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Via FedEx

February 27, 2015

In reply refer to SHEA-115155

Information Technology Unit  
Regional Water Quality Control Board, Los Angeles Region  
320 West 4th Street, Suite 200  
Los Angeles, California 90013

Gentlemen:

Subject: 2014 Annual NPDES Discharge Monitoring Report  
Compliance File CI-6027 and NPDES No. CA0001309  
The Boeing Company  
Ventura County, California

The Boeing Company (Boeing) hereby submits this annual discharge monitoring report (DMR) for the Santa Susana Field Laboratory (Santa Susana Site) for the period of 1 January through 31 December 2014. This annual DMR was prepared as required by and in accordance with National Pollutant Discharge Elimination System (NPDES) Permit No. CA0001309 Permit) and under regulatory oversight of the Los Angeles Regional Water Quality Control Board (Regional Board). The Regional Board issued a revised permit on 20 May 2010 with an effective date of 19 July 2010 (Order R4-2010-0090).

This annual DMR summarizes the information contained in each quarterly 2014 DMR submittal and provides information and data, including summary tables of surface water sample analytical results, rainfall summaries, liquid waste shipment summaries, and analytical laboratory Quality Assurance/Quality Control (QA/QC) procedures and certifications. Please refer to the quarterly DMRs for a more detailed description of the activities implemented by Boeing in 2014.

Hard copies of this DMR are available to the public at California State University at Northridge Library; Simi Valley Library; and the Platt Branch of the Los Angeles Library. An electronic version of this DMR is located at:

[www.boeing.com/aboutus/environment/santa\\_susana/ents/monitoring\\_reports.html](http://www.boeing.com/aboutus/environment/santa_susana/ents/monitoring_reports.html)

## REPORT CONTENTS

This annual DMR summarizes analytical data collected from the permitted outfalls during 2014 and the activities related to the Stormwater Pollution Prevention Plan (SWPPP) and best management practices (BMPs) implemented across the Santa Susana Site. This DMR includes the following:

- Site map with outfall locations and stormwater drainages (Figure 1);

- Interim Source Removal Action (ISRA) site location map (Figure 2);
- Santa Susana Site-wide BMP activities in 2014 (Appendix A);
- Bioassessment Monitoring Report (Appendix B);
- Summary of 2014 annual rainfall (Table I);
- Summary of 2014 liquid waste shipments (Table II);
- Summary of 2014 permit and benchmark limit exceedances (Table III);
- Outfall-specific summary tables and analytical result charts (Appendices C, D, E and F);
- Arroyo Simi (Receiving Water) summary tables and analytical result charts (Appendix G);
- Summary of Reasonable Potential Analysis ([RPA]; Appendix H);
- SWPPP Annual Evaluation Report (Appendix I); and
- Analytical methods, method detection limits, reporting limits, QA/QC procedures, and Environmental Laboratory Accreditation Program (ELAP) Certifications (Appendix J).

#### **OVERVIEW OF THE 2014 REPORTING PERIOD AT SANTA SUSANA**

This section presents the efforts Boeing has made and continues to make to achieve compliance with the NPDES Permit and return the Santa Susana Site to its natural habitat. It also provides an overview of SWPPP activities and implemented BMPs to minimize impacts to surface water and the potential for surface water permit limit exceedances.

#### **SANTA SUSANA SITE-WIDE SWPPP AND BMP PLAN ACTIVITIES FOR 2014**

Boeing continued to implement Santa Susana Site-wide SWPPP inspections in 2014. Boeing conducted before- and after- storm season inspections and monthly rainy season inspections as required by the Santa Susana Site-wide SWPPP and in accordance with the SWPPP requirements to identify and mitigate any Santa Susana Site conditions that may affect the quality of stormwater runoff from the Santa Susana Site.

Santa Susana Site-wide BMP activities in 2014 included outfall and stormwater conveyance system conditions. Specific BMP activities at each outfall location included inspections of: erosion and sediment control BMPs; flume and sample box conditions; flow meter calibrations; surface water catchment or sedimentation basin condition; liner integrity; filter media conditions; system pump and conveyance conditions; and retention tank inspection. General outfall maintenance and housekeeping included: sediment removal; leaf litter removal; liner repair or replacement; additional BMP implementation; and weed abatement.

Boeing continued to implement inspections associated with individual construction SWPPPs in 2014. BMP inspections were completed in accordance with the State of California General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ; NPDES Permit No. CAS000002 (Construction General Permit) requirements. Inspections were conducted before and after qualifying rain events and during extended rainfall lasting longer than 24 hours during the rainy season. Inspections were also conducted quarterly during the non-rainy season.



Construction and demolition activities were monitored under the Construction General Permit SWPPP requirements. BMPs implemented during pre- and post-soil disturbance activities for demolition and ISRA areas are discussed in Appendix A and summarized further in sections below.

