



Matthew Rodriguez
Secretary for
Environmental Protection



Department of Toxic Substances Control

Deborah O. Raphael, Director
8800 Cal Center Drive
Sacramento, California 95826-3200



Edmund G. Brown Jr.
Governor

March 12, 2013

Mr. Dave Dassler
The Boeing Company
5800 Woolsey Canyon Road, MC T-487
Canoga Park, California 91304-1148

DEPARTMENT OF TOXIC SUBSTANCES CONTROL APPROVAL TO IMPLEMENT THE GROUNDWATER INTERIM MEASURES WORK PLAN, SANTA SUSANA FIELD LABORATORY, VENTURA COUNTY, CALIFORNIA

Dear Mr. Gallacher:

The Department of Toxic Substances Control (DTSC) has determined that with the addition of the requirements specified in *DTSC's Additional Requirements for the Groundwater Interim Measures* (Attachment 1), the Groundwater Interim Measures Work Plan is technically complete and approved for implementation. DTSC requests that Boeing provide a schedule for the Groundwater Interim Measures implementation activities to DTSC no later than April 9, 2013.

The purpose of the Groundwater Interim Measures is to control groundwater and remove contaminant mass at source areas where trichloroethene plumes exceed 1,000 parts per billion. Pumping from selected wells will help to contain the northeast contaminant plume that extends offsite, and pumping from WS-9A will prevent surface discharge of contaminated groundwater in the area. The Groundwater Interim Measures are not a final remedy.

DTSC reviewed the *Work Plan (Revision 2) Groundwater Interim Measures* (July 2008) and the *Addendum to Revision 2 of the Work Plan for Groundwater Interim Measures* (February 2009) for the Santa Susana Field Laboratory (SSFL). In August 2012, DTSC issued a public notice and fact sheet, and conducted a 30-day public comment period for the Groundwater Interim Measures work plan.

DTSC reviewed and considered the public comments in developing the additional requirements identified in *DTSC's Additional Requirements for the Groundwater Interim Measures*. DTSC developed responses to the public comments and the responses are posted at DTSC's SSFL website at:

http://www.dtsc.ca.gov/SiteCleanup/Santa_Susana_Field_Lab/ssfl_document_library.cfm

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As part of the approval process, a Notice of Exemption has been filed with the Office of Planning and Research to comply with the California Environmental Quality Act requirements for this action. A copy of the Notice of Exemption has been included for your information.

If you have any questions regarding the approval of the SSFL Groundwater Interim Measures work plan, please contact Mr. Roger Paulson [REDACTED] or me at [REDACTED]

Sincerely,



Mark Malinowski
SSFL Program Manager
Department of Toxic Substances Control

Attachments:

DTSC's Additional Requirements to Implement the Groundwater Interim Measures Notice of Exemption

cc: (via e-mail)

Mr. Randy Ueshiro
The Boeing Company
[REDACTED]

Mr. Michael Bower
The Boeing Company
[REDACTED]

Mr. Allen Elliott
NASA
[REDACTED]

Peter Zorba
NASA
[REDACTED]

Mr. Dave Dassler
March 12, 2013
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cc: (cont'd)

Mr. John Jones
US Department of Energy
[REDACTED]

Ms. Stephanie Jennings
US Department of Energy
[REDACTED]

Ray Leclerc
Department of Toxic Substances Control
[REDACTED]

Roger Paulson
Department of Toxic Substances Control
[REDACTED]

Laura Rainey
Department of Toxic Substances Control
[REDACTED]

Paul Carpenter
Department of Toxic Substances Control
[REDACTED]

Tom Seckington
Department of Toxic Substances Control
[REDACTED]

Buck King
Department of Toxic Substances Control
[REDACTED]

ATTACHMENT 1

DTSC's Additional Requirements for the Groundwater Interim Measures Work Plan Santa Susana Field Laboratory February 28, 2013

- 1) Excavated Soil from Trenching,
 - a. Boeing areas (Areas I, III, and Southern Buffer Zone):
 - i. Collect soil samples prior to excavation and compare results with screening criteria from Table 1 to determine proper disposition of excavated soils.
 1. Soil samples will be collected along the trenching route prior to excavation activities. The soil samples will be collected at a frequency of one location per 200 linear foot of trench, at a depth of six to twelve inches, and retained for analysis. For every five locations sampled, one composite sample will be created from a portion of the five samples and the composited sample will be analyzed.
 2. If the results of the composited sample exceed any of the concentration limits (Screening Criteria, see attached Table 1), then each of the retained samples collected from the locations comprising the composite sample will be analyzed for the compound(s) exceeding the Screening Criteria. The results for all of the standard analytes for the test method used will be reported, not only the results for the compound exceeding the Screening Criteria.
 3. If the composited soil sample results are all below the Screening Criteria listed below, the excess soil can be spread adjacent to the trench within 5 feet of the trench or adjacent roadway and properly compacted.
 4. If visual observations, field monitoring equipment, or the results of the soil analysis indicate potential contamination, then the soil must be stockpiled and sampled separately to characterize the soil and determine the appropriate management option. Stockpiled soil must be disposed of properly and with DTSC concurrence.
 - b. Department of Energy and National Aeronautics and Space Administration areas (Areas II and IV):
 - i. Dispose as low level radiological waste or stockpile, characterize and determine proper disposition based on look up table values.
 - c. Detailed documentation of the excavations, backfill, sample locations, sample analysis results, stockpile locations, and any off-site disposal of contaminated soil must be provided to DTSC. Locations where the excess soils are spread and compacted along the trench or adjacent roadway shall be noted on a map of suitable scale, including a record of the thickness of the spread soils. All soil analysis data will be utilized for the ongoing RCRA Facility Investigation.

2) Biological Resource Protection:

