UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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ARLINGTON, TEXAS 76011-8064

April 27, 2000

T. W. Hardgrove, Manager
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SUBJECT: NRC INSPECTION REPORT 040-06622/00-01

Dear Mr. Hardgrove:

On April 11, 2000, the NRC completed an inspection at your former Shirley Basin Mill site in Carbon County, Wyoming. The inspection consisted of a routine review of site status, decommissioning and reclamation activities, radiation protection, and environmental monitoring. The inspection findings were presented to you and other members of your staff at the conclusion of the onsite inspection. The enclosed report presents the results of that inspection.

During the inspection, the NRC identified a number of license discrepancies that require revision of the license. These discrepancies include the organizational structure, surface water sampling requirements, disposal requirements for byproduct material received from offsite sources, and routine inspection of the ore stockpile areas. At the exit briefing you informed the inspector that you would submit a license amendment request to the NRC by July 1, 2000, to resolve these discrepancies. Since no cited violations were identified during the inspection, no response to this letter is required.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be placed in the NRC Public Document Room (PDR).

Should you have any questions concerning this inspection, please contact Mr. Robert Evans at (817) 860-8234 or the undersigned at (817) 860-8191.

Sincerely,

/RA/

Dr. D. Blair Spitzberg, Chief
Fuel Cycle & Decommissioning Branch

Docket No.: 040-06622
License No.: SUA-442

Enclosure:
NRC Inspection
Report 040-06622/00-01

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.	040-06622
License No.	SUA-442
Report No.	040-06622/00-01
Licensee:	Pathfinder Mines Company
Facility:	Former Shirley Basin Mill
Location:	Carbon County, Wyoming
Dates:	April 10-11, 2000
Inspector:	Robert J. Evans, PE, CHP, Health Physicist Nuclear Materials Inspection Branch
Accompanied by:	Judith L. Walker, Radiation Specialist (Inspector in Training) Fuel Cycle & Decommissioning Branch
Approved By:	D. Blair Spitzberg, Ph.D., Chief Fuel Cycle & Decommissioning Branch
Attachments:	Supplementary Information Photographs Taken at the Shirley Basin Site

EXECUTIVE SUMMARY

Former Shirley Basin Mill Site
NRC Inspection Report 040-06622/00-01

This inspection was a routine, announced inspection of site status, operations review, radiation protection, and environmental monitoring. Overall, the licensee was conducting site operations in accordance with license and regulatory requirements.

Site Status

- The organizational structure had changed since the previous inspection. The chief mine engineer's position had been abolished which changed the radiation safety officer's reporting responsibility. The licensee committed to submit an amendment request to the NRC in the near future to update the organizational structure that was provided in the license application (Section 1).

Operations Review

- Site activities were being conducted in accordance with the conditions of the license. Site fences, gates, perimeter postings, and security were adequate. Pond levels were below freeboard requirements (Section 2.2).

- A radiological survey was conducted, and most areas of the site exhibited low gamma exposure rate measurements. Areas that had slightly elevated exposure rates had not been fully remediated by the licensee (Section 2.2).

- The licensee was actively attempting to eliminate ponded water, in part, by releasing fluids from the restricted area to a mine reservoir. Sample results taken by the licensee indicate that the fluids could be released but the licensee had not always reported these effluent results to the NRC as a result of an administrative oversight. This was a minor violation of the license, and the licensee planned to submit this missing data in the next routine semi-annual effluent report (Section 2.3).

- The licensee was accepting and disposing of radioactive waste material from offsite locations in accordance with the conditions of the license with one minor exception. The licensee's failure to cover waste material with clean fill within 30 days was identified as a minor violation of the license. The licensee committed to submit a license amendment request to the NRC to resolve a potential discrepancy involving the time limit that had been established in the license for covering exposed waste material because this time limit was negatively impacting the licensee's ability to efficiently and effectively dispose of the waste material (Section 2.3).

Radiation Protection

- The licensee had implemented a radiation protection program that met the requirements established in 10 CFR Part 20 and the conditions of the license. Occupational

exposures were well below the NRC's annual dose limits. Specific program areas reviewed and deemed satisfactory included the contamination control program, instrument calibrations, employee training, and annual program reviews (Section 3).

