



HISTORIC MINE SITES IN BRITISH COLUMBIA

By Lisa N. Barazzuol and
Gregg G. Stewart, PGeo

National Library of Canada Cataloguing in Publication Data

Barazzuol, Lisa N.

Historic mines in British Columbia

(Open File ; 2003-3)

Includes bibliographical references: p.

ISBN 0-7726-4865-4

1. Mines and mineral resources - Location - British Columbia. 2. Mines and mineral resources - Environmental aspects - British Columbia. I. Stewart, Gregg G. (Gregg Gordon), 1961- . II. British Columbia. Mining Division. II. Title.

TN27.B7B37 2002

622'.14 '09711

C2002-960232-7

VICTORIA
BRITISH COLUMBIA
CANADA

FEBRUARY 2003

EXECUTIVE SUMMARY

Mining has played a large role in the economic and social development of British Columbia for over 150 years. Over that time thousands of mineral deposits have been mined in the province. Many of these sites have been abandoned and their location and potential impacts are not comprehensively documented in government records. The principal concerns of these sites are environmental impacts to land and water-courses from acid rock drainage and metal leaching, and dangers to public health and safety presented by openings, shafts, tunnels and other underground workings that open to the surface.

In order to better understand the scope of the problem with old mine sites in the province, the Ministry of Energy and Mines undertook a program of fieldwork to document and characterize sites that showed indications of being problematic sites. These sites were identified through preliminary screening of available data in MINFILE¹ and through discussion with regional mine inspection staff. Fieldwork included inspecting over 60 sites across the province and documented deposit types, lithologies, mineralization, weathering characteristics of waste rock, mine infrastructure and water quality.

This report documents the work completed under this project in the 2000/2001 fiscal year. The results should be considered preliminary and are subject to change based on new information.

KEY FINDINGS

- Based on the definition of a historic mine site adopted by the project, there are approximately 1,887 historic mine sites in the province, primarily based on the data contained in MINFILE. (This number indicates sites in the province that do not have major *Mines Act* permits and where the production of mineral commodities has occurred historically).
- Of these, 1,171 sites are classified as mineral deposits known to have geoenvironmental characteristics with the potential for generating acid and leaching of metals.
- The 2000 field program included inspecting 62 sites, which accounts for approximately 3 percent of the identified historic mine sites in the province.
- Of these, approximately 6.5 percent are estimated to present potential environmental contaminants based on analytical water sampling results.
- Field visits are necessary to properly document location and adequately characterize a site regarding environmental and health and safety issues.
- Many sites are difficult or impossible to access due to their remoteness. This is compounded by the fact that road or trail access to historic sites no longer ex-

ists due to vegetative growth. These sites must be accessed via helicopter.

- Additional fieldwork is necessary before conclusive statements can be made regarding the status, risk and liability associated with historic mine sites in the province.

OPTIONS

- Provide funding for staffing and resources to continue to inventory historic mine sites in the province through a fieldwork program and office research.
- Provide for funding for staffing and resources for an enhanced project team to undertake fieldwork to continue to characterize historic mine sites in the province, undertake office research and develop appropriate legislation to help facilitate remediation of historic mine sites.
- Continue to work with the Mining Association of British Columbia and other resource agencies to further explore partnerships related to remediation of historic mines sites. This includes:
 - work-in-kind, expert advice and cost sharing;
 - investigate the development of “Good Samaritan” legislation with provisions for release of liability for individuals or companies undertaking remedial works at historic mine sites; and
 - consideration of tax relief for reclamation of historic mine sites.
- Develop programs to encourage re-mining of historic sites.

OTHER OPTIONS

- Focus efforts on known sites that are contributing to environmental degradation in the province. e.g. Britannia, Mt. Washington, Anyox.
- Consider government funded programs for historic mine site remediation.

ACKNOWLEDGEMENTS

Sincere thanks to the Mines Inspectors from the Regional Offices who facilitated the field inspections: Ken MacDonald (Prince George), Bruce Graff (Smithers), Steve Wuschke (Cranbrook), Steve Rothman (Kamloops) and Greg Carriere (Nanaimo). Gratitude is also extended to the Regional Offices for their assistance with transportation, especially the Prince George and Smithers offices, which provided ATV's and helicopter time respectively.

