

**Flin Flon and Creighton**

# **Green Project News**

**Volume 2, Issue 1**

**April, 2002**

## **Introduction**

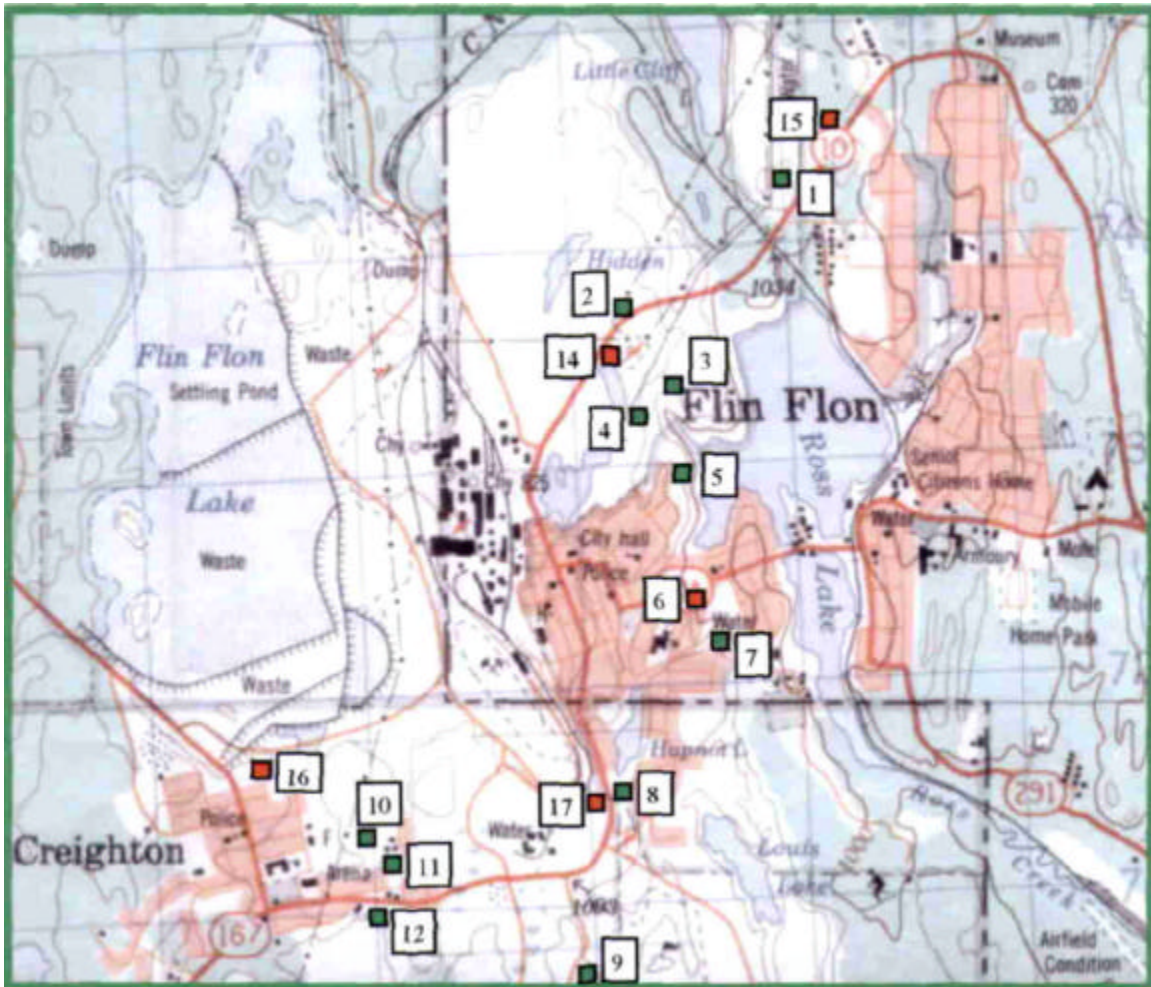
- We have successfully completed the second year (2001) of an initial five-year community-based plan.
- Our purpose is to accelerate the re-vegetation of barren areas in and around our communities by the application of crushed limestone.
- Because of the ruggedness of our terrain, it is not feasible to do the work by machine, so we use people-power, namely students from local schools, and adult volunteers.

