CONSTRUCTION STANDARDS FOR ACTIVITIES IN WATERCOURSES AND WETLANDS

February 2020

This document was created by the PEI Department of Environment, Water and Climate Change in accordance with the Watercourse and Wetland Protection Regulations (Sections 4 & 5) to set out the standards that must be met by contractors licensed under the Regulations to complete certain activities in watercourses, wetlands and buffer zones without a Watercourse, Wetland and Buffer Zone Activity Permit.

GENERAL STANDARDS

The general standards are to be used for all of the subsequent specific activities undertaken by contractors licensed under the Regulations to complete certain activities in watercourses, wetlands and buffer zones without a Watercourse, Wetland and Buffer Zone Activity Permit.

1. All work must be guided and overseen by a person who holds a Watercourse, Wetland and Buffer Zone Activity Certificate and is employed by a holder of a Watercourse, Wetland and Buffer Zone Activity Business License.

2. Construction must be conducted in strict compliance with the Prince Edward Island Environmental Protection Act, Watercourse and Wetland Protection Regulations, and the sections of the Fisheries Act, Fisheries and Oceans Canada, that address fish health and fish habitat, and any other Acts relevant to the activity being completed.

3. All reasonable measures and precautions must be taken to minimize the siltation of and prevent the destruction of watercourses and wetlands.

4. A spill kit which possesses a minimum of 190-liter petroleum product absorption capacity must be onsite at all times during the project. The contents of the kits must include a 45-gallon drum with removable cover, absorbent and containment booms, absorbent pads, blankets and particulate, and disposal bags and ties. It is the contractor's responsibility to ensure that adequate petroleum product absorption capacity on site and the operator must be familiar with spill kit usage.

5. All fuel, lubricants or other toxic chemicals must be stored a minimum of 30 meters from any watercourse or wetland.

6. The washing, refueling, servicing of equipment and storage of fuel, equipment and other materials must occur a minimum of 30 meters from watercourses and wetlands to prevent any deleterious substance from entering the water.

7. Any equipment that has been in contact with a marine environment must be cleaned of any sediment, plants or animals and pressure washed with fresh water and/or sprayed with undiluted vinegar prior to being mobilized at the work site.

8. Heavy equipment is to arrive on site in a clean, washed condition and is to be maintained free of fluid leaks.

9. Should a fuel or hazardous material spill occur, regardless of the size, the spill must be reported to the Environmental Emergency Response number at **1-800-565-1633.** This Emergency Response number operates 24- hours a day, 365 days a year.

10. Activities are prohibited in marine conservation areas established by the Canadian National Marine Conservation Areas Act including the Basin Head Lagoon area.

11. Heavy equipment (other than tracked vehicles) is not permitted to operate in the following shoreline areas on PEI. Temporary closures may be in effect depending upon the condition of the shoreline. The Department must be contacted by phone at 368-5700 prior to undertaking work in these areas:

A. Brighton Shore, Charlottetown, York Lane through Colonel Grey Dr.

B. Langley Beach, Stratford (shore between Battery Point and Rosebank Point).

C. Brooklyn, Prince County (shore along Wallace Dr., Dunroamin Ln, Vegabond Ln. and Adams Dr. Refer.

12. When erosion control measures are being utilized they must adhere to the Construction Techniques for Erosion and/or Sedimentation Control (specified in section 7.2)

13. Prior to commencing any activity under these standards, the contractor must submit to the Department of Environment, Water and Climate Change a completed notification form and must receive from the Department a confirmation of receipt.

14. Construction activities must be stabilized (at the end of the workday), to prevent sedimentation of any watercourse and/or wetland. Fill material and/or disturbed areas of the bank must be stabilized at the end of each day.

15. The holder of a Watercourse, Wetland and Buffer Zone Activity Business License is responsible for implementing Erosion and Sedimentation Control measures on all sites where the Licensee is carrying out construction activities.

16. Heavy equipment must not operate on a beach or shoreline within 1km of where piping plovers are present. No work may be carried out from April through September if piping plovers are present within 1km of the work site. Contractors must contact Forests, Fish and Wildlife (902) 368-4683 to determine the status of the piping plover in the area prior to conducting any work. Areas with traditional piping plover use are listed in Appendix 5.