¹ MINFILE is a comprehensive database maintained by the Geological Survey Branch which documents over 12,000 known mineral occurrences in the province.

Thanks to Diane Howe for her advice and help with the project, particularly the water sampling program. Thank you also to Mike Fournier for his GIS magic and Donna Launay for scanning photos. Thanks par-

ticularly go to Janet Holland for the desktop publishing, which resulted in this valuable publication.

TABLE OF CONTENTS

<p>EXECUTIVE SUMMARY <i>iii</i></p> <p>INTRODUCTION 1</p> <p>PROJECT OVERVIEW 3</p> <p style="padding-left: 20px;">Phase 1 - 2000/01</p> <p style="padding-left: 20px;">Long Term Objectives 3</p> <p>BACKGROUND 5</p> <p style="padding-left: 20px;">Legacy of Mining in BC 5</p> <p style="padding-left: 20px;">Overview of Mines Act in BC 6</p> <p style="padding-left: 20px;">Historic mine Sites 7</p> <p style="padding-left: 20px;">Definition of a Historic mine Site 8</p> <p>METHODS: HISTORIC MINE SITES</p> <p>PROJECT 11</p> <p style="padding-left: 20px;">Site Seletion of 1,887 Historic Mine Sites 11</p> <p style="padding-left: 20px;">Fieldwork 19</p> <p style="padding-left: 20px;">Water Quality Program 12</p> <p>INSPECTION REPORTS 15</p> <p>SMITHERS REGION 17</p> <p style="padding-left: 20px;">Big Onion 17</p> <p style="padding-left: 20px;">Native (Lorraine) 19</p> <p style="padding-left: 20px;">Cronin 20</p> <p style="padding-left: 20px;">Red Rose 23</p> <p style="padding-left: 20px;">Rocher Deboule 25</p> <p style="padding-left: 20px;">Sultana 27</p> <p style="padding-left: 20px;">Emerald Glacier 29</p> <p style="padding-left: 20px;">Marmot (Montana) 31</p> <p style="padding-left: 20px;">Porter Idaho 32</p> <p style="padding-left: 20px;">Dunwell 34</p> <p>KAMLOOPS REGION 35</p> <p style="padding-left: 20px;">Wayside 35</p> <p style="padding-left: 20px;">Congress 37</p> <p style="padding-left: 20px;">Banbury 38</p> <p style="padding-left: 20px;">Dividend-Lakeview 39</p> <p style="padding-left: 20px;">Snowflake 40</p> <p style="padding-left: 20px;">Twin Lakes 41</p> <p style="padding-left: 20px;">Windpass/Sweethome 44</p> <p style="padding-left: 20px;">Homestake (Kamad) 47</p> <p style="padding-left: 20px;">Enterprise 50</p> <p>CRANBROOK REGION 53</p> <p style="padding-left: 20px;">Phoenix 53</p> <p style="padding-left: 20px;">Tremblay Tailings 55</p>	<p>Motherlode 56</p> <p>Jewel Lake Tailings 57</p> <p>Oro Denoro 58</p> <p>Emma 59</p> <p>Spitzee 60</p> <p>Gopher 61</p> <p>Second Relief 62</p> <p>Ymir Tailings 64</p> <p>Kenville 66</p> <p>Queen Victoria 67</p> <p>Kootenay Florence 68</p> <p>Hghland 69</p> <p>Canex Tailings 71</p> <p>Midway 72</p> <p>Cork Province 74</p> <p>Camborne 76</p> <p>Jackson 78</p> <p>Lucky Jim 80</p> <p>Slocan Sovereign 81</p> <p>Reno 83</p> <p>Unknown Mill near Sandon 85</p> <p>Unknown Workings on Idaho Peak 86</p> <p>Unknown Portal near Kootenay Florence 88</p> <p>Unknown adits on Monte Cristo Mt. 89</p> <p>PRINCE GEORGE REGION 91</p> <p style="padding-left: 20px;">Takla Silver (Lustdust) 91</p> <p style="padding-left: 20px;">Bralorne-Takla 93</p> <p style="padding-left: 20px;">Snowbird 96</p> <p style="padding-left: 20px;">Quesnel Quartz 98</p> <p style="padding-left: 20px;">Cariboo Thompson 99</p> <p style="padding-left: 20px;">Cariboo Hudson 100</p> <p style="padding-left: 20px;">Jim 102</p> <p style="padding-left: 20px;">Jane (Snowshoe) 103</p> <p style="padding-left: 20px;">Midas 105</p> <p style="padding-left: 20px;">Warspite 107</p> <p style="padding-left: 20px;">Canusa 109</p> <p style="padding-left: 20px;">Island Mountain 110</p> <p style="padding-left: 20px;">Cariboo Gold Quartz 112</p> <p>NANAIMO REGION 115</p> <p style="padding-left: 20px;">Lenora 115</p> <p style="padding-left: 20px;">Tyee 118</p> <p style="padding-left: 20px;">Richard III 119</p> <p style="padding-left: 20px;">Blue Grouse 120</p>
--	--