### **Site-wide Planting of Native Vegetation and Restoration**

Boeing is committed to returning the Santa Susana Site to its natural habitat. In 2012, Boeing introduced over 3,000 plants and new vegetation cuttings across the Santa Susana Site in accordance with the Northern Drainage RMMP and the recommendation of the Surface Water Expert Panel (Expert Panel). Boeing is also committed to restoring and rehabilitating soil disturbance areas by installing proper sediment and erosion control BMPs such as hydromulch and hydroseed containing native seeds to enhance the regrowth of native plants.

### **Demolition and BMP Plan Related Activities**

Previously active areas are undergoing demolition and being prepared for restoration in Boeing's continued efforts to reinstate the Santa Susana Site to its natural habitat. These actions are performed in accordance with the NPDES Permit and Construction General Permit SWPPP requirements. BMPs are implemented to reduce erosion, sedimentation, and turbidity and continue to protect surface waters and respective drainages.

Areas restored in 2013 were regularly inspected for erosion and sedimentation and BMPs maintained or implemented as necessary. In 2014, demolition and restoration activities were conducted in Area I at former Building 1436, including the removal of concrete and metal structures, concrete slabs, debris containing metal and rebar, piping associated with utility conveyance, and asphalt road cover. Debris, metal, concrete, and asphalt were segregated upon removal and transported to a waste or recycling facility per Boeing's waste management plan and in accordance with local, state, and federal regulations. Construction BMPs implemented before, during, and after demolition activities included the following:

- Pre-demolition BMP strategy planning;
- Installation of tracking controls such as truck stabilizers or rumble plates at the entrance/exit of the work area;
- Implementation of dust suppression and wind erosion controls;
- Stockpile management;
- A waste management plan; and
- Installation of post-demolition BMPs, including two detention bioswales and hydromulch containing native seeds to enhance the regrowth of native plants.

The detention bioswales and associated drainage structures were installed to capture runoff from the Instrument and Equipment Laboratories (IEL) watershed and direct flow to the biofilter described below. Post-demolition erosion and sediment control BMPs associated with the bioswales included the placement of topsoil and the installation of approximately 2,950 plantings. Hydromulch and hydroseed consisting of a native plant seed mixture were applied to the contoured area upslope of the bioswales to enhance Santa Susana Site restoration. Per Construction General Permit requirements, regular inspection schedules were completed to maintain quality and ensure compliance.



## **OUTFALLS 008/009 ISRA AND BMP PLAN RELATED ACTIVITIES**

Pursuant to the 3 December 2008 Section 13304 Order issued by the Regional Board, Boeing and the National Aeronautics Space Administration (NASA), in coordination with the Expert Panel, have been proceeding with ISRA activities in the Outfall 008 and 009 watersheds to address constituents that have exceeded NPDES Permit limits/benchmarks. In 2014, these activities included monitoring and maintenance of the biofilter and the NASA ISRA areas and associated BMPs (NASA Expendable Launch Vehicle [ELV] channel BMPs and Culvert Modification [CM]-9). In September, the 2014 Best Management Practices (BMP) Plan Addendum to the October 2010 Santa Susana Site Outfalls 008/009 Watersheds BMP Plan was submitted to the Regional Board (Geosyntec and the Expert Panel, 2014). The 2014/2015 Rainy Season Sampling and Analysis Plan (SAP) Updates, Best Management Practice (BMP) Monitoring and ISRA Performance Monitoring Programs was submitted to the Regional Board in October (MWH, 2014). A list of BMPs implemented in 2014 at the Santa Susana Site is included in Appendix A. A map showing the current and completed ISRA area locations is included as Figure 2. The following sections are brief summaries of these activities as provided in the quarterly reports.

### **Biofilter**

The biofilter is a stormwater treatment BMP designed and built to capture, convey, and treat stormwater runoff from the lower lot and Instrument and Equipment Laboratories (IEL) watersheds. The BMP consists of a 30,000-gallon cistern, a stormwater conveyance line, a sediment basin, and a media biofilter (Lower Lot Biofilter). Construction began in 2012 and was completed in March 2013. In September 2013, the California Stormwater Quality Association (CASQA) awarded Boeing their "Outstanding Stormwater BMP Implementation Award" for the Lower Lot Biofilter.

Maintenance activities in 2014 included: infiltration improvements; sediment removal from the biofilter discharge box; regular watering of plantings; replacing worn sandbags near the cistern and biofilter; and selective weeding to remove invasive plants. Quarterly inspections included the sedimentation basin and biofilter, the cistern area and pump, and the BMPs recommended by the Expert Panel.

