

STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

STAFF SUMMARY REPORT – Uta Hellmann-Blumberg
MEETING DATE: January 15, 2014

ITEM: 7
SUBJECT: **Screening for Environmental Concerns at Contaminated Sites** – Status Report on Regional Water Board’s Updated Environmental Screening Levels

CHRONOLOGY: The Board has not considered this matter before.

DISCUSSION: The Board’s Environmental Screening Levels (ESLs) are a tool to help expedite identification and evaluation of potential environmental concerns at sites where soil or groundwater contamination has been identified. The ESLs help various parties – dischargers, regulators, property owners, consultants, and prospective purchasers – focus attention on the most significant cleanup issues, thereby promoting effective and efficient site cleanup and Brownfield restoration. We issued an initial set of screening levels in 1999 and comprehensive ESLs in 2000. Updates followed in 2001, 2003, 2005, and 2008.

The purpose of the ESLs is to provide a simple and inexpensive alternative to site-specific risk assessment for the evaluation of smaller sites with limited contaminant spills or releases (for example, redevelopment of former strip malls that may have included “mom-and-pop” dry cleaners). ESL users can compare site data with ESLs, enabling them to rapidly make site cleanup decisions. At larger or more-heavily contaminated sites where the chemical concentrations in soil or groundwater pose a significant risk to human health, water resources, or the environment, ESLs can serve as a starting point for site-specific risk assessment.

ESLs address not only the environmental protection goals presented in the Basin Plan but also human health concerns, including vapor intrusion from subsurface contamination into indoor air. For these reasons, ESLs address a far greater range of concerns and environmental media than other agencies’ screening levels. Screening levels for more than 100 of the most common contaminants are generated by an Excel Workbook and presented in a series of tables. The ESLs are not a regulation, and their use by dischargers or regulators is optional. However, they are widely used in our region because of their demonstrated effectiveness.

The ESLs can be accessed on the Board’s website at http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/esl.shtml. This webpage includes the Excel Workbook and PDF files of the

Workbook tables. In December, we posted on the website an extensively revised User's Guide, *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater*, which explains how the ESLs should (and should not) be used. We also posted a cover memo highlighting the most recent changes. Key changes include: revised vapor intrusion screening levels, revised petroleum screening levels, and new material on how to develop an exposure model for a site. The Executive Summary and a key figure concerning exposure models are attached. We will provide a fuller discussion during our staff presentation at the Board meeting.

RECOMMEN-
DATION:

This is an informational item only and no action is necessary.

Appendix A:

ESL User's Guide Executive Summary and Exposure-Model Figure

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User's Guide: Derivation and Application of Environmental Screening Levels

Prepared by San Francisco Bay
Regional Water Quality Control Board
Interim Final 2013

Executive Summary

The purpose of this "User's Guide: Derivation and Application of Environmental Screening Levels" is to explain how the Environmental Screening Levels (ESLs) were derived and how they should (and should not) be used. The ESLs have three main elements: an Excel workbook (including an interactive tool and supporting tables), PDF copies of the supporting tables, and the ESL User's Guide (this document).

The ESLs allow dischargers and regulators in our region to quickly focus on the most significant problems at contaminated sites. This can streamline the investigation and cleanup process. We have established ESLs for over 100 commonly-found contaminants, and the ESLs address a range of media and concerns commonly found at contaminated sites. Concerns addressed by the ESLs include:

Surface Water and Groundwater:

- Protection of drinking water resources;
- Protection of aquatic habitats;
- Protection against vapor intrusion into buildings;
- Protection against nuisance conditions.

Soil and Soil Gas:

- Protection of human health (direct-exposure);
- Protection against vapor intrusion into buildings;

- Protection against leaching and subsequent degradation of groundwater;
- Protection of terrestrial biota;
- Protection against nuisance conditions.

ESLs may not be adequately protective for some sites. For example, they should not be used at sites where physical conditions or exposure scenarios substantially differ from those assumed in development of the ESLs. In addition, the ESLs do not apply to sediment or sensitive ecological habitats (such as wetlands or endangered-species habitats). The need for a detailed human health or ecological risk assessment should be evaluated on a site-by-site basis for areas where significant concerns may exist.

The ESLs are considered to be protective for typical bay area sites. Under most circumstances, and within the limitations described, the presence of a chemical in soil, soil gas, or groundwater at concentrations below the corresponding ESL can be assumed to not pose a significant threat to human health, water resources, or the environment. Additional evaluation will generally be necessary at sites where a chemical is present at concentrations above the corresponding ESL. Active remediation may or may not be required depending on site-specific conditions and considerations. The ESLs may especially be beneficial for use at sites where the preparation of a more formal environmental assessment may not be warranted or feasible due to time and cost constraints.

ESL users should be aware of site-specific circumstances before applying ESLs to any given site. This includes an understanding of current/future land use type, media affected by contamination, and site-specific factors (collectively, the conceptual site model). The ESLs provide a tiered approach to environmental risk assessments. Under Tier 1, sample data are directly compared to ESLs for a more conservative conceptual site model (e.g., residential land use and potable groundwater); these are the Tier 1 ESLs. Under Tier 2, selection of specific ESLs is further refined with respect to site-specific considerations such as land use and groundwater use potential. This provides an intermediate but still relatively rapid and cost-effective option for preparing more site-specific risk assessments. The use of exposure scenarios and assumptions that depart significantly from those used to develop the ESLs constitutes a site-specific Tier 3 evaluation.

It is equally important to understand what the ESLs are not. The ESLs are not regulation. Their use by dischargers or regulators is optional. Dischargers seeking to

use the ESLs at their sites should discuss this with the overseeing regulatory agency. The presence of a chemical at concentrations in excess of an ESL does not necessarily indicate adverse effects on human health or the environment, rather that additional evaluation is warranted. Use of the ESLs as cleanup levels should be evaluated in view of the overall site investigation results and the cost/benefit of performing a more site-specific evaluation. Lastly, the ESLs should not be used as criteria to determine when chemical concentrations at a site must be reported to a regulatory agency.

The ESLs are “evergreen,” and are updated periodically to incorporate changes as appropriate, including revised toxicity criteria and exposure assessment parameters. Users should use the current version of the ESLs that is posted at the Regional Water Board web site and identify the version for the record in all relevant communications.

Exposure Model Figure

The graphic below shows how the Environmental Screening Levels (ESLs) are used to evaluate environmental contamination. The different media - soil, groundwater, soil gas, and indoor air - are represented as oval shapes. Screening levels for each of these media are selected from different environmental concerns. For example, the ESLs for soil address four concerns: leaching to groundwater, human health impacts due to direct exposure, impacts to ecological receptors (animals and plants in the environment), and nuisance (esthetic concerns that affect quality of life such as an objectionable odor).

