UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

QUICK REFERENCE FOR STATUS OF ENVIRONMENTAL INDICATORS					
Name and EPA I.D. Number	Location (City or Town)	**Current CA725 Decision**	Current CA750 Decision	If Current Decision is Negative, Projected Date for Positive EI	
				CA725	CA750
International Paper Company	Wiggins, Mississippi	YE			

4WD-RPB

SUBJ: Evaluation of International Paper Company's status under the RCRAInfo Corrective Action Environmental Indicator Event Code CA725
EPA I.D. Number: MSD 980 600 084

FROM: Russ McLean RM 9/29/03
Environmental Engineer

THRU: Doug McCurry, Chief DCM 9/29/03
South Programs Section

TO: Narindar M. Kumar, Chief N. M. Kumar 9/29/03
RCRA Programs Branch

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of International Paper Company's status in relation to the following corrective action event code defined in the Resource Conservation and Recovery Information System (RCRAInfo):

Human Exposures Controlled Determination (CA725)

Concurrence by the RCRA Programs Branch Chief is required prior to entering this event code into RCRAInfo. Your concurrence with the interpretations provided in the following paragraphs and the subsequent recommendation is satisfied by dating and signing at the appropriate location within the Attachment.

II. HISTORY OF ENVIRONMENTAL INDICATOR EVALUATIONS AT THE FACILITY AND REFERENCE DOCUMENTS

This particular evaluation is the second evaluation for International Paper Company. The initial evaluation was performed on September 30, 1998 and resulted in a CA725 status code of IN. This status code was assigned based on the lack of information regarding releases to soils, sediments and groundwater. Confirmatory Sampling of selected SWMUs and AOCs was conducted in April 1997 and identified 12 SWMUs and two (2) AOCs requiring an RFI. This evaluation is based on the RFI conducted in February 2001 and presented to EPA in the Draft RFI Report dated July 2001, Additional RFI Sampling Activities conducted in September 2001 and reported to EPA in January 2002 and International Paper's Response to EPA Technical Review Comments on the Draft RFI Report resulting in the submittal of the Final RFI Report in November 2002.

III. FACILITY SUMMARY

The International Paper Company's facility is located in Stone County, Mississippi, approximately two miles south of Wiggins, Mississippi, just east of Highway 49. The site is situated on 125 acres, of which approximately 85 acres are currently utilized for plant operations. The subject site is located at latitude 30°51' 59" north, and longitude 89°10'54" west. The facility has been operating since December 1969 and currently treats utility poles, pilings and structural timbers with pentachlorophenol (PCP) and chromated copper arsenate (CCA). Creosote was also used as a wood preservative from 1970 to 1986. Facility operations associated with pressure treating of wood products generated a wastewater stream identified as listed waste K001. The facility operates a Wastewater Treatment Plant for the pretreatment of process waste waters before release to the Wiggins Publicly Owned Treatment Works (POTW).

The facility has five RCRA-regulated units which have undergone a State approved closure. These units consist of one land treatment demonstration unit (SWMU 1) and four surface impoundments which include the creosote, PCP and cellon recovery ponds and the contact cooling water pond (SWMUs 7-10). Five sludge pits (SWMUs 2-6), used to manage sludges generated while cleaning the treating cylinders, were filled and covered prior to 1976. Closure, post-closure and corrective action of these units were addressed under the Hazardous and Solid Waste Amendments permit (hereafter referred to as the HSWA permit) issued by EPA in March 1987. A Corrective Action Plan (CAP), to remediate ground water impacted by these units, commenced operations under the State of Mississippi Hazardous Waste Management Permit in May 1989. To date, 49 monitoring wells have been installed at the facility. Until April 2002, contaminated groundwater was recovered from nine (9) ground-water extraction wells, eight (8) of which were located downgradient of the closed recovery ponds and one (1) downgradient of the closed contact cooling pond. On April 9, 2002 the groundwater extraction system was shut down for the purpose of evaluating the efficacy of the natural biological and geochemical system in containing the dissolved phase contaminant plumes and reducing contaminant mass under a monitored natural attenuation (MNA) system. A facility site map showing the various units, groundwater monitoring well network and facility boundaries is shown in Figure 1.

