Weed Awareness for Reclamation – Info Sheet

Preventing introduction and spread of weeds on reclamation sites

Alberta Environment and Parks
Alberta Agriculture and Forestry

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Caveat

- **Weed Awareness for Reclamation**
  - is not comprehensive,
  - is for information purposes only, and
  - will be updated periodically.
  - In the event of discrepancies between this document and existing policies and legislation, the latter shall take precedence.

- For information on weeds and reclamation, refer to:
  - *Weed Control Act*
  - Weed Control Regulation
  - 2010 Reclamation Criteria for Wellsites and Associated Facilities
Outline

- Weed Control Act
- Planning and Awareness
- Weed Surveys
- Weed Seeds
- Preventative Measures
- Amendments
- Maintenance
- References
Participants to Date

- Alberta Environment and Parks
- Alberta Agriculture and Forestry
- Alberta Transportation
- Agriculture Service Boards
- Oil and gas industry
- Special Areas Boards
Why are weeds a concern?

- Weeds are one of the most common stakeholder complaints for operating industrial sites and those being reclaimed.

- Economic impact of weed control
  - Cost of weed control
  - Impacts of not controlling weeds

Canada Thistle
Weed concerns in reclamation

- Refusal of reclamation certificates
- Weeds invading natural landscapes
- Weeds interfering with end land uses
- Loss of integrity of native ecosystems
- Loss of productivity
- Negative impacts on biodiversity
- Potential impacts for wildfire risks

Scentless Chamomile
Weed Control Act
What is a Weed?

- There are regulated and non-regulated weeds

- A regulated weed is a plant designated by the *Weed Control Act* as a **prohibited noxious** or **noxious weed**, which includes all parts of the plant, including its seeds.
Weed Control Act: Part 1

• Weed control is a legal requirement.

• A person must destroy a prohibited noxious weed that is growing on land the person owns or occupies:
  – growing parts must be killed,
  – reproductive mechanisms must be rendered non-viable.

• A person must control a noxious weed that is growing on land the person owns or occupies.
  – control the growth or spread, or destroy.
Weed Control Act: Sections 4 and 5

• A person shall not use or move any thing that, if used or moved, might spread a noxious weed or prohibited noxious weed.

• A person shall not deposit or permit to be deposited noxious weed seeds or prohibited noxious weed seeds where they might spread.
Operator Liability

• Operators or lease holders are the **occupants** as defined in the *Weed Control Act*.

• Occupants are liable for weed issues.
What is a Problem Plant?

- Problem plants might not be designated under the *Weed Control Act*.
- They might be plants that have negative impacts in a location
  - Introduced forages like crested wheatgrass, smooth brome and timothy may be desirable in one area but problem invaders in some natural landscapes or on reclaimed sites.
- Whether a plant becomes a problem depends on the plant’s habits and the climate and soils in the area.
Planning and Awareness
Weed Awareness Saves Time and Money

- Prevent weeds from being introduced
  - more cost effective than trying to control them after they are established.

- Every year industry spends millions of dollars on weed control.

- Simple precautions can be taken up front during planning, construction, and reclamation activities
  - saves time and money.
Case Study Example: Downy Brome

- A pipeline company purchased straw for crimping on well sites in southern Alberta.

- Downy brome (a noxious weed) was contained in the straw.

- The cost to the company was $33,000/ha to minimize new seed production and $1100/ha in ongoing maintenance.
Planning to Avoid Weeds

- Companies should communicate with:
  - The landowner and/or occupant
  - The weed inspector, agricultural fieldman, and reclamation inspector for the area
Pre-Site Assessment Interview

• Questions to ask
  – What is the weed history on the site and surrounding area?
  – What weeds have been managed in last three years?
  – Are there any weeds of concern on neighbouring fields?
  – What weeds are of concern in the area?
Questions to Ask During Planning Phase

• What is the current land use?
• Are special crops being grown?
  – e.g.: certified, organic?
• Sensitive landscapes
  – Native stands, wetlands
• Are herbicides allowed?
Questions for Landowners and Occupants

• Who are my contacts if problems arise?
• How will equipment be cleaned?
• Does the company have an active weed control program?
• Will you notify me if there is a change in location/route?
• Will I get a copy of the seed analysis reports?
• How will the lease holder control weeds?
  – Will the lease holder provide a report or any notification?
Communication with Agricultural Fieldmen and Public Land Managers

- What weeds have been documented in the area?
- What new weeds are a concern?
- What control methods have worked well?
- Has the landowner effectively controlled weeds?
- What problems have other companies had?
Assistance for Landowners and Occupants

- Farmers’ Advocate Office
- Surface rights groups
- Agricultural fieldmen
- Alberta Agriculture and Forestry
- Alberta Environment and Parks
  - reclamation inspectors
  - public lands/rangeland inspectors.
Weed Surveys
Pre-Activity Weed Survey

• Prior to commencing an activity
  – the operator should conduct an on-site inspection for all listed weeds; the landowner/occupant should sign the survey form
    • The survey should include those weeds of concern in particular municipalities.

