



Via FedEx

May 14, 2014

In reply refer to SHEA-114696

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

Attention: Information Technology Unit

Gentlemen:

Subject: First Quarter 2014 NPDES Discharge Monitoring Report  
Compliance File CI-6027 and NPDES No. CA0001309  
Santa Susana Field Laboratory  
Ventura County, California

The Boeing Company (Boeing) hereby submits this Discharge Monitoring Report (DMR) for the Santa Susana Field Laboratory (Santa Susana Site) for the period of 1 January through 31 March 2014 (First Quarter 2014). This 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). Included are summary tables of best management practices (BMPs), stormwater sample analytical results, rainfall quantities, liquid waste shipments, and laboratory analytical reports for stormwater samples.

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:

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

#### FIRST QUARTER 2014 DMR CONTENTS

This DMR includes the following sections and appendices:

- **Discharge Summary:** This section describes the number of rain events, the number of samples collected, the sample dates, and the sample locations during First Quarter 2014. Table I summarizes the First Quarter 2014 sampling record by outfall, location, and sample type collected per the requirements of the NPDES Permit.
- **First Quarter 2014 Summary of Compliance:** This section summarizes the sample results that exceeded NPDES Permit limits in First Quarter 2014.

- **First Quarter 2014 Santa Susana Site-wide Stormwater Pollution Prevention Plan (SWPPP)/BMP Activities:** This section presents Santa Susana Site SWPPP activities and BMPs related to demolition, Interim Source Removal Actions (ISRA), the BMP Plan, Northern Drainage, and other activities implemented in First Quarter 2014. Table II summarizes specific BMP activities by outfall location.
- **Data Validation and Quality Control:** This section discusses data validation results and any laboratory or field corrective actions.
- **Appendix A** summarizes measured First Quarter 2014 precipitation at the Santa Susana Site.
- **Appendix B** tabulates liquid waste shipment details.
- **Appendix C** presents chemical analytical results of First Quarter 2014 stormwater samples in tabular form by outfall location, constituents evaluated (analytes), sample dates, and data validation qualifiers.
- **Appendix D** summarizes the NPDES Permit limit exceedances.
- **Appendix E** contains copies of laboratory analytical reports, chains of custody, and data validation reports.
- **Appendix F** tabulates the Reasonable Potential Analysis (RPA).

## DISCHARGE SUMMARY

The Santa Susana Site experienced two rain events that produced greater than 0.1 inch of rainfall within a 24-hour period during First Quarter 2014 (see Appendix A). Onsite stormwater-related samples were collected at Outfall 009 and Outfall 010; one offsite stormwater sample was collected at the Arroyo Simi – Frontier Park location in Simi Valley (RSW-002). Four additional stormwater grab samples were collected at the Arroyo Simi – Frontier Park (RSW-002) following the collection of the annual stormwater samples. An annual sediment sample was also collected at the Arroyo Simi – Frontier Park (RSW-002) location. Table I summarizes the First Quarter 2014 sampling record by outfall, location, and sample type collected, per NPDES Permit requirements.

**TABLE I: Sampling Record during First Quarter 2014**

Date	Outfall/Location	Samples Collected
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

The samples were submitted to and analyzed by TestAmerica Laboratories, Inc., a California-certified analytical laboratory in Irvine, per the NPDES Permit requirements.



## FIRST QUARTER 2014 SUMMARY OF COMPLIANCE

As summarized in Appendix C, the First Quarter 2014 stormwater exceedances of Daily Max Permit Limit or receiving water limits included:

- *Escherichia coli* (*E. coli*), Fecal Coliform at Arroyo Simi – Frontier Park (RSW-002);
- Background dioxins (TCDD) toxic equivalent (TEQ) at Outfalls 009 and 010;
- Lead at Outfalls 009 and 010; and
- pH at Outfall 009.

### Outfall 009

#### Lead

On 01 March 2014, lead was detected in the stormwater sample collected from Outfall 009 at a concentration of 9.6 micrograms per liter (ug/L), above the Daily Maximum Permit Limit of 5.2 ug/L.