CONSTRUCTION STANDARDS FOR SPECIFIC WATERCOURSE, WETLAND AND BUFFER ZONE ACTIVITIES

In addition to the previous general standards, the following standards are specific to the activities listed and must be followed when undertaking those activities:

Shore Stabilization

Shoreline stabilization activities must be carried out as follows:

1. Shoreline stabilization can be carried out on shorelines of tidal water only. It may not be completed under the Contractor Licensing Program where the area at the base of the bank to be armored is a wetland or sand dune.

2. The deposition of material shall not exceed 100 meters in length when measured following the natural contours of the shoreline.

3. The deposition of material shall not exceed 1 meter on the seaward side of the toe of the existing bank. The deposition of any material shall not change the natural contours of the shoreline. The reclamation of eroded property is not permitted.

4. Trees and/or shrubs in the buffer zone may not be cut or destroyed. Dead trees on the beach/shoreline may be removed to allow placement of shore stabilization material. Trees leaning over the bank above the shore stabilization material may be removed.

5. Contractors must use an existing access to the shoreline. The creation of a new access to the shoreline through excavation of the bank, including the creation of slipways and walkways, is not permitted under the Contractor Licensing Program. The footprint (width) of an existing access must not be increased.

6. If it is determined by the Licensed Contractor that work will be taking place within 200 meters of a shellfish lease:

A. The Licensed Contractor must contact DFO Shellfish Leasing at (902)566-7849 to inform them of the work. DFO will then notify the lease owner of the work and any concerns will be brought to the contractor's attention.

B. If there are concerns from the lease owner, the contractor must inform the Department of Environment, Water and Climate Change at (902)368-

5700. If the concern(s) of the lease owner cannot be resolved by the Department over the phone an on-site meeting with the contractor will be arranged.

C. When working within 200 m of any shellfish lease, working from the bank (no machinery or equipment on the beach) is always the preferred method.

7. Existing rock (naturally occurring sandstone on the shoreline) directly in front of the property and within 3 m of the toe of slope may be incorporated into the shore stabilization material.

8. Shoreline stabilization work may not be carried out in areas where bank swallows are nesting. If bank swallow nest holes are present, no work can be carried out between April 15 and September 1 and the contractor must contact Forests, Fish and Wildlife (902) 368-4683 to arrange for a site inspection.

9. Acceptable methodologies include riprap construction, vertical retaining wall or gabion baskets.

10. For riprap construction:

A. The material used for the shoreline stabilization structure must be clean, durable and uncontaminated. It may include rock, crushed concrete, concrete structures, concrete slabs or other such material. The material may not have protruding re-bar and cannot be construction rubble (i.e.: bricks & concrete/cinder blocks), organic matter (i.e.: plant material such as trees) or asphalt

B. The material used for the backfill must be clean and uncontaminated and may include common borrow, shale or gravel.

C. The material used for shoreline stabilization must be securely installed to ensure it does not create a safety hazard.

D. Filter fabric is recommended behind the riprap to reduce undermining and loss of backfill material.

E. The exterior face of the stabilization material must be keyed (entrenched) into the beach profile to a depth of at least 0.6 meters to prevent undermining.

F. The stabilization material at the ends of the structure must be tied back into the existing bank. This will help prevent scouring around the ends of the structure that could lead to structural failure.

G. If riprap is being used, the slopes where the riprap is to be placed shall be graded to a gentle slope.

11. For vertical retaining wall construction:

A. Acceptable construction materials are heavy timber or heavy concrete blocks.

B. Timber materials may be untreated or pressure treated with preservatives. All treated wood must be air dried for a period of at least 6 months prior to construction. Touch-up painting of cut ends should be carried out away from the water and allowed to dry for a minimum of one week prior to being used. Creosote treated materials cannot be used. All vertical walls must be tied into each other and also tied into the bank material. Ties into the bank material must be secure such as large dead men imbedded deep into the bank.

C. The exterior face of the wall must be keyed (entrenched) into the beach profile to a depth of at least 0.6 meters to prevent undermining.

D. Filter fabric is recommended behind the wall to prevent the backfill material from escaping.

E. The ends of the wall structure must be tied back into the existing bank. This will help prevent scouring around the ends of the structure that could lead to structural failure.

12. For wire gabion basket construction:

A. Wire baskets must be filled with clean stone material that is larger than the mesh size

B. When more than one tier is used, the wire baskets must be terraced (stair-like) and tied together to add stability to the structure.

