



The Boeing Company
Santa Susana Field Laboratory
5800 Woolsey Canyon Road
Canoga Park, CA 91304-1148

Via FedEx and E Mail

In reply, refer to SHEA-110589

November 18, 2010

Mr. Rick Brausch
SSFL Project Director
Department of Toxic Substances Control
1001 "I" Street, 25th Floor
Sacramento, Ca 95812-0806

Dear Mr. Brausch:

Subject: Comments to the Draft Administrative Order on Consent between the Department of Toxic Substance Control and the Department of Energy

The Boeing Company (Boeing) has reviewed the draft Administrative Order on Consent (AOC) between the Department of Toxic Substance Control (DTSC) and the Department of Energy (DOE) announced by DTSC on October 27, 2010. While Boeing appreciates some important clarifications DTSC makes in its Response to Comments (RTC), Boeing, as landowner and member of the community, remains concerned about the impact the cleanup outlined in the draft AOC will have on the site and surrounding community. Furthermore, we continue to be concerned with the failure of the draft AOC to follow the state and federal Superfund process, which ensures that appropriate response actions are taken based on balancing site risks with the criteria outlined in statute, regulation and guidance.

Boeing has worked with the State of California for many years to reach resolution for site cleanup that is protective of both human health and the environment, including the existing 2007 Consent Order for Corrective Action. We continue to implement interim actions and support efforts to achieve an accelerated cleanup at the site, and we echo DTSC's concerns about the length of time spent in negotiating these issues. However, we do not believe that the cleanup approach outlined in the draft AOC and Settlement Framework Agreement-in-Principle (AIP) is in the best interests of the community, the parties, or the environment. We urge DTSC to more fully consider the comments of Boeing and others expressing concerns about the negative impacts this approach will have on the surrounding community and the environment. We are also concerned that DTSC is prematurely rushing to signature on an AOC without fully understanding the magnitude of excavation volumes or evaluating whether *in situ* treatment to background is technically feasible. These are critical questions that DTSC should not overlook in the name of political expediency.

In summary, **Boeing's concerns with the draft AOC consist of these two critical items:**



1. The amount (or volume) of soil to be excavated and removed from Santa Susana will be very large and unnecessarily impact the native site conditions, the surrounding community, and the environment.
2. Thoughtful consideration of hypothetical exposures balanced with other cleanup criteria specified in agency guidance will yield a better solution that is similarly protective and less destructive.

Extent of Excavation

As you know, one of Boeing's primary concerns is the destructive effect of the contemplated magnitude of excavation, which for DOE is now memorialized largely unchanged in the draft AOC. During the AIP public comment period, we offered to meet with DTSC to discuss the basis for our calculations, which unfortunately was not accepted. As a result, DTSC still misunderstands the volume of soil that we project will require excavation and off-site disposal. **Our estimates are based on a comparison of site data to an upper estimate of the existing 2005 background data set (i.e., 90% upper confidence limit of the 95th upper tolerance limit for each constituent).** In fact, since we only used the existing site sampling and background chemical data sets (which does not include radionuclides or account for DTSC possibly setting lower chemical background values), our cleanup estimates are more likely to *underestimate* the volumes. We also included any detections of organic and inorganic compounds (e.g., perchlorate, polycyclic aromatic hydrocarbons, polychlorinated biphenyls) where no background values were established, consistent with the cleanup description in the draft AIPs. Finally, this estimate is based upon our actual experience implementing cleanups at Santa Susana in targeted areas, including interim measures work for perchlorate at Happy Valley and interim source removal actions for storm water at various outfalls. The estimates were prepared by professional scientists and engineers who have studied this site for over a decade and are intimately familiar with contamination sources and site constituents.