### **B-1 Curb Cut Installation**

The 2012 BMP Plan Addendum (Geosyntec and the Expert Panel, 2012) recommended the installation of curb cuts with slope protections to increase the capture and conveyance of road runoff to the northern portion of the B-1 drainage. The purpose of the curb cuts is to reduce concentrated flows at the B-1 media filter and increase sedimentation in the drainage before the surface water reaches the B-1 media filter. Three 36-inch curb cuts with slope protection were installed in 2012; three smaller 12-inch curb cuts with slope protection were installed in the planter across the street to convey road runoff that does not flow to the B-1 area to the vegetated planter area. In 2013, the curb cuts were slightly modified to increase flow into the curb cuts. Sandbags were placed upslope prior to 2014 storm events to direct flow into the curb cuts.



### **CM-9 Upgrades**

The 2012 BMP Plan Addendum (Geosyntec and the Expert Panel, 2012) recommended the installation of erosion control/slope protection along the existing roadway embankments, the addition of a rip rap berm upstream of CM-9, the installation of a perforated conveyance pipe between the road runoff inlet and the rip rap berm, and improvements to the CM-9 media filter. The purpose of these BMPs is to slow road runoff, reduce erosion along roadway slopes into the CM-9 runoff inlet, and provide additional infiltration upstream of CM-9. These BMPs were installed to reduce surface water volumes, peak surface water flows, and overflows at the CM-9 media filter. The construction of these upgrades was completed in 2013; minor upgrades of the rip rap berm and perforated conveyance pipe included raising the berm with additional rip rap, extending the culvert pipe to place the outlet 10 feet north upslope, and expanding the wing wall at the culvert inlet. Activities performed in 2014 included quarterly inspections of the upgrades and, prior to and during rain events, removing excess sediment and plant debris built up behind the screened inlet to the perforated pipe along Area II Road.

### **NASA and Boeing ISRA Activities**

ISRA-related activities in 2014 included: BMP installation and monitoring; hydromulch and hydroseed application; SWPPP inspections; and performance monitoring. Boeing applied for and received a notice of termination for the ISRA SWPPP in April. Boeing communicates frequently with the Department of Toxic Substances Control (DTSC) and Regional Board to delineate planned approaches to ISRA activities and present results and supporting data pursuant to the 3 December 2008 Section 13304 Order. As agreed with the Regional Board in 2014, Boeing will report the future progress of ISRA activities, including the status of any permits required for the work, in the annual rainy season reports. For a more detailed description of 2014 ISRA and NASA-led activities, please refer to Appendix A and the quarterly DMRs. ISRA-related documents can be found electronically at:

[http://www.boeing.com/aboutus/environment/santa\\_susana/isra.html](http://www.boeing.com/aboutus/environment/santa_susana/isra.html)

### **BMP Plan-related Activities**

BMP Plan-related activities in 2014 included installation of a series of retention bioswales in the vicinity of former Building 1436, a BMP recommended in the 2013 Plan Addendum (Geosyntec and the Expert Panel, 2013).

### **Northern Drainage**

Boeing has actively worked to restore the Northern Drainage following cleanup activities performed under DTSC oversight and in accordance with the requirements of Regional Board Cleanup and Abatement Order (CAO) No. R4-2007-0054. Boeing completed surface water sample collection following the cleanup completion date as required by the CAO. No further wet weather sampling will therefore be conducted in the Northern Drainage. The final Northern Drainage Monthly Monitoring Report (MMR) was submitted in May 2012.

Following the Certification of Completion issued by the DTSC on 29 April 2011 (DTSC, 2011) for the work performed under the DTSC's 2007 Imminent and Substantial Endangerment Determination and Order and Remedial Action Order, Boeing, NASA, and the Expert Panel developed a Santa Susana Site-specific RMMP for the areas of the Northern Drainage subject to this Order. Boeing submitted the RMMP to the Regional Board on 5 October 2011 (Haley & Aldrich, Inc., 2011) and received permit approvals from the Regional Board, California Department of Fish and Wildlife, and the Los Angeles Division of United States Army Corps of Engineers in early July 2012.



The restoration and mitigation activities proposed in the RMMP plan<sup>1</sup> were implemented in 2012 and included the installation of native plants, structural measures, bioengineering features, and the application of hydroseed and hydromulch. Stabilization maintenance measures were implemented in four locations within the drainage in 2014. For a more detailed description of 2014 Northern Drainage RMMP activities, please refer to the quarterly DMRs and the 2014 Annual Report for the Northern Drainage (Haley & Aldrich, 2014). A list of BMPs implemented at the Santa Susana Site is included in Appendix A.

#### **Other NASA-led BMP Activities**

BMPs and drainage improvements were conducted in 2013 to improve stormwater quality from the ELV area before it is conveyed to Outfall 009. Activities conducted in 2014 included inspection and maintenance of the ELV drainage treatment system, and collection of influent and effluent performance monitoring samples. Straw wattles were added to the ELV drainage and at two new groundwater monitoring well locations near ELV and the Area I former Liquid Oxygen Plant (LOX). The ELV storage tanks were drained and sediment removed from the collection basin during December rain events. Other inspections included the ELV drainage BMPs and temporary BMPs installed at the LOX ISRA Areas and at slope drain discharge points to the Northern Drainage.