Prior to this exceedance, Boeing had already been implementing corrective actions to address metal exceedances in 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 concentration in stormwater runoff in the Outfall 009 watershed was the result of the high intensity rain event causing 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. In addition, and based on discussions with the Santa Susana Stormwater Expert Panel (Expert Panel), freshly-applied asphalt is known to be a source of lead in surface water, and a roadway along the Northern Drainage was recently repaved.

Boeing will continue to work with the Expert Panel to minimize future metal exceedances in Outfall 009. For example, Boeing is evaluating additional corrective actions targeting localized areas along the repaved roadway. Boeing is committed to fulfilling the requirements of the NPDES Permit and actions taken during the First Quarter 2014 to control sediment transport and minimize the occurrence of future permit exceedances are described in Table II and section Outfall 008/009 ISRA and BMP Plan-Related Activities below.

#### 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 is implementing corrective action by revising the Standard Operating Procedure for pH measurement.

TCDD TEQ

In the First Quarter 2014, TCDD TEQ was detected above Daily Max Permit Limit of 2.80E-08 ug/L in stormwater samples collected from Outfall 009 at 1.32E-07 ug/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 (USEPA, 2000; MWH, 2005; Flow Science 2006). In 2013, there were several fires in southern California, including the Springs Fire in Ventura County and the adjacent Santa Monica mountains which impacted over 24,000 acres. This fire most likely would have contributed to onsite deposition of ash. The fact that the 2378-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 constituents of concern (COCs). Boeing believes that the dioxin concentrations in the stormwater runoff in the Outfall 009 watershed were the result of the high intensity rain event causing erosion and elevated concentrations of total suspended solids (TSS) 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 the First Quarter 2014 to control sediment transport and minimize the occurrence of future permit exceedances are described in Table II and the section describing Outfall 008/009 ISRA and BMP Plan-Related Activities below.

NASA has installed a stormwater capture and treatment system to assist in sediment removal downstream from completed ISRA activities. It should be noted that this system operated initially during the 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 and developing a maintenance plan to help prevent future power outages that impact the stormwater program.

**Outfall 010**

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. Adequate volume was collected to enable analysis of all constituents required by the 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 that occurred in Area II of the Site, as noted above, which prevented the pumping and conveyance of the discharge 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 involves the conveyance of 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 is preparing a maintenance plan to help avert future power failures that impact the stormwater program.

#### Lead

On 01 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 ug/L.

During the last sampling event that occurred at this outfall in which the flow-through filter media bed operated (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 for 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 the First Quarter 2014 to control sediment transport and minimize the occurrence of future permit exceedances are described in Table II.

#### TCDD TEQ

In the First Quarter 2014, TCDD TEQ was detected slightly above Daily Max Permit Limit of 2.80E-08 ug/L in stormwater samples collected from Outfall 010 at 3.67E-08 ug/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). In 2013, there were several fires in southern California, including the Springs Fire in Ventura County and the adjacent Santa Monica mountains which impacted over 24,000 acres. This fire most likely would have contributed to onsite deposition of ash. The fact that the 2378-TCDD congener was non-detected 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 the high intensity rain event causing erosion and elevated concentrations of total suspended solids (TSS) consisting of native sediments and soils from these newly disturbed areas. TSS loading varies based on rainfall intensity, duration, and erosion. 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 the First Quarter 2014 to control sediment transport and minimize the occurrence of future permit exceedances are described in Table II.

#### **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 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 is implementing corrective action by revising the Standard Operating Procedure for pH measurement.

#### **FIRST QUARTER 2014 SANTA SUSANA SITE SWPPP/BMP ACTIVITIES**

Boeing implemented significant SWPPP- and BMP-related activities to assist in improving stormwater quality and compliance at the Santa Susana Site. Table II summarizes by outfall watershed the Santa Susana Site SWPPP and specific BMP activities completed in First Quarter 2014. Specific BMP projects included: demolition-related BMPs; Outfall 008/009 ISRA BMPs; BMP Plan-related BMPs; and Northern Drainage BMPs.