A second RCRA Facility Assessments(RFA) was performed in 1991 and identified 39 SWMUs (including the ten closed units listed above) and two (2) Areas of Concern (AOCs). On January 4, 1993, the EPA issued a modification to the HSWA permit to the subject facility. The HSWA permit required confirmatory sampling and/or structural integrity testing (CS/SIT) for 19 SWMUs and the two AOCs to determine if soils and sediments had been affected by the release of constituents of concern. Results of the CS/SIT were reported to EPA in April 1997. Results of the CS/SIT lead to the requirement for an RFI to delineate and characterize soil and sediment contamination, identify actual and potential receptors and perform limited removal actions at twelve (12) SWMUs and the two (2) AOCs. The RFI Work Plan was approved by EPA in November 2000 and RFI activities commenced in February 2001. The findings of the RFI were submitted to EPA in the Draft RFI Report dated July 2001. Additional RFI sampling was conducted on sediments and surface water in Church House Branch during September 2001 to better characterized the distribution of constituents-of-concern. The results of this sampling were submitted to EPA in a report dated January 2002. A Final RFI Report was submitted to EPA in November 2002, addressing EPA technical review comments to the Draft RFI Report and the Additional RFI Sampling Activities.

IV CONCLUSION FOR CA725

It is recommended that the status code YE be entered into RCRAInfo for CA725, as human exposures are controlled. The RFI has fully delineated soil and sediment contamination on-site. Groundwater contamination is being addressed through a Corrective Action Plan implemented under the State of Mississippi Hazardous Waste Management Permit. As indicated by the Risk Assessment conducted as part of the RFI, no unacceptable risk to human health as a result of past or current releases of site related contaminants is indicated.

Attachment: CA725: Current Human Exposures Under Control

ATTACHMENT
DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRAInfo Code (CA725)
Current Human Exposures Under Control

Facility Name: **Internationa Paper Company**
Facility Address: **Wiggins, Mississippi**
Facility EPA ID #: **MSD 980 600 084**

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, 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 #6 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 "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "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 "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

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

Current Human Exposures Under Control
Environmental Indicator (EI) RCRAInfo Event Code (CA725)

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

Media	Yes	No	?	Rationale/Key Contaminants
Groundwater	✓			PAHs and Pentachlorophenol (PCP)
Air (indoors)[2]		✓		
Surface Soil (e.g., <2 ft)	✓			PAHs, PCP, Arsenic
Surface Water	✓			Arsenic, Chromium, Copper
Sediment	✓			PAHs, Arsenic
Subsurface Soil (e.g., >2 ft)	✓			PAHs, PCP
Air (outdoors)		✓		

____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

__✓__ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s): Groundwater: Groundwater is contaminated with constituents of the preservatives creosote and pentachlorophenol. The creosote constituents consist primarily of polynuclear aromatic hydrocarbons (PAHs). For a detailed description of constituent concentrations and the local hydrogeological conditions, please refer to the Environmental Indicator Memo for CA750, dated 9/28/01.

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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 appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

2 Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

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Groundwater contamination is currently being addressed by a Corrective Action Plan (CAP) implemented under the State of Mississippi Hazardous Waste Management Permit. From May 1989 until April 2002 the CAP consisted of the withdrawal of contaminated groundwater through nine (9) extraction wells located downgradient of the closed recovery ponds and the contact cooling water pond. The characterization and delineation of the contaminant plumes was established by the installation of 49 monitoring wells. Effectiveness of the groundwater recovery system has been monitored continuously through semi-annual sampling of 26 of these monitoring wells. On April 9, 2002 the groundwater extraction system was shut down for the purpose of evaluating the efficacy of the natural biological and geochemical system in meeting the long-term CAP objectives of containment and contaminant mass removal of the dissolved-phase plumes. Since shut down of the extraction system, two sampling events have been conducted in May 2002 and November 2002, and have demonstrated plume stability providing evidence that intrinsic biodegradation is occurring. Continued monitoring will be conducted on a semi-annual basis. The plume boundary is contained on site an the leading edge of the plume is currently 2000 feet from the downgradient property boundary (Figure 2).