- The licensee conducted radiological surveys for alpha, beta, and gamma contamination. None of the survey results exceeded the respective action levels. Further, the licensee occasionally collected bioassay samples, and none of these samples contained radioactive material. The licensee's contamination control practices were effective in minimizing the potential for ingestion of radioactive materials (Section 3.3).

Environmental Monitoring

- The licensee had implemented the environmental and effluent monitoring programs at the site with one minor exception. All samples were collected as specified in the license, but the licensee did not analyze the surface water samples for all chemical constituents listed in the license application because of the its interpretation of the license. This was identified as a minor violation of the license, and the licensee committed to submit a license amendment request to the NRC in the near future to clarify the surface water sampling requirements (Section 4.2).

- Only two radionuclides exceeded the applicable effluent concentration limits from 1998-1999, lead-210 in one surface water sample and occasionally radon-222 at selected sample stations. However, site operations had no measurable radiological impact on the nearest resident (Sections 4.2 and 4.4).

- All sample results were reported to the NRC in the semi-annual effluent reports with the exception of some surface water sample results. The licensee's failure to submit all sample results to the NRC was a minor violation of the license, and the licensee committed to include these sample results in the next routine report submitted to the NRC. The licensee submitted annual land use surveys to the NRC although one report was less than timely (Section 4).

Report Details

1 Site Status

Activities completed at Pathfinder Mines Corporation's Shirley Basin site included demolition and disposal of the mill, installation of an interim cover over most of the tailings material, and cleanup of the windblown material. Activities in progress during the inspection included collection of environmental and groundwater monitoring samples, evaporation of excess pond water, implementation of the groundwater corrective action program, receipt and disposal of radioactive waste from offsite in-situ leach facilities, mine reclamation, and routine equipment maintenance. Activities planned for the near future include submittal of license amendment requests for approval of groundwater alternate concentration limits and for construction of evaporation ponds near Tailings Pond 4 to assist in the evaporation of pond water. Elimination of pond water is necessary before the licensee can complete the reclamation of the tailings ponds. The licensee still has to install the radon barrier, final cover, and erosion protection on and around the tailings impoundments.

The onsite staff consisted of four individuals; a manager, two mechanic/welders, and one electrician. The offsite staff included the radiation safety officer (RSO), reclamation manager, and general manager. Since the previous inspection, the licensee abolished the position of chief mine engineer, previously the highest ranking official onsite. This organizational change impacted the reporting requirements of the RSO. Previously, the RSO reported to the chief mine engineer. Following the elimination of the chief mine engineer's position, the RSO began reporting directly to the general manager. During the inspection, the inspectors noted that the current organizational structure did not agree with the NRC-approved structure provided in the license application (Figure 5-1). During the exit briefing, the RSO committed to update the organizational structure in the near future. This issue was not considered safety significant because the RSO now reports to a higher level individual (the general manager) in the organization than previously.

2 Operations Review (88020)

2.1 Inspection Scope

The objective of this portion of the inspection was to verify that site activities were being conducted in accordance with applicable regulations and the conditions of the license, and to ensure that operational controls were adequate to protect the health and safety of the workers and members of the general public.

2.2 Site Tour

Buildings, fences, gates, and operating equipment were observed during the site tours. The access gates were functional and the fences were adequately posted as required by 10 CFR 20.1902. No health or safety hazards were identified during the site tours,

and the inspectors determined that licensed material was adequately secured within the site property as required by 10 CFR 20.1801.

There were three tailings ponds at the site. Tailings Pond 3 initially held only tailings solutions and no solids. This pond is currently being used for disposal of byproduct material from offsite sources. Portions of Tailings Pond 4 were covered with fluids from the tailings dewatering system as well as precipitation. Approximately two-thirds of Tailings Pond No. 4 has been covered with an interim cover. The remainder of the pond cannot be covered until the pond water has been removed or has evaporated.

