inventoried 310 guardrail miles. Attributes collected included material under guardrail, guardrail type, surrounding environmental features and identification of sensitive/no spray zones. The inventory and attributes collected will be used in development of a pesticide reduction strategy to limit the use of herbicides, particularly around environmental sensitive areas (e.g. streams, wetlands, drinking supply, etc.).

A GIS analysis was performed to identify sections of guardrail adjacent to environmentally sensitive areas as referenced in Section 1 above. The following GIS data was used for this analysis: Delaware Wetlands, Statewide Excellent Recharge Areas, Land Use, Statewide Wellhead Protection Areas, Delaware Streams, Delaware Waterbodies, and Delaware Protected Lands. As a starting point, a buffer was then applied to identify all sections of guardrail that fell within 100' of these environmentally sensitive areas. Upon further examination it was determined Land Use and Delaware Protected Lands were not applicable for this analysis. This study did not progress in 2015 due to staffing vacancies, but we anticipate re-initiating the study next year. Once our analysis has been completed we will then evaluate alternative methods of reducing herbicides on a case by case basis. Treatment measures include weed control barriers, low growing vegetation, and hand cutting.

Since DelDOT is continually upgrading, replacing, or adding new guardrail, we executed a new agreement to update and maintain DelDOT's existing guardrail inventory database. The consultant will compile a field-verified inventory of the new and modified guardrail sections on all DelDOT-maintained roadways in Delaware, to include GPS location data for the beginning and end of each section. At least twice per year, DelDOT's NPDES Section will provide information to the consultant on the locations of new guardrail installations. These will be integrated into the existing guardrail inventory database.

2. Guardrail Vegetation Management pilot study – DelDOT and the University of Delaware developed a controlled research study to test the effectiveness of treatment types under guardrail for weed control. Weed barrier material, asphalt, low-grow fescue, zoysia seed and sod, Flight Turf, and natural growth with periodic trimming is monitored against a control. The results of this study will determine if these materials are effective at reducing herbicide application and can be used in specific locations such as environmental sensitive areas and drinking water supply reservoirs. We have extended this study through at least the next growing season to collect additional data on weed barrier materials and to test new plots of zoysia grass and Flight Turf.

#### 2015 Summary:

All plots were visited monthly during the growing season. Data on weed presence and acceptability for vegetation under guardrail was collected at each visit and a photograph of each plot was taken.

2015 was the fourth year of evaluation for zoysia plots. In zoysia sod plots established in 2012, zoysia was an effective competitor and there was very little weed encroachment. By the end of 2015, zoysia in those sod plots had started to spread into adjacent turf in the median. Three zoysia sod plots established in spring 2013 along Route 13 near the airport are still infested with foxtail, nutsedge, crabgrass, melilotis and other weeds. Plot 16b was the worst of the three. It appeared that the sod was poor quality with weeds present in the sod. These plots did not improve throughout 2015. They are currently planned for replanting to test zoysia in those locations from a new supplier with higher quality sod. Zoysia sod plots installed in Milford were initially infested with clover, but a broadleaf herbicide was used to control the clover. Zoysia grew successfully in 2015 and dominates the plots with a few broadleaved weeds mixed in. Zoysia planted in Odessa was variable in its success. The zoysia that was planted in small pieces did not establish well. All plots north of Odessa have the problem of soil sterilant applied by the contractor prior to planting that is affecting root growth and thus zoysia establishment. One of the zoysia plots (5a) at St. Georges was mistakenly treated with herbicide by the guardrail contractor and is completely dead.

Flight turf seeded in late fall 2012 continued to grow and formed a fairly solid ground cover. A broadleaved herbicide was not used on the FlightTurf plots during 2015 until late in the season. The late application did control weed competition, but an earlier treatment is planned for 2016. Bermudagrass and a mix of broadleaf weeds are the major competitors in the FlightTurf plots. Low fescue plots are variable in their ability to compete with encroaching weeds. None of the low fescue plots have established thickly enough to avoid the use of herbicides or hand trimming periodically. We had intended to install more FlightTurf plots in Fall 2015, but the areas had been previously treated with a soil sterilant by the guard rail contractor and there is no vegetation growing in the plots. We can't seed FlightTurf until fall 2016.

FlightTurf seeded in a large area around the St. Georges plots established well in 2015. It is thick throughout most of the area and has few weeds. FlightTurf was also planted in a larger site near Love of Christ Church close to the St. Georges plots. It was planted in late fall (November) but came up and started to establish at the end of 2015.

Weed barriers have performed differently based on their composition, location, installation and exposure. U-Teck custom installations and TrafFix rubber mat installations have held up best since their installation in 2011. Weed barriers must be installed flush with the road surface in order to be effective.

3. Training – In addition to the required training for pesticide license renewal, DeIDOT holds or attends periodic training to further educate staff. In 2015, DeIDOT Roadside Environmental staff attended the following workshops:

- Delaware Horticultural 2015 Industry / Pesticide Expo
- 2015 Arborist and Tree Care Seminar
- Delaware Nursery and Landscape Association (DNLA) - Summer Turf and Nursery Expo
- Transportation Research Board AHD50 Subcommittee Meeting
- 2015 Maryland Agriculture Pesticide Conference
- DNLA 2015 Ornamentals and Turf Workshop
- International Society of Arboriculture – Tree Risk Assessment Qualification
- Transportation Research Board Webinar: The Economic and Ecological Effects of Roadside Mowing
- Transportation Leaders' Summit – Restoring the Nation's Pollinator Habitat

4. NPDES Aquatic Pesticide General Permit Program – DelDOT is required to comply with the NPDES Aquatic Pesticide General Permit Program. The Environmental Roadside Section has submitted a Pesticide Discharge Management Plan and annual report to DNREC.
  
5. Record keeping and pesticide usage – Contractors and DelDOT applicators are required to submit records of spraying activities to DelDOT’s Environmental Roadside Section. The NPDES Program tracks and reports herbicide quantities to establish baseline usage. By tracking herbicide quantities we will be able to identify the cause of spikes or declines in usage and use the data to assess pesticide reduction programs we have implemented. Pesticide quantities are provided in Table 6-2.

**Table 6-2.** Total Pesticides Applied, Statewide 2015

<b>Product Name</b>	<b>EPA Reg. No.</b>	<b>App. Method</b>	<b>Quantity</b>	<b>Unit of Measure</b>
41A	Exempt	Land-based Sprayer	46.000	lbs.
Accord	67219-324	Land-based Sprayer	3.850	gals.
Amine 4, 2,4-D	34704-120	Land-based Sprayer	0.050	gals.
Aquaneat	228-365	Land-based Sprayer	266.490	gals.
Arsenal	241-346	Land-based Sprayer	0.326	gals.
Basal Oil	Exempt	Land-based Sprayer	3.200	gals.
Bullseye	Exempt	Land-based Sprayer	3.790	gals.
Chemsurf	Exempt	Land-based Sprayer	2.864	gals.
Clean Slate	228-491	Land-based Sprayer	0.038	gals.
Clearcast	241-437	Land-based Sprayer	0.234	gals.
Crossbow	627819-260-5905	Land-based Sprayer	0.250	gals.
Diuron	34704-648	Land-based Sprayer	1044.170	lbs.
Escort XP	352-439	Land-based Sprayer	19.470	lbs.
Esplanade	432-1516	Land-based Sprayer	9.141	lbs.
Garlon 3A	67219-37	Land-based Sprayer	1.230	gals.
Garlon 4	62719-40	Land-based Sprayer	0.850	gals.
Highlight	Exempt	Land-based Sprayer	1.761	gals.
Krenite	42750-247	Land-based Sprayer	350.000	gals.
Method 50SG	352-787	Land-based Sprayer	72.850	lbs.
Milestone VM	62719-537	Land-based Sprayer	1.146	gals.
MSO	Exempt	Land-based Sprayer	117.740	gals.
Nu-Film	Exempt	Land-based Sprayer	8.260	gals.
Oust XP	432-1552	Land-based Sprayer	0.013	lbs.
Oust Extra	432-1557	Land-based Sprayer	21.870	lbs.

<b>Product Name</b>	<b>EPA Reg. No.</b>	<b>App. Method</b>	<b>Quantity</b>	<b>Unit of Measure</b>
Outrider	524-500	Land-based Sprayer	0.049	lbs.
Overdrive	7969-150	Land-based Sprayer	0.770	lbs.
Panoramic	66222-141-81927	Land-based Sprayer	23.380	gals.
Pathfinder	67219-176	Land-based Sprayer	3.000	gals.
Patriot	228-391	Land-based Sprayer	0.125	lbs.
Pendulum	241-416	Land-based Sprayer	6.010	gals.
Polaris	228-534	Land-based Sprayer	27.050	gals.
Roundup Pro(41%)	524-475	Land-based Sprayer	0.750	gals.
Roundup Pro Max(47%)	524-579	Land-based Sprayer	5.970	gals.
Snapshot	62719-175	Land-based Sprayer	305.000	lbs.
Surface	2217-850	Land-based Sprayer	15.410	gals.
Tahoe	228-520	Land-based Sprayer	1.500	gals.
Thinvert	Exempt	Land-based Sprayer	275.000	gals.
Tordon	62719-17	Land-based Sprayer	3.750	gals.
Trooper P+D	228-530	Land-based Sprayer	44.220	gals.

*G. Spill Prevention and Response on Roadways*

DelDOT’s Transportation Management Center (TMC) coordinates operations and shares information among its own personnel as well as various other transportation and public safety-related agencies, serving as the transportation interface among all such agencies in the state. They operate 24-hours per day/7 days per week. The TMC serves as the central communication point for DelDOT during major incidents, special events, and emergencies, and coordinates transportation management activities with other agencies. The TMC has special instrumentation that has been used to develop incident management capability.

The type of incident detected or called in has a direct effect on the notification process and steps that must be taken in order to be able to respond, assist, and document the incident in an expeditious manner. Incidents have been classified into one of seven categories, and then into sub-categories that further specify the type of incident that has occurred. These categories are listed below:

- Category A: Accidents (Emergency)
- Category B: Vehicle Fire (Emergency)
- Category C: Disable Vehicles (Emergency)
- Category D: Police Activity (Emergency)
- Category E: Traffic Hazards (Emergency)

Category F: Roadway and Signal Operations (Traffic)

Category G: Delay or Congestion (Traffic)

In June 2001, the TMC developed a manual of Standard Operating Procedures (SOP) that acts as a guideline for handling incidents and systems problems; as a training tool/resource for new employees and as a reference guide for the operations staff. *Category E: Traffic Hazards (Emergency)*, of the SOP describes the notification and documentation procedure involving fuel, oil or other HAZMAT spills on or near the roadway.

In the event of a spill such as fuel, oil, or HAZ-MAT, the TMC is required to notify the respective police agency since they are responsible for arranging for the particular traffic hazard to be removed. Generally, the police will contact the following agencies: Fire Board, DNREC (Department of Natural Resources and Environmental Control), tow company, and all other agencies that are required to attend such incidents.

In the event of a non-hazardous materials spill DelDOT mobilizes, responds and directs the clean up effort to prevent the material from entering the storm drain system or receiving waters. If the spill is of questionable material, DelDOT uses procedures as describe for HAZ-MAT spills. Most DelDOT maintenance vehicles have been supplied with spill kits, and maintenance staff are regularly trained on their use.

In addition to the TMC's Standard Operating Procedures, the NPDES Program has completed the Spill Prevention Control and Countermeasures Plans for DelDOT facilities that met the above ground storage tank minimums. These are described in section H below.

#### *H. Pollution Prevention at Maintenance Facilities*

##### Pollution Prevention Plans

DelDOT's NPDES Program continues to manage a Stormwater Pollution Prevention Program (SWPPP) at each of the 17 DelDOT maintenance facilities. Development, implementation, and maintenance of the SWPPP provides the maintenance yards with tools to reduce pollutants contained in stormwater discharges and comply with the requirements of Delaware's *Regulations Governing Storm Water Discharges Associated with Industrial Activity*. The program includes a written plan, timeline for plan implementation, inspection schedules, training and monitoring requirements, and proper storage and housekeeping measures. Each SWPPP has a pollution prevention team with designated responsibilities to carry out the plan. Facility plans were updated in December 2013.

## Facility Inspections

Pollution Prevention Plan Team members are required to conduct quarterly inspections during dry and wet weather events to look for evidence of stormwater contamination. These inspections continued through the 2015 calendar year.

In addition, DeIDOT NPDES Program staff annually conducts thorough SWPPP compliance inspections of each facility. A summary of the 2015 annual inspection dates for all DeIDOT maintenance facilities in Kent and Sussex Counties is provided in Table 6-3.

A “Summary of Action Items,” if any, is noted on the inspection form and gives specific instructions to the facility team and supervisors for corrective action. Follow-up correspondence with District managers is conducted to ensure the action items were corrected.

**Table 6-3.** Permitted Facility Stormwater Inspections

<b>Facility</b>	<b>Date Inspected</b>
Talley	10/06/15
Kiamensi	10/06/15
Chapman	10/07/15
Bear	10/07/15
Odessa	10/07/15
Middletown	10/08/15
Cheswold	09/30/15
Dover	09/30/15
Magnolia	09/30/15
Harrington	09/24/15
Ellendale	09/24/15
Gravel Hill	09/21/15
Seaford	09/22/15
Georgetown	09/24/15
Dagsboro	09/21/15
Laurel	09/22/15
Sod Farm	10/08/15

## Spill Prevention Control and Countermeasures (SPCC)

Maintenance facilities that met the above ground storage minimums requiring a SPCC plan were developed in order to comply with EPA’s Oil Pollution Prevention regulations (40 CFR 112)

contained within the Clean Water Act. An SPCC Plan discusses how the maintenance facility conforms to oil spill prevention and containment procedures. Each SPCC Plan is unique to the facility. As reported previously, the initial plans were completed and distributed in 2007. Because of the addition of new above ground storage tanks at Harrington and Cheswold maintenance facilities, SPCC plans were also initially prepared for these areas in 2008 and updated in 2013.

In 2014, we executed an agreement with Tetra-Tech to update all the SPCC plans statewide. The final plan is expected in 2016.

### Training

Training videos were developed for maintenance staff. The videos provide training on protection of stormwater quality in the following areas:

1. Facility and vehicle maintenance
2. Stormwater contamination and spill prevention
3. Vegetation control and pollution prevention on public roads and highways
4. The regulatory requirements of the SPCC plans developed for each maintenance yard
5. Spill response and emergency procedures
6. The proper procedures for responding to facility and non-facility (roadway) based emergency events.

Each maintenance facility has copies of the videos, and current DelDOT personnel and new hires are required to view them. In addition, the NPDES Program also prepares training posters (“Maintenance Bulletins”) on elements of the PPP and SPCC Plans and distributes them to the yards at least twice per year.

### Monitoring

DelDOT performs semi-annual wet weather monitoring at maintenance yard outfalls, in compliance with the state industrial general permit.

In prior years, the Pollution Prevention Plans required BMP outfall monitoring at only four maintenance facilities. (Kiamensi, Bear, Cheswold, and Harrington). In August 2013, DNREC required monitoring to begin at all permitted facility outfalls that discharge stormwater and conduct vehicle maintenance. In addition, DNREC requested that Oil and Grease (O&G) replace Total Petroleum Hydrocarbons in the list of monitoring parameters.

Table 6-4 lists the Kent and Sussex County maintenance yard outfalls that DelDOT monitors semi-annually, along with the dates that samples were collected in 2015. The analytical data from first flush grab samples is presented in a spreadsheet that is attached to this report as Appendix E.

**Table 6-4.** Kent and Sussex Counties Maintenance Facility Outfalls and 2015 Sample Dates.

Yard		Type/ Material	Drainage Area	Sampling Requirement	2015 Sample Dates
<b>CHESWOLD</b>	CHE01	N/A	Parking Lot	No Sample Required	02-02-15; 07-27-15
	CHE02	CMP	Equip. Storage, Salt Shed, Road Waste	Sample	
<b>DAGSBORO</b>	DAGS01	Swale	Vehicle Storage, Maintenance Area, Equipment Storage	Sample	06-01-15; 12-17-15
	DAGS02	Swale	Sand, Rip Rap, Stone, Stockpile Area	Sample	
	DAGS03	Swale	Vehicle Storage, Equipment Storage	Sample	
<b>DOVER</b>	DOV01	N/A	Parking Lot	No Sample Required	03-26-15; 09-10-15
	DOV02	Asphalt Sheet Flow	Truck Storage, Shop and Garage	Sample	
<b>ELLENDALE</b>	ELE01	PVC Pipe	Equipment Storage Area, Parking Lot	No Sample Required	04-14-15; 09-10-15
	ELE02	Pond	Material Storage	Sample – Low Flow Potential; Verify No Flow	
	ELE03	CMP	Vehicle Wash Area, Salt Barn	Sample	
	ELE04	N/A	Material Storage	No Sample Required	
<b>GEORGETOWN</b>	GEO01	RCP	Maintenance Building	Sample	02-02-15; 12-30-15
<b>GRAVEL HILL</b>	No Outfalls – All Drainage Stays on Site				
<b>HARRINGTON</b>	HAR01	V-notch Concrete Weir	Vehicle Wash Area; Majority of Maintenance Yard	Sample	02-02-15; 09-30-15
<b>LAUREL</b>	No Outfalls – All Drainage Stays on Site				
<b>MAGNOLIA</b>	MAG01	Pipe / Riser	Material Storage/Pond	Sample	03-26-15; 09-10-15
	MAG02	Pipe /Swale	Vehicle Storage Area	Sample	
<b>SEAFORD</b>	SEA01	CMP	Vehicle Wash Area, Vehicle Storage, Repair Shop, Salt Barn	Sample	01-12-15; 10-28-15

Because so many facilities are monitored statewide, in 2015 we continued our system implemented in 2014 to report monitoring results to District management and to document follow-up corrective actions taken. When the laboratory results have been analyzed (by KCI Technologies), if there are any exceedances of the water quality parameter benchmark values, a Maintenance Facility Wet Weather Benchmark Monitoring Follow-up Form (Appendix F) is submitted to the DelDOT Pollution Plan Team Leader. This form provides the laboratory monitoring results, and identifies those parameters in exceedance of the water quality benchmark. The Pollution Plan Team Leader identifies the potential source(s) of contaminant(s) and provides follow-up actions to be implemented.

## Vehicle Wash Water Plan

In July of 2005, DelDOT received approval from DNREC for a plan entitled *Statewide Vehicle Wash Water Practices for DelDOT Maintenance Yards* (Section V, DelDOT NPDES Phase I MS4 Permit Stormwater Management Plan, revised September 2010). This plan outlined the Department's proposal for treating vehicle wash water on-site at our 17 maintenance facilities. Our goal was to develop options to treat vehicle wash water and stormwater to acceptable levels before it exits our site and enters receiving waters. To meet this objective we developed a stormwater "treatment train" at each maintenance facility. This method incorporates multiple Best Management Practices (BMPs) to treat wash water to the maximum extent practicable. In several cases, existing practices, together with proposed policy changes and employee training, were sufficient to treat the vehicle wash water. In other cases, there is a need to design and construct retrofits at the facilities. As part of the Phase I SWPP&MP, the revised vehicle wash plan was completed in May 2015.

### *I. Employee Training Program*

The following is a summary of annual employee training workshops and conferences attended by DelDOT staff and training materials produced in calendar year 2015:

#### **Videos:**

- All statewide district maintenance staff are required to view the following videos as part of Pollution Prevention Plans: Stormwater Contamination & Spill Prevention, Vegetative Control & Pollution Prevention, and Facility & Vehicle Maintenance.
- All maintenance staff are required to view videos as part of the Spill Prevention Control and Countermeasures Plans. The three topics include: SPCC regulatory requirements, spill response and emergency procedures and roadside events.

#### **Publications:**

- DelDOT Maintenance Facilities, Stormwater Pollution Prevention Plan – Good Housekeeping Practices Flip Book (Nov. 2015)

#### **Workshops:**

- DelDOT Winter Workshop – included training on Water Quality Improvement Program
- DNREC- Sediment/Stormwater Designer Training
- DNREC- Checking in on Post-Construction Stormwater Management

- NCC – Stormwater Management Maintenance & Inspections Program of Commercial and Industrial Facilities
- NCC- Stormwater Management Maintenance & Inspections Program of Residential Facilities
- DNREC & DEAWRA Symposium: MS4 Changes in Delaware: Will You Be Ready?

#### **Webinars:**

- Advanced Stormwater Treatment: Dissolved Pollutants webinar
- Potential Impacts of the Proposed Phase II MS4 General Permit Remand Rule
- EPA Watershed Academy: Watershed Approach Handbook: Improving Outcomes and increasing benefits associated with wetland and stream restoration and protection projects; March 18, 2015
- California Industrial Stormwater Permit; March 24, 2015
- EPA webcast: Water Quality Models 101 - What Are These Things? March 26, 2015
- Storm Water Solutions Virtual Expo; Navigating Muddy Waters: Understanding the proposed USEPA and Corps of Engineers Revised Definition of Waters of the United States; April 1, 2015

#### **CCR Training:**

- In 2015, 20 DeIDOT staff attended the Certified Construction Reviewer (CCR) course and 3 took the CCR recertification course (Blue Card).

#### **DeIDOT Sediment and Stormwater Training:**

DeIDOT holds E & S pre-construction meetings for the following projects: 1) bridges, 2) major, 3) medium, and 4) minor if they have a BMP installed. Discussion topics include:

- Responsibilities of DeIDOT
- Responsibilities of the contractor
- Design changes and approvals
- Following original approved plans/specs and non-compliance
- Project status and schedule
- Permits and permit requirements
- Restrictions

**Appendix A. KCI 2015 MS4/BMP Inventory and Inspection Report**



AGREEMENT NO. 1728  
STATEWIDE STORMDRAIN INVENTORY AND INSPECTION PROGRAM

## 2015 ANNUAL REPORT ANNUAL REPORT SUMMARY

### Prepared For

Delaware Department of Transportation  
National Pollutant Discharge Elimination System  
Stormwater Quality Program



Area 5 Dagsboro - BMP 557

### Prepared By

KCI Technologies, Inc.  
KCI Project 17141728B

March 2016



Area 11 Kiamensi - BMP 298



**DELDOT AGREEMENT NO. 1728**  
**STATEWIDE STORMDRAIN INVENTORY AND INSPECTION PROGRAM**



**2015 ANNUAL REPORT SUMMARY**

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**DELDOT AGREEMENT NO. 1728**  
**STATEWIDE STORMDRAIN INVENTORY AND INSPECTION PROGRAM**  
**2015 ANNUAL REPORT SUMMARY**



The following is a summary of work performed by KCI Technologies, Inc. (KCI) from January 1 to December 31, 2015 for Delaware Department of Transportation (DelDOT) Agreement 1728. The KCI Team was awarded Agreement 1728 in December 2014.

**1.0 PROJECT MANAGEMENT**

In 2015, KCI conducted project status meetings with DelDOT to discuss work completed and outstanding issues (**Table 1.1**). These meetings were highly effective in coordinating with DelDOT, identifying priority work, and resolving issues in a timely manner. KCI distributed an agenda at least two days prior to each meeting and prepared meeting minutes within 48 hours, including an Action Item List highlighting necessary actions, responsible parties, and target completion dates. Meetings were also conducted with DelDOT and NCC to discuss shared issues.

**TABLE 1.1**  
**2015 MEETINGS**

Date	Meeting
01-16-15	DNREC BMP Delegation
01-21-15	Internal Database Redesign Meeting
01-26-15	Internal Status Meeting
02-05-15	Database Redesign Meeting #1
02-13-15	STOPPIT Hotline Meeting
02-13-15	Database Redesign Meeting #2
02-18-15	Database Redesign Workshop #1
02-20-15	Database Redesign Workshop #2
02-27-15	Database Redesign Workshop #3
02-27-15	STOPPIT Hotline Meeting
03-02-15	Internal Status Meeting
03-13-15	Database Redesign Meeting #3
03-20-15	Internal (Newark) Database Redesign Meeting
04-09-15	Internal (w/GSP) Database Redesign Meeting
04-10-15	Database Redesign Meeting #4
04-10-15	STOPPIT Hotline Meeting
05-19-15	Database Redesign Meeting #5
05-21-15	Internal Status Meeting
05-28-15	Database Redesign Workshop #3
06-17-15	Internal (w/GSP) Database Redesign Meeting

Date	Meeting
07-14-15	DeIDOT-NCC NPDES Meeting No. 1
07-23-15	Immediate Action Work Order: Woodland Trails Sinkhole
07-27-15	Internal KCI Status Meeting
07-30-15	Internal NPDES Database Redesign Meeting
08-07-15	DeIDOT NPDES Database Redesign Meeting #7
08-18-15	DeIDOT and KCI BMP Field Inspections
08-19-15	Internal NPDES Database Redesign Meeting
09-21-15	Internal NPDES Database Redesign Meeting
10-05-15	Internal NPDES Database Redesign Meeting
10-06-15	DeIDOT NPDES Database Redesign Meeting #8
10-14-15	DeIDOT-NCCo NPDES Meeting No. 2
12-01-15	Internal KCI Status Meeting
12-15-15	DeIDOT SWM Database Module Meeting #1

**Table 1.2** lists the deliverables transmitted to DeIDOT in 2015. Deliverables pertinent to Agreement 1749 are included in the *Agreement No. 1749 2015 Annual Report Summary*, which includes outfall screening and illicit discharge investigations, some of which originated from Agreement No. 1728 inventory and inspection.

**TABLE 1.2  
 DELIVERABLES**

Date	Deliverable
01/27/15	01/27/15 Map Viewer User List
02/04/15	List of Approved Work Orders for Submittal (through end 2013 with some February 2014)
02/13/15	South Herald Street Location Map.pdf
02-27-15	2014 Annual BMP Inspection Reports: Maintenance Areas 2-12, 14
03-02-15	Communities.gdb.zip
03-06-15	Database Mock Up-Combined; Database Mock Up Tables
03-11-15	January/February DeIDOT Asset Submission
03-16-15	02-24-15 BMP 248 Memo to DelTech regarding BMP Ownership and Maintenance
03-20-15	Revisions to the 2014 Annual BMP Report: 2014 BMP INVASIVE INVENTORY 12-TALLEY; 2014 BMP INVASIVE CUT 11-KIAMENSI
04-10-15	Database Reports 2015-04-10 Database Report.pdf
04-16-15	2015 BMP Invasive Species Spray Maps and Corresponding Reports
04-22-15	Agr 1591 2014 Annual Report Summary
04-28-15	January-March DeIDOT Asset Submission: (1) All newly collected structures; (2) All newly collected conveyances; (3) All deleted structures; and (4) All deleted conveyances.
05-07-15	05-07-15 Map Viewer User List
05-13-15	Transmittal of plans for DeIDOT review, which indicate that BMPs 440-448 were never constructed.
05-20-15	Immediate Action WOs: Quigley Blvd; Country Creek Subdivision: Grate in Bottom of Catch Basin

Date	Deliverable
05-20-15	NPDES Database Requirements Document DRAFT V2.3 for DelDOT review
05-22-15	Immediate Action WOs: Newtown Village - 3 Catch Basins
05-29-15	Immediate Action WOs: Piermont Woods - Grates in 2 Catch Basins: Structures 90228, 90229
06-11-15	Immediate Action WO: Pinewoods
06-16-15	Augustine Creek II - 3 Year Warranty Period and Work Order
06-24-15	06-24-15 Map Viewer User List
06-25-15	Immediate Action WO: Salem Woods_Canal District
06-26-15	Immediate Action WO: Beechers Lot
07-07-15	06-24-15 Map Viewer User List
07-07-15	Immediate Action Work Order: Treelane Terrace Subdivision
07-13-15	Immediate Action Work Order Faulkland Road
07-23-15	Immediate Action Work Order: Woodland Trails Sinkhole
07-31-15	Howell Road Sump Pump Discharge Permits: KCI Field Investigations - No PIDs
08-11-15	BMP Spray List: DelDOT-owned BMPs at Maintenance Yards - for DelDOT Review.
08-19-15	DelDOT Asset Submission April - June 2015
08-20-15	2015 BMP Spray List with Maintenance Yard Ponds
08-25-15	BMP 75 08-14-15 Inspection Photos
08-31-15	Immediate Action Work Order: Briars Lane - Need Clarification if DelDOT or NCCo-owned.
08-31-15	Immediate Action Work Order: Erosion at BMP 43 along SR 273
08-31-15	BMP Inspection Reports for 11 BMPs Scheduled for 2015 Maintenance
09-01-15	Maximo Supervisor's List for DelDOT (Valda Ritter) Review and Comment
09-01-15	Approved MS4 Maintenance Work Orders filename Work_Orders_Submitted_09_01_15.xlsx
09-18-15	BMP Inventory and Inspection Manual
09-22-15	Notification that 2085 Creek Road Cross Road Pipe Added to DelDOT MS4 Database - Visible on DelDOT Map Viewer after early October Monthly Data Push.
09-23-15	August 2015 Drainage Assets Summary for 2014 DelDOT Fact Book.
09-23-15	DelDOT NPDES Database Redesign Wireframe pdfs.
09-25-15	Immediate Action Work Order: 2431 Glasgow Ave grate collapse.
10-01-15	10-01-2015 Augustine Ridge Pipe Inspections Memo.pdf
10-05-15	2014 MS4/BMP Inspection Quantities Facts for Annual Report
10-08-15	10-08-15 Map Viewer User List
10-27-15	3206 Summerset Road, Talleyville, Ownership Investigation Findings
10-30-15	10-30-15 Map Viewer User List
11-04-15	Immediate Action Work Order: Rt 40 near Rosetree Lane
11-06-15	DelDOT_Chesapeake_Bay.gdb.zip
11-10-15	Instructions to Query Map Viewer by District
11-10-15	11-09-15 3206 Summerset Road Sinkhole Memo.pdf
11-10-15	11-09-15 Snuff Mill Road Memo.pdf
11-10-15	BMP Inventory Spreadsheet
11-11-15	2015 DSF Inspections Summary Memo_11-10-15.pdf

Date	Deliverable
11-13-15	2015 Chesapeake Bay Progress Submission to EPA: All DeIDOT BMP's (via email to Marcia Fox, DNREC).
11-13-15	Street Sweeper Waste Totals for Jan-Oct 2015; Estimated Pollutant Removal for Chesapeake (via email to Marcia Fox, DNREC).
11-13-15	Central_District_Pipes_Centerline_Intersect_Poor_Rating.xlsx
11-23-15	2015 Chesapeake Bay Progress Submission to EPA: Table in non-XML format submitted to DNREC for 2015 Annual BMP Submission. This table will be updated for 2016 submission.
11-25-15	11-25-15 Blue Rock Road Sinkhole Memo.pdf
12-11-15	12-11-15 Map Viewer User List
12-17-15	12-15-15 Beechwood Road - Edgemoore Apartments Drainage Issues Memo
12-17-15	Immediate Action Work Order: Stone Mill
12-17-15	Database Redesign Potential Map Viewer Training Schedule.
12-18-15	Initial MS4 inventory & Inspection of Farmington Subdivision (New Castle County): Potential defects and work orders.

## 2.0 NPDES DATABASE MANAGEMENT

In 2007, KCI's Technology Services division developed a field application using advanced hardware, redesigned the existing NPDES Database structure to allow for re-inspections, migrated all existing data into the new NPDES Database design, and began development of a new field application to fit the new NPDES Database design.

In 2008, KCI's Technology Services division completed the development of the Field Application, Version 2 and developed a Web-based Map Viewer to replace and upgrade DeIDOT's existing Map Viewer. In 2009, DeIDOT expressed a desire for KCI to simplify the Map Viewer, especially the querying capabilities.

In 2010, KCI completed the refinements to the Map Viewer including simplifying querying and report creation for BMPs, conveyances and structures, and adding a drainage area layer for BMPs and Major Outfalls. In addition, KCI developed a *Map Viewer User's Guide* to assist with the use of the viewer.

In 2011, KCI assisted DeIDOT in formal training sessions to educate DeIDOT design and maintenance staff on the use of the Map Viewer.

In 2011/2012, KCI updated the Map Viewer by migrating the ArcGIS Server 9.3.1 webADF codebase to ESRI's ArcGIS Server 10.0 SP2 Javascript API in preparation for the ESRI's webADF deprecation at ArcGIS Server 10.1. KCI and DeIDOT developed a method for conducting desktop inventory for new drainage structures along roadway improvement projects, by overlaying electronic construction plans on the DeIDOT NPDES Database.

In 2013, KCI developed a Mobile Application for the Web-based Map Viewer. The DeIDOT NPDES Mobile Application is compatible with Android/iOS mobile browsers and with Google Chrome on



desktops/laptops. <http://deldot.kci.com/mobile/>.

The Mobile Application assists DeIDOT Maintenance Staff by allowing use of the phone's GPS function to see their location in relation to the MS4 or BMP structure.

In 2014, DeIDOT and KCI discussed the need to upgrade the NPDES geodatabase using updated software and incorporating latest NPDES permit requirements. The geodatabase and associated components (field data collection application, map viewer, mobile application) had become difficult to manipulate because the development architecture software has become outdated.

In 2015, DeIDOT tasked KCI with redesigning the existing NPDES field application, geodatabase, and web viewer to better support DeIDOT's business processes associated with creating, viewing, and reporting of NPDES data within the context of DeIDOT's mandated NPDES permit requirements. The proposed solution will manage stormwater structures, conveyances, and BMP facilities and ancillary activities, including work orders, photos, attachments, and IDDE / Water Quality Investigations, within a single, centralized framework capable of supporting associated workflows across multiple users and user groups. The proposed solution is designed to become the core dataset within a modular, program-wide NPDES solution. The improved field application and geodatabase will be released in the first half of 2016, with the revised map viewer released in mid-2016. **Table 2.1** contains the DeIDOT Geodatabase Timeline.

**TABLE 2.1  
 DELDOT GEODATABASE TIMELINE**

Date	Accomplishments
2007	Developed a field application using advanced hardware.
	Redesigned existing NPDES Database structure to allow for re-inspections.
	Migrated all existing data into new NPDES Database design.
	Began development of new field application to fit new NPDES Database design.
2008	Completed development of the Field Application, Version 2.
	Developed Web-based Map Viewer to replace and upgrade existing Map Viewer.
2009	DelDOT request for KCI to simplify Map Viewer, especially querying capabilities.
2010	Completed refinements to Map Viewer including simplifying querying and report creation for BMPs, conveyances and structures.
	Added drainage area layer for BMPs and Major Outfalls.
	Developed <i>Map Viewer User's Guide</i> to assist with viewer use.
2011/2012	Updated Map Viewer by migrating ArcGIS Server 9.3.1 webADF codebase to ESRI's ArcGIS Server 10.0 SP2 Javascript API in preparation for ESRI's webADF deprecation at ArcGIS Server 10.1.
	Developed method for conducting desktop inventory for new drainage structures along roadway improvement projects by overlaying electronic construction plans on DelDOT NPDES Database.
2013	Developed Mobile Application for the Web-based Map Viewer.
2014	Discussed need to upgrade NPDES geodatabase using updated software and incorporating latest NPDES permit requirements.
	Geodatabase/associated components (field data collection application, map viewer, mobile application) have become difficult to manipulate because development architecture software has become outdated.
2015	Redesign of field application, geodatabase and map viewer.
2016	Implement the redesigned database components and begin developing Database Modules for other DelDOT user groups having NPDES reporting requirements.

### 3.0 BEST MANAGEMENT PRACTICE (BMP) INVENTORY AND INSPECTION

In early 2015 under separate cover, KCI submitted the *2015 Annual BMP Inventory & Inspection Report*. The 2015 Annual BMP Report summarized the 2015 inspections for each BMP and provided recommended actions for BMPs in four categories:

- BMPs requiring MAINTENANCE by DelDOT maintenance staff (Maintenance Work Orders),
- BMPs requiring INVASIVE SPECIES to be treated by third party contractor,
- BMPs requiring CONTRACTED WORK by a third party contractor, and
- BMPs requiring RETROFIT evaluations by DelDOT's Stormwater Quality Program staff.



BMPs were assigned a summary rating based on the recommended actions identified during the inspections. These ratings are defined in **Table 3.1**. **Table 3.2** summarizes the BMP inspections conducted in 2015. The ratings shown in **Table 3.2** are preliminary, and will be reviewed and finalized during DelDOT’s review and finalization of the *2015 Annual BMP Inventory & Inspection Report*.

**TABLE 3.1  
 OVERALL BMP RATING SYSTEM**

Rating	Description
A	<b>NO PERFORMANCE ISSUES</b> BMP with No Issues affecting performance. ≤ 2 Scoring Criteria
B	<b>MINOR MAINTENANCE</b> BMP with Minor Maintenance required; repaired by DelDOT Maintenance District or third party invasive spray contractor. ≤ 3 Scoring Criteria
C	<b>MAJOR MAINTENANCE</b> BMP with Major Maintenance required; repaired by third party contractor. ≤ 4 Scoring Criteria
D	<b>RETROFIT</b> BMP with Retrofit requirements; BMP is failing; needs to be redesigned or re-built with input from DelDOT Stormwater Quality Program. ≤ 5 Scoring Criteria

**TABLE 3.2  
 2015 BMP INSPECTIONS RATING SUMMARY**

Maintenance Area	District	BMP Performance Rating				2015 Total
		A	B	C	D	
2 Seaford	South	12	2	0	0	14
3 Ellendale	South	16	3	0	0	19
4 Gravel Hill	South	13	0	1	0	14
5 Dagsboro	South	23	5	6	0	34
6 Harrington	Central	11	1	0	0	12
7 Magnolia	Central	7	4	0	0	11
8 Cheswold	Central	12	4	3	0	19
9 Middletown	Canal	50	31	48	0	129
10 Bear	Canal	8	27	22	0	57
11 Kiamensi	North	27	11	11	3	52
12 Talley	North	44	14	18	0	76
14 Expressways	North / Canal	14	14	13	0	41
<b>2015 Total</b>		<b>237</b>	<b>116</b>	<b>122</b>	<b>3</b>	<b>478</b>

#### 4.0 NEW CASTLE COUNTY MS4 RE-INSPECTION

KCI began re-inspection of DeIDOT’s MS4 in New Castle County subdivisions in February 2008, based on KCI’s Subdivision Re-inspection Schedule. The re-inspection schedule is based on a 5- and 10-year re-inspection cycle for subdivisions according to the acceptance date of the subdivisions. In October 2010, DeIDOT requested that KCI dedicate both KCI field crews to Kent County Initial Inventory and Inspection work. In 2012, KCI assigned one field crew to New Castle County to continue re-inspecting the 1966-1980 subdivisions, which was completed in January 2013. KCI devoted one field crew to re-inspecting the 1981-1995 subdivisions in 2013 and 2014. In 2015, KCI concentrated on re-inspections in the Christina River Watershed to coincide with the Water Quality Improvement Plan being developed for this watershed. **Table 4.1** summarizes the re-inspection work performed by one KCI field crew in 2015.



**TABLE 4.1**  
**2015 NEW CASTLE COUNTY MS4 RE-INSPECTION TOTALS**

Month (2015)	Subdivisions	Non-Subdivision Roadway Miles	Structures
January	1	0.0	77
February	0	0.0	0
March	0	0.0	0
April	0	0.0	0
May	12	0.0	355
June	5	0.0	408
July	7	0.0	297
August	0	0.0	0
September	0	0.0	0
October	0	0.0	0
November	0	0.0	0
December	3	0.0	270
<b>2015 Total</b>	<b>28</b>	<b>0.0</b>	<b>1,407</b>

## 5.0 NEW CASTLE COUNTY MS4 INITIAL INVENTORY AND INSPECTION

In 2015, KCI's performed field-level MS4 initial inventory and inspection work for recently accepted subdivisions and performed a desktop MS4 inventory on non-subdivision roads that were recently improved. **Table 5.1** summarizes the New Castle County initial inventory and inspection work in 2015.



**TABLE 5.1**  
**2015 NEW CASTLE COUNTY MS4 INITIAL INSPECTION TOTALS**

Type	Subdivisions	Non-Subdivision Roadway Miles	Structures
Field Inventory/Inspection	8	0.0	243
Desktop Inventory	0	2.8	329
<b>2015 Total</b>	<b>8</b>	<b>2.8</b>	<b>572</b>

## 6.0 KENT / SUSSEX COUNTIES MS4 INITIAL INVENTORY AND INSPECTION

In 2015, KCI and CEI field crews focused on completing the initial inventory / inspection of Sussex County (**Table 6.1**). In November 2015, KCI completed the Sussex County MS4 inventory/inspection, except for several roads that under construction and/or needed MOT. It is anticipated that the remaining work would be completed using a desktop process.

**TABLE 6.1**  
**2015 KENT/SUSSEX COUNTIES MS4 INITIAL INVENTORY / INSPECTION TOTALS**

Month	Non-Subdivision Roadway Miles	Structures
January	73.5	1,422
February	34.8	634
March	17.0	472
April	8.5	297
May	15.8	636
June	20.5	600
July	8.2	325
August	11.2	395
September	11.9	638
October	18.9	631
November	21.1	467
December	2.4	94
<b>2015 Total</b>	<b>243.8</b>	<b>6,611</b>

## 7.0 STATEWIDE INVENTORY SUMMARY

Tables 7.1, 7.2 and 7.3 summarize the number of Structures, linear feet of Conveyances and number of BMPs, respectively, contained in the DeLDOT NPDES Database.

**TABLE 7.1  
STATEWIDE STRUCTURES (NO.)**

Category	New Castle	Kent	Sussex	Statewide
Inlet	45,348	19,533	15,846	<b>80,747</b>
Outfall	8,943	11,448	12,526	<b>32,917</b>
Manhole	4,734	789	254	<b>5,777</b>
Swale End	1,463	2,762	2,333	<b>6,558</b>
<b>TOTAL</b>	<b>60,448</b>	<b>34,552</b>	<b>30,959</b>	<b>125,999</b>

**TABLE 7.2  
STATEWIDE CONVEYANCES (LF.)**

Type	New Castle	Kent	Sussex	Statewide
Open	2,395,509	8,371,201	11,091,906	<b>21,858,616</b>
Closed	4,919,977	1,561,037	1,090,202	<b>7,571,216</b>
<b>TOTAL</b>	<b>7,315,486</b>	<b>9,932,238</b>	<b>12,182,108</b>	<b>29,429,832</b>

**TABLE 7.3  
STATEWIDE BMPs (NO.)**

Type	New Castle *	Kent	Sussex	Statewide
BaySaver	1	0	0	<b>1</b>
Check Dam	6	0	0	<b>6</b>
Bioswale	93	25	88	<b>206</b>
Bioretention	23	6	2	<b>31</b>
Dry Pond	49	7	3	<b>59</b>
Filter Strip	6	3	15	<b>24</b>
Infiltration Basin/Trench	1	0	3	<b>4</b>
Sand filter	67	1	1	<b>69</b>
Sediment Forebay	4	1	3	<b>8</b>
Wet Pond	91	23	9	<b>123</b>
Wet Pond/Wetland	2	0	0	<b>2</b>
Infiltration Trench	8	0	0	<b>8</b>
Infiltration Basin	0	1	0	<b>1</b>
Underground Storage/ Infiltration	5	0	0	<b>5</b>
Shallow Marsh	2	0	0	<b>2</b>
Diverter Box	0	1	0	<b>1</b>
<b>TOTAL</b>	<b>358</b>	<b>68</b>	<b>124</b>	<b>550</b>

**Appendix B.** KCI 2015 Illicit Discharge Detection and Elimination Program  
Annual Report



DELDOT AGREEMENT 1749

ENVIRONMENTAL & WATER QUALITY MONITORING

2015 ANNUAL REPORT

ILLICIT DISCHARGE DETECTION & ELIMINATION PROGRAM

**Prepared For**

Delaware Department of Transportation  
National Pollutant Discharge Elimination System  
Stormwater Quality Program



**Prepared By**

KCI Technologies, Inc.  
KCI Project 17151749A

March 2016



DELDOT AGREEMENT 1749

ENVIRONMENTAL AND WATER QUALITY MONITORING



ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM  
2015 ANNUAL REPORT

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## DELDOT AGREEMENT 1749



# ENVIRONMENTAL AND WATER QUALITY MONITORING ILLICIT DISCHARGE DETECTION AND ELIMINATION PROGRAM 2015 ANNUAL REPORT

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### APPENDICES

The 2015 IDDE Program documentation has been organized into the following Appendices:

#### **APPENDIX A      2015 Potential Illicit Discharge Investigations – Summary Table**

- ❖ Summary Table for all 2015 PID Investigations

#### **APPENDIX B      Potential Illicit Discharge Investigations with Ongoing Issues**

- ❖ Documentation for Illicit Discharges with Ongoing Issues

#### **APPENDIX C      2015 Outfalls with Flow**

- ❖ Via Compact Disc
- ❖ **Tabs 1-190:** Field screening results for all structures with dry weather flow and miscellaneous reports of dumping. An Incident ID No. was assigned according to the order in which the incident was reported to the IDDE Field Crew (i.e., 2015-1-D to 2015-190-DN). Documentation included for each Incident ID includes a Tracking Form, Map, Field Sheet and the original QC Laboratories Analytical Reports and Chain of Custody, if applicable. This information was also uploaded to the DelDOT NPDES SharePoint Website.

#### **APPENDIX D      2015 Outfalls with No Flow, Streams, and CA/CL**

- ❖ Via Compact Disc
- ❖ Outfalls with no flow during the IDDE Field Crew inspection. Also, outfalls that were not accessible or able to be located, and outfalls that carry a stream. These outfalls were not given an Incident ID No., and are organized electronically by County and Structure No. on the attached CD.

#### **APPENDIX E      2015 302 STOPPIT HOTLINE**

- ❖ Summary Table of all 302 STOPPIT Reports Received and Actions Taken



**DELDOT AGREEMENT NO. 1749  
ENVIRONMENTAL & WATER QUALITY MONITORING**



**ILLICIT DISCHARGE DETECTION & ELIMINATION PROGRAM  
2015 ANNUAL REPORT**

As part of the Delaware Department of Transportation's (DelDOT) National Pollutant Discharge Elimination System (NPDES) General Permit Program Regulations Governing Stormwater Discharge, KCI Technologies, Inc. (KCI) was contracted to conduct work in support of DelDOT's Illicit Discharge Detection and Elimination (IDDE) Program. Responsibilities included DelDOT-owned municipal separate storm sewer system (MS4) outfall evaluation; dry weather outfall field screening; potential illicit discharge (PID) investigations, NPDES door hanger distribution, data input to DelDOT's NPDES IDDE field screening website; and, STOPPIT hotline field investigations. DelDOT's IDDE Program consists of two major components:

- **IDDE Evaluation**
  - Targeted Desktop Evaluation
  - Statewide MS4 Field Evaluation
  - Miscellaneous PID Reports
  
- **IDDE Dry Weather Field Screening**
  - Field Screening (confirm flow/no flow, sample collection)
  - Follow Up and Elimination of Potential Illicit Discharge

Phase I of the NPDES Permit requires that 20% of all DelDOT-owned outfalls are evaluated annually. To meet this requirement, in 2013, KCI created a revised IDDE Plan that included Targeted Desktop Evaluation to detect potential illicit discharges in DelDOT's Storm Water Pollution Prevention and Management Plan (SWPP&MP).

