ROLLINS
ENVIRONMENTAL INC.

One Rollins Plaza, P.O. Box 2349, Wilmington, DE 19899, 302/426-2700

December 19, 1996

Ms. Anita Cummings
U.S.E.P.A.
2800 Crystal Drive,
6th Floor
Arlington, VA 22202

Dear Ms. Cummings:

This letter is in response to Mike Petruska's letter of December 6, 1996. We have carefully reviewed the information forwarded to us in that letter concerning your visit to our Highway 36 facility in Colorado.

After reviewing this information, we have made some minor technical corrections to the site visit report document. A copy of these corrections is included with this letter.

In addition to the request to review this document, we were was also asked if we concurred that your data summary documents are not CBI. We do concur, an do not claim any CBI privileges over that information as it is presented in your documents.

If you have any further questions about these issues, please don't hesitate to contact me at (302) 426-3471.

Sincerely,

Michael G. Fusco
Director, Regulatory Analysis

Enclosure

cc: P. Retallick
R. Grondin

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

December 6, 1996

Mr. Richard Grondin
Technical Manager
Rollins Environmental Inc.
108555 E. Highway 36
Deer Trail, Colorado 80105

Dear Mr. Grondin,

This letter is in regard to the site visit that was coordinated between members of my staff and personnel at your Highway #36 facility in Deer Trail, Colorado. In addition to touring your facility, we collected data on a variety of inorganic waste streams being treated by stabilization technology. The data collected was identified as "Confidential Business Information (CBI)".

Attached, please find a copy of the site visit report, and a summary of the data collected at Highway #36. The Agency is requesting that you review our site visit report for verification that we have accurately represented your facility; likewise, we request that you review the sanitized data summary which includes only influent and effluent data. This data summary is written in an effort to represent your technology and not disclose any proprietary information. The Agency is requesting your concurrence that these data summary documents are not CBI, and therefore may be released to the docket for the Phase IV rulemaking.

The Agency is requesting your response by December 19, 1996. If any clarifications are needed, or discrepancies exist in either report, please contact Anita Cummings, of my staff. Ms. Cummings can be reached on (703)308-8303.

Respectfully,

Michael Petruska, Chief
Waste Treatment Branch

cc: Michael Fusco, Director Regulatory Affairs

attachments enclosed (2)

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November 21, 1996

MEMORANDUM

TO: Anita Cummings, Mary Cunningham, and Elaine Eby

FROM: Howard Finkel

SUBJECT: Final Draft Site Visit Report for the August 20-21 Site Visit to Rollins Environmental's Highway 36 Commercial Waste Treatment Facility Located in Deer Trail, Colorado

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Rollins Environmental operates the Highway 36 Land Development Company, which is a commercial waste treatment and disposal facility located in Deer Trail, Colorado. The Highway 36 facility is approximately 70 miles east of Denver and is situated on a 5,700 acre (9 square miles) parcel. The active area of the facility (i.e., the portion inside the fenced boundary) is approximately 325 acres. This permitted acreage is surrounded by a buffer zone of roughly 400 acres. The remaining acreage is leased to a farmer who grows wheat. The climate is arid, as the site has an annual rain fall of only 15 inches and an annual evapotranspiration rate of more than 50 inches. Although the site is located in a remote area, there was one visible residence located several miles North of the facility.

Overview of Operations

The Highway 36 facility is a commercial waste treatment and disposal facility that receives various metal-bearing wastes from clients across the United States. The facility is virtually self-sufficient and consists of an administration building, guard station with a truck scale, office/laboratory complex, truck sampling station, maintenance facility, waste treatment building, wastewater treatment facility and lined retention pond, small storage area for empty roll-offs, two large water storage tanks, and a Subtitle C permitted hazardous waste landfill.