**TABLE II: Boeing's First Quarter 2014 BMP Activities**

OUTFALL (Location)	BMP ACTIVITIES DURING FIRST QUARTER 2014
<p>001 (South Slope below Perimeter Pond)</p>	<p>Conducted erosion and sediment control inspections around the perimeter of the outfall and drainage. Inspected outfall and flume for excess sediment/debris. Checked sample box and flow meter control box for the presence of debris and/or animals. Reset flow meter and replaced tape on a monthly basis. Cleaned sample box and the outfall area and performed weed abatement as needed. Set autosamplers in preparation for rain events.</p>
<p>002 (South Slope below R-2 Ponds)</p>	<p>Conducted erosion and sediment control inspections around the perimeter of the outfall and drainage. Inspected outfall and flume for excess sediment/debris. Checked flow meter control box for the presence of debris and/or animals. Reset flow meter and replaced tape on a monthly basis. Completed maintenance inspection and reset the automated composite sampling equipment (autosamplers). Cleaned sediment and debris from the flume and sample box, cleaned the outfall area, and performed weed abatement as needed. Set autosamplers in preparation for rain events.</p>
<p>003 (Radioactive Material Handling Facility)</p>	<p>Conducted erosion and sediment control inspections. Inspected flume and sample box for excess sediment/debris. Conducted maintenance inspection of the structural BMPs, including the stormwater retention basin and conveyance and filter systems. Checked sample box and flow meter control box for spiders and the presence of debris and/or animals. Cleaned sample box and removed vegetation from the outfall flume area. Repaired damaged felt and replaced autosampler drum bags. Connected conveyance piping from flume to autosamplers and sample drums as necessary. Set autosamplers in preparation for rain events. Reset flow meter and replaced tape on a monthly basis.</p>
<p>004 (Sodium Reactor Experiment)</p>	<p>Conducted erosion and sediment control inspections near the outfall. Inspected the flume, outfall, and liner for excess sediment/debris. Conducted a maintenance inspection of the structural BMPs, including the stormwater retention system and conveyance and filter systems. Inspected dedicated retention tanks. Checked sample box and flow meter control box for the presence of debris and/or animals. Cleaned sample box and the outfall area. Repaired worn felt in upslope SRE area. Replaced straw wattles around swale. Set autosamplers in preparation for rain events. Reset flow meter and replaced tape on a monthly basis.</p>
<p>005 (Former Sodium Disposal Facility - 1)</p>	<p>Conducted erosion and sediment control inspections. Inspected the outfall and flume for excess sediment/debris. Completed a maintenance inspection of structural BMPs, including the conveyance and stormwater retention systems and sediment basin liner. Cleaned sample box and the outfall area. Reset flow meter and replaced tape on a monthly basis.</p>