• Copies of the pre-activity weed survey should go to:
  – the landowner/occupant and the municipality
  – if the activity is on public lands, the Public Lands program with Alberta Environment and Parks.
Pre-Activity Weed Survey: Why do it?

• Important documentation when conflicts arise
  – e.g. what was brought in vs. what was already there.

• A benchmark for companies conducting activity.

• Important step in identifying sources of weeds
  – e.g. what might companies be bringing to the next site?
Weed Survey: Why do it?

- Off-site concerns become evident.

- Updates during the life of operations can save money and time
  - especially on long term projects where third party impacts are likely.
Weed Survey Methodology

- Survey for any weeds listed as prohibited noxious or noxious in Alberta’s *Weed Control Act*
  - Check with the municipality for additional weeds

- Also obtain a list of local problem species from the municipal district or county being surveyed
  - Talk to the agricultural fieldman
Weed Survey Methodology: Effectiveness

• Use qualified personnel to do the survey
  – hire an appropriate environmental contractor if necessary.

• Use the Alberta Agriculture and Forestry **Weed Seedling Guide** and/or the **Identification Guide for Alberta Invasive Plants** to recognize early stages
  – Surveys may be easier when plants are in bloom and are easily recognized
  – Control methods are usually easier and more effective at early stages.

• Report findings in a timely manner to agriculture fieldman or municipal district/county weed inspector.
Weed Survey Info Sheet

- Record weed information with a survey sheet or app
  - Track site locations and land use type(s)
  - Track weed locations
- Keep a history
  - Weed types found and extent of infestation
  - Control methods used
- Report regulated weeds
  - Weed inspector and/or agricultural fieldman
Weed Surveys: What to Record

- What weeds are present?
  - Location(s) of weeds and extent of infestation.

- Growth stage(s) and species.

- Control action(s) taken
  - type and timing
  - if herbicide is used
    - record type, amount and weather conditions.

Young Scentless Chamomile (pre-flowering)
Weed Seeds
Weed Seeds in the Seed You Buy

• “Canada No. 1” or “certified seed”.
  – only guarantees the variety (genetic) purity,
  – but NOT that the seed is weed free!!!

• Common seed can be cleaner than certified seed.

• The only way to ensure that weeds/problem plants are not present:
  – get a “Report of Seed Analysis”
  – keep it on file (due diligence)
Example: Scentless Chamomile in Canada No. 1 Alfalfa

• *Canadian Seeds Act* allows 5 Scentless Chamomile (a noxious weed) seeds per 25 grams of seed (Canada No. 1).

• Seeding at 10 lb./acre (11.2 kg/ha)
  – Yields 900 Scentless Chamomile seeds/acre, or 2240 seeds/ha.

• Checking the seed analysis report can prevent this from happening.
Report of Seed Analysis

• Ask for a “Report of Seed Analysis” for each seed lot:
  – review them before you buy
  – refuse unsuitable seed lots
  – prevent problems before they can occur!

• The person purchasing seed needs to know what to look for
  – use qualified personnel.
Report of Seed Analysis: Issues

• It is not always possible to buy a completely weed-free seed lot
  – but, you can purchase one that does not contain weeds or plants of concern.

• Watch out for “other” potential problem plants:
  – agronomic species, and
  – weeds of concern.

• Reject or refuse a seed lot for planting if it will create issues.
Report of Seed Analysis: Things to look for

• Numerical info:
  – Lot number, or seed sealing number
  – Crop certificate number
  – Seed testing certificate number

• Crop info:
  – Crop Kind
  – Crop Variety

• Germination: percentage of seeds that grow
  – Hard Seeds: pertains to legume seeds, but still included in germination.
Report of Seed Analysis: Things to verify

• Pure Living Seed (PLS), or Pure Live Seed
  – Seed that is pure and viable
  – TZ: “tetrazolium test”, to determine percentage of viable seed.

• Signature and stamp
  – from accredited seed analyst.