Bulk and containerized (drum) shipments of wastes are received by truck. Typically, trucks arrive at the site by 7:30 a.m. and enter the site through the guard station where the trucks are scanned for radioactivity and weighed. The trucks then proceed to the sampling bay where Highway 36 workers collect a grab sample from each truck. The grab sample undergoes an on-site fingerprint analysis to confirm that the waste's characteristics match the characteristics displayed by the generator's preacceptance sample.[1] The fingerprint analysis

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[1] Prior to accepting any waste for treatment, the Highway 36 facility obtains a preacceptance sample from the generator. Preacceptance samples undergo complete organic analyses (total constituent concentrations, TOX, TOC), inorganic analyses (TCLP concentrations), and analyses for various other indicator and physical parameters. Based upon the results of the preacceptance sample, Highway 36 staff then select an appropriate

is a quick scan for various indicator parameters and physical form. However, as part of a random sampling protocol required by the site's permit, every twentieth sample undergoes a complete set of analyses (identical to the preacceptance sample) to ensure that wastes meet the site's expectations.

Once the fingerprint analysis is completed and the waste shipment is accepted for treatment, the truck is instructed to off-load its cargo at the waste treatment building. Bulk wastes are off-loaded directly into one of two treatment basins (that hold approximately [redacted] tons [or ~[redacted] cyds] each), whereas, debris waste and drummed wastes (pallets and all) first undergo size reduction using a hammer mill and shredding, [redacted]. Rollins attempts to process incoming shipments as quickly as possible because they do not have sufficient storage space to accumulate large amounts of waste. The inability to maintain an inventory of wastes that could allow Rollins to pick and chose specific loads of wastes to batch together has caused Rollins to carefully schedule incoming loads to maintain a "rolling inventory" of like or otherwise compatible wastes over the period of one to several days.

Sized debris and shredded waste are then placed in a treatment basin. The majority of all wastes are stabilized using a portland cement-based reagent, while debris wastes are microencapsulated using a cement kiln dust-based reagent. The reagents and water are added to the treatment basis according to one of a dozen predetermined treatment recipes that specifies the quantity and types of reagents, sequencing, and mixing times.[3] The facility reported that it takes the workers approximately 20 to 30 minutes to add the reagents and that the wastes are manually mixed for 45 to 60 minutes using a backhoe.

To verify the treatment of each stabilized batch of waste, workers collect a grab sample from the backhoe's bucket (the waste resembles a soil with a moisture content of 20 to 25%) and send the sample to the site's laboratory where the sample is analyzed for TCLP leachable metals. Passing batches are taken to the on-site landfill, cell #2 and failing batches (2 to 3% of all batches treated exhibit unacceptable leachate concentrations, while approximately 5% of the wastes fail the paint filter test) are retreated in the same treatment basin. Batches of waste that exhibit unacceptable TCLP concentrations undergo complete retreatment - every batch eventually passes and is disposed of onsite. Batches of waste failing the paint filter test are stiffened and released after an additional hour of treatment. Highway 36 treats between six and ten batches of waste every day. The entire process, from

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treatment recipe and verify the waste's treatability in the laboratory (using the results of the TCLP analyses as a measure of success).

[2] Although the facility has [redacted] treatment basins, wastes are only treated in [redacted], because the other two basins are dedicated to sizing and shredding and a non-utilized continuous processing line, respectively. The continuous processing line is not currently operated because the site does not maintain a sufficient waste inventory to allow continuous processing.

[3] Although Highway 36 has more than a dozen treatment recipes, the majority of all wastes can be treated using one of five principle recipes.

[4] Highway 36 has defined a [redacted] to be the treatment residues from the treatment of one or more loads of waste in a single treatment basin. A single batch may contain wastes from more than one generator.

receipt of the waste at the front gate, treatment, and disposal requires approximately 36 to 40 hours.

Microencapsulated wastes are put into steel forms. After curing approximately 72 hours, the microencapsulated wastes are transported to the on-site landfill without any verification analyses (verification analyses are not required for debris waste undergoing microencapsulation).

NO, IT IS NOT CLOSED YET

The Highway 36 facility is permitted for the land disposal of 2.5 million cubic yards of waste and additional suitable acreage is available to accommodate a total of 15 million cubic yards. Rollins has already closed one landfill cell (Cell #1) and is currently operating Cell #2, which has an anticipated volume of 185,000 cubic yards. Wastes are disposed in four foot lifts and are covered daily with a synthetic cover. Lifts are completed in approximately three to six weeks.

