

① Windsor Mining and Reserves
(plus Environmental)

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PLAINTIFF'S
EXHIBIT
CAM-274

DUE DILIGENCE
OF
FOR WINDSOR MINERALS, INC.

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I. INTRODUCTION

Between September 20, 1988 and September 30, 1988 investigations were conducted on the mines and properties of Windsor Minerals Inc. in Vermont and California. The Vermont investigation was conducted by Mr. Bob Piniaskiewicz, Mr. Mike Keener and Mr. E. H. Reade. The California investigation was conducted by Mr. Rick Weeks. Permitted environmental concerns were investigated by Geomapping Associates Ltd. (exhibit I trip report). A general view of these mines and mills is shown on exhibit II and reports by each participant are attached for reference.

II. GENERAL GEOLOGY

The ore bodies being worked by Windsor Minerals Company are located in a belt of ultramafic igneous rocks altered by regional metamorphism. The talc-carbonate rocks are generally associated with verde antiques and serpentines. The footwalls and hanging walls of the ore deposits are generally a garnet-biotite-quartz schist.

Structurally, the ore bodies are badly deformed and footwall-hanging wall contacts are normally fault zones. Folding and lensing appears to trend between N40E to N60E plunging at 20 degrees to 30 degrees toward the north. The general strike of the ore bodies ranges from northwest to north northeast and generally dips toward the east.

These deposits are similar in quality to the Hamm Mine presently being operated by Cyprus near Chester, Vermont.

III. MINES - VERMONT

Windsor Minerals, Inc. operates the underground Hammondsville Mine in Windsor County plus the open pit Rainbow, Black Bear and Argonaut Mines in Ludlow County. In addition, the Frostbite Mine in Ludlow County and the Clifton Mine in Chester County are maintained as a ready backup reserve. Each mine will be described below; but, economic considerations will be discussed later.

A. Hammondsville Mine

This mine is operated exclusively for cosmetic grade ore processed at the West Windsor Mill. The ore is a strongly foliated talc-carbonate schist and has been the prime source of crude for Johnson & Johnson products since 1960.

Underground workings developed primarily by Alpine and Dosco mechanical miners cover about 43 acres along a dipping plane that spans 300 feet of elevation and intersects two separate ore swells designated the "shaft orebody" and the "main orebody".

Windsor Minerals, Inc. estimates that in place-proven and probable geologic reserves are 4.78mm tons and CIMC concurs.

The evaluation of the Hammondsville Mine was conducted by Mr. R. J. Piniackiewicz and his report is attached as Exhibit III. Amphiboles were observed in the footwall and hanging wall but not in the ore zone.

B. Rainbow Mine

The Rainbow Mine is operated as an open pit mine using both blasting and breaker techniques for mining. The active mine area covers about two (2) acres. The ore is a very light colored talc carbonate schist with veins and zones of pale green folliated talc. The apparent quality of the ore resulted in an attempt to qualify the ore as a Johnson & Johnson cosmetic source during 1987. This attempt was not successful due to elevated levels of arsenic; so, during mid 1988 the mine was percussion drilled on a 20 foot grid resulting in 258 holes and 2 samples per hole (0-4' and 4-8') were analyzed for arsenic, color and insolubles. This data was then used to develop grade assessment maps for each parameter tested providing excellent control for the upper 8 feet and shows that the arsenic level is quite low, color is excellent, and insolubles range from 46 to 76 and average about 55 percent. This new data is being used to guide a second attempt at approval.

The structure of the deposit appear to be a synform plunging at about 28 degrees towards the northeast and truncated by a thrust fault on the north forming the hanging wall of the ore body.

Windsor Minerals Inc. estimates all grades of in-place geologic reserves at 2.1mm tons and CIMC estimates 1.4mm tons. The basic difference in estimates stems from mining since 11/25/87 and a different geologic interpretation. No amphiboles were observed in studies of the footwall, hanging wall or core samples.

C. Black Bear Mine

This mine is the youngest mine in the Ludlow complex and presently covers about 5 to 6 acres of open workings. The deposit is dominantly low grade talc with only 10 to

20 percent being considered as high to medium grade talc.

The orebody strikes about north-south with pinches and swells ranging from 70 to 300 feet thick. The deposit is complicated by folding, faulting and cut obliquely near it's center by a quartz diorite intrusive dike.

Amphiboles were observed in the core samples and the hanging wall at the Black Bear Mine but selective mining will avoid contamination.

Windsor Minerals Inc. estimates the in-place total geologic reserves are 3.06mm while CIMC estimates 2.2mm. Evaluations for the Black Bear, Frostbite and Clifton Mines were done by Mr. M. J. Keener and is attached as Exhibit IV.