- a. Special-status species placards should be reviewed by the work crew prior to start of work and/or placed onsite to ensure all personnel are aware of the potential for special-status reptiles or amphibians to occur throughout the site. If special-status reptiles or amphibians are observed at a work site, work should be curtailed at the specific location until a capture and relocation procedure is completed by a qualified biologist.
- b. Earthen areas adjacent to the location of the CTL-III containment basin should be considered as potential underground burrowing habitat for western spade foot, and this species may be expected to return to the basin and breed upon collection of rainwater. Therefore, it is recommended that work activities within 100 feet of the basin be postponed until the summer months; or, this location be surveyed prior to commencement of work activities and work activities (including trenching and backfilling) be monitored by a qualified biologist, especially at the beginning of each day. If necessary, the qualified biologist will conduct a capture and relocation procedure to a suitable nearby habitat.
- c. Should activities be conducted during the bird breeding/nesting season (March 1 to September 1 for most species), breeding bird surveys are recommended prior to entry into each area. If, at that time, any active bird nests are observed, these nests should be avoided and provided with a buffer (50 to 500 feet depending on the species and maturity of nestlings). Observation of an active bird nest (or nests) should immediately be brought to the attention of a qualified biologist who can determine the species and timing of the nesting cycle, and provide further conservation recommendations to ensure compliance with the Migratory Bird Treaty Act.
- d. Orange construction fencing should be placed in a perimeter at least 3 feet from the base of Santa Susana tarplants (SSTP) that are located in close proximity to each work site. These fenced areas should be protected at all times, and if at any time, additional SSTP are found within the project site, additional fencing will be required. No damage or removals of SSTP are authorized for the project.
- e. Avoid or minimize heavy equipment activity within 5 feet of each oak tree's dripline. Any pruning of live limbs greater than 3 inches in diameter should be overseen by a certified arborist or biologist experienced in tree protection and care. Dead limbs do not require any size restrictions, but proper trimming techniques (with recommended oversight by an arborist or biologist) are necessary.
- f. Vegetation clearance should be minimized to avoid loss of habitat buffer for adjacent areas potentially supporting special-status bird species. Where feasible, mature shrubs and willow trees should be protected in place, and if clearance is required, should be cut to ground level to leave the root systems in place, allowing for natural stump-sprout regeneration.
- g. Review of existing regulatory permits and/or exemptions for California Department of Fish and Game (CDFG) and U.S. Army Corps of Engineers jurisdiction are recommended prior to installation of the pipeline within the bed or banks of drainages to ensure compliance with CDFG Code and Section 404 of the Clean Water Act.

3) Cultural Resource Protection:

- a. Five archeological/historical sites within the GWIM project area were identified in the report, "Class III Inventory/Phase I Archaeological Survey of the Groundwater Interim Measures Conveyance Pipeline, Santa Susana Field Laboratory, Ventura County, California," (W&S Consultants, December 12, 2010). These sites are designated CA-VEN-1072, 56-100202, W&S-1, Building 302, and Building 319. These five sites shall be fenced prior to the GWIM project to prevent work activities, construction staging, or inadvertent traffic from crossing onto or otherwise damaging the sites. Buffers of at least 50 feet shall be maintained wherever possible.
- b. In the event resources of cultural or historical significance are found in the course of project activities, work shall be suspended in the area of the discovery while a qualified cultural or historical specialist makes an assessment of the area and arrangements are made to protect or preserve any resources that are located within the project area. Further, if Native American cultural items are found [as described in the Native American Graves Protection and Repatriation Act Section 2(3)], the project manager shall be notified immediately.
- c. If human remains are discovered at the project site, no further disturbance shall occur in the location where the remains are found, and the County Coroner shall be notified pursuant to Health and Safety Code section 7050.5.

4) Traffic Control:

- a. Project truck traffic is restricted to only off-peak traffic hours (after 9:00 AM and before 4:00 PM).
- b. Project truck traffic must be controlled and integrated with trucks from other projects at Santa Susana Field Laboratory such that there is not less than a 5-minute interval between trucks leaving Santa Susana Field Laboratory on Woolsey Canyon Road.

5) Fugitive Dust Control:

- a. Project activities capable of generating fugitive dust shall comply with Ventura County Air Pollution Control District Rule 55- Fugitive Dust.

**Table 1: Soil Analytes and Screening Criteria
Additional Requirements for the Groundwater Interim Measures Work Plan
Santa Susana Field Laboratory**

Chemical	Analytical Method	Boeing Interim Screening Level (mg/kg)	Screening Level Basis ^b
Metals			
Aluminum	EPA 6010/6020B	3.79E+04	Background
Antimony	EPA 6010/6020B	4.97E-01	Background
Arsenic	EPA 6010/6020B	2.42E+01	Background
Barium	EPA 6010/6020B	2.04E+02	Background
Beryllium	EPA 6010/6020B	4.80E+00	Eco RBSL
Boron	EPA 6010/6020B	2.20E+01	Eco RBSL
Cadmium	EPA 6010/6020B	4.35E-01	Background
Calcium	EPA 6010/6020B	9.77E+03	Background
Chromium	EPA 6010/6020B	6.01E+01	Background
Cobalt	EPA 6010/6020B	2.62E+01	Background
Copper	EPA 6010/6020B	4.20E+01	Background
Iron	EPA 6010/6020B	4.67E+04	Background
Lead	EPA 6010/6020B	3.39E+01	Background
Lithium	EPA 6010/6020B	6.44E+01	Background
Manganese	EPA 6010/6020B	7.23E+02	Background
Mercury	EPA 7471A	8.70E-01	Eco RBSL
Molybdenum	EPA 6010/6020B	1.64E+00	Background
Nickel	EPA 6010/6020B	6.42E+01	Background

Chemical	Analytical Method	Boeing Interim Screening Level (mg/kg)	Screening Level Basis ^b
Phosphorus	EPA 6010/6020B	8.63E+02	Background
Potassium	EPA 6010/6020B	7.52E+03	Background
Selenium	EPA 6010/6020B	5.36E-01	Background
Silver	EPA 6010/6020B	9.90E-01	Eco RBSL
Sodium	EPA 6010/6020B	7.54E+02	Background
Strontium	EPA 6010/6020B	1.21E+03	Eco RBSL
Thallium	EPA 6010/6020B	7.61E-01	Human Health RBSL
Tin	EPA 6010/6020B	3.10E+01	Eco RBSL
Titanium	EPA 6010/6020B	1.87E+03	Background
Vanadium	EPA 6010/6020B	1.12E+02	Background
Zinc	EPA 6010/6020B	1.53E+02	Background
Zirconium	EPA 6010/6020B	1.06E+01	Background
Volatile Organic Compounds			
1,3-Dichlorobenzene	EPA 8260B	2.30E+01	Eco RBSL
1,3-Dichloropropane	EPA 8260B	ND	Background
1,4-Dichlorobenzene	EPA 8260B	1.33E+00	Human Health RBSL
2-Chloroethylvinyl ether	EPA 8260B	4.20E-03	Human Health RBSL
2-Chloro-1,1,1-trifluoroethane	EPA 8260B	ND	Background
o-Chlorotoluene	EPA 8260B	1.60E+01	Eco RBSL
Methyl ethyl ketone	EPA 8260B	8.16E+03	Eco RBSL
2-Hexanone	EPA 8260B	2.30E+01	Eco RBSL
2,2-Dichloropropane	EPA 8260B	ND	Background
p-Chlorotoluene	EPA 8260B	1.60E+01	Eco RBSL
Methyl isobutyl ketone (MIBK)	EPA 8260B	4.50E+00	Eco RBSL
Acetone	EPA 8260B	4.60E+01	Eco RBSL
Benzene	EPA 8260B	1.15E-01	Human Health RBSL