## **Our Partners**

We gratefully acknowledge that our project has been made possible through the generosity of our partners. Major funding for the work in 2001 came from Manitoba Conservation - Sustainable Development Innovation Fund, Manitoba Hydro - Forest Enhancement Program, and Hudson Bay Mining and Smelting Company Limited. The City of Flin Flon and the Town of Creighton hauled the limestone to the areas to be treated. Flin Flon School Division (and its Youth Mentor Program), and Creighton School Division supplied the bulk of our workforce. Manitoba Industry Trade and Mines provided us with maps and air photographs, and Flin Flon and District Environment Council helped us with project administration. Home Hardware donated supplies. The organizational background to our project, and our procedures are explained in Appendix 1.

### Area Treated and Personnel

During a field season lasting from May 1 through October 18 2001, 140 yards of crushed (dolomitic) limestone was spread in ten areas for a total of 4.94 hectares (12.21 acres). The total area covered in our first two years is 9.44 hectares (23.3 acres). The map shows the areas treated to date, and to be treated in 2002.



Areas treated in 2000 and 2001 (green), and to be treated in 2002 (red).

- 1: Balsam, 2: Rock Cut, 3: Second Valley North,
- 4: Second Valley West, 5: First Avenue, 6: Hiawatha, 7: Grandview,
- 8: Hapnot, 9: Phantom, 10: Knight North, 11: Knight,
- 12: Pizza, 14: Pond, 15: Esso, 16: Fourth Avenue,
- 17: South Main.

The work was carried out by 844 individuals during 43 sessions (704 students in 30 sessions, and 140 members of the general public in 14 sessions). Some of our workers are shown here - on the left are McIsaac grade 4 students at work in the 'Balsam' area, to the right is a group of volunteers after an evening's work at the 'Pizza' area.



### Planting and Seeding

Although we are depending primarily on nature to do the re-vegetating for us, we have, following the advice of our consultant, Professor Winterhalder, set up small 'plantations' in each of the ten areas we have treated to date. In these, we put in four spruce seedlings, one alder (a nitrogen fixer), and one pine or tamarack. These were taken from the right-of-way along the Kisseynew Lake road, and put in during a very wet spell in September. All the seedlings (apart perhaps from the pines – which tended to yellow) seem likely to survive. Depending on results, we may put in more seedlings in the future. In August, a golf club member spread poppy seeds from her garden on part of our 'Phantom' area. In late September and October, acorns and some white ash seeds (from trees in residential neighbourhoods in Flin Flon – and from red oaks from Sudbury) were put into each plantation. In November, dwarf birch seeds from Sudbury were spread in the 'Second Valley' area. In February 2002, volunteers from Saskatchewan Environment and Resource Management spread 2.5 kilograms of jack pine cones in the 'Knight North' area. Grass seed supplied by the City of Flin Flon was applied to two of our areas in October 2000. There was enough seed left over to treat a quarter-hectare in May, and another in September 2001.

## New Growth in Treated Areas

Initially, most of the areas treated had no vegetation, or only a few thinly scattered tufts of the metal-tolerant grass *Agrostis capillaris*, and a few small stunted 'relict' poplars, birches, and willows. In the Report of Activities for 2000, we indicated that seedlings of Manitoba maple, birch, willow, and poplar had appeared by late June through August in areas that had been treated in May and June of that year. Grass from seed which had been spread in the 'Hapnot' and 'Knight' areas in October 2000 had germinated by early May of 2001, and came on strongly through the summer. Some flowering plants (such as trefoil and mustard) that appeared in the 'Hapnot' area in August were probably part of the seed mix, however Bucknell's geranium appeared in some areas that had not been seeded. *Agrostis* became much lusher, and thickened out significantly in areas that had been treated.