**A. IDDE EVALUATION**

**1. Targeted Desktop Evaluation**

In 2012, KCI developed an IDDE Targeted Desktop Evaluation for the Pike Creek Watershed (PCW) in New Castle County. This process followed the Center for Watershed Protection's 2004 guidance manual, *Illicit Discharge Detection and Elimination, Chapter 5: Desktop Assessment of Illicit Discharge Potential*. The purpose of the desktop evaluation was to use available mapping

and data to determine the potential for illicit discharges within a watershed. Using DelDOT’s MS4 / BMP database and other available data, KCI used GIS software to target outfalls in the PCW for field screening based on the following targeted evaluation factors:

- **Past Discharges:** Outfalls with Previous Ammonia/Detergents.
- **Proximity to Sanitary Sewer:** Outfalls Close to Sanitary Sewer Lines.
- **Proximity to Potential Discharges:** Outfalls Intersecting Commercial/Industrial Land Use and Private Sanitary Sewer.
- **Proximity to Previous MS4 Deficiencies:** Outfalls within 100 feet of DelDOT MS4 Environmental Work Orders.
- **Age of MS4:** Outfalls in Subdivisions Built Prior to 1962.

In 2015, KCI continued the targeted evaluation for the Christina River Watershed (CRW). KCI customized the targeted evaluation factors (i.e., criteria) used in the initial PCW analysis for the characteristics of the watershed based on location, development, etc. KCI also continued to evaluate contributing structures in addition to outfalls in order to maximize the detection of potential illicit discharges. **Table 1** summarizes the number of contributing structures and outfalls targeted in the Christina River Watershed. Many of these structures were targeted by multiple criteria.

**TABLE 1**  
**2015 WATERSHED TARGETED EVALUATION RESULTS**

<b>Watershed</b>	<b>Total Structures</b>	<b>Total Targeted Structures</b>	<b>Total Outfalls/ Swale Ends</b>	<b>Total Targeted Outfalls/ Swale Ends</b>
Christina River	19,379	12,542	2,429	1,523

Overall, KCI evaluated all 19,379 MS4 structures in the CRW, including 2,429 outfalls. The evaluation targeted 12,542 of the MS4 structures, including 1,523 outfalls/ swale ends, for field screening. Non-targeted outfalls/ swale ends were field screened if contributing structures leading to that outfall were targeted. A summary of the field screening results based on the targeted desktop evaluation is located in **Section B.2**.

## 2. Statewide MS4 Field Evaluation

In 2015, 1,276 outfalls and swale ends (102 in New Castle County and 1,174 in Sussex County) were evaluated through inventory, inspection, and re-inspection tasks as part of DelDOT's MS4 Statewide Inventory and Inspection Program. Three full-time field crews inventoried and inspected DelDOT's MS4 statewide. The 1,276 outfalls/swale ends represent structures that these field crews inventoried/inspected and noted if flow was present (yes/no). If flow was present and appeared to be illicit (e.g., strong odor, odd color, etc.), the KCI inventory/inspection crew immediately contacted the KCI IDDE field screening crew, the latter of which mobilized to conduct a thorough screening analysis and discharge sourcing.

If the flow did not appear to be illicit, the outfall was added to a dry weather flow list, which was provided weekly to the IDDE field screening crew. These outfalls were re-visited after a 72-hour dry period to confirm dry weather flow and to conduct dry weather field screening. In 2015, dry weather field screening was conducted in New Castle County only, except in cases of potential illicit discharge.

**Table 2** lists the number of outfalls and swale ends that were field-evaluated by the MS4 crews each month in the three counties. A summary of the field screening results based on the statewide MS4 field evaluation is contained in **Section B.2**.

**TABLE 2**  
**MS4 OUTFALL FIELD EVALUATION BY COUNTY**

Month	New Castle County	Kent County	Sussex County
January	6	0	221
February	0	0	178
March	0	0	151
April	2	0	107
May	35	0	141
June	22	0	118
July	18	0	42
August	0	0	73
September	0	0	61
October	0	0	42
November	0	0	32
December	19	0	8
<b>2015 TOTAL</b>	<b>102</b>	<b>0</b>	<b>1,174</b>

**3. Miscellaneous PID Reports**

In 2015, KCI received one report of dumping from the public, which was followed-up by an IDDE evaluation and field screening for dry weather flow and other traces of illicit discharge. A summary of the field screening results based on Miscellaneous PID Reports is contained in **Section B.2.**

**4. 2015 IDDE Program Evaluation Summary**

**Table 3** summarizes the IDDE Evaluation Program for 2015. Targeted desktop evaluation numbers include the evaluation of all outfalls and swale ends, including those that end a system and those that are located within a system. MS4 field crew evaluation numbers include only end of system outfalls and swale ends. Miscellaneous reports may include any type of structure (outfall, inlet, swale end, etc.)

**TABLE 3  
 2015 IDDE PROGRAM EVALUATION SUMMARY**

IDDE EVALUATION TYPE	COUNTY			TOTAL
	New Castle	Kent	Sussex	
Targeted Desktop Evaluation	2,429	0	0	2,429
MS4 Evaluation	102	0	1,174	1,276
Miscellaneous Reporting	1	0	0	1
<b>2015 TOTAL EVALUATED</b>	<b>2,532</b>	<b>0</b>	<b>1,174</b>	<b>3,706</b>

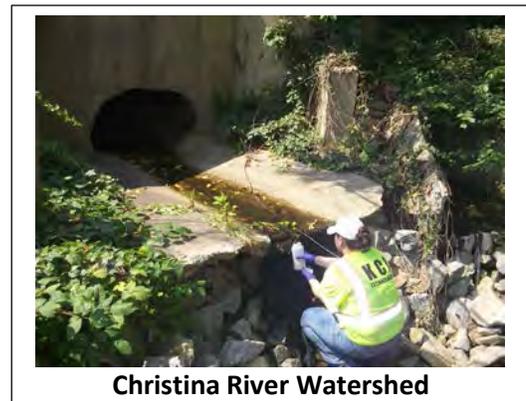


## B. IDDE DRY WEATHER FIELD SCREENING

### 1. 2015 IDDE Sampling Protocol

In 2015, KCI continued to perform chemical field testing for ammonia and detergents (surfactants). Field testing alleviates the need to wait for lab results prior to further investigation. Lab results were returned with an average wait time of two weeks, whereas field testing allows for field-determined potential illicit discharges and immediate sourcing.

The flow chart for Residential or Light Commercial Land Uses (**Figure 1**) was used to categorize discharges. Detergents were used to distinguish between no evidence of illicit discharge and likely sanitary wastewater or graywater/washwater source. Ammonia was field-tested as an early indicator of possible sewage discharge. If an outfall field-tested high for detergents or ammonia, field crews traced the flow to its origin and a second sample was collected and brought to the lab for follow-up analysis, potassium testing, and confirmation of field results.



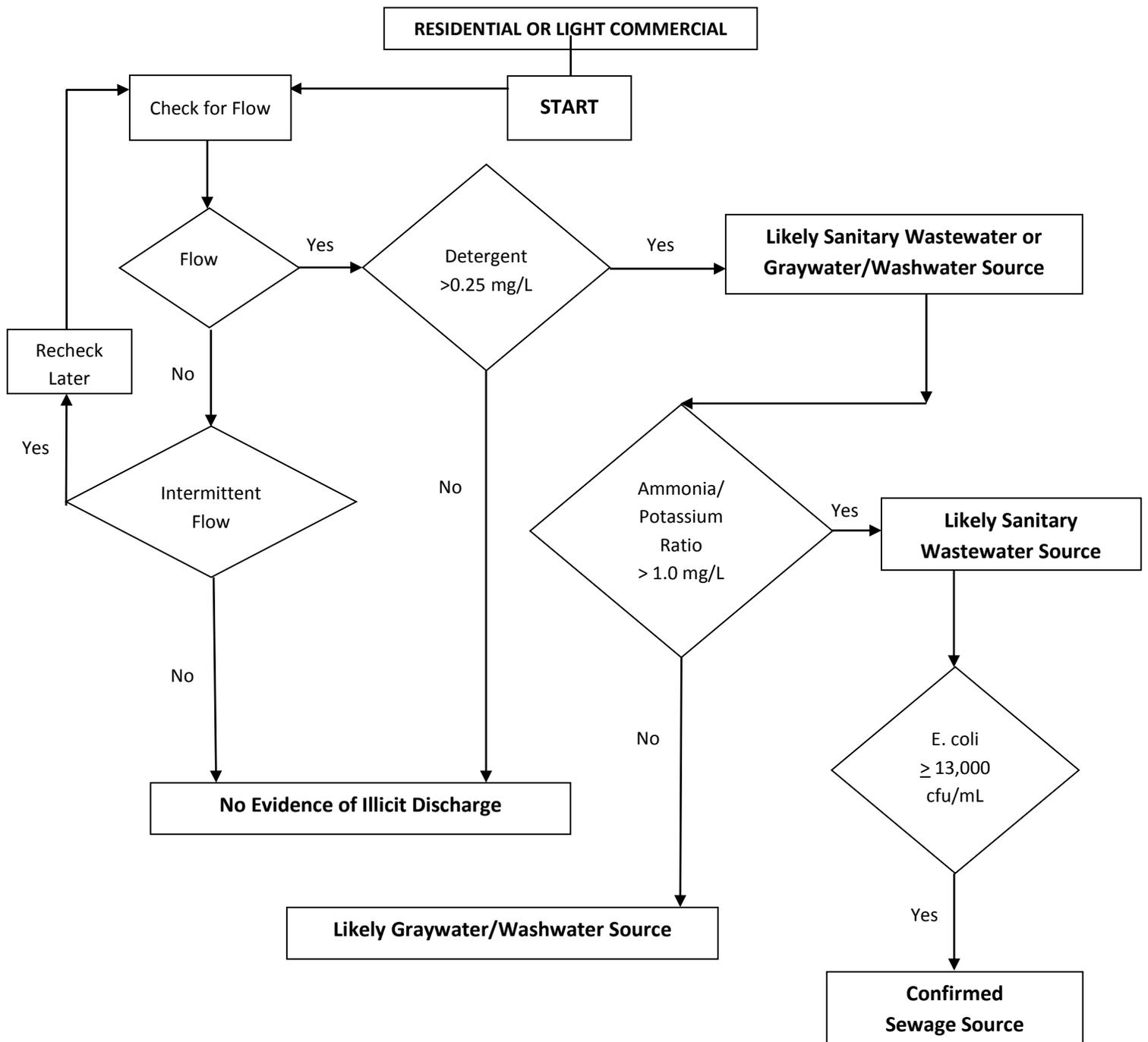
### 2. 2015 Field Screening Results

Dry weather field screening was conducted by the KCI IDDE field crew as a result of the IDDE Evaluation process (i.e., targeted desktop evaluation, MS4 field inventory/inspection, and miscellaneous reports). **Table 4** lists the 2015 field screening results organized by county.

In 2014 and 2015, KCI began outfall screening for the Co-permittees New Castle County (NCC) and the Town of Elsmere, respectively. NCC and Elsmere structures and outfalls were also assigned incident numbers. In order to distinguish the entity responsible for each incident, incident IDs began to include a “D” for DeIDOT, an “N” for New Castle, or an “E” for Elsmere. Illicit discharges that required two parties would include both suffixes (e.g., “DN”).

Between all co-permittees, there were 190 structures that were either investigated as potential illicit discharges, or were field tested as a result of dry weather flow; therefore, incident ID numbers range from 2015-1-D to 2015-190-DN. Incident IDs that were only the responsibility of NCC or Elsmere are not included in the yearly field screening numbers and will be missing in electronic and hard copy documentation.

**FIGURE 1**  
**FLOW SOURCE DETERMINATION:**  
**RESIDENTIAL OR LIGHT COMMERCIAL**



Robert Pitt, et al., *Source Verification of Inappropriate Discharges to Storm Drainage Systems*, Water Environmental Federation Technical Exhibition and Conference, September 2004.

**TABLE 4**  
**FIELD SCREENING RESULTS BY COUNTY**

County	Total Field Screened	Illicit Discharge	No Evidence of Illicit Discharge			Stream/Tax Ditch	Could Not Access/Could Not Locate (CA/CL)
			Flow	No Flow	302 STOPPIT Hotline		
New Castle	1,007	20	128	713	32	24	90
Kent	0	0	0	0	0	0	0
Sussex	2	1	1	0	0	0	0
<b>TOTAL</b>	<b>1,009</b>	<b>21</b>	<b>129</b>	<b>713</b>	<b>32</b>	<b>24</b>	<b>90</b>

There were 21 confirmed illicit discharges in 2015, which are summarized in **Table 5** and described in more detail in **Appendices A, B and C**. The contents of the **Appendices** are described in more detail on **Page 10**.

In addition, there are two PIDs that were evaluated prior to 2015 that are still active, as listed below. The field screening documentation for these PIDs and the PIDs identified in yellow in **Table 5** are located via CD in **Appendix B**.

- Incident ID 2013-70-D Webbs Road
- Incident ID 2014-19-DN Odessa State Police



**Incident ID 2013-70-D Webbs Road  
 Non DeDOT Pipe Connection**



**Incident ID 2014-19-DN Odessa State Police  
 Non DeDOT Pipe Connection**

**TABLE 5**  
**2015 ILLICIT DISCHARGES SUMMARY**

Incident ID No.	County	Reported By	Source	Comment
2015-137-DN	New Castle	Targeted	Washwater Entering MS4	<b>ACTIVE:</b> Business owner sent NOV; waiting for response
2015-190-DN	New Castle	BMP Inspection	High Detergents Level	<b>ACTIVE:</b> NCC to investigate the source of elevated detergents
2015-1-D	Sussex	MS4 Inspection	Non-DelDOT Connection	Homeowner contacted; connection was legal sump pump
2015-53-D	New Castle	MS4 Inspection	Dumping: Pet Waste	Confirmed pet waste in MS4; door hangers distributed
2015-75-D	New Castle	Miscellaneous	Dumping: Cement	Confirmed cement in MS4; door hangers distributed
2015-76-D	New Castle	Targeted	Dumping: Oil	Confirmed oil in MS4; door hangers distributed
2015-80-D	New Castle	302 STOPPIT Hotline	Dumping: Trash	Confirmed trash in MS4; door hangers distributed
2015-81-D	New Castle	MS4 Inspection	Dumping: Pet Waste	Confirmed pet waste in MS4; door hangers distributed
2015-82-DN	New Castle	302 STOPPIT Hotline	Dumping: Yard Waste	Confirmed yard waste in MS4; door hangers distributed
2015-88-D	New Castle	302 STOPPIT Hotline	Dumping: Yard Waste	Confirmed yard waste in MS4; door hangers distributed
2015-89-D	New Castle	302 STOPPIT Hotline	Dumping: Yard Waste	Confirmed yard waste in MS4; door hangers distributed
2015-92-D	New Castle	302 STOPPIT Hotline	Dumping: Yard Waste	Confirmed yard waste in MS4; door hangers distributed
2015-93-D	New Castle	302 STOPPIT Hotline	Dumping: Yard Waste	Confirmed yard waste in MS4; door hangers distributed
2015-97-D	New Castle	302 STOPPIT Hotline	Dumping: Oil	Confirmed oil in MS4; door hangers distributed
2015-114-D	New Castle	Targeted	Dumping: Kitchen Grease	Confirmed kitchen grease in MS4; door hangers distributed
2015-115-D	New Castle	Targeted	Dumping: Cigarette Butts	Confirmed cigarette butts in MS4; door hangers distributed
2015-117-D	New Castle	Targeted	High Ammonia Level	Known DNREC remediation site
2015-156-D	New Castle	302 STOPPIT Hotline	Dumping: Yard Waste/Leaves	Confirmed yard waste/leaves in MS4; door hangers distributed
2015-159-D	New Castle	Targeted	Dumping: Cigarette Butts	Confirmed cigarette butts in MS4; door hangers distributed
2015-185-D	New Castle	Targeted	Dumping: Diapers & Trash	Confirmed diapers and trash in MS4; door hangers distributed
2015-186-D	New Castle	MS4 Inventory	Dumping: Pet Waste	Confirmed pet waste in MS4; door hangers distributed

### C. NPDES FLYER AWARENESS

The distribution of NPDES flyers (door hangers) is an important component of DelDOT's education outreach campaign to remind the public about the importance of proper pollutant disposal. The front of a typical door hanger identifies the type of pollutant found, the door hanger distribution date, and the body of water potentially affected. The back of the door hanger describes stormwater pollution and guidelines to reduce pollution at home or at work.



**Pigeon Run Subdivision  
Concrete 07/21/15**

In 2015, reports of illegal dumping originated from the public, KCI MS4 Inventory/Inspection field crews, and KCI IDDE field crews. Many of the public reports came through the 302 STOPPIT Hotline, which accepted citizen reports of stormwater pollution via telephone, text message, and website. The 302 STOPPIT Hotline is described in more detail in **Section E**.

Overall, there were 17 separate incidents requiring door hanger distribution. For each report received, a GIS map was created identifying the specific neighborhood or location, the structure where pollutants were found, and the houses selected for door hanger distribution. A total of 217 door hangers were distributed in New Castle County in 2015.

The majority of the incidents involved the dumping of yard waste, pet waste, or oil/grease into the MS4. Most of the door hangers distributed, based on tips from the 302 STOPPIT Hotline, were for yard waste dumped in the street that entered the storm drains. In the Georgian Terrace subdivision, 15 door hangers were distributed with an attached print-out of DNREC's yard waste drop-off sites, which provided residents with information on how to properly dispose of their waste and reduce stormwater pollution.

In 2014, 174 door hangers were distributed throughout the Wood Creek subdivision after an MS4 Inspection crew found pet waste in multiple catch basins. During a BMP inspection in 2015, it was discovered that more pet waste had been dumped into the MS4. Subsequently, 19 additional door hangers were distributed to a more specific portion of the neighborhood. **Table 6** summarizes the 2015 Door Hanger Distribution. **Appendix C** contains the door hanger distribution map and a copy of the door hanger for each of the 17 investigations.

**TABLE 6**  
**2015 DOOR HANGER DISTRIBUTION**

<b>Incident ID No.</b>	<b>Date</b>	<b>Neighborhood</b>	<b>County</b>	<b>Waste Reported</b>	<b>Water Body</b>	<b>Door Hangers Distributed</b>
2015-53-D	05/01/15	Wood Creek	New Castle	Pet Waste	White Clay Creek	19
2015-75-D	07/21/15	Pigeon Run	New Castle	Concrete	Red Lion Creek	20
2015-76-D	07/21/15	Woodland Park	New Castle	Oil	Christina River	7
2015-80-D	07/14/15	Buena Vista Park	New Castle	Yard Waste/Trash	Army Creek	16
2015-81-D	08/26/15	Christiana Falls	New Castle	Pet Waste	Christina River	8
2015-82-DN	07/09/15	Bestfield	New Castle	Yard Waste	Christina River	21
2015-88-D	07/27/15	Jefferson Farms	New Castle	Yard Waste	Delaware River	6
2015-89-D	07/27/15	Elmhurst	New Castle	Yard Waste	Christina River	14
2015-92-D	07/20/15	Ridgewood	New Castle	Yard Waste	Shellpot Creek	8
2015-93-D	07/22/15	The Timbers	New Castle	Yard Waste	Naamans Creek	9
2015-97-D	08/04/15	Millrace	New Castle	Oil	White Clay Creek	15
2015-114-D	09/17/15	Bellemoor	New Castle	Kitchen Grease	Christina River	8
2015-115-D	09/17/15	Boxwood	New Castle	Cigarette Butts	Christina River	17
2015-156-D	12/03/15	Georgian Terrace	New Castle	Yard Waste/Leaves	Shellpot Creek	15
2015-159-D	12/03/15	Westhover at Taylortowne	New Castle	Cigarette Butts	Christina River	10
2015-185-D	12/31/15	Todd Estates	New Castle	Diapers/Trash	Christina River	8
2015-186-D	12/31/15	Stone Mill	New Castle	Pet Waste	Christina River	16
<b>2015 TOTAL DOOR HANGERS</b>						<b>217</b>

## D. NPDES IDDE FIELD SCREENING WEBSITE

In 2013, the DeLDOT NPDES IDDE Field Screening Website was created. It was designed to function as an online database for the IDDE Program, and contains outfall screening data from 2007–2015. The website is the final step in DeLDOT’s IDDE Program documentation process.

The NPDES IDDE Field Screening Website contains the following documentation:

- Incident ID Numbers
- Location and Structure Information (from NPDES Map Viewer)
- Structural Condition
- Photos
- Field Testing and Laboratory Analysis Data
- Final Determination (e.g., Illicit Discharge, No Evidence of Illicit Discharge, etc.).

Outfalls can be searched or “filtered” by the following features:

- **Outfall Information**
  - Address/Location, Subdivision, Width, Height
  - County, District, Watershed, Type, Shape
- **Condition**
  - Flow Rate, Flow Source (if known)
  - Land Use, Erosion, Algae
- **Flow Characteristics**
  - Color, Floatables, Odor, Deposits/Stains
- **Testing Parameters (Historical and Current)**
  - Water Temp, pH
  - Chlorine, Copper, Turbidity, Potassium, Phenol, Detergent, Ammonia, Fluoride, Oil & Grease, Bacteria\_Enterococcus, Bacteria\_Fecal

The screenshot displays the user interface of the NPDES IDDE Field Screening Website. At the top, there are navigation links: "Action", "Look up", "Filter", and "Log out". On the left side, there is a vertical sidebar with the logo for "CLEAN ONLY RAIN" and "THE STORMWATER" and a "TEAM" logo at the bottom. The main content area is titled "Outfall Info" and contains several input fields and dropdown menus. The "Outfall Info" section includes: "Address/Location", "Subdivision", "Width", "Height", "Comments", "County", "District", "Watershed", "Type", and "Shape", each with a corresponding input field or dropdown menu. Below this, the "Condition" section includes: "Date Inspected From" and "To", "Last Rain From" and "To", "Land Use", "Erosion", "Algae", and "Flow Source", each with a corresponding input field or dropdown menu. The "Comments" field is located at the bottom right of the form.

## E. 302 STOPPIT HOTLINE

### 1. Objectives

In 2015, DeIDOT teamed up with New Castle County and the City of Wilmington to create the 302 STOPPIT Hotline, which provided county residents with the ability to report instances of stormwater pollution via text, email, voicemail, and website. Between July 1 and July 31, 2015, the 302 STOPPIT Hotline was advertised and promoted through New Castle County on billboards, web ads, bus ads, YouTube ads, Facebook ads, and a poster at the Delaware Welcome Center. Emails were also sent to all cities and towns in New Castle County, environmental organizations, and homeowners associations. Overall, the 302 STOPPIT Campaign secured over 10 million impressions, surpassing the permit requirement of 250,000 impressions.

Additionally, pre- and post- campaign surveys were conducted to determine the effectiveness of the 302 STOPPIT Campaign on increasing public awareness of stormwater pollution. The survey found that prior to the 302 STOPPIT Campaign, just 1.3% of those surveyed had heard of the 302 STOPPIT Hotline, while after the promotion period 7.9% of those questioned were aware of the hotline.



### 2. Outcomes and Lessons Learned

When a report was received, KCI determined the responsible entity (i.e. DeIDOT, NCC, City of Wilmington, etc.) and investigated those reports that were within DeIDOT's jurisdiction. Of the 57 reports received, it was determined that 40 of them could possibly impact DeIDOT's MS4. A quick summary of the types of reports received through the hotline is located in **Table 7**. A

complete summary of all reports received and follow-up actions taken is located in **Appendix E**. During investigations, field staff cleared vegetation from catch basins, cleaned trash out of the storm drain system, and increased awareness of pollution issues by distributing door hangers. Between July 1 and December 31, 2015, KCI distributed 104 door hangers that provided information regarding stormwater and guidelines to help homeowners exercise good housekeeping practices. A few of the reports, which were determined to not be stormwater pollution issues, assisted in the detection of potential MS4 deficiencies. KCI was able to identify two situations in which the system was not performing correctly, and maintenance work orders were recorded.

Many lessons were learned during the campaign that could help make a subsequent campaign even more successful. Numerous reports contained vague location descriptions, resulting in significant time spent looking for the issues. Additionally, reports of air pollution, trash along highways, and neighbors allowing their lawns to grow too high were received from the hotline. Sorting through these reports took time away from focusing on the true stormwater pollution issues that were received. The website was the most utilized way of reporting, accounting for 35 of the 57 reports. Because of this, KCI recommends that future campaigns include more information on the website to educate users on the definition of stormwater and the ways in which different pollution types (i.e., grass clippings, yard waste, motor oil, pet waste, etc.) affect the waterways. Hopefully, this would result in more reports of stormwater pollution as compared to general pollution issues. If the campaign were to continue, it may be beneficial to decrease the time that callers had to wait in order to leave a voicemail. There were a lot of missed calls, which was probably due to a long ring time, in addition to callers being addressed by a recording rather than a live person.

**TABLE 7**  
**2015 STOPPIT HOTLINE REPORTS**

<b>Issue</b>	<b>Number of Reports Received</b>
Motor Oil or Other Auto Chemicals	8
Bags of Pet Waste	2
Yard Waste, Grass Clippings, Debris	34
Foam, Stains, Paint, or Other Chemicals	4
Trash	2
Concrete	2
Cleaning Liquid/Soap	2
Food Waste	3
<b>TOTAL</b>	<b>57</b>

# **IDDE PROGRAM**

## **2015 ANNUAL REPORT**

### **APPENDIX A**

# **POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS SUMMARY TABLE**

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**APPENDIX A  
POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS  
2015 SUMMARY TABLE**

Field Visit Date	Reported By	Investigation Results	Determination	Action
<b>Incident ID 2013-70 ACTIVE</b>				
<b>Structure 220131216135651</b>				
<b>16943 Webbs Road, Sussex County</b>				
<b>Gray Water in Catch Basin; Smells Like Fabric Softener</b>				
12/16/13	1591 Field Crew	During routine 1591 inspections, KCI field crew noticed catch basin with a non DelDOT connection that smelled like fabric softener and had a gray coloring	KCI 1613 to investigate	KCI 1613 to investigate
12/17/13	1613 Field Crew	A sample was collected and brought to QC Laboratories to be tested for ammonia, potassium and surfactants	--	Waiting for lab results
12/31/13	Lab Results	Lab results = 17.7 mg/L surfactants; .340 mg/L ammonia; 2.26 mg/L potassium.	According to IDDE Flow Chart, water is likely from a graywater/washwater source	Structure will be re-sampled with 72 hour dry period
01/20/14	1591 Field Crew	1591 collected a follow up sample from standing water in catch basin. PVC pipe was not actively flowing. Sent to lab for Potassium, Ammonia, Surfactants analysis	--	Waiting for lab results
01/29/14	Lab Results	Lab results = 15.0 mg/L Surfactants; 3.65 mg/L Ammonia; 20.3 mg/L Potassium	According to IDDE Flow Chart, water is likely from a graywater/washwater source	Send homeowner illicit discharge notice
01/31/14	KCI	--	Certified illicit discharge notice mailed to homeowner	Notice was delivered 02/04/14 @ 1:55 p.m.
02/10/14	KCI	--	KCI received confirmation of receipt	--
05/05/14	KCI	--	KCI called homeowner (Judith Webb) inquiring about progress and requested a return call	Waiting for homeowner
07/16/14	KCI	--	KCI called homeowner (Judith Webb) inquiring about progress and requested a return call	Waiting for homeowner
07/23/14	KCI	KCI Sussex 1591 crew visited structure to document any changes	No changes were observed	TBD
05/19/15	KCI	KCI 1613 field crew visited the structure to document any changes	No changes were observed	TBD
08/13/15	KCI	KCI Sussex 1591 crew visited structure to document any changes	No changes were observed	Second NOV to be sent
08/20/15	KCI	KCI sent a second NOV to homeowner at 16943 Webbs Road by regular mail	--	Waiting for response from homeowner
09/01/15	KCI	KCI called Judith Webb inquiring about second NOV	Ms. Webb stated that she no longer resides at the residence	TBD
10/15/15	KCI	KCI sent an NOV to Jeffrey Reed, the homeowner for the parcel in question	The NOV included the notice of violation letter, location map, and photos of the connection	TBD
10/29/15	KCI	Bruce Thompson, KCI, spoke to Jeff Reed	KCI to set-up a time for dye testing to determine source of connection into MS4	KCI to coordinate dye testing

**APPENDIX A  
POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS  
2015 SUMMARY TABLE**

Field Visit Date	Reported By	Investigation Results	Determination	Action
<b>Incident ID 2014-19-DN ACTIVE</b>				
<b>Structure 82836</b>				
<b>414 Main Street Odessa, New Castle County</b>				
<b>Soapy Dry Weather Flow &amp; Elevated Detergents Level</b>				
03/10/14	KCI	During Appoquinimink targeted screening, KCI field crew evaluated a catch basin that had evidence of an illicit discharge (sweet smell, soapy discharge)	Sample Sent to QC Laboratories for analysis of surfactants, ammonia, and potassium	Pending laboratory analysis
03/26/14	Lab Results	Lab results = 88.4 mg/L Surfactants; 0.419 mg/L Ammonia; 6.72 mg/L Potassium	According to IDDE flow chart water is likely from a graywater/washwater source	KCI to try to source discharge pipe
04/16/14	KCI	--	Certified illicit discharge notice mailed to homeowner requesting access to property to confirm location of illicit connection	Awaiting delivery
05/06/14	KCI	KCI received confirmation of receipt and spoke to homeowner (Paul Mooney)	KCI and Mr. Mooney scheduled a time to inspect plumbing and confirm location of illicit connection	Meeting date May 30, 2014
05/30/14	KCI	KCI met with Mr. Mooney and confirmed his washer was legally hooked up to sanitary sewer. After further investigation, KCI traced flow to wash bay of the State Police at 414 Main Street	KCI spoke to officers on duty, who gave contact information for the Captain. KCI plans on dye testing to confirm the connection	A message was left for Capt. Sapp to schedule a date for dye testing
06/10/14	KCI	KCI spoke to Capt. Sapp and scheduled a meeting for June 16th to perform dye testing	--	KCI to perform dye testing on Monday, June 16th
06/16/14	KCI	KCI performed dye testing at structure 82836	KCI confirmed that discharge is coming from State Police Troop 9 wash bay	KCI to notify DeIDOT/NCC
06/24/14	KCI/NCC	KCI informed Mike Harris (NCC) of issue	Bill Braswell, maintenance manager for State Police will work with NCC to resolve issue	Referred to NCC
12/09/14	KCI	KCI visited structure to check for resolution	The pipe was not actively flowing but It appeared that the pipe was still connected into the MS4	--
03/06/15	NCC	Bill Braswell stated by e-mail that they are putting the project out for bid and he hopes to meet with the engineer within the next two weeks	--	Awaiting response from Bill Braswell
05/11/15	KCI	KCI visited the site to take note of any progress	Catch basin still had illegal connection and was full of suds	Awaiting response from Bill Braswell
10/21/15	NCC	Mike Harris was contacted by Ring Lardner from Davis Bowen and Friedel	Ring Lardner was hired by the Delaware State Police to disconnect wash bay and vehicle maintenance shop from MS4. Disconnection is set for March 2016	Disconnection set for March 2016

**APPENDIX A  
POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS  
2015 SUMMARY TABLE**

Field Visit Date	Reported By	Investigation Results	Determination	Action
<b>Incident ID 2015-137-DN ACTIVE</b>				
<b>Structure 92214</b>				
<b>1921 Pulaski Highway, New Castle County</b>				
<b>Washwater Entering MS4</b>				
10/08/15	KCI	During targeted outfall screening KCI screened contributing structure 92214 for dry weather flow	Flow was observed and KCI traced the source of the flow to 1921 Pulaski Highway (Shorty's Detailing). Employees were detailing vehicles on the pavement and had an outdoor hose hooked up. Discharge water smelled sweet and looked soapy	Sample collected and taken to the lab
10/20/15	Eurofin QC Lab Results	Lab results = 64.9 mg/L Surfactants; ND Ammonia; 6.30 mg/L Oil and Grease; 0.180 mg/L Potassium	Flow chart determination = graywater/washwater	NCC to send NOV
10/23/15	NCC	NCC sent NOV to Rt. 40 Bear Wash LLC	Within 10 days of receipt, property owner must immediately stop discharging waste into MS4, investigate and determine source of discharge, and develop and submit a plan showing how the source of the illicit discharge was disconnected, how the property owner will clean up the site, and the name and address of contractor who will perform the cleaning, to NCC	Waiting for response from property owner
<b>Incident ID 2015-190-DN ACTIVE</b>				
<b>Structure 320080407131737</b>				
<b>Bear Christiana Road, New Castle County</b>				
<b>Soapy Dry Weather Flow/Elevated Detergents</b>				
12/22/15	KCI	A KCI team member was performing DeIDOT BMP inspections and observed a flowing outfall with evidence of a potential illicit discharge	--	KCI IDDE crew to investigate
12/22/15	KCI	A KCI IDDE field crew took a sample for field analysis. Field testing results = 0.35 mg/L Detergents; 0.40 mg/L Ammonia	Sample to be collected for laboratory analysis	Sample to be collected for laboratory analysis
<b>Incident ID 2015-1-D</b>				
<b>Structure 120141104080455</b>				
<b>26196 Deep Branch Road, Sussex County</b>				
<b>Non DeIDOT Connection with Gray Water in Catch Basin</b>				
12/23/14	Century 1591	During routine 1591 inspections, a KCI field crew noticed a catch basin with a non DeIDOT pipe connection. The catch basin had gray standing water and a strong stagnant smell	KCI to investigate & sample	KCI 1613 to investigate
01/03/15	KCI 1613	KCI visited the structure to confirm potential illicit discharge	No flow was observed when KCI visited the structure, so no sample was collected. There was gray debris at the bottom of the catch basin and a small amount of cloudy water in the pipe leaving the basin	KCI 1613 to re-visit
01/11/15	KCI 1613	KCI visited the structure to confirm potential illicit discharge	No flow was observed. Field crew believes the connection is a sump pump. Will re-visit structure	KCI to re-visit structure
06/22/15	KCI 1728	A KCI 1728 field crew re-visited the structure	No flow was observed and there was no odor or other signs of illicit discharge	No further action required

**APPENDIX A  
POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS  
2015 SUMMARY TABLE**

Field Visit Date	Reported By	Investigation Results	Determination	Action
<b>Incident ID 2015-37-DN</b>				
<b>Top of the Wedge Subdivision Wallace Drive, New Castle County</b>				
03/24/15	NCC	NCC contacted Randy Cole, DeIDOT about a subdivision with residents who are backwashing their water softeners into the roadway, which connects to the MS4	The water softener pipes being so close to the property line is a code violation, and NCC submitted a complaint	TBD
10/14/15	NCC	NCC confirmed that Code Enforcement visited the homes and that the pipes are now in compliance with code	No evidence of illicit discharge	No further action required
<b>Incident ID 2015-53-D</b>				
<b>Wood Creek Subdivision 208 Barberry Drive, New Castle County Pet Waste Dumped into MS4</b>				
05/17/15	KCI	During BMP inspections KCI noticed multiple bags of pet waste in the swales coming from the neighborhood and near BMP riser	Door hangers to be distributed	Door hangers to be distributed
05/01/15	KCI	KCI distributed 19 door hangers to surrounding homes		No further action required
<b>Incident ID 2015-74-D</b>				
<b>Structure 120150324142537 34112 DuPont Avenue, Sussex County Hose Connection in Catch Basin</b>				
06/11/15	Century 1591	Century Engineering notified KCI of a catch basin with an environmental pipe connection	KCI to investigate	KCI 1613 to investigate
06/16/15	KCI 1613	KCI visited structure to confirm connection & potential illicit discharge	After speaking with employee, KCI traced the hose connection to a basement sump pump	No evidence of illicit discharge. No further action required
<b>Incident ID 2015-75-D</b>				
<b>Structure 19127 35 Rawlings Drive, New Castle County Concrete Dumped into MS4</b>				
06/15/15	Citizen Report	KCI received a report of white staining/residue on a catch basin and surrounding curbs	KCI to investigate	KCI to investigate
06/17/15	KCI	KCI visited structure to investigate	It was determined that concrete had been dumped into catch basin	Door hangers to be distributed
07/21/15	KCI	KCI distributed 20 door hangers to surrounding homes		No further action required
<b>Incident ID 2015-76-D</b>				
<b>Structure 21846 2113 Faulkland Road, New Castle County Oil Dumped into MS4</b>				
07/07/15	KCI	During targeted outfall screening, KCI noticed an oil stain on a catch basin as well as oil sheen in the basin	Door hangers to be distributed	Door hangers to be distributed
07/21/15	KCI	KCI distributed 7 door hangers to surrounding homes		No further action required
<b>Incident ID 2015-80-D</b>				
<b>Structures 16723 &amp; 16724 Palmetto Drive, New Castle County Trash and Debris Dumped into MS4</b>				
07/07/15	STOPPIT Hotline	A citizen reported yard waste and debris entering storm drains along Palmetto Drive	KCI confirmed the presence of yard waste and trash in catch basins on Palmetto Drive	Door hangers to be distributed
07/21/15	KCI	KCI distributed 16 door hangers to surrounding homes		No further action required

**APPENDIX A  
POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS  
2015 SUMMARY TABLE**

Field Visit Date	Reported By	Investigation Results	Determination	Action
<b>Incident ID 2015-81-D</b>				
<b>Structure 90654</b>				
<b>30 Verdi Circle, New Castle County</b>				
<b>Pet Waste Dumped into MS4</b>				
07/22/15	KCI	During routine MS4 inspections, KCI came across a structure with dry weather flow and a sewage odor	KCI IDDE field crew took sample for lab analysis of surfactants, ammonia, potassium, enterococcus, and fecal coliform	Sample collected and taken to the lab
08/03/15	Eurofins QC Lab Results	Lab results = ND Surfactants; ND Ammonia; 2.51 mg/L Potassium; 16.1 MPN/100ml Enterococcus; 540 MPN/100ml Fecal Coliform	KCI plans to trace the source of the dry weather flow and high level of fecal coliform	KCI to investigate
08/06/15	KCI	KCI re-visited structure to trace the source	KCI could not confirm the source of the dry weather flow, but found a contributing structure containing used hamster/gerbil bedding, which could be the source of the elevated bacteria levels	Door hangers to be distributed
08/26/15	KCI	KCI distributed 8 door hangers to surrounding homes		No further action required
<b>Incident ID 2015-82-DN</b>				
<b>Bestfield Subdivision</b>				
<b>810 Augustine Street, New Castle County</b>				
<b>Yard Waste Dumped into BMP</b>				
07/09/15	STOPPIT Hotline	A citizen reported that yard waste and debris were entering the storm drains along Augustine Street	KCI investigated and found a large amount of yard waste in nearby BMP	Door hangers to be distributed
07/21/15	KCI	KCI distributed 21 door hangers to surrounding homes		No further action required
<b>Incident ID 2015-88-D</b>				
<b>Structure 87171</b>				
<b>1 Montpelier Boulevard, New Castle County</b>				
<b>Yard Waste Dumped into MS4</b>				
07/16/15	STOPPIT Hotline	A citizen reported that yard waste and debris were entering a storm drain	KCI to investigate	KCI to investigate
07/20/15	KCI	KCI confirmed the presence of yard waste in the MS4	KCI will distribute door hangers	Door hangers to be distributed
08/26/15	KCI	KCI distributed 6 door hangers to surrounding homes		No further action required
<b>Incident ID 2015-89-D</b>				
<b>Structure 15909</b>				
<b>101 Matthes Place, New Castle County</b>				
<b>Yard Waste Dumped into MS4</b>				
07/20/15	STOPPIT Hotline	A citizen reported a large pile of yard waste on top of a storm drain	KCI to investigate	KCI to investigate
07/22/15	KCI	KCI confirmed the presence of yard waste in the MS4	KCI will distribute door hangers	Door hangers to be distributed
08/26/15	KCI	KCI distributed 14 door hangers to surrounding homes		No further action required
<b>Incident ID 2015-92-D</b>				
<b>Ridgewood Subdivision</b>				
<b>18 Ridgewood Circle, New Castle County</b>				
<b>Yard Waste Dumped into MS4</b>				
07/20/15	STOPPIT Hotline	A citizen reported that grass clippings and yard waste were entering the roadway and storm drains	KCI to investigate	KCI to investigate
07/20/15	KCI	KCI confirmed the presence of yard waste in the MS4	KCI will distribute door hangers	Door hangers to be distributed
08/26/15	KCI	KCI distributed 8 door hangers to surrounding homes		No further action required

**APPENDIX A  
POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS  
2015 SUMMARY TABLE**

Field Visit Date	Reported By	Investigation Results	Determination	Action
<b>Incident ID 2015-93-D</b>				
<b>Conveyance 7264</b>				
<b>2508 Pin Oak Drive, New Castle County</b>				
<b>Yard Waste Dumped into MS4</b>				
07/22/15	STOPPIT Hotline	A citizen reported grass clippings, yard waste, and excessive dirt and rocks were clogging a storm drain	KCI to investigate	KCI to investigate
07/28/15	KCI	KCI confirmed the presence of yard waste in a backyard concrete swale	KCI will distribute door hangers	Door hangers to be distributed
08/26/15	KCI	KCI distributed 9 door hangers to surrounding homes		No further action required
<b>Incident ID 2015-97-D</b>				
<b>Millrace Subdivision</b>				
<b>16 Elizabeth Court, New Castle County</b>				
<b>Oil Dumped into MS4</b>				
08/04/15	STOPPIT Hotline	A citizen reported that someone had drained the oil from their car into the street	KCI to investigate	KCI to investigate
08/05/15	KCI	KCI visited the area to confirm the presence of an illicit discharge	The oil had already been cleaned up with oil absorbant; KCI plans to distribute door hangers	Door hangers to be distributed
08/26/15	KCI	KCI distributed 15 door hangers to surrounding homes		No further action required
<b>Incident ID 2015-114-D</b>				
<b>Structure 15845</b>				
<b>117 Champlain Avenue, New Castle County</b>				
<b>Oil Dumped into MS4</b>				
08/26/15	KCI	During targeted outfall screening, KCI came across a catch basin with what appeared to be kitchen grease on the grate/dumped inside.	--	KCI to send out door hangers.
09/17/15	KCI	KCI distributed 8 door hangers to surrounding homes		No further action required
<b>Incident ID 2015-115-D</b>				
<b>Structure 15750</b>				
<b>12 Main Avenue, New Castle County</b>				
<b>Cigarette Butts Dumped into MS4</b>				
08/27/15	KCI	During targeted outfall screening, KCI came across a catch basin with cigarettes dumped inside.	--	KCI to send out door hangers.
09/24/15	KCI	KCI distributed 17 door hangers to surrounding homes		No further action required
<b>Incident ID 2015-117-DN</b>				
<b>Structure 4415</b>				
<b>408 Meco Drive, New Castle County</b>				
<b>High Ammonia Level</b>				
08/31/15	KCI	During targeted outfall screening KCI screened outfall 4415 for dry weather flow. The outfall was originally targeted for multiple reasons including a previous ammonia/detergent hit	The field results came back with an ammonia result > 3.0 mg/L	Sample collected and taken to the lab
09/09/15	Eurofins QC, Inc.	Lab results = 0.107 mg/L Surfactants; 6.80 mg/L Ammonia; 19.2 mg/L Potassium	Flow chart determination = no evidence of illicit discharge. Higher than usual Ammonia levels	KCI to investigate high Ammonia test results
10/15/15	Mike Harris, NCC	Mike Harris contacted DNREC SIRS	408 Meco Drive is a known DNREC remediation site	No further action required

**APPENDIX A  
POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS  
2015 SUMMARY TABLE**

Field Visit Date	Reported By	Investigation Results	Determination	Action
<b>Incident ID 2015-156-D</b>				
<b>Georgian Terrace Subdivision 506 Ruxton Drive, New Castle County Yard Waste Dumped into MS4</b>				
11/09/15	STOPPIT	KCI received a report from the STOPPIT hotline	The report stated that the homeowner at 506 Ruxton Drive was blowing leaves from the yard into the street	KCI to investigate
11/11/15	KCI	KCI visited 506 Ruxton Drive	The field crew found leaving covering the roadway along Ruxton Drive. It appears that mutiple homes are blowing their leaves into the roadway	Door hangers to be distributed
12/03/15	KCI	KCI distributed 15 door hanger and locations of yard waste drop-off sites to surrounding homes		No further action required
<b>Incident ID 2015-159-D</b>				
<b>Structure 90624 1 Goya Place, New Castle County Cigarette Butts Dumped into MS4</b>				
11/09/15	KCI	During targeted outfall screening in the Christina River watershed, KCI screened a contributing structure with a large amount of cigarette butts	--	Door hangers to be distributed
12/03/15	KCI	KCI distributed 10 door hangers to surrounding houses		No further action required
<b>Incident ID 2015-185-D</b>				
<b>Structure 71488 15 Pearson Drive, New Castle County Trash Dumped into MS4</b>				
12/11/15	KCI	During targeted outfall screening in the Christina River watershed, KCI screened contributing structure 71488	The catch basin contained a large amount of trash including used diapers	Door hangers to be distributed
12/31/15	KCI	KCI distributed 8 door hangers to surrounding homes		No further action required
<b>Incident ID 2015-186-D</b>				
12/14/15	KCI	During routine Agr 1728 MS4 re-inspections, KCI inspected structure 90681 and noticed bags of pet waste in catch basin	--	KCI IDDE crew to investigate
12/15/15	KCI	A KCI IDDE field crew visited the structure and confirmed the presence of pet waste in the MS4		Door hangers to be distributed
12/31/15	KCI	KCI distributed 16 door hangers to surrounding homes		No further action required

# **IDDE PROGRAM**

## **2015 ANNUAL REPORT**

### **APPENDIX B**

## **POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS WITH ONGOING ISSUES**

- ❖ 2013-70-D Webbs Road
  - ❖ 2014-19-DN 82836 Appo DE State Police
  - ❖ 2015-137-DN 1921 Pulaski Highway
  - ❖ 2015-190-DN Bear Christiana Road
-

# **IDDE PROGRAM**

## **2015 ANNUAL REPORT**

### **APPENDIX B**

# **POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS WITH ONGOING ISSUES**

❖ 2013-70-D Webbs Road

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# IDDE INVESTIGATION TRACKING SHEET

Incident ID No. 2013-70

Date: 12/16/13

Structure No. 220131216135651

EVIDENCE OF ILLICIT DISCHARGE:     YES             NO             TBD

## LOCATION:

County: Sussex

House No: 16943

Stream: Beaver Dam Branch

ADC: 7G-12

Street: Webbs Road

Watershed: Gravelly Branch

Subdivision: N/A

City: Ellendale

Zip Code: 19941

## SETTING:

- |   |                                     |   |
|---|-------------------------------------|---|
| <input checked="" type="checkbox"/> Storm Drain | <input type="checkbox"/> Outfall    | <input type="checkbox"/> Other (specify): |
| <input type="checkbox"/> In Stream              | <input type="checkbox"/> Along Bank |   |
| <input type="checkbox"/> Stormwater Pond        | <input type="checkbox"/> Upland     |   |

## VISUAL:

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Flow            | <input checked="" type="checkbox"/> Soap                | <input checked="" type="checkbox"/> Cloudy  |
| <input type="checkbox"/> Staining        | <input type="checkbox"/> Floatables (toilet paper, etc) | <input type="checkbox"/> Algae              |
| <input type="checkbox"/> Oil / Oil Sheen | <input type="checkbox"/> Dead Fish                      | <input type="checkbox"/> Precip w/in 72 hrs |
| <input type="checkbox"/> Antifreeze      | <input type="checkbox"/> Yard Waste                     | <input type="checkbox"/> Other (specify):   |

## ODOR:

- |                                 |  |                                  |
|---------------------------------|--|----------------------------------|
| <input type="checkbox"/> None   | <input type="checkbox"/> Sulfide ("rotten egg")                            | <input type="checkbox"/> Gas/Oil |
| <input type="checkbox"/> Sewage | <input checked="" type="checkbox"/> Other (specify): Sweet/Fabric softener |                                  |

## IDDE INVESTIGATION SUMMARY:

**Referred By:** KCI Agreement 1591 Field Crew

**Issue:** Standing water in catch basin that smells of laundry detergent/fabric softener

**Determination:** Likely Graywater/Washwater Source; A follow up sample will be taken after a 72-hour dry period.



## DOCUMENTATION:

- Location Map from NPDES Map Viewer
- Summary Memorandum with Photographs
- Field Data Sheet
- QCL Laboratory Data
- Door Hanger
- Notice of Potential Illicit Discharge
- Other:





**Legend**

- |         |              |              |                      |            |
|---------|--------------|--------------|----------------------|------------|
| INLET   | RISER        | SWALE END    | DITCH                | BMP        |
| MANHOLE | JUNCTION BOX | SWALE VERTEX | PIPE                 | WORK ORDER |
| OUTFALL | CULVERT      | DUMMY NODE   | HYDRAULIC CONNECTION |            |

**NPDES Inventory Map**  
12 Feb, 2014



## MEMORANDUM

**TO:** Marianne Walch, DelDOT

**FROM:** Katherine Adami, KCI

**DATE:** December 16, 2013 – January 31, 2013

**SUBJECT:** **Potential Illicit Discharge**  
**Webbs Road PID**  
**Structure 220131216135651**  
**Incident ID No. 2013-70**  
Agreement 1613/KCI Project 17121613B

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**The purpose of this Memo** is to summarize the field investigations regarding a Potential Illicit Discharge (PID) at Structure 220131216135651 on Webbs Road in Sussex County.

