

# **Restoration of Well Sites and Associated Facilities on Cultivated Lands in Saskatchewan**

**Saskatchewan Petroleum Industry /  
Government Environmental Committee  
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## **Introduction**

The restoration of abandoned well sites and associated facilities in Saskatchewan is the responsibility of each oil and gas producer. The intent of this document is to provide oil and gas producers with restoration guidelines which will ensure consistent quality of restoration throughout the industry resulting in reclaimed sites which are clean, stable and have little risk of impaired capability.

In the document, “decommissioning” refers to the removal of all facilities from a well site; “remediation” refers to the decontamination of the soil or water; and restoration refers to the physical reclamation process involving recontouring, replacing topsoil, and re-vegetating to restore the surface of the land as near as possible to the original conditions.

It is important for industry to recognize that restoration at the end of the day is impacted by construction practices, by operational management during the life cycle of the site and by the practices used during the decommissioning, remediation and restoration processes. Soil conservation, prevention of contamination and timely remediation of problems during the life of the site will result in easier, more successful restoration at the end of its productive life.

## **Operational Considerations**

Successful restoration of a site may be largely determined by the practices used to select and construct the site. If the front-end work is done well restoration will be easier and generally less costly. The following points should be considered:

A qualified construction/restoration foreman should be present at the time of the survey to judge the value of moving a proposed wellcenter (if geology permits) or to use directional drilling in order to avoid a well site in a potentially high risk area for future restoration (for example steep slope, drainage course or high water table areas). At this time, a pre-site assessment can be done to characterize the well site conditions for post-restoration comparison if adequate off-lease controls may not be available.

During construction, it is important that soils must be handled properly. Two lift stripping is recommended where there are distinct A and B soil horizons. Care should be taken not to mix the soil horizons when stripping and storing the soils. It may be necessary to shut down in wet or soft conditions where the upper soil horizons will not bear the weight of the machine that is stripping the soil, resulting in churning up the lower horizon into the soil being stripped. There should be adequate room to store the stripped soils separately, without mixing, preferably on a portion of the lease not subject to heavy traffic and risk of contamination. When stripping under frozen conditions, several shallow passes with the cat rippers will help to prevent mixing. Topsoil should not be used for fill in berms, approaches or roadbeds.

When the site is operational, weeds should be kept under control, and salvaged soil should be stabilized. It is important that spills be cleaned up immediately.

## **Surface Restoration**

### **Landscape Issues in Well Site Restoration**

The site will be similar to the original landscape. There should be no impairment to travel across the site with farm equipment. Site drainage should be consistent with the original patterns, directions and capacity or be compatible with the surrounding landscape. Facilities left in place should not negatively impact drainage. For sites that have been developed in temporary or semi-permanent wet areas, there may be reason not to return the site to its original state, as the site may have improved agricultural capability.

The site will be stable, with no visible evidence of slope movement, slumping, subsidence or significant tension cracking. Surface gravel and rocks should not exceed that found on adjacent land. No industrial or domestic debris will be present.

### **Soil Management Issues in Well Site Restoration**

If topsoil has been salvaged and stored onsite, it will be replaced on the site and distributed evenly across the site. It is desirable to avoid mixing topsoil with other materials. However, if little or no topsoil is available onsite, a suitable rooting zone will be “constructed” using soil materials and organic amendments (manure, straw, compost, etc). Where possible, organic amendments should be weed free to prevent introduction of new weed species to adjacent lands.

Measures will be taken to mitigate compaction. Soil texture should be similar to that found off lease. Gravel and rocks within the soil profile will not exceed that found on adjacent land.

The end result of the soil management will be a site which is stable, farm-manageable (farmable with the same equipment, number of operations, fertilizer, etc) as the adjacent land.

Indicators of successful restoration:

- establishment of a suitable depth of topsoil or rooting zone
- texture similar to that found off-site
- no restriction to rooting or movement of water through the re-established soil profile

### **Vegetation Issues in Well Site Restoration**

The reclaimed site will be capable of supporting vegetation. Revegetation may be carried out by the operator, or may be left to the landowner. Revegetation is defined as establishment of a self-sustaining vegetative cover on the reclaimed land surface. The vegetative cover will be compatible with surrounding species.

The objective of successful revegetation on reclaimed cultivated lands will be a crop condition equal to adjacent undisturbed crop lands in the third crop season.

The objective of successful revegetation on reclaimed range, pasture and hay lands will be a vegetative cover equivalent to adjacent undisturbed land after three full growing seasons.

Vegetation will be sustainable under reasonable farm management. Weeds will be controlled during restoration and there will be no noxious weed present on the site.

Indicators of successful restoration:

- similar plant cover, height, density, vigour and/or productivity as adjacent land
- no extraordinary efforts (fertilizer, management, etc) required to manage the restored area
- weed population similar to that found off site

### **Documentation of Activities**

The activity on the site will be documented. Records of decommissioning, remediation and restoration work done and products applied shall be maintained by the company responsible for restoration. These records will be made available to new owners of the site if the property is sold and to appropriate regulatory agencies upon request.

### **Closure**

The operator is responsible to negotiate and undertake well site restoration to the satisfaction of the landowner or occupant. Occupant means a person or tenant, other than the owner, who is in actual and lawful possession of land.

If a satisfactory agreement cannot be reached, either party has access to an arbitration process administered by the Saskatchewan Surface Rights Arbitration Board. The Surface Rights Arbitration Board is governed by *The Surface Rights Acquisition and Compensation Act*, which was implemented in 1968. It is an Arbitration Board that is used as a last resort when a Landowner and an Oil/Gas or Potash Operator are unable to reach an agreement on their own. The Board holds Hearings very much like a Court of Law. Its Orders are binding and can only be appealed for two reasons -- jurisdiction or a point of law. The operator is strongly recommended to refer to *The Surface Rights Acquisition and Compensation Act* for any further information.

It is important for operators to know that just under one million acres of cultivated land in the province is held by the crown. On these lands *The Provincial Lands Regulations* apply in addition to the requirements of *The Oil and Gas Conservation Regulations*. These regulations require that the leaseholder follow *The Oil and Gas Conservation Regulations* in plugging and abandoning any well. As well, the leaseholder must be able to provide evidence that any pollutants are within acceptable levels on the lands used.

The leaseholder must provide and actively carry out a plan to restore the land surface to conditions existing prior to drilling.

Importantly, the leaseholder remains liable for the rent until restoration is complete.

As required in *The Oil and Conservation Regulations, 1985*, upon completion of well site restoration, the operator shall submit to Saskatchewan Energy and Mines, Petroleum Development Branch:

- a copy of the release from the landowner indicating that the operator has restored the surface to the satisfaction of the landowner; or
- a copy of the certificate from the Surface Rights Arbitration Board issued pursuant to subsection 56(2) of *The Surface Rights Acquisition and Compensation Act*.