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Phase II Surface Water and Sediment RFI Report for DuPont Oakley Site

REPORT SUMMARY

INTRODUCTION

This document describes the Phase II Surface Water and Sediment Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) at the E. I. du Pont de Nemours and Company (DuPont) Oakley facility (Site). The RFI focused on the potential discharge of site-related groundwater to surface water and the benthic flux of site-related constituents into Little Break surface water. The conceptual site model for Little Break identified the groundwater discharge pathway as the primary contaminant migration pathway to be investigated for Little Break. *The Phase II Surface Water and Sediment RFI Work Plan* described the in-situ investigation of this potential pathway using benthic flux chambers. The evaluation also incorporated multiple years of surface water data for Little Break to assess surface water quality over time and hydrologic regimes.

The investigation included the following tasks:

- Review of surface water data in Little Break to evaluate surface water quality and potential contaminant migration pathways
- Collection and analysis of benthic flux chamber water samples from Little Break to evaluate subsurface water quality and characterize potential groundwater contaminant migration pathways

Little Break is a shallow embayment located east of the site and was formed as the result of a levee break prior to DuPont ownership of the site. The water body is shallow (approximately ½ to 4 feet in depth at mean low tide), and water levels are influenced by tidal fluctuations of the San Joaquin River. Little Break is bordered by the site on the south and west and by a levee on the east and north. A break on the northern levee connects Little Break with the San Joaquin River.

Based on the surface water data, the following conclusions are provided:

- The surface water monitoring program has resulted in the collection of a large number of surface water samples over several years and varied hydrological conditions.
- Water quality conditions in Little Break are consistently comparable to regional surface water conditions in the Delta.
- The results of three years of comprehensive surface water monitoring data in conjunction with surface water data from other investigations in Little Break consistently demonstrate the attainment of water quality objectives (WQOs) for surface water in Little Break.

Based on the benthic flux chamber data, the following conclusions are provided:

- The results of the in-situ flux chamber investigation provide a measure of groundwater influx into Little Break under the most conservative conditions.
- The flux chamber results measure subsurface water reflecting the tidal interaction between surface water and groundwater in various locations within Little Break.
- The analytical results of the benthic flux chamber sampling indicate the attainment of surface water WQOs in Little Break in time series water samples collected over a full tidal cycle.

The work completed demonstrates subsurface groundwater advection in Little Break. Data indicate this sub-surface water is reflective of the tidal interaction between surface water and groundwater discharge and that these conditions are varied between locations within Little Break. The results of this investigation also indicate the attenuation of site-related groundwater constituents below measurable levels, in most instances, before discharging into Little Break surface water. Collectively, the investigations provide a comprehensive evaluation that indicates the attainment of surface water WQOs for flux samples collected at the point of groundwater discharge and for surface water samples collected throughout Little Break.

Based on the evaluation of data collected during surface water monitoring program events and the flux chamber investigation, no further evaluations are recommended for Little Break. The results of the *in situ* flux chamber investigation provide a measure of groundwater influx into Little Break under the most conservative conditions. The surface water monitoring program evaluations indicate water quality in Little Break is similar to that of regional surface water quality. The data collected during these investigations consistently demonstrate that water quality in Little Break is protective of the environment. The investigations in Little Break have provided a comprehensive evaluation for surface water and groundwater advection at the sediment-surface water interface. No additional studies in Little Break are recommended to augment these conclusions.