In the Response To Comments on the AIPs, DTSC asserts that *in situ* remedies have the potential to "significantly reduce" the amount of excavated soils. Yet DTSC also acknowledges that it is "impossible to know" whether any soils can be addressed using *in situ* remedies until the site is fully characterized and treatability studies are performed. **Even assuming that soil vapor extraction will address volatile organic chemicals in soil vapor, we still estimate that over 1.6 million cubic yards of soil would require excavation and off-site disposal site-wide.** Boeing fully supports inclusion of *in situ* remedies, such as bioremediation or soil vapor extraction. However, Boeing questions whether the process allows for identifying any areas that would be suitable for *in situ* treatment (i.e. soils only impacted with VOCs above the background cleanup levels) and the ability of these remedies to meet the background criteria specified (also defined as non-detect) levels. For those remedies to have any chance of reducing excavation soil volumes, DTSC must consider alternative remedial goals based on achievable standards for *in situ* remedies, such as treatment to asymptotic levels for a certain period of time or to achievable risk-based remedial standards as is done at other sites in the State of California.



Our excavation calculations are substantiated in part by soil cleanup volume estimates prepared by DOE and NASA. DOE's Environmental Assessment, published in March 2003, evaluated the soil cleanup volume for Area IV associated with a suburban residential risk-based standard ("Alternative 2"). DOE estimated that over 500,000 cubic yards (404,850 cubic meters) of soil would require excavation in Area IV alone, and require 30,000 large dump trucks for off-site disposal. *Environmental Assessment for Cleanup and Closure of the Energy Technology Engineering Center*, U.S. Department of Energy, p.3-7 (March 2003). The draft AIP/AOC background standard is more conservative than the 2003 DOE EA Alternative 2 cleanup standard. Recently, NASA informed Boeing that about 500,000 cubic yards of soil would need to be excavated to meet a "cleanup to background" requirement for their property at Santa Susana.

In short, we believe that the multiple concerns raised by the community and Boeing regarding the cleanup process outlined in the draft AIPs (and perpetuated in the draft AOC) cannot be ignored by casually dismissing the potential soil excavation quantities and the associated adverse consequences. The estimate of over 1.6 million cubic yards of soil that would require excavation site-wide under the cleanup approach described in the AIPs has been developed by qualified professionals and is supported based on currently known site conditions, even considering the clarifications provided in the draft AOC. We remain ready and willing to provide additional details and documentation supporting our estimates both in meetings and writing.

CleanUp Process and Risk

The AOC and DTSC's Responses to Comments also highlight how significantly this cleanup to background approach deviates from the standard cleanup process applied throughout California and the rest of the nation, even accounting for SB990. DTSC appears to rely upon EPA radiological preliminary remediation goals (PRGs) and chemical risk-based-screening-levels (RBSLs) to assert that site constituents present, in nearly every case, an incremental increase in carcinogen risk above 1 in 10,000 (1×10^{-4}), and non-cancer effects above 1 to a hypothetical rural resident, and thus application of the NCP balancing criteria and mitigation through CEQA is not possible. This is simply not the case.

To put DTSC's RTC in proper context, **the radiological PRGs (prepared by EPA) and chemical RBSLs (currently being developed by DTSC) are screening values and reflect only an initial step in selecting an appropriate remedy, which would normally include both a baseline risk assessment and feasibility study report.** U.S. EPA states that "preliminary remediation goals [*which includes RBSLs*] and the corresponding cleanup levels may also be modified based on the given waste management strategy selected at the time of remedy selection that is based on the balancing of the nine criteria used for remedy selection (55 Fed. Reg. at 8717 and 8718)" US EPA OSWER Directive 9355.0-30, *Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions*. [Bracketed text supplied.] U.S. EPA also indicates that the 1 in 10,000 risk level is not a bright-line for risk management decision-making and that risks "around 1 in 10,000 may be considered acceptable if justified based on site-specific



conditions.” The AOC wholly ignores this documentation in adopting its “cleanup to background” approach and use of the 1 in 10,000 risk level as a bright line.