Chemical	Analytical Method	Boeing Interim Screening Level (mg/kg)	Screening Level Basis ^b
Bromobenzene	EPA 8260B	2.50E+01	Eco RBSL
Bromochloromethane	EPA 8260B	ND	Background
Bromodichloromethane	EPA 8260B	1.95E-01	Human Health RBSL
Bromoform	EPA 8260B	2.30E+01	Eco RBSL
Bromomethane	EPA 8260B	3.20E+00	Eco RBSL
n-Propylbenzene	EPA 8260B	7.30E+01	Eco RBSL
p-Cymene	EPA 8260B	3.70E+00	Eco RBSL
sec-Butylbenzene	EPA 8260B	9.80E-01	Eco RBSL
tert-Butylbenzene	EPA 8260B	1.10E+00	Eco RBSL
Styrene	EPA 8260B	2.10E+02	Eco RBSL
Tetrachloroethene	EPA 8260B	4.16E-01	Human Health RBSL
Toluene	EPA 8260B	5.90E+01	Eco RBSL
trans-1,2-Dichloroethene	EPA 8260B	8.53E+01	Human Health RBSL
trans-1,3-Dichloropropene	EPA 8260B	ND	Background
Trichloroethene	EPA 8260B	7.97E-01	Human Health RBSL
Trichlorofluoromethane	EPA 8260B	1.70E+02	Eco RBSL
o-Xylene	EPA 8260B	3.40E+00	Eco RBSL
m-Xylene & p-Xylene	EPA 8260B	3.30E+00	Eco RBSL
Vinyl chloride	EPA 8260B	2.04E-02	Human Health RBSL
1,1,2-Trichloro-1,2,2-trifluoroethane	EPA 8260B	2.20E+02	Eco RBSL
1,1,1-Trichloroethane	EPA 8260B	2.46E+03	Eco RBSL
1,1,1,2-Tetrachloroethane	EPA 8260B	2.87E+00	Human Health RBSL
1,1,2,2-Tetrachloroethane	EPA 8260B	2.88E-01	Human Health RBSL
1,1,2-Trichloroethane	EPA 8260B	5.33E-01	Human Health RBSL
1,1-Dichloroethane	EPA 8260B	1.89E+00	Human Health RBSL
1,1-Dichloroethene	EPA 8260B	6.90E+00	Eco RBSL
1,1-Dichloropropene	EPA 8260B	ND	Background
1,2,3-Trichlorobenzene	EPA 8260B	1.00E+01	Eco RBSL
1,2,3-Trichloropropane	EPA 8260B	1.76E-03	Human Health RBSL
1,2,4-Trichlorobenzene	EPA 8260B	1.00E+01	Eco RBSL
1,2,4-Trimethylbenzene	EPA 8260B	3.10E+00	Eco RBSL
1,2-Dibromo-3-chloropropane	EPA 8260B	9.78E-02	Human Health RBSL
1,2-Dibromoethane	EPA 8260B	1.04E-01	Human Health RBSL
1,2-Dichlorobenzene	EPA 8260B	1.30E+02	Eco RBSL
1,2-Dichloroethane	EPA 8260B	2.61E-01	Human Health RBSL
1,2-Dichloropropane	EPA 8260B	4.39E-01	Human Health RBSL
1,3,5-Trimethylbenzene	EPA 8260B	3.20E+00	Eco RBSL
Carbon Tetrachloride	EPA 8260B	7.10E-02	Human Health RBSL

Chemical	Analytical Method	Boeing Interim Screening Level (mg/kg)	Screening Level Basis ^b
Chlorobenzene	EPA 8260B	2.10E+01	Eco RBSL
Chloroethane	EPA 8260B	8.12E+03	Human Health RBSL
Chloroform	EPA 8260B	7.33E-01	Human Health RBSL
Chloromethane	EPA 8260B	3.20E+00	Eco RBSL
Chlorotrifluoroethylene	EPA 8260B	7.90E+00	Eco RBSL
cis-1,2-Dichloroethene	EPA 8260B	9.22E+00	Human Health RBSL
cis-1,3-Dichloropropene	EPA 8260B	3.98E-01	Human Health RBSL
Dibromochloromethane	EPA 8260B	7.28E+00	Human Health RBSL
Dibromomethane	EPA 8260B	2.23E+01	Human Health RBSL
Dichlorodifluoromethane	EPA 8260B	4.10E+01	Eco RBSL
Ethylbenzene	EPA 8260B	2.31E+00	Human Health RBSL
Cumene	EPA 8260B	1.30E+00	Eco RBSL
Methyl-tert-butyl-Ether (MTBE)	EPA 8260B	ND	Background
Methylene chloride	EPA 8260B	2.97E+00	Human Health RBSL
n-Butylbenzene	EPA 8260B	6.10E+01	Eco RBSL
Semi-Volatile Organic Compounds			
1,2-Diphenylhydrazine/ Azobenzene	EPA 8270C	ND	Background
2,4,5-Trichlorophenol	EPA 8270C	7.50E+01	Eco RBSL
2,4,6-Trichlorophenol	EPA 8270C	7.43E+00	Human Health RBSL
2,4-Dichlorophenol	EPA 8270C	ND	Background
2,4-Dimethylphenol	EPA 8270C	6.50E+01	Eco RBSL
2,4-Dinitrophenol	EPA 8270C	ND	Background
2,4-Dinitrotoluene	EPA 8270C	ND	Background
2,6-Dinitrotoluene	EPA 8270C	ND	Background
3,3-Dichlorobenzidine	EPA 8270C	ND	Background
2-Chloronaphthalene	EPA 8270C	ND	Background
o-Cresol	EPA 8270C	4.30E+00	Eco RBSL
2-Nitroaniline	EPA 8270C	ND	Background
2-Nitrophenol	EPA 8270C	ND	Background
3-Nitroaniline	EPA 8270C	ND	Background
4,6-Dinitro-2-methylphenol	EPA 8270C	ND	Background
4-Bromophenyl-phenylether	EPA 8270C	ND	Background
4-Chloroaniline	EPA 8270C	ND	Background
p-Chloro-m-cresol	EPA 8270C	1.70E+00	Eco RBSL
4-Chlorophenyl-phenylether	EPA 8270C	ND	Background
p-Cresol	EPA 8270C	4.30E+00	Eco RBSL