The site generates three types of waste water:

- landfill leachate (from rain, waste moisture, and water released from the compacted ~~clay~~, rinse and decontamination waters, and laboratory wastes
- non-contaminated stormwater
- potentially contaminated stormwater

OK

The non-contaminated stormwater is stored in a pond and eventually is released by discharge off the site. Both the potentially contaminated and contaminated wastewaters are treated separately in an on-site wastewater treatment plant using dedicated systems. The potentially contaminated and contaminated wastewater treatment systems are identical, except for that the contaminated wastewater treatment system has a final polishing step using a reverse-osmosis process (necessary to the high chloride levels associated with the contaminated wastewater). The plant treats between 30,000 and 70,000 gallons per day, with the contaminated treatment system handling 50 gallons/minute and the potentially contaminated treatment system handling 100 gallons/minute. Both treated effluents are stored onsite for reuse in the treatment process. The resulting wastewater treatment filter cakes and all other plant wastes (baghouse dusts, drums, pallets, etc.,) are treated and disposed onsite.

Wastes Accepted For Treatment

Highway 36 is a commercial waste treatment, storage, and disposal facility that accepts metal-bearing wastes from clients across the United States. Highway 36 does not accept any wastes contaminated beyond land disposal Restrictions with organic constituents. The majority of wastes accepted are solid wastes, with less than one percent being liquid. The facility, which has had three different owners, opened in 1991. As shown in Exhibit 1, the amount of waste accepted for treatment and/or disposal has increased significantly since 1991. During the last year, ending September 1996, Rollins estimates that it will treat and/or dispose of 100,000 - 120,000 tons of metal-bearing wastes. Rollins anticipates treating and/or disposing of similar quantities of metal-bearing wastes next year. The theoretical capacity is somewhere between 150,000 and 180,000 tons per year, depending on the form and characteristics of the incoming wastes.

EXHIBIT 1

HISTORICAL WASTE ACCEPTANCE RATES

Operating Year	Tons (Estimated)
1991	7,000
1992	16,000
1993	23,000
1994	30,000
1995	48,000
1996	100,000 - 120,000

As noted above, the Highway 36 facility anticipates treating upwards of 120,000 tons of metal-bearing wastes in 1996. Approximately 60 to 75 percent of the wastes passing through the facility requires treatment. Thus, between 25 and 40 percent of the metal-bearing wastes upon receipt are already less than or equal to either the TC levels or the UTS levels - depending on whether the waste is a characteristic or listed hazardous waste, respectively. These wastes, after passing the fingerprint analysis, are sent directly to the on-site landfill for disposal.

Of the 72,000 to 90,000 tons of waste requiring treatment (60 to 75% of 120,000 tons), 40% is characteristic waste which must be treated to below the TC levels and the remaining 60% is listed hazardous wastes which must be treated to below the UTS levels. The majority (60 to 75%) of the wastes handled at the site are derived from RCRA remediation activities, with the remainder including RCRA-regulated process wastes (such as tank bottoms and wastewater treatment filter cakes), and CERCLA and DOD remediation wastes.

Treatment Philosophy

moderate-to-high

Rollins believes that it can treat just about any metal-bearing waste (including mercury), except for wastes containing leachable selenium - selenium is extremely difficult to treat and the Highway 36 facility rejects wastes with leachable selenium[5]. Rollins routinely treats wastes with percent levels of arsenic, cadmium, chromium, lead, nickel, and zinc. Wastes, such as incinerator ash, baghouse dusts, and plating sludges often have one or more of these contaminants in the percent range. Rollins treats lots of wastes containing percent levels of lead and does not have any trouble reaching the proposed UTS of 0.37 mg/L. In fact, Rollins often obtains levels an order of magnitude lower than the proposed UTS level.

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[5] Rollins indicated that the most wastes don't have high levels of selenium, except for some wastes generated by the mineral processing industry. Rollins does not know how other facilities are treating selenium-containing wastes, but theorized that they were likely relying on dilution with other wastes.