The licensee plans to submit a license amendment request to the NRC in the near future to build one or more evaporation ponds near Tailings Pond 4 so the water from Pond 4 can be transferred to the new evaporation ponds. Once Pond 4 has been dewatered, the licensee can continue with reclamation of this pond. Tailings Pond 5 has been dewatered since 1996 and an interim cover has been placed over the tailings material in this pond.

The licensee currently has 15 evaporation ponds, including Tailings Pond 4. During the inspection, the licensee started the enhanced evaporation system in Evaporation Ponds 4-8. The licensee plans to activate the enhanced evaporation systems in other ponds, including Tailings Pond 4, in the near future. At the end of 1999, about 55 million gallons of solution fluids remained in the 15 evaporation ponds. The licensee estimated the net change in ponded water volume was a loss of about 7 million gallons during 1999 as compared to a net loss of about 10.5 million gallons during 1998.

License Condition 37 states that the licensee shall maintain a minium of 3 feet of freeboard in Tailings Pond 4 and a minimum of 4.5 feet of freeboard in Tailings Pond 5. These two ponds were observed during the site tour and the inspectors noted that the actual pond levels were well below the freeboard limits. The licensee routinely measured the pond levels and reported these values in the semi-annual effluent reports.

The inspectors performed a limited independent radiological survey using an NRC-issued Ludlum Model 19 microRoentgen meter (Serial Number 33541, calibration due date of October 12, 2000) that was calibrated to radium-226. With a background of 0.030-0.045 millirems per hour (mr/hr), the highest exposure rate reading, 0.4 mr/hr, was observed near the Tailings Pond 3 burial pit that contained byproduct material obtained from offsite locations. The exposure rate near Tailings Pond 4 measured about 0.2 mr/hr, while the exposure rate near environmental monitoring sample station No. 2R measured 0.03-0.035 mr/hr (background level).

2.3 License Compliance Review

License Condition 11 states, in part, that the licensee is authorized to discharge fluids from the surficial aquifer collection system to the Area 2/8 Reclamation Reservoir as proposed in the licensee's April 9, 1996, submittal. The licensee transferred the discharge from the collection system to an onsite holding pond called the Industrial Pond. From the Industrial Pond, the water was transferred to a mine pit reservoir. The licensee started filling the Industrial Pond during March 1997, and the licensee started

transferring fluids from the Industrial Pond to the reservoir during July 1998. Since July 1998, the licensee has transferred about 24.6 million gallons of fluid to the reservoir. The State of Wyoming has placed a limit of 105 million gallons as the total amount of fluid that can be transferred to the reservoir.

Since the transfer of fluid from the surficial aquifer collection system to the reservoir involved the release of liquids from the restricted area to an unrestricted area, the licensee sampled the Industrial Pond fluid for total dissolved solids, natural uranium, radium-226, and radium-228. The sampling was conducted in accordance with the commitments made in the licensee's letter dated April 9, 1996, and referenced in License Condition 11. The inspectors reviewed the licensee's 1999 water sample results, and the inspectors noted that none of the sample results exceeded the limits that were listed in the April 9, 1996, letter.

However, the inspectors observed that the licensee did not always report these effluent results in the semi-annual reports as stipulated by License Condition 22. The licensee reported the results in the report for the second half of 1998 but not the 1999 reports. This error was determined to be the result of an administrative oversight on the part of the RSO. The licensee's failure to include all effluent results in the semi-annual reports for 1999 was a violation of License Condition 22. This failure constitutes a violation of minor significance and is not subject to formal enforcement action. The licensee did collect and analyze the samples. During the exit meeting, the RSO committed to provide the missing data in the next routine semi-annual effluent report scheduled to be submitted to the NRC at the end of August 2000.

License Condition 41 requires the licensee to implement a tailings pond embankment inspection program. Based on the inspectors' review of the licensee's records for 1998-1999, it was concluded that the licensee had conducted and documented the daily visual embankment inspections. The inspectors toured the mill tailings area, evaporation ponds, and dam areas and observed no degradation of the embankments and dams.