C. The lower row of the wire baskets must be keyed (entrenched) into the beach profile to a depth of at least 0.6 meters to prevent undermining.

D. Filter fabric is recommended behind the wire baskets to prevent the backfill material from escaping.

E. The backfill material behind the wire baskets must be compacted to help prevent future washouts.

F. The ends of the gabion structure must be tied back into the existing bank. This will help prevent scouring around the ends of the structure that could lead to structural failure.

13. Any holes or ruts greater than 0.5 feet in depth created on the beach area and/or shoreline which may present a safety hazard to the general public must be filled in and levelled at the end of each working day during the project.

14. Whenever practical, as much work as possible must be carried out from the top of the existing property bank to restrict the use of heavy equipment on the shoreline or beach. Trees or shrubs in the buffer zone must not be cut down to accomplish this. When the presence of trees or shrubs prevents working from the top of the bank, working from the shoreline may be utilized as long as:

A. There is no shellfish lease within 200 m of the work site.

B. There is no piping plover/bank activity within 1 km of the work site or nesting bank swallows.

C. The shoreline area is not a wetland (such as salt marsh) or a sand dune.

D. The shoreline is stable enough so that repeated trips of equipment in the area does not create large holes and ruts.

15. Where practical, the closest shoreline access point to the project location must be used to access the beach or shoreline when work cannot be carried out from on top of the property bank. If private access routes are to be used, landowner permission must be obtained prior to commencement of work. It is the licensed contractor's responsibility to repair any damage resulting from accessing the site.

16. Contractors must ensure that all work is stabilized as required to prevent sedimentation of any watercourse or wetland prior to leaving the construction site daily.

17. Any unstable material (i.e. imported backfill material, disturbed area of bank/slope, etc.) must be stabilized (i.e. covered with fabric and rock) as work progresses. Unstable material/disturbed areas must not be left exposed to the elements.

Landscaping in a Buffer Zone

Landscaping within a buffer zone must be carried out according to the following procedures:

1. No infilling of any part of a watercourse, wetland or sand dune is permitted.

2. The time frame for normal planned work is between May 1 and November 30.

3. Landscaping may only be completed between December 1 and April 30 where the work is an emergency and must be completed to forestall further damage to the buffer zone and adjacent watercourse or wetland.

4. No trees or shrubs may be cut or otherwise destroyed.

5. A type #1 silt fence must be installed along the perimeter of the watercourse boundary or wetland boundary and must remain in place until all barren soil has been seeded and stabilized.

6. The disturbed area is to be graded to a stable slope. Large amounts of soil, earth, or other material may not be either added or removed. This means that soil at a depth in excess of 60 cm may not be either added or removed.

7. All barren soil exposed by landscaping and grading must be seeded, have a Type #1 silt fence installed, and be mulched. The silt fence should remain in place until grass cover is established, and then removed and disposed of properly.

8. No heavy equipment is permitted to enter a watercourse, wetland or sand dune.

9. Road maintenance may be carried out in accordance with the following requirements in addition to those listed above:

A. Maintenance may only be carried out on existing roads where the footprint (width) of the road will not be increased.

B. Maintenance may not be carried out where a washout has occurred due to an undersized and/or obstructed culvert. In these cases, a separate permit which addresses the cause of the washout is required.

Operation of Heavy Equipment on the Shoreline

Operation of heavy equipment on a beach or shoreline must occur in accordance with the following:

1. Vehicle traffic must be confined to the existing access points and beach area where the work is located, and any disturbances to adjacent sand dunes or beaches must be avoided.

2. Where practical, the closest shoreline access point to the project location must be used to access the beach or shoreline when work cannot be carried out from on top of the property bank. If private access routes are to be used, landowner permission must be obtained prior to commencement of work. It is the licensed contractor's responsibility to repair any damage resulting from accessing the site.

3. Only the immediate area of the beach or shoreline at the work location may be disturbed.

4. Any holes and tracks, greater than 0.5 feet in depth, created on the shoreline during the work must be filled, levelled or back dragged before the next high tide or before the contractor leaves the site for the day.

5. Sand dunes can only be crossed at existing non-vegetated access points with a distance length of 30 meters or less. Old access points that are longer than 30 meters in length or have grown up with vegetation must not be utilized.