#### **Bioassessment**

A bioassessment review was conducted on 9 April 2014 to evaluate water quality conditions in Bell Canyon and Meier Canyon at the Santa Susana Site in accordance with NPDES Permit requirements. The methods, procedures, and results of the bioassessment are detailed in the Bioassessment Monitoring Report included as Appendix B. There was insufficient water flow to conduct bioassessment sampling in 2014.

#### **DISCHARGE STATUS**

Monthly Santa Susana Site precipitation for 2014 is summarized in Table I. Surface water samples are collected when flow is observed at the designated outfall locations during storm events greater than 0.1 inch. Surface water samples were collected in accordance with the NPDES Permit from Outfall 002, Outfall 008, Outfall 009, Outfall 010 and the Arroyo Simi Receiving Water location (RSW-002) for the six qualifying events between 1 January and 31 December 2014. No treated groundwater discharges occurred from the Groundwater Extraction Treatment System (Outfall 019).

Figure 1 illustrates the Santa Susana Site and outfall locations. Table A below summarizes the 2014 sampling record by outfall/location where flow was observed and stormwater samples collected per NPDES Permit requirements.

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<sup>1</sup> Available at: [http://www.boeing.com/aboutus/environment/santa\\_susana/tech\\_reports.html](http://www.boeing.com/aboutus/environment/santa_susana/tech_reports.html)

**Table A. Summary of Stormwater Sampling Events**

Date	Outfall/Location	Frequency	Samples Collected (i.e., grab, composite)
02/28-03/01/2014	Outfall 009 (WS-13 Drainage)	Routine, Annual	Grab, Composite
02/28/2014	Outfall 010 (Building 203)	Routine, Annual	Grab
02/28/2014	Arroyo Simi Frontier Park – (RSW-002)	Annual, Quarterly	Grab
03/10, 03/14, 03/19, 03/24	Arroyo Simi Frontier Park – (RSW-002)	Additional	Grab
03/19/2014	Arroyo Simi Frontier Park – (RSW-002)	Annual Sediment	Grab
05/21/2014	Arroyo Simi Frontier Park – (RSW-002)	Quarterly	Grab
8/12/14	Arroyo Simi Frontier Park – (RSW-002)	Quarterly	Grab
12/12/14-12/13/14	Outfall 002 (South Slope)	Routine, Annual	Grab, Composite
12/17/14-12/18/14	Outfall 002 (South Slope)	Routine	Grab, Composite
12/12/14	Outfall 008 (Happy Valley Drainage)	Routine, Annual	Grab, Composite
12/2/14-12/3/14	Outfall 009 (WS-13 Drainage)	Routine	Grab, Composite
12/12/14-12/13/14	Outfall 009 (WS-13 Drainage)	Routine	Grab, Composite
12/17/14	Outfall 009 (WS-13 Drainage)	Routine	Grab, Composite
11/13/14	Arroyo Simi Frontier Park – (RSW-002)	Quarterly	Grab
12/12/14	Arroyo Simi Frontier Park – (RSW-002)	Routine	Grab
12/17/14	Arroyo Simi Frontier Park – (RSW-002)	Routine	Grab

Collected samples were submitted to and analyzed by a California-certified analytical laboratory in accordance with NPDES Permit requirements. All sanitary wastes from the domestic Sewage Treatment Plant in Area I were shipped offsite to a permitted treatment and disposal facility. Details of these waste shipments are summarized in Table II.

#### **SUMMARY OF NON-COMPLIANCE AND CORRECTIVE ACTIONS**

Non-compliance analytical results for all water samples are summarized in Table III. Tables and graphs for all outfall locations where data were collected (i.e., where outfalls flowed), including the Arroyo Simi receiving water location, are provided in Appendices C through G:

1. Outfall 002 (South Slope below R-2 Ponds; Appendix C);
2. Outfall 008 (Happy Valley; Appendix D);
3. Outfall 009 (WS-13 Drainage; Appendix E);
4. Outfall 010 (Building 203; Appendix F); and
5. Receiving Water and Sediment Sample Location – Arroyo Simi Frontier Park (RSW-002; Appendix G).



The Annual Reporting Summary Notes in each of the above appendices include a compilation of notes, abbreviations, and data validation codes found in the preceding analytical data summary tables.

Table III summarizes the Daily Maximum Result and Permit Limit Daily Maximum for samples collected at Outfall 009 and Outfall 010 in 2014. The following paragraphs summarize permit limit or benchmark exceedances for discharges at Outfall 009 and Outfall 010. Outfall 001, Outfalls 003 through 007, and Outfalls 011 through 014 did not discharge during 2014; there were therefore no permit limit exceedances to report for these outfalls in 2014. A summary of the implemented corrective actions is included in the summary of non-compliance for each outfall.