Soil: During the RFI, SWMUs in the process area were grouped into five areas for investigation purposes based on proximity and similarity of operation and wastes handled and the results of sampling during the CS/SIT. These areas include; Vehicle Maintenance Area, Old Peeler Area, Treatment Area No. 1, Treatment Area No. 2 and the Site Drainage Ditches. Two Areas of Concern, Treated Wood Storage Area and Church House Branch were also investigated during the RFI.

In the Vehicle Maintenance Area several areas of stained soils and areas exhibiting elevated TPH during the Confirmatory Sampling phase of the investigation were excavated followed by confirmation sampling and backfilling with clean soils. All confirmation samples were non-detect for VOCs and, SVOCs. Surficial soils (0-1.5') and shallow subsurface soils (5'-6.5') were sampled at the vehicle wash pad during the RFI and analyzed for SVOCs, VOCs, TPH and metals. All organic constituents were below residential preliminary remediation goals (PRGs) established by EPA Region 9.

Treatment Area 1 is located in the northern portion of the facility and consists of the large PCP and CCA retorts, associated piping, and collection pits, the PCP and CCA drip tracks, the large PCP tanks, the CCA work tanks and the sump/treatment process areas. The PCP spill that occurred in 1983 is also included. Twenty three shallow boreholes to a depth of 6.5' were installed to establish the lateral extent of contamination that was detected during the CS/SIT investigation. Four of the shallow borehole locations were selected for deeper borings (to water table) to delineate the vertical extent of contamination and determine the potential for leaching of constituents to groundwater. Deeper borehole locations were selected based on TPH-d concentrations in the shallow boreholes. Samples in the shallow boreholes were collected from the 0-1.5' and 5'-6.5' depth intervals and analyzed for TPH-d. Based on TPH-d analyses, 16 of the 46 samples were analyzed for SVOCs and metals. Pentachlorophenol (PCP) was detected in surface soils at a maximum concentration of 782 mg/kg in the 1983 PCP spill area. The detections of PCP were associated with the 1983 spill area and the PCP Retort containment area. All PAH constituents and metals were below the residential PRG or background levels, respectively. During the CS-SIT investigation, four surface soil samples were collected in the PCP spill area with PCP detected at a maximum concentration of 383 mg/kg with no significant detection of PAH constituents. One surface soil sample near the PCP sump contained PCP at a concentration of 1080 mg/kg. In the shallow soil samples, 5'-6.5' bgs, PCP was detected at a maximum concentration of 16.5 mg/kg in the area of the PCP spill site. No significant detections of PAH constituents were indicated in any of the samples and metals were detected at background concentrations. In the deeper boreholes, only PCP was detected above the soil screening level for migration to groundwater (.03 mg/kg). PCP was detected at 25.4, 5.73, 2.39 mg/kg and ND in the 10'-12' depth interval. All samples from the deeper intervals were ND. The deeper borehole locations are up-

gradient of the current monitoring well system and any leaching of constituents would be detected by the current monitoring system..