**December 16, 2013:** A KCI 1591 field crew conducting routine MS4 inspections noticed outfall 320131216135806 had flow. The flow was traced to a yard catch basin with standing water and a 4" non-DelDOT pipe connection. The non-DelDOT pipe was not actively flowing. The standing water had a gray tint and smelled sweet like fabric softener.

**December 17, 2013:** A KCI 1613 field crew returned to 16943 Webbs Road to collect a sample for laboratory analysis. There was no flow from the 4" pipe, so the sample was taken from the standing water in the catch basin. It was brought to the lab to be tested for ammonia, potassium, and surfactants. The last rain was December 14, 2013, making the 72 hour dry period invalid. However, due to of the water's odor and color, the sample was collected outside of the 72 hour dry period.

**December 31, 2013:** Lab results were returned:

Surfactants = 17.7 mg/L  
Ammonia = .340 mg/L  
Potassium = 2.26 mg/L

According to flow chart, water is likely from a graywater/washwater source. A follow-up sample will be collected after 72 hours of dry weather.

**January 20, 2014:** The KCI 1591 field crew re-visited the yard catch basin on Webbs road to check for flow and to take a follow-up sample. The 4" pvc pipe was not flowing, but was wet and there was standing water. A sample was collected from the standing water and sent to QC Labs for analysis of surfactants, ammonia, and potassium.

**January 28, 2014:** Lab results were returned:

Surfactants = 15.0 mg/L  
Ammonia = 3.65 mg/L  
Potassium = 20.3

According to flow chart & prior laboratory results, water is confirmed graywater/washwater.

**January 31, 2014:** A certified Notice of Potential Illicit Discharge was sent to the homeowner at 16943 Webbs Road via USPS. The letter states that the discharge/connection must be ceased or removed within 30 days. Estimated delivery date is February 1, 2014.

**February 10, 2014:** KCI received confirmation of receipt of the Notice of Potential Illicit Discharge.

**May 5, 2014:** KCI left a message for homeowner (Judith Webb) inquiring about progress and requesting a return call.

**July 16, 2014:** KCI left a message for homeowner (Judith Webb) inquiring about progress and requesting a return call.

**July 23, 2014:** KCI Sussex 1591 crew visited the structure to document any changes. No changes were observed.



**Landscape**



**Structure 220131216135651 – December 17, 2013**



**Non Del-DOT Pipe Connection – December 17, 2013**



**Structure 220131216135651 – January 20, 2014**



**Non-DelDOT Pipe Connection – January 20, 2014**



**Outfall 320131216135806 – January 20, 2014**



**DELDOT AGREEMENT 1613  
ILLICIT DISCHARGE DETECTION & ELIMINATION  
FIELD SHEET**



Structure Number: 220131216135651  
 Incident ID #: 2013-70  
 County: Sussex  
 Subdivision: N/A  
 Address/Location: Webbs Road

<b>Personnel</b>		KA/DG/JL
<b>Date</b>		12/17/2013
<b>Time</b>		9:55 a.m.
<b>Air Temperature (F)</b>		40°
<b>Photograph</b>	Yes(Y), No(N)	Y
<b>Date Last Rain</b>		12/14/13
<b>Outfall Dimensions</b>	(inches)	4
<b>Outfall Shape</b>	Round(R), Oval(O), Box(B), V-Ditch(VD), Trap Ditch(TD)	R
<b>Outfall Type</b>	Corrugated Metal Pipe(CMP), Reinforced Concrete Pipe(RCP) Polyvinyl Chloride Pipe(PVC), Other(O-explain)	CMP
<b>Flow Observed</b>	Yes(Y), No(N)	N - Sample taken from
<b>Land Use</b>	Industrial(I), Commercial(C), Residential(R), Other(O-explain)	R standing water
<b>Structural Condition</b>	Normal(N), Concrete Spauling(SP) Peeling Paint(PP), Concrete Cracking(CC) Outfall Damaged(OD), Submerged(S), Metal Corrosion(MC), Other(O-explain)	N
<b>Erosion (Outfall Area)</b>	None(N), Moderate(M), Severe(S)	N
<b>Algae Growth</b>	Yes(Y), No(N)	N
<b>Vegetative Condition (Outfall Area)</b>	Normal(N), Inhibited Growth(IG) Excessive Growth(EG), Other(O-explain)	N
<b>Flow Rate (cfs)</b>		-
<b>Water Temperature (F)</b>		50.2
<b>pH (units)</b>		6.7
<b>Turbidity (ntu)</b>		41.77
<b>QC Laboratories:</b>		
<b>Surfactants (mg/L)</b>		17.7
<b>Ammonia (mg/L)</b>		.340
<b>Potassium (mg/L)</b>		2.26
<b>Bacteria (mpn)</b>	As needed if Suspect Sewage	-
<b>Odor</b>	None(N), Rancid-Sour(RS), Gas(G), Sewage(S), Oil(O), Sulfur(S), Other(O-explain)	0 - sweet/soapy
<b>Deposits/Stains</b>	None(N), Sediment(S), Oil(OY), Other(O-explain)	Iron flocculent
<b>Color</b>	Clear(C), Gray(G), Red(R), Yellow(Y), Brown(B), Green(GR), Other(O-explain)	G, blue-ish
<b>Floatables</b>	None(N), Trash(T), Oil Sheen(OS), Sewage(S), Other(O-explain)	soapy, bubbly
<b>DETERMINATION (FROM IDDE FLOWCHART)</b>		Likely graywater/ washwater source



# Analytical Report

Serialized: 12/31/2013 02:07pm

BRUCE THOMPSON  
KCI TECHNOLOGIES  
1352 MARROWS ROAD  
SUITE 100  
NEWARK, DE 19711

Regarding:

KCI TECHNOLOGIES  
1352 MARROWS ROAD, SUITE 100  
KCI SCREENING  
NEWARK, DE 19711

## PROJECT ID:

AL0120 KCI SCREENING

## LABORATORY REPORT NUMBER:

L4865397



Authorized by: Oommen V. Kappil, QA Director

QCL Accreditations: Southampton Div: EPA ID PA00018 NELAP's: PA900131NJ PA166, NM223  
State ID's CT PH0768, DE PA018, MD206, S 8902100 FDA Reg #: 255238  
Delaware Division: State ID's: DE0011, M 138  
Vineland Division: State ID NJ 06005; Reading Div: State ID: PA 003543  
Wind Gap Division: State ID's: PA01334, NPA001  
E. Rutherford Division: State ID: N02015

**KCI TECHNOLOGIES, INC.**  
**AL0120 KCI SCREENING**  
**KCI OUTFALL SCREENING PROJECT**  
**P.O. No:**  
**Inv. No: 1575770 PAPERLESS**  
**PWSID:**

BRUCE THOMPSON  
KCI TECHNOLOGIES  
1352 MARROWS ROAD, SUITE 100  
KCI SCREENING  
NEWARK, DE 19711

Regarding:  
BRUCE THOMPSON  
KCI TECHNOLOGIES  
1352 MARROWS ROAD, SUITE 100  
KCI SCREENING  
NEWARK, DE 19711

## SAMPLE SUMMARY

---

<b>Lab ID</b>	<b>Collected</b>	<b>Received</b>	<b>Matrix</b>	<b>Client ID</b>
L4865397-1	12/17/13 09:55	12/17/13	WASTEWATER	220131216135651

---

<b>Sample Description:</b>	220131216135651	<b>Samp. Date/Time/Temp:</b>	12/17/13 09:55am NA C
<b>Sample Number:</b>	L4865397-1	<b>Sampled by:</b>	Customer
<b>Matrix:</b>	WASTEWATER	<b>Iced (Y/N):</b>	Y
<b>Received Temp:</b>	4.1 C		

## GENERAL CHEMISTRY

<b>Analytical Method:</b>	SM 5540C	<b>Run Date:</b>	12/18/13 02:00PM	<b>Workgroup:</b>	121813AMBS
<b>Dilution:</b>	50	<b>Analyst:</b>	EGL	<b>File ID:</b>	d1-mbas_121813AMBS.csv
<b>Units:</b>	mg/l	<b>Instrument:</b>	D1-MBAS	<b>Basis:</b>	

Parameter	CAS	Result	MDL*	RL
Detergents, MBAS (Delaware)	N/A	17.7	1.00	1.00

<b>Analytical Method:</b>	SM 4500NH3-G	<b>Run Date:</b>	12/18/13 03:09PM	<b>Workgroup:</b>	121713ANH3
<b>Dilution:</b>	1	<b>Analyst:</b>	SLD	<b>File ID:</b>	121713ANH3.csv
<b>Units:</b>	mg/l	<b>Instrument:</b>	Lachat Quickchem 800	<b>Basis:</b>	

Parameter	CAS	Result	MDL*	RL
Ammonia, as N (Delaware)	7664-41-7	0.340	0.0990	0.200

## METALS

<b>Analytical Method:</b>	EPA 200.8 Rev 5.4	<b>Run Date:</b>	12/30/13 12:58PM	<b>Workgroup:</b>	WG60672
<b>Dilution:</b>	1	<b>Analyst:</b>	GJH	<b>File ID:</b>	12-30-13ww.rep
<b>Units:</b>	mg/l	<b>Instrument:</b>	PE Elan 9000 ICP-MS	<b>Basis:</b>	

Parameter	CAS	Result	MDL*	RL
Potassium	7440-09-7	2.26	0.0310	0.500

MBAS is reported as LAS, molecular weight; 340.



\*=This limit was used in the evaluation of the final result.

## DEFINITIONS

**The following terms or abbreviations are used in this report:**

MPN	Most probable number	PL	Customer-specific limit
CFU	Colony forming unit	DF	Dilution Factor
POS	Positive	Q	Qualifier
NEG	Negative	NTU	Nephelometric turbidity units
PRES	Presumptive	RL	Laboratory reporting limit or Limit of Quantitation (LOQ)
MF	Membrane Filtration	MCL	EPA recommended "Maximum Contaminant Level"
TNTC	Too numerous to count	MDL	Method Detection Limit

ND	The concentration was not detected at or above RL / MDL.
J	Estimated value $\geq$ MDL but $<$ RL. Applies to organics and general chemistry results (see below for metals)
DRY	Indicates the result was calculated and reported on a dry weight basis.
TIC	Tentatively Identified Compounds (Library Search Compounds); concentrations are estimated values only.
ppm (mg/l)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples.
ppb (ug/L)	Parts per billion: equivalent to 1 microgram per kilogram (ug/Kg) for solids or one microgram per liter (ug/L) for aqueous samples.
<	Less than: In conjunction with a numerical value, indicates a concentration less than RL / MDL.
>	Greater than: In conjunction with a numerical value, indicates a concentration greater than RL / MDL.

**Data Qualifiers (EPA CLP Convention)**

<u>Organics</u>		<u>Metals</u>	
B	Analyte was detected in the method blank	B	Value is $\geq$ MDL and $<$ RL
E	Concentration exceeds calibration range	E	Estimated value due to presence of interference
U	Compound not detected above MDL/RL	M	Duplicate precision for an element outside control limit
N	Presumptive evidence of compound in library search	N	Spike recovery for an element outside control limits
P1	Column precision criteria not met, report lower value	U	Element not detected above MDL/RL
P2	Column precision criteria not met, report higher value	Other	Defined in case narrative or data package
Other	Defined in case narrative or data package		

**Warranties, Terms, and Conditions**

- Unless otherwise specified in the Parameter field, analyses (excluding "Field Parameters") were performed at the QCL Southampton Division (1205 Industrial Boulevard, Southampton, PA 18966). Food, pharmaceutical, and dairy testing were performed the QCL facility in Horsham (702 Electronics Drive, Horsham, PA 19044).
- The test results meet all requirements of TNI or other regulatory agencies, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- The reported results relate only to the sample as tested. QCL is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- QCL is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. QCL's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Customer Service for further information.
- The following personnel or their deputies have approved the results of the tests performed by QCL: Nicki Smith (Environmental & Food Chemistry), Amanda Lukaszewski (Pharmaceutical), Ryan Baker (Dairy), Renata Paskevicius (Food Micro), Sue Abbott (QCL Delaware).

**QCL Accreditations**

Southampton Division	EPA ID:	PA00018			
	NELAP IDs:	PA 09-00131; NJ PA166; NY 11223			
	State IDs:	CT PH-0768; DE PA-018; MD 206			
	FDA Reg #:	2515238			
Delaware Division	State IDs:	DE 00011; MD 138	Reading Division	State ID:	PA 06-03543
Wind Gap Division	State IDs:	PA 48-01334; NJ PA001	Vineland Division	State ID:	NJ 06005
East Rutherford Division	State ID:	NJ 02015			



1205 Industrial Blvd.  
Southampton, PA 18966-0514  
Phone: 215-355-3900  
Fax: 215-355-7231

# CHAIN OF CUSTODY

Page \_\_\_\_ of \_\_\_\_

Lab LIMS No: **L48 65397**

## MATRIX CODES

Client/Acct. No. **KCI Technologies**  
Address **1352 Marrows Rd**  
City/State/Zip **Newark, DE 19711**  
Phone/Fax \_\_\_\_\_  
Client Contact \_\_\_\_\_

Bill to/Report to: (if different) \_\_\_\_\_  
Sampling Site Address: (if different) \_\_\_\_\_  
P.O. No. \_\_\_\_\_  
QC Contact \_\_\_\_\_

**LAB USE ONLY:**  
# \_\_\_ Ascorbic/HCl Vials # \_\_\_ HCl Vials  
# \_\_\_ Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> \_\_\_\_\_  
# \_\_\_ Na OH/Zn acetate pH \_\_\_\_\_  
# **1** HNO<sub>3</sub> pH **6.212 P11**  
# \_\_\_ H<sub>2</sub>SO<sub>4</sub> pH \_\_\_\_\_  
# \_\_\_ NaOH pH \_\_\_\_\_  
# \_\_\_ Unpreserved \_\_\_\_\_  
# \_\_\_ Hcl pH \_\_\_\_\_  
# **4** Temp control ID# **1000000000**

DW: DRINKING WATER  
GW: GROUND WATER  
WW: WASTEWATER  
SO: SOIL  
SL: SLUDGE  
OIL: OIL  
SOL: NON SOIL SOLID  
MI: MISCELLANEOUS  
X: OTHER

PROJECT FIELD ID	Collection		G R A B	C O M P	Matrix Code	Number of Containers																
	Date	Military Time				Total	H <sub>2</sub> O <sub>2</sub>	HCl	Y	H <sub>2</sub> O	N	Z	A	C	U	D	B					
<b>220131216135651</b>	<b>12/17/13</b>	<b>9:55</b>	<b>N</b>																			

## ANALYSIS REQUESTED

**Surfactants, potassium, ammonia**

Field pH, Temp (C or F),  
DO, Cl<sub>2</sub>, S. Cond. etc.

SAMPLED BY: (Name/Company)  
**KCI Technologies**

Verbal/fax data due: \_\_\_\_\_  
Hardcopy due: \_\_\_\_\_  
Please call for pricing and availability on rush (<14-21 day) turnaround and on all but standard format.

Report Format:  Standard  Forms  
 Standard + QC  NJ Reduced  Disk

Field Parameters Analyzed By:  
Sig: \_\_\_\_\_ Date/Time: \_\_\_\_\_

### SAMPLE CUSTODY EXCHANGES MUST BE DOCUMENTED BELOW. USE FULL LEGAL SIGNATURE, DATE AND MILITARY TIME (24 HOUR CLOCK, I.E. 8AM IS 0800, 4 PM IS 1600)

RELINQUISHED BY SAMPLER	DATE	TIME	RECEIVED BY	DATE	TIME	DELIVERY METHOD: <input type="checkbox"/> QC COURIER <input type="checkbox"/> CLIENT <input type="checkbox"/> UPS <input type="checkbox"/> FEDEX <input type="checkbox"/> OTHER	Custody Seal Number
1 <b>[Signature]</b>	<b>12/17/13</b>	<b>13:25</b>	<b>[Signature]</b>	<b>12/17/13</b>	<b>13:25</b>		
2 <b>[Signature]</b>	<b>12/17/13</b>	<b>13:45</b>	<b>2 coplee # 831 (retals)</b>				
3 <b>[Signature]</b>	<b>12/17/13</b>	<b>1550</b>	<b>[Signature]</b>	<b>12/17/13</b>	<b>1950</b>		
4			4				
5			5				

COMMENTS: **3.0**

Hazardous: yes / no

For example to aid completion, see reverse side.

FINAL REPORT





**DELDOT AGREEMENT 1613  
ILLICIT DISCHARGE DETECTION & ELIMINATION  
FIELD SHEET**



Structure Number: 220131216135651  
 Incident ID #: 2013-70  
 County: Sussex County  
 Subdivision: —  
 Address/Location: Webbs Road

<b>Personnel</b>	CS + NS
<b>Date</b>	1/20/2014
<b>Time</b>	8:30am
<b>Air Temperature (F)</b>	37°
<b>Photograph</b> Yes(Y), No(N)	Y
<b>Date Last Rain</b>	1/14/14
<b>Outfall Dimensions</b> (inches)	4
<b>Outfall Shape</b> Round(R), Oval(O), Box(B), V-Ditch(VD), Trap Ditch(TD)	R
<b>Outfall Type</b> Corrugated Metal Pipe(CMP), Reinforced Concrete Pipe(RCP) Polyvinyl Chloride Pipe(PVC), Other(O-explain)	PVC - in catch basin
<b>Flow Observed</b> Yes(Y), No(N)	N
<b>Land Use</b> Industrial(I), Commercial(C), Residential(R), Other(O-explain)	R
<b>Structural Condition</b> Normal(N), Concrete Spauling(SP) Peeling Paint(PP), Concrete Cracking(CC) Outfall Damaged(OD), Submerged(S), Metal Corrosion(MC), Other(O-explain)	N
<b>Erosion (Outfall Area)</b> None(N), Moderate(M), Severe(S)	N
<b>Algae Growth</b> Yes(Y), No(N)	N
<b>Vegetative Condition (Outfall Area)</b> Normal(N), Inhibited Growth(IG) Excessive Growth(EG), Other(O-explain)	N
<b>Flow Rate (cfs)</b>	~0.022
<b>Water Temperature (F)</b>	43.2
<b>pH (units)</b>	7.1
<b>Turbidity (ntu)</b>	1100 (over range)
<b>QC Laboratories:</b>	
<b>Surfactants (mg/L)</b>	15.0
<b>Ammonia (mg/L)</b>	3.65
<b>Potassium (mg/L)</b>	20.3
<b>Bacteria (mpn)</b> As needed if Suspect Sewage	
<b>Odor</b> None(N), Rancid-Sour(RS), Gas(G), Sewage(S), Oil(O), Sulfur(S), Other(O-explain)	O - Detergent
<b>Deposits/Stains</b> None(N), Sediment(S), Oil(OY), Other(O-explain)	N
<b>Color</b> Clear(C), Gray(G), Red(R), Yellow(Y), Brown(B), Green(GR), Other(O-explain)	O - cloudy
<b>Floatables</b> None(N), Trash(T), Oil Sheen(OS), Sewage(S), Other(O-explain)	N
<b>DETERMINATION (FROM IDDE FLOWCHART)</b>	Likely Graywater/ Washwater Source

\* Sample taken at the catch basin before the outfall



# Analytical Report

Serialized: 01/28/2014 04:24pm

BRUCE THOMPSON  
KCI TECHNOLOGIES, INC.  
1352 MARROWS ROAD  
SUITE 100  
NEWARK, DE 19711

Regarding:

KCI TECHNOLOGIES, INC.  
1352 MARROWS ROAD  
SUITE 100  
NEWARK, DE 19711

## PROJECT ID:

AL0120

## LABORATORY REPORT NUMBER:

L4904534

## PO NUMBER:

17121613



Authorized by: Oommen V. Kappil, QA Director

QCL Accreditations: Southampton Div: EPA PA000181  
NELAP's: PA0900131NJ PA166, NM223  
State ID's CT PH0768, DE PA018, MD206, S 8902100 FDA Reg: 255238  
Delaware Division: State ID's: DE0011, M 138  
Vineland Division: State ID NJ 06005; Reading Div: State ID: PA 003543  
Wind Gap Division: State ID's: PA01334, NPA001  
E. Rutherford Division: State ID: N02015

BRUCE THOMPSON  
KCI TECHNOLOGIES, INC.  
1352 MARROWS ROAD  
SUITE 100  
NEWARK, DE 19711

Regarding:  
BRUCE THOMPSON  
KCI TECHNOLOGIES, INC.  
1352 MARROWS ROAD  
SUITE 100  
NEWARK, DE 19711

**Account No:** AL0120, KCI TECHNOLOGIES, INC.  
**Project No:** AL0120, KCI TECHNOLOGIES, INC.

**P.O. No:** 17121613

**Inv. No:** 1581275 PAPERLESS  
**PWSID No:**

<b>Sample ID</b>	<b>Sample Description</b>	<b>Samp. Date/Time/Temp</b>	<b>Sampled by</b>
L4904534-1	22013121635651	01/20/14 08:30am NA C	Customer
	<b>Received Date/Time/Temp</b> 01/21/14 08:20am 6.1 C	<b>Iced (Y/N):</b> Y	
	<b>Satellite Received Temp</b> 7.1C	<b>Iced (Y/N):</b> Y	

Parameter	Result	RL	Units	Method	DF	Q	Test Date, Time, Analyst
-----------	--------	----	-------	--------	----	---	--------------------------

**GENERAL CHEMISTRY**

Ammonia, as N (Delaware)	3.65	0.200	mg/l	SM 4500NH3-G	1		01/22/14 04:33PM ALW
Detergents, MBAS (Delaware)	15.0	2.00	mg/l	SM 5540C	100		01/21/14 12:30PM EGL

**METALS**

Potassium	20.3	5.00	mg/l	EPA 200.8 Rev 5.4	10		01/28/14 09:14AM GJH
-----------	------	------	------	-------------------	----	--	----------------------

<b>Sample ID</b>	<b>Sample Description</b>	<b>Samp. Date/Time/Temp</b>	<b>Sampled by</b>
L4904534-2	97819	01/20/14 01:12pm NA C	Customer
	<b>Received Date/Time/Temp</b> 01/21/14 08:20am 6.1 C	<b>Iced (Y/N):</b> Y	

Parameter	Result	RL	Units	Method	DF	Q	Test Date, Time, Analyst
-----------	--------	----	-------	--------	----	---	--------------------------

**GENERAL CHEMISTRY**

Ammonia, as N (Delaware)	ND	0.200	mg/l	SM 4500NH3-G	1		01/22/14 04:33PM ALW
Detergents, MBAS (Delaware)	ND	0.0200	mg/l	SM 5540C	1		01/21/14 12:30PM EGL

**METALS**

Potassium	2.93	0.500	mg/l	EPA 200.8 Rev 5.4	1		01/28/14 09:33AM GJH
-----------	------	-------	------	-------------------	---	--	----------------------

MBAS is reported as LAS, molecular weight; 340.



## DEFINITIONS

**The following terms or abbreviations are used in this report:**

MPN	Most probable number	PL	Customer-specific limit
CFU	Colony forming unit	DF	Dilution Factor
POS	Positive	Q	Qualifier
NEG	Negative	NTU	Nephelometric turbidity units
PRES	Presumptive	RL	Laboratory reporting limit or Limit of Quantitation (LOQ)
MF	Membrane Filtration	MCL	EPA recommended "Maximum Contaminant Level"
TNTC	Too numerous to count	MDL	Method Detection Limit

ND	The concentration was not detected at or above RL / MDL.
J	Estimated value $\geq$ MDL but $<$ RL. Applies to organics and general chemistry results (see below for metals)
DRY	Indicates the result was calculated and reported on a dry weight basis.
TIC	Tentatively Identified Compounds (Library Search Compounds); concentrations are estimated values only.
ppm (mg/l)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples.
ppb (ug/L)	Parts per billion: equivalent to 1 microgram per kilogram (ug/Kg) for solids or one microgram per liter (ug/L) for aqueous samples.
<	Less than: In conjunction with a numerical value, indicates a concentration less than RL / MDL.
>	Greater than: In conjunction with a numerical value, indicates a concentration greater than RL / MDL.

**Data Qualifiers (EPA CLP Convention)**

<u>Organics</u>		<u>Metals</u>	
B	Analyte was detected in the method blank	B	Value is $\geq$ MDL and $<$ RL
E	Concentration exceeds calibration range	E	Estimated value due to presence of interference
U	Compound not detected above MDL/RL	M	Duplicate precision for an element outside control limit
N	Presumptive evidence of compound in library search	N	Spike recovery for an element outside control limits
P1	Column precision criteria not met, report lower value	U	Element not detected above MDL/RL
P2	Column precision criteria not met, report higher value	Other	Defined in case narrative or data package
Other	Defined in case narrative or data package		

**Warranties, Terms, and Conditions**

- Unless otherwise specified in the Parameter field, analyses (excluding "Field Parameters") were performed at the QCL Southampton Division (1205 Industrial Boulevard, Southampton, PA 18966). Food, pharmaceutical, and dairy testing were performed the QCL facility in Horsham (702 Electronics Drive, Horsham, PA 19044).
- The test results meet all requirements of TNI or other regulatory agencies, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- The reported results relate only to the sample as tested. QCL is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- QCL is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. QCL's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Customer Service for further information.
- The following personnel or their deputies have approved the results of the tests performed by QCL: Nicki Smith (Environmental & Food Chemistry), Amanda Lukaszewski (Pharmaceutical), Ryan Baker (Dairy), Renata Paskevicius (Food Micro), Sue Abbott (QCL Delaware).

**QCL Accreditations**

Southampton Division	EPA ID:	PA00018			
	NELAP IDs:	PA 09-00131; NJ PA166; NY 11223			
	State IDs:	CT PH-0768; DE PA-018; MD 206			
	FDA Reg #:	2515238			
Delaware Division	State IDs:	DE 00011; MD 138	Reading Division	State ID:	PA 06-03543
Wind Gap Division	State IDs:	PA 48-01334; NJ PA001	Vineland Division	State ID:	NJ 06005
East Rutherford Division	State ID:	NJ 02015			



1205 Industrial Blvd.  
Southampton, PA 18966-0514

Phone: 215-355-3900  
Fax: 215-355-7231

### CHAIN OF CUSTODY

Page \_\_\_\_\_ of \_\_\_\_\_

Bill to/Report to: (if different)

Lab LIMS No: LY904534

### MATRIX CODES

#### LAB USE ONLY:

# \_\_\_ Ascorbic/HCl Vials # \_\_\_ HCl Vials  
 # \_\_\_ Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>  
 # \_\_\_ Na OH/Zn acetate pH  
 # 2 HNO<sub>3</sub> pH L2 H2P1P1  
 # \_\_\_ H<sub>2</sub>SO<sub>4</sub> pH  
 # \_\_\_ NaOH pH  
 # \_\_\_ Unpreserved  
 # \_\_\_ Hcl pH  
 # 0.1 Temp control OK ID# CM114

DW: DRINKING WATER  
 GW: GROUND WATER  
 WW: WASTEWATER  
 SO: SOIL  
 SL: SLUDGE  
 OIL: OIL  
 SOL: NON SOIL SOLID  
 MI: MISCELLANEOUS  
 X: OTHER

Client/Acct. No. KCI Technologies  
 Address 1352 Mammus Rd  
 City/State/Zip Newark, DE 19711  
 Phone/Fax \_\_\_\_\_  
 Client Contact \_\_\_\_\_

Sampling Site Address: (if different)

P.O. No.

QC Contact

PROJECT	Collection		G R A B	C O M P	Matrix Code	Number of Containers															
	Date	Military Time				Total	H 2 O	H C l	Y t r	H N O <sub>3</sub>	Z n A c	U n p r e s e r v e d	B a s e	S a m p l e							
<b>FIELD ID</b>																					
<u>220131216135651</u>	<u>1/20/14</u>	<u>8:30</u>	<input checked="" type="checkbox"/>																		
<u>97819</u>	<u>1/20/14</u>	<u>13:12</u>	<input checked="" type="checkbox"/>																		

#### ANALYSIS REQUESTED

Surfactants, Ammonia, Potassium  
 " " "

Field pH, Temp (C or F),  
 DO, Cl<sub>2</sub>, S. Cond. etc.

SAMPLED BY: (Name/Company)

KCI Technologies

Verbal/fax data due: \_\_\_\_\_

Hardcopy due: \_\_\_\_\_

Please call for pricing and availability on rush (<14-21 day) turnaround and on all but standard format.

Report Format:  Standard  Forms

Standard + QC  NJ Reduced  Disk

Field Parameters Analyzed By:

Sig:

Date/Time:

**SAMPLE CUSTODY EXCHANGES MUST BE DOCUMENTED BELOW. USE FULL LEGAL SIGNATURE, DATE AND MILITARY TIME (24 HOUR CLOCK, I.E. 8AM IS 0800, 4 PM IS 1600)**

RELINQUISHED BY SAMPLER	DATE	TIME	RECEIVED BY	DATE	TIME	DELIVERY METHOD: <input type="checkbox"/> QC COURIER <input type="checkbox"/> CLIENT <input type="checkbox"/> UPS <input type="checkbox"/> FEDEX <input type="checkbox"/> OTHER	Custody Seal Number
<u>1</u> <u>David Ruber</u>	<u>1/20/14</u>	<u>8:20</u>	<u>1</u> <u>[Signature]</u>	<u>1/21/14</u>	<u>8:20</u>		
<u>2</u> <u>[Signature]</u>	<u>1/21/14</u>	<u>10:45</u>	<u>2</u> <u>coolio</u>	<u>1/21/14</u>	<u>10:45</u>	COMMENTS: <u>7.1</u>	
<u>3</u> <u>10</u>	<u>1/22/14</u>	<u>18:50</u>	<u>3</u> <u>[Signature]</u>	<u>1/22/14</u>	<u>18:50</u>		
<u>4</u>			<u>4</u>				
<u>5</u>			<u>5</u>				

Hazardous: yes / no

For example to aid completion, see reverse side.





STATE OF DELAWARE  
**DEPARTMENT OF TRANSPORTATION**  
800 BAY ROAD  
P.O. BOX 778  
DOVER, DELAWARE 19903

CAROLANN WICKS, P.E.  
SECRETARY

**NOTICE OF POTENTIAL ILLEGAL DISCHARGE**

The Delaware Department of Transportation (DelDOT) is responsible for maintaining not only roadways, but also the extensive storm drain and pipe networks located within State rights-of-way. The Federal National Pollutant Discharge Elimination System (NPDES) Program, which is a component of the Clean Water Act of 1972, requires DelDOT to control the amount of pollutants entering the drainage system. Part of this charge is the detection and elimination of *illegal discharges* or connections to the system that may contain pollutants or are otherwise not allowed. Left uncorrected, any pollutants entering the system will ultimately impact nearby streams, as storm drainage is not treated at any sort of treatment facility.

DelDOT has contracted with the engineering firm KCI Technologies, Inc. to survey and inspect the drainage system and to check for illegal discharges or connections. Please review the following checked items that pertain to you:

- You are receiving this notice because a potential illegal discharge or connection from your property was detected during a recent investigation. Please see details below.*

Date: 01/29/14      Outfall #: 320131216135806      Address: 16943 Webbs Rd, Ellendale, DE 19941

Indicators or Source: 4" PVC connection; soapy/sweet smelling discharge; sample tested high for turbidity, surfactants, ammonia and potassium.

- This discharge or connection must be ceased or removed within 30 days. A follow up investigation will be conducted after that time to ensure compliance.*
- We are requesting access to your property to assist in our determination. Within seven days, please contact KCI Technologies, Inc. as shown below to make the appropriate arrangements.*

Bruce Thompson  
KCI Technologies, Inc.  
1352 Marrows Road, Suite 100  
Newark, DE 19711  
(302) 731-9176 ext. 3312  
Bruce.Thompson@kci.com

If the illegal discharge or connection cannot be removed within 30 days, you do not understand this notice, or you disagree that an illegal discharge or connection exists at your property, please contact KCI Technologies, Inc. with further details or explanation.

Program information can be obtained by contacting DelDOT's Project Manager, Randy Cole, by calling (302) 760-2194, or by email at [randy.cole@state.de.us](mailto:randy.cole@state.de.us).

Thank you for helping us preserve Delaware's environment.





STATE OF DELAWARE  
**DEPARTMENT OF TRANSPORTATION**  
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DOVER, DELAWARE 19903

JENNIFER COHAN  
SECRETARY

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- You are receiving this notice because a potential illegal discharge or connection from your property was detected during a recent investigation. Please see details below.***

Date: 08/13/15      Outfall #: 320131216135806      Address: 16943 Webbs Rd, Ellendale, DE 19941

Indicators or Source: 4" PVC connection; soapy/sweet smelling discharge; sample tested high for turbidity, surfactants, ammonia and potassium.

- This discharge or connection must be ceased or removed within 30 days. A follow up investigation will be conducted after that time to ensure compliance. Failure to comply within 30 days gives DelDOT the right to remove/cease the connection and/or contact Delaware Department of Natural Resources and Environmental Control for enforcement action. Any damage resulting from a plugged connection is the homeowner's responsibility. Please Contact Bruce Thompson when the connection has been removed or with any questions regarding this matter.***
- We are requesting access to your property to assist in our determination. Within seven days, please contact KCI Technologies, Inc. as shown below to make the appropriate arrangements.***

Bruce Thompson  
KCI Technologies, Inc.  
1352 Marrows Road, Suite 100  
Newark, DE 19711  
(302) 318-1068

If the illegal discharge or connection cannot be removed within 30 days, you do not understand this notice, or you disagree that an illegal discharge or connection exists at your property, please contact KCI Technologies, Inc. with further details or explanation.

Program information can be obtained by contacting DelDOT's Project Manager, Brian Urbanek, by calling (302) 760-2201, or by email at [brian.urbanek@state.de.us](mailto:brian.urbanek@state.de.us).





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- You are receiving this notice because a potential illegal discharge or connection from your property was detected during a recent investigation. Please see details below.***

Date: 10/15/15 Outfall #: 320131216135806

Address: Corner of Webbs Rd & North Union Church Rd, Ellendale, DE 19941 (Please See Map)

Indicators or Source: 4" PVC connection; soapy/sweet smelling discharge; sample tested high for turbidity, surfactants, ammonia and potassium.

- This discharge or connection must be ceased or removed within 30 days. A follow up investigation will be conducted after that time to ensure compliance. Failure to comply within 30 days gives DelDOT the right to remove/cease the connection and/or contact Delaware Department of Natural Resources and Environmental Control for enforcement action. Any damage resulting from a plugged connection is the homeowner's responsibility. Please Contact Bruce Thompson when the connection has been removed or with any questions regarding this matter.***
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Program information can be obtained by contacting DelDOT's Project Manager, Brian Urbanek, by calling (302) 760-2201, or by email at [brian.urbanek@state.de.us](mailto:brian.urbanek@state.de.us).



# **IDDE PROGRAM**

## **2015 ANNUAL REPORT**

### **APPENDIX B**

## **POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS WITH ONGOING ISSUES**

❖ 2014-19-DN 82836 Appo DE State Police

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# IDDE INVESTIGATION TRACKING FORM

Incident ID No. 2014-19

Date: 03/10/14

Structure No. 82836

EVIDENCE OF ILLICIT DISCHARGE:  YES  NO  TBD

## LOCATION:

County: New Castle

House No: 410

Stream: Appoquinimink River

ADC: 22K-10

Street: Main Street

Watershed: Appoquinimink River

Subdivision: N/A

City: Odessa

Zip Code: 19730

## SETTING:

- |   |                                     |   |
|---|-------------------------------------|---|
| <input checked="" type="checkbox"/> Storm Drain | <input type="checkbox"/> Outfall    | <input type="checkbox"/> Other (Specify): |
| <input type="checkbox"/> In Stream              | <input type="checkbox"/> Along Bank |   |
| <input type="checkbox"/> Stormwater Pond        | <input type="checkbox"/> Upland     |   |

## VISUAL:

- |  |   |   |
|--|---|---|
| <input checked="" type="checkbox"/> Flow | <input checked="" type="checkbox"/> Soap                | <input type="checkbox"/> Cloudy             |
| <input type="checkbox"/> Staining        | <input type="checkbox"/> Floatables (toilet paper, etc) | <input type="checkbox"/> Algae              |
| <input type="checkbox"/> Oil / Oil Sheen | <input type="checkbox"/> Dead Fish                      | <input type="checkbox"/> Precip w/in 72 hrs |
| <input type="checkbox"/> Antifreeze      | <input type="checkbox"/> Yard Waste                     | <input type="checkbox"/> Other (specify):   |

## ODOR:

- |                                 |  |                                  |
|---------------------------------|--|----------------------------------|
| <input type="checkbox"/> None   | <input type="checkbox"/> Sulfide ("rotten egg")                  | <input type="checkbox"/> Gas/Oil |
| <input type="checkbox"/> Sewage | <input checked="" type="checkbox"/> Other (specify): Sweet/soapy |                                  |

## IDDE INVESTIGATION SUMMARY:

**Referred By:** 1613 Desktop Targeted

**Issue:** Within 100' SS ≤ 1990 AND within 300' commercial/industrial land use

**Determination:** Likely graywater/washwater source; pipe sourced to Odessa Police wash bay. Maintenance manager is working with NCC to re-route pipe to sanitary system; referred to NCC.



## DOCUMENTATION:

- Location Map from NPDES Map Viewer
- Summary Memorandum with Photographs
- Field Data Sheet
- QCL Laboratory Data
- Door Hanger
- Notice of Potential Illicit Discharge
- Other:





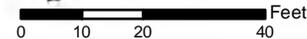
**Legend**

- |         |              |              |                      |            |
|---------|--------------|--------------|----------------------|------------|
| INLET   | RISER        | SWALE END    | DITCH                | BMP        |
| MANHOLE | JUNCTION BOX | SWALE VERTEX | PIPE                 | WORK ORDER |
| OUTFALL | CULVERT      | DUMMY NODE   | HYDRAULIC CONNECTION |            |



**NPDES  
Inventory Map**

14 Mar, 2014





## MEMORANDUM

**TO:** Brian Urbanek, DeIDOT  
Carol Cain, DeIDOT  
Mark Harbeson, DeIDOT  
Mike Harris, NCCo

**FROM:** Katherine Adami, KCI

**DATE:** June 3, 2014 – October 20, 2015

**SUBJECT:** Potential Illicit Discharge Investigation  
Incident ID No. 2014-19 / Structure 82836  
Odessa State Police / Main Street, Odessa  
Appoquinimink Watershed / New Castle County  
KCI Project 17141613N3 / 17151749A

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The purpose of this Memo is to summarize the field investigations regarding a Potential Illicit Discharge (PID) at Structure 82836 on Main Street, Odessa in the Appoquinimink Watershed in New Castle County.

### **March 10, 2014**

During 1613 targeted field screening, a KCI field crew screened a catch basin in front of 414 Main Street, Odessa.

- The catch basin had a 4 inch non-DeIDOT connection that was flowing.
- The catch basin had suds at the bottom and smelled soapy.
- There was no flow observed at the outfall of the system.
- A sample was collected directly from the non-DeIDOT pipe and sent to QC Laboratories to be analyzed for surfactants, ammonia, and potassium.

### **March 26, 2014**

QC Lab results were returned:

- Surfactants = 88.4 mg/L
- Ammonia = 0.419 mg/L
- Potassium = 6.72 mg/L

### **Flow Chart Determination:**

- The discharge is likely a graywater/washwater source.

### **April 16, 2014**

KCI mailed a Notice of Illegal Discharge letter via USPS to the homeowners at 410 Main Street requesting access to confirm that the non-DelDOT connection was from their washer.

### **May 6, 2014**

KCI received confirmation of delivery for the Notice of Illegal Discharge letter and also spoke to the homeowner at 410 Main Street.

- The homeowner, Mr. Mooney, agreed to meet with KCI at 2:30 pm on 05/30/14.

### **May 30, 2014**

KCI met with the homeowner at 410 Main Street in Odessa.

- The field crew verified that the PVC pipe in the catch basin was still flowing.
- While meeting with Mr. Mooney, the field crew confirmed that the house plumbing was all connected to the sanitary sewer line.
- Mr. Mooney's washing machine was tied into a wash sink, which he turned on, and could be seen through the sanitary clean-out in the yard.
- No increase in flow was observed during this time.
- KCI returned to the catch basin with the camera on a stick to try and determine the curve of the connection. It appeared to curve towards the State Police station located at 414 Main Street. Structure 82836 is located in the State Police parking lot.
- During this inspection, more soapy water entered into the structure.
- KCI asked the police officers on duty if they were aware of any connections into the storm sewer system.
- The officers stated that they had just washed one of their vehicles, which could be contributing to the flow.
- KCI went back to the wash bay where the State Police wash all of their vehicles.
- There were two floor drains (a sediment chamber that flowed to another inlet). There was soapy water standing in the inlet.
- When water was poured into the inlet, the connection in the storm drain sewer showed an increased flow.

- The field crew was unable to trace the pipe directly into the catch basin but they spoke to the officers who provided contact information for Captain Sapp (302-378-5218) and said to contact him to schedule further investigations.
- KCI intends to dye test to confirm that the wash water is coming from the State Police.

#### **June 2, 2014**

KCI contacted Randy Cole, DeIDOT, to confirm that dye testing should be conducted.

- Randy stated that he would contact Mike Harris (NCCo) and let him know that the State Police may need to tie their drainage into the NCCo Sewer System.
- KCI left a message for Capt. Sapp requesting a return phone call.

#### **June 10, 2014**

KCI spoke to Capt. Sapp from State Police Troop 9.

- KCI to perform dye testing on Monday, June 16<sup>th</sup> at 9 a.m.
- Captain Sapp will be present.

#### **June 16, 2014**

KCI performed dye testing at the State Police Troop 9 wash bay.

- Upon arrival, KCI checked structure 82836 and noted that it did not have any flow and there was no evidence of any soapy water.
- A KCI crew filled a 55 gallon drum with water and tracing dye and poured it into the inlet inside the State Police wash bay.
- The inlet inside the wash bay had sediment and standing water, so the field crew was unable to use the dye color to confirm the connection.
- About 10-15 seconds after the water was poured into the inlet, the connection in the catch basin had a heavy flow consistent with the amount of water poured into the basin.

#### **June 24, 2014**

KCI informed DeIDOT/New Castle County of the issue and findings.

- New Castle County will work with Bill Braswell, Delaware State Police Construction Maintenance Manager, to re-route the illicit connection.

**October 23, 2014**

Mike Harris e-mailed Bill Braswell requesting an update on re-routing the illegal connection.

**March 6, 2015**

Mike Harris e-mailed Bill Braswell requesting an update on re-routing the illegal connection.

- Bill Braswell stated that there is funding in place and they are working on lining up an engineering firm to start the project.
- He stated that he is hoping to meet with the engineer within 2 weeks' time.

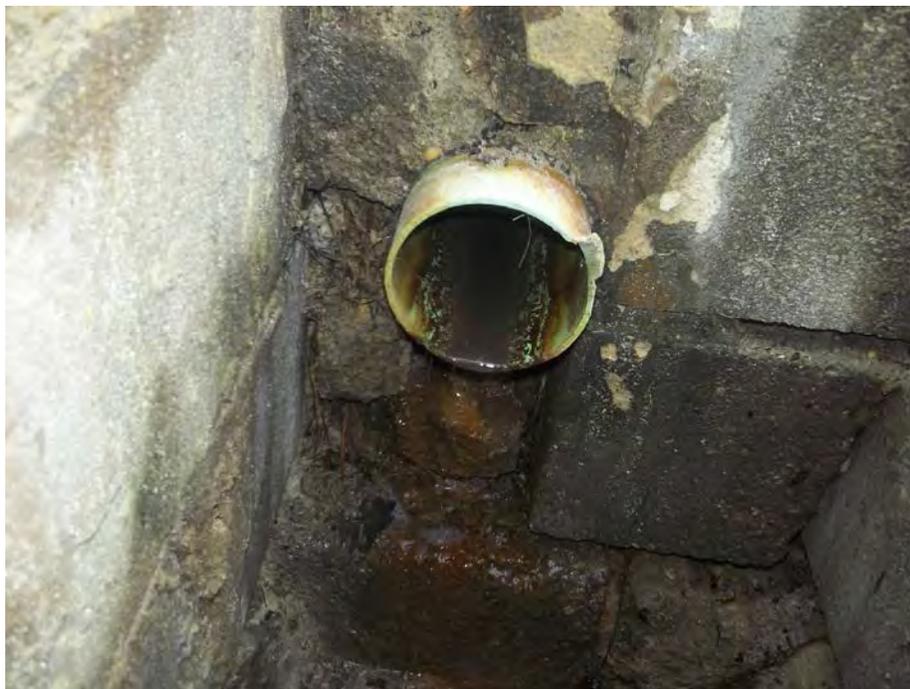
**October 20, 2015**

Mike Harris was contacted by Ring Lardner from David Bowen and Friedel.

