

Reservoirs to be Constructed in Conjunction with a Surface Coal Mining and Reclamation Operation.

- a. A proper application and accompanying map must be submitted and a permit secured from the State Engineer before commencing physical construction of any reservoir within the State of Wyoming. This shall include reservoirs, such as, ponds, pits and lagoons constructed for sediment and/or evaporation purposes which will store or temporarily impound water which has been contaminated. (NOTE: Generally such water or fluids containing water will originate from mine pit dewatering systems, milling, refining or other plant operations; surface run-off from disturbed areas, wash down areas, overburden or spoil piles and sewage effluent). Mine pit dewatering systems generally require a groundwater permit from the State Engineer and when this water is discharged into an off-channel perimeter-diked settling pond which will receive no surface run-off and which does not exceed ten (10) acre-feet in capacity, the pond may be addressed and included in the groundwater permit.
 - (1) A preliminary submittal of a location map for the State Engineer's review is recommended. This location map should show mine plan, proposed location of settling ponds, drainage re-route and identify other sediment control measures or activity which may affect natural drainage. Subsequent to such State Engineer's review, the applicant will be advised as to any further filing requirements of the State Engineer.
 - (2) The Reservoir Application (Form S.W. 3) and accompanying maps must comply with the State Engineer's Manual of Regulations and Instructions, as well as any other guidelines provided by, or requirements imposed by the State Engineer. NOTE: A location survey corner tie is not required for sedimentation reservoirs having an embankment which does not exceed twenty (20) feet in height or which has an impounding capacity of less than twenty (20) acre-feet.
 - (3) Sedimentation reservoirs (ponds) for the purpose of settling run-off from disturbed areas, overburden and spoil piles, shall be located in such a manner as to minimize the storage of waters from non-disturbed areas of natural drainage. To the extent practicable, sedimentation reservoirs shall be located off channel. If it is necessary to construct a sedimentation reservoir on channel, the disturbed area and the exterior drainage area shall be shown, identified and size in square miles or acres stated on the location map. The State Engineer may require a ditch or other system to by-pass water from the exterior drainage area around the facility.
 - (4) Plans for sedimentation reservoirs having an embankment height greater than twenty (20) feet as measured from the downstream toe of the embankment to the top of the embankment or with an impounding capacity of twenty (20) acre-feet or greater must be certified by a

professional engineer who is licensed to practice in Wyoming; this professional engineer shall supervise construction of the sedimentation reservoir and shall submit periodic reports regarding said construction to the State Engineer.

- (5)
 - (a) Permits for all permanent impoundments as proposed by the mining and reclamation plan must be secured from the State Engineer.
 - (b) Applications for permits for temporary impoundment facilities as may be required for the State Engineer to accommodate the active mining operation should be submitted in a timely manner to correlate with the Permit Term of the Land Quality Division of the Department of Environmental Quality (generally consisting of five years of actual mining). Such applications should specify the anticipated life of the impoundment facility. The permit as granted will contain a provision for automatic cancellation at the end of the anticipated life unless a timely request for extension is received.
- b. Plans for reservoirs shall conform to the minimum requirements of the State Engineer and shall also conform to the specifications set forth and/or referenced herein. In cases where minimum requirements specified elsewhere differ from those stated herein, the more stringent will prevail.
 - (1) Combined upstream and downstream side slopes of the settled embankment shall not be less than 1v:5h. The upstream slope (water face of the embankment) shall be 1v:3h minimum. Slopes shall be designed to be stable in all cases, even if flatter side slopes are required.
 - (2) The minimum top width of the embankment for a sedimentary reservoir shall not be less than the quotient of $(H+35) / 5$ where H is the height of the embankment as measured from the downstream toe to the top of the embankment.
 - (3) The design and physical construction of the embankment shall be in accordance with accepted engineering and construction practices. Careful attention will be given to settlement allowances, types of materials, core-trench – if required, thickness of layers, moisture content of materials and method of compaction, to ensure acceptable embankment slope stability.
 - (4) Outlets (conduits through the embankment) will generally be required for all settling pond reservoirs. The outlets of reservoirs having embankments greater than twenty (20) feet in height or impounding twenty (20) acre-feet or more of water will be provided with cut-off

collars in sufficient number to ensure stability and the method of installation shall be such as to provide adequate seepage control.

- (5) The outlet shall be a non-clogging dewatering device or conduit spillway which shall provide for discharge of water resulting from run-off inflow. The discharge rate will be sufficient to achieve and maintain the required theoretical detention time. The uncontrolled outlet shall not be located at an elevation lower than that required to achieve the storage volume required for proper settling and shall be a minimum of one (1) foot below the elevation of the bottom of the emergency spillway. The controlled outlet must provide for draining water which has been stored to meet the required detention time and this outlet must not be located at an elevation lower than the maximum elevation as established for sediment storage.
- (6) Emergency spillways shall be constructed in such a manner as to preclude erosive velocities. If it is necessary for the design to include erosive velocities in the spillway channel, a protective lining will be required. The design of the emergency spillway shall be such as to provide a minimum of one and one half (1½) feet of freeboard between the top of the embankment and maximum water level in the spillway. A minimum of five (5) feet of freeboard between the crest of the emergency spillway and the top of the embankment is a basic requirement. Under certain acceptable conditions and upon receipt of a specific written request for waiver, the State Engineer has the authority to waive this requirement and allow a lesser freeboard.
- (7) The combined capacities of the emergency spillway and uncontrolled outlet shall be sufficient to safely discharge inflow resulting from the 25-year flood event. For impoundments having height greater than twenty (20) feet or with a capacity of twenty (20) acre-feet or more, the combined capacity of the emergency spillway and uncontrolled outlet will be sufficient to pass inflow of a 100-year flood event, or a larger event as may be determined necessary by the State Engineer. The State Engineer may impose the requirements of this section on reservoirs of any size where located in an area where extensive property damage or loss of life might result from overtopping or failure of the embankment.
- (8) Reservoirs constructed by excavation (pit type) or constructed with perimeter or semi-perimeter dikes that will impound water during or after the mining operation shall have perimeter slopes that are stable and these slopes shall not be steeper than 1v:3h. The State Engineer may require flatter slopes and may also require drainage by-pass systems (ditches) and/or adequate water evacuation systems.

- c. No reservoir may be constructed or enlarged in Wyoming without first obtaining a permit from the State Engineer. Applications and accompanying maps for permits to construct reservoirs which meet the requirements of the State Engineer and which further comply with the requirements for environmental approval and as otherwise specified in this manual will generally be found acceptable to the State Engineer.