Treatment Area 2 Includes the small PCP treatment cylinders, the former creosote cylinder, the small PCP collection pit, the PCP drip tracks and tanks, the wastewater treatment facility, the carbon concrete ditch and the boiler blowdown/process skimmer. During the CS-SIT investigation three surface soil samples were collected along the drip track with PCP detected in one sample at a concentration of 18.9 mg/kg and only one sample detecting PAH constituents at a total PAH concentration of 1 mg/kg. Eighteen borings to 6.5' bgs with four locations selected for deeper borings based on TPH-diesel analyses were installed during the RFI in Treatment Area No. 2. Thirty six soil samples were selected for TPH-diesel analysis from the 0-1.5' and 5'-6.5' intervals. Based on TPH values, 12 samples were selected for SVOC and metals analyses. The deeper borings were sampled as described in Treatment Area No. 1. All four borings were terminated at 32' based on no evidence of contamination below that depth. One surficial soil sample, 0-1.5', located adjacent to the drip track, detected PAH constituents at a toxicity equivalent factor (TEF) to benzo(a)pyrene of 17.42 mg/kg. The industrial PRG for benzo(a)pyrene is .29 mg/kg. PCP in the surficial samples were below the MDL although the MDL on one sample was above the industrial PRG of 11 mg/kg due to the elevated PAH detections as indicated above. PCP was detected at a maximum concentration of 29.7 (UJ) mg/kg in the 5'-6.5' depth interval at a location adjacent to the carbon concrete ditch. This sample also contained a TEF of 3.42 mg/kg for PAH constituents. During the SC-SIT investigation two surface soil samples were collected in the vicinity of the Carbon Concrete Ditch with PCP detected in one sample at .189 mg/kg and PAH constituents being non-detect in both samples. Samples from the deeper boreholes exhibited PCP at a maximum concentration of 542 mg/kg in the 10'-12' interval with total PAH constituents at 466 mg/kg (CPAH was ND) and benzene at .698 mg/kg. The deeper sample in this boring (30'-32') was non-detect for all organic constituents. PCP was also detected at 1.02 and .506 mg/kg in the 30'-32' interval in two of the four borings. For metals in Treatment Area No. 2, arsenic was detected at a maximum concentration of 2.3 mg/kg and chromium at 26.5 mg/kg. Both of these samples were taken in the 5'-6.5' depth interval.

During the CS-SIT investigation, eight (8) surface soil samples were collected from the Treated Wood Storage Area. PCP was detected at a maximum concentration of .83 mg/kg and total PAH was detected at a maximum concentration of 33.4 mg/kg, (TEF = 1.5 mg/kg). Arsenic and chromium were detected at a maximum concentration of 10.9 and 52.6 mg/kg, respectively. During the RFI one additional soil boring was advanced to 6.5 feet in the south-central portion of the main storage yard. Samples were collected from the 0-1.5' and 5'-6.5' intervals. Only PCP was detected in the surface soil sample at .142 mg/kg, all other organic constituents were non-detect in both interval. Arsenic and chromium were detected at .731 and 7.91 mg/kg in the 0-1' interval respectively and at .69 and 11.6 mg/kg in the 5'-6.5' interval respectively.

Sediments: The site drainage ditches consist of approximately 6800' of mostly unlined drainage ditches that direct water away from the facility toward Church House Branch tributary. Two small sections of these ditches on the north and south sides of the recovery ponds are concrete lined. During the CS-SIT investigation seven sediment samples were collected from the unlined sections of these ditches. Total PAH constituents were detected at a maximum concentration of 20 mg/kg at a location just downgradient of Treatment Area No. 1. This sample also contained PCP at a concentration of 6.43 mg/kg. PCP was detected at a maximum concentration of 8.2 mg/kg at a location in the section of ditch that drains the area affected by the 1983 PCP spill. Arsenic and chromium were detected at this location at concentrations of 26.3 and 51.2 mg/kg respectively, the maximum concentrations of these two constituents in the ditch samples. During the RFI 18 additional sediment samples were collected from the ditches. The maximum concentration of arsenic and chromium were 78.8 and 112 mg/kg, detected at a location adjacent to the

maximum concentration of PAH during the CS-SIT. PAHs and PCP were 2.4 and 1.1 mg/kg respectively at this location. The highest detection of PCP was 1.47 mg/kg and the highest total PAH measured was 4.53 mg/kg with benzo(a)pyrene at .536 mg/kg at this location.

