**OVERLAND RESERVOIR SUMMARY OF ALTERNATIVES**
**THIRD DRAFT 11/9/2011**

| ALTERNATIVE DESCRIPTION | SUMMARY OF ALTERNATIVE EVALUATION |
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| **1. Overland Reservoir Enlargement** | **CONSIDERATIONS FOR APPLICANT'S PREFERRED ALTERNATIVE** |
| Located at 107° 38' 33" W Longitude, 39° 05' 19" N Latitude. This alternative consists of increasing the capacity of the existing Overland Reservoir by raising the existing main dam and an auxiliary dam on a secondary drainage. | 1. No enlargement of Overland Ditch will be required.<br>2. There is an existing conditional water right at this site for the proposed increased storage amount with a 1954 priority date.<br>3. Previous modifications (1987) were made to accommodate the proposed enlargement in a manner that woud minimize additional disturbance.<br>4. The enlargement will inundate an additional 3.2 acres of wetlands including 0.07 acre of fen.<br>5. The majority of construction materials will come from previously disturbed areas.<br>6. Reservoir is on National Forest land. |
| **2. West Reservoir** | |
| **2a. West Reservoir Enlargement** | **CONSIDERATIONS FOR ALTERNATIVE 2a** |
| Located at 107° 44' 00" W Longitude, 38° 55' 46" N Latitude. This alternative consists of increasing the capacity of the existing West Reservoir from 450 ac-ft to 1460 ac-ft by raising the existing dam height from 38 feet to 63 feet and constructing two auxiliary dams on secondary drainages. It would involve transfer of the existing Overland water storage right to the West Reservoir site. | 1. Existing dam is in a conservation easement. The governing land trust will oppose enlargement.<br>2. Requires enlargement of the Upper Overland Ditch to 160 percent of existing flow capacity by modifying the ditch cross-section. No increase in the length of Overland Ditch will be required.<br>3. Requires enlargement of 3.5 miles of feeder ditch from the Upper Overland Ditch to the reservoir site.<br>4. Overland Ditch enlargement will disturb 96 additional acres of public land, much of which appears to be jurisdictional wetlands.<br>5. Based on interpretation of aerial photos, the enlargement will encroach on approximately 3.9 acres of additional jurisdictional wetlands.<br>6. Objections to water right transfer out of basin of origin will have to be overcome.<br>7. Several safety concerns raised by the Colorado Dam Safety Engineer regarding the existing dam will have to be addressed.<br>8. Estimated cost (including enlargement of Overland Ditch and feeder ditch) is 11 times greater than the preferred alternative. |
| **2b. West Reservoir Reconstruction** | **CONSIDERATIONS FOR ALTERNATIVE 2b** |
| Located at 107° 44' 00" W Longitude, 38° 55' 46" N Latitude. This alternative consists of breaching the existing West Reservoir dam and constructing a new dam located 550 feet downstream from the current dam. This alternative involves constructing a single new dam 82 feet in height. The new dam will contain an enlarged reservoir . An auxiliary dam on a secondary drainage would also be required at this site. It would involve transfer of the existing Overland water storage right to the West Reservoir site. | 1. Existing dam and proposed new dam site are both in a conservation easement. The governing land trust will oppose reconstruction.<br>2. Requires enlargement of the Upper Overland Ditch to 160 percent of existing flow capacity by modifying the ditch cross-section. No increase in the length of Overland Ditch will be required.<br>3. Requires enlargement of 3.5 miles of feeder ditch from the Upper Overland Ditch to the reservoir site.<br>4. Overland Ditch enlargement will disturb 96 additional acres of public land, much of which appears to be jurisdictional wetlands.<br>5. Based on interpretation of aerial photos, the reservoir will encroach on approximately 5.6 acres of additional jurisdictional wetlands.<br>5. Objections to water right transfer out of basin of origin will have to be overcome.<br>6. Estimated cost (including enlargement of Overland Ditch and feeder ditch) is 11 times greater than the preferred alternative. |
| **3. Bailey Reservoir Enlargement** | **CONSIDERATIONS FOR ALTERNATIVE 3** |