<p>006 (Former Sodium Disposal Facility - 2)</p>	<p>Conducted erosion and sediment control inspections near the outfall. Completed maintenance inspection of the structural BMPs, including the stormwater retention and filter systems. Completed inspection of dedicated retention tanks. Inspected the flume, outfall, and liner for excess sediment/debris. Checked sample box and flow meter control box for the presence of debris and/or animals. Cleaned sample box and the outfall area and connected conveyance piping from flume to autosamplers and sample drums as necessary. Repaired damaged felt. Set autosamplers in preparation for rain events. Reset flow meter and replaced tape on a monthly basis.</p>
<p>007 (Building 100)</p>	<p>Conducted erosion and sediment control inspections at the perimeter of the outfall. Completed a maintenance inspection of the conveyance system, stormwater retention system, and sediment basin liner. Observed sediment basin liner and outfall for excess sediment/debris or deficiencies. Checked high level float/switch in sedimentation basin. Completed inspection of dedicated retention tanks. Cleaned sample box and the outfall area. Repaired damaged felt. Reset flow meter and replaced tape on a monthly basis.</p>
<p>008 (Happy Valley)</p>	<p>Conducted erosion and sediment control inspections near the perimeter of the outfall and within the outfall drainage. Observed the outfall and flume for excess sediment/debris, and cleared excess sediment from the flume. Checked sample box and flow meter control box for the presence of debris and/or animals. Reset flow meter and replaced tape on a monthly basis. Cleaned sample box and the outfall area. Set autosamplers in preparation for rain events.</p>
<p>009 (WS-13 Drainage)</p>	<p><i>Outfall BMPs:</i> Checked sample box and flow meter control box for the presence of debris and/or animals. Cleaned sample box and outfall area and performed weed abatement as needed. Replaced sandbags at top of flume and installed new straw wattles along hillside next to flume. Set autosamplers in preparation for rain events. Reset flow meter and replaced tape on a monthly basis.</p> <p><i>Culvert Modification (CM)-9:</i> Inspected riprap and culvert intake improvements made during Second Quarter 2013 in accordance with the ISRA SWPPP.</p> <p><i>Restoration, Monitoring and Mitigation Plan (RMMP) BMPs:</i> Inspected plantings and pole cuttings in the Northern Drainage and manually watered each plant. Selective weeding was performed at plantings as needed to remove invasive species. Inspected structural BMPs and continued weekly watering.</p> <p><i>National Aeronautics and Space Administration (NASA) ISRA BMPs:</i> Performed inspections of the 2010, 2011/2012, and 2013 ISRA areas in accordance with the ISRA SWPPP. Straw wattles were added to the ELV drainage in February.</p> <p><i>Lower Parking Lot BMP:</i> Inspected plantings and continued implementing watering plan. Inspected sediment basin, including fiber rolls, the biofilter, and the riprap berm placed at the west end. Replaced sandbags near the cistern and biofilter.</p>



OUTFALL (Location)	<i>BMP ACTIVITIES DURING FIRST QUARTER 2014</i>
010 (Building 203)	Conducted maintenance inspections of structural BMPs, including the flow-through structure and conveyance and stormwater retention systems. Replaced sandbags around media bed. Completed inspection of dedicated retention tanks. Maintained and inspected erosion and sediment controls within areas of disturbance or sparse vegetation. Checked sample box and flow meter control box for the presence of debris and/or animals. Reset flow meter and replaced tape on a monthly basis. Cleaned sample box and the outfall area and performed landscaping and weed abatement as needed. Began constructing stone walkway to outfall. Set autosamplers in preparation for rain events.
011 (Perimeter Pond)	Conducted maintenance inspections of structural BMPs, including the weir, flow-through structure, and pump and conveyance systems. Conducted erosion and sediment control inspections at the flume, drainage area, perimeter of outfall, pond, and around the conveyance system. Checked sample box and flow meter control box for the presence of debris and/or animals. Reset flow meter and replaced tape on a monthly basis. Cleaned and reset totalizer. Cleaned sample box and the outfall area and performed weed abatement as needed. Set autosamplers in preparation for rain events.
012 (Alfa Test Stand)	Conducted maintenance inspections of structural BMPs, including pump, conveyance system, and retention tank. Observed condition of the sand bag berm. Inspected outfall and perimeter for the presence of rodents/animals. Cleaned sample box and the outfall area and performed weed abatement as needed.
013 (Bravo Test Stand)	Conducted maintenance inspections of structural BMPs, including pump, conveyance system and retention tank. Observed condition of the sand bag berm. Inspected outfall and perimeter for the presence of rodents/animals. Cleaned sample box and the outfall area and performed weed abatement as needed.
014 (Advanced Propulsion Test Facility)	Conducted maintenance inspections of structural BMPs. Observed the condition and integrity of the liner and berm. Observed erosion and sediment control BMPs around outfall perimeter. Cleaned sample box and the outfall area and performed weed abatement as needed.
018 (R-2 Spillway)	Conducted maintenance inspections of structural BMPs, including the flow-through structure and conveyance system. Checked sample box and flow meter control box for the presence of debris and/or animals. Reset flow meter and replaced tape on a monthly basis. Cleaned sample box and the outfall area and performed weed abatement as needed. Set autosamplers in preparation for rain events.
019 (Area I Groundwater Extraction [GET] System)	The GET system has been off since April 2013 and no pumping or discharge has occurred. Therefore, no NPDES sampling was performed in First Quarter 2014 at the Area I GET System.
RSW-002 (Arroyo Simi – Frontier Park)	Collected quarterly and annual receiving water sample and annual sediment sample at the Arroyo Simi – Frontier Park location. Conducted monthly receiving water inspections.