• Place and Date of analysis.
Example: A Preventable Problem

- 22 kilometers of seismic line were seeded in the M.D. of Greenview
- A “Forestry Mix” was used
  - Scentless Chamomile was an impurity
- One landowner seeded 0.8 km with a different mix
  - That 0.8 km stretch of land stayed clean
  - everyone else is still picking and spraying Scentless Chamomile.

Lesson: Ask for a “Report of Seed Analysis” *before* purchasing seed!
Preventative Measures
Clean Equipment and Materials

• All equipment and materials must be properly pressure cleaned when moving to a new area
  – check with municipalities about weeds of concern

• Pay attention to less accessible parts or areas
  – e.g., tracks, belly pans, lugs, between tandem wheels

• Document the area where cleaning occurred
  – any weeds that come up can be easily controlled
  – record the location
Wash Station

• Many types exist:
  – Portable, temporary, permanent, jobsite
  – Sprayers, bays, drive-thru, industrial.
Storage Areas

- Make sure equipment and materials are from clean storage areas
  - items like pipes, boulders, fill material, tanks
  - talk to suppliers and contractors
Soil Movement

• Proper soil conservation eliminates need to haul topsoil
  – keep soils as close to the original location as possible

• Do not import topsoil with weeds
  – Note: fence line and ditch soils should be carefully inspected for weeds before use

Canada thistle problem following storage of weedy soil on cultivated land.
Mats – Rig Mats, Swamp Mats

- Use clean mats
- Wash mats before moving to new locations
- Ensure mats are free of soil, weed seeds, and propagules
- Prevent weeds from entering sites
Amendments
Using Amendments

• If suitable topsoil is unavailable, the soil quality on the site can be improved by using appropriate weed-free amendments and cropping practices
  – e.g. certified weed-free compost and green manure

• Choose and use amendments carefully
  – Get recommendations from an Agrologist

• Ensure amendments do not encourage weeds
  – Do not import amendments with weeds
  – Some amendments could favour weed growth
Annual Crops vs. Crimping

- Planting an annual crop (using clean seed) is a safer choice than crimping straw for weed and erosion control

- Use material from the same landowner if possible or get them to recommend a source
Straw Crimping

• Check fields where the straw is coming from
  – on large projects contract the straw production with a reputable grower

• Straw can sometimes be obtained from a certified annual seed crop grower

• On public land, get sources approved with appropriate regulatory personnel
Maintenance
Soil Stockpiles

• All stockpiles with maintenance needs should have side slopes no steeper than 4:1

• Revegetate with species that provide erosion control and are competitive with weeds
Staging Areas

• Remove small mounds of gravel, soil or debris that can impede maintenance such as mowing or spraying

• Level or back blade areas before moving equipment away from the location

Leafy spurge infestation
Regular Inspections and Control

- Make sure inspection personnel have the authority to deal with weeds immediately
  - Appropriate control measures to be used by qualified personnel
  - E.g. herbicides can only be applied by certified applicators
- Inspect operational areas twice during the growing season (spring and late summer)
  - Check for noxious weeds and other unwanted vegetation
- Weed control must be done in a timely manner
Issues with Residual Herbicides

• Do not apply residual herbicides more than once every three years

• These products accumulate in the soil
  – Can prevent the growth of desirable vegetation
  – Often contaminating soil for many years
  – Covering contaminated soil with clean soil will not help
  – Contaminated soil may require disposal or treatment

• If shallow-rooted weeds germinate after a residual herbicide has been used, use a non-residual herbicide to control them
Special Precautions for Native Vegetation Stands

- The use of non-selective herbicides can damage desirable species
  - E.g. native wildflowers and plants

- Picking, mowing, or spot spraying (with selective herbicides)
  - Preferred control methods in areas revegetated with native species
  - Usage and timing depends on weed types and native species type

- Care must be taken not to mow stands too low (<15 cm) to avoid damage to native plants
Natural Recovery – No Seed Areas

- Only use this approach where weed invasion potential is low

- Annual weeds (e.g. stinkweed) usually disappear in a few years and can be mowed if very competitive

Wild white geranium
References

- Crop Protection ("Blue Book", annual publication, AAF), Alberta Agriculture and Forestry, AGDEX 606-1.


- Practical Crop Protection ("Green Book"), Alberta Agriculture, AGDEX 606-3.

References, cont.


- Weeds of the Prairies, Alberta Agriculture, AGDEX 640-4.

- Weeds of the West, Tom D. Whitson. Newark, CA: Western Society of Weed Science in cooperation with the Western United States Land Grant Universities Cooperative Extension Services (and the University of Wyoming), 1996.

END