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Predictive Ecological Risk Assessment for DuPont Oakley Site

EXECUTIVE SUMMARY

This document presents a Predictive Ecological Risk Assessment (PERA) for the E. I. du Pont de Nemours and Company (DuPont) Oakley Site in accordance with guidelines provided in the *Ecological Risk Assessment Work Plan*. The PERA incorporates information from previous site investigations including the *Phase 1 Central Slough Investigation Final Report* and the *Phase 1 Soils RFI Work Plan*.

In the future, property at the Oakley Site will either be used for commercial/industrial or recreational (wetland area) purposes. Redevelopment plans are currently being drafted for the upland portions of the Oakley Site. To carry this out, the Oakley Site has been subdivided into logical development areas and separate wetlands areas. Upland areas immediately adjacent to wetland areas, such as the Central Slough and the Central Slough Channel, are relatively undisturbed from fire control activities (mowing and discing) that occur over most of the site. By comparison, they offer the highest potential wildlife use. These upland areas will form the buffer (or transition zones) between the redevelopment and wetland areas at the site. Consequently, these areas are the focus of the PERA. They include:

- Central Slough and Central Slough Channel
- Terrestrial upland areas bordering the Central Slough

A list of constituents of potential ecological concern (COPECs) was developed for surface water, sediment, and soil in the Central Slough and Central Slough Channel based on the results of the screening analyses. The exposure assessment included the development of toxicity reference concentrations (TRCs) for receptors including benthic invertebrates, fish, amphibians, birds, and mammals. An iterative process was used to derive Tier I and Tier II TRCs for wildlife. These values were compared to maximum COPEC concentrations followed by 95% upper confidence limit (UCL) concentrations for Central Slough sediments, where necessary. Hazard quotients were derived to assess potential risk.

Risk characterization conclusions reached in the assessment of media in the Central Slough and its channel are outlined below.

Central Slough

Surface Water

- The primary COPEC is lead, and exposure for ecological receptors is seasonal, based on precipitation and groundwater discharges to the slough.

- Negligible ecological risks are determined based on observations of aquatic communities (daphnia blooms observed during consecutive wet seasons from 2003 to present) and exposure assessment results.

Sediment

- The primary COPEC is lead (and organolead at one location). The metrics used to evaluate the bioavailability of metal COPECs (acid volatile sulfides/simultaneously extracted metals [AVS/SEM] and redox data) indicate metals are not bioavailable at most locations (except CS-01).
- Risk characterization indicates the potential for localized exposure effects for the sediment invertebrate community, particularly in lead and organolead “hotspot areas” at the southern end of the slough (CS-01) and just east of the flapper valve (CS-11). Significant portions of the slough dewater during the dry season reducing the area of open water available to the benthic invertebrate community. Lead levels are below the Ecological Soil Screening Level of 1,700 milligrams per kilogram (mg/kg) at all but one location (CS-01).
- Risk characterization indicates negligible risks to wildlife (the small size and isolated habitat in the Central Slough are contributing factors).

Hydric and Upland Soils

- Risk characterization indicates negligible risks to ecological receptors (the robust wetland plant communities observed during surveys support this conclusion).
- Risk characterization indicates negligible ecological risks to burrowing mammals from volatile organic compounds (VOCs) or organolead.
- The uncertainty regarding exposure assessment and risk characterization for the slough is low, and no further investigations are recommended. The open water habitat in the slough is small in area, controlled with a flapper valve (although the water is currently isolated), and fluctuates between the wet and dry seasons. Future site plans include the redevelopment of upland areas surrounding most of the slough, thereby reducing wildlife uses in the area.

Central Slough Channel

Surface Water

- Aquatic exposure to COPECs is seasonally based on precipitation and groundwater discharges to the tidal channel. The low tide exposure assessment is most conservative but not reflective of tidal increases in water volume, which will attenuate COPEC concentrations.
- Risk characterization indicates negligible ecological risks based on observations of aquatic communities and exposure assessment results.

Sediment

- Aquatic exposure to COPECs is restricted to channel segment west of the North- South Dredge Cut. AVS/SEM and redox data indicate lead is not bioavailable.
- Risk characterization indicates negligible risks to wildlife (the very small exposure area along the channel is a contributing factor).

The uncertainty regarding exposure assessment and risk characterization for the channel is low. The two COPECs identified are lead and organolead, restricted in sediment to portions of the channel west of the North-South Dredge Cut. Given the very small size of the channel and the tidal cycles, aquatic community exposure is low overall, and the potential for effects at the population level are unlikely. No further investigations are recommended for the channel.