STATE OF NEW MEXICO
BEFORE THE WATER QUALITY CONTROL COMMISSION

In the Matter of:

PROPOSED AMENDMENT TO 20.6.2 NMAC (Copper Rule) No. WQCC 12-01(R)

EXHIBIT SCOTT – D-30
Surface Mining Water Diversion Design Manual

September 1982

Prepared For:

U.S. Department Of The Interior
Office Of Surface Mining

Contract No. JS101050

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United States Department Of The Interior
Office Of Surface Mining

Technical Services & Research
<table>
<thead>
<tr>
<th>Considerations</th>
<th>Overland Flows, Shallow Groundwater Flows, Ephemeral Streams</th>
<th>Perennial and Intermittent Streams</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hydrology</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Recurrence Interval - Design Event</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent</td>
<td>10-year, 24-hour</td>
<td>100-year, 24-hour</td>
</tr>
<tr>
<td>Temporary</td>
<td>2-year, 24-hour</td>
<td>10-year, 24-hour</td>
</tr>
<tr>
<td>(b) Channel Capacity</td>
<td>Peak runoff from design event, 0.3 ft freeboard minimum. Protection of critical areas can be more stringent.</td>
<td>Must equal adjacent unmodified stream channel (floodplain capacity can be used for passing design event), but not less than (a).</td>
</tr>
<tr>
<td>(c) Channel Lining</td>
<td>Suitable to contain and minimize water pollution.</td>
<td>To control erosion, must be stable and only require infrequent maintenance.</td>
</tr>
<tr>
<td>(d) Slope or Gradient</td>
<td>Appropriate for sediment control.</td>
<td>Longitudinal profile of the stream to remain stable and to prevent erosion.</td>
</tr>
<tr>
<td>(e) Velocities</td>
<td>Regulated to control and minimize water pollution.</td>
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</tr>
<tr>
<td><strong>Geotechnical</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(f) Backslopes</td>
<td>Stable</td>
<td>Stable</td>
</tr>
<tr>
<td><strong>Ecological</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(g) Restoration</td>
<td>Permanent: None</td>
<td>Same as ephemeral stream</td>
</tr>
<tr>
<td>Temporary</td>
<td>Remove regrade topsoil &amp; revegetate.</td>
<td>Establish or restore natural meandering shape of an environmentally acceptable gradient.</td>
</tr>
<tr>
<td>(h) Enhancement</td>
<td>None</td>
<td>&quot;Where practical&quot; enhance natural riparian vegetation.</td>
</tr>
<tr>
<td>(i) Shape</td>
<td>None</td>
<td>Establish or restore to approximate pre-existing stream channel characteristics (including aquatic considerations below).</td>
</tr>
</tbody>
</table>
| (j) Longitudinal Profile and Cross Section | (see slopes and capacity) | "Establish or restore...usually a pattern of pools, riffles and drops...that approximate pre-existing characteristics."
| (k) Aquatic Habitats | None | |

*Where not specifically indicated, temporary and permanent requirements would be the same.*
2.3

Table 2.1. Possible Data Required for Channel Design.

**Topographic Data**
- Drainage area
- Stream slope
- Watershed slope
- Watershed shape
- Longitude
- Latitude
- Topographic maps
- Aerial photographs
- Land characteristics

**Hydrologic Data**

Precipitation:
- 2-year, 24-hour rainfall amount
- 10-year, 24-hour rainfall amount
- 100-year, 24-hour rainfall amount

**Hydraulic**
- Average velocity
- Boundary roughness
- Flow depth
- Top width
- Hydraulic radius
- Wetted perimeter
- Backwater profile
- Bedform configuration

**Geotechnical**

Soils:
- Type
- Structure
- Particle size
- Permeability
- Infiltration
- Percent organic matter
- Chemical composition
- Aggregate index
- Soil maps