Chemical	Analytical Method	Boeing Interim Screening Level (mg/kg)	Screening Level Basis ^b
p-Nitroaniline	EPA 8270C	3.40E+00	Eco RBSL
4-Nitrophenol	EPA 8270C	8.00E+00	Eco RBSL
Aniline	EPA 8270C	ND	Background
Benzidine	EPA 8270C	ND	Background
Benzoic acid	EPA 8270C	4.50E+00	Eco RBSL
Benzyl alcohol	EPA 8270C	4.50E+00	Eco RBSL
Bis(2-chloroethoxy)methane	EPA 8270C	ND	Background
Bis(2-chloroethyl)ether	EPA 8270C	ND	Background
Bis(2-chloroisopropyl)ether	EPA 8270C	ND	Background
bis(2-Ethylhexyl) phthalate	EPA 8270C	3.20E-01	Eco RBSL
Butyl benzyl phthalate	EPA 8270C	9.00E+01	Eco RBSL
Carbazole	EPA 8270C	1.50E+00	Eco RBSL
Dibenzofuran	EPA 8270C	1.20E+00	Eco RBSL
Diethyl phthalate	EPA 8270C	2.30E+00	Eco RBSL
Dimethyl phthalate	EPA 8270C	4.50E+00	Eco RBSL
Di-n-butyl phthalate	EPA 8270C	1.10E-01	Eco RBSL
Di-n-octyl phthalate	EPA 8270C	1.30E+01	Eco RBSL
Hexachlorobenzene	EPA 8270C	ND	Background
Hexachlorocyclopentadiene	EPA 8270C	3.00E+00	Eco RBSL
Hexachloroethane	EPA 8270C	ND	Background
Isophorone	EPA 8270C	ND	Background
Nitrobenzene	EPA 8270C	ND	Background
n-Nitroso-di-n-propylamine	EPA 8270C	ND	Background
n-Nitrosodimethylamine	EPA 8270C	3.25E-02	Human Health RBSL
n-Nitrosodiphenylamine	EPA 8270C	2.30E+00	Eco RBSL
Pentachlorophenol	EPA 8270C	2.80E+00	Eco RBSL
Phenol	EPA 8270C	5.10E+00	Eco RBSL
Dioxins/Furans ^{a, c}			
2,3,7,8-TCDD TEQ	EPA 8290/1613	5.00E-07	Eco RBSL
Polynuclear Aromatic Hydrocarbons			
1-Methylnaphthalene	EPA 8270C (SIM) PAH	7.29E+00	Human Health RBSL
2-Methylnaphthalene	EPA 8270C (SIM) PAH	5.30E+01	Eco RBSL
Acenaphthene	EPA 8270C (SIM) PAH	3.10E+00	Eco RBSL
Acenaphthylene	EPA 8270C (SIM) PAH	3.30E-01	Eco RBSL

Chemical	Analytical Method	Boeing Interim Screening Level (mg/kg)	Screening Level Basis ^b
Anthracene	EPA 8270C (SIM) PAH	2.80E+00	Eco RBSL
Benzo(a)anthracene	EPA 8270C (SIM) PAH	3.87E-01	Human Health RBSL
Benzo(a)pyrene	EPA 8270C (SIM) PAH	3.87E-02	Human Health RBSL
Benzo(b)fluoranthene	EPA 8270C (SIM) PAH	3.87E-01	Human Health RBSL
Benzo(g,h,i)perylene	EPA 8270C (SIM) PAH	4.10E+00	Eco RBSL
Benzo(k)fluoranthene	EPA 8270C (SIM) PAH	3.87E-01	Human Health RBSL
Chrysene	EPA 8270C (SIM) PAH	1.20E+00	Eco RBSL
Dibenz(a,h)anthracene	EPA 8270C (SIM) PAH	1.13E-01	Human Health RBSL
Fluoranthene	EPA 8270C (SIM) PAH	5.40E+01	Eco RBSL
Fluorene	EPA 8270C (SIM) PAH	1.90E+00	Eco RBSL
Indeno(1,2,3-cd)pyrene	EPA 8270C (SIM) PAH	3.87E-01	Human Health RBSL
Naphthalene	EPA 8270C (SIM) PAH	1.46E+01	Human Health RBSL
Phenanthrene	EPA 8270C (SIM) PAH	1.30E+00	Eco RBSL
Pyrene	EPA 8270C (SIM) PAH	1.20E+00	Eco RBSL

Footnotes:

^a As there are no TEFs available for terrestrial plants or soil invertebrates, no EcoRBSLs for 2,3,7,8-TCDD TEQ and PCB TEQ (Coplanar PCBs) were derived. Since EcoRBSLs for 2,3,7,8-TCDD TEQ and PCB TEQ (Coplanar PCBs) only apply to mammals and birds, individual dioxin/furan and coplanar PCB congeners are presented for evaluation of terrestrial plants and soil invertebrates exposed to these chemicals in soil.

^b Suburban Residential and Recreational Soil RBSLs include the following pathways: ingestion of soil, dermal contact with soil, and inhalation of dust and volatiles from soil.

° DTSC is currently determining the final background screening value for 2,3,7,8-TCDD TEQ.

Notes:

1. These screening levels are only applicable for the special case of soil management during GWIM trenching activities.
2. Background values are based on the combined UTL95-95 values published as part of the chemical background study in December 2012.
3. Ecological RBSLs for SSFL from MWH, Nov 7, 2012.
4. Human Health RBSLs (suburban residential without garden) for SSFL from MWH, Nov 7, 2012.

Abbreviations

DTSC = California Department of Toxic Substances Control

mg/kg = milligrams per kilogram

NA = not applicable

NC = not calculated

ND = non-detect

NL = not listed

RBSL = Risk-based Screening Level

SSFL = Santa Susana Field Laboratory

TCDD = Tetrachlorodibenzo-p-dioxin

TEF = toxic equivalency factor

TEQ = toxic equivalency

**CALIFORNIA ENVIRONMENTAL QUALITY ACT
NOTICE OF EXEMPTION**

To: Office of Planning and Research
State Clearinghouse
P.O. Box 3044
1400 Tenth St., Room 212
Sacramento, CA 95812-3044

From: Department of Toxic Substances Control
Brownfields and Environmental Restoration Program
8800 Cal Center Drive
Sacramento, CA 95826-3200

Project Title: Groundwater Interim Measures Work Plan

Project Location: Santa Susana Field Laboratory, 5800 Woolsey Canyon Road, Canoga Park, CA 91304 in unincorporated Ventura County

Project Description:

Background: The Santa Susana Field Laboratory (SSFL) occupies 2,850 acres including four administrative areas and two buffer zones. During its operational years, activities at the SSFL included rocket engine testing and nuclear energy research. The SSFL is jointly owned by The Boeing Company (Boeing) and the federal government (administered by the National Aeronautics and Space Administration [NASA]). The occurrence of trichloroethene (TCE) in groundwater beneath the SSFL was first discovered in the early 1980s when water supply wells were sampled and analyzed for the presence of TCE and certain other volatile organic compounds (VOCs). Groundwater characterization activities at the SSFL using conventional fractured rock methods have been ongoing since about 1985.

Sixteen separate areas of primarily TCE-impacted groundwater have been identified. The distribution of TCE in groundwater at the SSFL indicates that a total area of about 528 acres of land is underlain by groundwater containing TCE at concentrations greater than 5 micrograms per Liter ($\mu\text{g/L}$). The three largest areas of impacted groundwater lie beneath the northeast portion of the SSFL, beneath the Alfa and Bravo test areas, and beneath the Coca/Delta/STL-IV test areas. Vertically, TCE has been encountered in rock core pore water samples to depths approaching 1,000 feet beneath the Delta test area.