AND INCINERATOR RESIDUES

Although Rollins has developed more than 12 treatment recipes, it relies on five principle recipes to treat the majority of wastes - wastes that can vary in composition by both contaminant and contaminant level. The primary stabilization reagent is portland cement. Rollins typically adds between 20 and 25 percent portland cement and a variable amount of water to get a bulking factor ranging between 1.2 and 1.25 percent. Wastes that contain leachable chromium receive ferrous sulfate to reduce the chromium to a more insoluble state. Rollins can treat any level of chromium but noted that ferrous sulfate is expensive (~$500/ton) and that some wastes may be very expensive to treat (one waste stream that contained more than 240,000 ppm total chromium in an extremely leachable form was treated in the laboratory, but was never sent to Highway 36 for full-scale treatment because the expected treatment cost approached $1,000 per ton). Microencapsulation relies on the addition of cement kiln dust and has an average bulking factor ranging between 2.0 and 2.5.

Examples of high-lead wastes include a lead slag from one client [CBI]. Rollins reported that the preacceptance sample had a lead TCLP leachate concentration of 2,690 mg/L. Although Rollins did not analyze this sample for total lead, one can estimate the minimum total constituent concentration to be at least 5.38 percent (i.e., the TCLP test requires that 100 grams of sample be diluted with 2 liters of extractant - which produces a twenty fold dilution; therefore, if 100% of the lead leaches -- a highly unlikely event -- the total constituent concentration must be at least 52,800 mg/Kg). Rollins also had examples of wastes like blast furnace slag from a second client [CBI] that high levels of lead (between 2.15 and 2.22 percent) yet did not leach appreciable amounts of lead (they waste qualified for direct placement without any treatment).

On day two of the site visit (August 21, 1996), I worked with Royce McDonald to review Highway 36's files to obtain records documenting the successful treatment of percent levels of arsenic, cadmium, chromium, lead, nickel, and zinc. I obtained numerous results from preacceptance samples (initial characterization and laboratory treatment), the random fingerprint analyses (which represent complete analytical workups), and the full-scale treatment campaign results (results from the verification testing of one batch). In addition, some of the generators supplied Highway 36 with the results of total constituent analyses. Although these data were obtained from wastes that are still treated today, the very same wastes are not tested for total constituent concentrations today. However, because the waste generating processes are believed to be the same, the older total constituent data is likely to be representative of the waste as it exists today.

A complete memorandum discussing the data obtained from Rollins Environmental's Highway 36 site will be prepared after I have received the analytical data from EPA's Document Control Officer (i.e., Rollins considers the data to be confidential business information). A list of the individuals participating in the site visit is presented in Exhibit 2.

EXHIBIT 2

SITE VISIT PARTICIPANTS

Participants	Affiliation	Telephone No.
Paul Arell	U.S. EPA Region VIII	303/312-6149
Anita Cummings	U.S. EPA	703/308-8303
Mary Cunningham	U.S. EPA	703/308-8453
Elaine Eby	U.S. EPA	703/308-8449
Howard Finkel	ICF Incorporated	703/934-3656
Mike Fusco	Rollins Environmental	302/426-3471
Richard Grondin	Highway 36	970/386-2293
Royce McDonald	Highway 36	970/386-2293
Jim Mock	Highway 36	970/386-2293
Ken Niswonger	CDPHE	303/692-3352
Tanell Roberts	CDPHE	303/692-3352
Steve Schneider	Highway 36	970/386-2293

Summary

Rollins Environmental's Highway 36 facility consistently treats metal-bearing wastes containing percent levels of arsenic, cadmium, chromium, nickel, lead, and zinc using a portland cement-based stabilization process. Rollins will not have to modify its existing treatment process to meet the proposed UTS levels, except for selenium. Rollins can neither treat selenium-bearing nor organic-bearing wastes.
moderate-to-high

If you have any questions regarding my observations collected during our visit to the Highway 36 facility, please call me at 934-3656.