| Located at 107° 45' 31" W Longitude, 39° 02' 07" N Latitude. This alternative consists of increasing the capacity of the existing Bailey Reservoir from 330 ac-ft to 1,330 ac-ft by raising the existing dam height from 29 to 48 feet and constructing an auxiliary dam on a secondary drainage. This would involve filing for a new storage water right on West Leroux Creek. | 1. New water right with a 2012 priority date or later will be subordinate to all earlier water rights in the drainage basin. Development of existing conditional water rights will reduce the yield of the new right.<br>2. Water yield may be less than for preferred alternative.<br>3. Dam is owned by Leroux Creek Water Users Association (LCWUA). LCWUA will require compensation for expansion of their dam by committing a portion of the resulting storage to LCWUA. This compensatory storage will increase enlargement costs and impacts.<br>4. Based on interpretation of aerial photos, the enlargement will encroach on approximately 10.4 acres of additional jurisdictional wetlands.<br>5. The enlargement will inundate existing camp sites and boat ramp impacting existing recreational uses.<br>6. Estimated cost is 5.0 times greater than the preferred alternative (not including the cost for compensatory storage to LCWUA).<br>7. Reservoir is on National Forest land. |

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| **4. O'Brien Reservoir Construction** | **CONSIDERATIONS FOR ALTERNATIVE 4** |
| Located at 107° 42' 54" W Longitude, 38° 57' 01" N Latitude. This would involve transfer of the existing Overland water storage right to the O'Brien Reservoir site. The proposed reservoir requires construction of three new dams varying in height from 10 to 80 feet. | 1. Requires enlargement of the Upper Overland Ditch to 160 percent of existing flow capacity by modifying the ditch cross-section. No increase in the length of Overland Ditch will be required.<br>2. Overland Ditch enlargement will disturb 96 additional acres of public land, much of which appears to be jurisdictional wetlands.<br>3. Objections to water right transfer out of basin of origin will have to be overcome.<br>4. Estimated cost (including enlargement of Overland Ditch) is 12 times greater than the preferred alternative. |
| **5. Leroux Creek Reservoir Construction** | |
| **5a. Leroux Creek Reservoir Construction With Transfer of Existing Conditional Water Right** | **CONSIDERATIONS FOR ALTERNATIVE 5a** |
| Located at 107° 47' 26" W Longitude, 38° 55' 66" N Latitude. This would involve transfer of the existing Overland water storage right to the Leroux Creek Reservoir site. This alternative involves constructing a single new dam 112 feet in height. | 1. Requires enlargement of the Upper Overland Ditch to 160 percent of existing flow capacity by modifying the ditch cross-section if existing water right is transfered. No increase in the length of Overland Ditch will be required.<br>2. Overland Ditch enlargement will disturb 96 additional acres, much of which appears to be jurisdictional wetlands.<br>3. Requires construction of 0.5 mile of new feeder ditch.<br>4. Objections to water right transfer out of basin of origin will have to be overcome.<br>5. Estimated cost (including enlargement of Overland Ditch and construction of feeder ditch) is 11 times greater than the preferred alternative.<br>6. Based on interpretation of aerial photos, the enlargement will encroach on approximately 13.2 acres of additional wetlands.<br>7. Moderate geologic hazards to overcome due to historic and potential landslides in the reservoir basin.<br>8. Increased ditch flows will result in greater erosion in the portion of Cow Creek which is used as part of the Overland Ditch water conveyance system. |
| **5b. Leroux Creek Reservoir Construction With Filing for New Water Right** | **CONSIDERATIONS FOR ALTERNATIVE 5b** |
| Located at 107° 47' 26" W Longitude, 38° 55' 66" N Latitude. This would involve filing for a new storage water right on Leroux Creek. This alternative entails constructing a single new dam 112 feet in height. | 1. Requires construction of 0.5 mile of new feeder ditch.<br>2. Estimated cost is 5 times greater than the preferred alternative.<br>3. New water right with a priority date of 2012 or later will be subordinate to all earlier water rights in the drainage basin. Development of existing conditional water rights held by others will reduce the yield of the new right.<br>4. Based on interpretation of aerial photos, the enlargement will encroach on approximately 13.2 acres of additional wetlands.<br>5. Moderate geologic hazards to overcome due to historic and potential landslides in the reservoir basin.<br>6 . Increased ditch flows will result in greater erosion in the portion of Cow Creek which is used as part of the Overland Ditch water conveyance system. |