License Condition 46 authorizes the licensee to dispose of byproduct material generated either onsite or at other licensed facilities. The licensee received material from three offsite in-situ leach facilities during 1998-1999. The licensee received and disposed of 61 shipments during 1999 and 48 shipments during 1998. During the site tour, the inspectors observed the current waste disposal pit. The pit was located in Tailings Pond 3. The pit was a long, narrow trench that contained several recent waste shipment disposals. The licensee planned to cover the waste material with soil when the trench was completely full.

The inspectors discussed with the RSO the 30 day deadline specified in License Condition 46.C for covering exposed waste material with clean fill material. The RSO noted that the 30 day limit was cumbersome because the amount of time between the receipt of the first and final waste shipments typically exceeded 30 days. Strict compliance with this condition would require the licensee to place an unnecessary amount of clean fill material in the trench simply to adhere to the 30 day time limit. The RSO also stated that the trench was routinely visited by site personnel, and material that

had the potential for being blown away was covered or otherwise secured to prevent wind-blown dispersion of the material.

The 30-day time limit issue was discussed between the NRC inspectors and the NRC's program office project manager. The inspectors and the project manager agreed that this issue was not safety significant because the trench was located in the site restricted area and because site personnel routinely visited the area. The licensee's failure to cover exposed waste material with clean fill material within the 30 day time limit was a violation of License Condition 46.C. This failure constitutes a violation of minor significance and is not subject to formal enforcement action. At the exit briefing, the RSO committed to submit a license amendment request to the NRC to revise License Condition 46.C to resolve the 30-day time limit issue.

2.4 Conclusions

Site activities were being conducted in accordance with the conditions of the license. Site fences, gates, and postings were adequate. Site security was also adequate. A radiological survey was conducted by the inspectors, and low ambient gamma exposure rates were observed in most areas of the site. Elevated readings were observed in the areas that had not been fully remediated. No health or safety hazard was identified during the tour.

The licensee was actively attempting to eliminate ponded water. The inspectors observed that pond levels were below the freeboard limits. The licensee was also releasing fluids from the restricted area to a mine reservoir. Sample results indicate that the fluids could be released but the licensee had not always reported these effluent results as a result of an administrative oversight, a minor violation of the license. The licensee planned to submit this missing data in the next routine semi-annual effluent report.

The licensee was accepting waste material from offsite locations in accordance with the conditions of the license with one minor exception. The licensee had not always covered the waste material within 30 days, a minor violation of the license. The RSO committed to submit a license amendment request to the NRC to resolve a potential discrepancy involving the time limit that had been established in the license for covering exposed waste material because this time limit was negatively impacting the licensee's ability to efficiently and effectively dispose of the waste material.

3 Radiation Protection (83822)

3.1 Inspection Scope

This portion of the inspection effort was to determine if the licensee's radiation protection program was in compliance with the license and 10 CFR Part 20 requirements.

3.2 Occupational Exposure Monitoring

The licensee's exposure monitoring program was reviewed to ensure that no worker had exceeded the occupational dose limits specified in 10 CFR 20.1201. The program consisted of issuance of thermoluminescent dosimeters (TLDs) to site workers, collection of air particulate samples, and collection of bioassay samples. The inspector reviewed the licensee's records for calender years 1998 and 1999, and the inspector concluded that no individual exceeded the NRC's annual dose limits.

TLDs were issued to site workers during 1998-1999. The TLDs were supplied by Radiation Detection Company, an accredited member of the National Voluntary Laboratory Accreditation Program. Six individuals were monitored during 1998 and during 1999. The licensee's TLD records indicate that the individuals received no measurable exposure (0 millirems) during the last 2 years.

The licensee obtained air samples for determination of natural uranium, thorium-230, and radon daughter concentrations. The licensee sampled for radon daughters on a quarterly basis and uranium and thorium-230 on a monthly basis in selected locations around the site. These sample results were used to determine internal occupational exposures based on the amount of time a worker spent in a particular area of the site with known radioactive material concentration levels.

Based on the air sample results, the licensee conservatively assigned occupational doses to site workers that varied from 0.7 to 0.8 rems during 1998 and from 0.1 to 0.5 rems during 1999. The assigned doses were mainly from exposure to thorium-230. The inspectors noted that the air particulate sample results for 1999 were down from 1998 levels, and this reduction subsequently resulted in lower assigned doses for 1999.