- Mr. Lardner was hired by the Delaware State Police to draw up plans to disconnect the wash bay and vehicle maintenance shop from the MS4.
- Construction and disconnection is set to occur in March 2016.



**Soapy Discharge in Structure 82836**



**Non Del-DOT Connection**



**Structure 82836 Landscape**



**Plumbing in 410 Main Street**



**Washing Machine tied into Wash Sink at 410 Main St.**



**New Castle County State Police Wash Bay**



**Soapy Water in Wash Bay Inlet**



**Discharge During Dye Testing**



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- You are receiving this notice because a potential illegal discharge or connection from your property was detected during a recent investigation. Please see details below.***

Date: 04/16/14 Structure #: 82836 Address: 410 Main Street, Odessa, DE 19730

Indicators or Source: 4" PVC possible washer pipe connection; soapy/sweet smelling discharge; sample tested high for detergents. Please see attached map for location.

- This discharge or connection must be ceased or removed within 30 days. A follow up investigation will be conducted after that time to ensure compliance.***
- We are requesting access to your property to assist in our determination. Within seven days, please contact KCI Technologies, Inc. as shown below to make the appropriate arrangements.***

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**DELDOT AGREEMENT 1613  
ILLICIT DISCHARGE DETECTION & ELIMINATION  
FIELD SHEET**



Structure Number: 82836  
 Incident ID #: 2014-19  
 County: New Castle  
 Subdivision: N/A  
 Address/Location: 410 Main Street

<b>Personnel</b>		KA/MJ
<b>Date</b>		03-10-14
<b>Time</b>		10:20 am
<b>Air Temperature (F)</b>		
<b>Photograph</b>	Yes(Y), No(N)	Y
<b>Date Last Rain</b>		03-03-14
<b>Outfall Dimensions</b>	(inches)	Pipe in Catch Basin
<b>Outfall Shape</b>	Round(R), Oval(O), Box(B), V-Ditch(VD), Trap Ditch(TD)	CATCH BASIN
<b>Outfall Type</b>	Corrugated Metal Pipe(CMP), Reinforced Concrete Pipe(RCP) Polyvinyl Chloride Pipe(PVC), Other(O-explain)	PVC
<b>Flow Observed</b>	Yes(Y), No(N)	Y
<b>Land Use</b>	Industrial(I), Commercial(C), Residential(R), Other(O-explain)	C
<b>Structural Condition</b>	Normal(N), Concrete Spauling(SP) Peeling Paint(PP), Concrete Cracking(CC) Outfall Damaged(OD), Submerged(S), Metal Corrosion(MC), Other(O-explain)	N
<b>Erosion (Outfall Area)</b>	None(N), Moderate(M), Severe(S)	N
<b>Algae Growth</b>	Yes(Y), No(N)	N
<b>Vegetative Condition (Outfall Area)</b>	Normal(N), Inhibited Growth(IG) Excessive Growth(EG), Other(O-explain)	N
<b>Flow Rate (cfs)</b>		20.022 cfs
<b>Water Temperature (F)</b>		45.4
<b>pH (units)</b>		8.4
<b>Turbidity (ntu)</b>		55.68
<b>QC Laboratories:</b>		-
<b>Surfactants (mg/L)</b>		88.4
<b>Ammonia (mg/L)</b>		0.419
<b>Potassium (mg/L)</b>		6.72
<b>Bacteria (mpn)</b>	As needed if Suspect Sewage	-
<b>Odor</b>	None(N), Rancid-Sour(RS), Gas(G), Sewage(S), Oil(O), Sulfur(S), Other(O-explain)	0-Sweet/soap-y
<b>Deposits/Stains</b>	None(N), Sediment(S), Oil(OY), Other(O-explain)	0-Suds
<b>Color</b>	Clear(C), Gray(G), Red(R), Yellow(Y), Brown(B), Green(GR), Other(O-explain)	G
<b>Floatables</b>	None(N), Trash(T), Oil Sheen(OS), Sewage(S), Other(O-explain)	N
<b>DETERMINATION (FROM IDDE FLOWCHART)</b>		Likely Graywater/ Washwater Source



# Analytical Report

Serialized: 03/25/2014 04:51pm QC21

BRUCE THOMPSON  
KCI TECHNOLOGIES  
1352 MARROWS ROAD  
SUITE 100  
NEWARK, DE 19711

Regarding:

KCI TECHNOLOGIES  
1352 MARROWS ROAD, SUITE 100  
KCI SCREENING  
NEWARK, DE 19711

## PROJECT ID:

AL0120 KCI SCREENING

## LABORATORY REPORT NUMBER:

L4972877



Authorized by: Oommen V. Kappil, QA Director

QCL Accreditations: Southampton Div: EPA ID PA000181 NELAP's: PA900131 NJ PA166, NM223  
State ID's CT PH0768, DE PA018, MD206, S: 8902100 FDA Reg#: 255238  
Delaware Division: State ID's: DE0011, M 138  
Vineland Division: State ID NJ 06005; Reading Div: State ID: PA 003543  
Wind Gap Division: State ID's: PA01334, NPA001  
E. Rutherford Division: State ID: N02015

**KCI TECHNOLOGIES, INC.**  
**AL0120 KCI SCREENING**  
**KCI OUTFALL SCREENING PROJECT**  
**P.O. No:**  
**Inv. No: 1593357 PAPERLESS**  
**PWSID:**

BRUCE THOMPSON  
KCI TECHNOLOGIES  
1352 MARROWS ROAD, SUITE 100  
KCI SCREENING  
NEWARK, DE 19711

Regarding:  
BRUCE THOMPSON  
KCI TECHNOLOGIES  
1352 MARROWS ROAD, SUITE 100  
KCI SCREENING  
NEWARK, DE 19711

## SAMPLE SUMMARY

Lab ID	Collected	Received	Matrix	Client ID
L4972877-1	03/10/14 09:40	03/11/14 09:45	WASTEWATER	3279
L4972877-2	03/10/14 11:00	03/11/14 09:45	WASTEWATER	2794
L4972877-3	03/10/14 11:30	03/11/14 09:45	WASTEWATER	3285
L4972877-4	03/10/14 10:20	03/11/14 09:45	WASTEWATER	82836
L4972877-5	03/10/14 11:05	03/11/14 09:45	WASTEWATER	2909
L4972877-6	03/10/14 13:15	03/11/14 09:45	WASTEWATER	105058

<b>Sample Description:</b>	3279	<b>Samp. Date/Time/Temp:</b>	03/10/14 09:40am NA C
<b>Sample Number:</b>	L4972877-1	<b>Sampled by:</b>	Customer
<b>Matrix:</b>	WASTEWATER	<b>Iced (Y/N):</b>	Y
<b>Received Temp:</b>	1.6 C		

## GENERAL CHEMISTRY

<b>Analytical Method:</b>	SM 5540C	<b>Run Date:</b>	03/11/14 12:15PM	<b>Workgroup:</b>	031114AMBS
<b>Dilution:</b>	1	<b>Analyst:</b>	EGL	<b>File ID:</b>	d1-mbas_031114AMBS.csv
<b>Units:</b>	mg/l	<b>Instrument:</b>	D1-MBAS	<b>Basis:</b>	

Parameter	CAS	Result	MDL*	RL
Detergents, MBAS (Delaware)	N/A	0.0210	0.0200	0.0200

<b>Analytical Method:</b>	SM 4500NH3-G	<b>Run Date:</b>	03/12/14 05:19PM	<b>Workgroup:</b>	031114ANH3
<b>Dilution:</b>	1	<b>Analyst:</b>	ALW	<b>File ID:</b>	031114ANH3.csv
<b>Units:</b>	mg/l	<b>Instrument:</b>	Lachat Quickchem 800	<b>Basis:</b>	

Parameter	CAS	Result	MDL*	RL
Ammonia, as N (Delaware)	7664-41-7	ND	0.0990	0.200

## METALS

<b>Analytical Method:</b>	EPA 200.7 Rev 4.4	<b>Run Date:</b>	03/24/14 11:38AM	<b>Workgroup:</b>	MA032414W1
<b>Dilution:</b>	1	<b>Analyst:</b>	B B	<b>File ID:</b>	3-24.txt
<b>Units:</b>	mg/l	<b>Instrument:</b>	Optima ICP 7300	<b>Basis:</b>	

Parameter	CAS	Result	MDL*	RL
Potassium	7440-09-7	3.70	0.100	0.500

**Sample Comments:**  
MBAS is reported as LAS, molecular weight; 340.

\*=This limit was used in the evaluation of the final result.

**Sample Description:** 2794  
**Sample Number:** L4972877-2  
**Matrix:** WASTEWATER  
**Received Temp:** 1.6 C  
**Samp. Date/Time/Temp:** 03/10/14 11:00am NA C  
**Sampled by:** Customer  
**Iced (Y/N):** Y

## GENERAL CHEMISTRY

**Analytical Method:** SM 5540C  
**Dilution:** 1  
**Units:** mg/l  
**Run Date:** 03/11/14 12:15PM  
**Analyst:** EGL  
**Instrument:** D1-MBAS  
**Workgroup:** 031114AMBS  
**File ID:** d1-mbas\_031114AMBS.csv  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Detergents, MBAS (Delaware)	N/A	ND	0.0200	0.0200

**Analytical Method:** SM 4500NH3-G  
**Dilution:** 1  
**Units:** mg/l  
**Run Date:** 03/12/14 05:20PM  
**Analyst:** ALW  
**Instrument:** Lachat Quickchem 800  
**Workgroup:** 031114ANH3  
**File ID:** 031114ANH3.csv  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Ammonia, as N (Delaware)	7664-41-7	ND	0.0990	0.200

## METALS

**Analytical Method:** EPA 200.7 Rev 4.4  
**Dilution:** 1  
**Units:** mg/l  
**Run Date:** 03/24/14 11:40AM  
**Analyst:** B B  
**Instrument:** Optima ICP 7300  
**Workgroup:** MA032414W1  
**File ID:** 3-24.txt  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Potassium	7440-09-7	3.03	0.100	0.500

**Sample Comments:**  
 MBAS is reported as LAS, molecular weight; 340.

\*=This limit was used in the evaluation of the final result.

**Sample Description:** 3285  
**Sample Number:** L4972877-3  
**Matrix:** WASTEWATER  
**Received Temp:** 1.6 C  
**Samp. Date/Time/Temp:** 03/10/14 11:30am NA C  
**Sampled by:** Customer  
**Iced (Y/N):** Y

## GENERAL CHEMISTRY

**Analytical Method:** SM 5540C  
**Dilution:** 1  
**Units:** mg/l  
**Run Date:** 03/11/14 12:15PM  
**Analyst:** EGL  
**Instrument:** D1-MBAS  
**Workgroup:** 031114AMBS  
**File ID:** d1-mbas\_031114AMBS.csv  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Detergents, MBAS (Delaware)	N/A	ND	0.0200	0.0200

**Analytical Method:** SM 4500NH3-G  
**Dilution:** 1  
**Units:** mg/l  
**Run Date:** 03/12/14 05:25PM  
**Analyst:** ALW  
**Instrument:** Lachat Quickchem 800  
**Workgroup:** 031114ANH3  
**File ID:** 031114ANH3.csv  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Ammonia, as N (Delaware)	7664-41-7	ND	0.0990	0.200

## METALS

**Analytical Method:** EPA 200.7 Rev 4.4  
**Dilution:** 1  
**Units:** mg/l  
**Run Date:** 03/24/14 11:46AM  
**Analyst:** B B  
**Instrument:** Optima ICP 7300  
**Workgroup:** MA032414W1  
**File ID:** 3-24.txt  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Potassium	7440-09-7	3.42	0.100	0.500

**Sample Comments:**  
 MBAS is reported as LAS, molecular weight; 340.

\*=This limit was used in the evaluation of the final result.

**Sample Description:** 82836  
**Sample Number:** L4972877-4  
**Matrix:** WASTEWATER  
**Received Temp:** 1.6 C  
**Samp. Date/Time/Temp:** 03/10/14 10:20am NA C  
**Sampled by:** Customer  
**Iced (Y/N):** Y

## GENERAL CHEMISTRY

**Analytical Method:** SM 5540C  
**Dilution:** 400  
**Units:** mg/l  
**Run Date:** 03/11/14 12:15PM  
**Analyst:** EGL  
**Instrument:** D1-MBAS  
**Workgroup:** 031114AMBS  
**File ID:** d1-mbas\_031114AMBS.csv  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Detergents, MBAS (Delaware)	N/A	88.4	8.00	8.00

**Analytical Method:** SM 4500NH3-G  
**Dilution:** 1  
**Units:** mg/l  
**Run Date:** 03/12/14 05:30PM  
**Analyst:** ALW  
**Instrument:** Lachat Quickchem 800  
**Workgroup:** 031114ANH3  
**File ID:** 031114ANH3.csv  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Ammonia, as N (Delaware)	7664-41-7	0.419	0.0990	0.200

## METALS

**Analytical Method:** EPA 200.7 Rev 4.4  
**Dilution:** 1  
**Units:** mg/l  
**Run Date:** 03/24/14 11:54AM  
**Analyst:** B B  
**Instrument:** Optima ICP 7300  
**Workgroup:** MA032414W1  
**File ID:** 3-24.txt  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Potassium	7440-09-7	6.72	0.100	0.500

**Sample Comments:**  
 MBAS is reported as LAS, molecular weight; 340.

\*=This limit was used in the evaluation of the final result.

**Sample Description:** 2909  
**Sample Number:** L4972877-5  
**Matrix:** WASTEWATER  
**Received Temp:** 1.6 C  
**Samp. Date/Time/Temp:** 03/10/14 11:05am NA C  
**Sampled by:** Customer  
**Iced (Y/N):** Y

## GENERAL CHEMISTRY

**Analytical Method:** SM 5540C  
**Dilution:** 1  
**Units:** mg/l  
**Run Date:** 03/11/14 12:15PM  
**Analyst:** EGL  
**Instrument:** D1-MBAS  
**Workgroup:** 031114AMBS  
**File ID:** d1-mbas\_031114AMBS.csv  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Detergents, MBAS (Delaware)	N/A	ND	0.0200	0.0200

**Analytical Method:** SM 4500NH3-G  
**Dilution:** 1  
**Units:** mg/l  
**Run Date:** 03/12/14 05:27PM  
**Analyst:** ALW  
**Instrument:** Lachat Quickchem 800  
**Workgroup:** 031114ANH3  
**File ID:** 031114ANH3.csv  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Ammonia, as N (Delaware)	7664-41-7	0.445	0.0990	0.200

## METALS

**Analytical Method:** EPA 200.7 Rev 4.4  
**Dilution:** 1  
**Units:** mg/l  
**Run Date:** 03/24/14 11:56AM  
**Analyst:** B B  
**Instrument:** Optima ICP 7300  
**Workgroup:** MA032414W1  
**File ID:** 3-24.txt  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Potassium	7440-09-7	2.92	0.100	0.500

**Sample Comments:**  
 MBAS is reported as LAS, molecular weight; 340.

\*=This limit was used in the evaluation of the final result.

**Sample Description:** 105058  
**Sample Number:** L4972877-6  
**Matrix:** WASTEWATER  
**Received Temp:** 1.6 C  
**Samp. Date/Time/Temp:** 03/10/14 01:15pm NA C  
**Sampled by:** Customer  
**Iced (Y/N):** Y

## GENERAL CHEMISTRY

**Analytical Method:** SM 5540C  
**Dilution:** 1  
**Units:** mg/l  
**Run Date:** 03/11/14 12:15PM  
**Analyst:** EGL  
**Instrument:** D1-MBAS  
**Workgroup:** 031114AMBS  
**File ID:** d1-mbas\_031114AMBS.csv  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Detergents, MBAS (Delaware)	N/A	ND	0.0200	0.0200

**Analytical Method:** SM 4500NH3-G  
**Dilution:** 1  
**Units:** mg/l  
**Run Date:** 03/12/14 05:30PM  
**Analyst:** ALW  
**Instrument:** Lachat Quickchem 800  
**Workgroup:** 031114ANH3  
**File ID:** 031114ANH3.csv  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Ammonia, as N (Delaware)	7664-41-7	ND	0.0990	0.200

## METALS

**Analytical Method:** EPA 200.7 Rev 4.4  
**Dilution:** 1  
**Units:** mg/l  
**Run Date:** 03/24/14 11:57AM  
**Analyst:** B B  
**Instrument:** Optima ICP 7300  
**Workgroup:** MA032414W1  
**File ID:** 3-24.txt  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Potassium	7440-09-7	1.69	0.100	0.500

### Sample Comments:

MBAS is reported as LAS, molecular weight; 340.



\*=This limit was used in the evaluation of the final result.

## DEFINITIONS

**The following terms or abbreviations are used in this report:**

MPN	Most probable number	PL	Customer-specific limit
CFU	Colony forming unit	DF	Dilution Factor
POS	Positive	Q	Qualifier
NEG	Negative	NTU	Nephelometric turbidity units
PRES	Presumptive	RL	Laboratory reporting limit or Limit of Quantitation (LOQ)
MF	Membrane Filtration	MCL	EPA recommended "Maximum Contaminant Level"
TNTC	Too numerous to count	MDL	Method Detection Limit

ND	The concentration was not detected at or above RL / MDL.
J	Estimated value $\geq$ MDL but $<$ RL. Applies to organics and general chemistry results (see below for metals)
DRY	Indicates the result was calculated and reported on a dry weight basis.
TIC	Tentatively Identified Compounds (Library Search Compounds); concentrations are estimated values only.
ppm (mg/l)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples.
ppb (ug/L)	Parts per billion: equivalent to 1 microgram per kilogram (ug/Kg) for solids or one microgram per liter (ug/L) for aqueous samples.
<	Less than: In conjunction with a numerical value, indicates a concentration less than RL / MDL.
>	Greater than: In conjunction with a numerical value, indicates a concentration greater than RL / MDL.

**Data Qualifiers (EPA CLP Convention)**

<u>Organics</u>		<u>Metals</u>	
B	Analyte was detected in the method blank	B	Value is $\geq$ MDL and $<$ RL
E	Concentration exceeds calibration range	E	Estimated value due to presence of interference
U	Compound not detected above MDL/RL	M	Duplicate precision for an element outside control limit
N	Presumptive evidence of compound in library search	N	Spike recovery for an element outside control limits
P1	Column precision criteria not met, report lower value	U	Element not detected above MDL/RL
P2	Column precision criteria not met, report higher value	Other	Defined in case narrative or data package
Other	Defined in case narrative or data package		

**Warranties, Terms, and Conditions**

- Unless otherwise specified in the Parameter field, analyses (excluding "Field Parameters") were performed at the QCL Southampton Division (1205 Industrial Boulevard, Southampton, PA 18966). Food, pharmaceutical, and dairy testing were performed the QCL facility in Horsham (702 Electronics Drive, Horsham, PA 19044).
- The test results meet all requirements of TNI or other regulatory agencies, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- The reported results relate only to the sample as tested. QCL is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- QCL is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. QCL's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Customer Service for further information.
- The following personnel or their deputies have approved the results of the tests performed by QCL: Nicki Smith (Environmental & Food Chemistry), Amanda Lukaszewski (Pharmaceutical), Ryan Baker (Dairy), Renata Paskevicius (Food Micro), Sue Abbott (QCL Delaware).

**QCL Accreditations**

Southampton Division	EPA ID:	PA00018			
	NELAP IDs:	PA 09-00131; NJ PA166; NY 11223			
	State IDs:	CT PH-0768; DE PA-018; MD 206			
	FDA Reg #:	2515238			
Delaware Division	State IDs:	DE 00011; MD 138	Reading Division	State ID:	PA 06-03543
Wind Gap Division	State IDs:	PA 48-01334; NJ PA001	Vineland Division	State ID:	NJ 06005
East Rutherford Division	State ID:	NJ 02015			





# Main Street Odessa PID

82836 ★

## Legend

★ Potential Illegal Discharge

● Storm Drain

→ Pipes

▭ 410 Main Street



# **IDDE PROGRAM**

## **2015 ANNUAL REPORT**

### **APPENDIX B**

## **POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS WITH ONGOING ISSUES**

❖ 2015-137-DN 1921 Pulaski Highway

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**IDDE INVESTIGATION TRACKING FORM**

**Incident ID No.**

**2015-137-DN**

**Date:**

**10/08/15**

**Structure No.**

**92214**

**EVIDENCE OF ILLICIT DISCHARGE:**

YES

NO

TBD

**LOCATION:**

**County:** New Castle

**House No:** 1921

**Stream:** Belltown Run

**ADC:** 15B8

**Street:** Pulaski Highway

**Watershed:** Christina River

**Subdivision:** N/A

**City:** Bear

**Zip Code:** 19701

**SETTING:**

Storm Drain

Outfall

Other (specify): Parking Lot

In Stream

Along Bank

Stormwater Pond

Upland

**VISUAL:**

Flow

Soap

Cloudy

Staining

Floatables (toilet paper, etc)

Algae

Oil / Oil Sheen

Dead Fish

Precip w/in 72 hrs

Antifreeze

Yard Waste

Other (Specify):

**ODOR:**

None

Sulfide ("rotten egg")

Gas/Oil

Sewage

Other (specify): Sweet

**IDDE INVESTIGATION SUMMARY:**

**Referred By:** 1613 Targeted

**Issue:** Washwater flowing from car detailing property into DeDOT MS4.

**Determination:** TBD

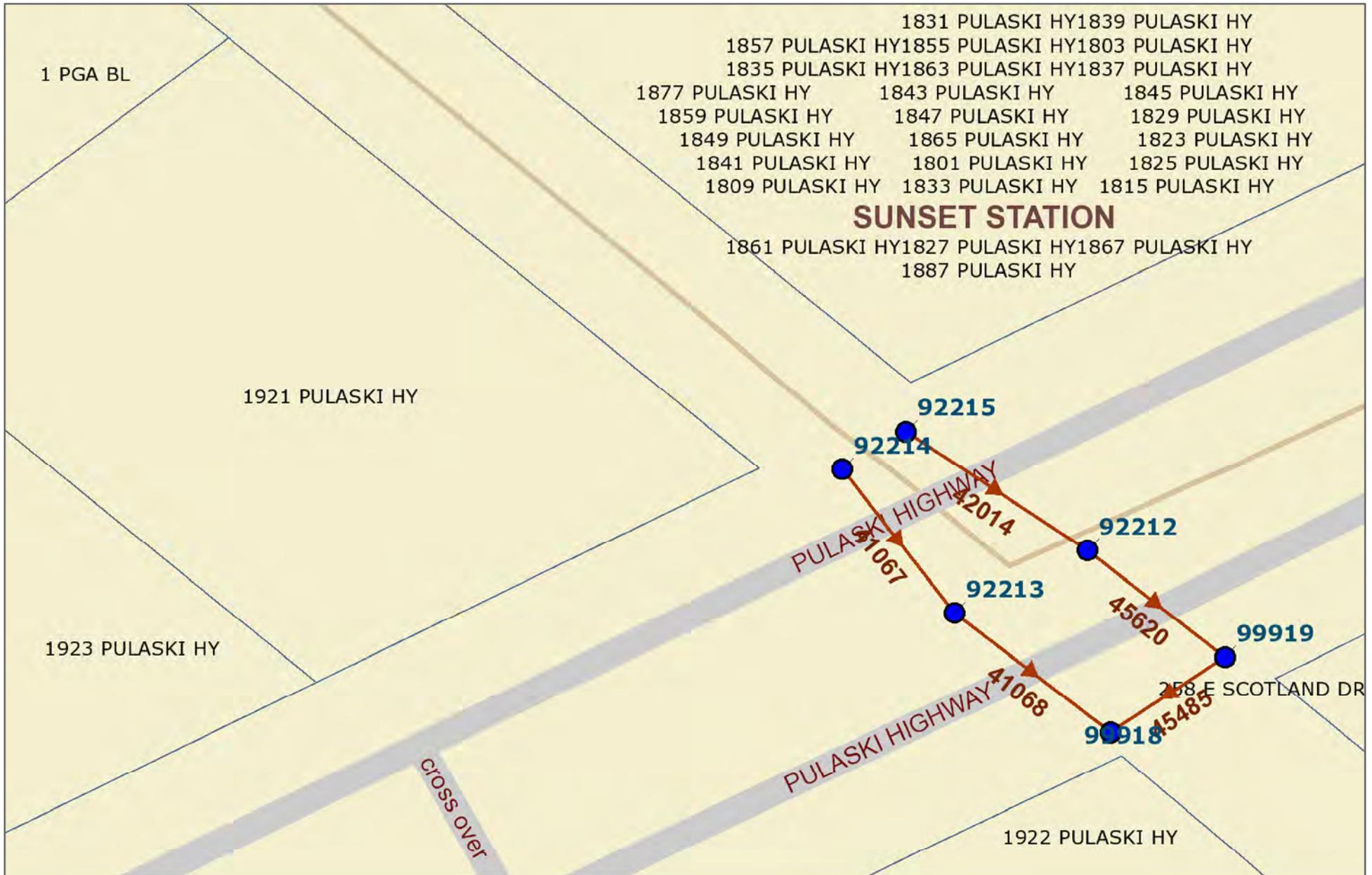


**DOCUMENTATION:**

- Location Map from NPDES Map Viewer
- Summary Memorandum with Photographs
- Field Data Sheet
- Laboratory Data
- Door Hanger
- Notice of Potential Illicit Discharge
- Other:



# 2015-137-DN 1921 Pulaski Highway



<b>Legend</b>							
INLET	RISER	SWALE END	DITCH	BMP			
MANHOLE	JUNCTION BOX	SWALE VERTEX	PIPE	WORK ORDER			
OUTFALL	CULVERT	DUMMY NODE	HYDRAULIC CONNECTION				

**NPDES  
Inventory Map**

14 Oct, 2015

0 25 50 100 Feet



## MEMORANDUM

**TO:** Mike Harris, NCCo  
Ellie Mortazavi, NCCo  
Brian Urbanek, DeIDOT  
Mark Harbeson, DeIDOT

**FROM:** Katherine Adami, KCI

**DATE:** October 8 – October 23, 2015

**SUBJECT:** Potential Illicit Discharge Investigation  
Incident ID No. 2015-137-DN  
Shorty's Detailing and Window Tinting / 1921 Pulaski Highway  
Christina River Watershed / New Castle County  
KCI Project 17141613N3 / 17151749A

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The purpose of this Memo is to summarize the KCI field investigation regarding a Potential Illicit Discharge (PID) at Shorty's Detailing in the Christina River Watershed in New Castle County.

### **October 8, 2015**

During DeIDOT targeted outfall screening, KCI screened contributing structure 92214. The field crew noted dry weather flow and traced the source to Shorty's Detailing and Window Tinting located at 1921 Pulaski Highway in Bear, DE.

- Water was flowing from the property into the gutter along Pulaski Highway and into the DeIDOT catch basin.
- The water smelled sweet and had evidence of cleaning solution/detergents (bubbles).
- Employees at the business were using tire shine and hosing off vehicles on the pavement with an outside hose.
- KCI field collected a sample and brought it to Eurofins QC Laboratory to be analyzed for ammonia, potassium, surfactants, and oil and grease.
- The system containing Structure 92214 does not have an outfall and the field crew was unable to determine the connectivity of the system.

### **October 20, 2015**

Eurofins QC lab results were returned:

- Surfactants = 64.9 mg/L
- Ammonia = ND
- Oil & Grease = 6.30 mg/L

- Potassium = 0.180 mg/L
- According to the flowchart, the discharge is a graywater/washwater source.

### **October 23, 2015**

NCCo sent a Notice of Violation Illicit Discharge (NOV) to Rt. 40 Bear Wash LLC, the property owner, for Shorty's Detailing and Window Tinting.

- Within 10 days of receipt of the notice, the property owner must do the following:
  - Stop immediately discharging/dumping industrial/other waste into the MS4 and surrounding area.
  - Investigate and determine the source of leakage.
  - Develop and submit to NCCo an outlined plan for cleaning and contractor information.
- The property owner should contact Ellie Mortazavi, NCCo, by Wednesday, November 4, 2015 to make arrangements to submit the plan.

**Incident ID No. 2015-137-DN**  
Shorty's Detailing and Window Tinting / 1921 Pulaski Highway  
Christina River Watershed / New Castle County



Structure 92214



Discharge Leaving Property onto Pulaski Highway

**Incident ID No. 2015-137-DN**  
Shorty's Detailing and Window Tinting / 1921 Pulaski Highway  
Christina River Watershed / New Castle County



Flow along Pulaski Highway



Flow into Structure 92214

**Incident ID No. 2015-137-DN**  
Shorty's Detailing and Window Tinting / 1921 Pulaski Highway  
Christina River Watershed / New Castle County



1921 Pulaski Highway Landscape



**DELDOT AGREEMENT 1749  
ILLCIT DISCHARGE DETECTION & ELIMINATION  
FIELD SHEET**



Structure Number: 92214  
 Incident ID # 2015-137-DN  
 County: New Castle  
 Subdivision: NIA  
 Address/Location 1921 Pulaski Highway

\*LAB

<b>Personnel</b>		JS/KA
<b>Date</b>		10/8/15
<b>Time</b>		2:50 PM
<b>Air Temperature (F)</b>		72
<b>Photograph</b>	Yes(Y), No(N)	Y
<b>Date Last Rain</b>		10/3/15
<b>Outfall Dimensions</b> (inches)		Catch
<b>Outfall Shape</b>	Round(R), Oval(O), Box(B), V-Ditch(VD), Trap Ditch(TD)	basin
<b>Outfall Type</b>	Corrugated Metal Pipe(CMP), Reinforced Concrete Pipe(RCP) Polyvinyl Chloride Pipe(PVC), Other(O-explain)	↓
<b>Flow Observed</b> Yes(Y), No(N)		Y
<b>Land Use</b> Industrial(I), Commercial(C), Residential(R), Other(O-explain)		C
<b>Structural Condition</b> Normal(N), Concrete Spauling(SP) Peeling Paint(PP), Concrete Cracking(CC) Outfall Damaged(OD), Submerged(S), Metal Corrosion(MC), Other(O-explain)		N
<b>Erosion (Outfall Area)</b> None(N), Moderate(M), Severe(S)		N
<b>Algae Growth</b> Yes(Y), No(N)		N
<b>Vegetative Condition (Outfall Area)</b> Normal(N), Inhibited Growth(IG) Excessive Growth(EG), Other(O-explain)		N
<b>Flow Rate (cfs)</b>		40.022 cfs
<b>Water Temperature (F)</b>		Not field tested
<b>pH (units)</b>		Not field tested
<b>Turbidity (ntu)</b>		Not field tested
<b>Surfactants (mg/L)</b>	<b>Field Tested:</b>	64.9
	<b>QC Lab Tested:</b>	-
	<b>Follow Up QC Lab Tested:</b>	-
<b>Ammonia (mg/L)</b>	<b>Field Tested:</b>	ND
	<b>QC Lab Tested:</b>	-
	<b>Follow Up QC Lab Tested:</b>	-
<b>Potassium (mg/L)</b>	<b>QC Lab Tested:</b>	4.04
	<b>Follow Up QC Lab Tested:</b>	-
<b>Other Oil + Grease</b> As applicable		6.30
<b>Odor</b> None(N), Rancid-Sour(RS), Gas(G), Sewage(S), Oil(O), Sulfur(S), Other(O-explain)		O-sweet
<b>Deposits/Stains</b> None(N), Sediment(S), Oil(OY), Other(O-explain)		N
<b>Color</b> Clear(C), Gray(G), Red(R), Yellow(Y), Brown(B), Green(GR), Other(O-explain)		C
<b>Floatables</b> None(N), Trash(T), Oil Sheen(OS), Sewage(S), Other(O-explain)		N
<b>DETERMINATION (FROM IDDE FLOWCHART)</b>		Likely Graywater/ Washwater source

Serialized: 10/20/2015 11:45am QC21

BRUCE THOMPSON  
KCI TECHNOLOGIES  
1352 MARROWS ROAD  
SUITE 100  
NEWARK, DE 19711

Regarding:

KCI TECHNOLOGIES  
1352 MARROWS ROAD, SUITE 100  
KCI SCREENING  
NEWARK, DE 19711

**PROJECT ID:**

**AL0120 KCI SCREENING**

**LABORATORY REPORT NUMBER:**

**L5855248**



Authorized by: Oommen V. Kappil, QA Director

**KCI TECHNOLOGIES, INC.**  
**AL0120 KCI SCREENING**  
**KCI OUTFALL SCREENING PROJECT**  
**P.O. No:**  
**Inv. No: 1743115 PI**  
**PWSID:**

BRUCE THOMPSON  
KCI TECHNOLOGIES  
1352 MARROWS ROAD, SUITE 100  
KCI SCREENING  
NEWARK, DE 19711

Regarding:  
BRUCE THOMPSON  
KCI TECHNOLOGIES  
1352 MARROWS ROAD, SUITE 100  
KCI SCREENING  
NEWARK, DE 19711

## SAMPLE SUMMARY

---

<b>Lab ID</b>	<b>Collected</b>	<b>Received</b>	<b>Matrix</b>	<b>Client ID</b>
L5855248-1	10/08/15 14:50	10/08/15 15:12	WASTEWATER	92214

**Sample Description:** 92214  
**Sample Number:** L5855248-1  
**Matrix:** WASTEWATER  
**Satellite Received Temp:** 12.3 C  
**Exceeds recommended temperature for chemical testing.**  
**Received Temp:** 3.3 C  
**Samp. Date/Time/Temp:** 10/08/15 02:50pm NA C  
**Sampled by:** Customer  
**Iced (Y/N):** Y  
**Iced (Y/N):** Y

## GENERAL CHEMISTRY

**Analytical Method:** SM 4500NH3-G  
**Dilution:** 1  
**Units:** mg/l  
**Run Date:** 10/15/15 11:58AM  
**Analyst:** ALW  
**Instrument:** Lachat Quickchem 800  
**Workgroup:** 101115ANH3  
**File ID:** 101115ANH3.csv  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Ammonia, as N (Delaware)	7664-41-7	ND	0.0772	0.200

**Analytical Method:** 1664B HEM  
**Dilution:** 1  
**Units:** mg/l  
**Run Date:** 10/15/15 05:18PM  
**Analyst:** JEM  
**Instrument:** x  
**Workgroup:** 101515HEM2  
**File ID:** hem\_1015\_2027.csv  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Hexane Ext. Material-HEM (oil+grease)	N/A	6.30	2.29	5.00

**Analytical Method:** SM5540C(MW340)  
**Dilution:** 100  
**Units:** mg/l  
**Run Date:** 10/08/15 10:00PM  
**Analyst:** SJW  
**Instrument:** Genysis 20  
**Workgroup:** 100815MBAS  
**File ID:**  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Surfactants, MBAS	N/A	64.9	2.13	5.00

## METALS

**Analytical Method:** EPA 200.7 Rev 4.4  
**Dilution:** 1  
**Units:** mg/l  
**Run Date:** 10/19/15 09:48AM  
**Analyst:** B B  
**Instrument:** Optima ICP 7300  
**Workgroup:** MA101915W1  
**File ID:** 10-19-15.txt  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Potassium	7440-09-7	4.04	0.180	0.500

### Sample Comments | Result Qualifiers:

Samples for chemical testing were received at the laboratory outside of the allowed temperature range of just above 0 to 6 degrees C. Because ice is present and the chilling process begun, the sample storage criteria is considered acceptable.



\*=This limit was used in the evaluation of the final result.

## DEFINITIONS

### Eurofins OC, Inc. (EOC)

### The following terms or abbreviations are used in this report:

MPN	Most probable number	PL	Customer-specific limit
CFU	Colony forming unit	DF	Dilution Factor (For Microbiology, DF = volume of sample tested)
POS	Positive / Present	QUAL	Qualifier
NEG	Negative / Absent	NTU	Nephelometric turbidity units
PRES	Presumptive	RL	Laboratory reporting limit or Limit of Quantitation (LOQ)
MF	Membrane Filtration	MCL	EPA recommended "Maximum Contaminant Level"
TNTC	Too numerous to count	MDL	Method Detection Limit

ND	The analyte was not detected at a concentration above the RL / MDL.
J	Estimated value $\geq$ MDL but $<$ RL. Applies to organics and general chemistry results (see below for metals)
Q	Indicates this analyte did not meet quality control requirements.
DRY	Indicates the result was calculated and reported on a dry weight basis.
TIC	Tentatively Identified Compounds (Library Search Compounds); concentrations are estimated values only.
ppm (mg/l)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples.
ppb (ug/L)	Parts per billion: equivalent to 1 microgram per kilogram (ug/Kg) for solids or one microgram per liter (ug/L) for aqueous samples.
<	Less than: In conjunction with a numerical value, indicates a concentration less than RL / MDL.
>	Greater than: In conjunction with a numerical value, indicates a concentration greater than RL / MDL.

### Data Qualifiers (EPA CLP Convention)

<u>Organics</u>		<u>Metals</u>	
B	Analyte was detected in the method blank	B	Value is $\geq$ MDL and $<$ RL
E	Concentration exceeds calibration range	E	Estimated value due to presence of interference
U	Compound not detected above MDL/RL	M	Duplicate precision for an element outside control limit
N	Presumptive evidence of compound in library search	N	Spike recovery for an element outside control limits
P1	Column precision criteria not met, report lower value	U	Element not detected above MDL/RL
P2	Column precision criteria not met, report higher value	Other	Defined in case narrative or data package
Other	Defined in case narrative or data package		

### Warranties, Terms, and Conditions

- Unless otherwise specified in the Parameter field, analyses (excluding "Field Parameters") were performed at the EQC Southampton facility (1205 Industrial Boulevard, Southampton, PA 18966). Food, pharmaceutical, and dairy testing were performed the EQC facility in Horsham (702 Electronic Drive, Horsham, PA 19044).
- The test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- The reported results relate only to the sample as tested. EQC is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- EQC is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. EQC's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Customer Service for further information.
- The following personnel or their deputies have approved the results of the tests performed by EQC: Nicki Smith (Environmental Chemistry), Amanda Berd (Pharmaceutical), Ryan Baker (Dairy), Ray Fratti (Food Chemistry), Sue Abbott (EQC Delaware).

### EOC Accreditations

Southampton	EPA ID:	PA00018			
	NELAP IDs:	PA 09-00131; NJ PA166; NY 11223			
	State IDs:	CT PH-0768; DE PA-018; MD 206			
	FDA Reg #:	2515238			
Delaware	State IDs:	DE 00011; MD 138	Reading	State ID:	PA 06-03543
Wind Gap	State IDs:	PA 48-01334; NJ PA001	Vineland	State ID:	NJ 06005
East Rutherford	State ID:	NJ 02015			





# **IDDE PROGRAM**

## **2015 ANNUAL REPORT**

### **APPENDIX B**

## **POTENTIAL ILLICIT DISCHARGE INVESTIGATIONS WITH ONGOING ISSUES**

❖ 2015-190-DN Bear Christiana Road

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**IDDE INVESTIGATION TRACKING FORM**

**Incident ID No.** 2015-190-DN  
**Structure No.** 320080407131737

**Date:** 12/22/15 – 01/14/16

**EVIDENCE OF ILLICIT DISCHARGE:**     YES     NO     TBD

**LOCATION:**

**County:** New Castle    **House No:** N/A    **Stream:** Christina River  
**ADC:** 15K1    **Street:** Bear Christiana Road    **Watershed:** Christina River  
**Subdivision:** N/A    **City:** Bear    **Zip Code:** 19701

**SETTING:**

Storm Drain     Outfall     Other (Specify):  
 In Stream     Along Bank  
 Stormwater Pond     Upland

**VISUAL:**

Flow     Soap     Cloudy  
 Staining     Floatables (toilet paper, etc)     Algae  
 Oil / Oil Sheen     Dead Fish     Precip w/in 72 hrs  
 Antifreeze     Yard Waste     Other (Specify):

**ODOR:**

None     Sulfide ("rotten egg")     Gas/Oil  
 Sewage     Other (Specify):

**IDDE INVESTIGATION SUMMARY:**

**Referred By:** Matthew Ortynsky, KCI  
**Issue:** Dry weather flow with evidence of potential illicit discharge  
**Field Investigation:** IDDE field crew observed soap suds and took a sample for field analysis. Field testing results: surfactants = 0.35 mg/L; ammonia = 0.40 mg/L. A second sample was collected for lab analysis due to the elevated surfactants level.  
**Determination:** TBD



**DOCUMENTATION:**

- Location Map from NPDES Map Viewer
- Summary Memorandum with Photographs
- Field Data Sheet
- Laboratory Data
- Door Hanger and Distribution Map
- Notice of Potential Illicit Discharge
- Other:



# 2015-190-DN Bear Christiana Road



## Legend

- |         |              |              |                      |            |
|---------|--------------|--------------|----------------------|------------|
| INLET   | RISER        | SWALE END    | DITCH                | BMP        |
| MANHOLE | JUNCTION BOX | SWALE VERTEX | PIPE                 | WORK ORDER |
| OUTFALL | CULVERT      | DUMMY NODE   | HYDRAULIC CONNECTION |            |



NPDES  
Inventory Map

7 Jan, 2016

0 65 130 260 Feet





## MEMORANDUM

**TO:** Mike Harris, New Castle County  
Ellie Mortazavi, New Castle County  
Brian Urbanek, DelDOT  
Mark Harbeson, DelDOT  
Carol Cain, DelDOT

**FROM:** Julie Scheu, KCI

**DATE:** December 22, 2015 – January 14, 2016

**SUBJECT:** Potential Illicit Discharge Investigation  
Incident ID No. 2015-190-DN  
Structure 320080407131737  
Bear Christiana Road / BMP 241  
Christina River Watershed / New Castle County  
DelDOT Agr 1749A / KCI Project 17151749A

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The purpose of this Memo is to summarize the KCI field investigation regarding a Potential Illicit Discharge (PID) at Structure 320080407131737 in New Castle County. Photos are attached on following pages.

### **December 22, 2015**

A KCI team member was performing DelDOT BMP inspections and observed a flowing outfall with evidence of a potential illicit discharge. A field crew visited the outfall to perform a field screening analysis.

- The outfall was flowing into BMP 241.
- The outfall is a private outfall, so the upstream system has not been inventoried.
- There were suds visible in the water pooling beneath the outfall.
- The water was clear and did not have any odor or discoloration.
- A sample was field tested for ammonia and detergents.
  - Ammonia = 0.40 mg/L
  - Detergents = 0.35 mg/L
- Based on an elevated detergents level, a sample should be collected and taken to the lab for ammonia, potassium, and detergents testing.
- KCI was unable to bring a sample to Eurofins QC Laboratories due to their holiday schedule.
- A field crew will return to the outfall when the lab resumes normal business hours.
- This outfall had previously been investigated for potential illicit discharge in 2009. A sample taken on January 18, 2010 tested within acceptable parameter levels but it was noted that

the outfall pipe had green staining and there was a large amount of dead fish in the pond near the outfall.

- A second sample was taken on March 2, 2010 which tested high for detergents (0.7 mg/L).

### **January 6, 2016**

KCI returned to structure 320080407131737 to collect a sample for lab analysis of surfactants, ammonia, and potassium.

### **January 14, 2015**

Eurofins QC lab results were returned:

- Surfactants = ND
- Ammonia = ND
- Potassium = 5.08 mg/L
- According to the flowchart, there is no evidence of illicit discharge. However, due to the history of high detergents, KCI plans to revisit this outfall in the future.