DTSC has required a Ground Water Interim Measures (GWIM) Work Plan that includes active source zone and plume front containment for groundwater contaminants. The GWIM Work Plan presents a technology evaluation and implementation plan for interim measures to address chemicals of potential concern (COPCs) in groundwater.

Project Activities: The GWIM Work Plan is comprised of two documents, the "Work Plan (Revision 2) Groundwater Interim Measures," dated July 2008 and the "Addendum to Revision 2 of the Work Plan for Groundwater Interim Measures," dated February 2009, plus the "Additional Requirements for the Groundwater Interim Measures Work Plan." The interim measures will extract groundwater contaminated with TCE from 14 locations for the purposes of source area remediation, plume front containment, and spring dewatering. The extracted groundwater will be conveyed via double walled piping to a Groundwater Extraction and Treatment System (GETS) facility permitted by the Ventura County Certified Unified Program Agency (CUPA) and the Ventura County Air Pollution Control District (APCD). Treated water from the GETS will be discharged to Outfall #19 under the National Pollutant Discharge Elimination System (NDPES) discharge permit issued by the California Regional Water Quality Control Board, Los Angeles Region (RWQCB).

Three specific interim measures are being proposed:

- Source Area Remediation: Source area groundwater extraction to reduce the concentration of TCE and lower groundwater elevation is from the following ten locations (wells): HAR-7, HAR-18, RD-1, RD-4, RD-41B, RD-46A, RD-49A, RS-54, WS-9 and HAR-20.

- Plume Front Containment: Northeast Plume (Plume 1) groundwater extraction will be implemented as required to augment natural containment of the off-site plume front and reduce the TCE concentration in corehole C-1. Groundwater extraction will start in C-1, then well RD-72, and then well RD-84 as the effects of pumping on groundwater levels are observed.
- Spring Dewatering: Dewatering of springs FDP-890 and FDP-881 located at the southern boundary of the Coca/Delta/STL-IV Plume (Plume 9) via pumping at extraction well WS-9A and also reduce the TCE concentration in well WS-9A.

The GWIM system consists of 13 below-grade extraction wellheads, one above-grade extraction wellhead, approximately 30,000 lineal feet of above- and below-grade double contained high density polyethylene (DCHDPE) conveyance pipeline, and 3,000 lineal feet of below-grade electrical conduit. Construction of the extraction well heads and conveyance piping is projected to take about 14 months to complete. Impacted groundwater will be conveyed from the extraction wells at a target total flow rate of 59 gallons per minute (gpm). Each extraction well will consist of:

- Below-grade well vault and piping (except for WS-9A which will remain above grade);
- An electric submersible pump;
- Level controller (except for WS-9A which will be operated off a variable speed drive);
- Flow meter with totalizer;
- Pressure indicator;
- Check valve;
- Globe valve;
- "Y" Strainer;
- Sample port; and
- Below-grade galvanized schedule 40 carbon steel vault piping and double contained high density polyethylene (DCHDPE) conveyance piping (except for the pipeline section from Extraction Well WS-9A to Delta which will be above-grade DCHDPE piping sleeved in carbon steel).

Electrical power for the GWIM extraction wells will be supplied from existing overhead power lines and transformers located in the vicinity of each extraction well. Distribution power will be conveyed to the individual wellheads via below-grade schedule 40 polyvinyl chloride (PVC) conduit. At the extraction well vault, the conduit will transition to rigid steel conduit terminating at the well. Installation of the distribution may include:

- Above-grade power poles, conductors, bus bars, etc.;
- Above-grade transformers and junction boxes; and
- Below-grade conduit and wiring

Each extraction well will be operated off of flow control and a level switch (with the exception of WS-9A). During operation of the extraction wells, the flow control valve will be manually adjusted until the individual well flow rate is within the user-specified range. The level switch for each extraction well will also be set at a user-specified pre-determined shut off depth within the well such that it automatically shuts down the pump if the groundwater level falls below the set depth. Additionally, each extraction well will be in direct communication with the main control system via radio telemetry. In the event the GETS shuts down, the main control panel sends a signal to the extraction wells shutting down the pumps.

Conveyance pipelines and conduit will be installed below-grade within trenches approximately 12-inches wide by 30-inches deep located beside existing roadways throughout the SSFL. The trenching activities will result in excavation of approximately 3,000 cubic yards of material (2,300 cy and 700 cy of soil and asphalt respectively). The excavated soil will be stockpiled alongside the trenches for reuse, while the asphalt will be disposed of on-site at a location determined by Boeing. It is estimated approximately 1,700 cubic yards (75%) of the excavated soil material will be reused as backfill in the trenches. Excavated soil material will be monitored for VOCs using a photoionization detector (PID) direct reading instrument. If observed concentrations are above action limits as described in Ventura County APCD Rule 74.29 are detected,

excavation activities will be curtailed until the appropriate controls can be instituted. Project activities capable of generating fugitive dust must comply with Ventura County Air Pollution Control District Rule 55- Fugitive Dust.

The excess soil material will be located within the unimproved areas alongside the trenches. Composite samples of excavated trench soil will be collected and analyzed on a frequency of one composite sample per 1,000 linear foot of trench, comprised of five subsamples collected at 200 foot intervals. The results will be compared to SSFL background value/screening criteria. If the sample results are all below the screening criteria, then the excess soil may be graded and blended with the surface soil alongside the trenches. If visual observations, field monitoring equipment, or the results of sample analyses indicate potential contamination, then the excavated [excess] soil will be stockpiled and characterized to determine the appropriate management option. Stockpiled soil must be disposed of properly and with DTSC concurrence.

The conveyance pipelines and conduit will be located beside existing roadways and/or pipeline corridors throughout the SSFL and therefore are not expected to cross within or traverse any impacted soils within solid waste management units (SWMUs) or areas of concern (AOCs), nor are they projected to be constructed through any sensitive habitat areas. The following conservation recommendations for the protection of sensitive biological resources or species are provided in the Biological Field Survey Form (Chris Dunn, October 14, 2010), which is attached:

1. Special-status species placards should be reviewed by the work crew prior to start of work and/or placed onsite to ensure all personnel are aware of the potential for special-status reptiles or amphibians to occur throughout the site. If special-status reptiles or amphibians are observed at a work site, work should be curtailed at the specific location until a capture and relocation procedure is completed by a qualified biologist.
2. Earthen areas adjacent to the location of the CTL-III containment basin should be considered as potential underground burrowing habitat for western spadefoot, and this species may be expected to return to the basin and breed upon collection of rainwater. Therefore, it is recommended that work activities within 100 feet of the basin be postponed until the summer months OR this location be surveyed prior to commencement of work activities, and work activities (including trenching and backfilling) be monitored by a qualified biologist, especially at the beginning of each day. If necessary, the qualified biologist will conduct a capture and relocation procedure of individuals to suitable nearby habitat.
3. Should activities be conducted during the bird breeding/nesting season (March 1 to September 1 for most species), breeding bird surveys are recommended prior to entry into each area. If, at that time, any active bird nests are observed, these nests should be avoided and provided with a buffer (50 to 500 feet depending on the species and maturity of nestlings). Observation of an active bird nest (or nests) should immediately be brought to the attention of a qualified biologist who can determine the species and timing of the nesting cycle, and provide further conservation recommendations to ensure compliance with the MBTA (Migratory Bird Treaty Act).
4. Orange construction fencing should be placed in a perimeter at least 3 feet from the base of Santa Susana tarplants (SSTP) that are located in close proximity to each work site. These fenced areas should be protected at all times, and if at any time, additional SSTP are found within the project site, additional fencing will be required. No damage or removals of SSTP are authorized for the project.
5. Avoid or minimize heavy equipment activity within 5 feet of each oak tree's dripline. Any pruning of live limbs greater than 3 inches in diameter should be overseen by a certified arborist or biologist experienced in tree protection and care. Dead limbs do not require any size restrictions, but proper trimming techniques (with recommended oversight by an arborist or biologist) are necessary.
6. Vegetation clearance should be minimized to avoid loss of habitat buffer for adjacent areas potentially supporting special-status bird species. Where feasible, mature shrubs and willow trees should be protected in

place, and if clearance is required, should be cut to ground level to leave the root systems in place, allowing for natural stump-sprout regeneration.

7. Review of existing regulatory permits and/or exemptions for California Department of Fish and Game (CDFG) and U.S. Army Corps of Engineers (Corps) jurisdiction are recommended prior to installation of the pipeline within the bed or banks of drainages to ensure compliance with CDFG Code and Section 404 of the Clean Water Act.

A Class III inventory/Phase I surface survey of the GWIM pipeline project area was conducted in November 2010 (W&S Consultants, December 12, 2010). Two previously recorded sites (identified as CA-VEN-1072 and 56-100202) were relocated and examined and three new sites (designated W&S-1, Building 302, and Building 319) were identified. Site CA-VEN-1072 is approximately 10 acres in size and consists of a series of large discontinuous midden/habitation areas, rock art galleries, bedrock features and lithic artifacts. Above ground pipeline that crosses this site was replaced in 2006 after wild fires destroyed the original pipeline. Since this existing pipeline will be left in place and used for the GWIM, the proposed GWIM project construction will have no effect on site CA-VEN-1072. Site 56-100202 was originally recorded as an isolated chalcedony flake and does not fall within the GWIM project footprint. Site W&S-1 consists of a small rockshelter with a midden deposit about 10 meters north of the paved Test Area Road. Site W&S-1 is located approximately 30 meters north of the proposed above-grade GWIM pipeline in this area, and thus does not fall within the GWIM project footprint. Building 302 consists of a one-story wooden frame industrial structure built in 1956 that was used as a lunch truck shelter and currently serves as a single vehicle garage. Building 302 is located in the administrative/industrial complex on the east side of SSFL, adjacent to the main access road. Building 319 is a one story wooden industrial building constructed in 1951 and sharing a common wall with Building 302. Building 319 was originally used as a telephone terminal/switching structure and currently serves as a telephone office. Buildings 302 and 319 are immediately adjacent to the project work area, but should not be affected by the GWIM pipeline. All five sites will be fenced prior to the GWIM project to prevent work activities, construction staging, or inadvertent traffic from crossing onto or otherwise damaging the sites and a buffer of at least 50 feet will be maintained whenever possible.

The GETS is located within a pre-engineered steel building at the intersection of the Area I and III roadways. The GETS is situated on a bermed concrete equipment pad with a dike level switch to prevent process water from leaving the GETS facility. The COPCs in extracted groundwater are (VOCs), primarily trichloroethene and its daughter products; semi-volatile organic compounds (SVOCs), primarily 1,4-dioxane and n-nitrosodimethylamine (NDMA); and perchlorate. The treatment system consists of: particulate filtration; green sand filtration, if necessary for iron and manganese removal; ion exchange; air stripping; liquid and vapor phase-carbon adsorption, operated in series; and, an ultraviolet peroxide system. Treated water will be discharged through 6" below-grade HDPE to Outfall #19 under the site specific NDPES discharge permit.

A control panel located at the GETS provides continuous automated system operation and monitors alarm conditions of the GETS and GWIM extraction wells. An automated telephone dialer located inside the control panel alerts technicians of any alarm conditions. The GETS and GWIM systems will be visited, inspected and monitored monthly and on an as needed basis dependent on: system flows; resin and carbon loading rates; timing of green sand, ion exchange, liquid and vapor phase carbon adsorption vessel breakthrough and change-outs; NPDES and Ventura County APCD required sampling; system alarm conditions; and, other operational parameters and objectives.

Project activities are anticipated to start in March 2013 and are expected to take approximately 14 months to complete.

Specific environmental safeguards and monitoring procedures that are enforceable and made a condition of project approval to ensure that impacts to the environment will be less than significant are included in the GWIM Work Plan and Additional Requirements for the GWIM Work Plan.

Name of Public Agency Approving Project: California Environmental Protection Agency, Department of Toxic Substances Control

Name of Person or Agency Carrying Out Project: The Boeing Company

Exemption Status:

- Class 30 Categorical Exemption: Cal. Code Regs., tit. 14, §15330
- General Rule: Cal. Code Regs., tit. 14, §15061(b)(3), Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA.

Reasons Why Project is Exempt:

Based on a review of supporting information, the project would not have a potential for a significant effect on the environment because:

1. The project will remove hazardous constituents from groundwater and eliminate or reduce the spread of hazardous constituent in groundwater and surface water.
2. Although the project is located on a site which is included on a list compiled pursuant to California Government Code, section 65962.5 (Cortese), the project is intended to remove hazardous constituents from the site. The project will not result in significant human health impacts from hazardous substances releases on the Cortese list site because the project does not include the addition of any residential or other occupied building.
3. The project will not have a significant effect on the environment due to unusual circumstances. The groundwater treated in the GETS contains only dilute concentrations of COPCs (primarily VOCs). The treatment technologies used at the GETS are routinely and extensively used for water treatment without significant risk of upset.
4. The project will not result in damage to scenic resources, including but not limited to, trees, historic buildings, rock outcroppings, or similar resources, within a highway officially designated as a state scenic highway. The project is not in the vicinity of a highway designated as a state scenic highway.
5. The project will not cause a substantial adverse change in the significance of a historical resource. Buildings 302 and 319 are immediately adjacent to the project work area, but should not be affected by the GWIM pipeline. Cultural resources in the vicinity of the project area that have been identified, and any new resources identified during the project, will be protected using procedures made conditions of the project approval. Resource sites will be fenced prior to the GWIM project to prevent work activities, construction staging, or inadvertent traffic from crossing onto or otherwise damaging the sites and a buffer of at least 50 feet will be maintained whenever possible.
6. The project will not require onsite use of a hazardous waste incinerator or thermal treatment unit.
7. The project will not require the relocation of residences or businesses.
8. The project may involve the potential release into the air of VOCs as defined in Health and Safety Code section 25123.6. However, the source of VOCs is extracted groundwater with only low concentrations of VOCs. The air stripper and carbon adsorption units at the GETS are permitted by the Ventura County APCD.
9. The cumulative impacts with other projects at SSFL will not be significant due to procedures made conditions of the project approval. During construction of the GWIM pipeline and well heads there may be concurrent projects at SSFL such as soil removal actions overseen by the Regional Water Quality Control Board and SSFL restoration work (building and debris removal) overseen by Ventura County. Cumulative truck traffic on Woolsey Canyon Road will be controlled. Traffic control procedures will limit the frequency of trucks leaving SSFL to 1 truck per 5 minute interval and restrict closure project truck traffic to non-peak times (9:00 AM to 4:00 PM). The GWIM construction activities are estimated to require approximately 20 personnel per day plus a total of 125 delivery vehicle trips. The GWIM construction and routine operations are not anticipated to increase the overall traffic to SSFL.

