

NEW DAM PLAN REVIEW CHECKLIST

05/22/2013

For dams, embankments or other water retention structures

The following information is required for review of dam plans. Please check that all the information is included in the submitted design package. The information can also be compiled on one summary page or document. For large dams, the applicant will also need to submit four (4) hard copies and one (1) electronic copy of the complete plans and specifications for the project including any project design report, hydrologic/hydraulic analyses, soil borings, or other information used in the project design. For small dams, the applicant will also need to submit three (3) hard copies and one (1) electronic copy.

- Name of Designer
- Agency/Firm
- Phone
- Address
- Email

General Design Information

- Purpose of dam
- Drainage area (*square miles*)
- Planned pool elevation (*referenced to recoverable datum*)
- Q₁₀₀ water surface elevation (*referenced to recoverable datum*)
- Normal pool surface area (*acres*)
- Water surface area at maximum pool (*acres*)
- Normal storage (from bottom of impoundment to planned pool) (*acre-feet*)
- Maximum storage (from bottom of impoundment to point of overtopping) (*acre-feet*)
- Structural height (difference between design elevation and elevation of streambed at downstream toe) (*feet*)
- Hydraulic height (difference between normal pool elevation and tailwater elevation) (*feet*)
- Design storm frequency/duration (must meet minimum from appropriate standard) (*year*) / (*hour*)
- Design discharge (reservoir routing may reduce peak spillway outflow) (*cfs*)
- Include hydrologic and hydraulic calculations with the submittal
- Stamp indicating preparation by a Professional Engineer (PE) registered in the State of Wisconsin

Outlet/Spillway Information

- Outlet structure type, dimensions, elevations, joint treatment, corrosion protection (shown on plans/specifications)
- Principle spillway capacity (calculated at point of embankment overtopping) (*cfs*)
- Total spillway capacity (calculated at point of embankment overtopping) (*cfs*)
- Auxiliary spillway location, elevations, bottom width, side slopes, materials (shown on plans/specifications)
- Auxiliary spillway constructed in natural undisturbed soils or show stability/erosion analysis
- Are there drawdown facilities?
- Is there access for gate operation?
- Is there a trash rack?
- Is there an anti-vortex device?

Embankment Information

- Elevation (design elevation) of top of embankment (low point in embankment crest)
- Elevation of stream bottom at downstream toe of embankment
- Length (*ft*)
- Top width (*ft*)
- Side slopes (upstream and downstream) (*ratio*)
- Fill volume (yd^3)
- Embankment fill soil type, compaction method/standards, and maximum lift thickness (shown on plans/specs)
- Foundation soil type and preparation (shown on plans/specifications)
- Depth of peat at structure or center of dike (if applicable)
- Seepage control measures (cutoff walls, toe drains, anti-seep collars, french drains, slurry trench, clay core)

Other Considerations

- Benchmark description for all elevations (include one on dam and two off dam benchmark locations)
- Description of construction sequence (coffer dams, water diversion, etc.)
- Description/plan of construction erosion protection measures
- Total area of land disturbance (yd^2)
- Description of post-construction scour protection at outlet structures and on embankments
- Clearing and grubbing plan for impoundment area (if necessary)
- Will normal pond surface flow lands not owned by the applicant?
 - o If yes, must have secured appropriate flowage/flooding easement or have affected property owner(s) as co-applicant(s)
- Will embankment affect mapped floodplain on adjacent property (increase ≥ 0.01 ft off owner property)?
 - o If yes, must have secured appropriate flowage/flooding easement or have affected property owner(s) as co-applicant(s)
- Will embankment affect mapped floodplain elevation in adjacent watershed during 100-year event?
 - o If yes, prepare encroachment analysis and secured appropriate flooding easement(s) from affected property owner(s)
- Projected minimum flows and water quality of discharge (if applicable)
- Warning signs and portage route locations if necessary (structures on navigable waterway with permanent pool)
- Request for waivers and waiver from design standard criteria included
- If impoundment will affect wild rice, show location on site map

Additional information required for large dams (must comply with all requirements of NR 333)

- Regional flood flows calculated per NR116.07 (3)
- Determination of floodplain boundary with and without dam per NR116.07(4)
- Stability analysis (for embankment with side slopes steeper than 2.5/1 and spillway structures, other than culverts)
- Identification of hydraulic shadow and calculations for dam break analysis per NR 333 and NR 116
 - o Including Dam Failure Analysis checklist
- Dam hazard rating determined per NR333.06
- Operation, Inspection and Maintenance Plan and Emergency Action Plan
- Cost estimate for construction