**Incident ID No. 2015-190-DN**  
Structure 320080407131737  
Bear Christiana Road / BMP 241  
Christina River Watershed / New Castle County



Outfall 320080407131737



Suds beneath Outfall

Potential Illicit Discharge Investigation  
Incident ID No. 2015-190-DN  
Christina River Watershed / New Castle County  
DelDOT Agr 1749A / KCI Project 17151749A  
December 22, 2015 – January 14, 2016  
Page 4

**Incident ID No. 2015-190-DN**  
Structure 320080407131737  
Bear Christiana Road / BMP 241  
Christina River Watershed / New Castle County



Landscape of BMP 241



**DELDOT AGREEMENT 1749  
ILLCIT DISCHARGE DETECTION & ELIMINATION  
FIELD SHEET**



Structure Number: 320080407131737  
 Incident ID #: 2015-190-DN  
 County: New Castle  
 Subdivision: N/A  
 Address/Location: Bear-Christiana Rd (BMP 241)

\* sent to lab  
1/6/16

<b>Personnel</b>		KA   DG
<b>Date</b>		12/22/15
<b>Time</b>		2:45 pm
<b>Air Temperature (F)</b>		
<b>Photograph</b> Yes(Y), No(N)		Y
<b>Date Last Rain</b>		12/17/15
<b>Outfall Dimensions</b> (inches)		42
<b>Outfall Shape</b> Round(R), Oval(O), Box(B), V-Ditch(VD), Trap Ditch(TD)		R
<b>Outfall Type</b> Corrugated Metal Pipe(CMP), Reinforced Concrete Pipe(RCP), Polyvinyl Chloride Pipe(PVC), Other(O-explain)		RCP
<b>Flow Observed</b> Yes(Y), No(N)		Y
<b>Land Use</b> Industrial(I), Commercial(C), Residential(R), Other(O-explain)		C
<b>Structural Condition</b> Normal(N), Concrete Spauling(SP), Peeling Paint(PP), Concrete Cracking(CC), Outfall Damaged(OD), Submerged(S), Metal Corrosion(MC), Other(O-explain)		N
<b>Erosion (Outfall Area)</b> None(N), Moderate(M), Severe(S)		N
<b>Algae Growth</b> Yes(Y), No(N)		Y
<b>Vegetative Condition (Outfall Area)</b> Normal(N), Inhibited Growth(IG), Excessive Growth(EG), Other(O-explain)		N
<b>Flow Rate (cfs)</b>		< 0.022 cfs
<b>Water Temperature (F)</b>		-
<b>pH (units)</b>		-
<b>Turbidity (ntu)</b>		-
<b>Surfactants (mg/L)</b>	<b>Field Tested:</b>	.35
	<b>Lab Tested:</b>	ND
	<b>Follow Up Lab Tested:</b>	
<b>Ammonia (mg/L)</b>	<b>Field Tested:</b>	.40
	<b>Lab Tested:</b>	ND
	<b>Follow Up Lab Tested:</b>	
<b>Potassium (mg/L)</b>	<b>Lab Tested:</b>	5.08
	<b>Follow Up Lab Tested:</b>	
<b>Other</b> As applicable		N/A
<b>Odor</b> None(N), Rancid-Sour(RS), Gas(G), Sewage(S), Oil(O), Sulfur(S), Other(O-explain)		N
<b>Deposits/Stains</b> None(N), Sediment(S), Oil(OY), Other(O-explain)		N
<b>Color</b> Clear(C), Gray(G), Red(R), Yellow(Y), Brown(B), Green(GR), Other(O-explain)		C
<b>Floatables</b> None(N), Trash(T), Oil Sheen(OS), Sewage(S), Other(O-explain)		N
<b>DETERMINATION (FROM IDDE FLOWCHART)</b>		Likely graywater/ washwater source

Serialized: 01/14/2016 02:41pm QC21

BRUCE THOMPSON  
KCI TECHNOLOGIES  
1352 MARROWS ROAD  
SUITE 100  
NEWARK, DE 19711

Regarding:

KCI TECHNOLOGIES  
1352 MARROWS ROAD, SUITE 100  
KCI SCREENING  
NEWARK, DE 19711

**PROJECT ID:**

**AL0120 KCI SCREENING**

**LABORATORY REPORT NUMBER:**

**L6007596**





Authorized by: Oommen V. Kappil, QA Director

**KCI TECHNOLOGIES, INC.  
AL0120 KCI SCREENING  
KCI OUTFALL SCREENING PROJECT  
P.O. No:  
Inv. No: 1760476 PI  
PWSID:**

BRUCE THOMPSON  
KCI TECHNOLOGIES  
1352 MARROWS ROAD, SUITE 100  
KCI SCREENING  
NEWARK, DE 19711

Regarding:  
BRUCE THOMPSON  
KCI TECHNOLOGIES  
1352 MARROWS ROAD, SUITE 100  
KCI SCREENING  
NEWARK, DE 19711

## SAMPLE SUMMARY

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<b>Lab ID</b>	<b>Collected</b>	<b>Received</b>	<b>Matrix</b>	<b>Client ID</b>
L6007596-1	01/06/16 13:36	01/06/16 14:45	WASTEWATER	10101763
L6007596-2	01/06/16 14:21	01/06/16 14:45	WASTEWATER	320080407131737

<b>Sample Description:</b>	10101763	<b>Samp. Date/Time/Temp:</b>	01/06/16 01:36pm NA C
<b>Sample Number:</b>	L6007596-1	<b>Sampled by:</b>	Customer
<b>Matrix:</b>	WASTEWATER	<b>Iced (Y/N):</b>	Y
<b>Satellite Received Temp:</b>	4.6 C	<b>Iced (Y/N):</b>	Y
<b>Received Temp:</b>	2.1 C		

## GENERAL CHEMISTRY

<b>Analytical Method:</b>	SM 5540C	<b>Run Date:</b>	01/07/16 11:50AM	<b>Workgroup:</b>	010716AMBS
<b>Dilution:</b>	1	<b>Analyst:</b>	SRC	<b>File ID:</b>	d1-mbas_010716AMBS.csv
<b>Units:</b>	mg/l	<b>Instrument:</b>	D1-MBAS	<b>Basis:</b>	

Parameter	CAS	Result	MDL*	RL
Surfactants, MBAS (Delaware)	N/A	0.0450	0.0200	0.0200

<b>Analytical Method:</b>	SM 4500NH3-G	<b>Run Date:</b>	01/07/16 01:41PM	<b>Workgroup:</b>	010516ANH3
<b>Dilution:</b>	1	<b>Analyst:</b>	ALW	<b>File ID:</b>	010516ANH3.csv
<b>Units:</b>	mg/l	<b>Instrument:</b>	Lachat Quickchem 800	<b>Basis:</b>	

Parameter	CAS	Result	MDL*	RL
Ammonia, as N (Delaware)	7664-41-7	0.122 J	0.0772	0.200

## METALS

<b>Analytical Method:</b>	EPA 200.7 Rev 4.4	<b>Run Date:</b>	01/14/16 09:30AM	<b>Workgroup:</b>	MA011416W1
<b>Dilution:</b>	1	<b>Analyst:</b>	B B	<b>File ID:</b>	1-14-16.txt
<b>Units:</b>	mg/l	<b>Instrument:</b>	Optima ICP 7300	<b>Basis:</b>	

Parameter	CAS	Result	MDL*	RL
Potassium	7440-09-7	4.07	0.0611	0.500

**Sample Comments | Result Qualifiers:**  
 MBAS is reported as LAS, molecular weight; 340.

\*=This limit was used in the evaluation of the final result.

**Sample Description:** 320080407131737  
**Sample Number:** L6007596-2  
**Matrix:** WASTEWATER  
**Satellite Received Temp:** 4.6 C  
**Received Temp:** 2.1 C  
**Samp. Date/Time/Temp:** 01/06/16 02:21pm NA C  
**Sampled by:** Customer  
**Iced (Y/N):** Y  
**Iced (Y/N):** Y

## GENERAL CHEMISTRY

**Analytical Method:** SM 5540C  
**Dilution:** 1  
**Units:** mg/l  
**Run Date:** 01/07/16 11:50AM  
**Analyst:** SRC  
**Instrument:** D1-MBAS  
**Workgroup:** 010716AMBS  
**File ID:** d1-mbas\_010716AMBS.csv  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Surfactants, MBAS (Delaware)	N/A	ND	0.0200	0.0200

**Analytical Method:** SM 4500NH3-G  
**Dilution:** 1  
**Units:** mg/l  
**Run Date:** 01/07/16 01:41PM  
**Analyst:** ALW  
**Instrument:** Lachat Quickchem 800  
**Workgroup:** 010516ANH3  
**File ID:** 010516ANH3.csv  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Ammonia, as N (Delaware)	7664-41-7	ND	0.0772	0.200

## METALS

**Analytical Method:** EPA 200.7 Rev 4.4  
**Dilution:** 1  
**Units:** mg/l  
**Run Date:** 01/14/16 09:33AM  
**Analyst:** B B  
**Instrument:** Optima ICP 7300  
**Workgroup:** MA011416W1  
**File ID:** 1-14-16.txt  
**Basis:**

Parameter	CAS	Result	MDL*	RL
Potassium	7440-09-7	5.08	0.0611	0.500

**Sample Comments | Result Qualifiers:**  
MBAS is reported as LAS, molecular weight; 340.



\*=This limit was used in the evaluation of the final result.

## DEFINITIONS

### **Eurofins OC, Inc. (EOC)**

### **The following terms or abbreviations are used in this report:**

MPN	Most probable number	PL	Customer-specific limit
CFU	Colony forming unit	DF	Dilution Factor (For Microbiology, DF = volume of sample tested)
POS	Positive / Present	QUAL	Qualifier
NEG	Negative / Absent	NTU	Nephelometric turbidity units
PRES	Presumptive	RL	Laboratory reporting limit or Limit of Quantitation (LOQ)
MF	Membrane Filtration	MCL	EPA recommended "Maximum Contaminant Level"
TNTC	Too numerous to count	MDL	Method Detection Limit

ND	The analyte was not detected at a concentration above the RL / MDL.
J	Estimated value $\geq$ MDL but $<$ RL. Applies to organics and general chemistry results (see below for metals)
Q	Indicates this analyte did not meet quality control requirements.
DRY	Indicates the result was calculated and reported on a dry weight basis.
TIC	Tentatively Identified Compounds (Library Search Compounds); concentrations are estimated values only.
ppm (mg/l)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples.
ppb (ug/L)	Parts per billion: equivalent to 1 microgram per kilogram (ug/Kg) for solids or one microgram per liter (ug/L) for aqueous samples.
<	Less than: In conjunction with a numerical value, indicates a concentration less than RL / MDL.
>	Greater than: In conjunction with a numerical value, indicates a concentration greater than RL / MDL.

### **Data Qualifiers (EPA CLP Convention)**

<u><b>Organics</b></u>		<u><b>Metals</b></u>	
B	Analyte was detected in the method blank	B	Value is $\geq$ MDL and $<$ RL
E	Concentration exceeds calibration range	E	Estimated value due to presence of interference
U	Compound not detected above MDL/RL	M	Duplicate precision for an element outside control limit
N	Presumptive evidence of compound in library search	N	Spike recovery for an element outside control limits
P1	Column precision criteria not met, report lower value	U	Element not detected above MDL/RL
P2	Column precision criteria not met, report higher value	Other	Defined in case narrative or data package
Other	Defined in case narrative or data package		

### **Warranties, Terms, and Conditions**

- Unless otherwise specified in the Parameter field, analyses (excluding "Field Parameters") were performed at the EQC Southampton facility (1205 Industrial Boulevard, Southampton, PA 18966). Food, pharmaceutical, and dairy testing were performed the EQC facility in Horsham (702 Electronic Drive, Horsham, PA 19044).
- The test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- The reported results relate only to the sample as tested. EQC is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- EQC is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. EQC's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Customer Service for further information.
- The following personnel or their deputies have approved the results of the tests performed by EQC: Nicki Smith (Environmental Chemistry), Amanda Berd (Pharmaceutical), Ryan Baker (Dairy), Ray Fratti (Food Chemistry), Sue Abbott (EQC Delaware).

### **EOC Accreditations**

Southampton	EPA ID:	PA00018			
	NELAP IDs:	PA 09-00131; NJ PA166; NY 11223			
	State IDs:	CT PH-0768; DE PA-018; MD 206			
	FDA Reg #:	2515238			
Delaware	State IDs:	DE 00011; MD 138	Reading	State ID:	PA 06-03543
Wind Gap	State IDs:	PA 48-01334; NJ PA001	Vineland	State ID:	NJ 06005
East Rutherford	State ID:	NJ 02015			





# **IDDE PROGRAM**

## **2015 ANNUAL REPORT**

### **APPENDIX C**

#### **2015 OUTFALLS WITH FLOW AND POTENTIAL ILLICIT DISCHARGES**

❖ **Incident ID No. 2015-1-D to 2015-190-DN Documentation Via CD**

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# **IDDE PROGRAM**

## **2015 ANNUAL REPORT**

### **APPENDIX D**

#### **2015 OUTFALLS WITH NO FLOW, STREAMS, AND CA/CL**

##### **❖ Field Screening Documentation Via CD**

# **IDDE PROGRAM**

## **2015 ANNUAL REPORT**

### **APPENDIX E**

## **302 STOPPIT CAMPAIGN SUMMARY TABLE**

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**302 STOPPIT HOTLINE  
DELDOT / NCC  
2015 FIELD INVESTIGATIONS**

Field Visit Date	Address/Location	Issue	Reported Through	DELDOT/NCC	Incident ID No.	Homeowner Contacted?	Investigation Results	Action Taken
07/07/15	17 Split Rail Lane, Newark DE	Yard Waste	Website	DeIDOT	NA	Anonymous tip	Leaves covering catch basin. Catch basin was inaccessible to KCI staff.	No action
07/07/15	Palmetto Drive before Cavellro Ct, New Castle DE	Yard Waste	Website	DeIDOT	2015-80-D	Yes; E-mail Sent	Structures 16723 and 16724 filled with trash; grass clippings on top of 16723	PID Door Hangers
NA	215 Rodman Street, Wilmington DE	Yard Waste	Website	--	--	--	Forwarded to COW	--
07/07/15	109 Landers Lane, New Castle DE	Yard Waste	Website	DeIDOT	NA	Anonymous tip	Pile of pine needles/dirt covering structure 19107; large amount water ponding at outfall 3711 (different system)	No action
07/09/15	406 King Rail Ct, Middletown DE	Yard Waste	Website	DeIDOT	NA	Anonymous tip	Some grass clippings on roadways and getting into structure 220080815103739	No action
NA	46 Ethan Allen Ct, Newark DE	Soap/Detergents drain to roadway	Website	--	--	--	Forwarded to City of Newark	--
07/07/15	Charles Dr & Springfield Blvd, New Castle DE	Clogged Catch Basins; Possible MS4 WO	Website	DeIDOT	NA	No	Structure 18356 has standing water.	Revisit
07/09/15	2 Tavernier Dr, New Castle DE	Yard Waste/Birds	Website	DeIDOT	NA	Anonymous tip	No evidence of excessive yard waste or dumping.	No action
07/09/15	211 Duncan Ave, Wilmington DE	Paint, Stains, Foam, Chemicals - Mold from improperly piped water	Website	DeIDOT	NA	Anonymous tip	Algae in gutters due to groundwater/sump pumps.	No action
07/09/15	14 Danville Ct, New Castle DE	Yard Waste	Website	NCC	NA	Yes; E-mail Sent	Grass clippings left on lawn, no evidence of dumping. NCC maintenance staff will ask contractor to direct grass clippings away from catch basin.	No action
07/09/15	810 Augustine St, Wilmington DE	Yard Waste	Website	DeIDOT/NCC	2015-82-DN	Yes; E-mail Sent	Piles of yard waste found in BMP near outfall structure.	PID Door Hangers
07/16/15	27 Ardmore Rd	Pet Waste	Website	DeIDOT	NA	Anonymous tip	No evidence of dumping or illicit discharge.	No action
NA	609 N. Franklin St, Wilmington DE	Oil	Website	--	--	--	Forwarded to COW	--
NA	609 N. Franklin St, Wilmington DE	Oil	Website	--	--	--	Forwarded to COW	--
07/16/15	15 Holly Drive, New Castle DE	Concrete	E-mail	DeIDOT	NA	Yes; E-mail Sent	No evidence of concrete dumping	No action
07/16/15	On Harrison Ave near corner of Smyrna Ave	Yard Waste	Website	DeIDOT	NA	Anonymous tip	No evidence of excessive yard waste or dumping. Small pile of yard waste beside a home on the corner.	No action
07/16/15	313 Forest Dr, Wilmington DE	Yard Waste	Text	DeIDOT	NA	Anonymous tip	Catch basin grate full of dirt. KCI cleaned off grate to prevent flooding. No evidence of dumping.	No action
07/16/15	Cooper Farm Subdivision	Trash/Sludge from Garbage Truck	Voicemail	DeIDOT	2015-91-N	Yes; Called	Forwarded to DSWA	--
07/20/15	1 Montpelier Blvd, New Castle DE	Yard Waste	Website	DeIDOT	2015-88-D	TBD	Large amounts of grass clippings covering structure 87171. KCI cleared basin of debris.	PID Door Hangers
NA	1280 Railcar Ave, Wilmington DE	Paint, Stains, Foam, Chemicals - Sewage overflow pumped into containers and into creek	Website	--	--	--	Forwarded to DNREC	--
07/20/15	Retention pond off Boulden Blvd behind Penske Trucking.	Oil on top of pond	Website	NCC	NA	Anonymous tip	KCI visited pond. Sheen on pond surface appeared to be a result of iron flocculation. Field crew did not see any signs of illicit discharge.	No action
NA	211 Maryland Ave, Wilmington DE	Trash in MS4	Website	--	--	--	Forwarded to COW	--
07/20/15	20 Ridgewood Circle, Wilmington DE	Yard Waste (Grass Clippings)	Website	DeIDOT	2015-92-D	TBD	KCI noticed large amounts of grass clippings in the street and gutters in front of 18 Ridgewood Circle.	PID Door Hangers
07/20/15	18 Ridgewood Circle, Wilmington DE	Yard Waste (Grass Clippings)	Website					
NA	615 West 38th St, Wilmington DE	Yard Waste/Trash/Neglected Rental Property	Text	--	--	--	Forwarded to COW	--
NA	101 Mallard Way, Middletown DE	Yard Waste	Website	--	--	--	Forwarded to City of Middletown	--

**302 STOPPIT HOTLINE  
DELDOT / NCC  
2015 FIELD INVESTIGATIONS**

Field Visit Date	Address/Location	Issue	Reported Through	DELDOT/NCC	Incident ID No.	Homeowner Contacted?	Investigation Results	Action Taken
07/22/15	Gender Drive, Breezewood Subdivision, Newark DE	Yard Waste	Website	NCC	NA	Anonymous tip	No evidence of excessive yard waste or dumping.	No action
07/22/15	Corner of Winston Ave and Matthes Place (Elmhurst)	Yard Waste	Voicemail	DeIDOT	2015-89-D	Tim	Yard waste and branches covering structure 15909. KCI removed branches and swept up yard waste.	PID Door Hangers
7/28/2015	46 Thorn Lane, New Castle DE	Motor Oil	Website	DeIDOT	NA	Anonymous tip	No evidence of motor oil in catch basin. No evidence of dumping on grate.	No action
7/28/2015	12 Edgebrooke Way, Newark DE	Yard Waste	Website	DeIDOT/NCC	NA	Anonymous tip	Not an MS4 issue. Yard waste pile on property. No nearby MS4.	No action
7/28/2015	109 East Van Buren Ave, New Castle DE (Wilmington Manor)	Yard Waste	Text	DeIDOT	NA	Anonymous tip	Small amount of grass clippings in roadway. Nearest catch basin did not show any signs of dumping or clogging from clippings.	No action
7/28/2015	11th St. and West Ave, New Castle DE (Holloway Terrace)	Yard Waste	Text	DeIDOT	NA	Anonymous tip	Structures 19582 and 19581 were covered in debris/dirt. KCI to clean off catch basin grates.	No action
7/28/2015	2508 Pin Oak Dr, Wilmington DE	Yard Waste	Text	DeIDOT	2015-93-D	Anonymous tip	No catch basin behind 2508 Pin Oak Drive. Field crew noticed large amounts of grass clippings dumped into concrete swale behind 2506 Pin Oak Dr.	PID Door Hangers
NA	11th St. and Jefferson	Food Waste	Text	--	--	--	Forwarded to COW	--
7/28/2015	Green Street in Claymont, DE	Yard Waste	Website	DeIDOT	NA	No; No issue	No evidence of excessive yard waste/grass clippings.	No action
7/28/2015	1 Delaware Ave, Claymont DE (Claymont Addition)	Yard Waste	Website	DeIDOT	NA	Anonymous tip	No evidence of yard waste dumping/excessive yard waste. Structure 31360 grate was covered by dirt. KCI to clean off basin.	No action
8/5/2015	Boxwood Rd & Augustine St, Augustine St & Walnut, Augustine and Dodson Ln towards Maryland Ave	Yard Waste	E-mail	DeIDOT	NA	Judy Dimichelle	No additional evidence of excessive yard waste in storm drains (same area/complaint as 2015-82-DN)	No action
8/5/2015	152 Olivine Circle, Stonefield Subdivision	Grass/Yard Waste in Street	Voicemail	DeIDOT	NA	Lonna Fry	No evidence of excessive yard waste/grass clippings.	No action
8/5/2015	76th St & Bunker Hill Ct, Newark DE	Yard Waste (plants growing out of drain)	Website	DeIDOT	NA	Louis Garcia	No evidence of illicit discharge; KCI to submit work order to clean out catch basin	Work Order
8/5/2015	Corner of 5 Fleming St, Newark, DE	Pet Waste (Years Ago)	Website	DeIDOT	NA	Anonymous tip	No evidence of pet waste in storm drains. There was, however, excessive yard waste/debris covering two catch basins which KCI cleaned off.	No action
8/5/2015	Collins Park, New Castle DE (South Pl by NCC Park)	Storm Drains Clogged w/Debris & Trash	Website	DeIDOT/NCC	NA	<a href="mailto:stwrtsr@yahoo.com">stwrtsr@yahoo.com</a>	No evidence of excessive trash/debris in storm drains or near park	No action
8/5/2015	Mansion Farm Dr, Bear DE	Cement truck dumping residue into storm drain	Website	DeIDOT	TBD	Anonymous tip	Evidence concrete dumping in curb leading to storm drain	No action
8/5/2015	16 Elizabeth Ct, Newark DE	Motor Oil in Gutter	Voicemail	DeIDOT	2015-97-D	Scott Kirlin	Motor oil had already been cleaned up (DNREC Emergency Response?); KCI distributed door hangers to surrounding houses	PID Door Hangers
8/14/2015	2505 Woodview Dr, Wilmington DE	Yard Waste - Grass Clippings	Voicemail	DeIDOT	NA	Shirley Riley	No evidence of grass clippings in street/catch basins	No action
8/14/2015	105 E Van Buren Ave, New Castle DE	Yard Waste - Grass Clippings	Text	DeIDOT	NA	Anonymous tip	No evidence of grass clippings in street/catch basins	No action
8/14/2015	Bear Corbitt Rd & Garwood Dr	Tree limbs in swale	Voicemail	NCC	NA	Anonymous tip	Large amount of cut tree limbs in swale in NCC owned Garwood Park. Revisited 9/1; branches removed, no evidence of illicit discharge.	No action

**302 STOPPIT HOTLINE  
DELDOT / NCC  
2015 FIELD INVESTIGATIONS**

Field Visit Date	Address/Location	Issue	Reported Through	DELDOT/NCC	Incident ID No.	Homeowner Contacted?	Investigation Results	Action Taken
8/18/2015	17 Bradley Drive, Brookstone, Wilm DE	Drain connection into street	Text	DeIDOT	2015-98-D	Anonymous tip	Sump pump connection draining into curb and then into storm drain. Field testing results for detergents and ammonia were 0.0 and 0.1 mg/L respectively. Green/brown staining on ground likely caused by algae and iron flocculent.	No action
8/17/2015	Willow Run at Montgomery Road and Spruce Avenue	White powder that runs into street. Chemicals stored on roadway.	Voicemail	NCC	NA	Anonymous tip	No evidence of illicit discharge	No action
8/18/2015	Pencader Plaza near pet store.	Cleaning liquid dumped into storm drain.	Voicemail	NCC	NA	Hilda	No evidence of wash water dumped into storm drain	Revisit
8/18/2015	Harmony Road	Grass getting into storm drain from NCC cutters	Voicemail	DeIDOT/NCC?	NA	Ed	Large amount of grass clippings on top of storm drains along Harmony Rd	No action
8/28/2015	8 Wyndom Circle	Oil in pavement	Voicemail	DeIDOT	NA	Kenneth Griese	No evidence of dumping or illicit discharge. - Not an MS4 issue, sent to County for Code Enforcement	No action
11/2/2015	325 Robinson Lane	Food waste/grease dumped into parking lot & MS4	Voicemail	NCC	2015-153-N	Mike Miller	Field crew did not see any evidence of illicit discharge. Mr. Miller contacted DNREC and condo association. Will contact KCI if issue occurs again.	PID - No action
11/12/2015	1 Douglas Drive, Bear DE	Leaking Vehicle parked on manhole	Text	DeIDOT	NA	Anonymous tip	No evidence of oil leaking/sheen; vehicle parked over sanitary sewer.	No action
11/12/2015	68 Bay Blvd, Newark DE	Yard Waste - Grass Clippings	Website	DeIDOT	NA	Scott Strycharz	No evidence of grass clippings in street/catch basins	No action
11/12/2015	2505 Woodview Dr, Wilmington DE	Yard Waste - Leaves	Website	DeIDOT	NA	Shirley Riley	No evidence of leaves in street/catch basins	No action
11/12/2015	506 Ruxton Drive, Wilmington, DE	Yard Waste - Leaves	Website	DeIDOT	2015-156-D	Anonymous tip	Evidence of leaves being blown into street.	PID Door hangers
12/28/2015	401 Kirkwood Highway, Elsmere, DE	Automotive liquid (possibly antifreeze)	Website	DeIDOT	2016-2-D	Randall Hedrick	No evidence of dumping into catch basins in front of auto repair shop; revisited 1/19/16 to check for signs of illicit discharge	Re-visit quarterly in 2016

**Appendix C. BMP Facility List.**

**DELDOT AGREEMENT 1728**  
**2015 BMP INSPECTION OVERVIEW**  
**STATEWIDE**

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
1	08/26/15	Middletown	dry pond	C			X	
2	08/26/15	Middletown	bioretention	C		X	X	
3	12/21/15	Bear	dry pond	C		X	X	
4	10/26/15	Expressways	bioretention	C			X	
5	2015	Cheswold	wet pond	A				
6	07/10/15	Kiamensi	wet pond	B	X			
7	06/21/12	Cheswold	wet pond	B	X			
8	12/02/09	Cheswold	wet pond	C			X	
9	10/20/15	Middletown	wet pond	B	X	X		
10	2015	Cheswold	dry pond	A				
11	11/25/15	Middletown	wet pond	B	X			
12	11/03/15	Middletown	wet pond	C			X	
13	11/03/15	Middletown	wet pond	B	X			
14	11/25/15	Middletown	wet pond	B	X			
15	10/31/15	Middletown	wet pond	C			X	
16	10/31/15	Middletown	wet pond	C		X	X	
17	2015	Cheswold	wet pond	A				
18	2015	Cheswold	wet pond	A				
19	11/25/15	Middletown	dry pond	C			X	
20	07/10/15	Kiamensi	dry pond	C			X	
21	07/02/15	Bear	wet pond	C			X	
22	08/21/15	Talley	dry pond	C			X	
23	08/21/15	Talley	dry pond	C		X	X	
24	08/21/15	Talley	dry pond	C			X	
25	08/21/15	Talley	dry pond	C			X	
26	05/04/15	Talley	biofiltration	B	X			
27	05/04/15	Talley	biofiltration	B	X			
28	07/10/15	Kiamensi	wet pond	B	X			
29	07/03/13	Cheswold	wet pond	C			X	
30	08/21/15	Talley	dry pond	C			X	
31	08/21/15	Talley	wet pond	B	X			
32	05/04/15	Talley	biofiltration	B	X			
33	08/21/15	Talley	dry pond	B	X			
34	05/04/15	Talley	biofiltration	B	X			
35	08/21/15	Talley	sed forebay	A				
36	12/28/15	Bear	biofiltration	C			X	
37	08/28/15	Bear	biofiltration	C			X	
38	08/28/15	Bear	dry pond	B	X	X		
39	09/18/15	Bear	wet pond	B	X			
40	09/18/15	Bear	wet pond	C			X	
41	08/28/15	Bear	wet pond	C			X	
42	08/28/15	Bear	wet pond	C			X	

**Bold = 2015 BMP Inspection**

Gray Shading = BMP Maintained in 2015

BMP 528: 1 in Talley/1 in Expressways

**DELDOT AGREEMENT 1728**  
**2015 BMP INSPECTION OVERVIEW**  
**STATEWIDE**

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
43	08/28/15	Bear	wet pond	C			X	
44	08/28/15	Bear	wet pond	B	X			
45	12/28/15	Bear	biofiltration	B	X			
46	10/26/15	Bear	sand filter	A				
47	10/30/13	Dagsboro	biofiltration	C			X	
48	06/12/15	Expressways	water treat sep	B	X			
49	08/14/15	Kiamensi	infil trench	B	X			
50	10/06/15	Middletown	biofiltration	A				
51	05/04/15	Talley	biofiltration	B	X			
52	10/12/15	Kiamensi	sand filter	A				
54	10/19/15	Kiamensi	sand filter	A				
55	10/12/15	Kiamensi	sand filter	A				
56	10/19/15	Kiamensi	sand filter	A				
57	10/12/15	Kiamensi	sand filter	A				
58	10/19/15	Kiamensi	sand filter	A				
59	10/12/15	Kiamensi	sand filter	A				
60	10/19/15	Kiamensi	sand filter	A				
61	10/12/15	Kiamensi	sand filter	A				
62	10/19/15	Kiamensi	sand filter	A				
63	10/12/15	Kiamensi	sand filter	A				
64	10/12/15	Kiamensi	sand filter	A				
65	10/19/15	Kiamensi	sand filter	A				
66	10/12/15	Kiamensi	sand filter	A				
67	10/19/15	Kiamensi	sand filter	A				
68	10/19/15	Kiamensi	sand filter	A				
69	10/12/15	Kiamensi	sand filter	A				
70	10/19/15	Kiamensi	sand filter	A				
71	10/19/15	Kiamensi	sand filter	A				
72	10/12/15	Kiamensi	sand filter	A				
73	10/19/15	Kiamensi	sand filter	A				
<b>74</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>C</b>			<b>X</b>	
75	08/14/15	Kiamensi	biofiltration	D				X
76	08/18/15	Kiamensi	wet pond	C			X	
77	2015	Cheswold	wet pond	A				
78	09/18/15	Expressways	wet pond	C			X	
79	08/14/15	Kiamensi	dry pond	B	X			
80	08/14/15	Kiamensi	biofiltration	C			X	
<b>81</b>	<b>11/18/15</b>	<b>Magnolia</b>	<b>wet pond</b>	<b>B</b>	<b>X</b>			
82	08/14/15	Kiamensi	dry pond	C		X	X	
83	09/16/10	Cheswold	wet pond	B	X			
84	09/28/15	Bear	dry pond	B	X			

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BMP 528: 1 in Talley/1 in Expressways

DELDOT AGREEMENT 1728  
**2015 BMP INSPECTION OVERVIEW**  
**STATEWIDE**

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
85	09/28/15	Bear	dry pond	C			X	
86	09/28/15	Bear	dry pond	C			X	
87	09/28/15	Bear	wet pond	B	X			
88	09/28/15	Bear	wet pond	C			X	
89	12/28/15	Bear	wet pond	B	X			
90	10/16/15	Middletown	wet pond	B	X			
91	12/28/15	Bear	wet pond	B	X			
92	10/31/15	Middletown	dry pond	C			X	
93	08/26/15	Middletown	biofiltration	A				
<b>94</b>	<b>11/17/15</b>	<b>Harrington</b>	<b>wet pond</b>	<b>A</b>				
95	10/20/15	Middletown	wet pond	C			X	
96	10/20/15	Middletown	wet pond	C		X	X	
97	10/20/15	Middletown	wet pond	B	X			
98	10/20/15	Middletown	wet pond	C			X	
99	10/20/15	Middletown	wet pond	B	X			
100	10/20/15	Middletown	wet pond	C			X	
101	10/20/15	Middletown	wet pond	C			X	
102	10/16/15	Middletown	dry pond	B	X			
<b>103</b>	<b>11/18/15</b>	<b>Ellendale</b>	<b>biofiltration</b>	<b>A</b>				
104	08/14/15	Kiamensi	biofiltration	C			X	
105	08/14/15	Kiamensi	wet pond	C			X	
106	06/07/12	Harrington	infil basin	B	X			
108	08/28/15	Bear	wet pond	B	X			
109	10/06/15	Middletown	biofiltration	A				
110	10/06/15	Middletown	biofiltration	A				
111	10/30/15	Middletown	wet pond	B	X			
<b>112</b>	<b>11/18/15</b>	<b>Magnolia</b>	<b>bioretention</b>	<b>A</b>				
113	12/31/14	Magnolia	bioretention	C			X	
114	12/31/14	Magnolia	bioretention	B	X			
115	12/31/14	Magnolia	bioretention	B	X			
118	10/30/15	Middletown	dry pond	C			X	
119	10/30/15	Middletown	infil trench	C			X	
120	10/23/15	Middletown	dry pond	C			X	
121	10/30/15	Middletown	dry pond	C			X	
122	10/30/15	Middletown	dry pond	C			X	
123	10/30/15	Middletown	dry pond	B	X			
124	10/30/15	Middletown	dry pond	C			X	
125	10/23/15	Middletown	dry pond	B	X			
126	06/05/14	Dagsboro	sed forebay	C			X	
127	10/23/15	Middletown	wet pond	B	X	X		
128	10/30/15	Middletown	wet pond	B	X			
129	10/30/15	Middletown	dry pond	B	X			

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BMP 528: 1 in Talley/1 in Expressways

DELDOT AGREEMENT 1728  
**2015 BMP INSPECTION OVERVIEW**  
**STATEWIDE**

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
130	10/20/15	Middletown	wet pond	B	X			
131	10/20/15	Middletown	wet pond	C			X	
132	11/03/15	Middletown	dry pond	C			X	
133	11/25/15	Middletown	dry pond	C			X	
134	11/03/15	Middletown	dry pond	C			X	
135	11/25/15	Middletown	dry pond	C			X	
136	10/30/15	Middletown	dry pond	C			X	
137	12/21/15	Bear	wet pond	B	X			
138	11/25/15	Middletown	dry pond	C			X	
139	12/21/15	Bear	wet pond	C			X	
140	11/25/15	Middletown	dry pond	C			X	
141	11/03/15	Middletown	wet pond	C			X	
142	08/18/15	Kiamensi	wet pond	C			X	
143	11/11/15	Kiamensi	wet pond	B	X			
145	05/29/12	Gravel Hill	dry pond	B	X			
146	05/29/12	Gravel Hill	dry pond	B	X			
147	09/28/15	Bear	biofiltration	B	X			
148	09/28/15	Bear	biofiltration	C			X	
149	09/28/15	Bear	biofiltration	A				
150	09/28/15	Bear	biofiltration	B	X			
151	09/28/15	Bear	biofiltration	B	X			
152	09/28/15	Bear	biofiltration	A				
153	09/28/15	Bear	biofiltration	A				
154	09/28/15	Bear	biofiltration	A				
155	09/28/15	Bear	biofiltration	A				
156	09/28/15	Bear	biofiltration	B	X			
157	09/28/15	Bear	biofiltration	B	X			
158	09/28/15	Bear	biofiltration	B	X			
160	10/26/15	Bear	biofiltration	A				
162	09/28/15	Bear	biofiltration	B	X			
163	09/28/15	Bear	biofiltration	B	X			
164	10/27/15	Expressways	biofiltration	B	X			
165	10/27/15	Expressways	biofiltration	B	X			
166	10/27/15	Expressways	dry pond	C			X	
167	12/02/09	Cheswold	wet pond	C			X	
<b>168</b>	<b>10/22/15</b>	<b>Gravel Hill</b>	<b>sand filter</b>	<b>A</b>				
169	12/22/15	Bear	wet pond	B	X			
170	12/22/15	Bear	wet pond	C			X	
171	12/21/15	Bear	wet pond	C			X	
<b>172</b>	<b>11/14/15</b>	<b>Gravel Hill</b>	<b>filter strip</b>	<b>A</b>				
173	12/21/15	Bear	wet pond	C			X	
174	06/06/12	Dagsboro	biofiltration	B	X			

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BMP 528: 1 in Talley/1 in Expressways

**DELDOT AGREEMENT 1728**  
**2015 BMP INSPECTION OVERVIEW**  
**STATEWIDE**

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
<b>176</b>	<b>10/22/15</b>	<b>Cheswold</b>	<b>sand filter</b>	<b>A</b>				
177	12/02/09	Cheswold	dry pond	C			X	
178	06/21/12	Magnolia	dry pond	B	X			
179	11/27/15	Bear	wet pond	B	X	X		
180	05/29/12	Seaford	wet pond	B	X			
181	10/06/15	Middletown	wet pond	A				
182	08/18/15	Kiamensi	wet pond	B	X			
183	08/18/15	Kiamensi	dry pond	C			X	
184	08/18/15	Kiamensi	biofiltration	D				X
185	10/30/15	Middletown	wet pond	C			X	
186	10/23/15	Middletown	wet pond	B	X			
187	10/23/15	Middletown	wet pond	C			X	
188	10/30/15	Middletown	dry pond	C			X	
189	10/23/15	Middletown	wet pond	C			X	
190	10/30/15	Middletown	dry pond	C			X	
191	10/23/15	Middletown	wet pond	C			X	
192	08/14/15	Kiamensi	bioretention	D				X
193	10/26/15	Bear	dry pond	B	X			
194	08/21/15	Talley	wet pond	C			X	
196	08/18/15	Bear	dry pond	C		X	X	
197	12/02/09	Cheswold	biofiltration	C			X	
198	07/10/15	Kiamensi	wet pond	B	X			
199	07/10/15	Kiamensi	wet pond	C			X	
200	10/04/12	Gravel Hill	wet pond	B	X			
201	10/04/12	Gravel Hill	wet pond	B	X			
202	12/28/15	Bear	wet pond	C			X	
203	12/03/09	Magnolia	wet pond	C			X	
204	2015	Magnolia	wet pond	A				
205	12/03/09	Magnolia	wet pond	C			X	
206	2015	Magnolia	wet pond	A				
207	12/03/09	Magnolia	wet pond	C			X	
208	2015	Magnolia	wet pond	A				
209	2015	Magnolia	wet pond	A				
210	12/03/09	Cheswold	wet pond	C			X	
211	2015	Cheswold	wet pond	A				
212	2015	Cheswold	wet pond	A				
213	10/30/13	Seaford	wet pond	C		X	X	
<b>216</b>	<b>08/26/15</b>	<b>Cheswold</b>	<b>biofiltration</b>	<b>C</b>			<b>X</b>	
217	08/14/15	Kiamensi	wet pond	C			X	
218	08/14/15	Kiamensi	wet pond	B	X			
219	12/28/15	Bear	wet pond	B	X			
221	10/31/15	Middletown	wet pond	C			X	

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BMP 528: 1 in Talley/1 in Expressways

DELDOT AGREEMENT 1728  
**2015 BMP INSPECTION OVERVIEW**  
**STATEWIDE**

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
222	12/22/15	Bear	wet pond	B	X			
223	07/10/15	Kiamensi	wet pond	B	X			
224	07/10/15	Kiamensi	wet pond	B	X			
225	07/10/15	Kiamensi	wet pond	B	X			
226	06/06/12	Dagsboro	wet pond	B	X			
<b>227</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>A</b>				
228	06/06/12	Dagsboro	biofiltration	B	X			
229	05/04/15	Talley	biofiltration	A				
230	05/04/15	Talley	dry pond	C			X	
232	05/04/15	Expressways	filter strip	A				
233	05/04/15	Expressways	sed forebay	B	X			
234	08/14/15	Kiamensi	wet pond	C			X	
236	06/07/12	Ellendale	wet pond	B	X			
237	09/16/15	Bear	biofiltration	B	X			
238	09/16/15	Bear	biofiltration	B	X			
239	10/26/15	Bear	wet pond	B	X			
240	12/22/15	Bear	wet pond	C			X	
241	12/22/15	Bear	wet pond	C			X	
242	12/28/15	Bear	wet pond	B	X			
<b>243</b>	<b>08/26/15</b>	<b>Cheswold</b>	<b>dry pond</b>	<b>A</b>				
244	09/16/15	Expressways	wet pond/wetland	B	X			
245	07/10/15	Kiamensi	bioretention	A				
246	06/21/12	Magnolia	wet pond	B	X			
247	09/17/10	Gravel Hill	wet pond	C			X	
248	05/29/12	Gravel Hill	bioretention	C			X	
250	12/12/13	Dagsboro	wet pond	C			X	
251	12/12/13	Dagsboro	dry pond	B		X		
253	06/12/15	Expressways	shallow marsh	B	X			
254	06/12/15	Expressways	shallow marsh	B	X			
<b>256</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>A</b>				
257	12/12/13	Dagsboro	biofiltration	B	X			
<b>258</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>C</b>			<b>X</b>	
<b>259</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>B</b>	<b>X</b>			
<b>260</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>C</b>			<b>X</b>	
<b>261</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>C</b>			<b>X</b>	
<b>262</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>A</b>				
<b>263</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>A</b>				
<b>264</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>A</b>				
<b>265</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>B</b>	<b>X</b>			
<b>273</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>A</b>				
<b>274</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>C</b>			<b>X</b>	

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BMP 528: 1 in Talley/1 in Expressways

DELDOT AGREEMENT 1728  
**2015 BMP INSPECTION OVERVIEW**  
**STATEWIDE**

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
275	12/12/13	Dagsboro	biofiltration	B	X			
<b>276</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>A</b>				
277	12/12/13	Dagsboro	biofiltration	C			X	
284	08/27/15	Middletown	wet pond	C			X	
291	08/27/15	Middletown	bioretention	C			X	
<b>295</b>	<b>05/01/15</b>	<b>Gravel Hill</b>	<b>sed forebay</b>	<b>C</b>			<b>X</b>	
296	06/06/12	Gravel Hill	sed forebay	B	X			
297	07/10/15	Kiamensi	dry pond	A				
298	07/10/15	Kiamensi	wet pond/wetland	A				
299	07/10/15	Kiamensi	bioretention	A				
<b>300</b>	<b>11/17/15</b>	<b>Harrington</b>	<b>biofiltration</b>	<b>A</b>				
<b>301</b>	<b>11/17/15</b>	<b>Harrington</b>	<b>biofiltration</b>	<b>A</b>				
<b>302</b>	<b>11/17/15</b>	<b>Harrington</b>	<b>biofiltration</b>	<b>A</b>				
<b>303</b>	<b>11/17/15</b>	<b>Harrington</b>	<b>biofiltration</b>	<b>A</b>				
304	06/24/14	Harrington	biofiltration	C			X	
305	10/29/15	Seaford	biofiltration	A				
306	10/29/15	Seaford	biofiltration	A				
307	06/11/14	Seaford	wet pond	C			X	
<b>308</b>	<b>11/17/15</b>	<b>Seaford</b>	<b>biofiltration</b>	<b>B</b>	<b>X</b>			
309	06/11/14	Seaford	biofiltration	D				X
<b>310</b>	<b>11/17/15</b>	<b>Seaford</b>	<b>biofiltration</b>	<b>A</b>				
311	08/26/15	Middletown	biofiltration	A				
<b>312</b>	<b>02/26/15</b>	<b>Cheswold</b>	<b>biofiltration</b>	<b>B</b>	<b>X</b>			
313	08/21/15	Talley	sed forebay	A				
314	08/21/15	Talley	sed forebay	C			X	
315	11/24/15	Bear	wet pond	C		X	X	
316	11/24/15	Bear	bioretention	C		X	X	
318	12/28/15	Expressways	wet pond	C		X	X	
319	10/16/15	Middletown	infil trench	A				
320	06/05/14	Gravel Hill	filter strip	C			X	
321	06/24/14	Harrington	biofiltration	C			X	
<b>322</b>	<b>11/17/15</b>	<b>Harrington</b>	<b>biofiltration</b>	<b>A</b>				
<b>323</b>	<b>11/17/15</b>	<b>Harrington</b>	<b>biofiltration</b>	<b>B</b>	<b>X</b>			
324	06/24/14	Harrington	biofiltration	C			X	
<b>325</b>	<b>11/17/15</b>	<b>Harrington</b>	<b>biofiltration</b>	<b>A</b>				
<b>327</b>	<b>11/17/15</b>	<b>Harrington</b>	<b>biofiltration</b>	<b>A</b>				
328	09/15/10	Cheswold	biofiltration	C			X	
<b>329</b>	<b>07/01/15</b>	<b>Cheswold</b>	<b>dry pond</b>	<b>C</b>			<b>X</b>	
335	10/06/15	Middletown	biofiltration	B	X			
337	10/06/15	Middletown	biofiltration	A				
339	10/06/15	Middletown	biofiltration	A				

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BMP 528: 1 in Talley/1 in Expressways

**DELDOT AGREEMENT 1728**  
**2015 BMP INSPECTION OVERVIEW**  
**STATEWIDE**

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
340	10/06/15	Middletown	infil trench	B	X			
341	10/06/15	Middletown	wet pond	A				
342	10/06/15	Middletown	biofiltration	C			X	
343	10/06/15	Middletown	infil trench	A				
344	10/16/15	Middletown	biofiltration	B	X			
345	10/16/15	Middletown	infil trench	A				
346	10/16/15	Middletown	biofiltration	B	X			
347	10/16/15	Middletown	biofiltration	B	X			
348	10/16/15	Middletown	infil trench	A				
349	10/16/15	Middletown	biofiltration	B	X			
350	10/16/15	Middletown	infil trench	B	X			
351	10/16/15	Middletown	biofiltration	A				
352	10/16/15	Middletown	biofiltration	A				
353	10/16/15	Middletown	infil trench	B	X			
354	05/04/15	Expressways	check dam	A				
355	05/04/15	Expressways	check dam	A				
357	05/04/15	Expressways	check dam	A				
358	05/04/15	Expressways	check dam	A				
359	05/04/15	Expressways	check dam	A				
360	05/04/15	Expressways	check dam	A				
364	10/20/15	Talley	sand filter	A				
365	10/20/15	Talley	sand filter	A				
366	10/20/15	Talley	sand filter	A				
367	10/20/15	Talley	sand filter	A				
368	10/20/15	Talley	sand filter	A				
369	10/20/15	Talley	sand filter	A				
370	10/20/15	Talley	sand filter	A				
371	10/20/15	Talley	sand filter	A				
372	10/20/15	Talley	sand filter	A				
373	10/20/15	Talley	sand filter	A				
374	10/20/15	Talley	sand filter	A				
375	10/20/15	Talley	sand filter	A				
376	10/20/15	Talley	sand filter	A				
377	10/20/15	Talley	sand filter	A				
378	10/20/15	Talley	sand filter	A				
379	10/21/15	Talley	sand filter	C			X	
380	10/21/15	Talley	sand filter	A				
381	10/21/15	Talley	sand filter	A				
382	10/21/15	Talley	sand filter	A				
383	10/21/15	Talley	sand filter	A				
384	10/21/15	Talley	sand filter	A				
385	10/21/15	Talley	sand filter	A				

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ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
386	10/21/15	Talley	sand filter	C			X	
387	10/21/15	Talley	sand filter	A				
388	10/21/15	Talley	sand filter	A				
389	10/21/15	Talley	sand filter	A				
390	10/21/15	Talley	sand filter	A				
391	10/21/15	Talley	sand filter	A				
392	10/21/15	Talley	sand filter	A				
393	10/21/15	Talley	sand filter	A				
394	10/26/15	Talley	sand filter	A				
395	10/26/15	Talley	sand filter	A				
396	10/26/15	Talley	sand filter	A				
397	10/26/15	Talley	sand filter	A				
398	11/25/15	Middletown	dry pond	B	X			
399	11/25/15	Middletown	dry pond	C			X	
400	11/25/15	Middletown	dry pond	B	X			
<b>401</b>	<b>07/01/15</b>	<b>Cheswold</b>	<b>filter strip</b>	<b>B</b>	<b>X</b>			
402	09/16/10	Cheswold	biofiltration	C			X	
403	09/16/10	Cheswold	biofiltration	C			X	
404	12/02/09	Cheswold	biofiltration	C			X	
<b>405</b>	<b>11/17/15</b>	<b>Seaford</b>	<b>biofiltration</b>	<b>A</b>				
<b>406</b>	<b>11/17/15</b>	<b>Seaford</b>	<b>biofiltration</b>	<b>A</b>				
407	10/29/15	Seaford	biofiltration	A				
408	10/29/15	Seaford	biofiltration	A				
409	10/29/15	Seaford	biofiltration	A				
410	10/29/15	Seaford	biofiltration	A				
<b>411</b>	<b>11/17/15</b>	<b>Seaford</b>	<b>biofiltration</b>	<b>A</b>				
<b>412</b>	<b>11/17/15</b>	<b>Seaford</b>	<b>biofiltration</b>	<b>A</b>				
<b>413</b>	<b>11/17/15</b>	<b>Seaford</b>	<b>biofiltration</b>	<b>A</b>				
414	06/11/14	Seaford	biofiltration	C			X	
415	06/11/14	Seaford	biofiltration	C			X	
420	06/12/15	Expressways	filter strip	A				
421	10/26/15	Talley	sand filter	A				
422	10/26/15	Talley	sand filter	A				
423	10/26/15	Talley	sand filter	A				
424	10/26/15	Talley	sand filter	A				
425	10/26/15	Talley	sand filter	A				
426	10/26/15	Talley	sand filter	A				
427	10/26/15	Talley	sand filter	C			X	
428	10/26/15	Talley	sand filter	C			X	
429	10/26/15	Talley	sand filter	A				
430	10/26/15	Talley	sand filter	A				
431	10/21/15	Middletown	dry pond	C			X	