10. The total project construction greenhouse gas emissions as calculated by the California Emissions Estimator Model (CalEEMod) are 2,090 metric tons carbon dioxide equivalent (CO₂e). The emissions estimated for the various construction phases range from approximately 2 metric ton CO₂e per day during mobilization to 8 metric tons CO₂e per day during pipeline installation. DTSC and the Ventura County APCD have not adopted a numeric threshold evaluating the significance of impacts based on greenhouse gas emissions analysis.
11. The project will be consistent with applicable State and local environmental requirements including, but not limited to: (a) offsite disposal; and (b) water quality standards, e.g., waste discharge requirements issued by the Regional Water Quality Control Board.

Evidence to support the above reasons is documented in the project file record, available for inspection at:

Department of Toxic Substances Control
 9211 Oakdale Avenue
 Chatsworth, California 91311-6505
 (818) 717-6521

References:

1. "Biological Field Survey Form," Chris Dunn, Padre Associates, Inc., October 14, 2010.
2. "Class III Inventory/Phase I Archeological Survey on the Groundwater Interim Measures Conveyance Pipeline, Santa Susana Field Laboratory, Ventura County, California," W&S Consultants, December 12, 2010.
3. Additional Requirements for Groundwater Interim Measures Work Plan, DTSC, draft August 2012.
4. "Ground Water Interim Measures Greenhouse Gas Emissions for The Boeing Company at Santa Susana Field Laboratory," Yorke Engineering, LLC, March 13, 2012.

		3/6/13
Branch Chief Signature		Date
Mark Malinowski, P.G.	Performance Manager, Santa Susana Field Lab Team	(916) 255-3717
Branch Chief Name (Print)	Branch Chief Title (Print)	Phone #

TO BE COMPLETED BY OPR/SCH ONLY

Date NOE Filed:

BIOLOGICAL FIELD SURVEY FORM

Job No.: 1002-0022	Date: Oct. 14, 2010	M	T	W	TH	F	S	S
Client: The Boeing Company (D. Taege)	Project: GWIM pipeline alignments							
Location(s): SSFL Areas I, II, III, & IV	Weather: Partly cloudy, ~70 deg. F							
Observer: Chris Dunn 	Observation Period	Start: 1000	Stop: 1300					

Site/Project Description:

Proposed and/or previously installed HDPE pipeline alignments to be utilized as part of the Groundwater Interim Measures System (GWIM) were surveyed within Areas I through IV. A majority of the pipelines are proposed to be placed within or along existing road right of ways, and portions of the GWIM system are already in place. The majority of pipelines to be installed on Boeing property will be placed below-ground (trenched). With exception to several trenched road crossings, pipeline alignments on NASA property will be installed above-ground.

The biological survey of the pipeline alignments focused primarily on areas where the alignments deviate from the roads into natural areas, or where there is a potential for (or known presence of) special-status plants to occur along the roadways. The pipeline located within NASA's Area II has already been installed, and was therefore not surveyed. The existing pipeline and the proposed dissipater location in Outfall 001 (Outfall 019) were previously surveyed on October 5, 2010, and a biological survey report was recently submitted for this portion.

Some vegetation removal and possibly minor pruning of trees (especially dead limbs) may be required at certain locations. Approximately seven (7) locations of the proposed or existing pipeline alignments are adjacent to or within potential U.S. Army Corps of Engineers (Corps) and/or California Department of Fish and Game (CDFG) jurisdictional areas. Sensitive biological resources and jurisdictional areas are marked on the project map. Conservation recommendations for the protection of sensitive biological resources or species are provided at the end of this report. Proper implementation of these measures will ensure that no impacts to sensitive biological resources or species occur as a result of the project.

Vegetation Types and/or Notable Plant Species:

As stated above, a majority of the pipelines would be placed within existing roadways, but may instead be located along roadside areas, or cross relatively undisturbed areas. Vegetation types in these areas include coastal sage scrub, chaparral, mulefat (*B. salicifolia*) scrub, coast live oak (*Q. agrifolia*) woodland, other individual native trees, and annual grassland. Dominant or commonly observed native and non-native plant species include, but are not limited to the following:

Natives: yerba santa (*E. crassifolium*), chamise (*A. fasciculatum*), laurel sumac (*M. laurina*), canyon sunflower (*V. carpesioides*), mulefat, poison oak (*T. diversilobum*), mugwort (*A. douglasiana*), deerweed (*L. scoparius*), California aster (*L. filaginifolia*), coyote brush (*B. pilularis*), black sage (*S. mellifera*), sawtooth goldenbush (*H. squarrosa* var. *grindelioides*), vinegar weed (*T. lanceolatum*), turkey mullein (*E. setigerus*), manzanita (*Arctostaphylos* sp.), arroyo willow (*S. lasiolepis*), red willow (*S. laevigata*) and coast live oak.

Non-natives: wild oats (*A. fatua*), red brome (*B. madritensis* ssp. *rubens*), tocalote (*C. melitensis*), summer mustard (*H. incana*), and smilo grass (*P. miliaceum*).

Coast live oak is protected under the Ventura County Tree Protection Ordinance, which allows for only very limited activities and pruning within or on oak trees without the requisition of an Oak Tree Permit. Therefore, oak trees located in close proximity to the pipeline alignments were marked on the project map and will require avoidance or protection throughout the duration of the project. Conservation measures for the protection of oak trees are provided below.