6. The washing, refueling, servicing of equipment and storage of fuel and other materials shall not occur within 30 meters of the coastline and /or watercourse / wetland boundary to prevent any deleterious substance from entering the water.

7. Parking or storage of heavy equipment is not permitted on sand dunes, the beach or shoreline or within 30 meters of a watercourse boundary or wetland boundary.

8. Timing of work must not coincide with periods of increased sensitivity for shellfish (i.e. spat fall) if the work is to be carried out within 200 meters of a lease. This period of sensitivity is between June and August.

9. Seaweed may be repositioned on the beach/shoreline but may not be removed from the beach/shoreline for disposal. Seaweed removal requires a separate permit.

10. Washed up animals may be buried on the beach when requested by Provincial Government. Prior to burying any animal washed up on the beach,

contractors must contact the Forests, Fish and Wildlife Division at 902-368-4683 for instructions on burial.

11. Contractors must use an existing access to the shoreline. The creation of a new access to the shoreline through excavation of the bank, including the creation of slipways and walkways, is not permitted under the Contractor Licensing Program. The footprint (width) of an existing access must not be increased.

Minor Bridge Repairs

Minor bridge repairs must occur in accordance with the following:

1. Repairs permitted under this section shall be limited to:

A. Decking and support replacement.

B. Erosion control and slope protection on abutments.

C. Grading of approach roads.

2. The time frame for normal planned work:

A. Decking and support replacement is year-round.

B. Erosion control and slope protection on abutments; and grading of approach roads is between June 1 and September 30.

3. Minor bridge repairs for erosion control and slope protection on abutments and grading of approach roads may only be completed between October 1 and April 31 where the work is an emergency and must be completed to limit damage to the buffer zone and adjacent watercourse or wetland.

4. Timing of all work must not coincide with periods of increased sensitivity for fish (i.e. spawning and egg incubation) or shellfish (i.e. spat fall) if the work is to be carried out within 200 meters of a shellfish lease.

5. Repair work on the upstream and downstream ends of the approach roads must be stabilized with wingwall riprap such as stone or concrete.

6. If riprap reinforcement or armoring is required to stabilize eroding areas around abutments, large clean, angular rocks must be placed into the eroding area at a similar slope as the stream bank to maintain a uniform bank slope and natural stream alignment. The cross-sectional area for water passage under the bridge must not be decreased by the riprap placement.

7. Approaches on both the upstream and downstream ends of the bridge must be riprapped with stone or concrete to prevent erosion.

8. During the grading of approach roads within 30 meters of a watercourse boundary or wetland boundary a type #1 silt fence must be installed along the perimeter of the boundary. The silt fence should remain in place until grass cover is established, and then removed and disposed of properly.

9. Any disturbance or destruction of any part of a watercourse or wetland that occurs during the project must be repaired immediately, under the direction of an environment officer.

10. No heavy equipment is permitted to enter or ford the watercourse or wetland.

11. Where ditch run outs are constructed along the approach roads to a bridge, they must not be constructed within the buffer zone.

12. Any construction debris or other debris generated during the project must not enter the watercourse. If any materials enter the watercourse they must be immediately removed and disposed of in a provincially approved manner.

13. The width of the grubbed zone should be no more than the total width of the roadway, fill embankments and ditches.

14. Creosote treated timbers may not be used in the watercourse

15. All barren soil exposed by landscaping and grading must be seeded, have a Type #1 Silt fence installed, and be mulched. The silt fence should remain in place until grass cover is established, and then removed and disposed of properly.

16. Heavy equipment shall not be operated outside the roadway fill embankments and ditch area in a manner that causes disturbance to the watercourse banks or wetland.

17. Sediment barriers, such as silt fences or hay bales, must be placed along the toe of the slope of the fill material used to construct the approaches to the structures.

18. Existing clear span bridges may be replaced with similar clear span bridge structures. No disturbance of the streambanks and/or watercourse or increase in footprint over the previous structure is permitted.

CONSTRUCTION TECHNIQUES FOR EROSION AND/OR SEDIMENTATION CONTROL

The following sections deal with construction techniques for erosion and/or sedimentation control related to any of the activities performed in previous sections of this document. All of the activities must include appropriate erosion and/or sediment control measures. It is the responsibility of the contractor to determine which of the erosion or sediment control techniques is appropriate for their project.