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ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
432	08/26/15	Middletown	biofiltration	C		X	X	
433	11/11/15	Talley	bioretention	C			X	
434	11/11/15	Talley	wet pond	B	X			
435	11/11/15	Talley	bioretention	C			X	
436	11/11/15	Talley	wet pond	C			X	
437	11/11/15	Talley	bioretention	B			X	
438	11/11/15	Talley	wet pond	B	X			
439	12/03/09	Magnolia	wet pond	C			X	
<b>454</b>	<b>11/18/15</b>	<b>Harrington</b>	<b>biofiltration</b>	<b>A</b>				
464	10/16/15	Middletown	bioretention	A				
465	10/27/15	Expressways	bioretention	A				
466	10/27/15	Expressways	bioretention	C			X	
467	09/17/15	Expressways	underground stor/infil	C			X	
468	10/27/15	Expressways	bioretention	B	X			
469	10/27/15	Expressways	bioretention	C			X	
470	10/27/15	Expressways	bioretention	C	X			
471	10/27/15	Expressways	bioretention	B	X			
472	10/27/15	Expressways	bioretention	B	X			
473	10/27/15	Expressways	bioretention	B	X			
474	09/17/15	Expressways	underground stor/infil	A				
475	10/27/15	Expressways	bioretention	C			X	
476	10/27/15	Expressways	bioretention	B	X			
477	10/27/15	Expressways	bioretention	B	X			
478	10/26/15	Expressways	bioretention	A				
479	09/17/15	Expressways	underground stor/infil	A				
480	10/16/15	Middletown	biofiltration	A				
481	10/16/15	Middletown	biofiltration	A				
482	10/16/15	Middletown	biofiltration	B	X			
483	10/16/15	Middletown	biofiltration	C			X	
484	10/16/15	Middletown	biofiltration	A				
485	10/16/15	Middletown	biofiltration	A				
<b>487</b>	<b>08/26/15</b>	<b>Cheswold</b>	<b>filter strip</b>	<b>B</b>	<b>X</b>			
488	06/21/12	Cheswold	dry pond	B	X			
489	06/07/12	Ellendale	biofiltration	B	X			
490	06/05/14	Ellendale	biofiltration	B	X			
491	06/05/14	Ellendale	biofiltration	B	X			
<b>492</b>	<b>11/18/15</b>	<b>Ellendale</b>	<b>biofiltration</b>	<b>A</b>				
<b>493</b>	<b>11/18/15</b>	<b>Ellendale</b>	<b>biofiltration</b>	<b>A</b>				
<b>494</b>	<b>11/18/15</b>	<b>Ellendale</b>	<b>biofiltration</b>	<b>B</b>	<b>X</b>			

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ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
495	06/05/14	Ellendale	biofiltration	C			X	
<b>496</b>	<b>11/18/15</b>	<b>Ellendale</b>	<b>biofiltration</b>	<b>A</b>				
<b>497</b>	<b>11/18/15</b>	<b>Ellendale</b>	<b>biofiltration</b>	<b>A</b>				
<b>498</b>	<b>11/18/15</b>	<b>Ellendale</b>	<b>biofiltration</b>	<b>A</b>				
<b>499</b>	<b>11/18/15</b>	<b>Ellendale</b>	<b>biofiltration</b>	<b>A</b>				
<b>500</b>	<b>11/18/15</b>	<b>Ellendale</b>	<b>biofiltration</b>	<b>A</b>				
501	06/05/14	Ellendale	biofiltration	C			X	
<b>502</b>	<b>11/18/15</b>	<b>Ellendale</b>	<b>biofiltration</b>	<b>A</b>				
503	06/05/14	Ellendale	biofiltration	B	X			
<b>504</b>	<b>11/18/15</b>	<b>Ellendale</b>	<b>biofiltration</b>	<b>A</b>				
505	06/05/14	Ellendale	biofiltration	C			X	
<b>506</b>	<b>11/18/15</b>	<b>Ellendale</b>	<b>biofiltration</b>	<b>A</b>				
<b>507</b>	<b>11/18/15</b>	<b>Ellendale</b>	<b>biofiltration</b>	<b>A</b>				
<b>508</b>	<b>11/18/15</b>	<b>Ellendale</b>	<b>biofiltration</b>	<b>A</b>				
<b>509</b>	<b>11/18/15</b>	<b>Ellendale</b>	<b>biofiltration</b>	<b>A</b>				
510	06/05/14	Ellendale	biofiltration	B	X			
<b>511</b>	<b>11/18/15</b>	<b>Ellendale</b>	<b>biofiltration</b>	<b>A</b>				
<b>512</b>	<b>11/18/15</b>	<b>Magnolia</b>	<b>biofiltration</b>	<b>B</b>	<b>X</b>			
<b>513</b>	<b>11/18/15</b>	<b>Magnolia</b>	<b>biofiltration</b>	<b>B</b>	<b>X</b>			
<b>514</b>	<b>11/18/15</b>	<b>Magnolia</b>	<b>biofiltration</b>	<b>A</b>				
<b>515</b>	<b>11/18/15</b>	<b>Magnolia</b>	<b>biofiltration</b>	<b>B</b>	<b>X</b>			
519	10/31/15	Middletown	wet pond	C			X	
520	10/31/15	Middletown	wet pond	C			X	
<b>521</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>A</b>				
<b>522</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>B</b>	<b>X</b>			
523	08/18/15	Bear	biofiltration	A				
524	12/28/15	Expressways	wet pond	C			X	
525	10/27/15	Expressways	wet pond	B	X			
526	08/18/15	Kiamensi	dry pond	A				
527	12/27/12	Gravel Hill	bioretention	B	X			
<b>528</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>A</b>				
528	06/12/15	Expressways	wet pond	C			X	
<b>529</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>A</b>				
530	12/12/13	Dagsboro	biofiltration	C			X	
531	12/12/13	Dagsboro	biofiltration	C			X	
<b>533</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>A</b>				
<b>534</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>C</b>			<b>X</b>	
<b>535</b>	<b>05/01/15</b>	<b>Ellendale</b>	<b>infil basin</b>	<b>B</b>	<b>X</b>			
<b>536</b>	<b>05/01/15</b>	<b>Ellendale</b>	<b>infil basin</b>	<b>A</b>				
<b>537</b>	<b>05/01/15</b>	<b>Ellendale</b>	<b>infil basin</b>	<b>B</b>	<b>X</b>			
538	10/26/15	Kiamensi	sand filter	A				
<b>555</b>	<b>11/14/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>A</b>				

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**STATEWIDE**

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556	11/14/15	Dagsboro	biofiltration	A				
557	11/14/15	Dagsboro	biofiltration	A				
558	11/14/15	Dagsboro	biofiltration	A				
559	11/14/15	Dagsboro	biofiltration	A				
560	11/14/15	Dagsboro	biofiltration	B	X			
585	05/04/15	Expressways	biofiltration	C			X	
586	12/09/15	Cheswold	sediment forebay	B	X			
587	04/24/15	Cheswold	bioretention	A				
588	04/24/15	Cheswold	dry pond	A				
589	04/24/15	Cheswold	bioretention	C			X	
590	04/24/15	Cheswold	diverter box	A				
825	10/31/15	Middletown	biofiltration	C			X	
826	10/31/15	Middletown	biofiltration	C			X	
827	04/24/15	Magnolia	filter strip	A				
832	05/01/15	Harrington	biofiltration	A				
833	05/01/15	Harrington	biofiltration	A				
834	10/16/15	Middletown	filter strip	C			X	
835	11/14/15	Gravel Hill	filter strip	A				
836	11/14/15	Gravel Hill	filter strip	A				
837	10/04/12	Gravel Hill	filter strip	C			X	
838	10/04/12	Gravel Hill	filter strip	B	X			
839	11/14/15	Gravel Hill	filter strip	A				
840	11/14/15	Gravel Hill	filter strip	A				
841	11/14/15	Gravel Hill	filter strip	A				
842	11/14/15	Gravel Hill	filter strip	A				
843	11/14/15	Gravel Hill	filter strip	A				
844	11/14/15	Gravel Hill	filter strip	A				
845	11/14/15	Gravel Hill	filter strip	A				
846	11/14/15	Gravel Hill	filter strip	A				
847	11/14/15	Gravel Hill	filter strip	A				
848	09/23/15	Talley	wet pond	C			X	
849	09/23/15	Talley	wet pond	C			X	
850	09/23/15	Talley	wet pond	B	X	X		
851	06/12/15	Talley	dry pond	B	X			
852	06/12/15	Talley	dry pond	B	X			
853	06/12/15	Talley	wet pond	B	X	X		
854	11/11/15	Talley	dry pond	A				
855	11/11/15	Talley	wet pond	C			X	
856	06/12/15	Expressways	wet pond	C			X	
857	11/17/15	Seaford	biofiltration	B	X			
858	09/27/12	Seaford	biofiltration	B	X			
859	09/27/13	Seaford	biofiltration	B	X			

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860	06/11/14	Seaford	biofiltration	C			X	
861	09/27/13	Seaford	biofiltration	B	X			
862	06/11/14	Seaford	biofiltration	C			X	
1012	08/27/15	Middletown	biofiltration	A				
1013	08/27/15	Middletown	biofiltration	C			X	
1014	08/27/15	Middletown	biofiltration	C			X	
1015	08/27/15	Middletown	biofiltration	A				
1016	08/27/15	Middletown	biofiltration	A				
1017	08/27/15	Middletown	biofiltration	A				
1018	08/27/15	Middletown	biofiltration	A				
1019	08/27/15	Middletown	biofiltration	A				
1020	08/27/15	Middletown	biofiltration	A				
1021	08/27/15	Middletown	biofiltration	A				
1022	08/27/15	Middletown	biofiltration	A				
1023	08/27/15	Middletown	biofiltration	A				
1024	08/27/15	Middletown	biofiltration	A				
1025	08/27/15	Middletown	filter strip	A				
1026	08/27/15	Middletown	filter strip	A				
1027	08/27/15	Middletown	biofiltration	A				
1028	08/27/15	Middletown	filter strip	A				
1029	08/27/15	Middletown	biofiltration	A				
1030	08/27/15	Middletown	biofiltration	A				
1031	08/27/15	Middletown	biofiltration	A				
1032	08/27/15	Middletown	biofiltration	B	X			
1033	08/27/15	Middletown	biofiltration	A				
1034	08/27/15	Middletown	biofiltration	B	X			
1036	08/27/15	Middletown	biofiltration	A				
1037	08/27/15	Middletown	biofiltration	A				
1038	08/27/15	Middletown	biofiltration	A				
1039	08/27/15	Middletown	biofiltration	A				
1040	08/27/15	Middletown	biofiltration	A				
1041	08/27/15	Middletown	biofiltration	A				
1042	08/27/15	Middletown	biofiltration	A				
1043	08/27/15	Middletown	biofiltration	A				
1044	08/27/15	Middletown	biofiltration	A				
1045	08/27/15	Middletown	biofiltration	A				
1046	08/27/15	Middletown	biofiltration	B	X			
1047	08/27/15	Middletown	biofiltration	A				
1048	08/27/15	Middletown	biofiltration	B	X			
<b>1049</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>A</b>				
<b>1050</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>A</b>				
<b>1051</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>B</b>	<b>X</b>			

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**2015 BMP INSPECTION OVERVIEW**  
**STATEWIDE**

ID	Date Inspected	Area	Type	Rating	MWO	Invasive Spray List	Contracted Work	Retrofit
<b>1052</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>A</b>				
<b>1053</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>A</b>				
<b>1054</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>A</b>				
<b>1055</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>A</b>				
<b>1056</b>	<b>12/05/15</b>	<b>Dagsboro</b>	<b>biofiltration</b>	<b>A</b>				
2002	09/17/15	Expressways	underground	A				
2003	09/17/15	Expressways	underground	A				

**Bold = 2015 BMP Inspection**

Gray Shading = BMP Maintained in 2015

BMP 528: 1 in Talley/1 in Expressways

**Appendix D.** DSWA Approval and Chemical Analyses of Street Sweeping Wastes.



# DELAWARE SOLID WASTE AUTHORITY

Richard P. Watson, P.E., BCEE  
Chief Executive Officer

Robin M. Roddy, P.E., BCEE  
Chief Operating Officer

June 10, 2015

Mr. Randy Cole  
Environmental Program Manager  
DelDOT NPDES Program  
800 Bay Road  
P.O. Box 778  
Dover, DE 19903

Re: Special Waste Approval for Street Sweeper Waste  
Special Waste Approval Number: **CIL-15.57**

Dear Mr. Cole:

I have received your special waste application and associated analytical testing dated June 9, 2015. Delaware Solid Waste Authority (DSWA) approves your request to dispose of approximately 2,880 tons of street sweeper waste. The material will be accepted at the Cherry Island Landfill (CIL). This material must be delivered in segregated loads and not mixed with other waste. Wastes not accurately represented by the information submitted in the special waste application or as stipulated in the DSWA Special Waste Policy may be rejected.

You are requested to contact DSWA at least 24 hours in advance to schedule the waste disposal.

**The rate charged for the material will be at our current tipping rate at time of disposal. A copy of this approval letter must accompany each load of waste delivered to CIL. This approval expires on June 30, 2016.**

If you have any questions, please feel free to contact me at (302) 764-5385.

Sincerely,

Jason M. Munyan, P.E., BCEE  
Senior Facility Manager

JMM:ur

- c: L. V. Miller, P.E., BCEE
- M. R. Lenkiewicz, P.E.
- F. W. Oehler (Compliance Supervisor)
- O. T. Webster (Compliance)
- NSWMC Weighmasters
- J. Rowe (G&L)
- M. Lyon (DNREC)

FOR DSWA USE ONLY	
WM initials:	_____
delivery date:	_____
expiration date:	_____
tonnage:	_____
ticket #:	_____
acct/truck #	_____

**Board of Directors**  
Gerard L. Esposito  
*Chairman*  
Ronald G. McCabe  
*Vice Chairman*  
Timothy P. Sheldon  
Tonda L. Parks  
Gregory V. Moore, P.E.  
Norman D. Griffiths  
Michael R. Paraskewich, Jr., Ph.D., P.E.

**RECEIVED**  
**JUN 14 2015**  
M&O SUPPORT SERVICES



STATE OF DELAWARE  
**DEPARTMENT OF TRANSPORTATION**

800 BAY ROAD  
P.O. BOX 778  
DOVER, DELAWARE 19903

JENNIFER COHAN  
SECRETARY

June 9, 2015

Jason Munyan  
Facility Manager, Cherry Island Landfill  
1706 E. 12th Street  
Wilmington, DE 19809

Dear Mr. Munyan:

DelDOT is seeking to renew its special waste disposal approval from the Delaware Solid Waste Authority to deliver street sweeper wastes to the Cherry Island landfill. The current approval expires on July 31, 2015.

In compliance with the DSWA Policy on Special Solid Wastes, we are providing the required information about these wastes as follows:

- a) The wastes in question are generated by street sweeping activities conducted by DelDOT throughout the year in New Castle County. The materials collected by the sweepers are staged in piles at six DelDOT maintenance yards (Talley, Kiamensi, Chapman Road, Bear, Odessa and Middletown).
- b) The composition of these waste materials is relatively consistent over time, consisting primarily of soil particles, road dust, litter, and some organic matter such as leaves and grass.
- c) None of the material is collected from a Federal Superfund site.
- d) This material is not hazardous waste.
- e) We conducted a new set of analytical tests on the street sweeper wastes on May 20, 2015. Composite samples of the wastes – one from the Bear yard (in New Castle County), one from the Cheswold yard (in Kent County) and one from the Laurel yard (in Sussex County) were collected by KCI Technologies, Inc. Each composite sample contained a mixture of three to five subsamples taken from representative sections of a pile of sweepings held at the maintenance yard.
- f) Copies of the test results are enclosed.
- g) The laboratory analyses were performed by QC Laboratories, Inc. (QCL), in Newark. QCL is a Delaware-certified, full-service environmental analytical company. The laboratory uses EPA-approved protocols for solid and hazardous waste and groundwater testing (EPA SW-846 methods).

- h) We estimate that DelDOT will deliver a total of up to 2,000 tons of sweeper wastes to the landfill per year.
- i) Maintenance staff from each of the six staging yards typically will need to transport these piles to the landfill on approximately once per month basis. Thus, each month approximately 20 to 40 tons of material will be delivered to the landfill from each of the yards.

If you need any additional information from us, please contact me at 302.760.2194, or Randy.Cole@state.de.us.

Sincerely,



Randy Cole  
Environmental Program Manager  
DelDOT NPDES Program

RC:rc  
Enclosure

cc: Don Weber, North District Engineer  
Maureen Kelley North District Maintenance Engineer  
Kevin Canning, Canal District Engineer  
Rich Fain, Canal District Maintenance Engineer  
Brian Urbanek, Asst. Director, Statewide Support Services



# Analytical Report

Serialized: 06/04/2015 04:05pm QC36

BRUCE THOMPSON  
KCI TECHNOLOGIES, INC.  
1352 MARROWS ROAD  
SUITE 100  
NEWARK, DE 19711

Regarding:

KCI TECHNOLOGIES, INC.  
1352 MARROWS ROAD  
SUITE 100  
NEWARK, DE 19711

## PROJECT ID:

AL0120

## LABORATORY REPORT NUMBER:

L5597728

## PO NUMBER:

17121613



Authorized by: Oommen V. Kappil, QA Director

QCL Accreditations: Southampton Div: EPA PA00018 NELAP's: PA900131NJ PA166, NM223  
State ID's CT PH0768, DE PA18, MD206, S 8902100 FDA Reg: 255238  
Delaware Division: State ID's: DE0011, M 138  
Vineland Division: State ID NJ 06005; Reading Div: State ID: PA 003543  
Wind Gap Division: State ID's: PA01334, NPA001  
E. Rutherford Division: State ID: N02015

BRUCE THOMPSON  
KCI TECHNOLOGIES, INC.  
1352 MARROWS ROAD  
SUITE 100  
NEWARK, DE 19711

Regarding:  
BRUCE THOMPSON  
KCI TECHNOLOGIES, INC.  
1352 MARROWS ROAD  
SUITE 100  
NEWARK, DE 19711

**Account No:**AL0120, KCI TECHNOLOGIES, INC.  
**Project No:** AL0120, KCI TECHNOLOGIES, INC.

**P.O. No:**17121613

**Inv. No:** 1705318 PI  
**PWSID No:**

**Sample ID**    **Sample Description**  
L5597728-1    BEAR MY

**Samp. Date/Time/Temp**    **Sampled by**  
05/20/15 10:15am NA C    Customer

**Satellite Received Temp** 25.6 C    **Iced (Y/N):** N  
**Exceeds recommended temperature for chemical testing.**  
**Received Date/Time/Temp** 05/20/15 12:50pm 1.8 C    **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
<b>GENERAL CHEMISTRY</b>							
Ignitability	NEG			EPA 1030	1		05/21/15 07:00PM JG
TCLP-Extraction	COMPLETE			EPA 1311			05/26/15 11:25AM KR
TCLP-O Headspace Extraction	COMPLETE			EPA 1311			05/27/15 11:45AM KR
Cyanide, reactive	ND	25.0	mg/kg	EPA 7.3.3.2	1		05/28/15 08:45AM MRP
Reactive Hydrogen Sulfide	ND	50.0	mg/kg	EPA 7.3.4.2	1		05/28/15 08:45AM MRP
Corrosivity (pH)	NEG			EPA 9045C			05/21/15 12:30PM KR
Sulfate	167	53.7	mg/kg DRY	EPA 9056A WO/COMB	1		05/30/15 01:16AM XJY
Paint Filter Test	NEG			EPA 9095			05/21/15 11:30AM KR
Total Solids Percent	93.14	0.01000	%	SM 2540G	1		05/21/15 05:00PM FXT
<b>METALS</b>							
Arsenic-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Barium-TCLP	0.336	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Cadmium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Chromium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Lead-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Selenium-TCLP	ND	0.0500	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Silver-TCLP	0.0196	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Mercury-TCLP	ND	0.000200	mg/l	EPA 7470A	1		05/27/15 06:39PM RMP

Account No:AL0120, KCI TECHNOLOGIES, INC.  
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI  
 PWSID No:

Sample ID Sample Description  
 L5597728-1 BEAR MY

Samp. Date/Time/Temp Sampled by  
 05/20/15 10:15am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N  
 Exceeds recommended temperature for chemical testing.  
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
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### GAS CHROMATOGRAPHY MASS SPECTROMETRY; SEMI-VOLATILES

1,4-Dichlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2,4,5-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2,4,6-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2,4-Dinitrotoluene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2-Methylphenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
3&4-Methylphenol-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Hexachlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Hexachlorobutadiene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Hexachloroethane-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Nitrobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Pentachlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Pyridine-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Cresol, total-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL

### GAS CHROMATOGRAPHY MASS SPECTROMETRY; VOLATILES

Benzene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
Ethylbenzene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
m, p-Xylenes	ND	1320	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
o-Xylene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
Toluene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
1,1-Dichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
1,2-Dichloroethane-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
2-Butanone-TCLP	ND	0.0500	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Benzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Carbon tetrachloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Chlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Chloroform-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Tetrachloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Trichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Vinyl chloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP

### GAS CHROMATOGRAPHY

Chlordane-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Endrin-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
gamma-BHC (Lindane)-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Heptachlor epoxide-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Heptachlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Methoxychlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Toxaphene-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Aroclor 1016	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1221	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP

PIN: 12145

Serial Number: 4664385

Account No:AL0120, KCI TECHNOLOGIES, INC.  
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI  
 PWSID No:

Sample ID Sample Description  
 L5597728-1 BEAR MY

Samp. Date/Time/Temp Sampled by  
 05/20/15 10:15am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N  
 Exceeds recommended temperature for chemical testing.  
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
<b>GAS CHROMATOGRAPHY continued</b>							
Aroclor 1232	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1242	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1248	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1254	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1260	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
2,4,5-TP (Silvex)-TCLP	ND	0.000250	mg/l	EPA 8151A	1		06/02/15 01:35AM AKP
2,4-D Methyl ester-TCLP	0.00326	0.00250	mg/l	EPA 8151A	1		06/02/15 01:35AM AKP

Sample ID Sample Description  
 L5597728-2 CHESWOLD MY

Samp. Date/Time/Temp Sampled by  
 05/20/15 09:30am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N  
 Exceeds recommended temperature for chemical testing.  
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
<b>GENERAL CHEMISTRY</b>							
Ignitability	NEG			EPA 1030	1		05/21/15 07:00PM JG
TCLP-Extraction	COMPLETE			EPA 1311			05/26/15 11:25AM KR
TCLP-O Headspace Extraction	COMPLETE			EPA 1311			05/27/15 11:45AM KR
Cyanide, reactive	ND	25.0	mg/kg	EPA 7.3.3.2	1		05/28/15 08:45AM MRP
Reactive Hydrogen Sulfide	ND	50.0	mg/kg	EPA 7.3.4.2	1		05/28/15 08:45AM MRP
Corrosivity (pH)	NEG			EPA 9045C			05/21/15 12:30PM KR
Sulfate	83.0	50.5	mg/kg DRY	EPA 9056A WO/COMB	1		05/30/15 01:31AM XJY
Paint Filter Test	NEG			EPA 9095			05/21/15 11:30AM KR
Total Solids Percent	98.98	0.01000	%	SM 2540G	1		05/21/15 05:00PM FXT

**METALS**

Arsenic-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Barium-TCLP	0.287	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Cadmium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Chromium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Lead-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Selenium-TCLP	ND	0.0500	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Silver-TCLP	0.0295	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Mercury-TCLP	ND	0.000200	mg/l	EPA 7470A	1		05/27/15 06:41PM RMP

Account No:AL0120, KCI TECHNOLOGIES, INC.  
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI  
 PWSID No:

Sample ID Sample Description  
 L5597728-2 CHESWOLD MY

Samp. Date/Time/Temp Sampled by  
 05/20/15 09:30am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N  
 Exceeds recommended temperature for chemical testing.  
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
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### GAS CHROMATOGRAPHY MASS SPECTROMETRY; SEMI-VOLATILES

1,4-Dichlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
2,4,5-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
2,4,6-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
2,4-Dinitrotoluene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
2-Methylphenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
3&4-Methylphenol-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Hexachlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Hexachlorobutadiene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Hexachloroethane-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Nitrobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Pentachlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Pyridine-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Cresol, total-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL

### GAS CHROMATOGRAPHY MASS SPECTROMETRY; VOLATILES

Benzene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
Ethylbenzene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
m, p-Xylenes	ND	10.1	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
o-Xylene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
Toluene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
1,1-Dichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
1,2-Dichloroethane-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
2-Butanone-TCLP	ND	0.0500	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Benzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Carbon tetrachloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Chlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Chloroform-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Tetrachloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Trichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Vinyl chloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP

### GAS CHROMATOGRAPHY

Chlordane-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Endrin-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
gamma-BHC (Lindane)-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Heptachlor epoxide-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Heptachlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Methoxychlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Toxaphene-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Aroclor 1016	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1221	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP

PIN: 12145

Serial Number: 4664385

**Account No:**AL0120, KCI TECHNOLOGIES, INC.  
**Project No:** AL0120, KCI TECHNOLOGIES, INC.

**P.O. No:**17121613

**Inv. No:** 1705318 PI  
**PWSID No:**

**Sample ID** L5597728-2  
**Sample Description** CHESWOLD MY

**Samp. Date/Time/Temp** 05/20/15 09:30am NA C  
**Sampled by** Customer

**Satellite Received Temp** 25.6 C **Iced (Y/N):** N  
**Exceeds recommended temperature for chemical testing.**  
**Received Date/Time/Temp** 05/20/15 12:50pm 1.8 C **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
<b>GAS CHROMATOGRAPHY continued</b>							
Aroclor 1232	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1242	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1248	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1254	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1260	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
2,4,5-TP (Silvex)-TCLP	ND	0.000250	mg/l	EPA 8151A	1		06/02/15 01:08AM AKP
2,4-D Methyl ester-TCLP	ND	0.00250	mg/l	EPA 8151A	1		06/02/15 01:08AM AKP

**Sample ID** L5597728-3  
**Sample Description** LAUREL MY

**Samp. Date/Time/Temp** 05/20/15 11:00am NA C  
**Sampled by** Customer

**Satellite Received Temp** 25.6 C **Iced (Y/N):** N  
**Exceeds recommended temperature for chemical testing.**  
**Received Date/Time/Temp** 05/20/15 12:50pm 1.8 C **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
<b>GENERAL CHEMISTRY</b>							
Ignitability	NEG			EPA 1030	1		05/21/15 07:00PM JG
TCLP-Extraction	COMPLETE			EPA 1311			05/26/15 11:25AM KR
TCLP-O Headspace Extraction	COMPLETE			EPA 1311			05/27/15 11:45AM KR
Cyanide, reactive	ND	25.0	mg/kg	EPA 7.3.3.2	1		05/28/15 08:45AM MRP
Reactive Hydrogen Sulfide	ND	50.0	mg/kg	EPA 7.3.4.2	1		05/28/15 08:45AM MRP
Corrosivity (pH)	NEG			EPA 9045C			05/21/15 12:30PM KR
Sulfate	63.5	56.3	mg/kg DRY	EPA 9056A WO/COMB	1		05/30/15 01:46AM XJY
Paint Filter Test	NEG			EPA 9095			05/21/15 11:30AM KR
Total Solids Percent	88.87	0.01000	%	SM 2540G	1		05/21/15 05:00PM FXT

**METALS**

Arsenic-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Barium-TCLP	0.535	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Cadmium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Chromium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Lead-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Selenium-TCLP	ND	0.0500	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Silver-TCLP	0.0262	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Mercury-TCLP	ND	0.000200	mg/l	EPA 7470A	1		05/27/15 06:46PM RMP

Account No:AL0120, KCI TECHNOLOGIES, INC.  
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI  
 PWSID No:

Sample ID Sample Description  
 L5597728-3 LAUREL MY

Samp. Date/Time/Temp Sampled by  
 05/20/15 11:00am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N  
 Exceeds recommended temperature for chemical testing.  
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
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### GAS CHROMATOGRAPHY MASS SPECTROMETRY; SEMI-VOLATILES

1,4-Dichlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2,4,5-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2,4,6-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2,4-Dinitrotoluene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2-Methylphenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
3&4-Methylphenol-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Hexachlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Hexachlorobutadiene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Hexachloroethane-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Nitrobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Pentachlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Pyridine-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Cresol, total-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL

### GAS CHROMATOGRAPHY MASS SPECTROMETRY; VOLATILES

Benzene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
Ethylbenzene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
m, p-Xylenes	ND	11.3	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
o-Xylene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
Toluene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
1,1-Dichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
1,2-Dichloroethane-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
2-Butanone-TCLP	ND	0.0500	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Benzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Carbon tetrachloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Chlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Chloroform-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Tetrachloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Trichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Vinyl chloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP

### GAS CHROMATOGRAPHY

Chlordane-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Endrin-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
gamma-BHC (Lindane)-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Heptachlor epoxide-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Heptachlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Methoxychlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Toxaphene-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Aroclor 1016	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1221	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP

PIN: 12145

Serial Number: 4664385

**Account No:**AL0120, KCI TECHNOLOGIES, INC.  
**Project No:** AL0120, KCI TECHNOLOGIES, INC.

**P.O. No:**17121613

**Inv. No:** 1705318 PI  
**PWSID No:**

**Sample ID**    **Sample Description**  
L5597728-3    LAUREL MY

**Samp. Date/Time/Temp**    **Sampled by**  
05/20/15 11:00am NA C    Customer

**Satellite Received Temp** 25.6 C    **Iced (Y/N):** N  
**Exceeds recommended temperature for chemical testing.**  
**Received Date/Time/Temp** 05/20/15 12:50pm 1.8 C    **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
<b>GAS CHROMATOGRAPHY continued</b>							
Aroclor 1232	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1242	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1248	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1254	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1260	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
2,4,5-TP (Silvex)-TCLP	ND	0.000250	mg/l	EPA 8151A	1		06/02/15 01:41AM AKP
2,4-D Methyl ester-TCLP	ND	0.00250	mg/l	EPA 8151A	1		06/02/15 01:41AM AKP

**Sample Comments:**

L5597728-1 :

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

The TCLP extraction was performed in accordance with 40 CFR parts 261.24 and 268.7.

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

Samples for chemical testing were received at the laboratory outside of the allowed temperature range of just above 0 to 6 degrees C. Consult your regulatory agency for further guidance on the use of this data.  
For method 8260B, the recovery of 2 Butanone (142%) in the laboratory control sample was above the laboratory quality control limits (78 to 134%). The detected results of this analyte in the sample may be biased high.

L5597728-2 :

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

The TCLP extraction was performed in accordance with 40 CFR parts 261.24 and 268.7.

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

Samples for chemical testing were received at the laboratory outside of the allowed temperature range of just above 0 to 6 degrees C. Consult your regulatory agency for further guidance on the use of this data.  
For the 8270 TCLP analysis, surrogate Phenol\_d5 (42%) recovered above the laboratory quality control limits (17% to 41%).

For method 8260B, the recovery of 2 Butanone (142%) in the laboratory control sample was above the laboratory quality control limits (78 to 134%). The detected results of this analyte in the sample may be biased high.

PIN: 12145

Serial Number: 4664385

**Account No:**AL0120, KCI TECHNOLOGIES, INC.  
**Project No:** AL0120, KCI TECHNOLOGIES, INC.

**P.O. No:**17121613

**Inv. No:** 1705318 PI  
**PWSID No:**

L5597728-3 :

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

Samples for chemical testing were received at the laboratory outside of the allowed temperature range of just above 0 to 6 degrees C. Consult your regulatory agency for further guidance on the use of this data.

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

The TCLP extraction was performed in accordance with 40 CFR parts 261.24 and 268.7. For method 8260B, the recovery of 2 Butanone (142%) in the laboratory control sample was above the laboratory quality control limits (78 to 134%). The detected results of this analyte in the sample may be biased high.



## DEFINITIONS

**The following terms or abbreviations are used in this report:**

MPN	Most probable number	PL	Customer-specific limit
CFU	Colony forming unit	DF	Dilution Factor (For Microbiology, DF = volume of sample tested)
POS	Positive	QUAL	Qualifier
NEG	Negative	NTU	Nephelometric turbidity units
PRES	Presumptive	RL	Laboratory reporting limit or Limit of Quantitation (LOQ)
MF	Membrane Filtration	MCL	EPA recommended "Maximum Contaminant Level"
TNTC	Too numerous to count	MDL	Method Detection Limit

ND	The analyte was not detected at a concentration above the RL / MDL.
J	Estimated value $\geq$ MDL but $<$ RL. Applies to organics and general chemistry results (see below for metals)
Q	Indicates this analyte did not meet quality control requirements.
DRY	Indicates the result was calculated and reported on a dry weight basis.
TIC	Tentatively Identified Compounds (Library Search Compounds); concentrations are estimated values only.
ppm (mg/l)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples.
ppb (ug/L)	Parts per billion: equivalent to 1 microgram per kilogram (ug/Kg) for solids or one microgram per liter (ug/L) for aqueous samples.
<	Less than: In conjunction with a numerical value, indicates a concentration less than RL / MDL.
>	Greater than: In conjunction with a numerical value, indicates a concentration greater than RL / MDL.

**Data Qualifiers (EPA CLP Convention)**

<u>Organics</u>		<u>Metals</u>	
B	Analyte was detected in the method blank	B	Value is $\geq$ MDL and $<$ RL
E	Concentration exceeds calibration range	E	Estimated value due to presence of interference
U	Compound not detected above MDL/RL	M	Duplicate precision for an element outside control limit
N	Presumptive evidence of compound in library search	N	Spike recovery for an element outside control limits
P1	Column precision criteria not met, report lower value	U	Element not detected above MDL/RL
P2	Column precision criteria not met, report higher value	Other	Defined in case narrative or data package
Other	Defined in case narrative or data package		

**Warranties, Terms, and Conditions**

- Unless otherwise specified in the Parameter field, analyses (excluding "Field Parameters") were performed at the QCL Southampton Division (1205 Industrial Boulevard, Southampton, PA 18966). Food, pharmaceutical, and dairy testing were performed the QCL facility in Horsham (702 Electronic Drive, Horsham, PA 19044).
- The test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- The reported results relate only to the sample as tested. QCL is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- QCL is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. QCL's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Customer Service for further information.
- The following personnel or their deputies have approved the results of the tests performed by QCL: Nicki Smith (Environmental Chemistry), Amanda Lukaszewski (Pharmaceutical), Ryan Baker (Dairy), Karen Battista (Food Micro), Jonathan Decenzi (Food Chemistry), Sue Abbott (QCL Delaware).

**OCL Accreditations**

Southampton Division	EPA ID:	PA00018	Reading Division	State ID:	PA 06-03543
	NELAP IDs:	PA 09-00131; NJ PA166; NY 11223	Vineland Division	State ID:	NJ 06005
	State IDs:	CT PH-0768; DE PA-018; MD 206			
	FDA Reg #:	2515238			
Delaware Division	State IDs:	DE 00011; MD 138			
Wind Gap Division	State IDs:	PA 48-01334; NJ PA001			
East Rutherford Division	State ID:	NJ 02015			



1205 Industrial Blvd. Phone: 215-355-3900  
 Southampton, PA 18966-0514 Fax: 215-355-7231

### CHAIN OF CUSTODY

Page \_\_\_\_\_ of \_\_\_\_\_

Bill to/Report to: (if different)

Lab LIMS No: **L5597728**

### MATRIX CODES

- DW: DRINKING WATER
- GW: GROUND WATER
- WW: WASTEWATER
- SO: SOIL
- SL: SLUDGE
- OIL: OIL
- SSL: NON SOIL SOLID
- MI: MISCELLANEOUS
- X: OTHER

Client/Acct. No. **KCI Technologies, Inc.**

Address **1352 Marrows Rd.**

Sampling Site Address: (if different)

City/State/Zip **NEWARK DE 19711**

Phone/Fax

P.O. No.

Client Contact

QC Contact

### LAB USE ONLY:

- # \_\_\_ Ascorbic/HCl Vials # \_\_\_ HCl Vials
- # \_\_\_ Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> \_\_\_\_\_
- # \_\_\_ Na OH/Zn acetate pH \_\_\_\_\_
- # \_\_\_ HNO<sub>3</sub> pH \_\_\_\_\_
- # \_\_\_ H<sub>2</sub>SO<sub>4</sub> pH \_\_\_\_\_
- # \_\_\_ NaOH pH \_\_\_\_\_
- # **3** Unpreserved **1000g. w/ 3 splits**
- # \_\_\_ Hcl pH \_\_\_\_\_

**1-800-800-8000**

LAB USE ONLY

PROJECT	Collection		Matrix Code	Number of Containers																	
	Date	Military Time		Total	H	S	C	R	I	B	N	Z	U	B							
<b>BEAR MY</b>	<b>5/20/15</b>	<b>1015</b>	<b>SO</b>																		
<b>CHESWOLD MY</b>	<b>5/20/15</b>	<b>0930</b>	<b>SO</b>																		
<b>LAUREL MY</b>	<b>5/19/15</b>	<b>1100</b>	<b>SO</b>																		

### ANALYSIS REQUESTED

**Full TCLP, RCRA Char, SulFok, Percent Solids, PCBs, BTEX, Paint Filter Test**

FINAL REPORT

SAMPLED BY: (Name/Company) \_\_\_\_\_

Verbal/fax data due: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Hardcopy due: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Please call for pricing and availability on rush (<14-21 day) turnaround and on all but standard format.

Report Format:  Standard  Forms

Standard + QC  NJ Reduced  Disk

Field Parameters Analyzed By: \_\_\_\_\_

Sig: \_\_\_\_\_ Date/Time: \_\_\_\_\_

**SAMPLE CUSTODY EXCHANGES MUST BE DOCUMENTED BELOW. USE FULL LEGAL SIGNATURE, DATE AND MILITARY TIME (24 HOUR CLOCK, I.E. 8AM IS 0800, 4 PM IS 1600)**

RELINQUISHED BY SAMPLER	DATE	TIME	RECEIVED BY	DATE	TIME	DELIVERY METHOD: <input type="checkbox"/> QC COURIER <input type="checkbox"/> CLIENT	Custody Seal Number
<b>1 Katherine Adair</b>	<b>5/20/15</b>	<b>1250</b>	<b>6 [Signature]</b>	<b>5/20/15</b>	<b>12:50</b>	<input type="checkbox"/> UPS <input type="checkbox"/> FEDEX <input type="checkbox"/> OTHER _____	
<b>2 [Signature]</b>	<b>5/20/15</b>	<b>13:40</b>	<b>2 [Signature]</b>			<b>COMMENTS: 25.6" PDE NOTICED</b>	
<b>3 #329</b>	<b>5/20/15</b>	<b>1425</b>	<b>[Signature]</b>	<b>5/20/15</b>	<b>1425</b>		
<b>4</b>			<b>4</b>				
<b>5</b>			<b>5</b>				
							Hazardous: yes / no

For example to aid completion, see reverse side.



# DELAWARE SOLID WASTE AUTHORITY

**Board of Directors**

Gerard L. Esposito

*Chairman*

Ronald G. McCabe

*Vice Chairman*

Timothy P. Sheldon

Tonda L. Parks

Gregory V. Moore, P.E.

Norman D. Griffiths

Michael R. Paraskewich, Jr., Ph.D., P.E.

Richard P. Watson, P.E., BCEE  
*Chief Executive Officer*Robin M. Roddy, P.E., BCEE  
*Chief Operating Officer*

August 1, 2015

RECEIVED

AUG 1 2 2015

M&amp;O SUPPORT SERVICES

Randy Cole  
Environmental Program Manager  
DelDOT NPDES Program  
State of Delaware  
Department of Transportation  
800 Bay Road  
P.O. Box 778  
Dover, Delaware 19903Re: Special Waste Approval: Street Sweepings (Cheswold, Magnolia, & Harrington Yards)  
Special Waste Approval Number: CSW15.05

Dear Mr. Cole:

I have received your special waste application and analytical testing results dated June 10, 2015. Delaware Solid Waste Authority (DSWA) approves your request of June 9, 2015 for disposal of approximately thirty-three (33) tons of Street Sweepings per month. The material will be accepted at the Central Solid Waste Management Center (CSWMC) located in Sandtown, Delaware. The material must be delivered in segregated loads and not mixed with other waste. Wastes not accurately represented by the information submitted in the special waste application or as stipulated in the DSWA *Special Waste Policy* may be rejected.

The rate charged for the material will be at our current tipping rate at time of disposal. **A copy of this approval letter must accompany each load of waste delivered to CSWMC. This approval expires August 6, 2016.**

If you have any questions, please feel free to contact me at 302-284-8851.

Sincerely,

Lynsey B. Kocenko, P.E., BCEE  
Facility Manager

LBK:blp

Cc: Richard P. Watson, P.E., BCEE  
Robin M. Roddy, P.E., BCEE  
Logan V. Miller, P.E., BCEE  
Fred Oehler  
Jason C. Nicholson

CSWMC\Special Waste\DelDot 1505

FOR DSWA USE ONLY	
WM initials:	_____
Delivery Date:	_____
Expiration Date:	_____
Tonnage:	_____
Ticket #:	_____
Acct/Truck #:	_____

1128 S. Bradford Street, Dover, Delaware 19904

Phone: (302) 739-5361 Fax: (302) 739-4287

CITIZENS' RESPONSE LINE: 1-800-404-7080

www.dswa.com



STATE OF DELAWARE  
**DEPARTMENT OF TRANSPORTATION**

800 BAY ROAD  
P.O. Box 778  
DOVER, DELAWARE 19903

JENNIFER COHAN  
SECRETARY

June 9, 2015

Lynsey Kocenko  
Facility Manager, Sandtown Landfill  
1107 Willow Grove Rd  
Felton, DE 19943

Dear Mr. Kocenko:

DeIDOT is seeking to renew its special waste disposal approval from the Delaware Solid Waste Authority to deliver street sweeper wastes to the Sandtown landfill. The current approval expires on August 2, 2015.

In compliance with the DSWA Policy on Special Solid Wastes, we are providing the required information about these wastes as follows:

- a) The wastes in question are generated by street sweeping activities conducted by DeIDOT throughout the year in Kent County. The materials collected by the sweepers are staged in piles at three DeIDOT maintenance yards (Cheswold, Magnolia and Harrington).
- b) The composition of these waste materials is relatively consistent over time, consisting primarily of soil particles, road dust, litter, and some organic matter such as leaves and grass.
- c) None of the material is collected from a Federal Superfund site.
- d) This material is not hazardous waste.
- e) We conducted a new set of analytical tests on the street sweeper wastes on May 20, 2015. Composite samples of the wastes – one from the Bear yard (in New Castle County), one from the Cheswold yard (in Kent County) and one from the Laurel yard (in Sussex County) were collected by KCI Technologies, Inc. Each composite sample contained a mixture of three to five subsamples taken from representative sections of a pile of sweepings held at the maintenance yard. Copies of the test results are enclosed.
- f) The laboratory analyses were performed by QC Laboratories, Inc. (QCL), in Newark. QCL is a Delaware-certified, full-service environmental analytical company. The laboratory uses EPA-approved protocols for solid and hazardous waste and groundwater testing (EPA SW-846 methods).
- g) We estimate that DeIDOT will deliver a total of approximately 400 tons of sweeper wastes to the Sandtown facility per month.

- h) Maintenance staff from each of the three staging yards typically will need to transport these piles to the landfill on approximately once per month basis. Thus, each month approximately 10 to 20 tons of material will be delivered to the landfill from each of the yards.

If you need any additional information from us, please contact me at 302.760.2194, or Randy.Cole@state.de.us.