Santa Susana tarplant (*D. minthornii*, SSTP), a California Rare species was observed at a total of seven (7) general locations and are marked on the project map. Based on our understanding of the project, all of these plants can be avoided, and conservation measures are provided below to ensure their protection. The locations and approximate numbers of SSTP individuals are as follows:

- B-1 area: 2 SSTP immediately south and east of RD-84, others nearby to the southeast; 1 SSTP immediately west of the proposed pipeline alignment; Approximately 50 SSTP immediately east of the pipeline alignment.
- RD-1 (Happy Valley): approximately 90 SSTP in a gravel area immediately south of RD-1.
- Canyon Road: approximately 6 SSTP along the roadside or growing directly out of the asphalt.
- Area I Road: approximately 20 SSTP on the rock outcrop along the west side of the road between the intersection of Canyon Road and Bowl Road.
- Area III Road near Silvernale Pond: approximately 5 SSTP along the existing water pipeline on the south side of the road.
- Area II PLF: approximately 33 SSTP along the south roadside or on the adjacent rock outcrop; 12 SSTP along the northwest side of the road and in the adjacent graded area; and 1 SSTP immediately east of HAR-7.
- Area IV road to RS-54: 1 SSTP located north of the access road.

BIOLOGICAL FIELD SURVEY FORM

Job No.: 1002-0022	Date: Oct. 14, 2010	M	T	W	T	F	S	S
Client: The Boeing Company (D. Taege)	Project: GWIM pipeline alignments							

Vegetation cont.

No Braunton's milk-vetch (*A. brauntonii*, BRMV), a federal endangered species were observed throughout the survey area. U.S. Fish & Wildlife Service-designated BRMV Critical Habitat Subunit 1d is located approximately 100 feet south of the proposed pipeline alignment from RS-54 in Area IV, but would not be affected by project activities. No other special-status plants were observed throughout the survey area.

Wildlife Observations:

Based on the timing of the survey, no actively nesting birds were observed. Although potentially present at SSFL, no special-status birds were observed at or near the sites during the survey. Birds observed included American crow, Anna's hummingbird, Bewick's wren, California quail, California towhee, Cassin's kingbird, common raven, house finch, mourning dove, red-shouldered hawk, red-tailed hawk, Say's phoebe, song sparrow, spotted towhee, turkey vulture, western scrub jay, white-crowned sparrow, wrenit, and yellow-rumped warbler. At least 70 bird species have been observed at SSFL (with additional species expected to occur) at various times of the year; many of which may be expected to occur at or within close proximity to the GWIM pipeline alignments.

Mammal observations included Audubon's cottontail (scat), coyote (scat), deer (tracks, scat), and ground squirrel (burrows).

Reptiles and amphibians included side-blotched lizard, western fence lizard and coastal western whiptail (a CDFG special animal). Special-status reptiles or amphibians previously observed at various locations throughout SSFL including silvery legless lizard, coast horned lizard, two-striped garter snake, western spadefoot toad, and ring-neck snake were not observed during the October 14, 2010 survey. However, of special note were the spring or summer 2010 observations of 1 juvenile two-striped garter snake and numerous tadpole and metamorphosed (but no adult) western spadefoots (both of which are considered species of special concern by CDFG) within a concrete stormwater secondary containment basin located at CTL-III. The pipeline alignment from RD-46A toward the west is located within the roadway immediately south of the containment basin. These two species were absent from the basin during a separate September 2010 survey, indicating that any metamorphosed toads had dispersed from the basin to adjacent upland habitats. Two-striped garter snake is highly aquatic, but is also known to occupy upland areas and had also likely dispersed from the basin. These two species may be expected to return to the location of the basin after initiation of the fall 2010 rains. Conservation measures for protection of special-status reptiles and amphibians are provided below.

No fish (or suitable habitat for fish) were observed onsite.

Applicable Regulatory Constraints:

1. Calif. Endangered Species Act (CESA) "Rare" species (SSTP, however no anticipated impacts).
2. Animal species of special concern to the CDFG (none observed during the subject survey, but have been observed during past surveys, and are potentially present onsite).
3. Animals listed on the CDFG Special Animals list (one species observed).
4. Migratory Bird Treaty Act [MBTA] of 1918 (a majority of birds occurring at SSFL are protected by the MBTA when nesting).
5. CDFG and U.S. Army Corps Jurisdictional areas, requiring avoidance of any substantial alteration to the bed or banks, or if unavoidable, potentially requiring permitting (if not already obtained).
6. Ventura County Tree Protection Ordinance (coast live oak).

Conservation Recommendations:

1. Special-status species placards should be reviewed by the work crew prior to start of work and/or placed onsite to ensure all personnel are aware of the potential for special-status reptiles or amphibians to occur throughout the site. If special-status reptiles or amphibians are observed at a work site, work should be curtailed at the specific location until a capture and relocation procedure is completed by a qualified biologist.
2. Earthen areas adjacent to the location of the CTL-III containment basin should be considered as potential underground burrowing habitat for western spadefoot, and this species may be expected to return to the basin and breed upon collection of rainwater. Therefore, it is recommended that work activities within 100 feet of the basin be postponed until the summer months OR this location be surveyed prior to commencement of work activities, and work activities (including trenching and backfilling) be monitored by a qualified biologist, especially at the beginning of each day. If necessary, the qualified biologist will conduct a capture and relocation procedure of individuals to suitable nearby habitat.

BIOLOGICAL FIELD SURVEY FORM

Job No.: 1002-0022	Date: Oct. 14, 2010	M	T	W	T	F	S	S
Client: The Boeing Company (D. Taege)	Project: GWIM pipeline alignments							
<p><i>Conservation Recommendations Cont.</i></p> <ol style="list-style-type: none"> 3. Should activities be conducted during the bird breeding/nesting season (March 1 to September 1 for most species), breeding bird surveys are recommended prior to entry into each area. If, at that time, any active bird nests are observed, these nests should be avoided and provided with a buffer (50 to 500 feet depending on the species and maturity of nestlings). Observation of an active bird nest (or nests) should immediately be brought to the attention of a qualified biologist who can determine the species and timing of the nesting cycle, and provide further conservation recommendations to ensure compliance with the MBTA. 4. Orange construction fencing should be placed in a perimeter at least 3 feet from the base of Santa Susana tarplants that are located in close proximity to each work site. These fenced areas should be protected at all times, and if at any time, additional SSTP are found within the project site, additional fencing will be required. No damage or removals of SSTP are authorized for the project. 5. Avoid or minimize heavy equipment activity within 5 feet of each oak tree's dripline. Any pruning of live limbs greater than 3 inches in diameter should be overseen by a certified arborist or biologist experienced in tree protection & care. Dead limbs do not require any size restrictions, but proper trimming techniques (with recommended oversight by an arborist or biologist) are necessary. 6. Vegetation clearance should be minimized to avoid loss of habitat buffer for adjacent areas potentially supporting special-status bird species. Where feasible, mature shrubs and willow trees should be protected in place, and if clearance is required, should be cut to ground level to leave the root systems in place, allowing for natural stump-sprout regeneration. 7. Review of existing regulatory permits and/or exemptions for CDFG and Corps jurisdiction are recommended prior to installation of the pipeline within the bed or banks of drainages to ensure compliance with CDFG Code and Section 404 of the Clean Water Act. 								
Photographs: Yes ___ No <u>X</u>								