Very few of the maples that germinated in 2000 survived the winter, and there was only minor germination of new maples in 2001. The over-winter survival rate of birches, poplars, and willows from 2000 was very good, and by September 2001, some of these were more than half a metre high. In areas treated in May and June 2001, new seedlings of woody plants (including a few spruce) were noted by early August. The picture to the left, taken in August 2001, shows new growth birch and willow in the 'Knight North' area (which had been treated two months earlier). The picture to the right, taken in August 2001, shows new growth spruce in an area treated in 2000.



Although all areas treated prior to mid-summer 2001 show new growth, some areas have shown a more positive response to the treatment than others. The most spectacular results to date have been in our more southerly areas, particularly 'Knight' and 'Hapnot'. We were however encouraged to find

seedlings of birch and willow in the 'Balsam' and 'Second Valley' areas north of Flin Flon by late summer and fall of 2001.

### Technical Support

Botanist Professor Keith Winterhalder from Sudbury spent four days in August 2000 checking over our project areas. He made an inventory of plant types, and collected soil samples for analysis. He sent us a technical report on his findings in April 2001 (a copy is available for inspection at Flin Flon Public Library). A follow-up visit was made in August 2001, and we expect an update report shortly. The science behind our project is explained in Appendix 2.

### Photography

In 2000 we took 117 photographs, and in 2001 we took 229. These will serve as a permanent record of the project, and will be used for public relations purposes. Pairs of 'before' and 'after' pictures taken a year apart already illustrate in a dramatic way how effective the limestone treatment is proving to be, for example, the picture on the left taken in June 2000, shows Heather Acres admiring a Manitoba maple seedling in the 'Knight' area one month after treatment. On the right is the same scene in July 2001.

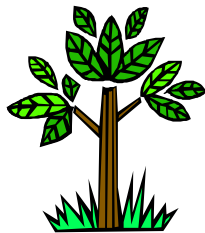


## Public Relations

A number of illustrated articles in the daily 'Reminder', and the weekly 'Gazette' kept our project in the public's eye during 2001. Our activities were also covered by our local radio station and cable TV channel. An article on our project by Avery Ascher, a freelance writer from The Pas, was published in the spring 2002 issue of 'Alternatives Journal' - a national magazine with an environmental/community action focus, published by a group affiliated with the Faculty of Environmental Studies at the University of Waterloo. A PowerPoint slide show was created in the spring, and has been used as the basis of presentations to a number of local groups. Our web site is at [www.ffsd.mb.ca/greenproject/](http://www.ffsd.mb.ca/greenproject/). Our first newsletter - Green Project News - came out in May 2001, and copies were distributed to stakeholders and other interested parties. Informational signs have been created, and these will be set up in the 'Second Valley', 'Hapnot', and 'Knight' areas in the spring. Posters on the project will shortly be distributed to schools, the public library, and to the city and town halls. Copies of our reports and newsletters are available for viewing at the library.

## Future Plans

We plan to treat five hectares in each of the remaining three years of our current five-year plan. In 2002, we plan to extend coverage in the 'Second Valley', 'Grandview', and 'Phantom' areas, and to start work in the 'Esso', 'Pond', 'Hiawatha', 'South Main', and 'Fourth Avenue' areas (see the map on page 2).



### Additional Information

Please contact any of the following committee members:

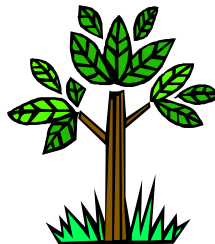
Heather Acres: (204) 681 3414 (work) or 687 4319 (home),  
E-mail: [heathera@mb.sympatico.ca](mailto:heathera@mb.sympatico.ca)

Dave Price: (204) 687 4317 (work and home),  
E-mail: [dpprice@mb.sympatico.ca](mailto:dpprice@mb.sympatico.ca).

or contact our technical consultant :

Professor Keith Winterhalder: (705) 674 7905,  
E-mail: [wintergreen@sympatico.ca](mailto:wintergreen@sympatico.ca).

also, check out our web site at: [www.ffsd.ca/greenproject/](http://www.ffsd.ca/greenproject/).