General techniques for all check dams:

1. Check dams must be installed before the construction phase of an activity begins.

2. Check dams must be constructed so that the center of the dam is at least 15 centimeters lower than the elevation at which the ends of the dam where they tie into the existing ground. This may be accomplished with a notch in the center of the dam.

3. Check dams must be embedded into the bottom and banks of the ditch to prevent undercutting and run-around.

4. Check dams should be spaced as per Figure 3 below titled “Distance Between Check Dams”.

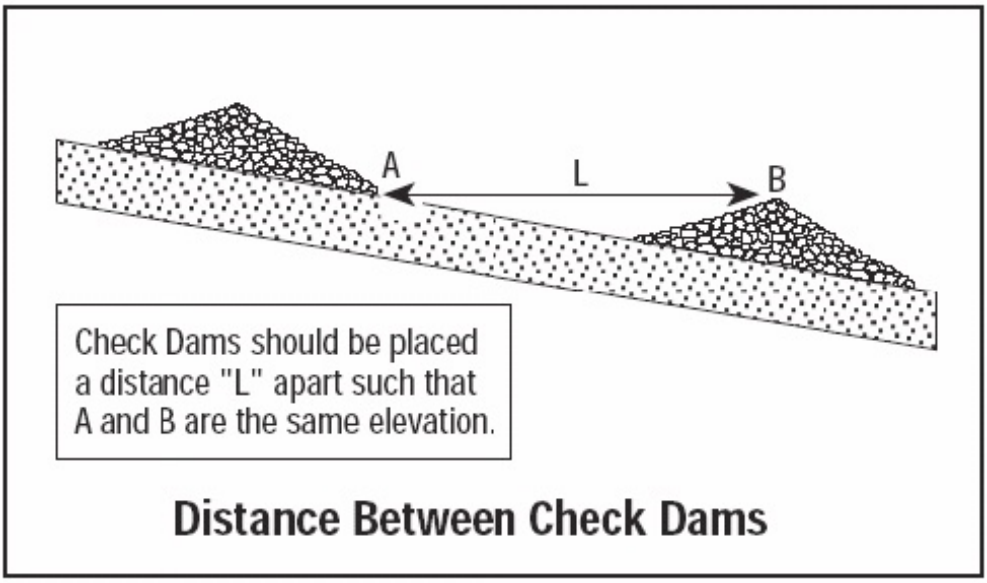


Figure 3 – Distance requirements between check dams

5. Regular inspections are necessary to ensure that sediment does not accumulate to an elevation of more than half of the height of the dam. The accumulated sediment must be removed prior to reaching this level.

6. Before the removal of the check dam, all accumulated sediment must be removed and disposed of in an area where it: cannot re-enter any watercourse; ii. and is outside the buffer zone.

7. Check dams can be removed when they are no longer needed or when the ditch becomes permanently stabilized with vegetation.

Additional stone check dam requirements

1. Rock must have a minimum dimension of approximately 50 millimeters.

2. Rock must be packed tightly.

Additional straw/hay bale check dam requirements

1. Straw/hay bales must be bound with wire or string.

2. Straw/hay bales must be keyed in with a trench.

3. Straw/hay bales must be placed tightly together and secured by driving 2 wooden stakes through each bale, deep enough to anchor them.

4. Loose straw must be wedged between any cracks or openings.

5. A small amount of fill must be placed on the upslope side of the bales as shown in

Techniques for Sediment Traps

1. Sediment traps must be constructed prior to initial grubbing and excavation of a work site and shall remain in use until the disturbed area is protected against erosion by permanent stabilization.

2. The average length of the trap shall be at least twice the average width of the trap.

3. The trap must be excavated to a maximum depth of 1 meter to reduce the frequency of clean out, and shall be sized large enough to handle the expected flows. The side slopes must be no steeper than 1:1. The maximum depth of the sediment trap from the bottom of the trap to the top of the spillway must not exceed a depth of 1.3 meters

4. The outlet of the sediment trap must be riprapped.

Silt Fences/barriers:

1. Type #1 Silt Fences:

A. Silt fences shall be installed up-slope of the watercourse and wetland boundaries.

B. A trench 100 millimeters in width and 100 millimeters in depth shall be excavated on the up-slope side of the fence. The silt fence must be keyed into the substrate.