| **6. Duke Basin Reservoir Construction** | **CONSIDERATIONS FOR ALTERNATIVE 6** |
| Located at 107° 43' 27" W Longitude, 38° 57' 54" N Latitude. This would involve transfer of the existing Overland water storage right to the Duke Basin Reservoir site. This alternative involves constructing a single new dam 66 feet in height. | 1. Requires enlargement of the Upper Overland Ditch to 160 percent of existing flow capacity by modifying the ditch cross-section. No increase in the length of Overland Ditch will be required.<br>2. Overland Ditch enlargement will disturb 96 additional acres of public land, much of which appears to be Jurisdictional wetlands.<br>3. Objections to water right transfer will have to be overcome.<br>4. Based on interpretation of aerial photos, the reservoir will encroach on approximately 9.0 acres of additional jurisdictional wetlands.<br>5. Estimated cost (including Overland Ditch enlargement) is 11 times greater than Overland enlargement.<br>6. Reservoir is on National Forest land.<br>7. Severe geologic hazards to overcome due to active, historic and potential landslides at the dam site and in the reservoir basin.<br>8. Increased ditch flows will result in greater erosion in the portion of Cow Creek which is used as part of the Overland Ditch water conveyance system. |

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| **7. Hydraulic Dredging of Overland Reservoir** | **CONSIDERATIONS FOR ALTERNATIVE 7** |
| This would involve removal of 1,600,000 cubic yards of soil from the Overland reservoir basin using a barge mounted dredge. Dredged slurry will be piped to a disposal site. Total quantity of dredged slurry would be 200,000,000 cubic feet including 3,500 ac-ft of water which will be pumped from the reservoir to the disposal site. | 1. Recreational and other impacts to the area with equipment operating 24 hours/day, 7 days/week during summer months for 3 years.<br>2. Disturbance to 22 acres of National Forest land for 12 mile long discharge pipeline corridor.<br>3. Disturbance to 60 acres of public or National Forest land for disposal site.<br>4. Possible impact to existing wetlands within the reservoir basin.<br>5. Impact to wetlands along discharge pipeline corridor and at disposal site.<br>6. Water quality concerns to include Increased reservoir water turbidity during dredging activities and quality of water discharged from disposal site to streams. Water quality monitoring will be required at both locations.<br>7. Loss of 3,500 ac-ft of water pumped from the reservoir to the disposal site.<br>8. Potential impacts to fishery resulting from fish entrainment in dredged slurry.<br>9. Estimated cost is 13 times greater than the preferred alternative. |
| **8. Mechanical Dredging of Overland Reservoir** | **CONSIDERATIONS FOR ALTERNATIVE 8** |
| This would involve removal of 1,600,000 cubic yards of soil from the Overland reservoir basin using conventional excavating equipment. Excavated spoil would be removed to a local disposal site. | 1. Recreational and other impacts to the area with equipment operating 7 days/week during summer months for 4 years.<br>2. Disturbance to 70 acres of National Forest land for disposal site.<br>3. Potential impact to existing wetlands within the reservoir basin.<br>4. Impact to heavily used haul roads.<br>5. Loss of reservoir storage water for 4 years during dredging.<br>6. Estimated cost is 8.5 times greater than the preferred alternative. |
| **9. Purchase Water From Other Entities** | **CONSIDERATIONS FOR ALTERNATIVE 9** |
| This would involve purchasing water from other water supply companies in the area. To satisfy the timing requirement, the purchased water would be from storage. The only local companies supplying significant storage water to the area are Fire Mountain Canal Company (FMCC) and Leroux Creek Water Users Association (LCWUA). | 1. There is no surplus water available for sale.<br>2. Purchasing water from another entity would create a greater irrigation deficit for other irrigated lands in the area.<br>3. Obtaining water from FMCC would require pumping to the Overland service area.<br>4. The value of existing stored water supplies is based on replacement cost which is 5 to 13 times greater than the cost of water from the preferred alternative. |