Boeing continued to take proactive steps to meet the requirements of its NPDES Permit. These steps are summarized below and included in the Site-wide BMP Activities table for 2014 (Appendix A). These activities will continue to be reevaluated and updated as needed to minimize the occurrence of any future benchmark exceedances.

### **Exceedance Summary and Discussion**

#### **Outfall 009 (WS-13 Drainage)**

As summarized in Table III, NPDES Permit limits were exceeded for pH in one field measurement and for lead and 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) toxic equivalency (TEQ) in three samples collected at Outfall 009 during the 2014 monitoring period.

#### **pH**

A field measurement collected from Outfall 009 stormwater on 28 February 2014 indicated a pH of 5.5, which is outside the NPDES Permit limit range of 6.5 to 8.5. Based on discussions with the Expert Panel, Boeing believes that the decreased pH condition is likely due to human or instrument error. This conclusion is supported by two facts: first, the field measurement was the lowest result ever recorded at Outfall 009, and second, it was recorded by inexperienced personnel. Boeing implemented a corrective action by revising the Standard Operating Procedure for measuring pH.

#### **Lead**

On 1 March 2014, lead was detected in the stormwater sample collected from Outfall 009 at a concentration of 9.6 micrograms per liter ( $\mu\text{g/L}$ ), above the Daily Maximum Permit Limit of 5.2  $\mu\text{g/L}$ . On 13 and 17 December 2014, lead was detected in stormwater samples collected from Outfall 009 at concentrations of 8.8  $\mu\text{g/L}$  and 13  $\mu\text{g/L}$ , respectively, above the Daily Maximum Permit Limit of 5.2  $\mu\text{g/L}$ .

Prior to these exceedances, Boeing had already been implementing corrective actions to address metals exceedances at Outfall 009. Specifically, soil removal within the Outfall 009 watershed was completed as part of ISRA activities in Fourth Quarter 2013, and lead was one of the targeted constituents of concern (COCs). Boeing believes that the lead concentrations in stormwater runoff in the Outfall 009 watershed may have been the result of high intensity rain that caused erosion and elevated concentrations of total suspended solids (TSS) consisting of native sediments and soil from these newly disturbed areas. TSS loading varies based on rainfall intensity, duration, and erosion characteristics. Based on discussions with the Expert Panel, freshly-applied asphalt is also known to be a source of lead in surface water. A roadway along the Northern Drainage was repaved in First Quarter 2014 and may be continuing to leach trace amounts of lead into surface runoff.



Boeing will continue to work with the Expert Panel to minimize future metals exceedances in Outfall 009. Boeing is evaluating additional corrective actions targeting localized areas along the repaved roadway (e.g., by increasing the settling time at CM-1 which captures water from the repaved road). Boeing is committed to fulfilling the requirements of the NPDES Permit, and actions taken during 2014 to control sediment transport and minimize the occurrence of future permit exceedances are described above in the section Outfall 008/009 ISRA and BMP Plan-Related Activities, and in Appendix A.

#### TCDD TEQ

In First Quarter 2014, TCDD TEQ was detected in stormwater samples collected from Outfall 009 at 1.32E-07 ug/L, above the Daily Max Permit Limit of 2.80E-08 µg/L. On December 13 and 17, 2014, TCDD TEQ was detected at 8.93E-08 µg/L and 7.50E-08 µg/L, respectively, in stormwater samples collected from Outfall 009, also above the Daily Max Permit Limit of 2.80E-08 µg/L.

TCDD congeners have been frequently detected in soils determined by DTSC to have not been impacted by industrial activities and representative of background conditions at the Santa Susana Site (MWH, 2005). The presence of TCDD in both background soils and fire-related materials suggests the TCDD TEQ measured in surface water at the Santa Susana Site could originate primarily from wildfire combustion processes, regional and atmospheric deposition, and other naturally occurring sources (U.S. Environmental Protection Agency [USEPA], 2000; MWH, 2005; Flow Science 2006). There were several fires in Southern California in 2013, including the Springs Fire in Ventura County and the adjacent Santa Monica Mountains, which impacted over 24,000 acres. The Springs Fire most likely would have contributed to ash deposition at the Santa Susana Site. The fact that the 2,3,7,8-TCDD congener was not detected in this sample also supports the explanation that the exceedance is not associated with a fresh anthropogenic source.

In addition, soil removal within the Outfall 009 watershed was completed as part of ISRA activities in Fourth Quarter 2013, with dioxins among the targeted COCs. Boeing believes that the dioxin concentrations in the stormwater runoff in the Outfall 009 watershed may have been the result of high intensity rain event that caused erosion and elevated TSS concentrations consisting of native sediments and soils from these newly disturbed areas. As described above, TSS loading varies based on rainfall intensity, duration, and erosion characteristics.