Sincerely,



Randy Cole  
Environmental Program Manager  
DeLDOT NPDES Program

RC:rc  
Enclosure

cc: Tom Greve, Central District Engineer  
Shahin Taavoni, Central District Maintenance Engineer  
Brian Urbanek, Asst. Director, Statewide Support Services



# Analytical Report

Serialized: 06/04/2015 04:05pm QC36

BRUCE THOMPSON  
KCI TECHNOLOGIES, INC.  
1352 MARROWS ROAD  
SUITE 100  
NEWARK, DE 19711

Regarding:

KCI TECHNOLOGIES, INC.  
1352 MARROWS ROAD  
SUITE 100  
NEWARK, DE 19711

## PROJECT ID:

AL0120

## LABORATORY REPORT NUMBER:

L5597728

## PO NUMBER:

17121613



Authorized by: Oommen V. Kappil, QA Director

QCL Accreditations: Southampton Div: EPA ID PA000181 NELAP's: PA0900131 NJ PA166, NM223  
State ID's CT PH0768, DE PA018, MD206, S 8902100 FDA Reg: : 255238  
Delaware Division: State ID's: DE0011, M 138  
Vineland Division: State ID NJ 06005; Reading Div: State ID: PA 003543  
Wind Gap Division: State ID's: PA01334, NPA001  
E. Rutherford Division: State ID: N02015

BRUCE THOMPSON  
KCI TECHNOLOGIES, INC.  
1352 MARROWS ROAD  
SUITE 100  
NEWARK, DE 19711

Regarding:  
BRUCE THOMPSON  
KCI TECHNOLOGIES, INC.  
1352 MARROWS ROAD  
SUITE 100  
NEWARK, DE 19711

**Account No:**AL0120, KCI TECHNOLOGIES, INC.  
**Project No:** AL0120, KCI TECHNOLOGIES, INC.

**P.O. No:**17121613

**Inv. No:** 1705318 PI  
**PWSID No:**

**Sample ID**    **Sample Description**  
L5597728-1    BEAR MY

**Samp. Date/Time/Temp**    **Sampled by**  
05/20/15 10:15am NA C    Customer

**Satellite Received Temp** 25.6 C    **Iced (Y/N):** N  
**Exceeds recommended temperature for chemical testing.**  
**Received Date/Time/Temp** 05/20/15 12:50pm 1.8 C    **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
<b>GENERAL CHEMISTRY</b>							
Ignitability	NEG			EPA 1030	1		05/21/15 07:00PM JG
TCLP-Extraction	COMPLETE			EPA 1311			05/26/15 11:25AM KR
TCLP-O Headspace Extraction	COMPLETE			EPA 1311			05/27/15 11:45AM KR
Cyanide, reactive	ND	25.0	mg/kg	EPA 7.3.3.2	1		05/28/15 08:45AM MRP
Reactive Hydrogen Sulfide	ND	50.0	mg/kg	EPA 7.3.4.2	1		05/28/15 08:45AM MRP
Corrosivity (pH)	NEG			EPA 9045C			05/21/15 12:30PM KR
Sulfate	167	53.7	mg/kg DRY	EPA 9056A WO/COMB	1		05/30/15 01:16AM XJY
Paint Filter Test	NEG			EPA 9095			05/21/15 11:30AM KR
Total Solids Percent	93.14	0.01000	%	SM 2540G	1		05/21/15 05:00PM FXT
<b>METALS</b>							
Arsenic-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Barium-TCLP	0.336	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Cadmium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Chromium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Lead-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Selenium-TCLP	ND	0.0500	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Silver-TCLP	0.0196	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Mercury-TCLP	ND	0.000200	mg/l	EPA 7470A	1		05/27/15 06:39PM RMP

Account No:AL0120, KCI TECHNOLOGIES, INC.  
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI  
 PWSID No:

Sample ID Sample Description  
 L5597728-1 BEAR MY

Samp. Date/Time/Temp Sampled by  
 05/20/15 10:15am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N  
 Exceeds recommended temperature for chemical testing.  
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
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### GAS CHROMATOGRAPHY MASS SPECTROMETRY; SEMI-VOLATILES

1,4-Dichlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2,4,5-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2,4,6-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2,4-Dinitrotoluene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2-Methylphenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
3&4-Methylphenol-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Hexachlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Hexachlorobutadiene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Hexachloroethane-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Nitrobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Pentachlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Pyridine-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Cresol, total-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL

### GAS CHROMATOGRAPHY MASS SPECTROMETRY; VOLATILES

Benzene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
Ethylbenzene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
m, p-Xylenes	ND	1320	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
o-Xylene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
Toluene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
1,1-Dichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
1,2-Dichloroethane-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
2-Butanone-TCLP	ND	0.0500	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Benzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Carbon tetrachloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Chlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Chloroform-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Tetrachloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Trichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Vinyl chloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP

### GAS CHROMATOGRAPHY

Chlordane-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Endrin-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
gamma-BHC (Lindane)-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Heptachlor epoxide-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Heptachlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Methoxychlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Toxaphene-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Aroclor 1016	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1221	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP

PIN: 12145

Serial Number: 4664385

Account No:AL0120, KCI TECHNOLOGIES, INC.  
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI  
 PWSID No:

Sample ID Sample Description  
 L5597728-1 BEAR MY

Samp. Date/Time/Temp Sampled by  
 05/20/15 10:15am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N  
 Exceeds recommended temperature for chemical testing.  
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
<b>GAS CHROMATOGRAPHY continued</b>							
Aroclor 1232	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1242	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1248	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1254	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1260	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
2,4,5-TP (Silvex)-TCLP	ND	0.000250	mg/l	EPA 8151A	1		06/02/15 01:35AM AKP
2,4-D Methyl ester-TCLP	0.00326	0.00250	mg/l	EPA 8151A	1		06/02/15 01:35AM AKP

Sample ID Sample Description  
 L5597728-2 CHESWOLD MY

Samp. Date/Time/Temp Sampled by  
 05/20/15 09:30am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N  
 Exceeds recommended temperature for chemical testing.  
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
<b>GENERAL CHEMISTRY</b>							
Ignitability	NEG			EPA 1030	1		05/21/15 07:00PM JG
TCLP-Extraction	COMPLETE			EPA 1311			05/26/15 11:25AM KR
TCLP-O Headspace Extraction	COMPLETE			EPA 1311			05/27/15 11:45AM KR
Cyanide, reactive	ND	25.0	mg/kg	EPA 7.3.3.2	1		05/28/15 08:45AM MRP
Reactive Hydrogen Sulfide	ND	50.0	mg/kg	EPA 7.3.4.2	1		05/28/15 08:45AM MRP
Corrosivity (pH)	NEG			EPA 9045C			05/21/15 12:30PM KR
Sulfate	83.0	50.5	mg/kg DRY	EPA 9056A WO/COMB	1		05/30/15 01:31AM XJY
Paint Filter Test	NEG			EPA 9095			05/21/15 11:30AM KR
Total Solids Percent	98.98	0.01000	%	SM 2540G	1		05/21/15 05:00PM FXT

**METALS**

Arsenic-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Barium-TCLP	0.287	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Cadmium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Chromium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Lead-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Selenium-TCLP	ND	0.0500	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Silver-TCLP	0.0295	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Mercury-TCLP	ND	0.000200	mg/l	EPA 7470A	1		05/27/15 06:41PM RMP

Account No:AL0120, KCI TECHNOLOGIES, INC.  
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI  
 PWSID No:

Sample ID Sample Description  
 L5597728-2 CHESWOLD MY

Samp. Date/Time/Temp Sampled by  
 05/20/15 09:30am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N  
 Exceeds recommended temperature for chemical testing.  
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
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**GAS CHROMATOGRAPHY MASS SPECTROMETRY; SEMI-VOLATILES**

1,4-Dichlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
2,4,5-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
2,4,6-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
2,4-Dinitrotoluene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
2-Methylphenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
3&4-Methylphenol-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Hexachlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Hexachlorobutadiene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Hexachloroethane-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Nitrobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Pentachlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Pyridine-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Cresol, total-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL

**GAS CHROMATOGRAPHY MASS SPECTROMETRY; VOLATILES**

Benzene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
Ethylbenzene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
m, p-Xylenes	ND	10.1	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
o-Xylene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
Toluene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
1,1-Dichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
1,2-Dichloroethane-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
2-Butanone-TCLP	ND	0.0500	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Benzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Carbon tetrachloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Chlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Chloroform-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Tetrachloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Trichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Vinyl chloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP

**GAS CHROMATOGRAPHY**

Chlordane-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Endrin-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
gamma-BHC (Lindane)-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Heptachlor epoxide-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Heptachlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Methoxychlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Toxaphene-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Aroclor 1016	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1221	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP

PIN: 12145

Serial Number: 4664385

Account No:AL0120, KCI TECHNOLOGIES, INC.  
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI  
 PWSID No:

Sample ID L5597728-2  
 Sample Description CHESWOLD MY

Samp. Date/Time/Temp 05/20/15 09:30am NA C  
 Sampled by Customer

Satellite Received Temp 25.6 C Iced (Y/N): N  
 Exceeds recommended temperature for chemical testing.  
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
<b>GAS CHROMATOGRAPHY continued</b>							
Aroclor 1232	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1242	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1248	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1254	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1260	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
2,4,5-TP (Silvex)-TCLP	ND	0.000250	mg/l	EPA 8151A	1		06/02/15 01:08AM AKP
2,4-D Methyl ester-TCLP	ND	0.00250	mg/l	EPA 8151A	1		06/02/15 01:08AM AKP

Sample ID L5597728-3  
 Sample Description LAUREL MY

Samp. Date/Time/Temp 05/20/15 11:00am NA C  
 Sampled by Customer

Satellite Received Temp 25.6 C Iced (Y/N): N  
 Exceeds recommended temperature for chemical testing.  
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
<b>GENERAL CHEMISTRY</b>							
Ignitability	NEG			EPA 1030	1		05/21/15 07:00PM JG
TCLP-Extraction	COMPLETE			EPA 1311			05/26/15 11:25AM KR
TCLP-O Headspace Extraction	COMPLETE			EPA 1311			05/27/15 11:45AM KR
Cyanide, reactive	ND	25.0	mg/kg	EPA 7.3.3.2	1		05/28/15 08:45AM MRP
Reactive Hydrogen Sulfide	ND	50.0	mg/kg	EPA 7.3.4.2	1		05/28/15 08:45AM MRP
Corrosivity (pH)	NEG			EPA 9045C			05/21/15 12:30PM KR
Sulfate	63.5	56.3	mg/kg DRY	EPA 9056A WO/COMB	1		05/30/15 01:46AM XJY
Paint Filter Test	NEG			EPA 9095			05/21/15 11:30AM KR
Total Solids Percent	88.87	0.01000	%	SM 2540G	1		05/21/15 05:00PM FXT

**METALS**

Arsenic-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Barium-TCLP	0.535	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Cadmium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Chromium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Lead-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Selenium-TCLP	ND	0.0500	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Silver-TCLP	0.0262	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Mercury-TCLP	ND	0.000200	mg/l	EPA 7470A	1		05/27/15 06:46PM RMP

Account No:AL0120, KCI TECHNOLOGIES, INC.  
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI  
 PWSID No:

Sample ID Sample Description  
 L5597728-3 LAUREL MY

Samp. Date/Time/Temp Sampled by  
 05/20/15 11:00am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N  
 Exceeds recommended temperature for chemical testing.  
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
-----------	--------	----	-------	--------	----	------	--------------------------

### GAS CHROMATOGRAPHY MASS SPECTROMETRY; SEMI-VOLATILES

1,4-Dichlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2,4,5-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2,4,6-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2,4-Dinitrotoluene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2-Methylphenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
3&4-Methylphenol-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Hexachlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Hexachlorobutadiene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Hexachloroethane-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Nitrobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Pentachlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Pyridine-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Cresol, total-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL

### GAS CHROMATOGRAPHY MASS SPECTROMETRY; VOLATILES

Benzene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
Ethylbenzene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
m, p-Xylenes	ND	11.3	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
o-Xylene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
Toluene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
1,1-Dichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
1,2-Dichloroethane-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
2-Butanone-TCLP	ND	0.0500	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Benzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Carbon tetrachloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Chlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Chloroform-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Tetrachloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Trichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Vinyl chloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP

### GAS CHROMATOGRAPHY

Chlordane-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Endrin-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
gamma-BHC (Lindane)-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Heptachlor epoxide-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Heptachlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Methoxychlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Toxaphene-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Aroclor 1016	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1221	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP

PIN: 12145

Serial Number: 4664385

**Account No:**AL0120, KCI TECHNOLOGIES, INC.  
**Project No:** AL0120, KCI TECHNOLOGIES, INC.

**P.O. No:**17121613

**Inv. No:** 1705318 PI  
**PWSID No:**

**Sample ID**    **Sample Description**  
L5597728-3    LAUREL MY

**Samp. Date/Time/Temp**    **Sampled by**  
05/20/15 11:00am NA C    Customer

**Satellite Received Temp** 25.6 C    **Iced (Y/N):** N  
**Exceeds recommended temperature for chemical testing.**  
**Received Date/Time/Temp** 05/20/15 12:50pm 1.8 C    **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
<b>GAS CHROMATOGRAPHY continued</b>							
Aroclor 1232	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1242	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1248	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1254	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1260	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
2,4,5-TP (Silvex)-TCLP	ND	0.000250	mg/l	EPA 8151A	1		06/02/15 01:41AM AKP
2,4-D Methyl ester-TCLP	ND	0.00250	mg/l	EPA 8151A	1		06/02/15 01:41AM AKP

**Sample Comments:**

L5597728-1 :

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

The TCLP extraction was performed in accordance with 40 CFR parts 261.24 and 268.7.

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

Samples for chemical testing were received at the laboratory outside of the allowed temperature range of just above 0 to 6 degrees C. Consult your regulatory agency for further guidance on the use of this data.  
For method 8260B, the recovery of 2 Butanone (142%) in the laboratory control sample was above the laboratory quality control limits (78 to 134%). The detected results of this analyte in the sample may be biased high.

L5597728-2 :

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

The TCLP extraction was performed in accordance with 40 CFR parts 261.24 and 268.7.

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

Samples for chemical testing were received at the laboratory outside of the allowed temperature range of just above 0 to 6 degrees C. Consult your regulatory agency for further guidance on the use of this data.  
For the 8270 TCLP analysis, surrogate Phenol\_d5 (42%) recovered above the laboratory quality control limits (17% to 41%).

For method 8260B, the recovery of 2 Butanone (142%) in the laboratory control sample was above the laboratory quality control limits (78 to 134%). The detected results of this analyte in the sample may be biased high.

PIN: 12145

Serial Number: 4664385

**Account No:**AL0120, KCI TECHNOLOGIES, INC.  
**Project No:** AL0120, KCI TECHNOLOGIES, INC.

**P.O. No:**17121613

**Inv. No:** 1705318 PI  
**PWSID No:**

L5597728-3 :

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

Samples for chemical testing were received at the laboratory outside of the allowed temperature range of just above 0 to 6 degrees C. Consult your regulatory agency for further guidance on the use of this data.

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

The TCLP extraction was performed in accordance with 40 CFR parts 261.24 and 268.7. For method 8260B, the recovery of 2 Butanone (142%) in the laboratory control sample was above the laboratory quality control limits (78 to 134%). The detected results of this analyte in the sample may be biased high.



## DEFINITIONS

**The following terms or abbreviations are used in this report:**

MPN	Most probable number	PL	Customer-specific limit
CFU	Colony forming unit	DF	Dilution Factor (For Microbiology, DF = volume of sample tested)
POS	Positive	QUAL	Qualifier
NEG	Negative	NTU	Nephelometric turbidity units
PRES	Presumptive	RL	Laboratory reporting limit or Limit of Quantitation (LOQ)
MF	Membrane Filtration	MCL	EPA recommended "Maximum Contaminant Level"
TNTC	Too numerous to count	MDL	Method Detection Limit

ND	The analyte was not detected at a concentration above the RL / MDL.
J	Estimated value $\geq$ MDL but $<$ RL. Applies to organics and general chemistry results (see below for metals)
Q	Indicates this analyte did not meet quality control requirements.
DRY	Indicates the result was calculated and reported on a dry weight basis.
TIC	Tentatively Identified Compounds (Library Search Compounds); concentrations are estimated values only.
ppm (mg/l)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples.
ppb (ug/L)	Parts per billion: equivalent to 1 microgram per kilogram (ug/Kg) for solids or one microgram per liter (ug/L) for aqueous samples.
<	Less than: In conjunction with a numerical value, indicates a concentration less than RL / MDL.
>	Greater than: In conjunction with a numerical value, indicates a concentration greater than RL / MDL.

**Data Qualifiers (EPA CLP Convention)**

<u>Organics</u>		<u>Metals</u>	
B	Analyte was detected in the method blank	B	Value is $\geq$ MDL and $<$ RL
E	Concentration exceeds calibration range	E	Estimated value due to presence of interference
U	Compound not detected above MDL/RL	M	Duplicate precision for an element outside control limit
N	Presumptive evidence of compound in library search	N	Spike recovery for an element outside control limits
P1	Column precision criteria not met, report lower value	U	Element not detected above MDL/RL
P2	Column precision criteria not met, report higher value	Other	Defined in case narrative or data package
Other	Defined in case narrative or data package		

**Warranties, Terms, and Conditions**

- Unless otherwise specified in the Parameter field, analyses (excluding "Field Parameters") were performed at the QCL Southampton Division (1205 Industrial Boulevard, Southampton, PA 18966). Food, pharmaceutical, and dairy testing were performed the QCL facility in Horsham (702 Electronic Drive, Horsham, PA 19044).
- The test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- The reported results relate only to the sample as tested. QCL is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- QCL is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. QCL's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Customer Service for further information.
- The following personnel or their deputies have approved the results of the tests performed by QCL: Nicki Smith (Environmental Chemistry), Amanda Lukaszewski (Pharmaceutical), Ryan Baker (Dairy), Karen Battista (Food Micro), Jonathan Decenzi (Food Chemistry), Sue Abbott (QCL Delaware).

**OCL Accreditations**

Southampton Division	EPA ID:	PA00018	Reading Division	State ID:	PA 06-03543
	NELAP IDs:	PA 09-00131; NJ PA166; NY 11223	Vineland Division	State ID:	NJ 06005
	State IDs:	CT PH-0768; DE PA-018; MD 206			
	FDA Reg #:	2515238			
Delaware Division	State IDs:	DE 00011; MD 138			
Wind Gap Division	State IDs:	PA 48-01334; NJ PA001			
East Rutherford Division	State ID:	NJ 02015			



1205 Industrial Blvd. Phone: 215-355-3900  
Southampton, PA 18966-0514 Fax: 215-355-7231

### CHAIN OF CUSTODY

Page \_\_\_\_\_ of \_\_\_\_\_

Lab LIMS No: **L5597728**

### MATRIX CODES

#### LAB USE ONLY:

# \_\_\_ Ascorbic/HCl Vials # \_\_\_ HCl Vials  
# \_\_\_ Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> \_\_\_\_\_  
# \_\_\_ Na OH/Zn acetate pH \_\_\_\_\_  
# \_\_\_ HNO<sub>3</sub> pH \_\_\_\_\_  
# \_\_\_ H<sub>2</sub>SO<sub>4</sub> pH \_\_\_\_\_  
# \_\_\_ NaOH pH \_\_\_\_\_  
# **3** Unpreserved **1000g. w/ 3 splits**  
# \_\_\_ Hcl pH \_\_\_\_\_

DW: DRINKING WATER  
GW: GROUND WATER  
WW: WASTEWATER  
SO: SOIL  
SL: SLUDGE  
OIL: OIL  
SOL: NON SOIL SOLID  
MI: MISCELLANEOUS  
X: OTHER

Client/Acct. No. **KCI Technologies, Inc.**

Address **1352 Marrows Rd.**

Sampling Site Address: (if different)

City/State/Zip **NEWARK DE 19711**

Phone/Fax

P.O. No.

Client Contact

QC Contact

LAB USE ONLY	PROJECT	Collection		C R A B	C O M P	Matrix Code	Total	Number of Containers														
	FIELD ID	Date	Military Time					H	S	C	R	I	B	N	Z	U	B					
								1	2	3	4	5	6	7	8	9	10					
	<b>BEAR MY</b>	<b>5/20/15</b>	<b>1015</b>			<b>SO</b>																
	<b>CHESWOLD MY</b>	<b>5/20/15</b>	<b>09:30</b>			<b>SO</b>																
	<b>LAUREL MY</b>	<b>5/19/15</b>	<b>1100</b>			<b>SO</b>																

**1-800-888-8888**

#### ANALYSIS REQUESTED

**Full TCLP, RCRA Char, SulFak,  
Percent Solids, PCBs, BTEX,  
Paint Filter Test**

Field pH, Temp (C or F),  
DO, Cl<sub>2</sub>, S, Cond. etc.

FINAL REPORT

SAMPLED BY: (Name/Company)

Verbal/fax data due: / /

Report Format:  Standard  Forms

Field Parameters Analyzed By:

Hardcopy due: / /

Standard + QC  NJ Reduced  Disk

Sig:

Date/Time:

Please call for pricing and availability on rush (<14-21 day) turnaround and on all but standard format.

#### SAMPLE CUSTODY EXCHANGES MUST BE DOCUMENTED BELOW. USE FULL LEGAL SIGNATURE, DATE AND MILITARY TIME (24 HOUR CLOCK, I.E. 8AM IS 0800, 4 PM IS 1600)

RELINQUISHED BY SAMPLER	DATE	TIME	RECEIVED BY	DATE	TIME	DELIVERY METHOD: <input type="checkbox"/> QC COURIER <input type="checkbox"/> CLIENT	Custody Seal Number
1 <b>Katherine Adair</b>	<b>5/20/15</b>	<b>1250</b>	<b>Carla DeOlla</b>	<b>5/20/15</b>	<b>12:50</b>	<input type="checkbox"/> UPS <input type="checkbox"/> FEDEX <input type="checkbox"/> OTHER	
2 <b>Carla DeOlla</b>	<b>5/20/15</b>	<b>13:40</b>	2 <b>Copley #829</b>			COMMENTS: <b>25.6" PDE NOT ILED</b>	
3 <b>#329</b>	<b>5/20/15</b>	<b>1425</b>	<b>J Muller</b>	<b>5/20/15</b>	<b>1425</b>		
4			4				
5			5			Hazardous: yes / no	

For example to aid completion, see reverse side.



# DELAWARE SOLID WASTE AUTHORITY

Richard P. Watson, P.E., BCEE  
Chief Executive Officer

Robin M. Roddy, P.E., BCEE  
Chief Operating Officer

Randy Cole  
Environmental Program Manager  
State of Delaware  
Department of Transportation  
800 Bay Road  
P.O. Box 778  
Dover, DE 19903

June 11, 2015

**Board of Directors**

Gerard L. Esposito  
*Chairman*  
Ronald G. McCabe  
*Vice Chairman*  
Timothy P. Sheldon  
Tonda L. Parks  
Gregory V. Moore, P.E.  
Norman D. Griffiths  
Michael P. Paskevich, Jr., Ph.D., P.E.

RECEIVED

JUN 14 2015

M&O SUPPORT SERVICES

Re: Special Waste Approval: Street Sweeper Wastes  
Special Waste Approval Number: ssw15.032

Dear Ms. Walch:

I have received your special waste application dated June 9, 2015 and analytical testing dated June 10, 2015. Delaware Solid Waste Authority (DSWA) approves your request to deliver approximately 700 tons of sweeper wastes over a one (1) year period. The material will be accepted at the Southern Solid Waste Management Center (SSWMC) located in Georgetown, Delaware at the standard rate tipping fee. This material must be delivered in segregated loads and not mixed with other waste. Wastes not accurately represented by the information submitted in the special waste application or as stipulated in the DSWA *Special Waste Policy* may be rejected.

**A copy of this approval letter must accompany each load of waste delivered to SSWMC.**

This approval expires July 30, 2016.

If you have any questions, please feel free to contact me at 302-875-3448.

Sincerely,

James Vescovi, P.E., BCEE  
Senior Facility Manager

cc: Logan V. Miller, P.E., BCEE  
Adolf A. Korosec  
Shawn L. Lovenguth  
Weighmasters  
Compliance

ssw15.032

FOR DSWA USE ONLY	
WM initials:	_____
Delivery Date:	_____
Expiration Date:	_____
Tonnage:	_____
Ticket #:	_____
Acct/Truck #:	_____

1128 S. Bradford Street, Dover, Delaware 19904  
Phone: (302) 739-5361 Fax: (302) 739-4287

CITIZENS' RESPONSE LINE: 1-800-404-7080 [www.dswa.com](http://www.dswa.com)



STATE OF DELAWARE  
**DEPARTMENT OF TRANSPORTATION**

800 BAY ROAD  
P.O. Box 778  
DOVER, DELAWARE 19903

JENNIFER COHAN  
SECRETARY

June 9, 2015

James Vescovi, P.E., BCEE  
Facility Manager, Jones Crossroads Landfill  
28560 Landfill Lane  
Georgetown, DE 19947

Dear Mr. Vescovi:

DeIDOT is seeking to renew its special waste disposal approval from the Delaware Solid Waste Authority to deliver street sweeper wastes to the Jones Crossroads landfill. The current approval expires on July 30, 2015.

In compliance with the DSWA Policy on Special Solid Wastes, we are providing the required information about these wastes as follows:

- a) The wastes in question are generated by street sweeping activities conducted by DeIDOT throughout the year in Sussex County. The materials collected by the sweepers will be staged in piles at five DeIDOT maintenance yards (Laurel, Seaford, Ellendale, Gravel Hill, Dagsboro).
- b) The composition of these waste materials is relatively consistent over time, consisting primarily of soil particles, road dust, litter, and some organic matter such as leaves and grass.
- c) None of the material is collected from a Federal Superfund site.
- d) This material is not hazardous waste.
- e) We conducted a new set of analytical tests on the street sweeper wastes on May 20, 2015. Composite samples of the wastes – one from the Bear yard (in New Castle County), one from the Cheswold yard (in Kent County) and one from the Laurel yard (in Sussex County) were collected by KCI Technologies, Inc. Each composite sample contained a mixture of three to five subsamples taken from representative sections of a pile of sweepings held at the maintenance yard. Copies of the test results are enclosed.
- f) Copies of the test results are enclosed.
- g) The laboratory analyses were performed by QC Laboratories, Inc. (QCL), in Newark. QCL is a Delaware-certified, full-service environmental analytical company. The laboratory uses EPA-approved protocols for solid and hazardous waste and groundwater testing (EPA SW-846 methods).

- h) We estimate that DelDOT will deliver a total of approximately 700 tons of sweeper wastes to the Jones Crossroads facility per year, or 50 to 70 tons per month.
- i) Maintenance staff from each of the three staging yards typically will need to transport these piles to the landfill on approximately once per month basis. Thus, each month approximately 10 to 20 tons of material will be delivered to the landfill from each of the yards.

If you need any additional information from us, please contact me at 302.760.2194, or Randy.Cole@state.de.us.

Sincerely,



Randy Cole  
Environmental Program Manager  
DelDOT NPDES Program

RC:rc  
Enclosure

cc: Jeff Reed, South District Engineer  
Alastair Probert, South District Maintenance Engineer  
Brian Urbanek, Asst. Director, Statewide Support Services



# Analytical Report

Serialized: 06/04/2015 04:05pm QC36

BRUCE THOMPSON  
KCI TECHNOLOGIES, INC.  
1352 MARROWS ROAD  
SUITE 100  
NEWARK, DE 19711

Regarding:

KCI TECHNOLOGIES, INC.  
1352 MARROWS ROAD  
SUITE 100  
NEWARK, DE 19711

## PROJECT ID:

AL0120

## LABORATORY REPORT NUMBER:

L5597728

## PO NUMBER:

17121613



Authorized by: Oommen V. Kappil, QA Director

QCL Accreditations: Southampton Div: EPA PA00018 NELAP's: PA900131NJ PA166, NM223  
State ID's CT PH0768, DE PA18, MD206, S 8902100 FDA Reg: 255238  
Delaware Division: State ID's: DE0011, M 138  
Vineland Division: State ID NJ 06005; Reading Div: State ID: PA 003543  
Wind Gap Division: State ID's: PA01334, NPA001  
E. Rutherford Division: State ID: N02015

BRUCE THOMPSON  
KCI TECHNOLOGIES, INC.  
1352 MARROWS ROAD  
SUITE 100  
NEWARK, DE 19711

Regarding:  
BRUCE THOMPSON  
KCI TECHNOLOGIES, INC.  
1352 MARROWS ROAD  
SUITE 100  
NEWARK, DE 19711

**Account No:**AL0120, KCI TECHNOLOGIES, INC.  
**Project No:** AL0120, KCI TECHNOLOGIES, INC.

**P.O. No:**17121613

**Inv. No:** 1705318 PI  
**PWSID No:**

**Sample ID**    **Sample Description**  
L5597728-1    BEAR MY

**Samp. Date/Time/Temp**    **Sampled by**  
05/20/15 10:15am NA C    Customer

**Satellite Received Temp** 25.6 C    **Iced (Y/N):** N  
**Exceeds recommended temperature for chemical testing.**  
**Received Date/Time/Temp** 05/20/15 12:50pm 1.8 C    **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
<b>GENERAL CHEMISTRY</b>							
Ignitability	NEG			EPA 1030	1		05/21/15 07:00PM JG
TCLP-Extraction	COMPLETE			EPA 1311			05/26/15 11:25AM KR
TCLP-O Headspace Extraction	COMPLETE			EPA 1311			05/27/15 11:45AM KR
Cyanide, reactive	ND	25.0	mg/kg	EPA 7.3.3.2	1		05/28/15 08:45AM MRP
Reactive Hydrogen Sulfide	ND	50.0	mg/kg	EPA 7.3.4.2	1		05/28/15 08:45AM MRP
Corrosivity (pH)	NEG			EPA 9045C			05/21/15 12:30PM KR
Sulfate	167	53.7	mg/kg DRY	EPA 9056A WO/COMB	1		05/30/15 01:16AM XJY
Paint Filter Test	NEG			EPA 9095			05/21/15 11:30AM KR
Total Solids Percent	93.14	0.01000	%	SM 2540G	1		05/21/15 05:00PM FXT
<b>METALS</b>							
Arsenic-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Barium-TCLP	0.336	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Cadmium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Chromium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Lead-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Selenium-TCLP	ND	0.0500	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Silver-TCLP	0.0196	0.0100	mg/l	EPA 6010C	1		05/28/15 08:34AM B B
Mercury-TCLP	ND	0.000200	mg/l	EPA 7470A	1		05/27/15 06:39PM RMP

Account No:AL0120, KCI TECHNOLOGIES, INC.  
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI  
 PWSID No:

Sample ID Sample Description  
 L5597728-1 BEAR MY

Samp. Date/Time/Temp Sampled by  
 05/20/15 10:15am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N  
 Exceeds recommended temperature for chemical testing.  
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
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### GAS CHROMATOGRAPHY MASS SPECTROMETRY; SEMI-VOLATILES

1,4-Dichlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2,4,5-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2,4,6-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2,4-Dinitrotoluene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
2-Methylphenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
3&4-Methylphenol-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Hexachlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Hexachlorobutadiene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Hexachloroethane-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Nitrobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Pentachlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Pyridine-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL
Cresol, total-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:04PM BJL

### GAS CHROMATOGRAPHY MASS SPECTROMETRY; VOLATILES

Benzene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
Ethylbenzene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
m, p-Xylenes	ND	1320	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
o-Xylene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
Toluene	ND	661	ug/kg DRY	EPA 8260B	123.15		06/01/15 11:47AM OP
1,1-Dichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
1,2-Dichloroethane-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
2-Butanone-TCLP	ND	0.0500	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Benzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Carbon tetrachloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Chlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Chloroform-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Tetrachloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Trichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP
Vinyl chloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 03:54PM OP

### GAS CHROMATOGRAPHY

Chlordane-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Endrin-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
gamma-BHC (Lindane)-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Heptachlor epoxide-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Heptachlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Methoxychlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Toxaphene-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 12:40AM GMP
Aroclor 1016	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1221	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP

PIN: 12145

Serial Number: 4664385

Account No:AL0120, KCI TECHNOLOGIES, INC.  
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI  
 PWSID No:

Sample ID Sample Description  
 L5597728-1 BEAR MY

Samp. Date/Time/Temp Sampled by  
 05/20/15 10:15am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N  
 Exceeds recommended temperature for chemical testing.  
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
<b>GAS CHROMATOGRAPHY continued</b>							
Aroclor 1232	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1242	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1248	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1254	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
Aroclor 1260	ND	17.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:34AM GMP
2,4,5-TP (Silvex)-TCLP	ND	0.000250	mg/l	EPA 8151A	1		06/02/15 01:35AM AKP
2,4-D Methyl ester-TCLP	0.00326	0.00250	mg/l	EPA 8151A	1		06/02/15 01:35AM AKP

Sample ID Sample Description  
 L5597728-2 CHESWOLD MY

Samp. Date/Time/Temp Sampled by  
 05/20/15 09:30am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N  
 Exceeds recommended temperature for chemical testing.  
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
<b>GENERAL CHEMISTRY</b>							
Ignitability	NEG			EPA 1030	1		05/21/15 07:00PM JG
TCLP-Extraction	COMPLETE			EPA 1311			05/26/15 11:25AM KR
TCLP-O Headspace Extraction	COMPLETE			EPA 1311			05/27/15 11:45AM KR
Cyanide, reactive	ND	25.0	mg/kg	EPA 7.3.3.2	1		05/28/15 08:45AM MRP
Reactive Hydrogen Sulfide	ND	50.0	mg/kg	EPA 7.3.4.2	1		05/28/15 08:45AM MRP
Corrosivity (pH)	NEG			EPA 9045C			05/21/15 12:30PM KR
Sulfate	83.0	50.5	mg/kg DRY	EPA 9056A WO/COMB	1		05/30/15 01:31AM XJY
Paint Filter Test	NEG			EPA 9095			05/21/15 11:30AM KR
Total Solids Percent	98.98	0.01000	%	SM 2540G	1		05/21/15 05:00PM FXT

**METALS**

Arsenic-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Barium-TCLP	0.287	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Cadmium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Chromium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Lead-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Selenium-TCLP	ND	0.0500	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Silver-TCLP	0.0295	0.0100	mg/l	EPA 6010C	1		05/28/15 08:37AM B B
Mercury-TCLP	ND	0.000200	mg/l	EPA 7470A	1		05/27/15 06:41PM RMP

Account No:AL0120, KCI TECHNOLOGIES, INC.  
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI  
 PWSID No:

Sample ID Sample Description  
 L5597728-2 CHESWOLD MY

Samp. Date/Time/Temp Sampled by  
 05/20/15 09:30am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N  
 Exceeds recommended temperature for chemical testing.  
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
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### GAS CHROMATOGRAPHY MASS SPECTROMETRY; SEMI-VOLATILES

1,4-Dichlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
2,4,5-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
2,4,6-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
2,4-Dinitrotoluene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
2-Methylphenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
3&4-Methylphenol-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Hexachlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Hexachlorobutadiene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Hexachloroethane-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Nitrobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Pentachlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Pyridine-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL
Cresol, total-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:29PM BJL

### GAS CHROMATOGRAPHY MASS SPECTROMETRY; VOLATILES

Benzene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
Ethylbenzene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
m, p-Xylenes	ND	10.1	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
o-Xylene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
Toluene	ND	5.05	ug/kg DRY	EPA 8260B	1		06/01/15 01:45PM OP
1,1-Dichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
1,2-Dichloroethane-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
2-Butanone-TCLP	ND	0.0500	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Benzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Carbon tetrachloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Chlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Chloroform-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Tetrachloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Trichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP
Vinyl chloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:19PM OP

### GAS CHROMATOGRAPHY

Chlordane-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Endrin-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
gamma-BHC (Lindane)-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Heptachlor epoxide-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Heptachlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Methoxychlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Toxaphene-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:00AM GMP
Aroclor 1016	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1221	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP

PIN: 12145

Serial Number: 4664385

Account No:AL0120, KCI TECHNOLOGIES, INC.  
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI  
 PWSID No:

Sample ID Sample Description  
 L5597728-2 CHESWOLD MY

Samp. Date/Time/Temp Sampled by  
 05/20/15 09:30am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N  
 Exceeds recommended temperature for chemical testing.  
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
<b>GAS CHROMATOGRAPHY continued</b>							
Aroclor 1232	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1242	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1248	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1254	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
Aroclor 1260	ND	16.9	ug/kg DRY	EPA 8082A	1		05/29/15 01:56AM GMP
2,4,5-TP (Silvex)-TCLP	ND	0.000250	mg/l	EPA 8151A	1		06/02/15 01:08AM AKP
2,4-D Methyl ester-TCLP	ND	0.00250	mg/l	EPA 8151A	1		06/02/15 01:08AM AKP

Sample ID Sample Description  
 L5597728-3 LAUREL MY

Samp. Date/Time/Temp Sampled by  
 05/20/15 11:00am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N  
 Exceeds recommended temperature for chemical testing.  
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
<b>GENERAL CHEMISTRY</b>							
Ignitability	NEG			EPA 1030	1		05/21/15 07:00PM JG
TCLP-Extraction	COMPLETE			EPA 1311			05/26/15 11:25AM KR
TCLP-O Headspace Extraction	COMPLETE			EPA 1311			05/27/15 11:45AM KR
Cyanide, reactive	ND	25.0	mg/kg	EPA 7.3.3.2	1		05/28/15 08:45AM MRP
Reactive Hydrogen Sulfide	ND	50.0	mg/kg	EPA 7.3.4.2	1		05/28/15 08:45AM MRP
Corrosivity (pH)	NEG			EPA 9045C			05/21/15 12:30PM KR
Sulfate	63.5	56.3	mg/kg DRY	EPA 9056A WO/COMB	1		05/30/15 01:46AM XJY
Paint Filter Test	NEG			EPA 9095			05/21/15 11:30AM KR
Total Solids Percent	88.87	0.01000	%	SM 2540G	1		05/21/15 05:00PM FXT

**METALS**

Arsenic-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Barium-TCLP	0.535	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Cadmium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Chromium-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Lead-TCLP	ND	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Selenium-TCLP	ND	0.0500	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Silver-TCLP	0.0262	0.0100	mg/l	EPA 6010C	1		05/28/15 08:40AM B B
Mercury-TCLP	ND	0.000200	mg/l	EPA 7470A	1		05/27/15 06:46PM RMP

PIN: 12145

Serial Number: 4664385

Account No:AL0120, KCI TECHNOLOGIES, INC.  
 Project No: AL0120, KCI TECHNOLOGIES, INC.

P.O. No:17121613

Inv. No: 1705318 PI  
 PWSID No:

Sample ID Sample Description  
 L5597728-3 LAUREL MY

Samp. Date/Time/Temp Sampled by  
 05/20/15 11:00am NA C Customer

Satellite Received Temp 25.6 C Iced (Y/N): N  
 Exceeds recommended temperature for chemical testing.  
 Received Date/Time/Temp 05/20/15 12:50pm 1.8 C Iced (Y/N): Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
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### GAS CHROMATOGRAPHY MASS SPECTROMETRY; SEMI-VOLATILES

1,4-Dichlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2,4,5-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2,4,6-Trichlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2,4-Dinitrotoluene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
2-Methylphenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
3&4-Methylphenol-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Hexachlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Hexachlorobutadiene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Hexachloroethane-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Nitrobenzene-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Pentachlorophenol-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Pyridine-TCLP	ND	0.0250	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL
Cresol, total-TCLP	ND	0.0500	mg/l	EPA 8270C	1		05/28/15 08:54PM BJL

### GAS CHROMATOGRAPHY MASS SPECTROMETRY; VOLATILES

Benzene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
Ethylbenzene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
m, p-Xylenes	ND	11.3	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
o-Xylene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
Toluene	ND	5.63	ug/kg DRY	EPA 8260B	1		06/01/15 02:18PM OP
1,1-Dichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
1,2-Dichloroethane-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
2-Butanone-TCLP	ND	0.0500	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Benzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Carbon tetrachloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Chlorobenzene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Chloroform-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Tetrachloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Trichloroethene-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP
Vinyl chloride-TCLP	ND	0.0250	mg/l	EPA 8260B	5		06/03/15 04:44PM OP

### GAS CHROMATOGRAPHY

Chlordane-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Endrin-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
gamma-BHC (Lindane)-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Heptachlor epoxide-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Heptachlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Methoxychlor-TCLP	ND	0.000200	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Toxaphene-TCLP	ND	0.00500	mg/l	EPA 8081B	1		06/02/15 01:21AM GMP
Aroclor 1016	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1221	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP

PIN: 12145

Serial Number: 4664385

**Account No:**AL0120, KCI TECHNOLOGIES, INC.  
**Project No:** AL0120, KCI TECHNOLOGIES, INC.

**P.O. No:**17121613

**Inv. No:** 1705318 PI  
**PWSID No:**

**Sample ID**    **Sample Description**  
L5597728-3    LAUREL MY

**Samp. Date/Time/Temp**    **Sampled by**  
05/20/15 11:00am NA C    Customer

**Satellite Received Temp** 25.6 C    **Iced (Y/N):** N  
**Exceeds recommended temperature for chemical testing.**  
**Received Date/Time/Temp** 05/20/15 12:50pm 1.8 C    **Iced (Y/N):** Y

Parameter	Result	RL	Units	Method	DF	Qual	Test Date, Time, Analyst
<b>GAS CHROMATOGRAPHY continued</b>							
Aroclor 1232	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1242	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1248	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1254	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
Aroclor 1260	ND	18.8	ug/kg DRY	EPA 8082A	1		05/29/15 02:19AM GMP
2,4,5-TP (Silvex)-TCLP	ND	0.000250	mg/l	EPA 8151A	1		06/02/15 01:41AM AKP
2,4-D Methyl ester-TCLP	ND	0.00250	mg/l	EPA 8151A	1		06/02/15 01:41AM AKP

**Sample Comments:**

L5597728-1 :

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

The TCLP extraction was performed in accordance with 40 CFR parts 261.24 and 268.7.

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

Samples for chemical testing were received at the laboratory outside of the allowed temperature range of just above 0 to 6 degrees C. Consult your regulatory agency for further guidance on the use of this data.  
For method 8260B, the recovery of 2 Butanone (142%) in the laboratory control sample was above the laboratory quality control limits (78 to 134%). The detected results of this analyte in the sample may be biased high.

L5597728-2 :

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

The TCLP extraction was performed in accordance with 40 CFR parts 261.24 and 268.7.

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

Samples for chemical testing were received at the laboratory outside of the allowed temperature range of just above 0 to 6 degrees C. Consult your regulatory agency for further guidance on the use of this data.  
For the 8270 TCLP analysis, surrogate Phenol\_d5 (42%) recovered above the laboratory quality control limits (17% to 41%).

For method 8260B, the recovery of 2 Butanone (142%) in the laboratory control sample was above the laboratory quality control limits (78 to 134%). The detected results of this analyte in the sample may be biased high.

PIN: 12145

Serial Number: 4664385

**Account No:**AL0120, KCI TECHNOLOGIES, INC.  
**Project No:** AL0120, KCI TECHNOLOGIES, INC.

**P.O. No:**17121613

**Inv. No:** 1705318 PI  
**PWSID No:**

L5597728-3 :

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

Samples for chemical testing were received at the laboratory outside of the allowed temperature range of just above 0 to 6 degrees C. Consult your regulatory agency for further guidance on the use of this data.

If the sample is a liquid and flashes at a temperature of <60C/140F then it is classified as hazardous waste (CFR 261.21). If the sample is a solid and tests positive using SW846 Method 1030 it meets the definition and characteristics of ignitability.

The TCLP extraction was performed in accordance with 40 CFR parts 261.24 and 268.7. For method 8260B, the recovery of 2 Butanone (142%) in the laboratory control sample was above the laboratory quality control limits (78 to 134%). The detected results of this analyte in the sample may be biased high.



## DEFINITIONS

**The following terms or abbreviations are used in this report:**

MPN	Most probable number	PL	Customer-specific limit
CFU	Colony forming unit	DF	Dilution Factor (For Microbiology, DF = volume of sample tested)
POS	Positive	QUAL	Qualifier
NEG	Negative	NTU	Nephelometric turbidity units
PRES	Presumptive	RL	Laboratory reporting limit or Limit of Quantitation (LOQ)
MF	Membrane Filtration	MCL	EPA recommended "Maximum Contaminant Level"
TNTC	Too numerous to count	MDL	Method Detection Limit

ND	The analyte was not detected at a concentration above the RL / MDL.
J	Estimated value $\geq$ MDL but $<$ RL. Applies to organics and general chemistry results (see below for metals)
Q	Indicates this analyte did not meet quality control requirements.
DRY	Indicates the result was calculated and reported on a dry weight basis.
TIC	Tentatively Identified Compounds (Library Search Compounds); concentrations are estimated values only.
ppm (mg/l)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples.
ppb (ug/L)	Parts per billion: equivalent to 1 microgram per kilogram (ug/Kg) for solids or one microgram per liter (ug/L) for aqueous samples.
<	Less than: In conjunction with a numerical value, indicates a concentration less than RL / MDL.
>	Greater than: In conjunction with a numerical value, indicates a concentration greater than RL / MDL.

**Data Qualifiers (EPA CLP Convention)**

<u>Organics</u>		<u>Metals</u>	
B	Analyte was detected in the method blank	B	Value is $\geq$ MDL and $<$ RL
E	Concentration exceeds calibration range	E	Estimated value due to presence of interference
U	Compound not detected above MDL/RL	M	Duplicate precision for an element outside control limit
N	Presumptive evidence of compound in library search	N	Spike recovery for an element outside control limits
P1	Column precision criteria not met, report lower value	U	Element not detected above MDL/RL
P2	Column precision criteria not met, report higher value	Other	Defined in case narrative or data package
Other	Defined in case narrative or data package		

**Warranties, Terms, and Conditions**

- Unless otherwise specified in the Parameter field, analyses (excluding "Field Parameters") were performed at the QCL Southampton Division (1205 Industrial Boulevard, Southampton, PA 18966). Food, pharmaceutical, and dairy testing were performed the QCL facility in Horsham (702 Electronic Drive, Horsham, PA 19044).
- The test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- The reported results relate only to the sample as tested. QCL is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- QCL is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. QCL's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Customer Service for further information.
- The following personnel or their deputies have approved the results of the tests performed by QCL: Nicki Smith (Environmental Chemistry), Amanda Lukaszewski (Pharmaceutical), Ryan Baker (Dairy), Karen Battista (Food Micro), Jonathan Decenzi (Food Chemistry), Sue Abbott (QCL Delaware).

**OCL Accreditations**

Southampton Division	EPA ID:	PA00018	Reading Division	State ID:	PA 06-03543
	NELAP IDs:	PA 09-00131; NJ PA166; NY 11223	Vineland Division	State ID:	NJ 06005
	State IDs:	CT PH-0768; DE PA-018; MD 206			
	FDA Reg #:	2515238			
Delaware Division	State IDs:	DE 00011; MD 138			
Wind Gap Division	State IDs:	PA 48-01334; NJ PA001			
East Rutherford Division	State ID:	NJ 02015			



1205 Industrial Blvd. Phone: 215-355-3900  
Southampton, PA 18966-0514 Fax: 215-355-7231

### CHAIN OF CUSTODY

Page \_\_\_\_\_ of \_\_\_\_\_

Lab LIMS No: **L5597728**

### MATRIX CODES

- DW: DRINKING WATER
- GW: GROUND WATER
- WW: WASTEWATER
- SO: SOIL
- SL: SLUDGE
- OIL: OIL
- SSL: NON SOIL SOLID
- MI: MISCELLANEOUS
- X: OTHER

### LAB USE ONLY:

- # \_\_\_ Ascorbic/HCl Vials # \_\_\_ HCl Vials
- # \_\_\_ Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> \_\_\_\_\_
- # \_\_\_ Na OH/Zn acetate pH \_\_\_\_\_
- # \_\_\_ HNO<sub>3</sub> pH \_\_\_\_\_
- # \_\_\_ H<sub>2</sub>SO<sub>4</sub> pH \_\_\_\_\_
- # \_\_\_ NaOH pH \_\_\_\_\_
- # **3** Unpreserved **1000g. w/ 3 splits**
- # \_\_\_ Hcl pH \_\_\_\_\_

Client/Acct. No. **KCI Technologies, Inc.**

Address **1352 Marrows Rd.**

City/State/Zip **NEWARK DE 19711**

Phone/Fax \_\_\_\_\_

Client Contact \_\_\_\_\_

Bill to/Report to: (if different)

Sampling Site Address: (if different)

P.O. No. \_\_\_\_\_

QC Contact \_\_\_\_\_

LAB USE ONLY	PROJECT	Collection		C R A B	C O M P	Matrix Code	Total	Number of Containers															
	FIELD ID	Date	Military Time					H	S	H	Y	N	Z	U	B	A	S						
								1	2	3	4	5	6	7	8	9	10						
	<b>BEAR MY</b>	<b>5/20/15</b>	<b>1015</b>			<b>SO</b>																	
	<b>CHESWOLD MY</b>	<b>5/20/15</b>	<b>0930</b>			<b>SO</b>																	
	<b>LAUREL MY</b>	<b>5/19/15</b>	<b>1100</b>			<b>SO</b>																	

**1-800-888-8888**

### ANALYSIS REQUESTED

**Full TCLP, RCRA Char, SulFok,  
Percent Solids, PCBs, BTEX,  
Paint Filter Test**

FINAL REPORT

SAMPLED BY: (Name/Company) \_\_\_\_\_

Verbal/fax data due: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Hardcopy due: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Please call for pricing and availability on rush (<14-21 day) turnaround and on all but standard format.

Report Format:  Standard  Forms

Standard + QC  NJ Reduced  Disk

Field Parameters Analyzed By: \_\_\_\_\_

Sig: \_\_\_\_\_ Date/Time: \_\_\_\_\_

**SAMPLE CUSTODY EXCHANGES MUST BE DOCUMENTED BELOW. USE FULL LEGAL SIGNATURE, DATE AND MILITARY TIME (24 HOUR CLOCK, I.E. 8AM IS 0800, 4 PM IS 1600)**

RELINQUISHED BY SAMPLER	DATE	TIME	RECEIVED BY	DATE	TIME	DELIVERY METHOD: <input type="checkbox"/> QC COURIER <input type="checkbox"/> CLIENT	Custody Seal Number
<b>Katherine Adair</b>	<b>5/20/15</b>	<b>1250</b>	<b>Carla DeOlla</b>	<b>5/20/15</b>	<b>12:50</b>	<input type="checkbox"/> UPS <input type="checkbox"/> FEDEX <input type="checkbox"/> OTHER _____	
<b>Carla DeOlla</b>	<b>5/20/15</b>	<b>13:40</b>	<b>2 Copley #829</b>			COMMENTS: <b>25.6" PDE NOTILED</b>	
<b>#329</b>	<b>5/20/15</b>	<b>1425</b>	<b>J Muller</b>	<b>5/20/15</b>	<b>1425</b>		

Hazardous: yes / no

For example to aid completion, see reverse side.

