

GENERAL BEST MANAGEMENT PRACTICE (BMP) FOR PROJECTS IN WATERS OF THE U.S.

BMPs are policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. Using BMPs does not exonerate an operator from permit conditions.

Work in Open Water (fresh and marine)

- Silt and sediment from excavation and fill activities may not enter waterbodies outside the project footprint. Where practicable, fill material must be free from fine material that is subject to erosion and suspension. Site preparation, excavation, fill placement, and construction activities must be conducted to prevent, minimize, and contain the erosion and suspension of fine material that could be carried off-site by surface runoff. If suspended material is evident in standing or flowing water outside the project footprint, appropriate control and containment measures must be applied. These measures may include slope stabilization, revegetation, filter fabric fences, straw bales, other effective filters or barriers, fiber matting, settling ponds, drainage control, trenches and water bars, waterproof covers over material piles and exposed soils, avoiding work during heavy precipitation, and other appropriate measures. Disturbed ground and exposed soil not covered with fill, structures, or appurtenances must be stabilized and revegetated in an appropriate and timely manner to minimize erosion and sedimentation, so that a durable vegetative cover is established and maintained.
- Project limits of authorized sites shall be clearly identified in the field (e.g., staking, flagging, silt fencing, use of buoys, existing footprint for maintenance activities, etc.) prior to clearing and construction to ensure avoidance of impacts to waters of the U.S. (including wetlands) beyond project footprints.
- Activities that include the construction and maintenance of intake structures must include adequate fish screening devices to prevent the entrainment or capture of fish.
- The authorized structure, pipe, or associated fill shall not impede flood flows. To the extent practicable, excavation equipment shall work from an upland site (e.g., the top of the bridge or culverted road crossing) to minimize adding fill into waters of the U.S. If it is not practicable to work from an upland site, excavation equipment must minimize disturbance to the channel or stream bank and bottom (other than the removal of accumulated sediments or debris).
- Silt fences, silt curtains, or other diversion or containment structures shall be installed to contain sediment and turbidity at the work site (a) parallel to and within 10 feet of the toe of any fill, or soil exposed within 25 feet of a standing or flowing waterbody, if the fill site has a downslope or surface connection to the waterbody; and (b) adjacent to any fill placed or soil exposed within a standing or flowing waterbody. All silt fences, curtains, and other structures must be installed properly and maintained in a functioning manner for the life of the construction period where fill material and

exposed soils might cause transport of sediment or turbidity beyond the immediate construction site.

- When conditions are favorable the use of trenchless technology is shall be employed for crossings of the aquatic environment.
- Activities in breeding areas for migratory waterfowl, spawning areas, or areas of concentrated shellfish populations must be avoided to the maximum extent practicable.
- Locate all extra work areas at least 50 feet away from water's edge and wetlands. Utilize previously disturbed areas before open ground and open ground before forested areas.
- For stream crossings, maintain adequate flow rates during the project to protect aquatic life, and prevent the interruption of existing downstream uses.
- Design, construct and maintain equipment bridges to maintain unrestricted flow and to prevent soil from entering the water body.
- Remove equipment bridges as soon as possible after completion of the project.
- Equipment shall not be stored, maintained or repaired in waters of the U.S.
- Excess dredged or excavated material that is either unsuitable or not used as backfill shall be disposed at an upland disposal site.
- Spoil, debris, piling, cofferdams, construction materials, and any other obstructions resulting from or used during construction shall be removed upon project completion.
- Remove the dewatering structures as soon as possible after the completion of dewatering activities.
- When possible, work should be conducted during periods of no-flow or low-flow.
- To limit the time required for construction at a stream crossing, work areas on both sides of the stream will be prepared prior to construction of the actual crossing.
- Move stranded fish found in the dewatered channel downstream.
- For dry-ditch crossings, complete streambed and bank stabilization before returning flow to the water body channel.
- Design to adequately transfer streamflow volumes around the work area when there are no concerns about sensitive species passage.

- Construct dams with materials that prevent sediment and other pollutants from entering the water body (e.g., sandbags or clean gravel with plastic liner).
- The stream bed and banks will be backfilled and restored to the pre-existing course, condition, capacity and location.
- To the maximum extent practicable backfill material shall consist of the excavated material and shall be returned to the hole in the same place on the vertical stratum from which it was excavated. As a contingency, use clean gravel or native cobbles for the upper 1-foot of trench backfill in all water bodies that contain fisheries.
- When velocity allows and prior to starting work, a silt fence or floating silt curtain shall be erected downstream or around the crossing. Where required, a fish barrier of netting may be erected, both upstream and downstream of the crossing, to prevent fish from entering the work area.
- Any stream bank, lake shore, or coastline affected by the work shall be restored and stabilized.
- Directional boring vaults/junction boxes or pads will not be constructed within 100 feet (measured from OHW) of anadromous fish streams.
- Horizontal directional drilling pilot, entrance, and exit holes must be the minimum necessary, and where a stream crossing is involved, must be set back from the stream bank by at least 100 feet. Excavated materials and drilling muds must be stockpiled on non-wetland, where available. Under non-frozen conditions fabric must be placed beneath all materials stockpiled in wetlands.
- Wooden structures in contact with water shall be treated with preservatives approved for use in aquatic and marine environments through the US EPA registration process.
- Wood preservative products shall be installed in accordance with the “Best Management Practices for the Use of Treated Wood in Aquatic and Other Sensitive Environments” August 2006, or the most current version including published amendments, published by the Western Wood Preservers Institute (WWPI) (www.wwpinstitute.org) including the standards set forth by the American Wood-Preservers Association (AWPA) (www.awpa.com), the Timber Piling Council (TPC) (www.timberpilingcouncil.org), and/or the American Lumber Standards Committee as appropriate.