## **APPENDIX 1: Organizational background and procedures**

In the late 1960s and early '70s, botanists at Laurentian University – among them our technical consultant, Professor Keith Winterhalder – found that the application of crushed limestone to the barren acidified and metal-contaminated soils around Sudbury led to the regeneration of vegetation. A major program of limestone application since then has led to a transformation of the Sudbury landscape.

In the early 1990s, Rena Gummerson and later Cathy Hynes of the Creighton / Denare Beach Economic Development Committee contacted Professor Winterhalder to see if he might be interested in helping to set up a revegetation program in our area. This resulted in his first visit up here in 1994. In 1999, Heather Acres and Clarence Pettersen of Flin Flon School Division thought that revegetation would be a good project for their Youth Mentor Program. Hudson Bay Mining and Smelting Co., Limited and the Flin Flon Economic Development Commission provided funding to bring Professor Winterhalder up here in October 1999. He spoke to a number of groups and generated a high level of interest and enthusiasm. As a result, the decision was made to establish the Green Project. A committee was formed, and planning meetings were held in March and April 2000. Through the generosity of McKeen's Trucking, who donated 130 yards of crushed limestone, we were able to start work in May 2000. Since then, the Green Project has become an affiliate of the Flin Flon and District Environment Council.

Present members of the committee are: Flin Flon School Division – Youth Mentor Program, Creighton School Division, City of Flin Flon, Town of Creighton, Flin Flon and District Environment Council, Hudson Bay Mining and Smelting Co., Limited, Manitoba – Industry Trade and Mines, Manitoba Conservation, and Saskatchewan Environment and Resource Management.

The first stage in planning our field operations involves checking out maps and air photographs. From these we get a general idea of which areas might be suitable for treatment. We then walk over the ground, and once we decide on our areas, we mark out 50 x 50 metre squares. The crushed limestone is then trucked in and dumped as close as possible to the squares. We mark out the squares with rope. Our volunteers fill their pails at the dump, then spread the limestone in a strip between a pair of 'moving ropes'. As each strip is filled, we move the ropes and continue in this way until the whole square is covered.



## APPENDIX 2: Environment and Science

In and around the communities of Flin Flon and Creighton<sup>1</sup>, there are large areas with little or no vegetation. Old tree stumps show that these areas were once forested.

In the 1920s and '30s when our communities and the smelter complex were first established, many trees were cut for fuel and lumber. Others were cut to make fire breaks, or were burned in forest fires. As production from the Flin Flon and other mines increased, so did the amount of sulphur dioxide smoke from the smelter. The smoke is harmful to vegetation so the forest was not able to recover. The increasing acidity and metal content of the soil meant that only a very few hardy types of plant were able to survive. As the plants died, the thin topsoil washed away.

High levels of metals such as copper and zinc in the soil are toxic to plants<sup>2</sup>. This toxicity is accentuated by acidity, which makes the metals more soluble, and therefore more accessible. When seeds germinate in metal-contaminated soil, growth stops immediately on contact with the toxic soil solutions. The carbonate ion in the limestone tends to neutralize soil acidity, thus making the metals less soluble, and less toxic. Another component of the limestone, calcium, contributes to reducing soil toxicity by competing with zinc ions for uptake by plant roots. Calcium ions also have a strengthening effect on the plasma membranes in the root cells. This membrane is responsible for determining what is absorbed by the roots.

Since the early 1970s, Hudson Bay Mining and Smelting Co., Limited has spent hundreds of millions of dollars to improve technology at the smelter complex, with the result that emissions of sulphur dioxide and metal oxide dust are now significantly reduced. The natural vegetation is slowly starting to recover. Our project will accelerate this recovery.

---

<sup>1</sup> Flin Flon and Creighton are situated on either side of the Manitoba/Saskatchewan boundary about 600 kilometres north of the Canada/US border. A large copper-zinc ore body was discovered at Flin Flon in 1915, and production – which started in 1930 – continues to the present day.

<sup>2</sup> This paragraph is from information supplied by Professor Winterhalder.