The licensee assigned the annual occupational doses to site workers based on the TLD and air sample results. Since the doses measured from the TLDs were zero, no deep dose equivalent values were assigned to the workers. Therefore, the total effective dose equivalents that were assigned to the workers were based exclusively from internal doses. The highest assigned total effective dose equivalent for 1998 was 0.8 rems, while the highest assigned dose for 1999 was 0.5 rems. These values were well below the NRC's total effective dose equivalent limit of 5 rems listed in 10 CFR 20.1201.

As a check for intake of radioactive materials, the licensee collected bioassay samples from selected site workers. Under the current license, bioassay samples are required only at the discretion of the RSO. Urine samples were collected from selected site workers and analyzed for natural uranium concentrations. During 1998-2000, 19 samples were collected from either workers that exited the site or workers involved with the disposal of byproduct material from offsite facilities. All 19 sample results were less than the detectable limit of 5 micrograms of uranium per liter of uranium.

3.3 Contamination Control

License Condition 18 states that the release of equipment or packages from the restricted area shall be in accordance with the document entitled "Guidelines for

Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct or Source Materials." The inspectors reviewed the equipment release survey records for 1998. (The licensee did not release any equipment during 1999; therefore, there were no release survey records for 1999.)

The licensee's records indicate that equipment had been released for both restricted use at other licensed facilities and for unrestricted use. The records indicate that the highest total (fixed and removable) alpha contamination was 2100 disintegrations per minute per 100 square centimeters (dpm/100 cm^2) with a limit of 5000 dpm/100 cm^2. The highest removable contamination was 485 dpm/100 cm^2 with a limit of 1000 dpm/100 cm^2. The licensee conducted random vehicle spot checks. The licensee surveyed 24 vehicles during the last 2 years. The highest alpha contamination measurement was documented as 596 dpm/100 cm^2 with a limit of 5000 dpm/100 cm^2.

The licensee performed routine surveys of the lunchroom and shop areas for removable alpha contamination. In the last 2 years, the highest sample result was obtained from the mill work bench. The sample result was 152 dpm/100 cm^2 with an action level of 250 dpm/100 cm^2. This area was occasionally used for maintenance of equipment that had been temporarily removed from the restricted area.

The licensee also performed beta-gamma surveys of selected site locations about three times per year. In the last 2 years, the highest sample result was obtained at the byproduct material disposal area that was located in Tailings Pond 3. This sample result was 1 millirem per hour. This location was situated inside of the restricted area boundary.

3.4 Radiation Work Permits and Standard Operating Procedures

Selected site activities such as the disposal of in-situ leach waste material and cleanup of windblown soil were conducted under the guidance provided in radiation work permits (RWPs) issued by the RSO (or alternate). The licensee issued 46 RWPs during 1998 and 15 RWPs during 1999. The inspectors reviewed a selected number of RWPs and determined that appropriate precautions had been utilized to minimize worker exposure to radioactive material.

License Condition 33 requires that written procedures be established and the RSO shall perform a documented review of all existing procedures at least annually. The inspectors reviewed the standard operating procedures established by the licensee for routine site activities. The RSO had reviewed these procedures during December of each calender year. The inspectors did not review these procedures in detail during the inspection.

3.5 Instrument Calibrations

License Condition 34 states that radiation monitoring equipment shall be calibrated after repairs and at least semi-annually or at the manufacturer's suggested interval, whichever is sooner. The licensee's instrument calibration records were reviewed. The records indicated that the licensee's four radiological survey meters, four environmental

air samplers, and four low volume air samplers had been calibrated at the frequency specified in the license.

3.6 Routine Audits

10 CFR 20.1101(c) states that the licensee shall periodically (at least annually) review the radiation protection program content and implementation. License Condition 36 states that the licensee shall submit a copy of their As Low As Reasonably Achievable (ALARA) report to the NRC. The licensee's 1998 ALARA report was reviewed during the inspection. (The 1999 report had not been finalized at the time of the onsite inspection.) The audit identified an issue regarding the use of a radiation survey meter on two occasions although the meter was out of calibration. The licensee took corrective actions in response to this finding, and no survey meter instrument was identified as out of calibration during the inspection.