During the CS-SIT investigation three sediment samples were collected from Church House Branch (CHB) with one sample located upstream of the confluence of CHB with the site drainage ditches. The upstream sample contained arsenic and chromium at 7.25 and 16.4 mg/kg respectively, PCP at 2.28 mg/kg and total PAH constituents at 1.98 mg/kg (benzo(a)pyrene-.072 mg/kg). The two downgradient samples detected arsenic and chromium at a maximum concentration of 3.29 and 6.22 mg/kg respectively, PCP at a maximum concentration of 2.84 mg/kg and total PAH constituents at a maximum concentration of 27.6 mg/kg (benzo(a)pyrene-1.2 mg/kg). Sediment contamination was further delineated during the RFI and the Additional RFI Sampling Activities. A total of 11 additional sediment samples were collected, including three samples collected upstream of the confluence with the site drainage ditches. These samples indicated a maximum concentration for arsenic of 3.8 mg/kg in the furthest upstream sample, chromium at a maximum concentration of 24.2 mg/kg in the mid-upstream sample, PCP at a maximum concentration of .095 mg/kg in the closest upstream sample and total PAH at .26 mg/kg in the furthest upstream sample. Two additional background sediment samples were taken from an unnamed ditch which drains into CHB from the north. These two samples indicated arsenic at .564 and .597 mg/kg respectively, chromium at 3.34 and 3.76 mg/kg respectively and with PCP and PAHs all ND. For the downgradient samples arsenic and chromium were detected at a maximum concentration of 6.28 and 23.4 mg/kg respectively. The maximum arsenic detection was at a mid-stream point and the chromium was detected just outside the downstream property boundary. PCP was detected at a maximum concentration of 2.31 mg/kg in the sample containing the maximum arsenic level. Total PAH constituents were detected at a maximum concentration of 1.57 mg/kg (benzo(a)pyrene-.075 mg/kg) at the most downstream location.

Surface Water: The eastern portion of the facility lies within a subdued valley that drains toward Church House Branch. Church House Branch is located about .25 miles east of the facility and is approximately 30 feet lower topographically. Approximately 2100 feet of CHB traverses the property and flows into Red Creek about 3 miles south of the site. Red Creek flows into the Pascagoula River. Four surface water samples were collected in CHB during the Additional Sampling Activities. One sample was located just upstream of the property boundary, two samples were located on facility property and one sample just downstream of the property boundary. The highest concentrations for arsenic (63.2 μg/l), chromium (15.1 μg/l) and copper (13.1 mg/kg) were observed in the sample collected midway between the northern and eastern property boundaries. PCP was detected in the two samples within the site boundary but not upstream or downstream of the site. The highest concentration of PCP was estimated at .84 μg/l. Total PAH constituents were found at a maximum concentration of .479 μg/l in one of the on-site samples. The levels for arsenic, chromium and PCP are below the National Recommended Water Quality Criteria for Criterion Continuous Concentration (CCC). The maximum concentration of copper is only slightly above the CCC for copper of 9 μg/l, For the individual PAH constituents detected which have quantitative water quality criteria standards, the maximum concentrations are well below the standards.

References: 1) Walk Haydel, Confirmatory Sampling and Structural Integrity Testing Results for Solid Waste Management Units and Areas of Concern, April 1997; 2) E^{x}ponent®, Evaluation of the Groundwater Extraction and Treatment System and Assessment of the Potential for Natural Attenuation, November 2000; 3) Premier Environmental Services, RCRA Facility Investigation Draft Report, July 2001. 4) Premier Environmental Services, Inc., RCRA Facility Investigation Final Report, November 2002. 5) Premier Environmental Services, LLC, RCRA Facility Investigation Additional Sampling Activities Report, January 2002. 6) Premier Environmental Services, LLC, MNA Effectiveness Report, May 2003; 7) URS Greiner Woodward Clyde, Semi-Annual Groundwater Monitoring Reports.