D. Argonaut Mine

The Argonaut Mine was first worked as an underground operation using mechanical miners. The underground mine extends along strike for about 2,300 feet ranging from about 30 feet to 300 feet wide. The mine covers a verticle distance of about 200 feet. The present mine is being operated open pit and covers about 6 to 7 acres on the north end of the orebody.

This deposit is divided into the "main orebody" and the "east orebody". This consists of two talc limbs separated by a biotite-quartz schist which pinches to 10 feet at the southern end of this deposit. The deposit strikes about north 25 degrees east with dips ranging from about 30 degrees towards the east to 75 degrees towards the west.

The quality of this ore is approved by Johnson & Johnson for cosmetic products and presently 50 percent of the crude used at the west Windsor mill (25m per year) is being mined from the Argonaut Mine. Total high and medium grade talc appears to be about 35 percent of this deposit.

Windsor Minerals Inc. estimates in-place geologic reserves for all grades at 3.1mm tons while CIMC estimates reserves of 5.9mm tons. This tonnage estimate utilized 21 existing WMI cross sections by H. T. Suydam to determine extent and configurations of an open pit mine extending the length of the ore body.

Amphiboles were observed at the hanging wall contact between the talc carbonate and the biotite quartz schist in the open pit mine and in one core drill sample.

E. Frostbite Mine

The Frostbite Mine is south of the Argonaut Mine and has been worked almost completely underground with only some minor open pit development near the mine portal. This mine extended about 2,800 feet along strike and ranges up to 175 feet wide. The quality of the ore as determined from drilling records appears to have been better than 50 percent high to medium grade talc.

WMI estimates in-place total geologic reserves at 951m tons and CIMC estimates an open pit reserve of about 2.4mm tons (less mined out ore).

F. Clifton Mine

The Clifton Mine is the oldest and the southern most mine at this location. A drift just above Smokeshires Road was driven to intersect the Clifton ore body. After driving about 165 feet the heading was abandoned and the Clifton Mine was developed open pit. The drift is still open but does not present a hazard.

This mine is worked intermittently and is now filled with water.

The talc-carbonate of this deposit is more schistose and somewhat darker; but, appears to be dominantly a high to medium grade talc ore.

WMI estimates in-place geologic reserves at this mine to be about 643m and CIMC concurs.

Amphiboles have been observed in chlorite schist within the talc ore body and along the hanging wall contact between chlorite schist and the talc-carbonate schist.

G. Kelley Prospect

The Kelley Prospect was not visited; however, the potential shown on the cross section and aerial geology would exceed a geologic reserve of 1mm tons.

H. Vermont Reserve Summary In-Place Tons

<u>PROVEN AND PROBABLE</u>	<u>WMI (mm tons)</u>	<u>CIM (mm tons)</u>
Hammondsville Mine	4.8	4.8
Rainbow Mine	1.6	1.1
Black Bear Mine	2.6	1.7
Argonaut Mine	2.7	5.1
High to Medium Grade		1.4
Low Grade		3.7
Frostbite Mine	0.7	1.4
Clifton Mine	0.6	0.6
Kelley Mine	0.9	0.9
TOTAL PROVEN & PROBABLE	13.9	15.6
TOTAL POSSIBLE	2.0	2.1
TOTAL ALL	15.9	17.7

IV: MINES CALIFORNIA

The evaluation of the operating location in California was conducted by Mr. R. L. Weeks and his report is attached as Exhibit V.

Reserve estimates by WMI are felt to be conservative. Reserve estimates and land holdings are outlined below.

<u>LOCATION</u>	<u>ORE</u> <u>PROVEN & PROBABLE</u>	<u>FEE</u>	<u>LAND</u> <u>LEASED</u>
Red Hill Mine	400m	170 Acres	40 Acres
K. R. Prospect	280m	160 Acres	93 Acres
Soapstone Hill Prospect	0	35.7 Acres	-
TOTAL		365.7 Acres	133 Acres

No possible ore has been estimated by WMI for these deposits.

The ore at the Red Hill Mine strikes about northwest and dips about 55 degrees towards the northeast. The ore is a light colored talc-carbonate schist used toally for coarse industrial products.

IV: ORE GRADES & LONGEVITY

For the purpose of this study, we have considered the reserves as Industrial Ore and Cosmetic Ore. The data used for this evaluation is based dominantly on past logging or underground observations dependent upon the opinion of the observer and ore specifications at the time of the work.

Analytical work on cores was not available except for the upper 8 feet of the Rainbow Mine.