**Appendix E.** Wet Weather Monitoring Data from DelDOT Maintenance Facilities.

**DeIDOT Maintenance Facilities  
Semi-annual Wet Weather Grab Samples**

**Maintenance Yard Sampling Results**

**TALLEY, OUTFALL #1**

		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		
																				8/28/13	5/16/14	8/12/14	4/14/15	8/11/15	2/23/16			
TOTAL SUSPENDED SOLIDS	mg/L																				232	36.7	59.4	10.4	233	21.6		
SURFACTANTS, MBAs	mg/L																				0.09	0.634	0.959	0.231	0.341	0.378		
CHLORIDE	mg/L																				10.3	174	45.8	4730	37.7	5360		
TPH-GASOLINE RANGE ORGANICS	mg/L																											
TPH-DIESEL RANGE ORGANICS	mg/L																											
OIL & GREASE																					ND	27.20	10.4	ND	ND	7.90		
pH	s.u.																				7.38	7.39	7.23	7.04	7.00	7.16		

**TALLEY, OUTFALL #2**

		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016			
																						8/28/13	5/16/14	8/12/14	4/14/15	8/11/15	2/23/16		
TOTAL SUSPENDED SOLIDS	mg/L																				9.6	331	43.6	74.5	54.5				
SURFACTANTS, MBAs	mg/L																				0.372	1.32	0.583	0.299	0.447				
CHLORIDE	mg/L																				ND	6050	36.500	1350	34.3				
TPH-GASOLINE RANGE ORGANICS	mg/L																												
TPH-DIESEL RANGE ORGANICS	mg/L																												
OIL & GREASE																					ND	24.70	5.70	ND	139.00				
pH	s.u.																				7.36	8.35	6.77	7.13	7.23				

**KIAMENSI, OUTFALL #1**

		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
		11/4/04	12/7/04	10/8/05	1/11/06	7/28/06	3/2/07	8/5/07	1/11/08	9/6/08	4/3/09	8/28/09	3/12/10	10/14/10	1/18/11	8/9/11	2/29/12	8/14/12	3/12/13	8/28/13	4/15/14	8/12/14	2/2/15	7/27/15	2/24/16		
TOTAL SUSPENDED SOLIDS	mg/L	28	12	13	56	52	82	33	53	26	28	7	72	6	35	78	52	90.8	40.8	97	42	26.2	55.8	15	14.4		
SURFACTANTS, MBAs	mg/L	0.80	0.06	0.21	0.14	0.17	0.53	0.37	0.17	0.26	0.23	0.28	0.89	0.11	0.18	0.2	0.99	0.174	0.1	0.19	0.27	0.178	0.266	0.212	0.143		
CHLORIDE	mg/L	254	230	1144	17911	424	5750	1910	530	1190	977	713	18100	695	15700	1580	9660	1190	3460	313	2790	1850	6510	3970	4150		
TPH-GASOLINE RANGE ORGANICS	mg/L	<0.05	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.32	<0.05	<0.05	<0.05	<0.100	ND								
TPH-DIESEL RANGE ORGANICS	mg/L	0.31	<0.10	0.22	0.13	0.12	0.24	0.18	0.45	0.28	0.3	0.20	1.80	0.20	0.95	0.28	0.49	<0.500	<0.500								
OIL & GREASE																				ND	ND	ND	5.40	ND	ND		
pH	s.u.	7.52	7.37	7.39	6.67	7.06	7.38	8.26	7.3	7.35	7.08	7.36	7.38	7.78	7.58	7.34	7.45	7.34	7.45	7.68	7.47	7.11	7.06	7.40	7.67		

**CHAPMAN, OUTFALL #1**

		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		
																						10/7/13	4/15/14	8/12/14	6/8/15	8/11/15		
TOTAL SUSPENDED SOLIDS	mg/L																				ND	9.8	15	103	21			
SURFACTANTS, MBAs	mg/L																				0.045	0.086	0.173	0.1	0.133			
CHLORIDE	mg/L																				892	2350	882	925	746			
TPH-GASOLINE RANGE ORGANICS	mg/L																											
TPH-DIESEL RANGE ORGANICS	mg/L																											
OIL & GREASE																					ND	ND	ND	ND	ND			
pH	s.u.																				7.38	7.57	7.10	6.73	7.00			

**CHAPMAN, OUTFALL #2**

		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		
TOTAL SUSPENDED SOLIDS	mg/L																											
SURFACTANTS, MBAs	mg/L																											
CHLORIDE	mg/L																											
TPH-GASOLINE RANGE ORGANICS	mg/L																											
TPH-DIESEL RANGE ORGANICS	mg/L																											
OIL & GREASE																												
pH	s.u.																											

**CHAPMAN, OUTFALL #3**

		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016		
																						10/7/13	4/15/14	8/12/14	6/8/15	8/11/15		
TOTAL SUSPENDED SOLIDS	mg/L																				130	318	63.7	203	89.5			
SURFACTANTS, MBAs	mg/L																				0.209	0.352	0.319	0.204	0.429			
CHLORIDE	mg/L																				48	298	92.3	115	32.1			
TPH-GASOLINE RANGE ORGANICS	mg/L																											
TPH-DIESEL RANGE ORGANICS	mg/L																											
OIL & GREASE																					2.29	ND	6.90	33.30	ND			
pH	s.u.																				7.03	7.57	6.64	6.93	7.22			

**DeIDOT Maintenance Facilities  
Semi-annual Wet Weather Grab Samples**

**CHAPMAN, OUTFALL #4**

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
											10/7/13	11/1/13	4/15/14	8/12/14	6/8/15	8/11/15	
TOTAL SUSPENDED SOLIDS	mg/L										1110	119	876	84.3	96.8	353	
SURFACTANTS, MBAs	mg/L										0.98	0.728	0.385	0.714	0.081	0.368	
CHLORIDE	mg/L										44900	117	1140	117	499	55.1	
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE											43.2	6.80	7.40	9.70	5.70	14.80	
pH	s.u.										7.92	7.16	8.57	6.90	7.01	7.20	



**BEAR, OUTFALL #1**

		2004	2005	2006		2007		2008		2009		2010		2011		2012		2013	2014		2015		2016	
		11/4/04	10/8/05	1/23/06	7/27/06	3/2/07	7/19/07	1/18/08	9/6/08	4/3/09	8/28/09	3/12/10	10/14/10	1/18/11	8/9/11	2/29/12	8/14/12	3/12/13	9/21/13	4/7/14	9/25/14	5/18/15	7/30/15	2/23/16
TOTAL SUSPENDED SOLIDS	mg/L	65	2530	71	677	318	783	18	107	51	8	18	34	8	261	122.8	113	116	46.8	51.8	18.3	14.5	18.5	5.6
SURFACTANTS, MBAs	mg/L	0.17	0.31	0.16	0.13	0.15	0.18	0.18	0.27	0.25	0.18	0.17	0.16	0.11	0.16	0.13	0.126	0.073	0.084	0.201	0.115	0.14	0.145	0.081
CHLORIDE	mg/L	693	483	1487	124	806	260	737	39.3	965	28.5	4530	83.7	1620	107	2420	30	880	96.2	2480	130	1610	261	3130
TPH-GASOLINE RANGE ORGANICS	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.100	<0.100							
TPH-DIESEL RANGE ORGANICS	mg/L	<0.11	0.20	0.19	0.21	0.22	0.18	106	0.14	0.16	0.13	0.50	0.10	0.23	0.48	0.43	<0.500	<0.500						
OIL & GREASE																			ND	ND	ND	ND	ND	ND
pH	s.u.	7.86	8.22	7.70	7.40	7.11	7.10	*	7.31	7.16	7.29	8.27	7.85	9.51	7.23	7.18	7.30	7.54	7.42	8.36	7.69	7.27	7.38	6.58

**BEAR, OUTFALL #2**

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
											9/21/13		4/7/14	9/25/14	5/18/15	7/30/15	2/23/16
TOTAL SUSPENDED SOLIDS	mg/L										109		16.8	17.3	10	13.5	67.6
SURFACTANTS, MBAs	mg/L										0.055		1.81	0.189	0.444	0.239	0.178
CHLORIDE	mg/L										17.9		2440	17.7	153	458	2650
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE											ND		8.00	ND	ND	ND	ND
pH	s.u.										7.15		7.68	6.49	7.25	7.41	7.21

**MIDDLETOWN, OUTFALL #1**

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
													9/25/14	6/14/15	10/28/15		
TOTAL SUSPENDED SOLIDS	mg/L												6.5	82.5	4		
SURFACTANTS, MBAs	mg/L												ND	0.12	ND		
CHLORIDE	mg/L												14.8	213	52.2		
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE													ND	ND	ND		
pH	s.u.												6.61	6.73	7.36		

**MIDDLETOWN, OUTFALL #2**

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
											9/21/13		4/15/14	9/25/14	6/14/15	10/28/15	
TOTAL SUSPENDED SOLIDS	mg/L										102		162	64.5	2600	488	
SURFACTANTS, MBAs	mg/L										0.521		0.58	ND	0.16	0.384	
CHLORIDE	mg/L										494		9570	2220	940	4830	
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE											ND		ND	ND	ND	ND	
pH	s.u.										7.69		7.24	7.35	8.02	7.22	

**MIDDLETOWN, OUTFALL #3**

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
											9/21/13		4/15/14	9/25/14	6/14/15		
TOTAL SUSPENDED SOLIDS	mg/L														78		
SURFACTANTS, MBAs	mg/L														ND		
CHLORIDE	mg/L														1.06		
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE															ND		
pH	s.u.														7.80		



**DeIDOT Maintenance Facilities  
Semi-annual Wet Weather Grab Samples**

**CHESWOLD, OUTFALL #2**

		2004		2005	2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
		11/4/04	12/7/04		1/14/06	9/1/06	1/5/07	8/20/07	1/11/08	9/6/08	4/3/09	9/11/09	1/17/10	8/12/10	1/18/11	9/6/11	4/22/12	9/18/12	3/12/13	9/21/13	4/8/14	9/25/14	2/2/15	7/27/15	2/24/16	
TOTAL SUSPENDED SOLIDS	mg/L	525	39		47	45	6	469	717	51	33	36	548	372	36	163	221	60	65.5							
SURFACTANTS, MBAs	mg/L	0.49	0.03		0.09	0.29	0.21	0.43	0.28	1.6	0.25	0.15	0.16	0.42	0.16	0.19	0.35	0.233	0.17	0.298	0.151	ND	0.094	0.136	0.14	
CHLORIDE	mg/L	346	13.6		1993	242	457	443	471	107	603	50.5	7460	90.4	9170	258	1050	45.4	545	67.4	526	132	1500	73.2	3310	
TPH-GASOLINE RANGE ORGANICS	mg/L	<0.05	<0.10		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.100	<0.100								
TPH-DIESEL RANGE ORGANICS	mg/L	0.96	<0.10		0.18	0.14	<0.1	0.22	0.1	3.62	0.23	0.18	1.70	0.40	0.66	0.39	1.13	<0.500	<0.500							
OIL & GREASE																			ND	ND	ND	ND	ND	ND		
pH	s.u.	7.62	6.59		7.96	7.22	8.24	7.68	8.11	7.13	7.43	7.33	8.28	8.19	7.42	7.52	6.94	7.80	7.75	7.74	7.55	7.23	6.94	7.60	7.77	

**DOVER, OUTFALL #2**

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
											10/7/13	5/16/14	9/25/14	3/26/15	9/10/15		
TOTAL SUSPENDED SOLIDS	mg/L											167	143	19.8	410	495	
SURFACTANTS, MBAs	mg/L											0.05	0.599	0.206	0.203	1.2	
CHLORIDE	mg/L											13.4	60.5	11.5	16.8	45.8	
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE												5.3	ND	ND	ND	6.90	
pH	s.u.											7.85	6.36	6.45	7.36	6.78	

**MAGNOLIA, OUTFALL #1**

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
											10/7/13	4/7/14	9/25/14	3/26/15	9/10/15		
TOTAL SUSPENDED SOLIDS	mg/L											98.9	50.8	48.5	ND	227	
SURFACTANTS, MBAs	mg/L											<0.040	ND	ND	0.025	2.54	
CHLORIDE	mg/L											197	167	35.7	131	57.4	
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE												<5.00	ND	ND	ND	ND	
pH	s.u.											7.05	7.36	6.56	7.31	6.93	

**MAGNOLIA, OUTFALL #2**

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
											10/7/13	4/7/14	9/25/14	3/26/15	9/10/15		
TOTAL SUSPENDED SOLIDS	mg/L											670	99.4	84.2	58.5	90.7	
SURFACTANTS, MBAs	mg/L											0.964	0.716	ND	0.973	0.045	
CHLORIDE	mg/L											120	258	163	566	122	
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE												11.8	9.00	ND	8.90	ND	
pH	s.u.											7.55	7.88	6.65	7.36	6.96	



**HARRINGTON, OUTFALL #1**

		2004		2005	2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
		11/4/04	12/7/04		1/14/06	9/1/06	1/5/07	9/11/07	2/1/08	9/6/08	4/3/09	9/11/09	1/17/10	10/14/10	1/8/11	9/6/11	4/22/12	11/7/12	3/12/13	8/1/13	3/13/14	9/25/14	2/2/15	9/30/15	2/24/16	
TOTAL SUSPENDED SOLIDS	mg/L	320	2130		195	15	106	9	60	48	21	161	37	11	6	5	17.2	<4.00	14	ND	30.7	12.8	6.6	17.6	5.6	
SURFACTANTS, MBAs	mg/L	<0.02	<0.02		0.22	0.27	0.1	0.23	0.16	0.69	0.2	0.22	0.1	0.05	0.07	0.08	0.11	0.088	0.112	0.123	0.201	ND	0.104	0.096	0.142	
CHLORIDE	mg/L	195	504		1453	186	83.2	96.6	1870	331	644	51	9000	98.8	143	68.2	1130	37.1	408	48.2	3090	147	485	103	1020	
TPH-GASOLINE RANGE ORGANICS	mg/L	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.100	<0.100	0.112							
TPH-DIESEL RANGE ORGANICS	mg/L	0.14	0.15		<0.10	0.20	<0.1	<0.1	<0.13	0.24	0.11	0.23	0.70	0.10	0.11	0.16	<0.5	<0.500	<0.500	ND						
OIL & GREASE																					6.60	ND	ND	ND	ND	
pH	s.u.	7.67	6.80		6.90	6.84	7.24	7.59	6.97	7.26	7.34	7.17	8.33	7.47	7.50	8.93	7.39	7.27	7.52	7.64	7.78	7.22	7.44	7.20	7.94	

**ELLENDALE, OUTFALL #2**

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
											11/26/13	4/15/14					
TOTAL SUSPENDED SOLIDS	mg/L											5070	ND				
SURFACTANTS, MBAs	mg/L											ND	0.046				
CHLORIDE	mg/L											38.7	109				
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE												3.9	ND				
pH	s.u.											7.31	6.28				

**DeIDOT Maintenance Facilities  
Semi-annual Wet Weather Grab Samples**

**ELLENDALE, OUTFALL #3**

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
											11/26/13	4/15/14	9/25/14	4/14/15	9/10/15		
TOTAL SUSPENDED SOLIDS	mg/L										175	6.8	77.7	8.40	463		
SURFACTANTS, MBAs	mg/L										0.272	0.086	0.15	0.0690	0.395		
CHLORIDE	mg/L										90.3	547	174	649	309		
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE											5.00	ND	ND	ND	ND		
pH	s.u.										8.27	6.43	7.87	7.31	7.31		

**SEAFORD, OUTFALL #1**

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
											10/7/13	4/7/14	11/6/14	1/12/15	10/28/15		
TOTAL SUSPENDED SOLIDS	mg/L										324	113	398	400	373		
SURFACTANTS, MBAs	mg/L										0.45	1.11	0.152	0.445	0.536		
CHLORIDE	mg/L										229	1190	196	913	759		
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE											<5.00	ND	ND	5.20	ND		
pH	s.u.										8.04	8.16	8.69	7.69	7.27		

**SEAFORD, OUTFALL #2**

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
TOTAL SUSPENDED SOLIDS	mg/L																
SURFACTANTS, MBAs	mg/L																
CHLORIDE	mg/L																
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE																	
pH	s.u.																

**GEORGETOWN, OUTFALL #1**

		2004		2005		2006		2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
		11/4/04	12/7/04	1/18/06	9/1/06	1/7/07	8/20/07							10/7/13	6/26/14	8/13/14	2/2/15	12/30/15		
TOTAL SUSPENDED SOLIDS	mg/L	17	39	47	36	17	19							27	77.1	36	17.8	40.5		
SURFACTANTS, MBAs	mg/L	<0.02	0.03	0.09	0.13	0.08	0.17							0.15	0.171	0.063	0.550	ND		
CHLORIDE	mg/L	12.2	13.6	1993	15.9	8.87	17.3							11.7	233	20.9	274	15		
TPH-GASOLINE RANGE ORGANICS	mg/L	<0.05	<0.10	<0.05	<0.05	<0.05	<0.05													
TPH-DIESEL RANGE ORGANICS	mg/L	<0.10	<0.10	0.18	<0.10	<0.1	0.14													
OIL & GREASE	mg/L													ND	ND	ND	ND	ND		
pH	s.u.	7.19	6.59	7.96	6.92	7.38	6.9							7.41	8.69	6.46	7.36	7.25		

**DAGSBORO, OUTFALL #1**

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
											11/26/13	4/15/14	8/12/14	6/1/15	12/17/15		
TOTAL SUSPENDED SOLIDS	mg/L										43.8	43.5	114	356	78		
SURFACTANTS, MBAs	mg/L										0.129	0.113	0.127	0.093	ND		
CHLORIDE	mg/L										136	473	141	90.1	24.7		
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE											2.6	ND	5.70*	ND	ND		
pH	s.u.										7.62	6.35	7.99	7.76	7.65		

**DAGSBORO, OUTFALL #2**

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
											11/26/13	4/15/14	8/12/14	6/1/15	12/17/15		
TOTAL SUSPENDED SOLIDS	mg/L										30	215	62.8	184	8.5		
SURFACTANTS, MBAs	mg/L										0.124	0.096	0.081	0.095	ND		
CHLORIDE	mg/L										58.2	26.4	28.000	37.4	18.9		
TPH-GASOLINE RANGE ORGANICS	mg/L																
TPH-DIESEL RANGE ORGANICS	mg/L																
OIL & GREASE											2.7	ND	ND	ND	ND		
pH	s.u.										7.66	6.09	7.95	7.78	7.39		

**DeIDOT Maintenance Facilities  
Semi-annual Wet Weather Grab Samples**

**DAGSBORO, OUTFALL #3**

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		2016
												01/12/15**	6/1/15	12/17/15	
TOTAL SUSPENDED SOLIDS	mg/L											76.1	269	130	
SURFACTANTS, MBAs	mg/L											0.29	0.209	0.216	
CHLORIDE	mg/L											348	1400	171	
TPH-GASOLINE RANGE ORGANICS	mg/L														
TPH-DIESEL RANGE ORGANICS	mg/L														
OIL & GREASE												ND	ND	ND	
pH	s.u.											6.45	7.27	7.55	

**SOD FARM, OUTFALL #1**

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		2016
												8/12/14	6/8/15	12/14/15	
TOTAL SUSPENDED SOLIDS	mg/L											203	16	28.4	
SURFACTANTS, MBAs	mg/L											0.127	0.511	0.091	
CHLORIDE	mg/L											256	1170	137	
TPH-GASOLINE RANGE ORGANICS	mg/L														
TPH-DIESEL RANGE ORGANICS	mg/L														
OIL & GREASE												ND*	ND	ND	
pH	s.u.											6.23	7.11	7.41	

**SOD FARM, OUTFALL #2**

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
TOTAL SUSPENDED SOLIDS	mg/L													
SURFACTANTS, MBAs	mg/L													
CHLORIDE	mg/L													
TPH-GASOLINE RANGE ORGANICS	mg/L													
TPH-DIESEL RANGE ORGANICS	mg/L													
OIL & GREASE														
pH	s.u.													

**Benchmark Values:**

TSS – 100 mg/L  
 Surfactants – 1.0 mg/L  
 Chlorides – no benchmark  
 Oil and Grease – 15 mg/L  
 pH – 6 to 9 s.u.

 Completion of BMP retrofit projects

\* DAGS01 and SOD01 Oil and Grease samples were mixed up at the lab. The result could be ND or 5.70 for either (5.70 assumed for DAGS01 because oil sheen was observed).

\*\* Sample fulfilling 2014 requirement

Semi-Annual Wet Weather Outfall Grab Samples  
Talley Maintenance Yard

TALLEY, OUTFALL #1

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2015		2016
											8/28/13	5/16/14	8/12/14	4/14/15	8/11/15	2/23/16
TOTAL SUSPENDED SOLIDS	mg/L										232	36.7	59.4	10.4	233	21.6
SURFACTANTS, MBAs	mg/L										0.09	0.634	0.959	0.231	0.341	0.378
CHLORIDE	mg/L										10.3	174	45.8	4730	37.7	5360
OIL & GREASE	mg/L										ND	27.20	10.4	ND	ND	7.90
pH	s.u.										7.38	7.39	7.23	7.04	7.00	7.16

TALLEY, OUTFALL #2

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2015		2016
											8/28/13	5/16/14	8/12/14	4/14/15	8/11/15	2/23/16
TOTAL SUSPENDED SOLIDS	mg/L										9.6	331	43.6	74.5	54.5	582
SURFACTANTS, MBAs	mg/L										0.372	1.32	0.583	0.299	0.447	0.409
CHLORIDE	mg/L										ND	6050	36.500	1350	34.3	34300
OIL & GREASE	mg/L										ND	24.70	5.70	ND	139.00	13.10
pH	s.u.										7.36	8.35	6.77	7.13	7.23	7.11

**Benchmark Values:**

TSS – 100 mg/L  
 Surfactants – 1.0 mg/L  
 Chlorides – no benchmark  
 Oil and Grease – 15 mg/L  
 pH – 6 to 9 s.u.

Semi-Annual Wet Weather Outfall Grab Samples  
Kiamensi Maintenance Yard

KIAMENSI, OUTFALL #1

		2004		2005	2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
		11/4/04	12/7/04	10/8/05	1/11/06	7/28/06	3/2/07	8/5/07	1/11/08	9/6/08	4/3/09	8/28/09	3/12/10	10/14/10	1/18/11	8/9/11	2/29/12	8/14/12	3/12/13	8/28/13	4/15/14	8/12/14	2/2/15	7/27/15	2/24/16	
TOTAL SUSPENDED SOLIDS	mg/L	28	12	13	56	52	82	33	53	26	28	7	72	6	35	78	52	90.8	40.8	97	42	26.2	55.8	15	14.4	
SURFACTANTS, MBAs	mg/L	0.80	0.06	0.21	0.14	0.17	0.53	0.37	0.17	0.26	0.23	0.28	0.89	0.11	0.18	0.2	0.99	0.174	0.1	0.19	0.27	0.178	0.266	0.212	0.143	
CHLORIDE	mg/L	254	230	1144	17911	424	5750	1910	530	1190	977	713	18100	695	15700	1580	9660	1190	3460	313	2790	1850	6510	3970	4150	
TPH-GASOLINE RANGE ORGANICS	mg/L	<0.05	<0.10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.32	<0.05	<0.05	<0.05	<0.100	ND							
TPH-DIESEL RANGE ORGANICS	mg/L	0.31	<0.10	0.22	0.13	0.12	0.24	0.18	0.45	0.28	0.3	0.20	1.80	0.20	0.95	0.28	0.49	<0.500	<0.500							
OIL & GREASE	mg/L																			ND	ND	ND	5.40	ND	ND	
pH	s.u.	7.52	7.37	7.39	6.67	7.06	7.38	8.26	7.3	7.35	7.08	7.36	7.38	7.78	7.58	7.34	7.45	7.34	7.45	7.68	7.47	7.11	7.06	7.40	7.67	

Benchmark Values:
TSS – 100 mg/L
Surfactants – 1.0 mg/L
Chlorides – no benchmark
Oil and Grease – 15 mg/L
pH – 6 to 9 s.u.

Semi-Annual Wet Weather Outfall Grab Samples  
Bear Maintenance Yard

BEAR, OUTFALL #1

		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
		11/4/04		10/8/05		1/23/06	7/27/06	3/2/07	7/19/07	1/18/08	9/6/08	4/3/09	8/28/09	3/12/10	10/14/10	1/18/11	8/9/11	2/29/12	8/14/12	3/12/13	9/21/13	4/7/14	9/25/14	5/18/15	7/30/15	2/23/16	
TOTAL SUSPENDED SOLIDS	mg/L	65		2530	71	677	318	783	18	107	51	8	18	34	8	261	122.8	113	116	46.8	51.8	18.3	14.5	18.5	5.6		
SURFACTANTS, MBAs	mg/L	0.17		0.31	0.16	0.13	0.15	0.18	0.18	0.27	0.25	0.18	0.17	0.16	0.11	0.16	0.13	0.126	0.073	0.084	0.201	0.115	0.14	0.145	0.081		
CHLORIDE	mg/L	693		483	1487	124	806	260	737	39.3	965	28.5	4530	83.7	1620	107	2420	30	880	96.2	2480	130	1610	261	3130		
TPH-GASOLINE RANGE ORGANICS	mg/L	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.100	<0.100								
TPH-DIESEL RANGE ORGANICS	mg/L	<0.11		0.20	0.19	0.21	0.22	0.18	106	0.14	0.16	0.13	0.50	0.10	0.23	0.48	0.43	<0.500	<0.500								
OIL & GREASE	mg/L																										
pH	s.u.	7.86		8.22	7.70	7.40	7.11	7.10	*	7.31	7.16	7.29	8.27	7.85	9.51	7.23	7.18	7.30	7.54	7.42	8.38	7.69	7.27	7.38	6.58		

BEAR, OUTFALL #2

		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
																				9/21/13	4/7/14	9/25/14	5/18/15	7/30/15	2/23/16		
TOTAL SUSPENDED SOLIDS	mg/L																			109	16.8	17.3	10	13.5	67.6		
SURFACTANTS, MBAs	mg/L																			0.055	1.81	0.189	0.444	0.239	0.178		
CHLORIDE	mg/L																			17.9	2440	17.7	153	458	2650		
OIL & GREASE	mg/L																			ND	8.00	ND	ND	ND	ND		
pH	s.u.																			7.15	7.68	6.49	7.25	7.41	7.21		

Benchmark Values:
TSS – 100 mg/L
Surfactants – 1.0 mg/L
Chlorides – no benchmark
Oil and Grease – 15 mg/L
pH – 6 to 9 s.u.

Semi-Annual Wet Weather Outfall Grab Samples  
Cheswold Maintenance Yard

CHESWOLD, OUTFALL #2

		2004		2005	2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
		11/4/04	12/7/04		1/14/06	9/1/06	1/5/07	8/20/07	1/11/08	9/6/08	4/3/09	9/11/09	1/17/10	8/12/10	1/18/11	9/6/11	4/22/12	9/18/12	3/12/13	9/21/13	4/8/14	9/25/14	2/2/15	7/27/15	2/24/16	
TOTAL SUSPENDED SOLIDS	mg/L	525	39		47	45	6	469	717	51	33	171	36	548	372	36	163	221	60	65.5	18.8	26.8	37.6	192	90.7	
SURFACTANTS, MBAs	mg/L	0.49	0.03		0.09	0.29	0.21	0.43	0.28	1.6	0.25	0.15	0.16	0.42	0.16	0.19	0.35	0.233	0.17	0.298	0.151	ND	0.094	0.136	0.14	
CHLORIDE	mg/L	346	13.6		1993	242	457	443	471	107	603	50.5	7460	90.4	9170	258	1050	45.4	545	67.4	526	132	1500	73.2	3310	
TPH-GASOLINE RANGE ORGANICS	mg/L	<0.05	<0.10		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.100	<0.100								
TPH-DIESEL RANGE ORGANICS	mg/L	0.96	<0.10		0.18	0.14	<0.1	0.22	0.1	3.62	0.23	0.18	1.70	0.40	0.66	0.39	1.13	<0.500	<0.500							
OIL & GREASE	mg/L																			ND	ND	ND	ND	ND	ND	
pH	s.u.	7.62	6.59		7.96	7.22	8.24	7.68	8.11	7.13	7.43	7.33	8.28	8.19	7.42	7.52	6.94	7.80	7.75	7.74	7.55	7.23	6.94	7.60	7.77	

Benchmark Values:
TSS – 100 mg/L
Surfactants – 1.0 mg/L
Chlorides – no benchmark
Oil and Grease – 15 mg/L
pH – 6 to 9 s.u.



Semi-Annual Wet Weather Outfall Grab Samples  
Harrington Maintenance Yard

**HARRINGTON, OUTFALL #1**

		2004		2005	2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
		11/4/04	12/7/04		1/14/06	9/1/06	1/5/07	9/11/07	2/1/08	9/6/08	4/3/09	9/11/09	1/17/10	10/14/10	1/8/11	9/6/11	4/22/12	11/7/12	3/12/13	8/1/13	3/13/14	9/25/14	2/2/15	9/30/15	2/24/16	
TOTAL SUSPENDED SOLIDS	mg/L	320	2130		195	15	106	9	60	48	21	161	37	11	6	5	17.2	<4.00	14	ND	30.7	12.8	6.6	17.6	5.6	
SURFACTANTS, MBAs	mg/L	<0.02	<0.02		0.22	0.27	0.1	0.23	0.16	0.69	0.2	0.22	0.1	0.05	0.07	0.08	0.11	0.088	0.112	0.123	0.201	ND	0.104	0.096	0.142	
CHLORIDE	mg/L	195	504		1453	186	83.2	96.6	1870	331	644	51	9000	98.8	143	68.2	1130	37.1	408	48.2	3090	147	485	103	1020	
TPH-GASOLINE RANGE ORGANICS	mg/L	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.100	<0.100	0.112							
TPH-DIESEL RANGE ORGANICS	mg/L	0.14	0.15		<0.10	0.20	<0.1	<0.1	<0.13	0.24	0.11	0.23	0.70	0.10	0.11	0.16	<0.5	<0.500	<0.500	ND						
OIL & GREASE	mg/L																				6.60	ND	ND	ND	ND	
pH	s.u.	7.67	6.80		6.90	6.84	7.24	7.59	6.97	7.26	7.34	7.17	8.33	7.47	7.50	8.93	7.39	7.27	7.52	7.64	7.78	7.22	7.44	7.20	7.94	

Benchmark Values:
TSS – 100 mg/L
Surfactants – 1.0 mg/L
Chlorides – no benchmark
Oil and Grease – 15 mg/L
pH – 6 to 9 s.u.

Semi-Annual Wet Weather Outfall Grab Samples  
Georgetown Maintenance Yard

GEORGETOWN, OUTFALL #1

		2004		2005		2006		2007	2008	2009	2010	2011	2012	2013	2014		2015		2016	
		11/4/04	12/7/04	1/18/06	9/1/06	1/7/07	8/20/07							10/7/13	6/26/14	8/13/14	2/2/15	12/30/15		
TOTAL SUSPENDED SOLIDS	mg/L	17	39	47	36	17	19								27	77.1	36	17.8	40.5	
SURFACTANTS, MBAs	mg/L	<0.02	0.03	0.09	0.13	0.08	0.17								0.15	0.171	0.063	0.550	ND	
CHLORIDE	mg/L	12.2	13.6	1993	15.9	8.87	17.3								11.7	233	20.9	274	15	
TPH-GASOLINE RANGE ORGANICS	mg/L	<0.05	<0.10	<0.05	<0.05	<0.05	<0.05													
TPH-DIESEL RANGE ORGANICS	mg/L	<0.10	<0.10	0.18	<0.10	<0.1	0.14													
OIL & GREASE	mg/L														ND	ND	ND	ND	ND	
pH	s.u.	7.19	6.59	7.96	6.92	7.38	6.9								7.41	8.69	6.46	7.36	7.25	

Benchmark Values:
TSS – 100 mg/L
Surfactants – 1.0 mg/L
Chlorides – no benchmark
Oil and Grease – 15 mg/L
pH – 6 to 9 s.u.

Semi-Annual Wet Weather Outfall Grab Samples  
Chapman Maintenance Yard

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
												10/7/13	4/15/14	8/12/14	6/8/15	8/11/15	
TOTAL SUSPENDED SOLIDS	mg/L											ND	9.8	15	103	21	
SURFACTANTS, MBAs	mg/L											0.045	0.086	0.173	0.1	0.133	
CHLORIDE	mg/L											892	2350	882	925	746	
OIL & GREASE	mg/L											ND	ND	ND	ND	ND	
pH	s.u.											7.38	7.57	7.10	6.73	7.00	

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
TOTAL SUSPENDED SOLIDS	mg/L																
SURFACTANTS, MBAs	mg/L																
CHLORIDE	mg/L																
OIL & GREASE	mg/L																
pH	s.u.																

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016
												10/7/13	4/15/14	8/12/14	6/8/15	8/11/15	
TOTAL SUSPENDED SOLIDS	mg/L											130	318	63.7	203	89.5	
SURFACTANTS, MBAs	mg/L											0.209	0.352	0.319	0.204	0.429	
CHLORIDE	mg/L											48	298	92.3	115	32.1	
OIL & GREASE	mg/L											2.29	ND	6.90	33.30	ND	
pH	s.u.											7.03	7.57	6.64	6.93	7.22	

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014		2015		2016	
												10/7/13	11/1/13	4/15/14	8/12/14	6/8/15	8/11/15	
TOTAL SUSPENDED SOLIDS	mg/L											1110	119	876	84.3	96.8	353	
SURFACTANTS, MBAs	mg/L											0.98	0.728	0.385	0.714	0.081	0.368	
CHLORIDE	mg/L											44900	117	1140	117	499	55.1	
OIL & GREASE	mg/L											43.2	6.80	7.40	9.70	5.70	14.80	
pH	s.u.											7.92	7.16	8.57	6.90	7.01	7.20	

Benchmark Values:
TSS – 100 mg/L
Surfactants – 1.0 mg/L
Chlorides – no benchmark
Oil and Grease – 15 mg/L
pH – 6 to 9 s.u.

Semi-Annual Wet Weather Outfall Grab Samples  
Dover Maintenance Yard

DOVER, OUTFALL #2

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2015		2016
											10/7/13	5/16/14	9/25/14	3/26/15	9/10/15	
TOTAL SUSPENDED SOLIDS	mg/L										167	143	19.8	410	495	
SURFACTANTS, MBAs	mg/L										0.05	0.599	0.206	0.203	1.2	
CHLORIDE	mg/L										13.4	60.5	11.5	16.8	45.8	
OIL & GREASE	mg/L										5.3	ND	ND	ND	6.90	
pH	s.u.										7.85	6.36	6.45	7.36	6.78	

**Benchmark Values:**

TSS – 100 mg/L  
 Surfactants – 1.0 mg/L  
 Chlorides – no benchmark  
 Oil and Grease – 15 mg/L  
 pH – 6 to 9 s.u.

Semi-Annual Wet Weather Outfall Grab Samples  
Magnolia Maintenance Yard

**MAGNOLIA, OUTFALL #1**

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2015		2016
											10/7/13	4/7/14	9/25/14	3/26/15	9/10/15	
TOTAL SUSPENDED SOLIDS	mg/L										98.9	50.8	48.5	ND	227	
SURFACTANTS, MBAs	mg/L										<0.040	ND	ND	0.025	2.54	
CHLORIDE	mg/L										197	167	35.7	131	57.4	
OIL & GREASE	mg/L										<5.00	ND	ND	ND	ND	
pH	s.u.										7.05	7.36	6.56	7.31	6.93	

**MAGNOLIA, OUTFALL #2**

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2015		2016
											10/7/13	4/7/14	9/25/14	3/26/15	9/10/15	
TOTAL SUSPENDED SOLIDS	mg/L										670	99.4	84.2	58.5	90.7	
SURFACTANTS, MBAs	mg/L										0.964	0.716	ND	0.973	0.045	
CHLORIDE	mg/L										120	258	163	566	122	
OIL & GREASE	mg/L										11.8	9.00	ND	8.90	ND	
pH	s.u.										7.55	7.88	6.65	7.36	6.96	

Benchmark Values:
TSS – 100 mg/L
Surfactants – 1.0 mg/L
Chlorides – no benchmark
Oil and Grease – 15 mg/L
pH – 6 to 9 s.u.

Semi-Annual Wet Weather Outfall Grab Samples  
 Ellendale Maintenance Yard

ELLENDALE, OUTFALL #2

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
											11/26/13	4/15/14		
TOTAL SUSPENDED SOLIDS	mg/L										5070	ND		
SURFACTANTS, MBAs	mg/L										ND	0.046		
CHLORIDE	mg/L										38.7	109		
OIL & GREASE	mg/L										3.9	ND		
pH	s.u.										7.31	6.28		

ELLENDALE, OUTFALL #3

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
											11/26/13	4/15/14	9/25/14	4/14/15	9/10/15
TOTAL SUSPENDED SOLIDS	mg/L										175	6.8	77.7	8.40	463
SURFACTANTS, MBAs	mg/L										0.272	0.086	0.15	0.0690	0.395
CHLORIDE	mg/L										90.3	547	174	649	309
OIL & GREASE	mg/L										5	ND	ND	ND	ND
pH	s.u.										8.27	6.43	7.87	7.31	7.31

Benchmark Values:
TSS – 100 mg/L
Surfactants – 1.0 mg/L
Chlorides – no benchmark
Oil and Grease – 15 mg/L
pH – 6 to 9 s.u.



Semi-Annual Wet Weather Outfall Grab Samples  
Dagsboro Maintenance Yard

DAGSBORO, OUTFALL #1

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2015		2016
											11/26/13	4/15/14	8/12/14	6/1/15	12/17/15	
TOTAL SUSPENDED SOLIDS	mg/L										43.8	43.5	114	356	78	
SURFACTANTS, MBAs	mg/L										0.129	0.113	0.127	0.093	ND	
CHLORIDE	mg/L										136	473	141	90.1	24.7	
OIL & GREASE	mg/L										2.6	ND	5.70*	ND	ND	
pH	s.u.										7.62	6.35	7.99	7.76	7.65	

DAGSBORO, OUTFALL #2

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2015		2016
											11/26/13	4/15/14	8/12/14	6/1/15	12/17/15	
TOTAL SUSPENDED SOLIDS	mg/L										30	215	62.8	184	8.5	
SURFACTANTS, MBAs	mg/L										0.124	0.096	0.081	0.095	ND	
CHLORIDE	mg/L										58.2	26.4	28	37.4	18.9	
OIL & GREASE	mg/L										2.7	ND	ND	ND	ND	
pH	s.u.										7.66	6.09	7.95	7.78	7.39	

DAGSBORO, OUTFALL #3

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		2015		2016
												01/12/15**	6/1/15	12/17/15		
TOTAL SUSPENDED SOLIDS	mg/L											76.1	269	130		
SURFACTANTS, MBAs	mg/L											0.29	0.209	0.216		
CHLORIDE	mg/L											348	1400	171		
OIL & GREASE	mg/L											ND	ND	ND		
pH	s.u.											6.45	7.27	7.55		

Benchmark Values:
TSS – 100 mg/L
Surfactants – 1.0 mg/L
Chlorides – no benchmark
Oil and Grease – 15 mg/L
pH – 6 to 9 s.u.

\* DAGS01 and SOD01 Oil and Grease samples were mixed up at the lab. The result could be ND or 5.70 for either (5.70 assumed for DAGS01 because oil sheen was observed).

\*\* Sample fulfilling 2014 requirement

Semi-Annual Wet Weather Outfall Grab Samples  
Sod Farm

SOD FARM, OUTFALL #1

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
												8/12/14	6/9/15	12/14/15
TOTAL SUSPENDED SOLIDS	mg/L											203	16	28.4
SURFACTANTS, MBAs	mg/L											0.127	0.511	0.091
CHLORIDE	mg/L											256	1170	137
OIL & GREASE												ND*	ND	ND
pH	s.u.											6.23	7.11	7.41

SOD FARM, OUTFALL #2

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
TOTAL SUSPENDED SOLIDS	mg/L													
SURFACTANTS, MBAs	mg/L													
CHLORIDE	mg/L													
OIL & GREASE														
pH	s.u.													

**Benchmark Values:**

TSS – 100 mg/L  
Surfactants – 1.0 mg/L  
Chlorides – no benchmark  
Oil and Grease – 15 mg/L  
pH – 6 to 9 s.u.

\* DAGS01 and SOD01 Oil and Grease samples were mixed up at the lab. The result could be ND or 5.70 for either (5.70 assumed for DAGS01 because oil sheen was observed).

**Appendix F.** Maintenance Facilities Wet Weather Benchmark Monitoring Follow-up Form.



# MAINTENANCE FACILITY WET WEATHER BENCHMARK MONITORING FOLLOW-UP

**Requirement:**

- Semi-annual analytical monitoring of wet weather discharges from DeIDOT maintenance facilities is required by the industrial general permit and the facility Pollution Prevention Plans.
- Benchmark values for each parameter tested are set by DNREC. When the measured values at an outfall exceed the benchmark values, the permit requires the facility to investigate the cause(s) of the exceedance, document the results of the investigation, and identify follow-up actions to be taken to eliminate or treat the pollution source.
- Place a copy of the completed/signed form in the facilities' PPP notebook.

**This form must be completed, signed, and returned to Brian Urbanek, NPDES Section within 30 days.**

**Facility:**

**Sample Date:**

**Sample Time:**

**Monitoring Results:**

See attached map for outfall locations. **Results that exceed the benchmark are highlighted in yellow.**

Parameter	Units	Benchmark Value	Outfall	
Suspended Solids (TSS)	mg/L	100		
Surfactants (Detergents)	mg/L	1.0		
Chloride	mg/L	no benchmark		
pH	mg/L	6.0 - 9.0		
Oil and Grease	mg/L	15.0		

\*ND = Not Detected

**Other Observations:**

**Identify the source(s) of the contaminants that exceeded benchmarks, highlighted above:**

**Follow-up actions to be taken:**

**Maureen Kelley**  
Maintenance Engineer  
Canal District

Date

**Ray Jubb**  
Superintendent  
Canal District

Date



# MAINTENANCE FACILITY WET WEATHER BENCHMARK MONITORING FOLLOW-UP

**Requirement:**

- Semi-annual analytical monitoring of wet weather discharges from DelDOT maintenance facilities is required by the industrial general permit and the facility Pollution Prevention Plans.
- Benchmark values for each parameter tested are set by DNREC. When the measured values at an outfall exceed the benchmark values, the permit requires the facility to investigate the cause(s) of the exceedance, document the results of the investigation, and identify follow-up actions to be taken to eliminate or treat the pollution source.
- Place a copy of the completed/signed form in the facilities' PPP notebook.

**This form must be completed, signed, and returned to Brian Urbaneck, NPDES Section within 30 days.**

**Facility:**

**Sample Date:**

**Sample Time:**

**Monitoring Results:**

See attached map for outfall locations. **Results that exceed the benchmark are highlighted in yellow.**

Parameter	Units	Benchmark Value	Outfall	
Suspended Solids (TSS)	mg/L	100		
Surfactants (Detergents)	mg/L	1.0		
Chloride	mg/L	no benchmark		
pH	mg/L	6.0 - 9.0		
Oil and Grease	mg/L	15.0		

\*ND = Not Detected

**Other Observations:**

**Identify the source(s) of the contaminants that exceeded benchmarks, highlighted above:**

**Follow-up actions to be taken:**

**Shahin Taavoni**  
**Pollution Prevention Team Leader**  
**Central District**

Date

Area Supervisor

Date



# MAINTENANCE FACILITY WET WEATHER BENCHMARK MONITORING FOLLOW-UP

**Requirement:**

- Semi-annual analytical monitoring of wet weather discharges from DelDOT maintenance facilities is required by the industrial general permit and the facility Pollution Prevention Plans.
- Benchmark values for each parameter tested are set by DNREC. When the measured values at an outfall exceed the benchmark values, the permit requires the facility to investigate the cause(s) of the exceedance, document the results of the investigation, and identify follow-up actions to be taken to eliminate or treat the pollution source.
- Place a copy of the completed/signed form in the facilities' PPP notebook.

**This form must be completed, signed, and returned to Brian Urbanek, NPDES Section within 30 days.**

**Facility:**

**Sample Date:**

**Sample Time:**

**Monitoring Results:**

See attached map for outfall locations. **Results that exceed the benchmark are highlighted in yellow.**

Parameter	Units	Benchmark Value	Outfall			
Suspended Solids (TSS)	mg/L	100				
Surfactants (Detergents)	mg/L	1.0				
Chloride	mg/L	no benchmark				
pH	mg/L	6.0 - 9.0				
Oil and Grease	mg/L	15.0				

\*ND = Not Detected

**Other Observations:**

**Identify the source(s) of the contaminants that exceeded benchmarks, highlighted above:**

**Follow-up actions to be taken:**

**Bill Thatcher**  
Pollution Prevention Team Leader  
North District

Date

Area Supervisor

Date



# MAINTENANCE FACILITY WET WEATHER BENCHMARK MONITORING FOLLOW-UP

**Requirement:**

- Semi-annual analytical monitoring of wet weather discharges from DelDOT maintenance facilities is required by the industrial general permit and the facility Pollution Prevention Plans.
- Benchmark values for each parameter tested are set by DNREC. When the measured values at an outfall exceed the benchmark values, the permit requires the facility to investigate the cause(s) of the exceedance, document the results of the investigation, and identify follow-up actions to be taken to eliminate or treat the pollution source.
- Place a copy of the completed/signed form in the facilities' PPP notebook.

**This form must be completed, signed, and returned to Brian Urbanek, NPDES Section within 30 days.**

**Facility:**

**Sample Date:**

**Sample Time:**

**Monitoring Results:**

See attached map for outfall locations. **Results that exceed the benchmark are highlighted in yellow.**

Parameter	Units	Benchmark Value	Outfall		
Suspended Solids (TSS)	mg/L	100			
Surfactants (Detergents)	mg/L	1.0			
Chloride	mg/L	no benchmark			
pH	mg/L	6.0 - 9.0			
Oil and Grease	mg/L	15.0			

\*ND = Not Detected

**Other Observations:**

**Identify the source(s) of the contaminants that exceeded benchmarks, highlighted above:**

**Follow-up actions to be taken:**

**Alastair Probert**  
Pollution Prevention Team Leader  
**South District**

Date

Area Supervisor

Date