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3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table Potential **Human Receptors** (Under Current Conditions)							
"Contaminated" Media	**Residents**	**Workers**	**Day-Care**	**Construction**	**Trespassers**	**Recreation**	**Food[3]**
Groundwater	No	No	No	No	N/L	N/L	No
~~Air (indoors)~~	N/C	N/C	N/C	N/C	N/C	N/C	N/C
Soil (surface, e.g., <2 ft)	No	Yes	No	Yes	Yes	No	No
Surface Water	No	No	N/L	N/L	Yes	No	N/L
Sediment	N/L	No	N/L	N/L	Yes	No	No
Soil (subsurface, e.g., >2 ft)	N/L	N/L	N/L	Yes	N/L	N/L	N/L
~~Air (outdoors)~~	N/C	N/C	N/C	N/C	N/C	N/C	N/C

Instructions for Summary Exposure Pathway Evaluation Table:

1. For Media which are not "contaminated" as identified in #2, please strike-out specific Media, including Human Receptors' spaces, or enter "N/C" for not contaminated.

2. Enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations, some potential "Contaminated" Media - Human Receptor combinations (Pathways) are not assigned spaces in the above table (i.e, **N/L - not likely**). While these combinations may not be probable in most situations, they may be possible in some settings and **should be added as necessary**.

____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze

[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

major pathways).

✓ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale and Reference(s): A human health risk assessment was developed as part of the RCRA Facility Investigation to quantify human health risks associated with constituents of potential concern (CoPCs) in the absence of any remedial actions. As described in Question 2 above surface and subsurface soils and sediments are contaminated with CoPCs above the corresponding preliminary remediation goals (PRGs) developed by EPA Region 9 in Treatment Areas No. 1 and No. 2 (surface and subsurface soils), Site Drainage Ditches (sediments), and Church House Branch (sediments). The risk assessment assumed ongoing industrial use of the facility. In addition, a hypothetical trespasser scenario was evaluated to assess potential risks associated with contact to sediments in the ditches and Church House Branch. The following exposure pathways were evaluated in the risk assessment: Surface soils - incidental ingestion and dermal contact with CoPCs by long-term workers, Sediments - incidental ingestion and dermal contact with CoPCs by trespassers and Surface and subsurface soils - incidental ingestion and dermal contact with CoPCs in soil from 0-17 feet below ground surface by construction workers.

References: See reference 4, Question 2.

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4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

____ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_✓_ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s): The facility is currently conducting wood treating operations. The site is secure and is guarded 24 hours a day, seven days a week. Site access by individuals other than employees is very limited. Surface and subsurface soil contamination was screened against the EPA Region 9 preliminary remediation goals (PRGs) for residential soil. These levels represent ingestion, inhalation and dermal contact exposure routes. For CoPCs in surface soils at the site, no concentrations exceeded the inhalation PRGs. As indicated in Question 3, soils in Treatment Areas No. 1 and 2 were evaluated against the screening criteria. In Treatment Area No. 1 arsenic, 2-methylnaphthalene and PCP were present in surface soils at concentrations exceeding the respective PRGs. Arsenic, chromium and PCP exceed the PRGs for subsurface soils. In Treatment Area No. 2 surface soils contained five PAH compounds which exceeded screening criteria. Arsenic was above the Region 9 PRG but below background. Arsenic, chromium, benzene, PCP and nine PAH constituents exceed the PRG in subsurface soils.

Sediments in the site drainage ditches and Church House Branch were compared with the PRG for residential soil. Arsenic, chromium and six PAH constituents exceeded the PRG in the site drainage ditches and arsenic and one PAH compound exceed the PRG in Church House Branch.

References: Reference 4) in Question 2.

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[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

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5 Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