CONCLUSIONS AND RECOMMENDATIONS	123
REFERENCES	125
APPENDICES	
A. British Columbia Water Quality Guidelines	127
B. Water Quality Data	129
C. Map of Historic Mine Sites Inspected in the 2000 Field Season	131
FIGURES	
Figure 1. Main form of the Historic Mine Sites Database	8
Figure 2. Map of the 1,887 historic mine sites in British Columbia	10
Figure 3. Map of historic mine sites inspected in the 2000 field season. For a more comprehensive map, <i>see</i> Appendix 3.(in pocket)	12
PHOTOS	
Photo 1. Water sampling	13
Photo 2. Drainage flowing from the Big Onion adits, located behind Bruce	17
Photo 3. Downstream of the Big Onion adits	17
Photo 4. Native (Lorraine) caved portal and waste rock dumps. Drainage flows from the adit	19
Photo 5. Cronin lower portal. Note the adit drainage flowing over the dump	20
Photo 6. Cronin mill and tailings	21
Photo 7. Upper camp of the Red Rose mine. The site is a favoured backcountry destination	24
Photo 8. Drainage with malachite precipitate flowing from the 800 level portal, Red Rose mine	24
Photo 9. Rocher Deboule mill site	25
Photo 11. Emerald Glacier tailings. The workings are located on Mount Sweeney, located in the background	30
Photo 12. Marmot exploration camp	31
Photo 13. Porter-Idaho portal (unknown level). The drainage flowing from the adit was sampled	32

Photo 14. Dunwell 1200' portal. The drainage was sampled	34
Photo 15. Wayside adit	35
Photo 16. Congress adit (background). The drainage from the adit is draining from a small pipe, located below the tracks	37
Photo 17. Oxidized waste dump at D ividend-Lakeview	39
Photo 18. Snowflake adit	40
Photo 19. Open, flooded shaft near the glory hole at Twin Lakes	41
Photo 20. Twin Lakes mill	42
Photo 21. Sweethome dump and decaying wooden structure (tram?)	44
Photo 22. Windpass portal and drainage	45
Photo 23. Homestake (Kamad) partially flooded upper adit. Homestake Creek flows beneath the bridge leading to the portal.	47
Photo 24. Homestake (Kamad) lower adit. Note white salts in front of the adit	48
Photo 25. Enterprise mill foundations	50
Photo 26. The partially revegetated Enterprise tailings facility (across the road). Dump is in foreground	51
Photo 27. Phoenix tailings, tailings pond and dumps. The workings in the background include an open pit	53
Photo 28. Tremblay tailings facility	55
Photo 29. Motherlode flooded open pit	56
Photo 30. Jewel Lake tailings	57
Photo 31. Oro Denoro adit	58
Photo 32. Stope at Emma	59
Photo 33. Drainage from Spitzee adit	60
Photo 34. Portal backfilled with a culvert in place at the Gopher mine site. The drainage was sampled	61
Photo 35. Waste rock dump and oxidized tailings impoundment	63
Photo 36. Ymir tailings impoundment on the Salmo River	64

Photo 37. Kenville tailings	66	Photo 40. Collapsed tram load out station at Highland mine site.	70
Photo 38. Queen Victoria stope	68	Photo 41. Pond at toe of the Canex tailings	72
Photo 39. Mine drainage from Kootenay Florence adit. The portal was backfilled and 3 culverts installed	69		