Boeing also continued to implement the individual SWPPPs during First Quarter 2014 and BMP inspections were completed in accordance with the State of California Construction General Permit requirements. Construction BMPs are implemented before, during, and after demolition activities.

Efforts to plan and implement BMPs for pre- and post-soil disturbance activities in ISRA areas are discussed further below. Demolition projects comprised areas of disturbed soil from recent demolition and post-demolition restoration. The ISRA areas are subject to ongoing soil removal and/or remediation, post-remediation, and restoration activities. There were no demolition activities in First Quarter 2014.

### **Outfall 008/009 ISRA and BMP Plan-Related Activities**

ISRA soil removal within Outfall 008 was completed in 2009, and ISRA soil removal conducted within the Outfall 009 watershed was completed in Fourth Quarter 2013. In January 2014, the Phase III ISRA Implementation Report for 2011 to 2013 Activities was submitted to the Regional Board (Boeing, 2014a)<sup>1</sup>. Performance monitoring at Phase III ISRA areas is currently being performed with results and recommendations being presented in annual rainy season summary reports. Since ISRA remedial activities are complete, progress reports are provided quarterly.

The Expert Panel prepared BMP plans and submittals on behalf of NASA and Boeing to meet Outfall 008/009 Permit limits/benchmarks established in the NPDES Permit (Order No. R4-2004-0090). These plans are considered conceptual designs and recommendations for BMPs identified based on an evaluation of NPDES Permit compliance and ISRA/BMP stormwater monitoring results. The following BMP plans were submitted to the Regional Board and are located on Boeing's Santa Susana Site web page under Outfall 008/009 ISRA- and BMP-related activities<sup>2</sup>:

- 2010 BMP Plan Outfalls 008 and 009 BMP Watersheds (MWH et al., 2010);
- 2011 BMP Plan Addendum (Geosyntec and the Expert Panel, 2011);
- 2012 BMP Plan Addendum (Geosyntec and the Expert Panel, 2012); and
- 2013 BMP Plan Addendum (Geosyntec and the Expert Panel, 2013).

All completed Expert Panel-recommended BMPs are discussed in the ISRA Performance Monitoring and BMP Monitoring Report for Outfalls 008 and 009 Watersheds submitted to the Regional Board for each rainy season (Boeing, 2013).

The BMP activities discussed below were performed, commenced, or completed during First Quarter 2014 in coordination with the Expert Panel. These activities are summarized in the "Fourth Quarter Progress Report for December 19, 2013 – March 21, 2014 Activity, Interim Source Removal Action (ISRA) and Best Management Practices (BMP) Plan" (Boeing, 2014b)<sup>3</sup>.

---

1 Available at: : [http://www.boeing.com/boeing/aboutus/environment/santa\\_susana/isra.page](http://www.boeing.com/boeing/aboutus/environment/santa_susana/isra.page)

2 Available at: [http://www.boeing.com/boeing/aboutus/environment/santa\\_susana/isra.page](http://www.boeing.com/boeing/aboutus/environment/santa_susana/isra.page)

3 The title of the report should have read First Quarter Progress Report for December 19, 2013 – March 21, 2014 Activity.