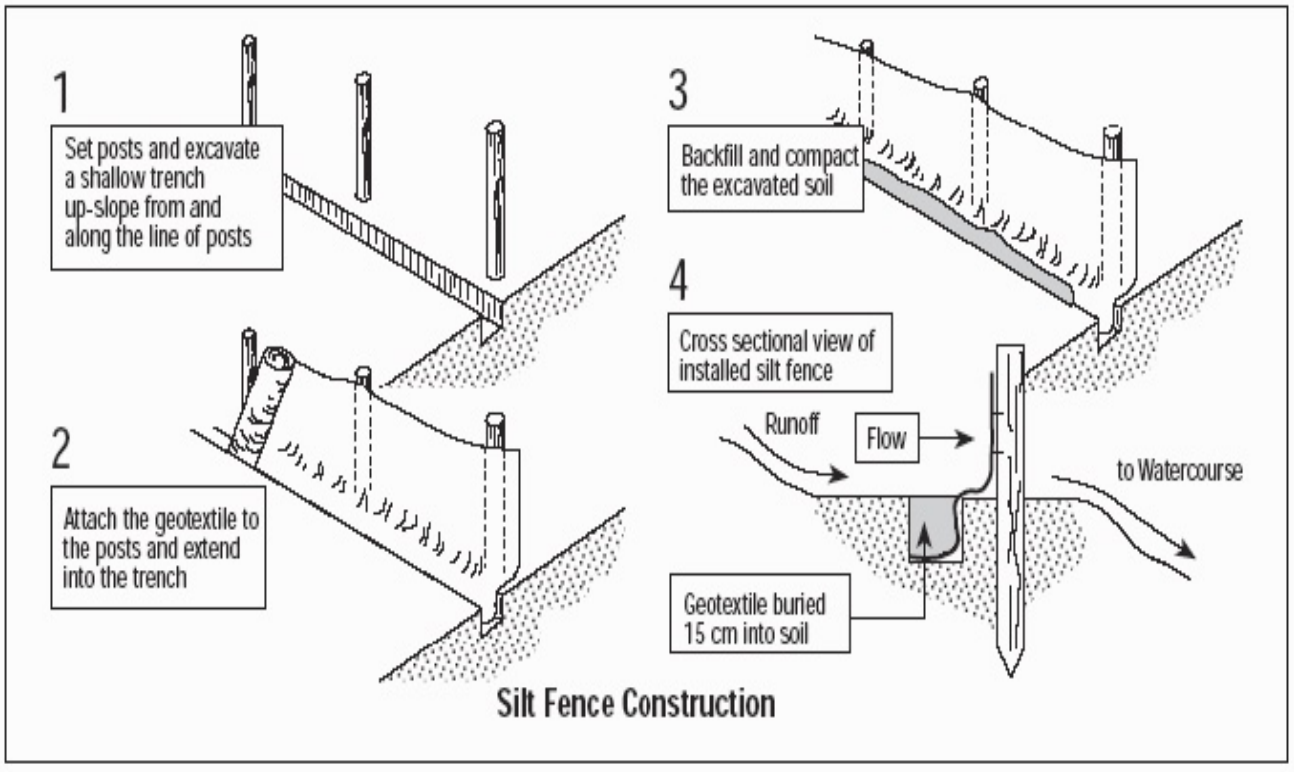
C. Excavated soil in the trench shall be backfilled and compacted over the silt fence.

D. All silt fences/barriers or parts thereof that are damaged shall be repaired immediately.

E. Once area is stabilized remove type #1 silt fence and dispose of properly.

F. Refer to Figure 5 for proper installation and construction of a silt fence.

.Figure 5 – Silt Fence Construction



Straw/Hay Bale Barrier:

1. An excavated trench 10 cm deep and the width of the straw bale must be created for the bales. Excavated soil should be compacted against the upslope side of the bale as shown in the Figure 6.

2. Bales must be bound with wire or string and be placed lengthwise in the trench.

3. Bales must be secured by driving 2 sturdy wooden or steel stakes through each bale, deep enough into the substrate to anchor them securely, i.e. Loose straw must be wedged between any cracks or other openings.