In addition, DTSC bases its “cleanup to background” approach on default exposure assumptions for the hypothetical rural resident. These default exposure assumptions are technically impracticable. Santa Susana is unable to support the food chain system on which the default exposure parameters are based. As one example, **DTSC’s approach presumes a future hypothetical rural agricultural resident eats site-raised fish every day.** While this exposure could be a conservative assumption made by DTSC for the rural residential RBSL calculations, it is not a reasonable or representative assumption considering the rocky and arid Santa Susana conditions. DTSC’s assumptions drive the RBSLs – and hence, the presumed cleanup values – far below the realistic estimated risks. An example of the conservatism inherent in the AIP/AOC “cleanup to background” approach is the standard being applied to zinc, a metal present in naturally occurring soils but also an essential nutrient in multi-vitamins. Below is a comparison of risk-based soil screening levels developed by DTSC and U.S. EPA for residential exposures, the Santa Susana background value, and two calculated rural residential RBSLs for zinc.

DTSC Residential California Human Health Screening Level (mg/kg)	USEPA Residential Regional Soil Screening Level (mg/kg)	2005 SSFL Background (mg/kg)	Rural Residential RBSL using Default Exposures (mg/kg)	Rural Residential RBSL using Site-Specific Exposures (mg/kg)
23,000	23,000	110	30	1,127

Source: SB990 Implementation Technical Memorandum – Draft. Prepared by MWH, September 2008 and provided to DTSC.

The wide range of screening values for zinc illustrates that a risk-based, protective cleanup goal does not necessarily have to be background, unless impracticable default exposures are selected. Boeing believes that a background cleanup for this chemical, and likely many others, is unnecessary. **Put simply, a strict application of a “cleanup to background” will result in the real destruction of significant natural resources at the site to protect against a risk that could never occur.**

DTSC’s “not-to-exceed” protocol is similarly unrealistic, requiring excavation of soil containing any detection above background or method reporting limits. DTSC assumes that the hypothetical farmer (and his dairy cows, beef cows, pigs, fish, chickens, fruits, vegetables) live 30 years on *each and every single sample location*, thus only eating fruits and vegetables grown at that precise location, only drinking milk or eating beef from cows grazing at that precise location, and eating fish farmed in a pond at that precise location. This is not a requirement of the cleanup process, nor does it in any way reflect site-specific conditions.

What is most appropriate to consider as a basis for site-specific RBSLs (that can be used as initial cleanup goals) are modifications to the exposure assumptions that are based on Santa Susana’s actual conditions and the most current sound scientific methods. Nothing in SB990 prevents considering site specific



exposure considerations, which would still result in hypothetical and extremely conservative risk-based decisions, since the property is neither a suburban or rural residence.¹ DTSC makes unprecedented assertions that it cannot deviate from this excavation to background approach by meaningful application of the balancing criteria or CEQA processes that are applied at every other California site. Yet, SB990 does not alter either the provision for application of balancing criteria, or the requirements of CEQA.

Putting Santa Susana in Context

There is no doubt that response actions at Santa Susana are needed, including targeted excavation and off-site disposal of soil to background levels for certain constituents (e.g., arsenic). However, DTSC's requirement of a full-scale "cleanup to background" of all constituents creates unnecessary over-excavation (which presents its own hazards) and destruction of the native site conditions with little to no benefit in reducing site-related risks related to real-world future uses. This approach that predetermines the remedy with minimal concern for ecological impacts is counter to the standard response action process in state and federal law, where constituents are commonly left in place above background values at sites because risks are adequately controlled.

Excavating all contaminated soils to background levels is unprecedented, even at sites similar to Santa Susana. It is not unusual for response action remedies to either treat or leave levels of contamination in place and still be protective of human health and the environment. For example, at another former DOE research facility at the University of California, Davis, remedial goals were developed using a site-wide risk assessment, assuming, among other future users, a hypothetical future suburban resident. Some areas of the site either exceeded a 1 in 10,000 risk for the hypothetical, onsite resident, or were between the 1 in 10,000 and 1 and 1 million risk range for strontium-90, polycyclic aromatic hydrocarbon, and dieldrin. After evaluating several alternatives and applying the NCP balancing criteria, DOE selected land use restrictions and long-term groundwater monitoring over excavation and off-site disposal in each instance. *Record of Decision for DOE Areas at the Laboratory for Energy-Related Health Research, University of California, Davis, September 2009* (15-acre site at UC Davis used for studies the long-term effects of low level radiation from that operated from 1958 until 1988).