Boeing is committed to fulfilling the requirements of the NPDES Permit, and actions taken during 2014 to control sediment transport and minimize the occurrence of future permit exceedances are described above in the section Outfall 008/009 ISRA and BMP Plan-Related Activities, and in Appendix A.

NASA has installed a stormwater capture and treatment system to assist sediment removal downstream from completed ISRA activities. It should be noted that this system operated initially during a First Quarter 2014 rain event, but failed to operate during the power outage. As such, the additional TSS loading from displaced sediment that would normally have been captured by the treatment system may also have been a contributor to the concentrations noted. Boeing is implementing corrective action by conducting a review of the power distribution system throughout the Site and developing an inspection and maintenance plan to help prevent future power outages that impact the stormwater program.



### **Outfall 010 (Building 203)**

As summarized in Table III, NPDES Permit limits for lead and TCDD TEQ were exceeded in one sample collected at Outfall 010 during First Quarter 2014. On 28 February 2014, there was a small discharge of 821 gallons at Outfall 010. The discharge was insufficient to trigger the autosampler, so grab samples were collected. An adequate volume was collected to analyze all constituents required by the NPDES Permit. The water was treated through a flow-through media bed filter at Outfall 010 prior to discharge. This discharge occurred because of a power failure in Area II of the Santa Susana Site that prevented the discharge from being pumped and conveyed from Outfall 010 to Silvernale Pond. Sampling crews brought in a gasoline powered pump and were able to resume pumping and conveyance to Silvernale Pond within approximately 45 minutes. Boeing is committed to ensuring that the primary BMP for this outfall, which conveys stormwater to Silvernale Pond for later treatment, is working correctly during all storm events. To this end, Boeing is conducting an analysis of the power distribution system throughout the Site and developing an inspection and maintenance plan to help avert future power failures that impact the stormwater program.

#### Lead

On 1 March 2014, lead was detected in the stormwater sample collected from Outfall 010 at a concentration of 5.6 ug/L, slightly above the Daily Maximum Permit Limit of 5.2 µg/L.

During the last sampling event at this outfall when the flow-through filter media bed was operating (March 2011), the flow-through system performed as expected with full compliance. As such, the source of the lead and the reason for the failure of the media bed to fully treat all constituents are unknown at this time and are being investigated. Boeing will continue to evaluate potential impacts to stormwater, monitor the effectiveness of BMPs, and implement additional BMPs as necessary in order to reduce the occurrence of any future exceedances.

Boeing is committed to fulfilling the requirements of the NPDES Permit, and actions taken during 2014 to control sediment transport and minimize the occurrence of future permit exceedances are described in Appendix A.

#### TCDD TEQ

In First Quarter 2014, TCDD TEQ was detected at 3.67E-08 µg/L in stormwater samples collected from Outfall 010, slightly above the Daily Max Permit Limit of 2.80E-08 µg/L.

TCDD congeners have been frequently detected in soils determined by DTSC to have not been impacted by industrial activities and representative of background conditions at the Santa Susana Site (MWH, 2005). The presence of TCDD in both background soils and fire-related materials suggests the TCDD TEQ measured in surface water at the Santa Susana Site could originate primarily from wildfire combustion processes, regional and atmospheric deposition and other naturally occurring source (USEPA, 2000; MWH, 2005; Flow Science 2006). There were several fires in Southern California in 2013 that impacted over 24,000 acres, including the Springs Fire in Ventura County and the adjacent Santa Monica Mountains. The Springs Fire most likely would have contributed to onsite deposition of ash. The fact that the 2,3,7,8-TCDD congener was non-detect in this sample also supports the explanation that the exceedance is not associated with a fresh anthropogenic source.



Boeing believes the dioxin concentration in stormwater runoff in the Outfall 0010 watershed was the result of high intensity rain that caused erosion and elevated TSS concentrations consisting of native sediments and soils from these newly disturbed areas. TSS loading varies based on rainfall intensity, duration, and erosion characteristics. Boeing is committed to fulfilling the requirements of the NPDES Permit, and actions taken during 2014 to control sediment transport and minimize the occurrence of future permit exceedances are described in Appendix A.

### **Arroyo Simi Frontier Park – (RSW-002)**

#### Bacteria

In a sample collected on 28 February 2014, *E. coli* and Fecal Coliform were both detected at  $\geq 1,600$  MPN/100mL (greater than 1,600 most probable number per 100 milliliters) above the single sample maximum receiving water limits of 235 MPN/100mL and 400 MPN/100mL, respectively, at Arroyo Simi – Frontier Park (RSW-002). As a result of the exceedance at the Arroyo Simi – Frontier Park location (RSW-002), Boeing conducted additional monitoring for bacteria in accordance with the NPDES Permit (Boeing, 2011). All subsequent sample results were within the single sample daily maximum limits with the exception of the sample collected on 19 March 2014 which had concentrations of 540 MPN/100mL *E. coli* and 540 MPN/100mL Fecal Coliform.