### Lower Parking Lot BMP

The Lower Parking Lot BMP is a stormwater treatment BMP designed and built to capture, convey, and treat stormwater runoff from the lower lot and former Instrument and Equipment Laboratories (IEL) watersheds. The need for a treatment BMP at the Lower Parking Lot BMP was first proposed in the 2010 BMP Plan (MWH et al., 2010). The Lower Parking Lot BMP consists of a 30,000-gallon cistern, a stormwater conveyance line, a sedimentation basin, and a media biofilter. Construction activities were completed on 15 March 2013 and a Regional Board and public tour of the completed Lower Parking Lot BMP was conducted on 20 March 2013.

First Quarter 2014 activities included inspections to verify that the sedimentation basin and biofilter were free of sediment and debris, checks of the cistern area and pump, and inspections of surrounding BMPs. During the rain event, the biofilter was operated and performance monitoring samples were collected on 28 February 2014. Approximately 380,000 gallons of stormwater were pumped from the cistern to the sedimentation basin and then biofilter for treatment during the rain event.

### NASA Expendable Launch Vehicle (ELV) BMPs

BMPs and drainage improvements were conducted at NASA ELV to improve stormwater quality from the ELV area before it is conveyed to Outfall 009. The construction commenced in June 2013 and was completed in October 2013. An existing 520-foot asphalt drainage swale was removed south of ELV and a concrete sump, sump pumps, settling tanks with tube settling plates, and a media filter were installed at the corner of Helipad Road and Area II Road. Stormwater will be gravity driven through the tank system, starting with the settling tanks, then through the filter media tank, before discharging to a tributary that flows to Outfall 009.

First Quarter 2014 activities included inspections of the BMPs and collection of performance monitoring samples from the influent and effluent of the treatment system during the rain event on 28 February 2014.

### CM-9 Upgrades

CM-9 upgrades were recommended in the 2012 BMP Plan Addendum and construction of these upgrades was completed in March 2013. 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. First Quarter 2014 activities included inspections of the CM-9 upgrades in accordance with the ISRA SWPPP.

### First Quarter 2014 NASA and Boeing ISRA Activities

In addition to activities performed in coordination with the Expert Panel, the following ISRA activities were performed for Outfall 008/009 during First Quarter 2014:

- Planning and Reporting:
  - Submitted the Phase III ISRA Implementation Report for 2011 to 2013 Activities to the RWQCB in January; and

- Continued planning activities for a series of retention bioswales in the vicinity of former Building 1436, a BMP recommended in the 2013 Plan Addendum.
- **Surveys, Monitoring, and Inspections:**
  - Performed weekly, pre-rain event, rain event, and post-rain event SWPPP inspections at the 2010, 2011/2012 and 2013 ISRA areas per the ISRA SWPPP; and
  - Conducted ISRA Performance Monitoring and BMP Subarea Monitoring inspections.

Boeing continues to submit quarterly progress reports to Regional Board staff on the progress of ISRA performance monitoring and BMP monitoring<sup>4</sup>. Boeing is committed to restoring the ISRA areas immediately following cleanup activities and works closely with the Regional Board, California Department of Toxic Substances Control (DTSC), and the Expert Panel to ensure that restoration is comprehensive.

### **Northern Drainage BMPs**

Boeing has actively worked to restore the Northern Drainage following cleanup activities performed under the oversight of the DTSC and in accordance with the requirements of Regional Board Cleanup and Abatement Order No. R4-2007-0054. The restoration and mitigation activities proposed in the RMMP plan<sup>5</sup> were implemented in 2012.

Some areas along the Northern Drainage hydroseeded in December 2013 were watered weekly. Plant and pole cutting monitoring and maintenance were conducted in First Quarter 2014. Water replenishment cartons were previously replaced periodically to provide plants with a water source for three months, but the watering process changed to manual during First Quarter 2014. Selective weeding was performed as needed to remove invasive plants. In accordance with the RMMP Plan, plant monitoring will continue for a minimum of five years from the 2012 planting and supplemental baseline geomorphic surveys will continue for two to three years from this time, depending on the need to reassess the sediment conditions in the drainage. Manual watering will be performed on a weekly basis or as needed until the plants are well established. Structural BMPs were also inspected monthly to evaluate conditions and performance during rain events.