Cosmetic ore is present at all mines in varying amounts and is estimated to make up 4.1mm tons of proven & probable reserves of which 800m is from the Hammondsville Mine, 1.4mm from the Argonaut Mine, 600m from the Rainbow Mine, and the remaining 1.3mm tons from the Frostbite, Black Bear and Clifton Mines. The Johnson & Johnson approved crudes total 2.2mm or 54 percent of the estimated cosmetic ore equating to 28 years of reserves at 52m tons per year. This leaves an additional 1.8mm tons of unapproved cosmetic ore to be used for other cosmetic applications.

Industrial grades for all properties are estimated at a total of 11.5mm tons of proven and probable ore which at present production rates of 200mm tons per year at 80 percent recovery equates to about 46 years of reserves.

VI: COSMETIC ORE SOURCE

Presently WMI is obtaining 50% of their cosmetic ore from its Hammondsville Mine and 50% from the Argonaut Mine. The basic plan is to phase out the underground operation in favor of an open pit at the Argonaut Mine and possibly the Rainbow Mine if approved by Johnson & Johnson as a new source.

Presently CIMC estimates that 100% of the ore demand can be produced from the Hammondsville Mine using existing mechanical mining techniques for at least 7 years.

The Argonaut Mine is estimated to contain about 166m tons of open recoverable ore of which 66m is estimated to be cosmetic ore. With a projected 1988 demand of 52m tons per year only 1.27 years of ore is available.

The total proven and probable reserve of cosmetic ore is estimated to be 1.39mm tons or at 80% recovery and 52m tons demand per year about 21 years of mine life. Recovery of this reserve will require the removal of 2.4mm cubic yards of waste.

Present stripping programs of about 100m cubic yards per year MIGHT provide reserves for 100% production of crude ore from the Argonaut Mine; however, based on present data it would appear that 300m cubic yards of stripping will be required to provide a certainty of supply.

If the Rainbow Mine is approved as a source of ore an additional 100,000 tons of recoverable ore or about 2.0 years of additional cosmetic ore would be open for production.

The four options outlined below indicate the estimated cash cost for each scenario during 1989. All estimates are delivered to the West Windsor Mill and stripping costs are charged to cosmetic ore since industrial ore is open at other mines.

Option No. 1 - Operate the Hammondsville Mine at 50% (\$18.51/ton). Total cash cost = \$9.26 per ton.
Stripping at Argonaut (\$500m) = \$10.00 per ton.
Total cash cost = \$19.26 per ton.
Total cash at 50m tons = \$963,000.00 per year.

Option No. 2 - Operate the Hammondsville Mine at 100% for 3 years. Total cash cost = \$13.08 per ton.
Stripping at Argonaut (\$500m) = \$10.00 per ton.
Total cash cost = \$23.08 per ton.
Total cash at 50m tons = \$1,154,000.00 per year.

Option No. 3 - Operate Argonaut at 100% and abandon the Hammondsville Mine. Abandoned Mine Cost at \$50m = \$1.00 per ton.
Stripping Argonaut at \$1.5mm = \$30.00 per ton.
Argonaut cost of ore = \$8.74 per ton.
Total cash cost = \$39.84 per ton.
Total cash at 50m tons = \$1,987,000.00 per year.

Option No. 4 - Operate Argonaut (\$8.74 per ton) at 50% and Rainbow (\$6.75 per ton) at 50% plus close the Hammondsville Mine at \$50m. Total cash cost = \$8.75 per ton.
Stripping Argonaut at \$500m = \$10.00 per ton
Total cash cost = \$18.75 per ton.
Total cash at 50m tons = \$937,500.00 per year.

In considering the four options, the approval of the Rainbow Mine would provide a slight edge over Option No. 1 and also provide the safety margin necessary to close the Hammondsville Mine. Without this approval of the Rainbow Mine, it appears that Option No. 1 is the most cost effective; however, the cost of Option No. 2 is not significantly different and without detailed mine plans for the Argonaut Mine or the Hammondsville Mine, a decision in favor of Option No. 1 or Option No. 2 would be premature and for the purposes of this study they will be classed as equal.

Additional core drilling will be required to develop a mine plan for the Argonaut Mine. This drilling is estimated to require an initial effort of 14 holes for a total footage of about 3,500 feet

at a cost of about \$60,000. This estimate includes 2 holes for the Rainbow Mine.

Discussions at WMI indicate the Hammondsville talc and the Argonaut talc produce an acceptable product without blending so the grades have been considered interchangeable for this study.

VII: SAFETY

All open mines were observed for problems requiring immediate attention, but few were found.