4. Bale barriers that are damaged shall be repaired immediately.

5. Refer to Figure 6 for proper installation and construction of a straw bale barrier.

Figure 6

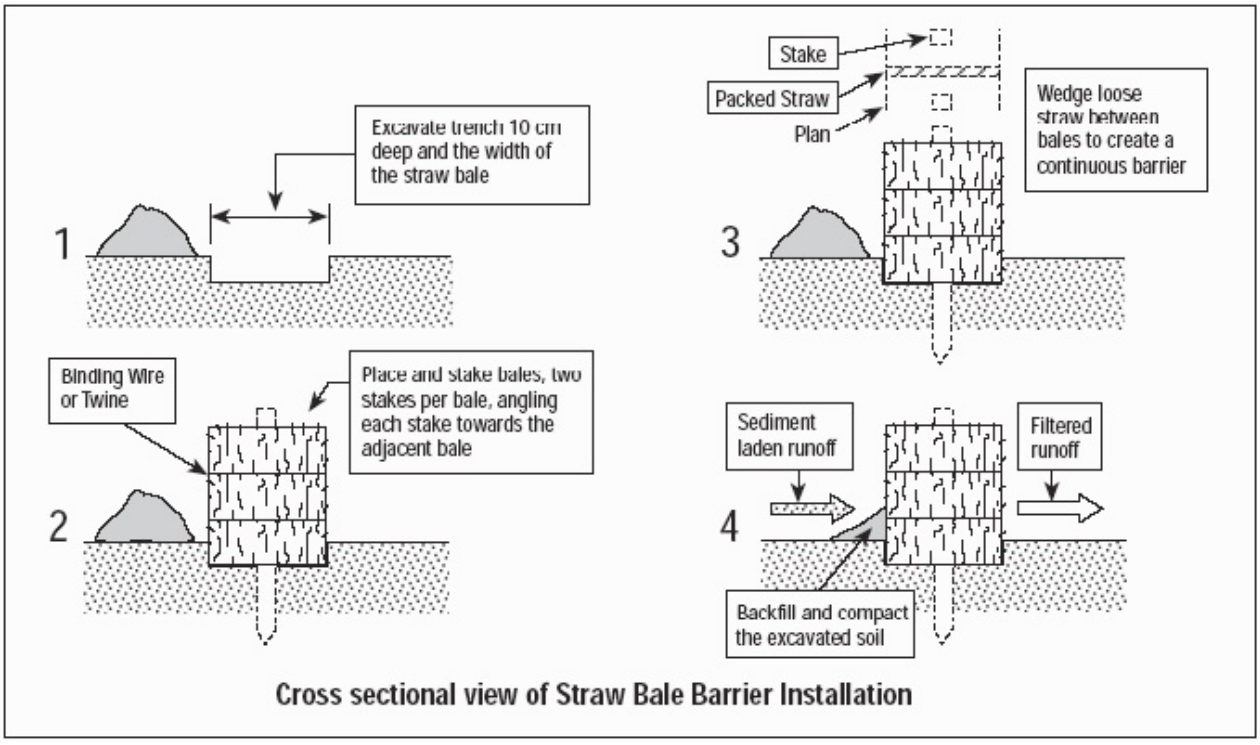


Figure 6

Re-vegetation

1. Seeding

A. Seeding must be carried out as soon as possible or within 24 hours of completing surface preparation.

B. Seeding shall be completed on topsoil.

C. On steep areas, such as road side slopes, the seed must be covered with mulch or an erosion control mat to ensure that the seed remains in place during its germination period.

2. Mulching

A. Straw/hay mulch must be applied uniformly as soon as possible or within 24 hours of completing surface preparation.

B. Mulch must not be so wet, decayed or compacted that it inhibits even and uniform spreading.

C. Mulch shall be applied at a rate as such that the ground is 100% covered and repaired/ re-mulched as required, until the area has stabilized.

D. Where the mulch is at risk of being blown or washed away, the mulch must be crimped into the surface.

Soil Stabilization Blankets (i.e. jute mats, burlap & woven straw blankets)

1. Stabilization blankets must be stapled securely to the soil.

2. Stabilization blankets must not be stretched.

3. In ditches or channels, the blankets shall be laid out in the direction of flow. On steep slopes, the mat shall be laid out with its length extending from the top to the bottom of the slope.

4. Stabilization blankets must be inspected regularly and repaired as required until the area has stabilized.