Work in Wetlands

- Silt and sediment from excavation and fill activities may not enter wetlands outside the project footprint. Where practicable, fill material must be free from fine material that is subject to erosion and suspension. Site preparation, excavation, fill placement, and construction activities must be conducted to prevent, minimize, and contain the erosion and suspension of fine material that could be carried off-site by surface

runoff. If suspended material is evident in standing or flowing water outside the project footprint, appropriate control and containment measures must be applied. These measures may include slope stabilization, revegetation, filter fabric fences, straw bales, other effective filters or barriers, fiber matting, settling ponds, drainage control, trenches and water bars, waterproof covers over material piles and exposed soils, avoiding work during heavy precipitation, and other appropriate measures. Disturbed ground and exposed soil not covered with fill, structures, or appurtenances must be stabilized and revegetated in an appropriate and timely manner to minimize erosion and sedimentation, so that a durable vegetative cover is established and maintained.

- Project limits of authorized sites shall be clearly identified in the field (e.g., staking, flagging, silt fencing, use of buoys, existing footprint for maintenance activities, etc.) prior to clearing and construction to ensure avoidance of impacts to waters of the U.S. beyond project footprints.
- Silt fences, silt curtains, or other diversion or containment structures shall be installed to contain sediment and turbidity at the work site (a) parallel to and within 10 feet of the toe of any fill, or soil exposed within 25 feet of a standing or flowing waterbody, if the fill site has a downslope or surface connection to the waterbody; and (b) adjacent to any fill placed or soil exposed within a standing or flowing waterbody. All silt fences, curtains, and other structures must be installed properly and maintained in a functioning manner for the life of the construction period where fill material and exposed soils might cause transport of sediment or turbidity beyond the immediate construction site.
- Construction equipment, particularly the width of the excavating bucket head, should be limited to the minimum size necessary to complete the work.
- The load of heavy equipment shall be dispersed so that the bearing strength of the soil is not exceeded. Suitable methods to accomplish this include, but are not limited to, working in frozen or dry ground conditions, employing mats when working in wetlands or mudflats and using tracked rather than wheeled vehicles. Do not use rock, soil imported from outside the wetland, tree stumps, or brush riprap to support equipment on the work site.
- The work shall not adversely alter existing hydrology of waters of the U.S., including wetlands. The methods (e.g. use of impervious material, structures such as trench plugs, avoiding extensive gravel layering when backfilling, etc.) chosen to prevent the draining of wetlands shall be drawn onto the constructions plans and clearly labeled.
- Activities in breeding areas for migratory waterfowl, spawning areas, or areas of concentrated shellfish populations must be avoided to the maximum extent practicable.

- Locate all extra work areas at least 50 feet away from water's edge and wetlands. Utilize previously disturbed areas before open ground and open ground before forested areas.
- Remove the cut vegetation from the wetland for disposal.
- Equipment shall remain inside the identified project limits.
- Equipment shall not be stored, maintained or repaired in waters of the U.S.
- Excess dredged or excavated material that is either unsuitable or not used as backfill shall be disposed at an upland disposal site.
- Spoil, debris, piling, cofferdams, construction materials, and any other obstructions resulting from or used during construction shall be removed upon project completion.
- Remove the dewatering structures as soon as possible after the completion of dewatering activities.
- Temporary fill in wetlands shall be placed on geotextile fabric which is laid on the existing wetland grade.
- Topsoil and organic surface material such as root mats shall be stockpiled separately from overburden and returned to the surface of the restored site.
- Natural drainage patterns shall be maintained to the extent practicable by the installation of culverts in sufficient number and size to prevent ponding, diversion, or concentrated runoff that would result in adverse impacts to adjacent wetlands and other fish and wildlife habitats.
- Fill for the individual driveways, home pad, and septic systems shall not be placed in wetlands until the lot is sold or the applicant proposes to use a lot for a personal residence, a rental unit, or a model unit.

Restoring Disturbed Areas (Open Water and Wetlands)

- Areas disturbed during project construction must be revegetated as soon as possible, preferably in the same growing season as the disturbance. Erosion protection shall be provided and remain in place until the soil is permanently stabilized.
- In peat wetlands, systematically removing the natural vegetative mat (with root masses intact) prior to construction, storing it in a manner to retain viability (usually frozen or hydrated), then replacing it after re-contouring the ground following construction, with final contours within one foot of adjacent undisturbed soil surfaces after one growing season and one freeze/thaw cycle. For minor utility projects where

no imported bedding or backfill material is used (e.g., "plowed in" cables or small utility lines installed with ditch-witches), simple restoration to pre-work contours and appropriate revegetation shall suffice.

- Restoration and revegetation of streambank and shoreline habitat should utilize the most up-to-date bioengineering techniques and use of biodegradable materials when feasible and practicable (i.e. Streambank Revegetation and Protection: A Guide for Alaska (Muhlberg and Moore 1998)). Techniques may include, but are not limited to, brush layering, brush mattresses, live siltation, and use of jute matting and coir logs to stabilize soil and re-establish native vegetation.