DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: INTERNATIONAL PAPER NAVASOTA FACILITY
Facility Address: HWY. 6 NORTH AT SEBASTIAN RD.
Facility EPA ID #: TXD 008077356

1. Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this EI determination?

✓ If yes - check here and continue with #2 below.

____ If no - re-evaluate existing data, or

____ if data are not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is groundwater known or reasonably suspected to be "contaminated"[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

✓ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

_____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): Note: Site locations are shown on enclosed figure.

The area of affected groundwater is derived from the former surface impoundments used before the wood preserving plant was closed in 1983 for separation of creosote and pentachlorophenol from wastewater (former ponds 1-6 on figure). The surface impoundments were certified closed in 1991, and the post-closure care permit issued 3/15/91 includes Compliance Plan CP-50266 (TNRCC Permit HW-50266-000), which requires corrective action for the affected groundwater. The affected groundwater extends southward and westward from the area of the former ponds. Site contaminants consist of wood preservative constituents derived from creosote, and pentachlorophenol. The principal constituents in the groundwater are the creosote constituents naphthalene, phenol, cresols and 2,4-dimethlyphenol; and pentachlorophenol. In the fourth quarter 1999 groundwater sampling results, the concentration of naphthalene ranges from 0.041 mg/L to greater than 1 mg/L, phenol ranges from 0.012 mg/L to greater than 1 mg/L, total cresols range from 0.013 mg/L to greater than 1 mg/L, and 2,4-dimethylphenol ranges from 0.024 mg/L to greater than 1 mg/L; all of which exceed the groundwater protection standard of 0.010 mg/L for each constituent. The concentration of pentachlorophenol ranges from 0.212 mg/L to greater than 1 mg/L, exceeding the groundwater protection standard of 0.050 mg/L. Dense non-aqueous phase liquid consisting of free-phase creosote is present in monitoring well N-27B, which is just west of former pond 6. *Reference*—Semi-Annual CAP Effectiveness Report, Third and Fourth Quarters 1999, International Paper Former Treated Wood Products Facility, Navasota, TX (in preparation for submission in March 2000).

Footnotes:

[1]"Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3. Has the migration of contaminated groundwater stabilized (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

✓ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

Migration of affected groundwater has been stabilized. International Paper implemented a Corrective Action Program in 1987 including groundwater extraction by recovery wells and groundwater treatment. Recovery pumping is monitored and adjusted as necessary to optimize recovery of DNAPL creosote, and to maintain control of the hydraulic head distribution downgradient of the former ponds, so that the extent of constituents in the groundwater remains stable. Additional monitoring wells were installed in 1994 to assess the extent of constituents at or beyond the property lines downgradient of the closed former ponds. No constituents are present in the two monitoring wells to the west of the west property line. Although the two monitoring wells at the south property line show creosote constituents greater than 1 mg/L, the extent of constituents is stable along the property boundary. Increased pumping of the recovery wells over the last two years, after resuming discharge to the city POTW, has resulted in the extent of constituents being drawn further toward the recovery wells in the interior of the facility.
Reference— Semi-Annual CAP Effectiveness Report, Third and Fourth Quarters 1999, International Paper Former Treated Wood Products Facility, Navasota, TX (in preparation for submission in March 2000); 1999 Site Activity Report for Post-Closure Care, International Paper, Navasota, TX Facility (2000).

[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4. Does "contaminated" groundwater discharge into surface water bodies?

_____ If yes - continue after identifying potentially affected surface water bodies.

✓ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

The area of affected groundwater does not discharge into surface water bodies. Although the Navasota River comes within half a mile to a mile of the facility to the north and northwest, the geologic units in the site area dip southeastward toward the Gulf of Mexico at an angle greater than the land surface, and the overall movement of the groundwater in the site area is to the south-southeast. Local direction of groundwater flow is controlled both by topography, such that in the area of affected groundwater the flow is to the south and southwest, and by the presence of interlayered silt and clay strata in the sand lenses and layers underlying the site.
Reference—U.S. Geological Survey Topographic Map, Navasota, Texas, 7 ½ minute series (1958); Comprehensive CAP Evaluation Report, Former Treated Wood Products Facility, Navasota, Texas (1995); Site Hydrogeology, Treated Wood Products Facility, Navasota, Texas (1985).

5. Is the discharge of "contaminated" groundwater into surface water likely to be "insignificant" (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

_____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s): _____

[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the discharge of "contaminated" groundwater into surface water be shown to be "currently acceptable" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of "contaminated" groundwater can not be shown to be "currently acceptable") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):_____

[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater monitoring / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

✓ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

____ If no - enter "NO" status code in #8.

____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

Groundwater monitoring is ongoing to verify that the affected groundwater remains within the horizontal and vertical dimensions of the "existing area of contaminated groundwater." Currently, groundwater monitoring is conducted quarterly on 29 point-of-compliance and supplemental monitoring wells, and annually on 12 additional supplemental wells near or beyond the property lines.
Reference— Semi-Annual CAP Effectiveness Report, Third and Fourth Quarters 1999, International Paper Former Treated Wood Products Facility, Navasota, TX (in preparation for submission in March 2000); Compliance Plan for Industrial Solid Waste Management Site, International Paper Company, Treated Wood Products Division, No. CP-50266 (1991).

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

✓ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the INTERNATIONAL PAPER, NAVASOTA, TX facility, EPA ID # TXD 008077356, located at HWY 6 N @ SEBASTIAN RD. . Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

____ IN - More information is needed to make a determination.

Completed by (signature) [signature] Date 1/28/00
(print) GARY DRY
(title) PROJECT MANAGER

Supervisor (signature) [signature] Date 1/28/2000
(print) JASON WANG
(title) Supervisor
(EPA Region or State) Texas

Locations where References may be found:

All project reports have been submitted to the TNRCC Industrial + Hazardous Waste Div. and are maintained at the International Paper Navasota facility, Hwy. 6 N at Sebastian Rd., Navasota, TX. 77868

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