✓ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

____ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s): In addition to evaluation of site data for direct contact pathways, migration from soil to outdoor air for shallow soil and migration from soil to groundwater for deep soils were also considered. Because no soil concentrations exceeded the Region 9 PRGs for inhalation, this pathway was not quantified. For the migration to groundwater pathway the soil screening levels (SSLs) developed by EPA were compared to site concentrations. At this facility groundwater beneath the main treatment area is located approximately 60 feet below ground surface. The SSLs with a Dilution Attenuation Factor (DAF) of 20 were selected for evaluation of the potential for migration to groundwater. In Treatment Area No. 1 chromium and PCP exceeded the SSL in subsurface soils. In Treatment Area No. 2 subsurface soils benzene, PCP and three PAH constituents exceed the respective SSL. No constituents exceeded the SSLs in subsurface soils at the Treated Wood Storage Area. Shallow groundwater in the Citronelle Formation is impacted by CoPCs and is being addressed by the Corrective Action Plan implemented under the State of Mississippi Hazardous Waste Management Permit. Furthermore, this formation is not utilized as a drinking water supply. The deeper Pascagoula Formation is used as a drinking water supply in the surrounding area. The uppermost member of the Pascagoula is characterized as a clayey silt that is 13 to 68 feet thick and is a laterally continuous aquitard. This aquifer has not been impacted by CoPCs from this site.

Current and future long-term onsite worker scenarios were evaluated for surface soils. Risks associated with exposure to CoPCs in soil from 0-17 feet bgs were evaluated through a current and future construction worker scenario. The most likely receptor to contaminated sediments within the undeveloped area of the site would be a trespasser who might gain access. The most likely human populations to trespass in and around the undeveloped areas are adults and older children (9-18 years old).

The potential risk estimates for carcinogens were compared to the range of excess target risk levels ($1x10^{-6}$ to $1x10^{-4}$) and potential risk estimates for noncarcinogens were compared with a hazard index of 1. Carcinogenic risk estimates were calculated for older children and adults in the reasonable maximum exposure (RME) and typical exposure scenarios as the probability of additional cancers associated with the exposure pathways evaluated. Total excess cancer risk was quantified by calculating risks associated with exposure to individual carcinogens and aggregating risks associated with simultaneous exposure to multiple carcinogenic CoPCs for each exposure pathway. Total cancer risks for each pathway are then summed for reasonable combinations of exposure pathways to determine the total cancer risk for the population of concern. For carcinogens, all estimated total cancer risks for both the RME and typical scenarios were within the target risk range. Specific results are as follows:

Current Human Exposures Under Control
Environmental Indicator (EI) RCRAInfo Event Code (CA725)

Long term workers contact with surface soils in Treatment Areas No. 1 and 2 had the highest cumulative risk estimates of $8x10^{-5}$ and $6x10^{-5}$, respectively due primarily to PCP and arsenic in Treatment Area 1 and PAHs in Treatment Area 2.

Construction workers contact with soil from 0-17 feet bgs risk estimates were less than $1x10^{-6}$ in Treatment Area 1 and $2x10^{-6}$ in Treatment Area 2.

Trespassers' contact with sediments were less than $1x10^{-6}$ in both the site drainage ditches and Church House Branch.

The quantification of noncarcinogenic risks was accomplished by summing the hazard quotients for individual CoPCs for each exposure pathway to derive a hazard index. Hazard indices for each exposure pathway were then summed to determine the total hazard index for each population of concern. No current or future exposure scenarios had hazard indices greater than one for any receptor.

References: All exposure frequency and duration figures and receptor characteristics along with all other assumptions made, can be found in the Human Health Risk Assessment located in Appendix H of the RCRA Facility Investigation, November 2002 (Ref. 4, Question 2).

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6. Check the appropriate RCRAInfo status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

✓ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the **International Paper** facility, EPA ID # **MSD 980 600 084**, located at **Wiggins, Mississippi** under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

____ NO - "Current Human Exposures" are NOT "Under Control."

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

Completed by: _____ Date: 7/29/03

Russ McLean
Environmental Engineer
South Programs Section

Supervisor _____ Date: 9/29/03

Doug McCurry
Chief, South Programs Section
RCRA Programs Branch

Branch Chief _____ Date 9/29/03

Narindar M. Kumar
Chief, RCRA Programs Branch
Waste Management Division
EPA Region 4

Locations where References may be found:

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5 **FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.**

Current Human Exposures Under Control
Environmental Indicator (EI) RCRAInfo Event Code (CA725)

EPA Region 4 RCRA File Room
10th Floor, 61 Forsyth Street SW
Atlanta, Georgia 30303