The Hammondsville Mine is quite sound and does not present any structural problems.

The open pit mines at Ludlow appear to be reasonably sound with the Rainbow Mine being the only concern in the near future. The south and west wall will require some benching within the next 2 years and this is estimated to require the removal of at least 125m cubic yards of rock at an estimated cost of about \$500m.

The Red Hill Mine in California requires immediate attention for the eastern highwall. CIMC estimates that about 44m cubic yards must be removed for an estimated cost of 122m in order to prevent failure and collapse (exhibit VI).

VIII: CONTRACTORS

Contractors are utilized at WMI only to do mine development work at the Ludlow Mines and perform road maintenance by Daniels Construction Company for the Ludlow Mines.

The Western Source Inc. contracts with Gary Bresseau Trucking of San Andreas, California to haul their ore from their Red Hill Mine 21 miles to the Toyon Mill.

IX: PROPERTY HOLDINGS AND ASSOCIATED LIABILITIES

Lands owned and leased by WMI are outlined on Exhibit VII as published by Johnson & Johnson in their offering memorandum of January 19, 1988.

Surplus land appears limited to the 311 acres Amsden Gravel Pit parcel, the 30 acre parcel at Gassetts and possibly 100 acres west of Route 106 at the West Windsor Mill.

The value of the Gravel Pit could be considerable as it is permitted to operate and the demand for building material never decreases. The other land is not expected to exceed \$1,000 per acre.

Specific liability concerns were visited on September 28, 1988 with Mr. Rodger Miller. These concerns consisted of some subsidence over the upper portion of the Hammondsville Mine, the sand backfill opening at the Hammondsville Mine, the tailings ponds for the West Windsor Mill, the Amsden Gravel Pit, the Clifton access drift, the dumps and sediment ponds for the Rainbow-Black Bear Mines, the sediment pond for the Frostbite Mine, the dump for the Argonaut Mine and the sediment pond for the Clifton Mine. Finally, we visited the site designated for sludge disposal from the town of Ludlow.

None of the areas visited appeared to pose any liability above that normally expected for a mining company.

X. ENVIRONMENTAL

The land use permits at WMI are in good order and will not pose problems for the operations. Evaluations of existing water discharges will be required prior to the 1991 review by state and federal agencies to be certain we can support what we are doing.

Below is a list of items outlined as areas of concern by Geomapping Associates, Ltd. (exhibit VIII).

1. Black Bear Mine discharge review by state water resource staff.
2. Determine water budget analysis and drainage basin review of Ludlow parcel for impact of intersecting high volume inflow of mine water.
3. Test mine discharge waters for heavy metal concentrations.
4. Plan of action for new pond construction or old pond renovating at Windsor plant site.
5. Determine potential septic site location prior to any plant expansion programs at the Windsor facility.
6. Protect Hammondsville settling ponds from effect of surface runoff and occasional high influx of sediments.

In addition, a new sediment pond will probably be required for the Rainbow-Black Bear sediment pond prior to 1991.

Tailing pond capacity at the West Windsor Mill appears to be good for 5 to 6.5 years before another pond is completed.

A detailed discussion or environmental considerations is attached as exhibit VIII.

XI: MINING EQUIPMENT

The primary mining equipment is generally in fair to good condition. Primary equipment at the three locations is outlined below.

Hammondsville Mine, Vermont

2 Mechanical Miners (Dosco)	1983 used
1 12 ton truck (DUX)	1986
2 10 ton truck (DUX)	1976 & 1977
1 5 ton truck (Getman)	1979
1 920 Cat loader	1974
1 LHD (Wagner) size not specified	1979

Ludlow Mines, Vermont

5 Mechanical Miners (Dosco)	
2 930 wheel loader	1984 & 1985
2 235 Cat backhoes	1985 & 1986
with hydraulic breaker attachments	
2 20 ton dump trucks	1988 & 1985

Red Hill Mine, California

2 Mechanical miner (Alpine)	
1 Mechanical miner (Alpine) salvage	

XII: IMPRESSIONS

During our 10 day visit to WMI, the following observations were made:

1. WMI deliberately keeps a very low profile.
2. WMI strives to work closely with local and state agencies.
3. WMI has prudently acquired buffer land around their operations to avoid or limit controversy with the public.
4. The supervisory staff appears to co-operate and work well with one another.
5. The union likes to gripe a lot; however, I believe this is the nature of the region and not indicative of any unfair practices.
6. All hourly employees encountered were friendly and appeared happy with what they are doing.
7. Good housekeeping is the rule and not the exception.
8. The operating practices of WMI appears planned by the

management and not established by the hourly workers. The operations appear efficient and cost effective.