As stated in the NPDES Permit, *E. coli* and Fecal Coliform are part of water quality objectives for monitoring inland surface waters and include a geometric mean calculation. Five samples collected on 28 February and 10, 14, 19, and 24 March 2014, were used to calculate the geometric mean for *E. coli* and Fecal Coliform. The calculated geometric means for *E. coli* (225 MPN/100mL) and Fecal Coliform (241 MPN/100mL) were above the geometric mean receiving water limits for *E. coli* (126 MPN/100mL) and Fecal Coliform (200 MPN/100mL).

The Outfall 009 sample collected on 28 February 2014 was also analyzed for human-specific Bacteroides to confirm that the bacteria present in Outfall 009 samples were not from human sources. Based upon the results of the Bacteroides analysis, human-specific markers were not detected in the samples collected and it follows that the bacteria detected at Arroyo Simi – Frontier Park (RSW-002) and Outfall 009 do not include bacteria originating from human sources at the Santa Susana Site.

#### pH

A field measurement collected at the Arroyo Simi – Frontier Park location (RSW-002) on 19 March 2014 indicated a pH of 6.1, which is outside the NPDES Permit limit range of 6.5 to 8.5. As flow from Outfall 009 ceased on 04 March 2014, Boeing does not believe that the low pH condition originated from discharges from the Santa Susana Site. Boeing implemented a corrective action by revising the Standard Operating Procedure for measuring pH.

### **SURFACE WATER DISCHARGE ANALYTICAL RESULTS REPORTING**

All surface water discharge sample analyses were conducted at laboratories certified by the California Department of Public Health or approved by the Regional Board's Executive Officer, and in accordance with current USEPA guidelines, procedures, or as specified in the monitoring program. As indicated on Page E-33 of the NPDES Permit, analytical results were designated "Detected but not Quantified (DNQ)" (similar to organic analyses being J-flagged by the laboratory or data validator) if the analytical result was greater than or equal to the laboratory's method detection limit (MDL), and less than the State Water Resources Control Board's Minimum Level (ML) or laboratory reporting limit (RL). In determining



compliance with NPDES Permit limits, data that were designated DNQ or J-flagged (estimated values) were reported as such, but not used to establish compliance because the estimated value was less than the laboratory's RL.

Attachment H of the NPDES Permit presents the State Water Resources Control Board's MLs for reporting and determining NPDES Permit compliance limits. The analytical laboratory achieved these MLs in 2014. In cases where the NPDES Permit limit was less than the RL and ML, the RL was used to determine compliance. As required in the NPDES Permit, Appendix J of this report provides a summary table of constituents listed in the NPDES Permit, their analytical laboratory methods, MDLs, RLs, and copies of laboratory QA/QC procedures. California Department of Public Health Environmental Laboratory Accreditation Program certifications are also included in Appendix J, as required in the NPDES Permit.

The laboratory RL for each constituent in the permit was less than the lowest applicable permit requirement with the following exceptions: 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, polychlorinated biphenyls (PCBs) [Aroclor congeners], bis(2-ethylhexyl)phthalate, chlordane, chlorpyrifos, cyanide, diazinon, dieldrin, mercury, silver, and toxaphene. The laboratory RL for these exceptions met their respective MLs. With the exception of bis(2-ethylhexyl)phthalate in Outfall 010 during First Quarter 2014, none of these compounds were detected at concentrations equal to or greater than their RL in samples collected and analyzed during 2014.

## **REASONABLE POTENTIAL ANALYSIS**

Outfall monitoring data were collected during the first (Outfalls 009 and 010) and fourth (Outfalls 002, 008 and 009) quarters of 2014. Analytical results from samples collected at these outfalls were added to the RPA dataset following the MWH and Flow Science RPA procedures for the following outfall monitoring groups: Outfalls 001, 002, 011, 018 and 019; and Outfalls 003-010 (MWH and Flow Science, 2006). The analytical results for this sampling period did not demonstrate reasonable potential for bis(2-ethylhexyl) phthalate at Outfall 010 or *E. coli* at Outfall 009 as detailed below. As shown in Appendix H, the analytical results for samples collected in 2014 did not trigger reasonable potential for any other constituent not already regulated under the current NPDES Permit.

### **Bis(2-ethylhexyl) phthalate**

On 28 February 2014, bis(2-ethylhexyl) phthalate was detected at a concentration of 6.71 µg/L in the stormwater sample collected from Outfall 010. Bis(2-ethylhexyl) phthalate has not been previously detected in stormwater samples collected from Outfall 010. Bis(2-ethylhexyl) phthalate is a known laboratory contaminant and may have been introduced by plastics, gloves, laboratory drying agents, etc. (USEPA, 2007 and 2008). For these reasons, Boeing does not believe that reasonable potential has been demonstrated for bis(2-ethylhexyl) phthalate at Outfall 010. Boeing will continue to monitor bis(2-ethylhexyl) phthalate according to the current NPDES Permit.