3.7 Training

License Condition 35 specifies the training requirements which include the requirement for bi-monthly safety meetings. The licensee had conducted training during 1998-1999, including the routine safety meetings. The licensee maintained records of the training that was conducted.

3.8 Conclusions

The licensee had implemented a radiation protection program that met the requirements established in 10 CFR Part 20 and the conditions of the license. Occupational exposures were well below the NRC's annual dose limits. Doses that were assigned to site workers were exclusively from internal exposures. The licensee's determination of the internal exposures was noted to be conservative.

The licensee conducted radiological surveys for alpha, beta, and gamma contamination. None of the survey results exceeded the respective action levels. Further, the licensee occasionally collected bioassay samples, and none of these samples contained radioactive material. Therefore, the licensee's contamination control practices were deemed effective in minimizing the potential for ingestion of radioactive materials. Other program areas reviewed and deemed satisfactory included use of radiation work permits, instrument calibrations, training, and annual program reviews.

4 Environmental Monitoring (88045)

4.1 Inspection Scope

The environmental monitoring and groundwater corrective action programs were reviewed to assess the effectiveness of the licensee's programs and to evaluate the impact, if any, of site activities on the local environment.

4.2 Environmental Monitoring

License Condition 38 states that the licensee shall implement the environmental and effluent monitoring program as specified in Table 5.8 and Figure 2-2 of the amended application dated November 1994. Further, License Condition 22 states that the results of all effluent and environmental monitoring required by the license shall be reported in accordance with 10 CFR 40.65. The inspectors reviewed the licensee's semi-annual effluent reports for 1998 and 1999, and the inspectors reviewed the original laboratory data used in the development of these reports. The semi-annual reports were submitted to the NRC in a timely manner.

The licensee performed air particulate, radon, surface water, soil, vegetation, and ambient gamma radiation monitoring around the site. All samples, with the exception of the surface water samples, were obtained at four environmental monitoring sample stations. The stations included a background and a nearest resident station.

Airborne radioactivity concentrations were sampled at the four stations. The air sample filters were exchanged weekly and the filter composites were analyzed quarterly for their natural uranium, thorium-230, radium-226, and lead-210 concentrations. The sample results for 1998-1999 were compared to the effluent concentration limits provided in 10 CFR Part 20, Appendix B, Table 2. The highest quarterly sample result was collected at Station 2R. This sample result was 12.3 percent of the applicable thorium-230 limit, but Station 2R was located within the site restricted area. The next highest sample result was for lead-210, obtained at the nearest resident station. This sample result was only 2.5 percent of the respective limit. In summary, all sample results were well below the applicable effluent concentration limits listed in 10 CFR Part 20, Appendix B, Table 2.

Radon-222 was sampled at the four stations. The track etch canisters were exchanged on a quarterly basis. The highest sample result was obtained during the fourth quarter of 1999 at Station 10R, a site boundary station. This sample result (2 picocuries per liter), with background subtracted, was 400 percent of the applicable limit specified in 10 CFR 20, Appendix B, Table 2, for radon-222 with daughters present. Although this and several other radon-222 sample results exceeded the effluent concentration limit, the radon concentrations at the nearest resident station were consistently below the background station concentrations. Therefore, the radon-222 effluents from the site had no measurable impact on the nearest resident.

Environmental thermoluminescent dosimeters (TLDs) were used to measure the ambient gamma exposures at the four sample stations. The TLDs were exchanged on a quarterly frequency. The exposure rates at the onsite sample Station 2R were consistently above background levels, while the exposure rates at the nearest resident sample Station 7R were consistently below background levels. As an example, during 1999, the annual exposure for Station 2R was 27.5 millirems above background, while the annual exposure for Station 7R was 12.5 millirems below background. The sample results for 1998 were similar to the 1999 sample results.