The Windsor Minerals staff conducted our phase of the due diligence in an open, professional and truthful manner providing factual information with a minimum of conjecture.

XIII: CONCLUSIONS

- A. Reserves estimated by WMI are conservative for both California and Vermont.
- B. Amphiboles are present at contacts with the chlorite schist but selective mining can avoid contamination.
- C. The Hammondsville Mine can not be closed until additional reserves are qualified at the Rainbow Mine or uncovered at the Argonaut Mine.
- D. Reserves of Johnson & Johnson approved crude ore for cosmetic application total about 2.2mm in-place tons. Another 1.8mm tons of unapproved ore is available for other cosmetic applications.
- E. Cosmetic ore from the Argonaut and Rainbow Mines is considered interchangeable with the ore from the Hammondsville Mine.
- F. The mines are generally considered safe except for the Red Hill Mine in California, which, will require immediate attention to remove the eastern highwall at an estimated \$125m. In addition, the Rainbow Mine will require attention within the next two years for an estimated cost of \$500m.
- G. No significant liabilities other than normal mining liabilities exist on lands owned or leased by WMI.
- H. Surplus lands are limited to 311 acres at the Amsden Gravel Pit, 30 acres at Gassetts and possibly 100 acres west of Highway 106 west of the West Windsor Mill.
- I. The land use permits are in good order and do not pose operating problems. The Ludlow Mine area will probably require a sediment pond before 1991 and the tailings ponds at the West Windsor Mill will hold tailings for at least 5 years.
- J. The primary mining equipment at the two locations in Vermont and the California location are in fair to good condition.
- K. The operation of WMI appear well run and quite efficient. Operating practices appear planned to utilize men and equipment in order to optimize results.
- L. Stockpiles of crude are maintained at the Columbia Mill, West Windsor Mill and the Toyon Mill. Exact numbers will be established

at the time of sale.

M. No core drilling or crude ore testing will be required to complete this due diligence study; however, ongoing work will be required for the Argonaut and Rainbow Mines. Initial core drilling is estimated at \$60,000 to be conducted in 1989.

Crude ore testing programs to determine potential contaminants, such as arsenic, will be required for Argonaut or other localities as required.

N. Major capital investments for the mines appears limited to equipment upgrades.

E. H. Reade

EXHIBIT I

DUE DILIGENCE TRIP REPORT

On 9/20/88 RJP & EHR initiated due diligence at Windsor Minerals, Inc. We were assisted by Bob Goff, Dan Howard & Rick Suydam in our investigation of the Hammondsville Mine.

On 9/21/88 RJP & EHR was assisted by Dan Howard as we visited the Argonaut, Frostbite, Clifton, Black Bear and Rainbow Mines. That afternoon RJP & EHR met with M. Harrington, M. Cox and D. Cornette to discuss initial impressions and objectives.

On 9/22/88 RJP & EHR received Cost Data from Frank Hasty, Act 250 Data from Rose Buswell and additional mine data from Rick Suydam. During the P.M. RJP returned to the Hammondsville Mine to gather additional data. EHR logged Drill Cores from the Rainbow and Argonaut Mines. Lance Meade met with D. Howard at Ludlow to begin Environmental Studies.

On 9/23/88 RJP & EHR logged Drill Cores.

On 9/24/88 RJP returns to Montana and EHR continues Field Investigations of the Argonaut, Black Bear and Rainbow Mines.

On 9/25/88 EHR met with L. Meade to discuss mine planning for the Troy and Hamm Mines and then worked on Argonaut Cross Sections. MJK arrives 1:00 AM Monday.

On 9/26/88 EHR went to Burlington to work with R. Morris, E. Wisell, L. Demers and M. Chmielewski on the Troy Stone Contract. Also discussed mine planning at the Hamm Mine with RGM. Also MJK began mapping Black Bear, Frostbite and Clifton Mines at Ludlow.

On 9/27/88 MJK & EHR compiled data during the AM and logged core during the afternoon. Also EHR met with Bob Goff to discuss W.M.I. Jim Purdy of Geomapping Associates began Field Studies for Environmental Data.

On 9/28/88 MJK continued logging core and EHR visited the W.M.I. Land Holdings with Rodger Miller.

On 9/29/88 MJK continued field studies at the Ludlow Mines including two Grandfathered sediment ponds. EHR returned to Cartersville during AM and MJK returned to Sandersville during late PM.

In addition, Rick Weeks began work at W.S.I. on 9/28/88 and returned to Denver on 9/30/88.

EXHIBIT II