### **REASONABLE POTENTIAL ANALYSIS**

Stormwater discharges from the Santa Susana Site occurred at Outfalls 009 and 010 during First Quarter 2014. Analytical results from this quarter were added to the Reasonable Potential Analysis (RPA) dataset following the MWH and Flow Science RPA procedures for outfall monitoring group 009-010 (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 F, the analytical results for First Quarter 2014 did not trigger reasonable potential for any other constituent not already regulated under the current NPDES Permit.

---

4 Available at: [http://www.boeing.com/boeing/aboutus/environment/santa\\_susana/isra.page](http://www.boeing.com/boeing/aboutus/environment/santa_susana/isra.page)

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



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

On 28 February 2014, bis (2-ethylhexyl) phthalate was detected in the stormwater sample collected from Outfall 010 at a concentration of 6.71 ug/L. Bis(2-ethylhexyl)phthalate has not been detected in stormwater samples collected from Outfall 010 previously. 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 to objectives, RPA was not conducted for Fecal Coliform.

On 28 February 2014, *E. coli* was detected in stormwater samples collected from Outfall 009 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. The Outfall 009 sample 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 Outfall 009 originated from non-human, natural sources. Therefore, Boeing does not believe that reasonable potential has been demonstrated for bacteria at Outfalls 009. Boeing will continue to monitor *E. coli*, Fecal Coliform and human-specific Bacteroides and monitor for any potentially contributing sources of bacteria in order to continue to confirm that any indicator bacteria detected at the outfalls are from animals and not human sources.

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.

### **DATA VALIDATION AND QUALITY CONTROL**

In accordance with current federal and state Environmental Protection Agency guidelines and procedures, or as specified in the NPDES Monitoring and Reporting Program, chemical and radiological analyses of water samples were completed at a State of California-certified laboratory. Data validation was performed on the analytical results and quality control elements were found to be within acceptable limits for the analytical methods reported, except as noted on the analytical summary tables. As noted above, measures were implemented by the analytical laboratory to monitor and/or evaluate low level detections, to analyze for interferences, and to ensure that cross-contamination did not occur. Laboratory analytical reports, including validation reports and notes, are included in Appendix E.

Attachment H of the NPDES Permit presents the State Board's minimum levels (MLs) for use in reporting and determining compliance with NPDES Permit limits. The analytical laboratory achieved these MLs for in the First Quarter 2014 when technically possible. In cases where the NPDES Permit limit is less than the reporting limit (RL) and ML, the RL was used to determine compliance.

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, these compounds were not detected at concentrations equal to or greater than their RL in samples collected and analyzed during the First Quarter 2014.

### **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 planting and maintaining native plants and applying hydroseed mulch, as well as continuing with planned ISRA and BMP activities as detailed above.

### **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.

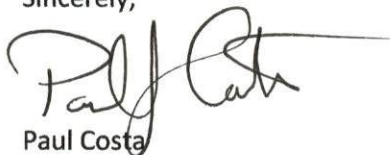
### **CERTIFICATION**

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 14th of May 2014 at The Boeing Company, Santa Susana Site.

Sincerely,



Paul Costa  
Environmental Operations and Compliance Manager  
Santa Susana Field Laboratory



Enclosures:

References

Figures 1 – Site Map with Outfall Locations and Stormwater Drainages

Appendix A – First Quarter 2014 Rainfall Data Summary

Appendix B – First Quarter 2014 Liquid Waste Shipment Summary Table

Appendix C – First Quarter 2014 Discharge Monitoring Data Summary Tables

Appendix D – First Quarter 2014 Summary of Permit Limit Exceedances

Appendix E – First Quarter 2014 Analytical Laboratory Report, Chain of Custody, and Validation Report

Appendix F – First Quarter 2014 Reasonable Potential Analysis (RPA) Summary Tables

cc: Ms. Cassandra Owens, RWQCB  
Mr. Mark Malinowski, DTSC  
California State University – Northridge, Library  
Simi Valley Library  
Los Angeles Library, Platt Branch