Soil samples were obtained annually at the four stations. The samples were analyzed for natural uranium, radium-226, thorium-230, and lead-210 concentrations. The highest sample results were obtained at the onsite Station 2R. Further, the 1999 sample results were slightly higher than the 1998 sample results. As an example, the thorium-230 sample result for 1999 was 18.4 picocuries per gram, while the 1998 sample result was 10.8 picocuries per gram. The causes of the slightly elevated sample results were not clearly evident but could have been the result of dry weather or the randomness of the soil sampling collection process. The inspectors noted that the nearest resident sample station results were consistently below the background sample results.

Vegetation samples were obtained annually at the four stations. The samples were analyzed for radium-226 and lead-210 concentrations. No clear trend was observed during the review of this program area.

Surface water samples were obtained on a semi-annual basis at eight stream locations. The samples were analyzed for a number of chemical and radiological constituents. Only one sample result exceeded the applicable effluent concentration limit. The lead-210 concentration was 103 percent of the limit in the sample collected during June 1998 from Fox Creek. The licensee considered this sample result an anomaly because the next three sample results were less than 1 percent of the limit.

License Condition 38 states, in part, that in addition to the parameters specified in Table 5.8, all surface water sampling sites shall be monitored for pH and all the chemical parameters specified for the groundwater wells in Table 5.8. The chemical parameters included chlorides, nitrates, sulfates, total dissolved solids, as well as a number of metals/ions (arsenic, barium, etc.). The inspectors noted that the licensee was sampling the surface water samples for the metals on an annual basis and not semi-annually. The licensee's failure to analyze the surface water samples for all chemical constituents on a semi-annual basis was a violation of License Condition 38.

The inspectors discussed this issue with the NRC's program office project manager, and the project manager agreed with the inspectors that this issue was not safety significant. Therefore, the licensee's failure to analyze the surface water samples on a semi-annual basis constitutes a violation of minor significance and is not subject to formal enforcement action. The RSO stated that the current sampling frequency was based on his interpretation of License Condition 38, but he would submit a license amendment request in the near future to clearly specify the surface water sampling requirements.

During the review of the semi-annual effluent reports, the inspectors noted that the licensee had not reported the annual surface water sample results (arsenic, barium, beryllium, and so forth) in the 1998 and 1999 reports. The RSO stated that this error was the result of an administrative oversight. The licensee's failure to include all sample results in the semi-annual reports for 1998-1999 was a violation of License Condition 22. This failure constitutes a violation of minor significance and is not subject to formal enforcement action. The licensee did collect and analyze the samples. At the exit meeting, the RSO committed to submit the missing data as an attachment to the next routine semi-annual effluent report, due at the end of August 2000.

4.3 Annual Land Use Survey

License Condition 21 requires that the licensee conduct an annual survey of land use in the area within 5 miles of the mill and submit a report of this survey to the NRC each year. The Land Use Survey Report describes significant land use changes by private residences, nonresidential structures, grazing areas, and potable water and agricultural wells. The inspectors reviewed the licensee's 1998 and 1999 Land Use Survey Reports that were submitted to the NRC. The inspectors noted that the licensee had submitted the 1999 report about 4 months late. This administrative oversight was not safety significant because the land use around the site had not changed appreciably in years. The inspectors concluded that the licensee's 1998 and 1999 Land Use Survey Reports met the intent of License Condition 21.

4.4 Public Dose Assessment

The inspectors performed a public dose assessment to ensure that site operations did not result in a total effective dose equivalent to individual members of the public in excess of 100 millirems per year, the annual limit specified in 10 CFR 20.1301. The environmental monitoring data for 1998 and 1999 were used in this assessment, including the data for the nearest resident station 7R and background station 4R. The nearest resident was located about 3.5 miles from the site. The inspectors noted that the radon-222 concentrations were consistently below background levels at the nearest resident station, the air particulate sample results at the nearest resident station were at background levels, and the quarterly ambient gamma exposures at the nearest resident station were consistently below the background exposures. Therefore, the site had no measurable impact on the nearest resident.