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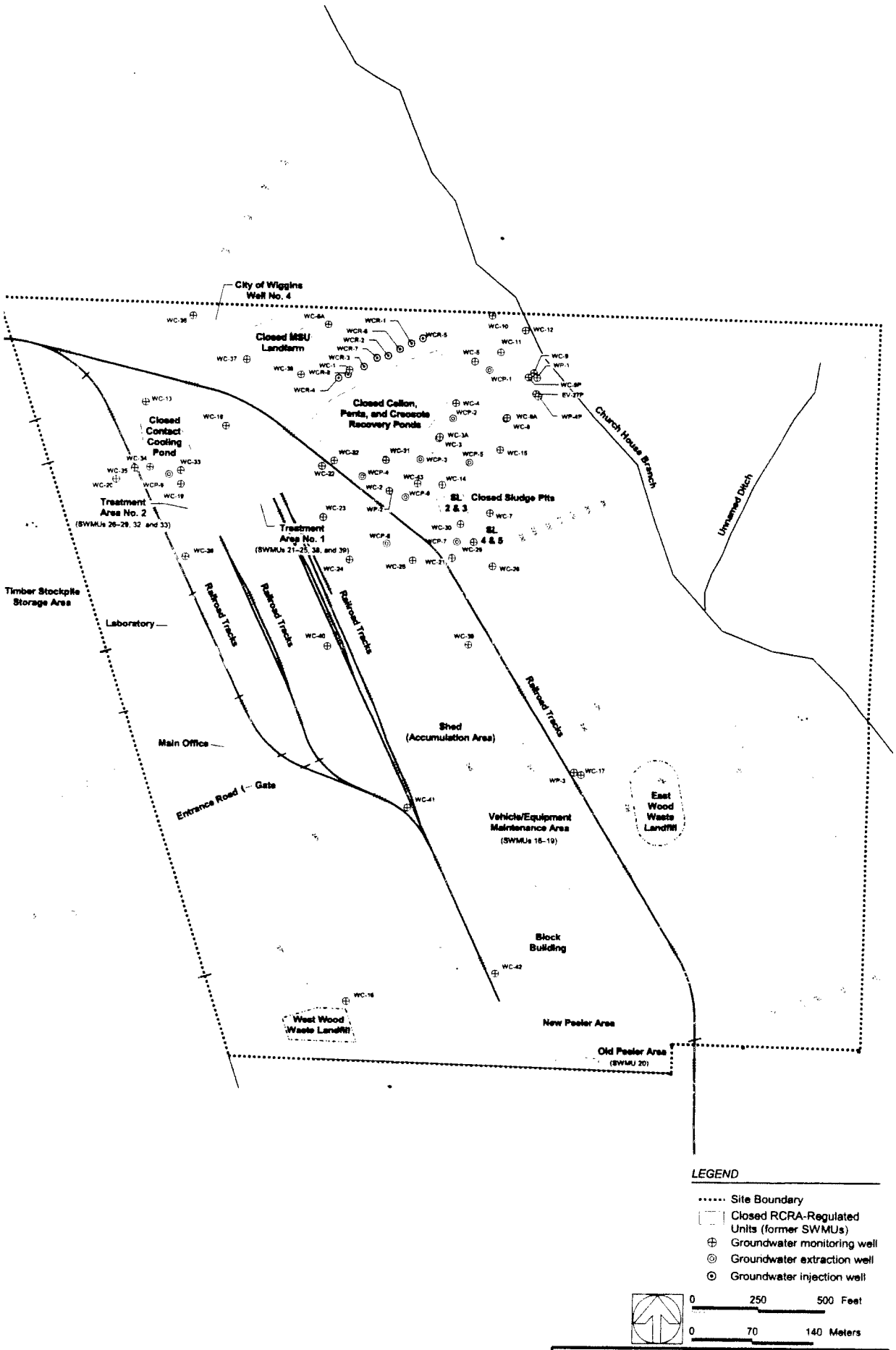

Figure 1 Wiggins facility site map