The former McClellan Air Force Base (AFB) was used as an active military facility until 2001. The site is slated to be used for industrial, aviation, commercial, and residential uses. Most land surrounding the site is zoned for low-density residential and agricultural use. However, the selected remedies for multiple areas of concern included institutional controls alone or limited excavation of soil. For example, in an area of concern where mercury and polychlorinated biphenyls exceeded screening levels protective of surface water and human health and soil vapor risks, the selected remedy is excavation of near surface soil to a maximum 1 foot depth and institutional controls. The resulting permitted land use

¹ DTSC wrongly implies that existing zoning would require a rural or suburban residential land use assumption in the absence of SB990. In fact, under the current Ventura County General Plan, which controls allowed uses for the property, Santa Susana and the surrounding area are designated as open space.



is industrial or restricted residential. *Local Reuse Authority Initial Parcel Record of Decision #2, Former McClellan Air Force Base, California, October, 2008.* The state of California concurred with the remedy.

Low-level radionuclide contamination has also been identified in surface soil and disposal pits at the former McClellan AFB. A risk-based preliminary cleanup goal for radium 226 was established in a focused feasibility study for remedial alternative evaluation. The radium 226 preliminary cleanup goal was based the residential PRG inclusive of background. *Final Strategic Sites Focused Feasibility Study, Former McClellan Air Force Base, California, May 2006.*

Another example is cleanup done at the Mather AFB which was closed in 1993 under the Base Realignment and Closure Act. Current uses of portions of the closed AFB include a cargo airport, a regional open-space park, residential housing, and a business park. Site 87, the former Skeet/Trap range, was closed by the Air Force in 1998, with concurrence by the USEPA and the State of California. Under the Record of Decision (ROD) for Site 87, the remedy selected was excavation to 6 inches with backfill using with clean fill material. A soil cleanup goal of 700 milligrams per kilogram (mg/kg) was deemed to be protective of human health and the environment under future recreational land use, and institutional controls were implemented to restrict future residential or unrestricted land use for this portion of the former AFB. *Air Force Base Conversion Agency (AFBCA). 1998. Final Record of Decision, Basewide Operable Unit Sites. Mather Air Force Base, California. Air Force Installation Restoration Program.*

Conclusion and Recommendation

Boeing re-iterates the proposal presented in our September 30th letter to DTSC on the draft AIPs. We urge DTSC to use a risk-based approach to set reasonable, protective cleanup standards for Santa Susana, utilizing all of its existing cleanup authorities that ensure protection of *both* human health *and* the environment. We believe this can be done following regulatory guidance and the normal process to reach a remedy selection using balancing criteria. This process can and should be expedited since we have so much data collected to date, a feasibility work plan prepared, and a real commitment to getting the cleanup done as quickly as possible.

Boeing is very supportive of an accelerated soil cleanup program that is protective of human health, safety and the environment. The key concern expressed by members of the community and Boeing regarding the clean up approach under the draft AIP and AOC centers on the volume of soil to be removed resulting in deleterious effects on the environment, human health, and safety. We believe a similarly-protective soil clean-up can be developed that reduces the impacts to the native Santa Susana site conditions and the surrounding community through a collaborative effort that is consistent with statutes, regulations and guidance regarding site clean-ups. A better soil clean-up can be achieved by simply considering reasonable exposure scenarios to hypothetical residents and allowing *in situ* treatment to technically achieve clean-up goals that balance hypothetical risks with effectiveness and



implementability criteria in the California Health and Safety Code and National Contingency Plan. We are ready to meet with you to further this proposal at your earliest convenience.

Sincerely,

A handwritten signature in black ink that reads "Thomas J. Gallacher". The signature is fluid and cursive, with a large initial "T" and "G".

Thomas Gallacher
Director, Santa Susana Field Laboratory
Environment, Health and Safety

Cc: Mr. Mark Malinowski, Department of Toxic Substances Control
Mr. Gerard Abrams, Department of Toxic Substances Control
Ms. Laura Rainey, Department of Toxic Substances Control
Ms. Susan Callery, Department of Toxic Substances Control