4.5 Groundwater Corrective Action Program

License Condition 47 requires that the licensee implement a groundwater compliance monitoring program. Activities in progress during the inspection included groundwater sampling, evaporation of pond water, operation of tailings dewatering pumps, collection of tailings seepage water, and pumping of fresh water into the ground to sweep contaminated water towards the dewatering pump wells.

In accordance with License Condition 47, the licensee is required to sample 11 wells on a quarterly basis. The inspectors reviewed the licensee’s 1998 and 1999 semi-annual effluent reports and the original data used in the development of these reports. Based on this review, the inspectors determined that the licensee collected all groundwater samples as required during 1998-1999.

License Condition 47.B lists two point of compliance wells, NP01 and RPI19B. The sample results for these two wells were compared to the protection standards listed in the license. The chemical constituents still above the protection standards were uranium and selenium. The licensee recently submitted a request for NRC approval for alternate concentration limits for selected groundwater chemical constituents. Until the alternate concentration limits are approved by the NRC, the licensee must continue to

implement the groundwater corrective action program in an attempt to remediate the groundwater to the current protection standards.

The inspectors reviewed the 1998 and 1999 annual corrective action program reviews, submitted to the NRC by letters dated February 23, 1999, and March 31, 2000, respectively. The reports document the progress made by the licensee in remediating the groundwater. At the time of the inspection, 46 pumping wells were in service in the tailings dewatering system. The licensee installed 4 dewatering wells in Tailings Pond 4 during late 1998 and early 1999, in part, to assist in the dewatering of Pond 4.

Based on the information provided in the two annual reports, the dewatering pump flow rate from Tailings Pond 4 increased from 65 to 89 gallons per minute from 1998 to 1999, but the flow rate from Tailings Pond 5 decreased from 45 to 38 gallons per minute. The increase in flow rate from Pond 4 can be attributed to the installation of the four additional pumps, while the decrease in flow rate from Pond 5 can be attributed to a reduction in the amount of water remaining in pond's tailings material. The licensee plans to construct two additional clay lined evaporation ponds in the northwest end of Tailings Ponds 4 and 5 to allow for transfer of pooled water in Pond 4 to the new evaporation ponds. Once the water is eliminated from Pond 4, tailings dewatering efforts in this pond are expected to show improved results.

4.6 Conclusions

The licensee had implemented the environmental and effluent monitoring programs at the site. All samples were collected as specified in the license, although the licensee did not analyze the surface water samples for all chemical constituents listed in the license application on a semi-annual basis, a minor violation of the license. The RSO committed to submit a license amendment request to the NRC in the near future to resolve this interpretation discrepancy. During 1998-1999, only two radionuclides exceeded the applicable effluent concentration limits, lead-210 in one semi-annual surface water sample and radon-222 at selected sample stations. However, site operations had no measurable radiological impact on the nearest resident.

All sample results were reported to the NRC in the semi-annual effluent reports with the exception of some surface water sample results. The licensee failed to include all surface water sample results in the 1998-1999 effluent reports, a minor violation of the license. The licensee committed to include these sample results in the next routine semi-annual effluent report submitted to the NRC. Finally, the licensee submitted annual land use surveys to the NRC although one report was less than timely.

5 Exit Meeting Summary

The inspectors presented the inspection results to the representatives of the licensee at the conclusion of the inspection on April 11, 2000. Licensee representatives acknowledged the findings as presented. The licensee did not identify any information reviewed by the inspectors as propriety information.

ATTACHMENT

PARTIAL LIST OF PERSONS CONTACTED

Licensee

T. Hardgrove, Manager, Environmental & Regulatory Services/Radiation Safety Officer
K. Hurley, Manager, Personnel & Safety

ITEMS OPENED, CLOSED AND DISCUSSED

Opened

None

Closed

None

Discussed

None

LIST OF ACRONYMS USED

ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulations
dpm/100 cm^2	disintegrations per minute per 100 square centimeters
mr/hr	millirems per hour
PDR	Public Document Room
RSO	radiation safety officer
RWP	radiation work permit
TLD	thermoluminescent dosimeter

Attachment 2 is in ADAMS as ML003711244