**REFERENCES**

1. Boeing, 2011. Waste Discharge Requirements- The Boeing Company, Santa Susana Field Laboratory, Canoga Park, California, NPDES No. CA0001309, CI No. 6027, issued on June 16, 2010, and effective on July 19, 2010, Addendum. September 7.
2. Boeing, 2013. ISRA Performance Monitoring and BMP Monitoring for the Outfalls 008 and 009 Watersheds, 2012/2013 Rainy Season, The Boeing Company, Santa Susana Field Laboratory, Ventura County, California (Order No. R4-2010-0090; NPDES No. CA0001309, CI No. 6027; and California Water Code §13304 Order; No. CA0001309, CI No. 1111, Site ID No. 2040109). August.
3. Boeing, 2014a. Interim Source Removal Action (ISRA) Phase III Implementation Report – 2011-2013 Activities, The Boeing Company, Santa Susana Field Laboratory, Ventura County California (California Water Code §13304, Order No. CA0001309, CI No. 6027, SCP No. 1111, Site ID No. 2040109) January 14.
4. Boeing, 2014b. Fourth Quarter Progress Report for December 19, 2013 – March 21, 2014 Activity, Interim Source Removal Action (ISRA) and Best Management Practices (BMP) Plan, The Boeing Company, Santa Susana Field Laboratory, Canoga Park, California (Order No. R4-2010-0090; NPDES No. CA0001309, CI No. 6027). March 27.
5. Flow Science, 2006. Potential Background Constituent Levels in Storm Water at Boeing's Santa Susana Field Laboratory. February 23.
6. Geosyntec and the Expert Panel, 2011. 2011 BMP Plan Addendum, The Boeing Company, Santa Susana Field Laboratory, Canoga Park, Canoga Park, California (Order No. R4-2010-0090; NPDES No. CA0001309, CI No. 6027). September 28.
7. Geosyntec and the Expert Panel, 2012. 2012 BMP Plan Addendum, The Boeing Company, Santa Susana Field Laboratory, Canoga Park, Canoga Park, California (Order No. R4-2010-0090; NPDES No. CA0001309, CI No.6027). September 28.
8. Geosyntec and the Expert Panel, 2013. 2013 BMP Plan Addendum, The Boeing Company, Santa Susana Field Laboratory, Canoga Park, Canoga Park, California (Order No. R4-2010-0090; NPDES No. CA0001309, CI No.6027). September 30.
9. MWH Americas, Inc., 2005. Standardized Risk Assessment Methodology (SRAM) Work Plan – Revision 2 Final, Santa Susana Field Laboratory, Ventura County, California. September.
10. MWH Americas, Inc., and Flow Science, 2006. Reasonable Potential Analysis Methodology Technical Memo- Version 1, Final, Santa Susana Field Laboratory, Ventura County, California. April 28.
11. MWH Americas, Inc. et al, 2010. Best Management Practices (BMP) Plan, Outfalls 008 and 009 Watersheds, The Boeing Company, Santa Susana Field Laboratory, Canoga Park, California (Order No. R4-2010-0090; NPDES No. CA0001309, CI No. 6027). October 14.



11. MWH Americas, Inc. et al, 2010. Best Management Practices (BMP) Plan, Outfalls 008 and 009 Watersheds, The Boeing Company, Santa Susana Field Laboratory, Canoga Park, California (Order No. R4-2010-0090; NPDES No. CA0001309, CI No. 6027). October 14.
12. USEPA, 2000. Exposure and Human Health Reassessment of 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD) and Related Compounds. Part I: Estimating Exposure to Dioxin-Like Compounds. Volume 3: Properties, Environmental Levels, and Background Exposures. Draft. EPA/600/P-00/001Ac. Office of Research and Development, Washington, DC. March.
13. USEPA, 2007. "Phthalates, TEACH Chemical Summary." October 10.
14. USEPA, 2008. "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review." OSWER 9240.1-46. USEPA-540-R-08-01. June 2008.