### **Bacteria**

Boeing notes that the water quality objectives for indicator bacteria were updated by the Regional Board on July 8, 2010 (Resolution No. 2010-005). This update eliminated water quality objectives for fecal coliform and added water quality objectives for *E. coli*. In response to this change in objectives, RPA was not conducted for fecal coliform.

On 28 February 2014, *E. coli* was detected at  $\geq 1,600$  most-probable-number (MPN)/100mL in stormwater samples collected from Outfall 009. The sample was also analyzed for human-specific Bacteroides to confirm that the bacteria present in Outfall 009 samples were not from human sources. Based on the results of the Bacteroides analysis, human-specific markers were not detected in the samples collected and it follows that the bacteria detected at Outfall 009 originated from non-human, natural sources. Therefore, Boeing does not believe that reasonable potential has been demonstrated for bacteria at Outfalls 009.

On December 12, 2014, *E. coli* was detected in stormwater samples collected from Outfall 002 at 540 MPN/100mL and from Outfall 008 at  $\geq 1,600$  MPN/100mL. Boeing collects all sanitary waste generated at the Santa Susana site and transports it to an offsite facility for treatment and disposal. The discharges at these outfalls consist entirely of stormwater. Due to laboratory oversight, human-specific Bacteroides from samples collected on December 12, 2014 were not analyzed as the laboratory did not provide sterile bottles. On December 17, 2014, *E. coli* was detected in stormwater samples collected from Outfall 002 at 71 MPN/100mL. This sample was also analyzed for human-specific Bacteroides to confirm that the bacteria present in Outfall 002 samples were not from human sources. Based on the results of the Bacteroides analysis, human-specific markers were not detected in the December 17 sample collected from Outfall 002 and it follows that the bacteria detected at Outfall 002 originated from non-human, natural sources. Outfalls 002 and 008 were previously sampled for *E. coli* in April 2012 and human-specific markers were not detected. Therefore, Boeing does not believe that reasonable potential has been demonstrated for bacteria at Outfall 002 or Outfall 008.

Boeing is implementing corrective action by revising the Standard Operating Procedure for collecting human-specific Bacteroides and will continue to monitor *E. coli*, fecal coliform and human-specific Bacteroides and monitor for any potentially contributing sources of bacteria to continue to confirm that any indicator bacteria detected at the outfalls are from non-human sources.

### **CONCLUSIONS**

Boeing continues to improve stormwater quality in discharges at the Santa Susana Site through methods designed to preserve the natural conditions in the watershed to the maximum extent feasible by implementing erosion control/restoration measures such as the planting and maintenance of native plants and the application of hydroseed mulch, as well as through continuing with planned ISRA activities as detailed above and in the quarterly DMRs.

### **FACILITY CONTACT**

If there are any questions regarding this report or its enclosures, you may contact Mr. Paul Costa of Boeing at (818) 466-8778.



**CERTIFICATION**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for a knowing violation.

Executed on the 27th day of February 2015 at The Boeing Company, Santa Susana Site.

Sincerely,



Paul J. Costa  
Environmental Operations and Compliance Manager  
Santa Susana Field Laboratory  
The Boeing Company

**Enclosures:**

## References

Table I – Area 1 Station, Daily Rainfall Summary

Table II – Annual 2014 Liquid Waste Shipment Summary

Table III – Summary of Permit Limit Exceedances

Figure 1 – Site Map with Drainages, Outfall Locations and SWTS Conveyance Piping

Figure 2 – ISRA Site Location Map

Appendix A – 2014 Site-wide BMP Activities

Appendix B – 2014 Bioassessment Monitoring Report

Appendix C – Outfall 002 South Slope below R-2 Ponds

Appendix D – Outfall 008 Happy Valley

Appendix E – Outfall 009 WS-13 Drainage

Appendix F – Outfall 010 Building 203

Appendix G – Receiving Water and Sediment Sample Location – Arroyo Simi Frontier Park (RSW-002)

Appendix H – Reasonable Potential Analysis (RPA) Summary Tables

Appendix I – Stormwater Pollution Prevention Plan Annual Evaluation Report

Appendix J – Analytical Laboratory Methods, Method Detection Limits, Reporting Limits, QA/QC Procedures, and ELAP Certifications

Appendix K – 2014 Validation Reports

cc: Los Angeles Regional Water Quality Control Board; Attn: Ms. Cassandra Owens  
Department of Toxic Substances Control; Attn: Mr. Mark Malinowski  
California State University – Northridge, Library  
Simi Valley Library  
Los Angeles Library, Platt Branch



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